ASGBI abstracts 2014

E-Posters

1. ATMS (pp. 2–8)
2. Audit and Outcomes Research (pp. 9–37)
3. Basic and Applied Clinical Science (pp. 38–41)
4. Breast-Endocrine (pp. 42–50)
5. Cancer-Surgical Oncology (GI) (pp. 51–67)
6. Cancer-Surgical Oncology (Other) (pp. 68–71)
7. Education and Training (pp. 72–102)
8. Emergency Surgery (pp. 103–117)
9. General (pp. 118–138)
10. Minimally Invasive Surgery and Technology (pp. 139–147)
11. Patient Safety (pp. 148–157)
12. Perioperative Care-Nutrition (pp. 158–160)
13. Randomised Clinical Trials (pp. 161–161)
14. Surgical Complications (pp. 162–165)
15. Vascular and Transplant (pp. 166–175)

Citing ASGBI abstracts
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ATMS

Trauma and Military Surgery 0020

Title Damage Control in Maxillofacial Trauma

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Head and neck trauma is a common presentation to the Emergency Department and makes up a significant workload for the Maxillofacial Surgery units to whom cases are referred. The facial skeleton can be regarded as the 'airbag' of the head. The sinuses create buttresses, which withstand heavy biting forces, but the remaining aerated structure is comparatively weak and enables a 'crumpling' effect. Facial injuries can be life-threatening, and sight-threatening. Management must be prioritised, taking into account sub-clavicular injuries.
We present a visual overview of the key considerations in assessing head and neck trauma, using an Advanced Trauma Life Support (ATLS) framework. The "ABCDE's" of management are highlighted in a comprehensive manner using an ATLS algorithm where principles are modified when necessary. The gold standard of damage control in maxillofacial trauma is presented for the education of clinicians involved in trauma management and to enable application into clinical practice.

Trauma and Military Surgery 0089

Management of Penetrating Neck Trauma at a London Trauma Centre

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Aims: Penetrating neck trauma (PNT) in the UK is an uncommon emergency but on the rise due to increasing urban violence and at present there is no national guidelines. With the creation of major trauma centres in London the majority of cases will be managed here rather than at other hospitals and therefore guidelines are needed. A retrospective review of all PNT managed at a London Major Trauma Centre over a 20 month period was undertaken
Methods: All cases of PNT were extracted from the emergency department's electronic databases using the search terms: 'major trauma' and 'neck wound' over a 20 month period. Case notes of these patients were then reviewed in detail.
Results: There were 29 cases of PNT. The mechanism of injury included deliberate self harm (10), knife assault (9), assault with other sharp implement (5), shot gun wound (1) and accidental causes (4). The platysma was breached in 13 cases. Of these there were 4 CT angiograms, 5 CT scans, 2 ultrasound duplex scans and 2 panendoscopy. Also of these 10 cases were explored and closed in the operating theatre; 6 by the ENT team, 2 by the vascular team and 2 jointly by both teams; 1 case was transferred to a maxillofacial centre and 2 were closed in the emergency department.
Conclusions: PNT is infrequently seen by the trauma team and there is a wide range of injuries and vital structures that need to be considered. Systematic initial assessment, imaging and involvement of the relevant specialty teams early are key to providing optimal care. A PNT protocol has been introduced so that the vascular, aerodigestive and neurological examination is comprehensively conducted. In addition CT angiogram is the imaging investigation of choice to guide definitive management and is strongly indicated if there is suspicion of vascular involvement. This PNT protocol focuses on identifying significant injury to the vital structures of the neck, imaging and involvement of relevant specialty teams.

Trauma and Military Surgery 0188

Pattern of Spinal Injuries in Modern Conflict – Op HERRICK 15, Afghanistan

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Aims: This study on current spinal injury patterns in modern conflict provides guidance on future resource planning and training adjustment.
Methods: A retrospective review of all CT scans performed at Bastion Hospital through Sep 11 to Mar 12 identified 56 cases of spinal injuries confirmed radiologically by a consultant radiologist. Hospital notes were reviewed retrospectively for causes of injuries.
Results: There is a significant increase in prevalence of acute presentation of spinal injuries since 2009. The study identified 41 cases of vertebral column injuries with 103 spinal column fractures over 6 months. 20% of cases are unstable spinal fractures. 30% sustained neurological deficits. 17% had associated spinal cord injuries, 25% of which presented with spinal shock. IED remains the dominant mechanism of injuries. Unstable fractures are features of IED and lower limb injuries
Conclusions: Survival Rate. More effective PPEs, TTPs, IED detecting equipment and vehicle hull designs have undoubtedly reduced severity of injuries and fatalities in current conflicts. This may have directly contributed to the increase of acute presentation of surviving casualties with spinal injuries.

Trauma and Military Surgery 0219

Title Improving Pre-Hospital Haemorrhage Identification and Control – A National Trauma Questionnaire

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Aims: Uncontrollable haemorrhage is one of the leading causes of mortality in trauma. This questionnaire was developed to gain an expert consensus of opinion on how improvements in abdominal haemorrhage identification and its control in the pre-hospital setting can be achieved.
Methods: A qualitative questionnaire was formulated and validated by independent trauma experts before national distribution. There were 13 questions centred on training and research priorities in pre-hospital abdominal haemorrhage identification and control. The questionnaire was distributed to the following clinical stakeholders: The UK International Emergency Trauma Register, The Helicopter Emergency Medical Service Network, The London Major Trauma Network, Experts in Trauma and Pre-hospital Care and Specialists in Austerity care and Catastrophe and Conflict Medicine.
Results: In total 54 participants responded with the majority being Consultants (43%) within Accident and Emergency and Pre-hospital Medicine. The mean level of pre-hospital experience across the cohort was 13 (±8·0) years. The key findings were that more training in haemorrhage identification and control is required. Specifically for haemorrhage *identification*, greater exposure to high fidelity ultrasound simulators (70%) and for haemorrhage *control* simulators (58%) or cadavers (51%).The majority of respondents stated that the research priorities for haemorrhage *identification* should be focussed on ultrasound as a diagnostic modality. Research into haemorrhage *control* should focus on novel mechanical compression devices and endovascular control. Innovative ideas for pre-hospital abdominal haemorrhage identification and control mentioned included endovascular balloon occlusion and an abdominal tourniquet.
Conclusions: This is the first UK questionnaire to frontline trauma clinicians addressing this challenging area in pre-hospital care. Respondents highlighted training deficiencies in haemorrhage identification and control requiring increased exposure to high fidelity simulators or cadavers. Research priorities

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highlighted for haemorrhage *identification* include ultrasound and for *control* mechanical compression or endovascular techniques.

Trauma and Military Surgery 0280

Return to Duties after Arthroscopic Shoulder Stabilisation Surgery In UK Military Personnel

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Aims: Shoulder instability is a common problem in military personnel and results in them being unfit for full operational duties. Our aim was to analyse the ability of service personnel to return to full duties following arthroscopic shoulder stabilization.
Methods: The records of 40 patients undergoing arthroscopic labral repair were reviewed retrospectively. Operational fitness was assessed using standardised tests including the assessment of upper limb function. Records were analysed to assess patients' pre and post-operative military fitness state and the period taken to return to full fitness.
Results: All patients were operated on by the senior author. The indication for surgery was instability in 35 patients and pain with instability in 5 patients. Bioknotless anchors were used in 36 patients, Lacto Screw, Bioraptor or Lupine anchors were used in the remaining patients. 35 patients had anterior labral repairs. 6 of these had combined anterior labral and SLAP repair. 4 patients had isolated SLAP tears repaired. 1 patient had a combined posterior labral and SLAP tear. There were no complications but 5 patients required further surgery, 4 due to recurrent instability, 1 due to pain. 3 of 5 revisions returned to full fitness. Overall, 85% returned to full fitness at a mean follow up of 17 months. 6 patients didn't return to full duties; 3 patients had recurrent instability and 3 had chronic pain.
Conclusions: Arthroscopic labral repair is a reliable procedure for treating shoulder instability in military patients, with 85% returning to full duties. There were no significant factors associated with poor outcome.

Trauma and Military Surgery 0289

Emergency Preservation and Resuscitation: A Systematic Review of the Literature

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Aims: To systematically review the literature pertaining to the novel trauma resuscitation paradigm of *Emergency Preservation and Resuscitation (EPR)*.
Methods: An English language literature search was performed through PubMed using the search terms: ('Trauma' OR 'Haemorrhage' OR 'Shock') AND 'Hypothermia', as well as separate searches using the terms 'Emergency Preservation Resuscitation' and 'Suspended Animation'. In addition, a manual search of the reference lists of key articles was performed. All resulting titles or abstracts were screened for relevance. Studies specific to therapeutic hypothermia for brain injury or normovolaemic cardiac arrest were excluded.
Results: The search terms ('Trauma' OR 'Haemorrhage' OR 'Shock') AND 'Hypothermia' produced 4,579 results. The terms 'Emergency Preservation Resuscitation' and "Suspended Animation" yielded 65 and 141 results, respectively. Manual search of reference lists yielded a total of 38 citations of interest. A total of 34 full text animal studies were reviewed. No human trials of EPR have been reported.
Conclusions: The feasibility and efficacy of exploiting the preservative effects of hypothermia have been demonstrated in a number of animal models of exsanguinating haemorrhage, including the achievement of neurologically intact survival in clinically relevant, highly lethal, large animal models. Translation of this pre-clinical data into a viable treatment option for trauma patients, however, poses significant challenges. The effects of profound hypothermic circulatory arrest on humans after exsanguination are not known the first phase II human trial of EPR is yet to recruit any patients.

Trauma and Military Surgery 0308

How Soon Will Solid Organs Heal After Blunt Abdominal Injury? A Remarkable Case Evaluated By Laparoscopy

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Aims: Conservative management of solid organ injury is an established approach to the management of blunt abdominal trauma. However, the precise timing of healing and resolution of intraperitoneal blood is unclear because, by definition, we usually only examine the peritoneal cavity after major injury with imaging or by laparotomy; furthermore, operation usually occurs within 72 hours of the point of injury. Here we show a laparoscopic video examination of the abdominal cavity 3 weeks after severe blunt abdominal trauma.
Methods: A 5 year old girl sustained severe blunt abdominal, pelvic and arm injuries following an RTA. On arrival in hospital she was conscious but severely shocked. CT Scan demonstrated grade 3 injury to both the liver and the spleen, a fractured pelvis with significant amounts of both retroperitoneal and intraperitoneal free fluid. She was conservatively managed on the ITU but continued to have bilious aspirates so laparoscopy was performed 20 days after injury.
Results: The most remarkable finding was the complete resolution of intraperitoneal blood with virtually no adhesions to the intestines; the capsule of the liver and spleen appeared intact and normal apart from some adhesions between the liver and the diaphragm. The obstruction appeared to arise from the retroperitoneal duodenum so a decision was made to perform a gastro-jejunostomy. She made a good recovery and was discharged home 14 days later.
Conclusions: The CT scans and laparoscopic video clips will be shown. The purpose of this video is not to claim that conservative management is a better approach but merely to demonstrate the body's remarkable power of healing and so better inform our understanding of the physiology of recovery from trauma.

Trauma and Military Surgery 0315

The Changing Face Of Trauma At A General District Hospital

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Aims: To assess the impact of the introduction of Major trauma centres on a general district hospital
Methods: Analysis of cases submitted to TARN and any other patient coded as trauma over a correlating 2 month period before and after the introduction of Major trauma centres.
Results: Total of 33 patient identified of which 31 were submitted to TARN. The introduction of MTC's led to a reduction in the number of patients and well as the severity of their injuries. The mechanism of injury was similar in both groups however no patient's in the post MTC group were taken to theatre for emergency surgery. Equal numbers of patients were transferred to specialist care following specialist care in both groups.
Conclusions: The introduction of the major trauma network has clearly had a number of positive effects with volume and severity of injury in patients attending a GDH reducing dramatically. However not all trauma cases are being taken directly to MTC's meaning GDH should still be able to manage some trauma cases.
This also has a knock on effect on training particularly for on call middle grades. There is still clearly a need for all general surgical consultants to have some experience in trauma as this study shows however with reducing numbers of trauma cases in GDH's training experiences for middle grade doctors is reduced.

Trauma and Military Surgery 0346

Management Of The Bus(T) Foot

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Aims: Degloving injuries to the foot from vehicle tyres can be devastating and may results in an unsalvageable foot. We aimed to devise a treatment algorithm by reviewing our experience in the management and outcome of these injuries.
Methods: Data was collected prospectively on foot injuries from vehicle tyres requiring orthoplastic treatment from 2010–2013.
Results: We identified 20 patients, aged 6 to 85 years. All patients wore footwear, 2 injuries were caused by buses, 2 by lorry, 2 forklifts, 5 vans and 9 cars. All patients, except one, underwent staged debridement (range 2 to 8 procedures). In three patients, the foot was unsalvageable resulting in transtibial amputation. Other sequelae included toe terminalisation (n = 5), skin grafting (n = 12), direct closure of wounds (n = 1) and free tissue transfer (n = 4). Patients injured by lorry or bus compared with car or van had a higher rate of amputation of the foot or a toe ($p = 0{\cdot}03$). 11 patients had a positive bacterial culture at debridement, 80% of these grew a *staphylococcal* species. Mean length of stay was 20 days (range 8–32 days).
Conclusions: This series of injuries following a specific mechanism is the largest reported to date. We identified three outcome groups - simple reconstruction, complex reconstruction and unsalvageable limbs. Outcomes were predictable early on in the debridement process. However, we employed a treatment algorithm for each group of patients, abiding by the principles of staged, conservative debridement to maximize tissue salvage and function of the limb.

Trauma and Military Surgery 0668

Assessment Of Sheep (Ovis Ares) As A Large Animal Model For Human Plasma Based Resuscitation Research: A Pilot Study

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Aims: Swine (*sus scrofa*) are the predominant large animal model for contemporary translational trauma research. As component blood products make their way further forward into the echelons of care, notably French lyophilized human plasma, it becomes increasingly important to identify a suitable large animal model for translational combat casualty care (CCC) research. Despite exhibiting key physiologic similarities to humans, it has been reported that human plasma administration elicits detrimental effects in the porcine cardiopulmonary system, which may be mediated by complement. Sheep have been previously identified as being less susceptible to complement mediated reactions to human plasma. The purpose of this study was to assess the feasibility of using sheep (*Ovis ares*) as a large animal model for translational CCC research focused on the development of human blood product based interventions.
Methods: Merino sheep were anesthetized, and splenectomy and cystotomy were performed. Sheep were randomized into 1 of 2 experimental groups: FP24 (human AB Frozen Plasma 24) or 3X (3x-concentrated human type A, pooled, pathogen-eliminated, spray-dried plasma [Entegrion Inc.]). A 10-minute stabilization period was observed prior to top-load transfusion of either FP24 in two doses of 10 mL/kg (n = 4) or 3X in two doses of 3·5 mL/kg (n = 3), each dose separated by 30 minutes. Cardiopulmonary parameters were monitored, and animals were observed for 240 minutes or until death.
Results: All sheep died. Time to death was similar in both groups. FP24 demonstrated a significant decrease in $EtCO_2$ and MAP compared to baseline. These parameters were not significant in 3X. Changes in PA pressure, heart rate, and SpO_2 were not significant in all animals.
Conclusions: Sheep do not tolerate human plasma administration and are suboptimal models for translational CCC research involving human plasma products. Further experiments are needed to elucidate the mechanisms mediating cardiopulmonary dysfunction in sheep in response to human plasma products.

Trauma and Military Surgery 0724

TachoSil® as an Adjunct to Operative Management of Liver Injuries

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Aims: To describe our experience of TachoSil® use following Liver Trauma
Methods: Retrospective review of patients presenting to our institution with liver injuries March 2009-November 2013.
Results: 96 patients with liver (+/– other) injuries were identified during the study period, of which 38 underwent emergency laparotomy. TachoSil® was employed intra-operatively in 13 patients. 8 of these had sustained blunt trauma and 5 had stab injuries. 10 patients had high-grade liver injuries (AAST grade ≥3) and median Injury Severity Score for the cohort was 25 (range 9–50).
TachoSil® was utilised as follows: as an adjunct to packing during damage-control laparotomy (n = 3), in conjunction with liver suturing at first laparotomy (n = 5) and during re-look laparotomy (n = 5), including resectional debridement (n = 2).
2 patients with AAST Grade V blunt injuries had unplanned return to theatre for bleeding after treatment incorporating haemostatic sutures/clips, TachoSil® and packing. 1 of these went on to have a prolonged bile leak requiring ERCP. 1 other patient had a prolonged bile leak that settled spontaneously and 1 patient required re-laparotomy due to sub-hepatic abscess. There were no deaths following TachoSil® use in this cohort.
Conclusions: The efficacy of TachoSil® as an adjunct to operative management of liver trauma is unknown. We have employed TachoSil® as an adjunct to haemostasis and biliostasis in a range of operative settings following blunt and penetrating liver trauma. In this small cohort of severely injured patients its use was associated with low rates of morbidity and mortality, however, prospective comparative studies are required to assess the efficacy of TachoSil® and other novel haemostatic agents in this setting.

Trauma and Military Surgery 0786

Approach to Polytrauma in a Jehovah's Witness

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Aims: We present the case of a 27-year-old male motorcyclist admitted to a major trauma centre following a road traffic collision. As a Jehovah's Witness, the patient refused transfusion of blood products on religious grounds despite significant injuries, and subsequently developed severe anaemia (lowest Hb 3·3 g/dL) and mutli-organ failure. This case study aims to discuss the key management strategies that enabled him to make a good recovery from his injuries.
Methods: Both authors were involved in the care of this patient from admission to discharge. First hand knowledge was supplemented with a review of the case notes in preparing this case study.
Results: On arrival at hospital, the patient was hypotensive but responsive to fluid resuscitation. He refused blood products but consented to the use of cell salvage techniques. Primary survey and trauma CT revealed extensive injuries including: significant intra-peritoneal haemorrhage with active extravasation from branches of the superior mesenteric artery; liver and renal lacerations; peri-splenic haematoma; pulmonary haemorrhages; comminuted humeral fracture, and extensive soft tissue injury to the right leg. Damage control surgery utilised cell saver and included peri-hepatic packing and resection of devitalised small bowel with ileostomy formation. The patient was resuscitated on intensive care, requiring mechanical ventilation, haemofiltration, and high concentrations of inotropes. Parenteral iron and human recombinant erythropoietin were infused to stimulate erythropoiesis in view of the declining haemoglobin (Hb 6·2 g/dL) and venepuncture was minimised. Unfortunately, compartment syndrome developed in the injured limb. Rather than risk further blood loss from fasciotomies and multiple debridements, a primary through-knee amputation was performed. Haemoglobin dropped further to 3·3 g/dL before slowly normalising. Definitive surgery was delayed until Hb had normalised. The patient made a good recovery.
Conclusions: This case suggests an aggressive strategy to minimise unnecessary early surgical intervention combined with techniques to stimulate erythropoiesis and minimise blood loss, can be an effective strategy to manage the severely anaemic polytrauma patient who refuses blood transfusion.

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Trauma and Military Surgery 0840

Training Future Trauma Surgeons; Efficacy of the US Designed Advanced Surgical Skills for Exposure in Trauma (ASSET) Course for UK Trainees

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Aims: To assess the efficacy and desirability of conducting the ASSET course for UK general surgical trainees.

Methods: Prior to the course participants were presented with the course manual, a DVD depicting the surgical exposures, and a pre-course self-efficacy evaluation (pre-score); a measure of confidence in performing the skills with a range of scores from 1 to 5, with 1 being little confidence and 5 extreme confidence.

Fresh frozen human cadavers were used with one trained ASSET faculty per table and four participants. The faculty presented topics that were delivered by PowerPoint presentations and videos. The presentation topics were in five segments: upper extremity, lower extremity, neck and chest, abdomen, and pelvis. After each segment, the participants completed the surgical exposure in the cadaver under supervision. On completion, mean pre-scores were compared with the post-scores scores by paired "t" test.

Results: 16 UK general higher surgical trainees (HSTs) with national training numbers completed the course. HST level of experience ranged from years 1–6 (median 3). The overall mean efficacy scores were $2{\cdot}26 \pm 1{\cdot}34$ pre-course versus $3{\cdot}92 \pm 0{\cdot}79$ post-course ($p < 0{\cdot}0001$). Across the 5 anatomical areas taught pre-scores ranged from $1{\cdot}91 \pm 1{\cdot}2$ (Chest) to $2{\cdot}70 \pm 1{\cdot}45$ (Lower extremity), with post scores of $3{\cdot}80 \pm 0{\cdot}9$ (Neck) to $4{\cdot}09 \pm 0{\cdot}62$ (Upper extremity). The area of greatest benefit was Chest, pre- $1{\cdot}91 \pm 1{\cdot}2$ to post- $3{\cdot}87 \pm 0{\cdot}70$. However all areas demonstrated significant improvement in efficacy scores ($p = <0{\cdot}0001$).

Conclusions: Within this small cohort of UK general HSTs the ASSET course produced significant improvements in objective measures of self-confidence with respect to surgical exposure to trauma. In particular teaching directed at anatomical areas less commonly encountered during routine general surgical practice yielded the greatest benefits. The ASSET course appears relevant to current UK trainees of all levels.

Trauma and Military Surgery 0849

Thoracotomy in Blunt Trauma- A Futile Exercise?

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Aims: To examine the outcomes of thoracotomies performed for trauma within a single institution and determine any association between mortality and associated injury

Methods: The Major Trauma registry of a single London Hospital was interrogated over a seven year period for all thoracotomies performed for trauma. Mechanism of injury, demographics, interventions and outcome were recorded prospectively.

Results: The trauma registry contained 10058 patients over the 7 year period.166 patients were identified who had undergone a trauma thoracotomy between April 2004 and April 2011. Sufficient data was available for 164. 65 of these patients (39·6%) sustained blunt trauma. Mortality was significantly greater for blunt trauma (73·8%) than for penetrating trauma (45·4%) ($p = 0{\cdot}0003$). Only 4 patients underwent thoracotomy for blunt trauma without chest injury and none survived. Of those with chest trauma, there was no significant difference in mortality with additional head, abdominal or pelvic injury ($p = 0{\cdot}39$).

Conclusions: Several studies have shown poor outcomes for Emergency and Urgent Thoracotomy performed for blunt trauma. Whilst indications and techniques for penetrating trauma are well understood, there remains uncertainty for blunt trauma. Our experience shows that blunt trauma undoubtedly carries a worse prognosis but that thoracotomy is certainly not futile. Survivorship in our series is on par or better than that shown in other published data. Mortality cannot be predicted by associated injuries. More work needs to be carried out to elucidate those physiological, haematological or biochemical factors which may allow us to select those patients who would benefit from surgical intervention. The roll out of the Major Trauma Network and the concentration of trauma skills within select centres may have both increased our capability to deal with such injuries as well as provided us with a greater pool of data.

Trauma and Military Surgery 1004

The impact of Orthopaedic Trauma Nurse Co-ordinators on achievement of Best Practice Tariff (BPT) standards for Hip Fractures

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Aims: The aim of this study was to evaluate the relationship of Trauma Nurse Co-ordinator (TNC) numbers and work patterns with the achievement of BPT standards across Hospitals within the North West of England.

Methods: Using the 2011–2012 National Hip Fracture Database (NHFD) and a standardised questionnaire, information was collected with regard to achievement of BPT and current workload of TNCs across the North West.

Results: The number of qualified TNC's employed within each Trauma & Orthopaedic unit ranged from zero to four. Eighty-seven percent of units employed TNCs. Service provision ranged from five to seven days per week. Overall cumulative hours of provision ranged from forty to ninety-eight hours per week. Number of femoral neck fractures submitted per unit ranged from one hundred and twenty to four hundred and fifty-eight per year. Number of femoral neck fracture patients per TNC ranged from forty-one to four hundred and three. The only significant relationship found was between TNC individual workload and % pressure ulcers.

Conclusions: These findings demonstrate the significant discrepancies that exist in the volume of workload managed, achievement of BPT standards, and workload/pattern of TNC's across Hospitals within the North West of England. In our experience, the employment of trained TNC's undoubtedly improves the overall quality and efficiency of care for all patients with Orthopaedic Trauma injuries, including fractures of the femoral neck. However, the results of this study have failed to demonstrate any significant relationships between TNC workload, total or cumulative hours per week worked and the achievement of BPT standards. As the achievement of BPT standards is multi-factorial and multi-disciplinary, firm conclusions relating to the effect of TNC's on BPT achievement cannot be made from these results alone.

Trauma and Military Surgery 1009

Toppling Televisions: A Hazard for Children

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Aims: Toppling television sets is a well-recognised cause for neurological morbidity and mortality in children, with increasing rates with adoption of flat-screen television in homes. Incidence of this mechanism has been well reported in North America. This paper reviews the literature in paediatric trauma associated with falling televisions. In addition, we describe the mortality rate in children due to toppling televisions relative to other causes that have presented at our institution since 2010.

Methods: A comprehensive literature review of paediatric trauma secondary to falling televisions was conducted using MEDLINE. A retrospective search using the Trauma Audit & Research Network (TARN) and our institution's records identified paediatric mortalities (children <16 years old) as a result of trauma between 2010 and 2013 at our institution.

Results: A total of 21 articles with 849 original reported cases of paediatric trauma secondary to toppling televisions were identified (between 1998 and 2012). The largest series were from United States (183 cases) and Canada (178 cases). There were no reports from the UK or Europe. The most common age group was 1 to 5 years (range 0 to 13 years) with preponderance towards boys. The most common injury was head trauma, followed by injury to extremities.

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The mortality rate was 67/849 (8%). Highlighted in the literature is the lack of prevention strategies, such as provision of TV-fixation devices and manufacturer hazard warnings with recommendation of TV-anchoring. Data from TARN and our institution's records over a 4-year period exhibited 12 mortalities in children as a result of trauma. There was 1 (8%) death as a result of blunt head trauma by a toppled television set in a child aged 1 year 8 months. The other causes of death were as follows: road traffic accident (n = 3), falls (n = 3), stabbing (n = 2), house-fire smoke inhalation injury (n = 1), head injury from non-accidental injury (n = 1) and self-harm by hanging (n = 1).

Conclusions: Toppling televisions is most hazardous in children less than 5 years of age with the most common injury being head trauma and has a significant mortality rate. This is consistent with the mechanism of injury and anatomy of children in this age group. Studies from the UK and Europe regarding this important mechanism of injury are currently absent. This data is paramount in supporting prevention strategies, which include raising public awareness and encouraging manufacturers to supply hazard warnings and TV-fixation devices for the modern flat screen television.

Trauma and Military Surgery 1088

Overuse of Computed Tomography in the Management of Isolated Anterior Abdominal Stab Wounds

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Aims: Traditionally, the majority of patients presenting with anterior abdominal stab wounds (AASW) underwent emergency laparotomies, many of which were non-therapeutic and resulted in avoidable complications and expense. Computed Tomography (CT) may help to reduce non-therapeutic laparotomy; however, CT involves high-dose radiation, could potentially delay life-saving surgery, and may overestimate injury. This study aimed to investigate how often and in which circumstances CT favourably alters management for patients with AASW.

Methods: From a prospectively collated database, we identified 49 consecutive adults presenting over six months with AASW in a major trauma centre. Exclusions were those with stab wounds to other parts of the body and those transferred from other hospitals. Database and notes were analysed for management and outcome.

Results: 17/49 (35%) patients were transferred immediately to theatre for laparotomy, of which 16/17 (94%) were therapeutic. 32/49 (65%) patients had immediate CT, following which nine went to theatre, 13 were discharged within 24 hours, one self-discharged and nine were observed for more than 24 hours. Of those taken to theatre following CT, in four (44%) CT could be considered unnecessary as there was a clear indication for surgery (hypotension with absent or transient response to fluid and/or bowel evisceration); in two (22%) CT over-estimated injury resulting in non-therapeutic laparotomy; and in three cases CT was helpful (stable patients where significant injury was detected on CT). For patients undergoing surgery, the median time from presentation to surgery was significantly longer for those that had a CT scan (69 minutes vs. 180 minutes; p =0·025; two-tailed Mann–Whitney U).

Conclusions: We may be overusing CT in patients with isolated AASW. For patients with clear indications for laparotomy, CT delays surgery, and in stable patients, CT may lead to non-therapeutic laparotomies. Using these results we propose a simple algorithm for use of CT in AASW.

Trauma and Military Surgery 1108

A Novel Anatomical and Physiological Scoring System for Military Pelvic and Perineal Blast Injuries Shows a Significantly Better Predictive Outcome Than Current Scoring Systems Used

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Aims: Various injury severity scores exist for trauma. A novel anatomical scoring system was created for blast pelvic and perineal injury which showed a better correlation to outcome than ISS alone. Further analysis of data was made in order to create a superior scoring system using machine learning techniques.

Methods: The survival data which contains 5 anatomical scores and 14 physiological parameters of 118 patients was used in this study. We first used an unbiased genetic algorithm (a search heuristic that mimics the process of natural selection) to select the optimal set of physiological parameters. A logistic regression model was built using the proposed anatomical scores and the selected physiological parameters to predict the probability of survival. In order to evaluate the performance of our system, we employed 5-fold cross validation (CV) and repeated the experiments 30 times.

Results: Our logistic regression model achieved significantly better average predictive accuracy and an average area under the receiver operating characteristic (ROC) curve (AUC) when compared to the logistic regression model of ISS-injury severity score, NISS-new injury severity score, TRISS-trauma score injury severity score and RTS-revised trauma score. A two-sample t-test showed that the predictive performance of the proposed scoring system is significantly better than ISS ($p < 0{\cdot}0001$), NISS ($p < 0{\cdot}05$), TRISS ($p < 0{\cdot}001$) and RTS ($p < 0{\cdot}001$). Certain anatomic variables were shown to be the most significant factor within the regression model (pelvic fracture) whilst factors such as testicular injury, systolic blood pressure and pulse had a positive correlation to survival.

This table shows a comparison of all the scoring systems versus our novel system.

Experiment	Precision	Recall	Specificity	Accuracy	AUC	P-value
ISS	0·8583	0·8000	0·8790	0·8424	0·8440	<0·001
NISS	0·8907	0·8571	0·9048	0·8822	0·8803	<0·05
TRISS	0·7835	0·9542	0·7618	0·8531	0·8587	<0·001
RTS	0·7879	0·9286	0·7742	0·8475	0·8505	<0·001
Novel System	0·8708	0·8893	0·8899	0·8850	0·8875	

Conclusions: Our scoring system is significantly better than current scoring systems used for trauma. In our future work, we plan to create a protocol for constructing specific scoring systems for different trauma regions and combine them using machine learning techniques for a more accurate global trauma scoring system.

Trauma and Military Surgery 1114

Operative General Surgical Trauma – A Trainee's Point of View

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Aims: Operative trauma remains a neglected part of general surgical training. Exposure is limited as trauma is rare, unpredictable and predominately out of hours.

Methods: Trauma admissions in a six-month period in a regional trauma centre were identified. Retrospective review of notes and theatre records were carried out. Mechanisms of trauma, resulting injury and the resulting operations were identified.

Results: Seventeen trauma operations were carried out in a six month period. Blunt abdominal trauma accounted for 12 cases, penetrating trauma accounted for 3 and mechanism unknown in 3 cases. Fourteen open, 3 laparoscopic and 1 combined procedure with interventional radiology were undertaken. All operations were exploratory with 3 small bowel resections, 3 splenectomies, 3 diaphragmatic repairs and 2 repairs of liver lacerations. Nine different Consultant surgeons were the primary operating surgeon for 15 cases while registrar trainees carried out two. Nine separate registrars were involved in trauma operations with only two registrars involved in more than a single operation. The SHO (FY2-CT2) grades were only involved in two operations.

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Conclusions: There is low volume of operative trauma with limited trainee exposure. Trainees experienced less than three operations in six months. An increasing role of laparoscopy in trauma can be seen.

Trauma and Military Surgery 1203

Patterns, severity and management of maxillofacial injuries in a suburban secondary health facility, South-western Nigeria

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Aims: Craniofacial region is highly susceptible to trauma either in isolation or in combination with other systems. Prospective evaluation of the patterns, aetiological factors, severity and management of maxillofacial trauma at our centre.
Methods: Prospectively collected demographic and clinical data on consecutive patients who presented to our centre over a 12-month period. Data collected relates to the mechanisms of injuries, patterns of trauma, soft tissue and bony structural classification, associated systemic injuries, treatment, length of hospital stay and outcomes.
Results: 58 patients were treated for maxillofacial injuries with mean age of 31(1–60) years and male to female ratio of 3:1. Motor-vehicular accidents accounted for 76% of the cases while fall and assault accounted for 12% each. Injuries involved soft tissue only in 21, soft tissues with mandibular fractures in 17, mid-face fractures in 12, combined mandibular and mid-face fractures in 8 patients. Mandibular fractures involved the body in 9, parasymphysis in 7, angle in 2, condyle in 1 and various combinations of the above in 6 patients. Mid-face trauma included one patient each with solitary Le-Fort I, Le-Fort II, Le-Fort III fractures, zygomatic fractures in 6, zygomatic arch fractures in 2 and combinations of the above injuries in 8 patients. 21 patients had associated systemic injuries including 7 head, 1 C-spine, 7 Orthopaedic and 6 combined head and Orthopaedic injuries. The severity of associated head injury was mild in 10, moderate in 2 and severe in 1 patient. Treatment were conservative measures in 17, soft tissue repair alone in 17, closed reduction and immobilisation in 22 and an open reduction and internal fixation of fracture in 2. The median hospital stay was 4 (0–18) days. We report a mortality rate of 1·7% in a patient with severe head injury admitted with GCS of 5.
Conclusions: Motor-vehicular accidents were the leading cause of maxillofacial trauma in our centre. The trauma tends to involve combination of craniofacial structures.

Trauma and Military Surgery 1213

Medium Term Outcomes Following Severe Open Tibia Fracture Sustained in Combat

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Aims: The aim of this study was to establish medium term outcomes in military casualties following severe open tibia fractures sustained in combat. A second objective was to compare outcomes after limb salvage for tibia fracture with a previously published group of patients who had sustained a trans-tibial amputation.
Methods: Patients from a previously published case series of four years of tibia fractures sustained in Iraq or Afghanistan[1] were contacted and assessed with the SF-36 Health Related Quality of Life outcome tool. These results were then compared to a methodologically similar published study on military amputees[2].
Results: Of the original data set of 49 patients, 30 patients were followed up and completed an SF-36 (61%) with a median follow-up was 4-years (49 months, IQR 39–63). Ten of the 30 required revision surgery, 3 of which involved conversion from initial fixation to a circular frame. However 22 of the 30 patients recovered sufficiently to complete a military basic fitness test. The median physical component of SF-36 in the tibia fracture group was 46 (IQR 35–54) which was significantly similar to the trans-tibial amputation cohort ($p = 0{\cdot}3057$, Mann–Whitney) similarly there was no difference in mental component scores ($p = 0{\cdot}1595$, Mann–Whitney). There was no significant difference in the proportion of patients in the amputation or fracture group reporting pain ($p = 0{\cdot}1157$, Fisher's exact test) or with respect to SF-36 physical pain scores ($p = 0{\cdot}5258$, Mann–Whitney).
Conclusions: We present the patient reported outcomes following combat tibia fracture and show that they are similar to those achieved after trans-tibial amputation.

Trauma and Military Surgery 1221

Evolving use of selective angiography and or embolization in the emergency management of penetrating gluteal injuries

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Aims: Highlight the evolving use of interventional radiology by means of selective angiography in the assessment and emergency management of penetrating gluteal injuries.
Methods: Single centre case series from large Level 1 Trauma centre, comprising of 4 cases demonstrating the use of angiography as an emergency assessment method and or management technique for both haemodynamically stable and unstable patients. Series supported by a literature review (Medline, Embase, Pubmed) of published practice in the management of penetrating gluteal injury.
Results: Case series demonstrates the successful usage of selective angiography and or embolization in the emergency management of penetrating gluteal injury. Literature review highlights a distinct lack of published data on the use of interventional radiology in this scenario in contrast to wound exploration and or laparotomy.
Conclusions: Selective angiography and or embolization can be successfully used in the assessment of penetrating gluteal injuries and in select cases as an emergency treatment modality. Avoiding the morbidity and mortality associated with traditional wound exploration and or laparotomy. There is little published material on this issue and more research is required to solidify this modality's place within the trauma setting.

Trauma and Military Surgery 1231

The Epidemiology, Management and Outcome of Sport-Related Ankle Fractures in a Standard UK Population

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Aims: The literature on outcome in sport-related ankle fractures focuses on operatively-managed fractures, despite a large proportion being treated nonoperatively. We aimed to describe the epidemiology, management and outcome of acute sport-related ankle fractures in a UK population.
Methods: All sport-related ankle fractures sustained during 2007 to 2008 in the Lothian Population were prospectively collected when patients attended the only adult orthopaedic service in Lothian. Fractures were classified using the Lauge Hansen and the Pott's Classification. The presence of fracture displacement was also recorded. Patients were contacted in February 2011 to ascertain their progress in return to sport.
Results: Ninety-six sport-related ankle fractures were recorded in 96 patients. Eighty-four fractures (88%) were followed up at a mean interval of 36 (range, 30 to 42) months. Most common sports were soccer (n = 49), rugby (n = 15), running (n = 5), ice-skating (n = 3). The mean time for return to sport was 26 (range, 4 to 104) weeks, the return rate to sport 94%, and the 'persisting symptom' rate 42%.
Fifty-two fractures (all un-displaced) were managed nonoperatively – 43 isolated lateral malleolar (30 Weber B, 13 Weber A), two isolated medial malleolar, seven bimalleolar. Forty-four fractures were managed operatively – 42 were displaced (two isolated lateral malleolar, three isolated medial malleolar, 18 bimalleolar equivalent, nine bimalleolar, three trimalleolar equivalent, seven trimalleolar), two were un-displaced (two trimalleolar).
The mean times for return to sport were 20 (range, 4 to 52) weeks for the nonoperative cohort (NOC) and 35 (range, 8 to 104) weeks for the operative cohort (OC) ($p < 0{\cdot}001$), the return rates to sport 100% for NOC and 87% for

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OC ($p < 0{\cdot}016$), and the 'persisting symptom' rates 17% for NOC and 71% for OC ($p < 0{\cdot}001$).

Conclusions: We have described the injury pattern and return to sport rate for ankle fractures. This information is useful for team medical staff, and we have demonstrated that the quickest return to sport is seen in undisplaced fractures managed non-operatively.

Trauma and Military Surgery 1244

Prevalence Of Radiographic Features of Femoral-Acetabular Impingement Syndrome In Asymptomatic Active Servicemen

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Aims: Over the last 15 years a new clinical diagnosis has emerged which is believedto be a significant cause of hip pain in young adults and early onset osteoarthritis (OA). The concept of Femoral-Acetabular Impingement (FAI) is based on abnormal contact between a dysmorphic proximal femur and/or acetabulum. The diagnosis of FAI remains controversial as the radiographic measurements that have been suggested as objectively defining abnormal morphology are based predominantly on studies of small numbers of symptomatic individuals. This study aims to define these measurements in a high functioning, active, young, male population.

Methods: One hundred and ninety eight CTs performed in Afghanistan on injured British servicemen in the 18-months between 1 May 2011 and 31 Oct 12 were reviewed. 57 were excluded, because there were extensive pelvic or lower limb disruption, they were technically inadequate or were performed on females, leaving136 scans which formed the basis of this study. The mean age was 25 at time of injury (SD = 5·0). Scans were reviewed by a single Consultant Radiologist with a musculoskeletal special interest.

Results: The mean alpha angle was 50·7° (SD = 6·0, range 38–72) and the mean centre-edge angle was 35·3° (SD = 6·1, range 21–49). The femoral version was only measureable in 160 femora due to incomplete scans or fractures, the mean was 10·5 (SD = 10·4, range −15 to 36). In the 265 un-fractured acetabula the mean version was 16·0 (SD = 3·8, range 5–25).

Conclusions: Our results demonstrate that there is a wide variability in radiological values in asymptomatic previously active patients. These findings also indicate that some of these normal values would have previously been regarded as abnormal in previous research. Specifically this study demonstrates that an alpha angle of 50 is well within the normal distribution in an asymptomatic, active population. We believe that much of the previously reported normal and abnormal values were based on symptomatic or older populations and therefore should be used with caution.

Trauma and Military Surgery 1248

Sports-Related Fractures in South East Scotland – An Analysis of 990 Injuries

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Aims: Sports injury data provides clinicians and sports therapists with an understanding of the range, variety, and patterns of injury resulting from sports participation. Relatively few studies have examined the patterns of injury sustained from all sporting disciplines within a geographic region.

Methods: We retrospectively analysed our prospectively collected fracture database to identify all sports fractures occurring in our regional population of 545,000 adults (aged 15 years or older). We included all acute fractures of the upper limbs, lower limbs, pelvis and cervical spine, but excluded stress fractures and chronic injuries.

Results: We encountered 990 sports fractures in one year, representing a population incidence of 1·8/1,000/yr, and 14·5% of all fractures sustained by adults in our region. Peak incidence was seen in young adults, and fell markedly with advancing age. We identified 49 causative sporting activities in total, but 83% of sports fractures resulted from participation in twelve popular sports. Upper limb fractures outnumbered those of the lower limb and axial skeleton in all but two sports.

Conclusions: We present a summary of the sports injury and sports fracture literature. Obtaining complete epidemiological fracture data is challenging, but our institution is well placed to accurately record fracture patterns in South East Scotland, as it is the sole trauma unit for a captive and defined population. We have prospectively identified and described the epidemiological characteristics of all sports-related fractures in adults from our region. We believe the patterns of sports-related fractures presented in this study will broadly reflect those from other regions whose population demographics and distribution of popular sports is similar to our own.

Trauma and Military Surgery 1267

Evaluation of Rapid Training in Ultrasound Guided Tourniquet Application Skills

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Aims: Tourniquet application has been widely accepted to improve survival for major limb trauma. Colour 67 duplex ultrasound (US) can be used as a non-invasive method of confirming cessation of arterial flow. We aimed to assess if novice users could be rapidly and effectively be trained to apply the Combat Application Tourniquet using ultrasound guidance.

Methods: Participants with no or limited experience of ultrasound were taught to apply the Combat Application 69 Tourniquet with ultrasound guidance. Following this, participants were tested in effective tourniquet application: Blind and with ultrasound guidance.

Results: US guidance improved abolition of limb perfusion from 22 to 93 per cent in upper limb; from 25 to 100 per cent in lower limb (p 1/4 0·0027 and <0·0001). No significant difference was found in application time 72 for the lower limb; less time was taken for application with US guidance in the upper limb 8·1 (7·1, 8·6) vs 73 4·5 s (4·0, 5·3; median (IQR)), p 1/4 0·002.

Conclusions: Tourniquet ultrasound skills are rapidly acquired by novice operators. Accuracy improves with ultra- 75 sound guidance, this may have a role in improving survival.

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Audit and Outcomes Research

Audit and Outcomes Research 0016

A Clerking Proforma can Improve Documentation in Surgical Admissions

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Aims: Accurate documentation in patients' notes is paramount in facilitating patient safety. We aimed to assess the standard of surgical admission clerkings at our district general hospital.
Methods: We carried out a retrospective audit of consecutive patients admitted to the surgical take. Accuracy of documentation pertaining to areas identified in national standards was recorded. After an initial audit, a surgical clerking proforma was introduced to improve documentation.
Results: 44 patient notes were reviewed in the initial audit (Group 1) and 41 patients after introduction of the proforma (Group 2). Significant improvements were seen in documentation of patient identifier details - documented correctly in 27% of Group 1, which improved to 66% in Group 2. Significant improvements were also seen in time and date of clerking (50% to 70%), medication history (43% to 93%), family history (2% to 29%), physical examination and blood results (14% to 61%) - all p-value <0·05.
Conclusions: A clerking proforma can significantly improve documentation in a patient's admission notes facilitating better patient care and improving adherence to legal requirements.

Audit and Outcomes Research 0023

Antibiotic Prescribing- Are Local Protocols Being Followed?

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Aims: The Department of Health guidance for antimicrobial stewardship states that procedures should be in place to ensure prudent prescribing and antimicrobial stewardship. There should be an ongoing programme of audit, revision and update. It was thought that adherence to local protocols reduces around the period of junior doctors' change over because of frequent job rotation. Targeting junior doctors who do the majority of the prescribing is a challenge. We assessed compliance of antibiotic prescribing in surgical patients around the period of junior doctors' change over and aimed to improve the compliance of antibiotic prescribing.
Methods: Initial audit was performed to assess adherence to local protocols for antibiotic prescribing. Drug charts of all surgical patients were assessed. Documentation of prescribing indication and review date was recorded. Initial audit results were presented to both nursing colleagues and junior doctors as part of the Foundation year teaching programme. A closing loop audit was performed to reassess compliance and improvement.
Results: On initial audit, 110 patients were assessed with 34 (31%) on antibiotics. 24 (71%) had a documented indication and 12 (35%) had a documented review or stop date. 99 patients were included in the re-audit, with 51 (51%) patients on antibiotics. 45 (88%) had indication written (p = 0·04, chi-squared test) and 39 (76%) had review or stop date written (p = 0·0001, chi-squared test).
Conclusions: An educational presentation and a guidance poster campaign raised awareness amongst junior doctors and re-audit showed statistically significant improvements in antibiotic prescribing.

Audit and Outcomes Research 0033

The Association Between Frailty and Outcome in Surgical Patients: Evidence from a Meta-Analysis

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Aims: Frailty is becoming increasingly prevalent within the elderly population. More elderly patients are being assessed for surgical intervention but the effect of frailty is still not clear. A lack of consensus regarding its clinical definition hampers the comparison of clinical studies. The aim of this study was to investigate the effect of frailty on outcome in surgical patients.
Methods: A systematic literature search for all prospective studies reporting frailty and post-operative outcomes in patients undergoing surgical intervention was performed. Random effects meta-analysis modelling was undertaken to estimate the association between frailty and mortality rates (in-hospital and one year), length of hospital stay and the need for nursing home placement or step down to a rehabilitation unit.
Results: A total of 12 studies met the inclusion criteria, corresponding to 7960 patients. Frailty was associated with increased in-hospital and 1 year mortality (pooled OR 2·77; 95% CI 1·62–4·73 and OR 1·99; 95% CI 1·49 – 2·66, respectively,) a longer hospital length of stay (pooled mean difference 1·05 days; 95% CI 0·02–2·07 days) and a higher discharge rate for further rehabilitation or step- down care (pooled OR 5·71; 95% CI 3·41-9·55).
Conclusions: The presence of frailty in patients undergoing surgical intervention is associated with poorer outcomes with regard to mortality and return to independence. The increased length of stay and cost associated with rehabilitation or care home placement will pose an increasing financial load on healthcare providers. Further in-depth studies are required to identify factors that can be optimized to reduce the burden of frailty and cost in this group of patients.

Audit and Outcomes Research 0049

A Comparison of Local Surgical Scrub Practice in a University Hospital Against Current WHO Recommendations

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Aims: This audit compares objective assessment of current staff scrub practice prior to gowning whilst in theatre in a large University Hospital against the current 2007 WHO recommendations. (Best Practice Protocols Clinical Procedures Safety).
Methods: This prospective audit was performed from 02nd September 2013 to 04th October 2013. Research and Development department, Quality, Governance and Risk Unit in the hospital approved the conduct of the study. Scrubbing techniques were observed and recorded on a printed pro-forma. The participants comprised of consultant surgeons (C), trainees (T) and scrub nurses (SN). All data was collected anonymously. Main variables assessed were: grade of health professional, type of scrub agent used, length of scrub time, quantity of scrub chemical agent used, use of nail brush and eye shields and the presence of jewellery or nail varnish. All the data was collected on Excel 2011 (Microsoft Corp) and analysed.
Results: 303 surgical health professionals were assessed (95 SN, 123 T and 85 C). On average the first scrub was 3·43 min (SN at 4·45 min, T at 3·22 min, C at 3·03 min). On average, subsequent scrubs were 2·42 min and revealed a similar trend (SN at 2·42 min, T at 2·44 min and C at 2·09 min). 69% used a nail brush during the first scrub (95% of SN, 62% of T and 44% of C) and 8% during subsequent scrubs (5% of SN, 11% of T and 5% of C). Additionally 42% of the cohort used eye shields (58% of SN, 19% of T and 13% of C). On average the cohort pressed the soap dispenser a total of 11 times (SN pressed 10 times, T 13 times and C 12 times). Out of the 303 participants 17% wore a wedding band and 3% had nail varnish.
Conclusion: No comprehensive local guidelines on hand scrubbing currently exist in the hospital and people are unaware of WHO guidelines. In this study, average scrub times were less than the WHO guidelines and there was wide variation in the practice across different grades of staff. There needs to be clear guidelines at local and national level.

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Audit and Outcomes Research 0059

Impact of Individual Performance Monitoring in Surgery: A Systematic Review

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Aims: To evaluate the findings of studies investigating individual performance in surgery.
Methods: Design: Systematic review; Data sources: MEDLINE, Embase, PsycINFO, AMED and the Cochrane Database of Systematic Reviews (from their inception to February 2013); Study selection: Two reviewers independently reviewed citations and selected eligible studies based upon predetermined inclusion and exclusion criteria; Data Extraction: 91 data-points per study were extracted using a pre-designed data collection form. All extracted data were independently reviewed by two authors.
Results: The search strategy yielded 6,950 citations. Seventy eight studies were eligible comprising 910,903 procedures by 10,033 surgeons. Of the 78 studies, 35 (44·9%) aimed to evaluate factors affecting individual performance. Thirty nine studies monitored surgical case volume, 29 (74·4%) of which reported that increasing case volume improves outcomes. Twelve studies assessed the impact of surgical experience, 9 (75·0%) of which found that experience improves outcomes. Furthermore, 23 studies (29·5%) measured individual performance with the aim of determining the learning curve of a new procedure and 11 studies (14·1%) tested the impact of performance monitoring tools. Cumulative sum (CUSUM) analysis was used in 23 studies (29·5%) and was identified as a reliable and objective tool for monitoring adverse outcomes. The impact of behavioural interventions on individual performance was assessed by 3 studies (3·8%) and in each case significantly improved individual surgeon performance.
Conclusions: There is significant variability in the factors affecting individual surgeon performance, the monitoring of individual performance and the impact of behavioural interventions. Increasing surgical case volume, experience, teamwork and prior surgical assistance all accelerate the learning curve. For the field to progress, surgical training programmes should seek to maximize individual case volume and performance monitoring studies should adopt a wide range of procedure-specific outcome measures.

Audit and Outcomes Research 0063

Reversal of Loop Ileostomy- A Review of Outcomes

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Aims: Major complications following loop ileostomy reversal can occur in up to 9% of cases. The aims of the study were to assess outcomes following loop ileostomy reversal in our unit.
Methods: Retrospective review of consecutive patients undergoing elective loop ileostomy reversal between Jan 2006 to Jan 2013. Demographic data, anastomotic technique, length of stay, complications and 30-day mortality were recorded.
Results: 67 patients underwent elective loop ileostomy reversal over the time period. 45 were male and 22 were female. Median age was 65 years (range 20–83). Indication for the ileostomy formation was low anterior resection for rectal cancer in 54 cases, Ileo-anal pouch formation for Inflammatory Bowel Disease in 7 cases, and 6 miscellaneous cases. Median length of wait between ileostomy formation and reversal was 266 days (range 49–1317 days). The length of wait for reversal was not affected by post-operative chemotherapy, radiological leak or stricture formation requiring repeated dilatation ($p = 0{\cdot}4555$ unpaired t-test). Hand sewn anastomosis was performed in 13 cases and stapled in 54 cases. Median post-operative length of stay was 5 days (range 1–23). 4 patients had anastomotic leaks and 2 had bowel obstruction requiring intervention; resulting in a major complication rate of 4·02% (Clavien-Dindo Classification III-V). No statistically significant difference was seen between anastomotic technique and major complication ($p = 0{\cdot}5743$ fisher exact test). 30-day mortality rate was 0%.
Conclusions: Our major complication rate following loop ileostomy reversal was comparable to published data. There was no significant difference in major complication rate comparing anastomotic techniques.

Audit and Outcomes Research 0070

A Comparison of Outpatient Rigid Sigmoidoscopy Versus Flexible Sigmoidoscopy; Does Outpatient Rigid Sigmoidoscopy Still Have a Role?

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Aims: Rigid Sigmoidoscopy (RS) is performed for symptomatic patients referred to the colorectal clinic. Further endoscopic assessment, such as a flexible sigmoidoscopy (FS) is often advised for these patients. FS offers greater diagnostic yield and is better tolerated.
This study aims to compare the diagnostic use of RS and FS for the investigation of colorectal symptoms.
Methods: We performed a retrospective review of consecutive patients referred to colorectal outpatient clinics between January 2010 – January 2011. All patients underwent both RS and FS evaluation. Demographic details and data regarding diagnostic findings and procedural complications were recorded and analysed.
Results: 231 patients underwent both RS and FS. 119 were males. The median age of the patients was 63 (IQR 46–78). RS conferred normal findings in 206 (89%) patients. Of these 206 patients, 132 (64%) patients were found to have pathology on FS of which 24% were within the reach of the RS. No malignant lesions were missed on RS.
Conclusions: FS is superior to RS in terms of diagnostic value. In our study RS missed a significant number of lesions. The utility of outpatient RS is in question and the use of flexible sigmoidoscopy in preference, within resource constraints, should be considered.

Audit and Outcomes Research 0087

The Accuracy of Specialty-Specific Databases Versus Hospital Episode Statistics in Assessing Healthcare Quality Indices

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Aim The term "specialty-specific" refers to prospective databases which include information such as admissions and procedures performed within a department. These databases have been used for research purposes in the past, however, the accuracy of the data they provide has been put under scrutiny. The aim of this study is to assess the role of specialty-specific databases, compared to Hospital Episode Statistics (HES), in assessing health care quality.
Methods: For the purposes of this study we chose to assess an emerging health quality index, 30 day readmission rate, using both a specialty-specific database and HES. The vascular surgery unit keeps a prospective database of all admissions and procedures performed, which is updated by the surgical team and validated every week. The Hospital administration runs the Hospital Episode Statistics (HES) department, which monitors all admissions and re-admissions.
Results: Between April 2011 and 2012, 1412 live discharges were reviewed. 537 of the live discharges were day case admissions and were excluded. The 30 day readmission rate, as calculated using the Vascular surgery specific database and HES database, is 2·3% and 6·5% respectively. The two diagnoses with the highest readmission rates are lower limb ischaemia and diabetic foot sepsis. HES data has inappropriately included day case admissions, accident and emergency attendances and readmissions due to chronic medical conditions.
Conclusion: Specialty-specific database can underestimate negative health care indices. Conversely, HES data can overestimate negative indices. A combination of the two databases and investigation of the cause-effect relation between admission and readmission is recommended.

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Audit and Outcomes Research 0088

Know Your Enemy – Are we Consistently Assessing Left Ventricular and Valvular Function Prior to CABG?

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Aims: Left ventricular (LV) and cardiac valvular function are strong predictors of morbidity and mortality following coronary artery bypass grafting (CABG). They should be assessed preoperatively in order to calculate risk. We audited whether this was consistently done in our Department; ideally all patients should be fully assessed before surgery.

Methods: Patients undergoing isolated CABG were selected prospectively from the start date of the audit until a 50-patient quota had been reached – this covered an 8-week period. Case notes and all available imaging were reviewed postoperatively. Data were collected on urgency of operation (elective, urgent inpatient transfer, or semi-elective where the patient had been transferred to our unit for assessment as an inpatient, but discharged with a date for surgery in the near future) and the best investigation performed, with echocardiograms (transthoracic or transoesophageal) considered as the gold standard. Left ventriculogram at coronary angiogram and MR-based imaging were also considered acceptable forms of imaging for assessment.

Results: 23 patients (46%) had echocardiograms preoperatively. 18 patients (36%) had ventriculograms at angiography. 4 patients (8%) had neither of the previous investigations but had MR-based imaging. The remaining 5 patients (10%) had no assessment of LV or valvular function prior to CABG. No correlation was found between urgency of the operation and type of imaging used.

Conclusions: Study limitations included small sample size and possible positive bias if authors had requested preoperative investigations. It was agreed that the preoperative assessment of patients planned for CABG needed to be improved, so that all patients were getting the necessary imaging in order to more accurately calculate their risks of major complications. This could be implemented by referrals not being accepted until a complete set of investigations was completed, including imaging to assess LV and valvular function.

Audit and Outcomes Research 0099

Diagnostic Criteria for Acoustic Neuromas

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Aims: To determine the diagnostic accuracy for this department we reviewed the records and MRI scans for all the patients with suspected acoustic neuroma over 1 year.

Methods: All 446 scans in 2011 were reviewed retrospectively along with their case records and audiograms. The scans for all patients diagnosed with acoustic neuromas were reviewed anew by a consultant radiologist. The information was analysed against the local otolaryngology MRI guidelines.

Results: 31 patients were found to have an acoustic neuroma. 5 patients were newly diagnosed with an acoustic neuroma. 26 patients were under monitoring. Of the patients who had normal findings on MRI, only 5% did not fit the guidelines. Following our review of the 449 patients, 75% had sudden sensorineural hearing loss, 54% had unilateral tinnitus, 0·5% had fluctuating hearing loss, 8% had imbalance, 8% had vertigo, 8% were dizzy, 3% had headache, 2% had cranial nerve palsies, 2% had Menieres disease, 37% had a normal audiogram.

Conclusions: It was concluded that our department had a 95% adherence rate to our current local guidelines. Compared to the literature we have a comparable rate of incidence of acoustic neuromas. We would therefore encourage that all departments have similar local guidelines to ensure that patients are managed appropriately.

Audit and Outcomes Research 0100

Are We Still Working for Nothing? Procedural Outcome Forms in our ENT Outpatients Department

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St George's Hospital, London, UK

Aims: The Payment by results (PBR) national tariff is published by our Department of Health each year. Since 2010, it has included ENT outpatient procedures tariffs, such as flexible laryngoscopy or ear microsuction. Our Ear, Nose & Throat (ENT) department is a tertiary centre which receives from a catchment area of 1·3 million. The accuracy of payment in the outpatient setting in our ENT department is dependent on how accurately procedural forms are being completed. This audit aim was to investigate how accurately we were recording procedures performed and thus the degree to which we were over- or underpaid. This indirectly affected patient-care as funding shortages would result in financial deficit, preventing improvement and upkeep of facilities, equipment, staffing, research and training in the department.

Methods: A two-cycle audit in our unit was conducted in November 2012 (1st cycle) and from July to September 2013 (2nd cycle). Clinical notes were compared with the completed procedural form to see if all procedures performed in clinic were recorded on the form.

Results: The initial audit found an accuracy of 84%. This roughly translated into a loss of £654 per clinic session. Per year, this would be a substantial shortfall of £340, 278. The second audit showed an improved accuracy of 89%. Calculated losses were lower but still substantial at £283 per clinic session. At an average of 10 clinic sessions per week, this translated to yearly losses averaging £147,160. As a result of improved procedural recording, our department prevented an estimated loss of £190, 000 that year. However, there was still a financial loss estimated at £147,160/ year.

Conclusions: PBR is a process of funding for NHS England that is here to stay. The results of this audit brought to light our gross underpayment under this new scheme. The results of this audit are applicable to all clinical departments and units that are paid based on tariffs. This audit was especially chosen as the ENT outpatient department is a relatively new player in this funding scheme and this audit quantified an estimate of our losses under this scheme. Clinicians and managers need to recognise the significance of accurate coding. The provision of adequate staff training and/or staff provision in order to allow accurate coding based on our workload is central to this. Funding shortfalls result in decreased resources that could otherwise be well spent on improving aspects such as facilities, equipment, staffing, research and training.

Audit and Outcomes Research 0166

Abbreviated Mental Test (Cognitive) Screening in Acutely Ill Elderly Surgical Patients

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Aims: Delirium is a common neuropsychiatric condition characterised by an acute decline in attention and cognition, and is present in 14 - 24% of elderly patients admitted to hospital. It is associated with one-year mortality rate of 35 - 40%; missing the diagnosis is frequent and associated with a doubling of this mortality rate. The Royal College of Physicians' National Guidelines on Delirium (2006) recommend that all patients aged 65 years and over should routinely receive an Abbreviated Mental Test (AMT) on admission to hospital irrespective of the mode or specialty of the admission. The importance of accurate cognitive assessment is particularly salient in surgical patients for capacity and consent for operative procedures. The main aim of this study is to assess the current clinical practice and documentation with regard to cognitive impairment in acute elderly general surgical patients in a tertiary referral NHS trust.

Methods: Acute general surgical admission case notes for patients aged 65 years and over were assessed retrospectively for any form of cognitive screening used including the standardised AMT over a 4 week period in Ashford & St. Peters Hospitals NHS Trust, including all the surgical subspecialties. Results were collated and analysed using Microsoft Excel 2010.

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Results: Data were collected for 39 patients at mean time of 24 hours (range 8–48 hours) after admission over a period of four weeks. The mean age was 80·5 years (range 66–95 years). 84·6% (33) patients had no documented reference about their cognitive status on admission. Six patients had documented AMT scoring on admission, one in A&E case notes and five in neck of femur fracture protocol. No patients were formally diagnosed with delirium or acute confusion.

Conclusions: This study concludes that our current practice for clinical cognitive assessment is significantly deviated from the recommended best practice. We strongly suggest the increasing the use of AMT e.g. by incorporating pre-printed AMT forms in acute surgical admission notes along with staff training to meet the standards.

Audit and Outcomes Research 0171

Evaluating the Implementation of the Surgical Safety Checklist in the District General Hospital Setting

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Aim: The World Health Organisation (WHO) reported in 2004 that half of all the surgical morbidities and mortalities in that year were preventable. The WHO developed the Surgical Safety Checklist (SSC) with this in mind. The use of the checklist has since been shown to reduce surgical morbidities and mortalities. The WHO encourages adaptation of the SSC to fit local practice. The aim of this audit was to evaluate the practical application of the SSC in a district general setting.

Methods: Prospective data was collected over 5 days from 4 surgical specialties. Theatre staff were asked to complete data collection spread sheets assessing the adequate completion of the two main sections of the SSC; 'Time Out' and 'Sign Out' with particular emphasis on time frame of completion and staff present. Standards for 'Time out' and 'Sign out' were both set at 100%.

Results: Data were collected for 98 patients. The results are shown in the table below:

	'Time Out'	'Sign Out'
Nurse present	98 (100%)	96 (98%)
Anaesthetist present	97 (99%)	82 (84%)
Surgeon present	97 (99%)	89 (91%)
Completed within time frame	98 (100%)	86 (88%)

The checklist highlighted 1 change (1%) which resulted in the change of gloves and certain equipment following identification of a patient with latex allergy.

Conclusions: The identification of change in a small study period using the SSC identifies its pivotal role in the prevention of adverse events in the operating theatre. In particular, attendance compliance and completion of 'Sign Out' was found to be below standards. Staff retraining on the importance of the SSC and changes to the local adaptation of the SSC needs to be undertaken to achieve the required standards.

Audit and Outcomes Research 0174

Blood Test Requesting Guides for Junior Doctors can Reduce Financial Cost

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Aims: To assess if introduction of a blood test requesting guide for junior doctors would reduce unnecessary blood sampling, thereby decreasing excess financial cost related to this resource within a surgical department.

Methods: Twenty admissions to a surgical department at a single centre in August 2011 were reviewed retrospectively. All bloods tests performed were for assessed for appropriateness based on a blood-ordering standard which was agreed upon by the local consultant body. A flowchart based on this standard was created and introduced to the department in August 2012. In the month following flowchart introduction the audit process was repeated for twenty further admissions, and again in March-April 2013 to assess impact and sustainability. Excess laboratory cost related to inappropriate blood tests was calculated and compared before and after flowchart introduction. Key targets including the requesting of coagulation screen were also assessed.

Results: Prior to flowchart introduction 59/249 (23%) of individual blood test requests were deemed to be inappropriate, resulting in an estimated yearly loss of £8800 in laboratory costs. Following flowchart introduction error was noted in 29/189 requests (15%) in the first month, and 70/220 (32%) at six months. Predicted excess expenditure was calculated at £3400 and £5250 respectively. Coagulation screen numbers performed decreased from 68 pre flowchart initiation, to 31 and then 24 respectively at 1 and 6 months post flowchart introduction.

Conclusions: The use of blood test requesting guides can reduce excess financial cost and decrease unnecessary discomfort to patients within surgical practice, but must be supported by the appropriate education of those using them to provide a sustained cost saving.

Audit and Outcomes Research 0181

The Medial Pivot (MRK TM) Compared to Conventional Fixed-Bearing (PFC®) Total Knee Arthroplasty: A Randomised Controlled Trial at Five-Year Follow-Up

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Aims: To establish the difference in clinical and radiological outcomes between a ball-and-socket (MRK) articulation and a conventional fixed-bearing knee design (PFC) at five years.

Methods: We reviewed 80 matched patients in a single-centre, single-blinded, randomised, controlled trial comparing the MRK design to PFC prosthesis. Our primary end point was ROM at five years. Our secondary end points were AKSS, WOMAC, Oxford Knee, SF-36, TKFQ scores at five years and radiological parameters. SPSS version 17·0 was used for data analysis. The two-tailed Student's t test for parametric data or the Mann–Whitney U test for nonparametric data were undertaken to compare the two cohorts with respect to clinical and radiographic variables.

Results: The mean ROM was 104·2° and 114·3° in the PFC and MRK groups, respectively ($p = 0·001$). The mean physical component scores of SF-36 were better in the MRK group compared to the PFC group (49·3 vs 29, $p = 0·002$). We found no difference in AKSS, TKFQ, WOMAC, Oxford Knee scores, mental component of SF36 and satisfaction at five-year follow-up. One case revised in the MRK group and two in the PFC group. No radiological loosening was identified at five years. Three patients died in each arm for reasons unrelated to their knee operation.

Conclusions: Both implant designs similarly relieved pain and improved function including comparable high-end function at five years with significantly better ROM in the MRK design compared to PFC design. Less revision rate was observed with MRK design at five-year follow-up.

Audit and Outcomes Research 0184

Effects of Parecoxib on Colonic Anastomotic Healing in a Rat Model: A Randomized Blinded Experimental Trial

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Aims: Anastomotic leakage is a major complication after colorectal surgery and is associated with increased morbidity and mortality. Several experimental studies were conducted questioning the safety of the postoperative usage of Cox-2 inhibitors as analgesics. The aim of this experimental trial is to investigate the effects of parecoxib on colonic anastomotic healing.

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Methods: After obtaining ethical approval, 24 adult male Wistar rats (weight = 260-300gr) underwent laparotomy, ascending colon transection and an end-to-end re-anastomosis by a blinded consultant surgeon. The rats were randomized into two groups and postoperatively received,by intraperitoneal injection, either a selective COX-2 inhibitor (parecoxib 0·05 mg/kg, BD) or placebo (normal saline 0·9%, BD). Animals were killed either on the 3rd or on the 7th postoperative day. Haematoxylin and eosin stained specimens from intestinal anastomoses were examined by a blinded consultant. Inflammatory cell composition, angiogenesis, collagen deposition and epithelization were assessed and these factors in each wound were assigned a score from 1 to 4 (1:absent, 2:minimally present, 3:moderately present, 4:markedly present). Statistical analysis was conducted with Mann–Whitney U test.
Results: No macroscopic anastomotic leakage was identified on both placebo and parecoxib group. The density of neutrophils and macrophages appeared to be more prominent in the parecoxib group ($p < 0·05$), whereas no statistically significant difference was observed in the density of monocytes. Regarding the proliferative phase, 66·7% of the parecoxib group expressed moderate density of collagen whereas that was observed only in the 16·7% of the placebo group ($p < 0·05$). Similarly, neo-vascularization was significantly elevated in the parecoxib than in the placebo group ($p < 0·05$). On the contrary, epithelization was less prominent in the parecoxib group ($p < 0·01$).
Conclusions: In conclusion ,minimal effects were observed suggesting that it might be safe for parecoxib to be used in the early postoperative period after colonic surgery.

Audit and Outcomes Research 0193

Dermabond vs. Opsite Dressings Following Laparoscopic Colorectal Surgery

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Aims: To determine whether there is any difference in quality of care and cost between Dermabond (2-octylcyanoacrylate tissue adhesive) and Opsite dressings following laparoscopic colorectal surgery.
Methods: A prospective, questionnaire based study was conducted in which 20 consecutive patients undergoing major elective laparoscopic colorectal surgery were allocated to skin dressing with Dermabond or Opsite. Patients and attending nurses (n = 20), were asked to complete a questionnaire in which they rated the following four key areas of satisfaction: Experience of dressing changes, limitations to mobility, ease of care of dressings (including washing/showering for patients), and overall experience. A cost analysis was performed to determine cost effectiveness of both dressing methods.
Results: 10 patients received Dermabond. Both nurse and patient satisfaction ratings were similar for Dermabond and Opsite. The overall cost of Dermabond was £21 compared to Opsite at £11·50. The cost analysis of the Opsite dressing included the cost of dressing changes on the ward.
Conclusions: Patient and nurse satisfaction is comparable between Opsite and Dermabond. Dermabond does not appear to offer a significant benefit in quality of care to justify its additional cost.

Audit and Outcomes Research 0200

Temporal Artery Biopsies; Do they make the Cut?

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Aims: The British Society for Rheumatology 2010 Giant Cell Arteritis (GCA) Guideline endorses Temporal Artery Biopsy (TAB) as the only specific diagnostic test for this condition. Furthermore, they state that biopsies should be no less than 1 cm, and ideally more than 2 cm in length, as this influences the likelihood of biopsy positivity.
This audit investigates whether TABs carried out in our hospital met these guidelines.
Methods: The histopathology reports for all TABs between January 2011 and June 2013 were examined. Data on biopsy length and histological diagnosis was collated.
Results: 56 TABs showed a range of lengths from 0·5 cm to 3·1 cm, with a mean of 1·4 cm. 37 biopsies were >1 cm (66·1%) and 13 were >2 cm (23·2%). 19 TABs (33·9%) did not meet the standard.
Additionally, 7 biopsies showed features of GCA. 6 of these (85·7%) measured >1 cm.
Conclusions: This audit shows we do not meet the stated guidelines. Furthermore, TABs measuring >1 cm are more common in the small group of positive results. This validates the minimum recommended biopsy length and displays the importance of adhering to this standard.
We suggest changes intended to increase the number of biopsies meeting these guidelines, and thereby increase the likelihood of accurate results.

Audit and Outcomes Research 0201

The Interface Between Primary and Secondary Healthcare in the Management of Intermittent Claudication

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Aim: To assess current service provision and reduce volume of inappropriate referrals for intermittent claudication (IC) from primary healthcare services. The SIGN guidelines have identified investigations to be carried out in primary care and criteria for referral of IC to secondary care.
Method New patients referred to vascular clinic with IC were identified prospectively over a total of 10 weeks of choice. Referral letters were reviewed looking at investigations already carried out in primary care and their reasons for referral.
Results: A total of 35 patients were referred for IC. 80% of patients had been examined for peripheral pulses. 8·6% of patients had been examined for abdominal aortic aneurysm. 14·3% of patients had ankle-brachial pressure indexes (ABPI) carried out. 11·4% of GPs were not confident of making the diagnosis, 20% of GPs were not able to or did not institute best medical treatment (BMT) in the community. 51·4% of patients referred had symptoms limiting lifestyle.
Conclusion: We are not meeting the minimum requirements for clinical examination and ABPI measurements. This could be because GP's often do not feel confident to diagnose IC and we can speculate as to whether education or increasing secondary care provision would be most appropriate.

Audit and Outcomes Research 0210

Discharge Letters and Diagnoses: are we doing it right?

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Aims: The discharge document produced upon a patient's discharge from hospital should be clear, accurate and completed promptly. The Scottish Intercollegiate Guidelines Network (SIGN 128 - June 2012) outlines that extended discharge documents (EDD) should be issued within 7 days of the date of discharge or up to 14 days when awaiting test results. We undertook this study to determine if discharge letters were being completed within this timeframe in our university teaching hospital.
Methods: Seventy-five patients admitted and discharged between July-November 2013 were included for the study. This five month period was chosen to include patients managed by a minimum of 5 consultants in each firm (General Surgery, Orthopaedics, Urology) for better representation of discharge letter completion. To reduce further variability, elective and emergency admissions were permitted in the data set. Both immediate and extended discharge letters were acquired for each patient, collecting the following details: consultant in charge, surgical specialty, date of admission and discharge, date of extended discharge letter completion and the primary diagnosis.

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Results: The number of EDDs completed within 7 days are as follows: General Surgery 5/25 (20%), Orthopaedics 2/25 (8%), Urology 8/25 (32%). The number of EDDs completed within the extended timeframe of 14 days: General Surgery 11/25 (44%), Orthopaedics 11/25 (44%), Urology 15/25 (60%). The mean time of discharge letter completion was 16·4 (range 2–48) days. The percentage of matching primary diagnoses between discharge documents were as follows: General Surgery 22/25 (88%), Orthopaedics 17/25 (68%), Urology 22/25 (88%).
Conclusions: Our data demonstrates the quality and timeliness of EDD completion can be improved significantly across the surgical specialties. We intend to present the findings locally to ensure the provision of discharge documents are in accordance with SIGN guidelines and the principles of good medical practice.

Audit and Outcomes Research 0246

Laparoscopic Cholecystectomy and the Need for Routine Group and Save

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Aims: The maximum blood ordering schedule within our hospital trust states that all patients undergoing Laparoscopic Cholecystectomy should have had a group and save sample taken in pre-assessment clinic. Furthermore, those patients undergoing surgery at the peripheral hospital, which is situated 25 miles from the blood bank should have a group and save sample taken within 7 days of surgery. Lack of valid group and save samples has resulted in delays to the start of theatre lists and cancellation of elective Laparoscopic Cholecystectomies. The aim of the study was to assess if group and save samples are required for Laparoscopic Cholecystectomy.
Methods: Data for all patients who underwent cholecystectomy within the trust over a one year period were retrospectively reviewed. The database was interrogated to review if these patients had a group and save sample taken within 16 weeks prior to surgery, and then how many patients had blood requested, and whether this blood was used.
Results: A total of 731 Cholecystectomies were performed, 89% of which were elective operations. 44% of these elective cholecystectomies were performed at the peripheral hospital. 13% of patients did not have a group and save sample prior to admission. There were 49 group and save samples on 35 separate days at the peripheral hospital where samples had to be transported to the blood bank on the morning of surgery.
15 patients had blood ordered for reasons other than antibodies. 6 patients (0·8%) received a blood transfusion as a result of a simple cholecystectomy and only 1 patient (0·14%) received blood intra-operatively.
Conclusions: Laparoscopic Cholecystectomy is a safe operation, and routine group and save is not necessary for this day case procedure. Changing hospital policy would result in reduction in number of cancelled operations and avoid delayed starts to theatre lists. It also saves thousands of pounds each year without compromising patient safety.

Audit and Outcomes Research 0261

Referral Practices and Outcomes for the Placement of Percutaneous Enteral Gastrostomy (PEG) Tubes

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Aims: The National Confidential Enquiry into Patient Outcome and Death (NCEPOD) published in 2004 raised concerns regarding high rates of morbidity and mortality associated with percutaneous enteral gastrostomy (PEG) insertions. In 2010 The British Society of Gastroenterologists (BSG) published guidelines on the provision of PEG feeding services. Our aim was to investigate the appropriateness of referrals and outcomes of PEG insertions over a 12-month period at our trust.
Methods: A proforma was constructed based on BSG guidelines and our trust's Endoscopy policy. This included patient demographics, complications following PEG insertion, and mortality during admission, at 30 days and at 1 year. The notes of all patients were retrospectively reviewed.
Results: 135 patients had 137 PEGs inserted. The most common reason for referral was acute stroke, 53 patients (41·7%), followed by chronic progressive neurological disorder, 27 patients (21·3%) and ENT cancer, 19 patients (15·0%). Of the 127 patients, 12 (9·4%) died during their admission, 11 (8·7%) died within 30 days and 53 (41·7%) died within 1 year of PEG insertion.
Conclusions: Compared with the 2004 NCEPOD report the 30 day and 1 year mortality demonstrated here is much improved, suggesting our referral process is appropriate. The authors feel that further improvements could be made and that the results may suggest that premorbid state and prognosis is not being adequately considered. We suggest referrals should be reviewed by a single endoscopist with a practicing interest in PEG insertion and that the referral process should be more robust by involving a multidisciplinary team to avoid inappropriate procedures.

Audit and Outcomes Research 0262

Mortality and Morbidity Outcomes and National Society Membership

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Aims: To investigate if there is a difference between members and non-members of the Vascular Society (VS) in reported mortality and morbidity after Carotid Endarterectomy (CEA) and Abdominal Aortic Aneurysm (AAA) repair
Methods: The 2013 National Vascular Registry of Consultant Level Outcome statistics was cross-referenced with the 2013 roll of ordinary VS members. The NVR report details number of CEA and AAA procedures performed per surgeon in the UK with 30-day mortality after CEA and mortality and morbidity following AAA repairs
Results: Of the 461 individual surgeons contributing to the report, 327 (70·9%) were ordinary VS members in the UK. Outcomes following CEA were provided by 372 consultants, with 281 (75·5%) being VS members. Outcomes following AAA repair were provided by 406 consultants, with 301 (74·1%) being VS members. Mean stroke or mortality following CEA was 2·26% (3·37%) in VS members and 1·95% (2·51%) in non-members ($P = 0·415$). Mean mortality following AAA repair was 2·31% (3·24%) in VS members and 2·38% (3·28%) in non-members ($P = 0·869$).
Conclusions: There is no statistical difference in mortality or morbidity following major vascular surgery between the members and non-members of the Vascular Society.

Audit and Outcomes Research 0268

Can Blood Test Rationalisation in Emergency General Surgical Patients be Beneficial Across Different NHS Trusts?

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Aims: A recent audit at a district general hospital identified that the introduction of guidelines could lead to a rationalisation of blood tests performed and significant savings. This study aimed to identify if this guideline could be successfully implemented at other trusts with similarly beneficial outcomes.
Methods: All general surgical emergency admissions over 1 week were identified and prospectively analysed. Data collected included presenting complaint and blood tests on admission. A previously described guideline was applied and comparison made between predicted and actual blood tests performed.
Results: Of the 59 patients (31 female, 28 male), 15/59 (25%) were outside the remit of the proposed guideline. Only a minority adhered to the proposed guideline. CRP and amylase (26/43 and 26/41, performed vs recommended) were frequently missed, while an excess of coagulation screens were performed (23/3, performed vs recommended). Strict adherence to the guideline would have resulted in a saving of £1·93 per patient.

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Conclusions: Inappropriate blood test ordering is widespread throughout the NHS. It is possible to implement a simple guideline, that would improve patient care and result in huge cost savings, across many trusts.

Audit and Outcomes Research 0287

Audit of the Role of CT Scanning for Pre-Operative Staging in Colorectal Cancer Versus Post-Operative Pathological Staging

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Aims: Colon cancer is the third most common cancer in the UK, with 35000 new diagnoses each year. The aim of the audit was to look at CT as pre-operative staging tool when compared to the gold standard of post-operative histology and to compare our results with published data.
Methods: A retrospective audit using the Somerset staging system for all new diagnosis of colon cancer from a single institution from June 2011 to April 2012. Those Patients who did not go for resection were excluded from the audit. A total of 43 patients were analysed.
Results: 43 patients (27 male) with a mean age of 74 years were evaluated. A majority of tumours were located in the sigmoid colon (37%) and in the caecum (23%). When comparing CT with histopathology understaging was as follows T1 tumours 1/3, T2 3/9, T3 5/24, T4 4/7. Overstaging T1 none, T2 3/9, T3 none, T4 none. Nodal status understaging N0 none, N1 3/17, N2 2/5. Overstaging N0 6/21, N1 5/17, N2 none.
This gave a sensitivity of 67·5% for local tumour staging with a positive predictive value of 90%. With T3/T4 tumours alone a sensitivity of 83% and specificity of 75% was seen. With nodal staging we had a sensitivity of 70·6% and a specificity of 57·7%.
Conclusions: Our results are comparable with the published literature although we tended to understage tumours. Five tumours could not even be seen on CT of which four turned out to be T1/T2 tumours because of the inability of CT to demonstrate the separate layers of colonic wall and faecal matter within the colon obscuring lesions. Bowel preparations pre CT scan can improve staging, therefore, we now perform CT scans very close to time of colonoscopy to enhance pre-operative staging.

Audit and Outcomes Research 0298

Audit of Operating Theatre Efficiency in a District General Hospital (DGH)

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Aims: Determine emergency operating theatre efficiency due to its important economical implications and promoting patient safety.
Methods: A prospective study was performed to characterise the activity in the designated emergency and trauma operating theatres in a DGH over 32-days. A proforma was designed to evaluate: (1) waiting time (2) end-utilisation (3) Turn-around time and its components and (4) out of hours operating.
Results: In our hospital, despite apparently adequate emergency facilities including a designated trauma theatre, there was a significant under-utilisation of emergency theatres. Utilisation was 77% for trauma and 44% in emergency theatres. A prolonged turn-around time in trauma and emergency theatres of 47 and 97 minutes respectively was found. Time taken for patients' arrival was 18–22 minutes and approximately a sending time of 30-minutes post closure of previous. A significant delay in theatre start time, with 97% of emergency cases started >30-minutes late. Out of hours operating contributed to 43% of emergency procedure with average waiting time of 9 hours.
Conclusions: the significant under-utilisation of emergency theatre 0800–1700 led to increased out of hours operating. The areas of inefficiency have been highlighted and various strategies have been implemented to enhance efficiency and patient safety.

Audit and Outcomes Research 0330

Role of Cardiopulmonary Exercise Testing Variables as a Predictor of Surgical Outcome - A Validation Study

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Aim: We aim to validate published cut-off points derived from cardiopulmonary testing (CPET) variables and assess their prediction of surgical outcome in patients undergoing major bowel resection (MBR) (West et al. *Br J Anaesth* 2013).
Methods: We recruited patients listed for MBR (small or large bowel resection requiring anastomosis and/or stoma). Inclusion criteria - elective surgery, exclusion criteria - inability to complete CPET. Postoperative complication (using Clavien-Dindo Score) was the main outcome measure. Receiving operator characteristic (ROC) curves were constructed to determine the relationship between oxygen uptake at lactate threshold (VO_2 at LT) and oxygen uptake at peak exercise (VO_2 at Peak) with complication. Univariate analysis was performed using published dichotomized values of VO_2 at LT (10·1 ml kg^{-1} min^{-1}) and VO_2 at Peak (16·7 ml kg^{-1} min^{-1}) for complication rate using χ^2 test. Multivariable analysis utilizing VO_2 at LT, VO_2 at Peak, gender, age, surgical approach (open or laparoscopic) was performed to determine independent predictors of adverse surgical outcome.
Results: 260 patients were analysed and 194 included (142 (73%) males). 173 patients (89%) had diagnosis of malignancy. 120 patients (62%) underwent laparoscopic procedure. Median age was 65 (inter-quartile range (IQR) 57–73). Median ASA was 2 (IQR 2–2). Area under curve for VO_2 at LT was 0·60 ($p = 0·0014$, confidence interval (CI) 0·52-0·68) and for VO_2 at Peak was 0·58 ($p = 0·047$, CI 0·50-0·66). On χ^2 test, VO_2 at Peak <16·7 ml kg^{-1} min^{-1} showed significant association with longer median LOS (8 days (IQR 4·5-9·5) vs. 6 days (IQR 5·0-13·0), $p = 0·042$). VO_2 at LT <10·1 ml kg^{-1} min^{-1} showed significant association with higher complication rate (62% vs. 45%, $p = 0·029$). Median LOS of the complication group was significantly higher (10 days (IQR 8–16) vs. 5 days (IQR 4–6) in complication-free group, $p < 0·0001$ on Kruskal Wallis test). Multivariable analysis revealed surgical approach as the only significant independent predictor of complication ($p = 0·02$). VO_2 at LT ($p = 0·09$) and VO_2 at Peak ($p = 0·6$) failed to show independent significance.
Conclusion: This study validates our previously published ROC cut-off points for MBR patients.

Audit and Outcomes Research 0353

The Operation Note: A Prospective Audit of the Quality of Operation Notes in a DGH

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Aims: The operation note is a medico-legal document; its accurate completion is important in post-operative management and as a reference tool in a patient's onward care. This audit examined the quality of operation notes in a DGH against the standards set by the The Royal College of Surgeons of England (RCSEng)[1].
Methods: A prospective audit over a two month period was conducted; 183 operation notes across five surgical specialities (Vascular, Orthopaedics, General Surgery, Gynaecology and Urology) were audited against the 16 RCSEng criteria and 19 other novel criteria.
Results: Documentation of operation time (0%), whether the procedure was an elective or emergency case (0%), and a record of any extra procedures performed (3%) were consistently omitted. Complications encountered (14%), the indication for the operation (33%), estimated blood loss (37%) and follow up plans (30%) were also poorly documented. Results varied widely between specialities, e.g. indication for procedure: Orthopaedics (52%) vs. General Surgery (14%).
Conclusions: Current practice by all surgical disciplines at the observed centre falls below that expected according to RCSEng guidelines. A wide

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variance in the documentation of criteria between specialities is also noted. Education of surgeons, aide memoires and possible changes to the operative note proforma should be considered.

Reference:

1 Royal College of Surgeons of England. Good Surgical Practice, 2008.

Audit and Outcomes Research 0355

Surgical Site Infection Following Elective Spinal Surgery at a Single Surgeon Unit in a District General Hospital - 5 Year Retrospective Study

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Aims: 2-6% surgical Site infections (SSIs) following spinal operations have been reported in most large series and 0·22% in minimally invasive procedures (1). The aim of this study is to assess the rate of SSIs following elective spinal surgery in a DGH with a single orthopaedic spinal surgeon and to evaluate current practice and how it affects the rate of SSIs.
Methods: A retrospective study of patients who had spinal surgery performed by a single orthopaedic spinal surgeon between August 2007 and May 2012. All elective spinal surgery was included with the exception of cancer surgery. Data collection was done using trust electronic applications to access patient details, discharge summaries, clinic letters and operation notes. We also identified risk factors contributing to developing post-operative SSIs in these patients.
Results: A total of 364 procedures were reviewed; 278 open procedures and 86 minimally invasive procedures. Rate of overall SSIs is 1·64% (n = 6), open procedures accounting for 5 cases while minimally invasive procedures accounted for 1 case. All 6 cases were superficial SSIs requiring only antibiotic treatment. Diabetes has been identified as the highest independent risk for spinal SSIs (OR = 5·89; CI 95% =1·03, 33·6; p =0·024) in our study.
Conclusions: Our current practice consists of a single consultant surgeon with patient in prone/ lateral position, prophylactic antibiotic given on induction, saline wash, and wound closure with absorbable suture and glue. Our results compare favourably with results in the available literature using this evidence-based practice. Limitations to our study include difficulty in direct comparison to literature due to different inclusion/exclusion criteria. Further studies should look into methods of risk reduction in order to reduce the rate of SSIs.

1 O'Toole et al. Surgical site infection rates after minimally invasive spinal surgery. J Neurosurg Spine. 2009 Oct; 11 (4): 471–6.

Audit and Outcomes Research 0356

Cost Savings by Minimisation of Delays on Care Decision Making in Urgent and Emergency Care Services

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Aims: The timely availability of blood sample results for interpretation impacts on the ability to plan patient care from initial assessment in Accident and Emergency (A&E) departments. We assessed the impact of potential delays in obtaining blood sample results at our Trust to assess causative factors, the impact on acute care decision-making, and the use of hospital resources.
Methods: The rates of, and reasons for, rejected blood samples submitted from different clinical areas, including A&E was evaluated. Haemoglobin (Hb) represented haematology and potassium (K^+), biochemistry. Requests for repeat investigations within 24 hours after a rejected sample for those admitted to an inpatient bed were identified. A prospective observational study was undertaken to identify whether methods of obtaining samples impacted on sample utility.
Results: 16,061 haematology and 16,209 biochemistry samples were received in the laboratory in the one-month study period of which 1·4% (n = 229, range 0·5-7·3%) and 4·7% (n = 762, range 0·9-14%) respectively were rejected. The A&E had the largest Hb sample rejection rate at 1·7% (n = 30/1711) and K^+ sample rejection rate at 14% (n = 248/1,808). 261 patients with a rejected K^+ sample had a median in-hospital stay of 50 hours (quartiles: 18–168) compared to 41 hours (quartiles: 13–137) in 1,286 patients with an accepted sample (p = 0·007). 20 patients with a rejected Hb sample had a median in-hospital stay of 114 hours (quartiles: 31–292) compared to 38 hours (quartile 12–142) in 1,389 patients with an accepted sample (p = 0·024). The fixed cost associated with the additional length of stay was £20,969·98 excluding treatment costs.
Conclusions: The A&E had the highest rate of blood sample rejection. The prospective study suggested that sampling technique was a major causative factor in sample rejection. Modification of practice in urgent and emergency care services has the potential to reduce sample rejection, length of stay, inpatient admissions and cost.

Audit and Outcomes Research 0370

Laparoscopic Cholecystectomy Following Gallstone Pancreatitis: Does not Adhering to British Society of Gastroenterology Guidelines Increase Readmission Rates?

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Aims: The British Society of Gastroenterology (BSG) recommends that patients diagnosed with acute gallstone pancreatitis undergo definitive surgical management of gallstones within the admission or within 2 weeks. This is however often surgically challenging, and logistically difficult. Patients in our trust are routinely listed for laparoscopic cholecystectomy on the next available waiting list which is often entails a wait of 3–4 months if not possible as an inpatient. Our aim was to assess if longer waiting time for elective laparoscopic cholecystectomy was linked to a higher readmission rate with the same complaint.
Methods: Retrospective analysis of all patients admitted in one trust with radiologically proven gallstone pancreatitis between February 2011 and November 2012, with minimum 6 month follow up. Patient demographics, clinical results and dates for definitive therapy recorded
Results: 119 patients were admitted with radiologically proven gallstone pancreatitis in the time period studied. 32 (27%) patients were male and 87 (73%) were female. Median age was 67 (range 21–95). 10 patients died as a direct consequence of gallstone pancreatitis (8%). 49 patients were deemed unfit for laparoscopic cholecystectomy (41%), 26 patients did not proceed with laparoscopic cholecystectomy either as a result of patient choice, failure to attend appointments or referral elsewhere (22%). 44 patients were listed for laparoscopic cholecystectomy (37%) with 3 of these performed during their admission (3%). 12 patients were readmitted with the same complaint whilst awaiting their procedure (27%). The mean wait time for those not readmitted whilst waiting for laparoscopic cholecystectomy was 9·9 weeks, whereas the mean wait time for laparoscopic cholecystectomy for those who were readmitted with recurrence was 25·8 weeks (p = 0·0019) prior to readmission.
Conclusions: Definitive management of gallstone pancreatitis according to BSG guidelines is ideal but often not possible, however results from our trust show that early scheduling of laparoscopic cholecystectomy (within 10 weeks of event) is possible, logistically easier and has a significantly lower readmission rate.

Audit and Outcomes Research 0401

The Hidden Cost of Intravenous Gentamicin in Treatment of Abdominal Sepsis

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Aims: Therapeutic gentamicin is cheap and effective and thus commonly used in acute infective surgical pathologies. However, its safe administration and monitoring may considerably increase its apparent low cost. The aim of this study is to determine the true cost of this antibiotic to the health service.

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Methods: An audit of gentamicin prescription was conducted. Data was obtained on gentamicin dosage, timing of serum levels and subsequent doses and administration. The total cost of gentamicin therapy was calculated and compared with the total costs of alternative treatment regimes.
Results: 53% of patients had their first gentamicin dose calculated correctly. Only 41% of people had their first serum level measured on time. The cost of 'Triple-therapy' per-patient-episode (PPE) was £135·04 but rose to £483·21 when litigation costs was factored into the calculation. The cost PPE for comparable antibiotics; Meropenem and Tazosin, were £154·80 and £227·55 respectively.
Conclusions: Intravenous gentamicin when given at therapeutic doses demands significant time and attention from both nursing and medical staff. Errors are common and although it may appear a relatively cheap antibiotic. These costs can rise significantly when personnel and assay costs are factored in. When litigation costs are considered it may be significantly more expensive than alternative antibiotics.

Audit and Outcomes Research 0421

An Audit of the Quality of Operation Notes in Trauma and Orthopaedics

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Aims: To establish current practice in operative note-keeping in the trauma and orthopaedic department, and then present recommendations for change, re-auditing the results. ('Completing the loop')
Methods: Standards were derived from the GMC guidance and the Royal College of Surgeons of England for operative note-keeping. All operative notes for trauma were collected over a 7 day period, and analysed according to the standards set. These included; patient details, diagnosis and type of surgery, site and side of operation, responsible consultant, operating surgeon and signature, abbreviations used, post-operative instructions.
After presentation at a local meeting, and recommendations made, notes were re-audited again over a 7 day period of trauma, and results collected.
Results: Initially, 100% of notes included patient details, the side of operation, and operating surgeon.
The diagnosis was recorded in 84·7%, the type and site of operation was correct in 94·7% (the wrong operation was recorded on the operation note), and the responsible consultant was recorded in 68·4%.
Abbreviations were used in all operative notes- and in a week long period, 49 different types of abbreviations were used. (15·8% recorded the side of the operation as 'R' or 'L')
In addition, only 15·8% used the designated post-operative instructions box on the operation note, which included prompts for writing post-operative notes.
Re-audit showed 100% of notes included patient details, side and site of operation, and operating surgeon. The recording of the responsible consultant also increased to 84·2%. Use of the designated postoperative box increased from 15·8% to 73·7%.
Slightly more abbreviations were used (49 types to 52 types), and diagnosis recorded dipped from 84·2% to 79·0%)
Conclusions: Recommendations included; always using a patient sticker on the top of the operation notes, stating the indication for the operation; avoiding abbreviations and stating the responsible consultant. To aid with this, the results were presented to the department at a local meeting, and print out sheets containing this information were posted around theatre as an 'aide-memoire'. In addition, specific post-operative instructions for lower limb, upper limb and hip fractures were stated on this sheet so help with writing the operation notes. Re-audit showed a percentage increase in the recording of responsible consultant and use of the post-operative box. Slightly more overall abbreviations were used, and this is something to perhaps address in the future, although abbreviation for the side of the operation decreased.

Audit and Outcomes Research 0451

How do Surgical Specialties Compare to Physicians when Questioned on the Investigation and Management of Venous Thromboembolism?

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Aims: To compare clinical knowledge of surgical and medical specialties in the appropriate investigation of suspected acute pulmonary embolism (PE) and the role that Inferior Vena Cava (IVC) filters play in management of the condition. Comparing the results with the 2003 British Thoracic Society (BTS) and 2008 British Journal of Haematology (BJH) guidelines as a national reference standard.
Methods: A clinical questionnaire was produced based on the BTS guidelines. Two hundred and seventy seven participants completed the questionnaire within three NHS Trusts. The level of experience amongst participants ranged from foundation year doctors to consultant physicians.
Results: The clinicians divided into four groups based on seniority: Foundation Doctors, Senior House Officers (SHO), Registrars (SpR) and Consultants. There were statistical differences between surgical and medical specialties ($p = 0{\cdot}01$) with orthopaedic surgeons scoring the lowest marks.
Conclusions: The results indicate that various aspects of the national guidelines on suspected acute pulmonary embolism are unfamiliar to many UK hospital clinicians particularly those in surgical training. It also shows knowledge is related to specialty with physicians performing better than surgeons. As surgeons, work is needed to improve knowledge in this frequently occurring post-operative complication.

Audit and Outcomes Research 0493

Patients' Perception of Hospital Care in Lincolnshire

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Aims: Patients' experience and ratings of the quality of care received in hospital constitute the 'bottom line' in health care. Guidance on care quality indicators from the Department of Health, Care Quality Commission and others are largely centred on what providers should do to meet specified standards. However, data on patients' perception of care in this process is not well documented. This study aims to assess the degree of satisfaction of care receivers from the point of admission into hospital until discharge.
Methods: We prospectively collected data from 97 patients admitted into the Emergency Surgical Assessment Unit at Lincoln County Hospital over a three week period (December 1–24, 2012). Patients' perception of care was evaluated using a questionnaire on four key domains: admission process, medical and nursing care, ward environment (including meal quality, number of beds and hygiene) and discharge planning.
Results: There were 58 females and 39 males with a mean age of 48 years. Overall, we found moderate level of satisfaction with care (62% of respondents). On the four key domains, on average, there was a moderately high level of satisfaction with the admission process, with 74% of the patients reporting it was well organised. A similar number (79%) were satisfied with the overall clinical care, and 73% on ward conditions. Only 42% were satisfied with the discharge planning. The professionalism of both junior doctors and nursing staff were rated highly (94% and 96% respectively) on the admission domain. The proportion of patients who reported satisfaction in specific domains varied substantially: for example only 30% 'fully understood' their diagnoses, 42% felt they were involved in their discharge planning and 89% thought the ward was clean. Key areas of concern were waiting times, insufficient nurse staffing levels, and confusing communication between care givers and patients.
Conclusions: This portrait of patients' experiences in Lincoln County Hospital provides insight into areas that the hospital is doing well at and equally, sheds lights into domains that require improvement. It suggests that clear communication between hospital staff and patients, an increase in the number of nursing staff can provide both a high quality clinical care and a good experience for the patients.

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Audit and Outcomes Research 0504

Outcome of Early Surgical Resection of Limited Ileocecal Crohn's: First and Single Center Experience in Saudi Arabia

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Aims: The aim of study is to evaluate the outcome of introduction of early surgery in the course of isolated ileocecal Crohn's where no absolute indication of surgery.
Methods: Observational study involving patients with isolated ileocecal Crohn's who underwent early surgical resection (within one year of the presentation of the hospital). The patients who required mandatory surgical intervention (e.g perforation, associated dysplasia) or had previous surgery were excluded. Blood workup in the form of CBC, ESR and CRP are done and compared between the immediate preoperative value, 1st postoperative visit (3–4 weeks) and last follow up visit. Nutritional status will be assessed using the body weight, BMI and albumin levels and compared.
Results: 15 patients were initially included in the study, but two patients were excluded (earlier diagnosis, presence of perforation). Out of 13 patients, there were 6 females. The mean age was 27·7 years. The indications of surgery was fistula (n = 5), stricture (n = 4), uncontrolled pain (n = 3), subacute obstruction (n = 1). An average of 6 months was the duration between first presentation and surgery (max = 12 months). Ten patients had ileocecal resections and three had right hemicolectomy. Two cases had early postoperative complications (wound infection, leakage). Average hospital stay was 6·3 days. The patients were followed up with average of 18·8 months. No patients required further surgical intervention and controlled symptoms were achieved in all patients. There was highly statistical significant increase in the haemoglobin levels between preoperative, postoperative and long term follow up , and significant decrease in leukocytic count between the pre and post-operative values ($p = 0·05$). The ESR and CRP values were decreased significantly in the long term follow up ($p = 0·02$, $p = 0·01$ respectively). In addition, there was highly significant increase achieved in the body weight, BMI and albumin levels ($p < 0·01$).
Conclusions: The early surgical resection in isolated ileocecal Crohn's achieved significant clinical, laboratory and nutritional results. These successful results in this small number of patients encourage the recruitment of larger group with comparison to the outcomes of delayed surgery, with inclusion of QoL parameters that might give better insight to the results.

Audit and Outcomes Research 0507

Endoscopic Stenting Versus Laparoscopic Diverting Stoma in Management of Emergency Colorectal Cancer Obstruction

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Aims: The study aims to compare the endoscopic stenting with laparoscopic stoma creation regarding the complications and outcome in cases of emergency colorectal cancer obstruction as bridge to surgery or as palliative treatment.
Methods: Retrospective analysis of the cases with emergency obstruction due to colorectal cancers from January to December 2012. The patients were followed up to 6 months, regarding early and late complications of the procedure.
Results: 37 patients presented with emergency obstruction, 6 excluded due to loss of follow up. 15 patients underwent stenting with success achieved in 13 patients and 2 patients proceeded to laparoscopic stoma creation in addition of 10 patients who directly to referred to laparoscopic surgery. 20 out of 25 patients were males, with mean age of 47·2 years old (29–87).
For the indications of decompression, 44% (n = 11) as a bridge to neoadjevent chemoradiation therapy then surgical resection, 52% (n = 13) for palliative care and 4% (n = 1) case as a bridge to surgical resection. 1 case in the right colon, 3 cases in the left, 12 in the rectum, 4 in sigmoid, 5 case in the rectosigmoid. 6 out of 13 stented patients were bridged to neoadjuvant therapy (46%), and one directly to surgical resection (8%), and 6 patients were for palliative (46%). 5 patients out of 12 laparoscopic diverted patients (42%) and 7 patients were for palliative (58%). Of the stented patients, one patients suffered early complications (8%) in the form of perforation and 4 patients suffered late complications (31%) in the form of migration (n = 3) and tumor growth (n = 1). For the laparoscopic group, 4 patients suffered early complications (33%) in the form of ileus (n = 2) and wound infection (n = 2) and one long term complications (8%) in the form of stoma prolapse.
Conclusions: Late complications of the stenting make it less favorable option for the long term palliative care where laparoscopic stoma can be offered as it has manageable earlier and rare late complications. For patients with intention to cure by neoajduvant therapy and surgical intervention, stenting can provide a better option as a bridge by relieving of the emergency obstruction and better quality of life.

Audit and Outcomes Research 0514

Socioeconomic Factor and Colorectal Cancer Outcome in Singapore- A Hospital-Based Study

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Aims: To study the impact of socio-economic factor by type of housing on the survival of patients with colorectal cancer in Singapore
Methods: Analysis of a prospectively collected university hospital-based database over 7-year period (2000–2006) tagged to the National Registry of Birth and Death. Outcomes include 30-day and 5 year mortality; cancer-specific and overall mortality. Socioeconomic factor was defined as average (government housing), intermediate (private apartment) and affluent (landed property). Statistical analysis (Kaplan Meier survival plot, cox hazard model & logistic regression with multivariate analysis) was performed using SPSS version 17.
Results: 597 patients (mean age 64; male 55%; Chinese 90%, Malay 6%, Indian 3%; elective 85% vs emergency 15%) had surgery for colorectal cancer. The stage of cancer at diagnosis (proportion) was Duke A (13·9%), B (35·7%), C (35·7%) and D (14·7%). The overall 30-day, 5-year cancer-specific and 5-year overall survival were 2·9%, 69·9% and 62·3% respectively. The predictors of both cancer specific and overall survival were age and stage of colorectal cancer at diagnosis (Duke C & D). Sex and the type of housing were not significantly associated with death.
Conclusions: Socioeconomic factor as measured by housing type does not appear to adversely affect the outcome of colorectal surgery. This may be multi-factorial including standard of living and healthcare in a city island state with a consultant-driven practice in a university-based setting. Or housing type may not be a reliable marker of deprivation. As outcome measure is dependent on stage of disease, effective screening of colorectal cancer may require strategy other than target of housing subtype in this population.

Audit and Outcomes Research 0517

Pathology of Surgical Resection of Rectal Cancer: First Local Audit in Saudi Arabia

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Aims: Pathology reporting of the rectal cancer is vital for diagnosis, prognosis, treatment planning, and evaluate the quality of surgery. This study aims to audit the pathological reporting of the resected rectal cancers and highlighting important facts about rectal cancer in our centre.
Methods: Retrospective analysis of the pathological reporting of surgically resected (LAR/APR) of rectal cancers. The pathology lab in our center is credited by College of American Pathologists (CAP) and score of 22-items stemmed from their protocol is used to assess the adequacy of reporting and highlighting the main pathological features of rectal cancer in this region.
Results: 20 cases were recruited from 2011, and 39 cases from 2012. 43 out of 59 were males with average age of 55 years (79–24). 35·6% of the patients were below 50 years. In 2011, 35% of reports were using the pro forma while in 2012 about 38·5% used it. For 2011, the average percent of the

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reporting of the items were 52% (27%–77%) and for 2012, it was 63% (27% to 95·5%) with statistical significant difference (p = 0·025). TNM staging and specimen size were reported 100% over the two years. CRM was reported by 55% of reports in 2011 & 77% in 2012. The lowest features to report is the peritumor and intramural lymph nodes, intactness of mesorectum , presence of perforation and associated findings (all below 20% of the reports). Average number of lymph nodes retrieved after APR was 9·75 (1–21) and after LAR is 12·9 (3–35). 54% of the specimens achieved satisfactory number of lymph nodes retrieval, with higher percent in LAR (57·4%) compared to the APR (41·7). Regarding the neoadjuvant theapy, 21 patients did not receive any preoperative therapy, 8 received only Chemotherapy (CT) and 30 received CCRT. There is no significant difference between the number of lymph nodes retrieved when comparing the No-neoadjuvant, CT or CCRT groups, to each other. (p-value =0·243, 0·788, 0·248 respectively).

Conclusions: Audit is very important in highlighting the quality of pathological reporting, effect of the Neoadjuvant and quality of surgery. Application of the pro forma improved reporting effective and recommended to improve the quality of pathological reporting. The audit expanded to include (2009 to 2013) patients.

Audit and Outcomes Research 0531

An Audit of Blood Product Use in Elective Colorectal Surgery and Predicted Savings With Changes to Maximum Surgical Blood Order Schedule

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Aims: To audit the use of packed red cells for patients undergoing elective colorectal surgery. Determine our current crossmatch to transfusion (C:T) ratio. Estimate the impact on C:T ratio of a change in our Maximum Surgical Blood Order Schedule (MSBOS) guidelines.

Methods: A retrospective audit of packed red cell use for elective colorectal procedures between January 2012 and April 2013. We recorded the procedure, number of units crossmatched and the number transfused. Following a recent change in local MSBOS guidelines we calculated the change in C:T ratio for each procedure based on the new guidelines. The accepted gold standard is a C:T ratio of 2:1 in the elective setting.

Results: 103 patients underwent an elective colorectal resection. 262 units of PRC were crossmatched and 32 units were transfused within 72 hours. This is an overall C:T ratio of 8·2:1.

		MSBOS					
Procedure	N	Old	New	C	T	C:T	New C:T
Anterior resection	31	4	2	62	7	11·1:1	8·9:1
APER	10	4	2	20	7	5·7:1	2·9:1
Right hemi	31	2	2	62	5	11:1	12·4:1
Left hemi	9	2	2	18	5	4·4:1	3·6:1
Sigmoid colectomy	12	2	2	24	5	5·8:1	4·8:1
Subtotal colectomy	4	4	2	8	0	N/A	N/A
Panproctocolectomy	5	4	2	10	3	6·7:1	3:1

Conclusions: Our audit has demonstrated that our crossmatch:transfusion ratio for elective colorectal resection procedures exceeds the gold standard of 2:1. Even with a recent change in our local MSBOS crossmatch guidelines we predict that for the majority of procedures we will continue to miss our target. This requires further attention. Our trust will shortly be moving towards electronic issue and the impact of this is yet to be determined.

Audit and Outcomes Research 0547

Using Administrative Data and Variable Life Adjusted Display (VLAD) to Monitor the Performance of a Surgical Department

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Aims: To evaluate the feasibility of using administrative data as part of risk adjustment model to monitor surgical outcome of general surgical emergency operations with Variable Life Adjusted Display (VLAD).

Methods: Surgical performance involving major and ultramajor general surgical emergency operation from 1 July 2012 to 30 June 2013 in a tertiary referral hospital was displayed using VLAD curve. Patient records were retrieved from a prospectively collected central audit database. 30-day mortality was used as the primary outcome measure in performance. Hospital administrative data, including diagnosis and procedure codes, the 3 M International Refined Diagnostic Related Groups risk of mortality (ROM) and severity level (SOI), and prognostic blood test results were retrieved to formulate the risk-adjusted model by logistic regression. Upper and lower CUSUM limit corresponding to halve and twice the odds of mortality was set as the boundary of accepted performance. For VLAD curve fell below this limit, it served as an "alarm" for action.

Results: There were 405 patients retrieved from the audit database. Thirty-seven patients died within 30 days after operation, giving an overall crude 30-day mortality rate of 9·1%. Age, creatinine, albumin, INR, ROM and SOI were significant risk factors in formulation of risk-adjusted model. The area under Receiver Operating Characteristics curve was 0·8872. The Hosmer-Lemeshow goodness-of-fit test showed that the model fitted the data well (P = 0·9388). The VLAD curve of the all cases and each individual general surgical team were plotted to show the variation of performance according to time.

Conclusions: It is feasible to use administrative data and VLAD curve to monitor the performance of general surgical emergency operation. It has the potential to be used as a real-time monitoring tool which provides feedback on surgical performance.

Audit and Outcomes Research 0557

Is Elective Laparoscopic Abdominal Aortic Aneurysm Repair Superior to Endovascular Aneurysm Repair?

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Aims: Presently there are currently no high quality reviews comparing laparoscopic abdominal aortic aneurysm (AAA) repair against endovascular aneurysm repair (EVAR). This Best Evidence Topic review compares elective laparoscopic AAA repair against EVAR in terms of clinical outcomes, studying associated mortality, morbidity, length of operation and length of hospital stay.

Methods: A Medline search (01·01·1990 - 01·01·2013) was done using the PubMed interface for the terms: ("abdominal aortic aneurysm"[MeSH Terms] OR ("aortic"[All Fields] AND "aneurysm"[All Fields] AND "abdominal"[All Fields]) AND ("laparoscopy"[MeSH Terms] OR "laparoscopy"[All Fields] OR "laparoscopic"[All Fields]) AND "endovascular"[All Fields].

Results: 229 papers were found using the reported search. Seven papers representing the best evidence were discussed. Four studies (a [prospective cohort study], b [retrospective cohort study], c [prospective cohort study], d [randomised prospective cohort study) reported no significant difference in mortality and morbidity rates in both laparoscopic AAA repair and EVAR (p > 0·05 where reported). Length of hospital stay was also not significantly different in both techniques (p > 0·05 in study b and d). Studies (a, b, c, d) comparing the length of operation time showed conflicting results. Three other papers (e [prospective study], f [prospective cohort study], g [prospective cohort study]) evaluated the use of laparoscopic AAA repair in terms of mortality, morbidity rates, complications, operative times, and length of stay.

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Conclusions: An analysis of the results from the seven papers concluded that both laparoscopic surgery and EVAR are equally safe with similar mortality and morbidity rates as well as length of hospital stay. More data is needed in the form of high-quality randomised studies to obtain reliable results comparing clinical outcomes of laparoscopic AAA surgery against EVAR.

Audit and Outcomes Research 0571

Operation Notes: Are we Conforming to RCS Recommendations?

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Aims: The Royal College of Surgeons (RCS) of England have provided guidelines for clinicians on medical records and notes. An audit was carried out to review general surgery operation notes at a district general hospital to ascertain whether recommended information is documented and to identify areas of poor documentation and suggest methods of improvement. The audit cycle was completed by re-auditing following implementation of recommendations.
Methods: A prospective audit of 47 notes was performed over a 3 month period (May-July 2013). Notes were audited against 15 criteria devised by the RCS Guidelines on Good Clinical Practice. Results were presented at a clinical governance meeting and an aide memoir was placed in all theatres. A prospective re-audit was carried out over three months (August-October 2013), 89 notes were randomly selected and data was analysed to compare against the original audit.
Results: There were significant improvements in 4/15 criteria ($p < 0{\cdot}05$); Operative diagnosis (improved from 30 to 77%), problems/complications (improved from 17 to 47%), extra procedures (improved from 9 to 66%) and identification of implants/ prosthesis (improved from 4 to 62%). Other criteria remained similar to the original audit; time of operation and emergency/elective cases were poorly recorded. Legibility continued to be problematic, 10/15 criteria affected (2 to 34% of cases). Operative findings and post operative instructions were illegible in 12% and 5% of the re-audited group respectively. Our results need to improve across all criteria.
Conclusions: This audit highlights that a more robust method of documentation is required. Illegibility will continue to remain a problem if notes are to be handwritten. A modified electronic operative note has been submitted to the information systems department and is now active. All surgical trainees have been given access to use the system. A key factor will be to educate the surgeons on the new method of recording operative notes, which is already used by some consultants within the Trust, but not all. It will also be introduced at induction for subsequent trainees. A further re-audit has been planned in order to see if these recommendations are able to make the significant changes necessary to comply with RCS guidelines as well what percentage of surgeons use the electronic forms.

Audit and Outcomes Research 0586

Is Modern Haemorrhoid Surgery a Cost Effective Measure at a Teaching Hospital?

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Aims: Income and subsequent funding, is dependent upon accurate clinical coding. Un-coded episodes are unfunded.
This research assessed completeness of day case haemorrhoid coding and the level of reimbursement to the trust making the procedure viable.
Methods: Prospective data, of all haemorrhoid operations performed by a Consultant team over 6 months was compared. The operation performed and the assigned Office of Population Censuses and Surveys (OPCS) code was compared. The Healthcare Resource Group (HRG) code was determined and the generated tariff calculated. The discrepancies between the operation performed and the coded operation were compared and any payment variations calculated.
Results: 30 patients (13 men, 17 female), median age of 46 underwent surgery. 14/30 (47%) had trans-anal de-arterialisation (THD), 16/30 (53%) haemorrhoidectomies. 7/30 (23%) patients were coded as having had a THD, whilst 23/30 (77%) haemorrhoidectomies. This means 7 patients (23%) were incorrectly coded as having haemorrhoidectomies when they in fact had a THD.
Conclusions: All the 16 who underwent haemorrhoidectomies were correctly coded. However 7/14 THD procedures (23% of all cases) were undercoded (£500 per case) resulting in a net shortfall of £3,500 to the trust. Therefore even in day case colo-proctology significant coding errors exist resulting in under reimbursement. These limitations make day case haemorrhoid surgery an uneccesarily expensive burden to a trust.

Audit and Outcomes Research 0587

What is the True Extent of Colorectal Two Week Wait (2WW) Patients Lost to Follow Up?

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Aims: NICE recommends that all patients with symptoms suggestive of colorectal cancer be reviewed and investigated within two weeks by a colorectal surgeon.
We assessed the number of patients referred to a Colorectal Consultant during a 6-month period that did not attend their initial clinic appointment, investigations and follow up appointments and if any patient had a malignancy detected and did not attend follow up.
Methods: A prospective data collection over 6 months, of 100 2WW patients referred by their GP to a colorectal Consultant. All patients were given outpatient appointments within two weeks and a further appointment if they did not attend. Attendance of recommended investigations were noted as well as those patients diagnosed with a malignancy within this trust.
Results: Of 100 patients referred 19 did not attend their first clinic appointment and 10 of these did not attend their second clinic appointment leaving 90 for assessment. Of these 90, 20 did not attend investigations leaving only 70 who were fully investigated. 7 patients were found to have a malignancy (1:10 rate).
Conclusions: A significant number of patients referred as 2WWs did not attend clinic appointments or investigations and were lost to follow up. Investigated 2WW patients yielded a 10% malignancy rate. There exists a significant group of under investigated 2WW patients who may potentially harbour a similar rate of malignancy. This delay in diagnosis would severely impact their prognosis.

Audit and Outcomes Research 0591

The Impact of Inaccurate Documentation of Penicillin Allergy in Patients of a General District Hospital

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Aims: Documentation of the penicillin allergy reaction is often vague and inaccurate, causing over prescription of alternative more expensive broad-spectrum antibiotics in patients who do not have a true allergy. We aim to review the accuracy of documentation in penicillin-allergic patients, its impact on cost-effectiveness and the use of second line antibiotics that increases the risk of hospital-acquired infections.
Methods: We conducted a prospective audit over 2 weeks. Patients labelled as penicillin-allergic were randomly selected to fill in a questionnaire to confirm their allergic reaction and their records reviewed. The primary outcome measure was the accuracy of allergic reaction documentation. Secondary measures included type of reaction and the prescription of alternative antibiotics.
Results: Fifty patients are included during the audit period. Presence of documentation of penicillin allergy in admission clerking and drug charts were reviewed (80% and 94% respectively) with only 20% documented the type of allergy or sensitivity. 34% of patients are unaware that they have a penicillin allergy. Within those who are aware of their allergy 52% of patients have true

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allergy to penicillin (42% rash, 10% anaphylaxis). The remaining 48% have a sensitivity reaction (20% GI upset, 24% headache and 4% generally unwell). Within the twenty-one patients who were receiving antibiotics treatment, 71% were receiving second line antibiotics including cephalosporin and wide spectrum intravenous antibiotics.

Conclusions: Many patients who are labelled as penicillin allergic does not have a true allergy, inaccurate documentation may have economic consequences in addition to the increase risk of hospital acquired infections.

Audit and Outcomes Research 0606

Outcomes of Cervical Lymph Node Biopsies from the Head and Neck Lump and Bump Clinic

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Introduction On occasion, initial assessment fails to provide a definitive diagnosis in patients presenting with cervical lymphadenopathy. Therefore formal lymph node excision biopsy is indicated.

Aim: To audit the outcomes of our cervical lymph node biopsies.

Method: Retrospective review of patients who underwent cervical lymph node biopsy between January 2007 and June 2013 at our centre.

Results: Two hundred and twelve cervical lymph node biopsies were performed. The median age of presentation was 44 years. Haematological malignancy, predominantly lymphoma, was diagnosed in 95 patients (41·5%). "Benign" pathology was found in 90 patients (39·3%), which included 39 cases of granulomatous lymphadenitis (17%), 50 simple reactive nodes (21·8%) and 1 case of amyloid infiltration (0·4%).

Metastatic carcinoma was diagnosed in 27 patients (11·8%). Eighteen were of non-head and neck origin. The commonest primary source was the lung (n = 5). Unknown primary source and genitourinary (prostate, testicular and renal) were the second and third commonest in our series (n = 5 and n = 3 respectively).

Postoperative complication data was available for 193 cases (90·6%). Six patients suffered motor nerve weakness (3·1%), of which five were temporary and one was permanent (2·6% and 0·5% respectively), infection occurred in seven patients (3·6%) and partial dehiscence in three (1·6%).

Conclusions: Our outcomes show that cervical lymph node excision biopsy is a relatively safe and very effective diagnostic procedure. This information helps in development of service planning and patient counselling for our department. Our results may aid those clinicians aspiring to provide a lump-and-bump service in other regions of the UK.

Audit and Outcomes Research 0629

Achieving Minimal Conversion Rates for Laparoscopic Cholecystectomy in the General Hospital Environment; an 11 Year Audit of Surgical Activity

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Aims: Laparoscopic cholecystectomy has been considered a non-specialist operation with a quoted incidence of conversion to the open procedure in the region of 5% nationally. Recent studies have suggested that outcomes for the laparoscopic procedure are improved by specialisation. In recent years, a number of practice initiatives have been implemented in our unit including provision of a pre-assessment clinic, day of surgery admission (DOSA) and ring fenced elective surgical beds. In addition, the national cancer strategy has facilitated an increasing volume of benign procedures. The aim of this study was to determine outcomes for elective laparoscopic cholecystectomy in a non-specialist unit with a historic policy of avoidance of intervention for the acutely inflamed gallbladder.

Methods: An analysis of a prospectively updated database of all cholecystectomies performed by four general surgeons during 2003–2013 was conducted. Hospital databases, theatre registers and patient charts were used as data sources. Complication rates were recorded at monthly audit meetings during the study period.

Results: 1937 consecutive cholecystectomies were performed; 1875 as elective laparoscopic procedures and 62 as planned open. The overall conversion rate recorded was 1·7% (32/1875). Conversion rates declined progressively from 8·3% in 2003 to <2% in each of the last seven years of the study. Three deaths occurred in the planned open cholecystectomy group (4·8%). One common bile duct injury was noted in the laparoscopic cohort (0·05%). Other complications observed in this group included bile leak (0·48%), bowel ischaemia (0·1%) and haemorrhage (0·21%).

Conclusions: Laparoscopic cholecystectomy can be performed safely, effectively and in significant volume in the general hospital setting. Minimal conversion rates (<2%) and low morbidity can be consistently achieved in parallel with focused practice policies.

Audit and Outcomes Research 0646

Venous Thromboembolism Risk Assessment Compliance in Plastic Surgery: A Multi-cycle Audit

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Aims: Venous Thromboembolism (VTE) is an international patient safety issue. Lifetime incidence is 1 in 20, approximately half associated with prior hospitalisation and two-thirds potentially preventable. VTE prevention is now recognised as a clinical priority for the NHS by the National Quality Board and the NHS Leadership Team. Our objective was to determine the compliance of the Burns Unit with VTE risk assessments (in line with NICE Clinical Guideline CG92 and Trust Policy on VTE). If deficient, changes would be implemented and performance re-audited. If successful, this pilot would be extended to other wards.

Methods: A baseline audit was completed over three weeks in September-October 2013. 11 patients were admitted, three not having a risk assessment completed. Staff education sessions on VTE were held. The inpatient board on the Burns Unit was modified to facilitate inter-professional communication and VTE status visibility.

Results: Six audit cycles over six weeks were completed, with 100% compliance (20 patients). The system was exported to wards 16a, 16b and the Surgical Assessment Unit where a baseline audit showed a median of 50% compliance and initial results showed a sustained increase to 100% compliance two days post-implementation (six audit cycles).

Conclusions: The package of interventions utilised is a viable way of increasing VTE risk assessment compliance in Plastic Surgery.

Audit and Outcomes Research 0660

The 2-Week Wait Suspected Colorectal Cancer Referral: Do we have to Review Patients Before Requesting Specific Tests?

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Aims: The two week referral system is established practice in cancer service in the UK. Our aim is to evaluate the accuracy and efficiency of the General Practitioners (GPs) referral for the two week wait suspected bowel cancer.

Methods: Retrospective examinations of the GP referral letters for suspected colorectal cancer under the 2 week wait target were reviewed. The main criteria for referral and the clinical symptoms and signs upon surgical consultation were checked along with the required investigation. The out come of all required tests was checked.

Results: Retrospective review of 200 G.P referral letters of patients as Two Week Wait for suspected colorectal cancer. The clinical letters after surgical consultation and the outcomes were checked. These patients were consulted between two sites within the trust by three different colorectal teams.

Two patients were excluded as we could not get the referral letters or clinical notes. We found that 32·8 % of the referred patients (n 64) did not meet any of the criteria for the Two Week Wait referral system when reviewed in the clinic.

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Only thirteen patients (6·5%) were diagnosed with colorectal malignancy. Three patients were found to have other malignancies. Eight patients did not attend their first appointment, seven of them were breached the 2 WW target.
Conclusions: Accuracy and reliability of the data provided by the G.P for the 2-week wait suspected colorectal cancer patients is questionable and the current criteria for referral are of low diagnostic accuracy. We concluded these patients should be seen in the clinic first before ordering any specific test and G.Ps should seek further detailed information before referring these patients to hospitals to save time and NHS resources.

Audit and Outcomes Research 0686

Impact of PROMs on Clinician Behaviour Study

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Aims: This study aims to explore the interaction between outcome measures, namely PROMs, and clinicians, and to establish the impact of this data on individual clinicians' practice.
Methods: A single time point design was used with in-depth, semi-structured, individual interviews. Samples of the transcripts were coded independently by two researchers and discussed in detail to ensure multiple perspectives, consistency and coherence in the analysis.
Results: A total of 18 consultant surgeons and associate specialists who specialised in general, vascular and trauma and orthopaedics surgery from 10 different NHS hospitals were interviewed. Although most surgeons (17) agreed with the principle of outcome measures, only 2 surgeons used them in clinical practice. All the surgeons reported that the data collected by their hospitals was inaccurate, which led them to question any other data that is fed back to them. Although, majority of the surgeons (16) interviewed felt that PROMs data had a role in changing clinician behaviour by providing the evidence-base needed to analyse changes in surgical practice, they (16) did not feel that current outcome metrics accurately reflected their abilities as a surgeon. All of the surgeons (18) interviewed felt that they needed administrative support to maintain accuracy. Feedback of this data was universally welcomed and although some (13) voiced fear of this data being used punitively in the case of poor outcomes, majority (16) felt that they would use it to self-reflect and improve outcomes. The majority (16) wanted an external, independent, specialist body to be responsible for intervention in case of poor outcomes. Although all surgeons agreed with the need for transparency, they raised the issue of collateral impact of public reporting on training of juniors and possibility of risk-aversion with regards to patient selection.
Conclusions: We found that there are infrastructural and cultural barriers preventing effective usage of outcome data by clinicians. Surgeons have voiced out the need for administrative support to collect accurate, risk-adjusted and clinically relevant data and the need for increased involvement of surgeons in the development of national outcome measures projects such as PROMs.

Audit and Outcomes Research 0687

A Ten Year Study Assessing the Outcomes of Emergency Laparotomies in Over 90 year olds

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Aims: The NCEPOD report 'Extremes of Age' (1999) found that in a population of over 90's undergoing surgery only 10% of patients received ICU/HDU care immediately post-operatively. With an increasing ageing population, the decision-making as to who would benefit from an emergency laparotomy is important. Currently there are no publications on outcomes of emergency laparotomy in over 90s. The results of emergency laparotomies in over 90 year olds at a district general hospital in London over a ten-year period were analysed.
Methods: Patients over the age of 90 years who underwent an emergency laparotomy over a 10-year period (2002 to 2012) were identified. Data was retrospectively collected using Ward Watcher (ITU / HDU database) and analysed.
Results: In total, 49(3%) of 1613 laparotomies carried out in the ten-year period were in patients over 90 years old. 35 (71%) were female with a mean age of 93 years (range 90–102). The causes for emergency laparotomy were bowel obstruction (64%) and peritonitis (36%). The overall thirty-day mortality was 49% and hospital mortality was 53%. 35 (71%) were admitted to the critical care unit postoperatively with a 30-day mortality of 23%. 14 (29%) were admitted straight to the ward and had a 30-day mortality of 50%. Amongst those admitted to the critical care unit, 57% required single organ support. Average length of hospital stay was 37 days (range 4–123) amongst those who had survived at thirty-days. Multiple sub-groups analyses could not identify a particular group with a more favourable 30-day mortality outcome.
Conclusions: Even though mortality is high, our study shows that emergency laparotomy in the over 90s population is worthwhile. Due to the limited number of patients in this study, it is not possible to identify a particular sub-group with a favourable outcome. We recommend that all over 90 year olds requiring an emergency laparotomy receive postoperative HDU / ICU care.

Audit and Outcomes Research 0690

Overused and Abused? Audit of the use of Abdominal X-Rays in Acute Surgical Admissions

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Aims: Plain abdominal radiographs (AXR's) are commonly requested when assessing patients with acute abdominal pain, however they are frequently of limited diagnostic value and expose patients to significant radiation. The Royal College of Radiologists' "iRefer" guidelines were written to help prevent their indiscriminate use. The aims of this audit were twofold. 1) Assess conformity of abdominal radiograph requests to national guidelines in acute surgical admissions in a district general hospital, and 2) Identify how frequently the abdominal radiograph is of diagnostic value in the acute setting.
Methods: Retrospective analysis of all acute surgical admissions to a district general hospital during July 2012 who underwent an abdominal radiograph within the first 24 hours of admission. The differential diagnosis documented in the notes prior to radiology was compared to Royal College of Radiologists' iRefer guidelines. AXR findings were confirmed by radiology reports. Notes were evaluated to assess the effect of radiographs on patient management. After exclusions there were 75 patients. Exclusions included notes not available and incomplete documentation.
Results: Of the 75 AXR's, only 28 requests (37·3%) conformed to guidelines, 47 (62·7%) did not. Of the 28 films which conformed, 14 (50·0%) had clinically significant positive findings, compared to just 6 (12·8%) of the 47 films, which did not conform. In 3 (10·7%) of the appropriately requested films, there were significant negative findings. Overall 23 films (30·7%) were of diagnostic value and had an impact on patient management.
Conclusions: Our results show that the majority of abdominal radiographs performed in this cohort were not indicated based on national guidelines and only a minority were of diagnostic value to patient management. Significantly we also showed that their correct use was associated with a greater diagnostic yield, which supports the use of such guidelines. A change in practice has been initiated.

Audit and Outcomes Research 0698

Appropriateness of Serum Carcinoembryonic Antigen Marker Requests from Colorectal Outpatient Clinics

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Aims: To evaluate whether requests for serum carcinoembryonic antigen level from the colorectal outpatient clinics were appropriate to the clinical context.
Methods: Consecutive patients who had serum carcinoembryonic antigen (CEA) levels requested following attendance at five different colorectal surgical outpatient clinics at a District General Hospital between April and August 2013

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were identified from a prospectively maintained lab registry. Clinical records including radiological, endoscopic and histological data were then reviewed to evaluate the clinical context. Smoking status of patients was noted. Patients on follow up after treatment of colorectal cancer were excluded. Serum CEA level of 0–5 was considered as normal.

Results: Serum CEA levels were requested in 200 consecutive patients over the study period, of whom 95 met the selection criteria (52 male, 43 females). Median (IQR) age was 76 (58 – 80) years. 86 patients (91%) were tested for serum CEA levels without a definite clinical, radiologic, endoscopic or histological indication for the request.

Overall, 23 patients (24%) had a raised serum CEA. Five patients in the study group were eventually diagnosed with colorectal cancer, of whom three had a raised CEA (positive predictive value 13% (3/23)) and two had normal CEA levels.

Conclusions: There is a need to raise the awareness among clinicians to the correct indication for requesting serum carcinoembryonic antigen levels in routine practice.

Audit and Outcomes Research 0721

The Pancreatitis Score: What is it Good for?

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Aims: Acute pancreatitis is a common reason for admission under upper GI teams yet there is no consensus regarding some aspects of its management. We retrospectively audited 6 months of admissions using standards provided by the British Society of Gastroenterology (2003 guidelines). Also we looked at specific aspects, including Glasgow scoring, and how they related to severity and length of stay.

Methods: A detailed analysis of all patients admitted with acute pancreatitis between the 1st of April and the 30th of September 2013 was performed, utilizing a retrospectively collected database.

Results: 63 patients were identified, the mean age was 61. 52 (82·6%)patients had a Glasgow score within 48 hours, 56(88·9%) patients had an ultrasound scan within 24 hours, of the 10 patients who required ERCP 2(20%) had the procedure within 72 hours. 1 out of 17(6·3%) patients requiring cholecystectomy had this within 2 weeks. Our average length of stay (LOS) was 9·25 days, mortality was 4·8%. 66·7% of patients were managed by the Upper GI team.

Of the 10 patients with a Glasgow score of 3 or greater, average LOS was 16·8 days, 1 patient was managed on ITU who subsequently died. Of 15 patients who developed pancreatic necrosis, 6(40%) had a Glasgow score of 3 or greater, and of the 3 patients who died, 1 had a score of 3 or greater.

Conclusions: The management of Acute pancreatitis at our centre was in line with BSG guidelines on most of the audit standards; our main issues were with provision of ERCP and same admission/expedited cholecystectomy.

A Glasgow score of 3 or greater did not correspond with an increased need for ITU support or increased mortality, however it did lead to an increased LOS.

From these results it appears that Glasgow score is not a reliable tool to identify patients at greatest risk, and although it does have some role in predicting LOS it appears to be poor at predicting severity of disease.

Audit and Outcomes Research 0728

Colonoscopy Tattooing Practice –Single Unit Audit

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Aims: Quality assurance guidelines for colonoscopy in Bowel cancer screening recommend tattooing all suspicious lesions that may require bowel resection or surveillance. St Marks Hospital Colonoscopy tattoo protocol recommends tattooing 3 cm distal to the lesion for right sided lesions, proximal for left sided lesions and distal for rectosigmoid lesions.

However, the local guideline states that tattoos should be placed 2 cm distal to the lesion in 3 positions.

Our aim is to assess compliance and consistency in tattoo placement at endoscopy in patients undergoing laparoscopic colonic resection.

Methods: We reviewed colonoscopy, operation and histology reports of patients who underwent colonic resections for consistency in tattoo placement.

Results: 37 out of 51 patients selected at random qualified for the study (laparascopic resection following tattooing). 24 (64%) tattoos were placed distal to lesion, 2 (6%) proximal and 11 (30%) position of the tattoo not stated.

7 (19%) reports stated the position of the tattoo in relation to the lesion. 44% and 55% of cases mentioned tattoo in the operation note and histology notes respectively.

Conclusions: Tattooing is essential for visualisation of lesion and assists with resection margins intra-operatively in laparoscopic colonic resection. Inconsistency in tattoo placement could potentially lead to difficulty in localisation of lesion intra-operatively, variable resection margin, need for on-table colonoscopy and possible change of procedure.

We have recommended that all trust endoscopists be reminded of the local tattoo guidelines and a copy of the guideline should be made available in all endoscopy rooms for locum endoscopist to be aware.

Audit and Outcomes Research 0731

10% of Females Undergoing Diagnostic Laparoscopy by General Surgeons Have Evidence of Acute Gynaecological Pathology

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Women attending hospital with lower abdominal pain and tenderness represent a grey area between the specialties of general surgery and gynaecology.

Aims: To determine the incidence of acute gynaecological pathology in patients undergoing diagnostic laparoscopy under general surgery. To also assess whether such patients were offered appropriate management and follow-up.

Methods: Retrospective analysis of all female patients who underwent diagnostic laparoscopy and/or laparoscopic appendicectomy between September 2012 and September 2013. Patients were identified using the operating theatres electronic record system. Patient case notes and electronic records were used to determine operative and histological diagnoses, use of pre-operative ultrasound or CT scanning, medical personnel present intra-operatively and outpatient follow-up.

Results: 94 patients underwent diagnostic laparoscopy in our hospital in one year. 60 (64%) were performed by general surgeons. Amongst these, 44 patients (73%) had an operative and/or histological diagnosis of acute appendicitis. In 6 cases, no diagnosis was apparent. 5 patients (8%) had clinically significant ovarian cysts and one (2%) had macroscopic evidence of PID. In the 6 patients found to have acute gynaecological pathology, 3 underwent ultrasound and one underwent CT scanning pre-operatively, which was non-diagnostic in all cases. In two thirds of these cases, a gynaecologist attended intra-operatively. Gynaecological follow-up occurred in all but one case, who self-discharged from hospital post-operatively.

34 patients (36%) underwent diagnostic laparoscopy under gynaecology; 20 (59%) had ectopic pregnancies, 12 (35%) had ovarian cysts, 2 (6%) had PID. None had evidence of acute gastrointestinal pathology.

Conclusion: 10% of patients undergoing diagnostic laparoscopy by general surgeons in our hospital had macroscopic evidence of acute gynaecological pathology in the absence of appendicitis or other acute gastro-intestinal disease. No imaging modality is entirely able to rule out appendicitis, hence diagnostic laparoscopy is justifiable where acute appendicitis is clinically suspected. Where gynaecology pathology has been found, appropriate specialists have been involved in the majority of cases with follow-up arranged in all cases.

Audit and Outcomes Research 0732

Faecal Incontinence and Quality of Life After Transanal Endoscopic Microsurgery (TEMS) Excision for Early Rectal Cancer

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Aims: Transanal Endoscopic Microsurgery (TEMS) provides an alternative to radicle surgery for highly selected patients with early rectal tumour. However

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little is known about the functional outcome and quality of life (QoL) data after TEMS. The aim of this study is to compare pre- and post-operative functional outcome and short- and medium-term quality of life (QoL) of patient underwent TEMS in a major teaching hospital in the United Kingdom

Methods: We conducted a retrospective study to review all patients who underwent TEMS for an early rectal cancer in a major teaching hospital in the United Kingdom between 2010 and 2012. Faecal Incontenence Quality of Life Scale questionnaire and the European Organisation for research and Treatment of Cancer Quality of Life Questionnaire (EORTC QLQ-C30 and QLQ-C38) were used to evaluate at 0, 1,3 and 6 months.

Results: During the period studied 51 patients diagnosed to have early rectal neoplasia underwent TEMS. 22 had adenocarcinoma (T1), 3 carcinoid and rest were benign adenoma. In cancer group, as compared 0 months Faecal Incontinence, QLQ-C30 and QLQ-C38 scoring were much worse (defecation score ($p = 0{\cdot}001$) and gastrointestinal ($p = 0{\cdot}005$) and worsening global health status ($p = 0{\cdot}12$)) after 30 days post TEMS. At 3 and 6 months the Faecal Incontinence, QLQ-C30 and QLQ-C38 showed significant improvement in defecation problem ($p = 0{\cdot}001$) and weight loss ($p = 0{\cdot}001$) and overall improvement in global health status.

Conclusions: QoL and defecation problem get worse initially after TEMS however with passage of time it improves to pre-operative level.

Audit and Outcomes Research 0733

Evaluation of Evidence on Clinically Indicated Removal of Intravenous Cannula (VEINS Audit)

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Aims: The aim of the audit is to assess compliance with current guidance on intravenous cannulation, reasons surrounding removal of cannula and if evidence supports clinically indicated removal of intravenous cannula.

Methods: An observational audit over a 3-week period was undertaken in surgical wards using a proforma designed to record cannula insertion attempts, Visual Inspection Phlebitis (VIP) score and reasons for removal.

The primary outcomes were compliance with current policy (Epic2 guidance), reasons for removal of cannula and incidence of phlebitis outside of routine removal. The secondary outcomes audited included local venous and tissue infection, the cost of cannulation, number of cannula used per patient over the course of admission, duration of intravenous therapy and success rates per grade.

Results: 69 patients were included with 202 cannula insertions over the monitoring period. There was 100% compliance with the IV cannulation policy. The most common reasons for removal was infiltration (56·6%) followed by accidental removal (31·3%). A low incidence of phlebitis was demonstrated throughout the monitoring period (4·8%). The highest VIP score observed was two. 43% of the cannula was inserted on first attempt (29% requiring 2 attempts and 17% 3 or more attempts). There was a good linear relationship demonstrated between length of stay and number of cannula inserted (average 3 cannula insertion per patient)

The cost of a cannula pack varied between £1·76 and £2·48 dependent upon cannula gauge and bulk discounts offered to the trust. The healthcare costs associated with insertion varied by grade from £1·60 (FY1) to £3·80 (consultant).

Conclusions: The audit demonstrated excellent compliance with current policy. There was low incidence of phlebitis. This supports contemporary evidence, which suggests clinical assessment of cannula at 72 hours to be equivocal to routine removal.

Audit and Outcomes Research 0763

Visual Distraction During Flexible Nasendoscopy: Does Observation Reduce Discomfort?

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Aims: Flexible nasendoscopy (FNE) is a commonly performed procedure in routine otolaryngological practice. FNE is often reported as uncomfortable by patients. This study aimed to assess the impact of visual distraction on patient reported discomfort during FNE.

Methods: Following a statistical power calculation, 24 patients requiring FNE were allocated into four groups: prior topical anaesthetic spray with or without visual distraction (simultaneously viewing the procedure on a screen), and no topical anaesthetic spray with or without visual distraction. Pain assessments were undertaken using a visual-analogue scale (VAS).

Results: Pain scores were significantly reduced in the visual distraction groups ($p = 0{\cdot}04$). The use of topical anaesthetic spray was not associated with significantly reduced pain scores ($p < 0{\cdot}05$). When asked, 67% of all patients would opt to view the procedure in the future, rising to 83% when questioning those who underwent visual distraction alone.

Conclusions: The use of visual distraction has been shown to reduce overall discomfort, improve patient experience, and help with reassurance or explanation post-procedure. Indeed, it was superior to the use of a topical anaesthetic spray. It should therefore be considered as a simple method to reduce discomfort in those undergoing FNE.

Audit and Outcomes Research 0764

Improving the Quality of Data Collection in Multicentre Surgical Studies: Are Online Quizzes the Answer?

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Aims: One of the challenges associated with multicentre surgical studies is ensuring accuracy and completeness in the collection of outcome data. We aimed to improve the quality and quantity of outcome data within a multicentre trainee-led study, investigating the diagnosis and treatment of sepsis amongst emergency general surgical patients.

Methods: Multiple centres from across the UK and Europe were recruited to the audit, which entailed the correct identification of patients displaying signs of systemic inflammatory response syndrome (SIRS) and the recording of post-operative complications. In order to ensure that clinicians collecting data at each site fully comprehended the study, detailed guidance notes were produced to accompany each section of the data collection tool. In addition, quizzes were designed to test their understanding of a) the study inclusion criteria, b) identification of patients with SIRS, and c) application of the Clavien-Dindo classification for post-operative complications. All three quizzes were developed and disseminated using an online tool. Trainees collecting data from recruited centres were asked to complete all quizzes, although this was not a prerequisite for participation. Correct answers and detailed explanations were provided on completion of each quiz.

Results: Over a 6 week period, the quizzes were completed by 38 (quiz a), 34 (b) and 22 (c) research participants, respectively. Median scores: quiz a 86% (range = 29-100%); quiz b 67% (range = 33-100%) and quiz c 71% (range = 42-100%). A breakdown of scores for each individual question enabled the identification of any ambiguities, and provided the opportunity for clarification and further guidance.

Conclusions: Online quizzes are an innovative way of enabling researchers leading multi-centre studies to check the understanding of clinicians participating in data collection, thereby providing quality assurance and reducing bias between sites. We recommend that similar strategies are used in future multicentre surgical studies. Further modifications might include the introduction of a pass mark to be attained prior to participation in the study, in order to ensure that the data collected is as robust as possible.

Audit and Outcomes Research 0767

bHCG Negative? An Audit of Abdominal Radiography in Females of Childbearing Age

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Aims: Plain abdominal radiographs (AXR's) are commonly requested when assessing patients with acute abdominal pain, however they expose patients

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to significant radiation. In women of childbearing age this carries a risk of directly exposing a foetus to this radiation, which can cause harm to subsequent development.
The Royal College of Radiologists' "iRefer" guidelines state that the referring clinician is responsible for identifying pregnancy status prior to submitting a radiology request. The aim of this audit was to assess whether AXR requests for acute surgical admissions in a district general hospital conform to these guidelines.
Methods: Retrospective analysis of all female acute surgical admissions to a district general hospital during July 2012 who underwent an AXR within the first 24 hours of admission. Females who did not meet the criteria of childbearing age (10 to 55 years inclusive) were excluded. Patient notes were examined to check if pregnancy status was documented prior to referral for radiology. Corresponding radiology request forms were also checked for documentation of pregnancy status.
Results: Of the childbearing females who underwent AXR, only 17·6% had had their pregnancy status documented in their notes prior to a request for radiology being made. In addition 0% of patients had their pregnancy status documented on their radiology referral forms.
Conclusions: Our results show that the majority of abdominal radiographs in this cohort did not meet national guidelines for documentation of pregnancy status prior to radiology. The responsibility for checking pregnancy status lies with the referring clinician and should not be left to the radiographer or the patient. This audit highlighted both a patient safety concern as well as an important medico-legal issue. A change in practice has been initiated in this hospital.

Audit and Outcomes Research 0782

Pathological Characteristics and Prognosis After Gastrectomy for Node-Negative Gastric Adenocarcinoma

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Aims: This study describes oncological characteristics and patterns of disease recurrence for patients with node-negative gastric adenocarcinoma treated with gastrectomy.
Methods: From January 2005 to December 2012, 56 patients had node-negative gastric adenocarcinoma after gastrectomy. No patients had neo-adjuvant chemotherapy. 13 patients (23%) had a nodal yield of fewer than 15 nodes were excluded from the current study.
Results: There were 27 men (63%); median age was 74 years (32–88). 24 patients (56%) had a subtotal gastrectomy and 19 had total gastrectomy. 28 patients (67%) had an open operation, 14 had a laparoscopic operation and 1 patient had a laparoscopic operation that was converted to open surgery. 41 patients (95%) had a D2 lymphadenectomy. Median lymph node yield was 26 nodes (15–66). There were no in-hospital deaths. T-stage and node yield are shown below:

T-stage	Median node yield (range)	Vascular invasion	Perineural invasion	Poorly differentiated
pT0 (n = 1, 2%)	29	0, 0%	0, 0%	0, 0%
pT1a (n = 15, 35%)	26 (17–40)	1, 7%	1, 7%	3, 21%
pT1b (n = 5, 12%)	17 (15–42)	2, 40%	1, 20%	1, 20%
pT2 (n = 15, 35%)	25 (15–66)	5, 33%	4, 28%	5, 33%
pT3 (n = 7, 16%)	26 (19–44)	5, 71%	6, 86%	6, 86%

One patient received adjuvant chemotherapy; he had pT3 disease with vascular and perineural invasion and poorly differentiated tumour. At median follow-up of 64 months (14–103), no patients had developed recurrent disease. Actual 1-year survival was 95% and estimated overall 3- and 5-year survival (Kaplan-Meier) was 84% and 71% respectively.
Conclusions: One-half of patients with adequately staged N0 gastric adenocarcinoma had T2 or T3 disease. N0 disease was associated with excellent prognosis, irrespective of T stage. These data emphasise the importance of optimizing nodal staging accuracy using the previously determined threshold number of 15 nodes to minimize the incidence of stage migration.

Audit and Outcomes Research 0783

Timing of Cholecystectomy After Gallstones Pancreatitis; Current Practice of a Local Trust

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Aims: The guidelines state that patients with mild gallstones pancreatitis should undergo definitive management for gallstones during the same admission or within the next two weeks. The aim of this audit was three fold; firstly, to assess the timing at which patients were offered a definitive treatment for gallstones following an admission with pancreatitis. Secondly, to evaluate the readmission rate with biliary complications that occur due to a delay in surgical management; and thirdly, to estimate the financial cost resulting from the recurrent admissions and subsequent investigations.
Methods: A retrospective analysis included patients with gallstones pancreatitis who were admitted across a local trust between June 2011 and January 2013. Patients with severe pancreatitis and those unfit for surgery were excluded.
Results: 40 patients were included in the study. 45% of patients readmitted with biliary complications. Only 1 patient (2·5%) had cholecystectomy within 2 weeks of admission as per guidelines. Estimated cost of extra investigations required during readmissions exceeded £20,000.
Conclusions: There is an evident breach regards timing of cholecystectomy following mild gallstones pancreatitis in accordance with the guidelines, with a compliance rate of 2·5%. This has resulted in high readmission rate with biliary complications, and subsequently a high extra cost.

Audit and Outcomes Research 0821

Audit: Admission Record Keeping in Surgery

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Aims: To evaluate the standard of admission record keeping by assessing the completeness of the hospital generic admission clerking proforma.
Methods: All adult patients admitted under the care of orthopaedics from accident and emergency (A + E) within a month was incorporated in this retrospective study. The admission clerking proforma was sourced from patient notes and scored according to completeness under its various headings such as; patient details, observations, abbreviated mini mental test (AMMT) assessment and venous thromboembolic (VTE) assessment. .
Results: Ninety eight percent of admission clerking was located. Eighty five percent of admissions located in the assigned month were documented in the hospital admission clerking proforma, the remaining was found either in the trauma or A + E notes. Forty four percent of patient demographics and details were complete on the clerking proformas. Missing criteria included; Consultant details (thirty six percent) and name of the admitting doctor (nine percent). Fifty three percent of patients in this study were over sixty five years old and fifty four percent of these patients did not have a documented AMMT assessment as per the proforma section. Fifty seven percent of patients did not have a documented VTE assessment as per the proforma section. Thirty eight percent of patient admissions had a registrar review documented under the 'Registrar review' or 'Additional Notes' headings.
Conclusions: The Health Informatics Unit (HIU) of the Royal College of Physicians (RCP) has demonstrated the need for structured medical records and the use for proformas to communicate a patients' hospital journey, in accordance with medico-legal standards. Comprehensive record keeping in clerking proformas requires commitment and an awareness of policies and

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standards. Implications for consent and prompt management are flagged up early. Both juniors and seniors have a role regarding admission documentation.

Audit and Outcomes Research 0830

Timely Discharge Detail in the Continuity of Patient Care: An Audit of Vascular Surgery Patients

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Aims: Timely communication between tertiary care units and general practitioners is paramount to ensuring continuity in patient care. We investigated whether there were unnecessary delays in immediate discharge (IDL) or final discharge (FDL) letters.
Methods: 500 consecutive admissions were included. The hospital admission database (Clinical Portal) was used to retrieve details pertaining to admission and discharge. Results were analysed in SPSS v19·0.
Results: 2 patient records were inaccessible leaving 498 patients for analysis (416 with arterial; 82 with venous disease). 60·6% of admissions had an IDL and 66·3% had a FDL. 203 patients had both IDLS and FDL, whereas 69 patients (13·9%) had neither. Whether a patient had arterial or venous disease did not influence whether an IDL was done (arterial 61·2% vs venous 57·3%, Chi-squared p = 0·362). There were no differences in the mean (SD) length of stay between patients with and without IDLS (8 (14) vs 7 (14) respectively, p = 0·486). The mean time between discharge and FDL was 11 (11) days.
Conclusions: This audit identified approximately 14% of vascular surgical patients are discharged with no formal documentation relating to the admission. Efforts need to be focused on educating medical staff to ensure appropriate and timely communication with the GPs.

Audit and Outcomes Research 0847

Colonoscopy in the Over 75's: Are we Following Guidance?

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Aims: Colonoscopy is a valuable and largely safe diagnostic and therapeutic tool for the management of many colorectal pathologies. Current guidelines limit surveillance to the under 75 cohort based on known pathophysiological factors as well as consideration of the invasiveness of the test and increased risk in elderly patient groups. This work seeks to review the referral pattern in patients over 75 undergoing lower GI endoscopy and ascertain if current accepted guidelines are being followed with regards to cancer and polyp follow up.
Methods: Unisoft Endoscopy reporting software was used in our hospital and a report of all colonoscopies in patients over 75 at the time of the procedure was generated for two 6 month periods 1 year apart. Referral indications and findings were identified and recorded. Basic demographic data and known co-morbidities were identified from the electronic patient record. Indications were compared to British Gastroenterological Society Guidelines, the departmental agreed guideline.
Results: Indications for lower GI endoscopy remained consistent over the 2 sample time periods, as was patient age and fitness by ASA status.
The majority of referrals were appropriate for primary investigation of significant abdominal/colorectal symptomatology (87-89%). Of the patients for polyp surveillance, appropriate referrals fell from 51·2% to 43·2% between study periods with most inappropriate endoscopies occurring too early according to BSG guidelines. With cancer follow up, appropriateness of referrals increased from 34·5% to 59·4%, again with most inappropriate follow up occurring early.
Conclusions: Adherence to guidelines needs improvement and improvement seen in cancer follow up may be due to pre-procedure vetting and assessment of patients. This could be an important method of streamlining services and correct intervals could increase efficiency and lead to cost savings. Documentation is important and needs to be complete, especially in cases of deviation from guidelines for future evaluation and as part of the patient record.

Audit and Outcomes Research 0857

The Practice of ERCP in a London District General Hospital; are we Meeting the Standards?

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Aims: To compare the outcomes and the success rate of endoscopic retrograde cholangiopancreatography (ERCP) for both diagnostic and therapeutic reasons in our hospital.
Methods: An audit was conducted analysing retrospectively the medical and endoscopy notes of a total of 118 patients who underwent ERCP in the endoscopy suite of Ealing Hospital from June 2012 to June 2013. All procedures were performed by gastroenterology consultants.
Results: The commonest indications for ERCP were biliary stones on radiological imaging (31·3%), common bile duct (CBD) or common hepatic duct (CHD) dilatation (32·2%) and abnormal liver function tests (10·1%). Further indications included stent change/removal and bile leak or retained CBD stones following cholecystectomy. Most patients received antibiotic cover in the form of Cefuroxime. The bile duct cannulation was successful in 95·7% of the cases. A total of 19 complications were observed, accounting for 16% of the cases. The commonest ones were post-ERCP pancreatitis (6·7%) and patient restlessness following the procedure (3·3%). Three deaths were observed following the procedure, but only one of these deaths (0·8%) was directly related to the endoscopic procedure.
Conclusions: The ERCP results in our department are within the expected range when compared to national guidelines and reports, as well as to the latest National Confidential Enquiry into Patient Outcome and Death report. The success rate of the procedure is comparable to national standards and the complication rates lie at or below the expected levels.

Audit and Outcomes Research 0861

Management Approaches and Outcomes in Paget-Schroetter Syndrome: a Single-Centre Clinical Experience

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Aims: There are few clinical data regarding the optimal management of Paget-Schroetter syndrome (effort-related, primary, upper extremity deep venous thrombosis; UEDVT); a sequela of thoracic outlet syndrome. We evaluated the outcomes of different approaches to managing Paget-Schroetter syndrome.
Methods: A retrospective analysis of patients with clinically-diagnosed UEDVT, treated in a tertiary vascular centre, from 2009–13, was performed. Patients were identified using an internal audit system, and an *a priori* data collection protocol defined. Secondary UEDVT (related to predisposing factor; *e.g.* central venous catheterisation, known thrombophilia, *etc.*) were excluded. Analyses were performed in SPSS 20·0. Data are presented: median, interquartile range.
Results: Of Paget-Schroetter cases ($n = 35$; age 35·9y), 19 received thrombolysis *via* an intra-clot bolus of 10 (5–20) mg r-tPA, followed by infusion of 1·0 (0·5-4·0) mg h^{-1} for 20 (6–29)h. Successful lysis (Grade II/III) was achieved in 70%, with no complications. The remainder received anticoagulation alone. Presentation outside the therapeutic window (≥14 days; 63%), and non-occlusive thrombi (13%) comprised common reasons for not undergoing lysis. Thrombolysed patients were less likely to experience recurrence (OR 0·71, 95%CI 0·51-0·94, $p = 0·03$) or post-thrombotic syndrome ($p = 0·04$). Post-thrombolytic thoracic outlet decompression (supraclavicular first rib resection) was undertaken in 8 patients, at 21 (10–64) days post-diagnosis. The remainder did not undergo surgery due to patient choice (73%) symptomatic resolution (18%) and contraindication to anaesthesia (9%). Decompression reduced symptomatic recurrence, compared to conservative management (OR 0·76, 95%CI 0·47-0·97; $p = 0·04$). No major complications were reported. Outcomes in non-thrombolysed cases were similar to those conservatively

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managed post-thrombolysis. Anticoagulation was maintained for ≥6 months in all patients; overall follow-up was 23·2 (11·5-39·8) months.
Conclusions: These data support the sequential management of Paget-Schroetter syndrome with catheter-directed thrombolysis and thoracic outlet decompression; a safe and efficacious approach which reduces the risk of symptomatic recurrence and post-thrombotic syndrome.

Audit and Outcomes Research 0862

The Diagnostic Utility of "Out Of Hours" Computed Tomography of the Abdomen and Pelvis for Surgical Patients at a District General Hospital

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Aims: Computed Tomography of the abdomen and pelvis (CT A/P) has great diagnostic accuracy for acute surgical conditions. We aim to establish: (i) the diagnostic utility of CT A/P in the "out of hours" setting at a District General Hospital (DGH) and (ii) their subsequent impact on the management of this patient group.
Methods: At our institution, "out of hours" radiology services represent weekdays from 17:00 to 09:00, weekends and Bank Holidays. The "out of hours" CT book was hand-searched for CT A/P scans referred by the surgeons for the nine month period of January-September 2013 and an electronic database, together with the Picture Archiving and Communications System (PACS) scan request forms and reports, was generated. The subsequent case notes were examined to assess: (i) what impact the scan findings had on management and (ii) the diagnostic accuracy of "out of hours" CT A/P by primarily comparing to clinical outcomes correlating, where possible, with subsequent laparotomy/histopathology findings.
Results: The case notes of 78 of the 96 surgical patients (81·3%) who underwent "out of hours" CT A/P scans in the defined time period were obtained, with a mean age of 55·3 years. Twenty-one (26·9%) scans were reported as normal, 9 (11·5%) as obstruction, 27 (34·6%) as an acute inflammatory pathology, 6 (7·7%) as a perforated viscus and 15 (19·2%) as other miscellaneous pathologies. The CT A/P scan reports had a direct impact on management in 60 (75·9%) cases (new surgical/medical treatments and the exclusion of serious acute pathology in 36 and 22 cases respectively). The mean time from the scan being reported to an effect on management was 7 hours and 48 minutes, with 46·8% occurring in the first 4 hours. The sensitivity, specificity and positive predictive and negative predictive values (PPV and NPV), were 91·7%, 86·7%, 91·7% and 86·7% respectively where CT findings were compared to clinical outcomes. When compared only to laparotomy/histopathology findings, the sensitivity was 90·2% and PPV 79·5%.
Conclusions: "Out of hours" CT A/P scans at our institution directly impact on patient management. They are mostly acted upon within a time period that justifies the decision to do such imaging "out of hours". Balanced against the defined risks of such scans, "out of hours" CT A/P is diagnostically very useful and demonstrates great strength in both ruling in and out serious pathologies in the acute setting.

Audit and Outcomes Research 0889

A District General Hospital Experience of Biliary Stenting for Malignant Disease

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Background Curative management of malignant pancreato-biliary (PB) disease is the preserve of tertiary referral centres but conservative and palliative management is often undertaken in local hospital units.
Aims: We set out to assess outcomes from endoscopic biliary stenting (ERCP) for malignant disease in our district general hospital.
Methods: Patients with malignant disease of the biliary tract who underwent primary ERCP between 2011 and 2012 were identified and case notes reviewed for clinical outcomes.
Results: 37 patients underwent biliary stenting in this period, one patient was excluded as they had undergone 3 previous endoscopic interventions. Median age was 75·6 years (53·6-99·8 years). 35 stents were placed for primary PB malignancy. 31 of these stents were covered metal stents, 6 were uncovered. Bilirubin decreased from a median of 218umol/L to 112umol/L (median decrease 55umol/L). Complications occurred following 13 cases; 7 blocked stents (18·9%), 2 of which were associated with sepsis, 2 cases of stent migration (8·1%), 3 cases of biliary sepsis (8·1%) and 1 episode of pancreatitis (2·7%). Subsequently 12 patients underwent a single repeat ERCP and 1 patient underwent 3 further ERCPs. Median survival following ERCP and stent was 78 days (10–806).
Conclusions: Our DGH is a low-volume unit for biliary stenting but provides local service with complication rates comparable to those described in the literature. This allows care of patients with short expected survival to be kept close to home.

Audit and Outcomes Research 0898

Procedures of Limited Clinical Value in ENT: What Effect has There Been on Operating Numbers?

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Aims: 'Procedures of Limited Clinical Value' (PLCV) is a term first highlighted in the McKinsey report (2009), examining potential cost cutting measures within the future NHS. It is a term used by some trusts to describe surgical procedures that, they feel, are not cost effective. With the NHS now facing intense financial pressures we undertook a study to examine whether five core procedures within the specialty of ENT had been restricted.
Methods: Numbers of operative procedures carried out from six separate hospitals across the Wessex Deanery were obtained, over a 6 year period (2007 to 2012). Five surgical ENT procedures commonly classified as PLCV were studied: tonsillectomy, adenoidectomy, septorhinoplasty, pinnaplasty and myringotomy with insertion of grommets.
Results: In total, 22,839 surgical procedures were included. A year on year variability in the number of each of the five individual procedures was observed, however when comparing the cumulative data from pre-2009 to post-2009 there was no significant changes in the number of procedures carried out. When examining hospitals on an individual basis, no significant changes were seen in the numbers of tonsillectomy, adenoidectomy and myringotomy performed. However, a significant drop in the numbers of pinnaplasty and septorhinoplasty were observed in some hospitals.
Conclusions: Since the introduction of PLCV in 2009 there has not been a significant drop in the number of core ENT procedures performed across the Wessex region. However there seems to be a significant inter-hospital variation with respect to some ENT procedures. With the introduction of clinical commissioning the inter-hospital variation in surgical provision may well increase.

Audit and Outcomes Research 0907

The Surgical MET Call: An Audit of Current Practice

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Aims: In 2011, the surgical medical emergency team (sMET) system was established, aimed to manage surgical emergencies more efficiently with appropriate MET persons present and to improve patient care. Our practice is audited on a yearly basis. Our aim is to assess how medical staff respond to deteriorating patients, why sMET calls are being made, attendance during sMET calls, whether the medical registrar is required, quality of documentation and use of sMET call pro-forma and if patients are being re-reviewed appropriately.
Methods: In the 3 month period of 1st October – 31st December 2012, 51 sMET calls were triggered and recorded for a total of 47 patients. Notes were available for 26 of these patients; these were analysed and data recorded onto a pro-forma.

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Results: 19 sMET calls from 0800–2000, 7 from 2000–0800. 85% of METS calls triggered were appropriate, based on MET score and symptoms. Except for 1 case of MET score >8, nursing staff are requesting review at appropriate MET score. Medical registrar was required at 50% of sMET calls. 80% of patients are being re-reviewed following sMET call (aim 100% compliance). The sMET call pro-forma only used in 8% of cases and persons present at sMET call only documented in 15% of cases (90% in previous audit).
Conclusions: Medical register must be present for sMET calls. Documentation must be improved using the pro-forma as well as compliance rate of re-reviews.
Action plan: Organised education on sMET calls at each hospital induction, departmental F1 induction and to surgical nursing staff. Re-audit 6 months time.

Audit and Outcomes Research 0909

Aortic Stenosis Patients with Severely Impaired Left Ventricular Function Should Still be Offered Surgery

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Aims: The study aimed to evaluate short and long term survival outcomes following aortic valve replacement (AVR) comparing patients with preserved and impaired left ventricular (LV) function.
Methods: We selected all patients undergoing isolated AVR for aortic stenosis between Jan '08 and Dec '12 from a prospectively maintained unit database. Overall survival of patients with a Good (>50%), Fair (30-49%), and Poor (<30%) ejection fraction were compared. Univariate and multivariate analysis was performed on the parameters used to calculate Euroscore, to see if there were any negative predictors of overall survival.
Results: 571 patients had an AVR between Jan '08 and Dec '12. Overall survival was significantly better in the Good LV subgroup with 5 yr survival of 84% compared with 75% in and 53% in the Fair LV and Poor LV subgroups respectively ($p = 0{\cdot}001$). Multivariate analysis retained male gender (HR = 2·07 $p = 0{\cdot}014$), pre-operative creatinine ≥200 (HR = 3·81 $p = 0{\cdot}010$), pulmonary disease (HR = 2·16 $p = 0{\cdot}003$), and poor LV function (HR = 2·93 $p = 0{\cdot}002$) as negative predictors of overall survival.
Conclusions: Poor LV function adversely affected survival; nevertheless our result suggests that over 50% of patients with poor LV function are still alive at 5 yrs. Therefore patients with poor LV function should still be offered surgery.

Audit and Outcomes Research 0915

Evaluation of the Surgical Apgar Score and National Early Warning Score in Predicting Post-Operative Outcomes

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Aims: To evaluate the relevance of the Surgical Apgar Score (SAS) and the National Early Warning Score (NEWS) in identifying the most common physiological variables that are useful in predicting post-operative outcomes. The SAS provides graded information on the patient's condition at the end of an operation predicting who is at risk of death or post-operative complications. SAS range 0–10, with ≤4 associated with earlier identification of safety problems. The NEWS is designed to detect clinical deterioration for ward based patients and has mainly been evaluated in acute medical assessment units for the first 24 hours of admission only.
Methods: Prospective analysis in a population of bariatric and general surgical patients, collating admission NEWS score, baseline blood pressure, highest and lowest NEWS score from recovery and throughout the post-operative stay until discharge home. Additionally three intra-operative SAS parameters (lowest heart rate, lowest mean arterial pressure and estimated blood loss), were recorded and evaluated. Demographics include BMI and comorbidities.
Results: The most common final SAS score was 7–8, in both surgical categories. The lowest intraoperative heart rate was in the bariatric group (2 SAS points =66-75 bpm). The lowest mean arterial pressure was in the general surgery group (1 SAS point = 40-54 mmHg). The lowest estimated blood loss was 2 points (101-600 ml) in both groups The general surgical group had the highest SAS score as well as the highest NEWS score in recovery (NEWS = 6), which appeared contradictory. The most common NEWS score at discharge was between 0–2 in both categories.
Conclusions: A high SAS score equates to low risk of surgical complications, whereas a high NEWS score is associated with a worse outcome. On some occasions there appears to be a lack of correlation between the two scoring systems; immediate low SAS status may not be associated with postop complications and the NEWS score has shown low specificity. Further correlation studies are ongoing to evaluate which score is most predictive and whether the two scores can be used to improve and complement the clinical decision making.

Audit and Outcomes Research 0929

Specialist Radiology Reporting Reduces Unnecessary Endoscopic Examination in CT Proven Diverticulitis

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Aims: There is increasing data to suggest that routine endoscopy to rule out malignancy is not required following CT proven uncomplicated diverticulitis. One of the factors that may have a significant impact on whether an endoscopy is performed may be the phrasing of the radiology report. The aim of this study is to examine whether CT reporting by a radiologist with a specialist interest in gastro-intestinal imaging can reduce unnecessary endoscopic follow up.
Methods: This was a retrospective study of patients with CT proven diverticulitis from 2007–2012. The consultant radiologists reporting the scans were separated in to generalists or those with a gastrointestinal interest. The diverticulitis was classified as simple or complex (perforation, abscess, stricture or fistula) and findings matched with endoscopy reports.
Results: 299 cases of CT proven diverticulitis were identified. 196 (65%) were simple and 103 (35%) complex. At follow up endoscopy there were no cancers identified in the simple group and two cancers in the complex group. 113 scans were reported by general radiologists in the simple diverticulitis group with 85 (75%) going on to have subsequent endoscopy. In contrast, only 20 out of 83 (24%) of those reported by a Specialist radiologist went on to endoscopy. The Odds ratio of those that underwent endoscopy following general radiology compared to specialist radiology reporting is 8·7 ($p < 0{\cdot}001$). 57(50%) general radiologist reports inferred that neoplasia could not be excluded in the report compared to none by a specialist radiologist.
In the complex group 61 cases were reported by general radiologists, 42 by a specialist, with endoscopic follow up in 42 (69%) and 23 (55%) cases respectively. The Odds ratio for endoscopic follow up of general vs. specialist reporting is 1·8 ($P = 0{\cdot}14$).
Conclusions: Non-specialist radiologists over-report neoplasia in uncomplicated diverticulitis. A specialist radiology report can reduce the number of unnecessary endoscopies and should be obtained before endoscopy is organised in CT proven diverticulitis.

Audit and Outcomes Research 0936

Audit on the Completion of Theatre Documentation

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Aims: All patients undergoing surgery should go to theatre with a complete package of documentation, including medical notes; consent documentation; anaesthetic assessment form; and medication charts. This audit sought to improve the availability of complete theatre documentation for all patients, going to theatre under one general surgical firm at a major UK hospital.
Methods: The documents available in theatre were checked for all patients having surgery under the care of one general surgical firm over a period of 1 calendar month. After this month, the data was presented in a departmental

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meeting and improvement strategies put in place. Theatre documentation was later audited to check for improvement.

Results: At the initial audit, 91% of patients were taken to theatre with a complete package of documentation, with medical notes present in 93% of cases; Consent documentation in 93%; anaesthetic forms in 100% of cases and medication charts present in 91% of cases.

This data was presented to the department, and strategies were put in place to improve documentation, which included the introduction of targets; a review of the local consent policy to improve awareness of consent protocols; and improving availability of junior doctors to complete medication charts for day-case patients.

On the second round of the audit cycle, 96% of patients were taken to theatre with a complete package of documentation – medical notes present in 96% of cases; Consent documentation in 98%; anaesthetic assessment documentation in 98% of cases; and medication charts in 98% of cases.

Conclusions: Availability of a complete package of documentation in theatre is important for patient safety. This audit shows that minor interventions can be put in place to ensure that important documents are available at the time of surgery for all patients.

Audit and Outcomes Research 0938

A Retrospective Audit Assessing Compliance with Trust Guidelines for Vancomycin Prescription and Monitoring on Orthopaedic Wards

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Aims: To assess the accuracy by which orthopaedic junior doctors comply with the Trust's guidelines for prescribing and monitoring Vancomycin on the orthopaedic wards.

Methods: Medical records were retrospectively reviewed for 20 randomly selected orthopaedic patients prescribed Vancomycin over the period June 2011- June 2012. Adherence to the Trust's guidelines for prescribing and monitoring Vancomycin was determined by assessing whether Vancomycin levels and Urea and Electrolytes (U + Es) were monitored as recommended below in the guidelines:

Guideline 1 - A trough plasma Vancomycin level and U + Es should be taken at the end of the dosing interval of 24 to 48 hours of therapy. *Guideline 2* - Trough Vancomycin samples should then be taken every two to three days if renal function is stable. *Guideline 3* - If renal function is unstable, Vancomycin and U + Es levels should be monitored daily. *Guideline 4* - Creatinine and GFR should be monitored daily, even if Vancomycin levels are stable.

Results: None of the four guidelines reviewed were followed 100% of the time.

Trough Vancomycin levels were taken for 17 patients (85%). Eight patients had stable renal function throughout Vancomycin prescription, of which only four patients (50%) had Vancomycin levels taken every two to three days. 12 patients had unstable renal function, and only two patients (16·7%) had Vancomycin levels monitored daily. Three patients (15%) had their U + Es monitored daily. Only three patients in the sample (15%) had all four guidelines followed.

Conclusions: Vancomycin has a narrow therapeutic range and has potential catastrophic side effects if not prescribed or monitored accurately. Only three (15%) of patients in this audit had all four guidelines followed, and the remaining 17 patients (85%) were not monitored or prescribed Vancomycin as stated in the Trust's guidelines.

Audit and Outcomes Research 0941

Investigating Markers of Frailty in Vascular Surgery Inpatients

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Aims: Individual surgeon mortality data is now freely available to the public. We have previously highlighted the challenges associated with case-mix adjustment of these data. However, the potential impact of patient frailty has been scarcely investigated. We set out to investigate the frailty of a population of vascular surgical inpatients in a single UK centre.

Methods: Over 2 months (June-July2013) 39 consecutive inpatients within the Vascular department of a single large teaching hospital were included. Data was collected for factors known to be associated with frailty; patient demographics, mode of admissions, disease process, treatment received, ASA grade, Charleston Index, BMI and hand grip strength.

Results: The mean age was 68·7 years (IQR: 58·5-79·0 years), with mean length of admission 24·5 days. The commonest reason for admission was for complications of micro-vascular disease (43%) or critical limb ischaemia (30%). The modal ASA grade was 3. On admission, 85% lived independently, 10% had carers and 5% full time nursing care. Only 51% were independent, 20% required walking aid(s) or assistance, 25% were wheelchair bound and 3% bed bound. 21% needed assistance with personal care; 15% assistance transferring; 13% were incontinent and 8% required assistance feeding. The mean Charleston Index was 5; with 56% having diabetes, 49% having heart failure and 23% COPD. Within our population the median hand grip strength was 19·1 kg (IQR 13·3-27·45), considerably lower compared to previous studies on healthy adults that have shown mean values of 39·2 kg[1].

Conclusions: This pilot study suggests patients admitted to the vascular unit have high indices of frailty. Further work will investigate frailty measures and outcome and compare geographical areas of the UK.

1. Rantanen T, Guralnik JM, et al. Midlife hand grip strength as a predictor of old age disability. JAMA. 1999 Feb 10;281:558–60.

Audit and Outcomes Research 0942

Analysis of Unnecessary Chest X-Ray in Pre-Operative Patients with Neck of Femur Fracture

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Aims: X-ray examinations are not without risk or cost. Chest X-ray is a source of extra radiation &time consuming both to the patients & staff. The International system of units of dose equivalent radiation = Sv (Sievert). 1 mSv = 0·001 Sv. Typical effective dose in millisievert (mSv) of single chest X-ray =0·02 mSv. Each Single chest X-ray is approximately equivalent to 3 days of period of natural background radiation. UK average background radiation = 2·2 mSv per year. The aim is to assess that preoperative chest X-ray in patients with neck of femur fracture is performed in accordance with the guidelines.

Methods: A retrospective study of 21 patients (age range 70-95years) with neck of femur fracture in the orthopaedic department was randomly selected for the period (May-August 2011).

Results: Out of all the 21 patients, 14 had a normal chest X-ray one day prior to the operation.

Only 4 patients had the indication(s) to have a chest X-ray prior to the operation in accordance with the guidelines.

Conclusions: All 21 Patients had a chest X-ray following neck of femur fracture regardless of their co-morbidity status before undergoing surgery (chest X-ray results did not change nor postpone surgery). Majority of Chest X-ray have been ordered as a routine for anaesthetic assessment, and not based on history or signs and symptoms and co-morbidities of patient and not in accordance with the guidelines.

Chest x-ray should be requested in accordance with the guidelines and not as a routine assessment.

Advances in Knowledge Chest x-ray should be requested in accordance with the guidelines and not as a routine assessment.

Audit and Outcomes Research 0946

Is Routine Luminal Investigation Required Following a CT Diagnosis of Acute Diverticulitis?

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Aims: Current guidelines state that all patients require luminal investigation, most commonly endoscopy, following an attack of acute diverticulitis in order

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to exclude underlying malignancy. Scientific data to support these guidelines is limited and there is growing evidence that routine investigation may not be required. The aim of this study was to assess the incidence of malignancy on endoscopic follow up in CT proven diverticulitis.

Methods: Retrospective study of patients with CT proven diverticulitis from 2007–2011. Imaging data was matched against endoscopy reports of within 6 months from the date of the CT scan using our hospital database. Patients that underwent emergency surgery or had undergone endoscopy within the preceding 2 years were excluded. A CT diagnosis of diverticulitis was classified as simple or complex, the latter being defined as perforation (extraluminal gas), abscess, stricture or fistula.

Results: Of 300 patients with CT-diagnosed acute diverticulitis, 160 patients (90 men, 70 women; mean age 68·5 years old) had endoscopic evaluation. 105 patients were classified as simple diverticulitis, with the remainder (55) as complex. There were a total of 2 cancers diagnosed at endoscopy (1·25%). These were in cases of complex diverticulitis on CT, both occurring on a background of sigmoid perforation and sizeable abscess formation.

Conclusions: The incidence of malignancy following a diagnosis of CT proven diverticulitis is low. All cancers detected occurred in patients with complex diverticulitis. Our findings are in agreement with recently published data and contribute to evidence against routine endoscopy following simple diverticulitis.

Audit and Outcomes Research 0948

Does Laparoscopic Colorectal Resection Increase the Re-operation Rate?

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Aims: To assess if laparoscopic colorectal resection was associated with higher re-operation rates, as has been suggested by a recent national audit* of 246469 patients undergoing elective colorectal resections.

Methods: A retrospective review was made, of a prospectively maintained database, of all patients undergoing elective major colorectal resections, under a single surgeon, between August 2002 and February 2013. Patients returning to the operation suite (re-operation) within 30 days of their index operation were identified and association to variables including patient demographics, pathology, previous surgery, metastatic disease, rectal resection, neoadjuvant therapy, conversion, BMI, ASA grade and laparoscopic surgery analysed. Fisher's Exact Test was used for statistical analysis.

Results: A total of 482 (260 laparoscopic) patients have undergone elective colorectal resection. The median age was 70 years (24–93 yrs). Conversion rate was 10·3%. Overall, 29 patients (5·9%) underwent a re-operation within 30 days. There was no statistical difference between the laparoscopic and open groups for the studied variables. The re-operation rate for the laparoscopic group was 5·4% (14/260) [anastomotic leak =2, burst abdomen =3, stoma complication =2, internal hernia =2]. The re-operation rate for the open group was higher at 6·8% (15/222) [anastomotic leak =4, collection =3, burst abdomen =2, secondary haemorrhage =1]. Although the re-operation rate was lower for the laparoscopic group, this did not reach statistical significance.

Conclusions: Our findings show no evidence of higher re-operation rates in laparoscopic colorectal surgery.

* Burns et al. BMJ 2011;343:d4836 doi: 10·1136/bmj.d4836

Audit and Outcomes Research 0960

Developing a Patient-Reported Experience Measure for Surgical Outpatients

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Aims: Patient experience is a central pillar of quality healthcare. As yet there are no surgery-specific measures of patient experience. We aimed to design, and test construct validity of, a survey to establish questions for a new patient-reported experience measure (PREM) for surgical outpatients.

Methods: The NHS Patient Experience Framework, NICE Quality standards and Clinical Guidelines were used to identify key domains and sub-domains of patient experience. Each sub-domain was assigned one survey question. Respondents were asked to rate importance of addressing each sub-domain in outpatient consultations using a 5 point Likert scale (5 = strongly agree – 1 = strongly disagree). Importance of each sub-domain was determined by mean response to the assigned question. Importance of each domain was determined by averaging the means, for questions within that domain. Internal consistency was measured using Cronbach's alpha; for domains with >1 question, by agreement in response across questions within that domain. For domains with only one question, by agreement of responses with mean response across all domains.

Results: 87 surgical outpatients completed the survey prior to their appointment. All surgical specialties at the research site (except ophthalmology) were included. Mean age of respondents was 54y (median 56y). 47 (55%) respondents were female. 33% were new to the relevant clinic, 61% already had a diagnosis for the relevant problem and 35% had undergone an operation for that problem. Patients rated all sub-domains as important; mean response to all assigned questions was > =4·26/5 (between agree – strongly agree). Importance (I) and consistency (C) of each domain were as follows: Patient needs & preferences (I =4·75, C =0·82), Information, education & self-care (I =4·80, C =0·85), Daily living & physical comfort (I =4·73, C =0·69), Emotional support (I =4·42, C =0·71), Family & friends (I =4·43, C =0·77), Access to care (I =4·53, C =0·56).

Conclusions: Patients identified all domains as important, and the survey is valid to measure this as indicated by high Cronbach's alpha scores (>0·5 indicates good internal consistency). These questions would form a valid PREM to measure actual experience after outpatient appointments.

Audit and Outcomes Research 0964

The Use of Social Media for Recruitment and Communication in Multicentre Collaborative Studies

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Aims: Surgical studies can be difficult to design and conduct and amongst the challenges is the recruitment of patients and study centres. We describe and evaluate the innovative use of social media to facilitate the recruitment of geographically diverse centres in the context of a trainee collaborative-delivered study involving general surgical patients.

Methods: A designated communications team was appointed and tasked with co-ordinating the dissemination of information, answering queries and tracking the location of study centres, in order to facilitate targeted recruitment. Communication 'interventions' were delivered throughout the recruitment period and included email newsletters, targeted emails and tweets. Online twitter support sessions were also held in order to share knowledge and address any concerns. Each intervention was subsequently correlated with the number of email enquiries, website hits and ultimately the registration of centres wishing to participate in the study.

Results: In the week following an email bulletin to all registered ASiT (Association of Surgeons in Training) members and Twitter publicity linked to World Sepsis Day, the number of the number of email enquiries was 47 (overall mean enquiries per week =9). Moreover, the number of confirmed participating centres increased by 47. The website attracted 358 additional hits following the first twitter support session and registered centres increased from 108 to 120 during this period. A final total of 120 centres were recruited.

Conclusions: We recommend that the use of social media should be considered in future multicentre surgical studies in order to maximise recruitment of centres in a cost effective manner. The interactive nature of social media enables discussion amongst all collaborators and may help to maintain interest and motivation of participating clinicians. Further work is ongoing in order to investigate their potential use in solving other problems faced by surgical studies, such as outcome measurement and attrition.

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Audit and Outcomes Research 0968

Patient Satisfaction and Outcome Following Ulnar Nerve Transposition for Cubital Tunnel Syndrome

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Aims: To assess patient satisfaction and outcomes following ulnar nerve decompression and anterior subcutaneous transposition for cubital tunnel syndrome.

Methods: The patient search was performed using the Bluespier electronic clinical records and theatre management systems. All patients undergoing ulnar nerve transposition in our department between July 2008 to July 2013 were included. A combination of the QuickDASH score and information relating to post-operative complications were used to construct a patient questionnaire that was delivered by post and returned to our Department within a four-week period.

Results: Eighty-nine patients were selected for participation, of which forty-nine completed and returned questionnaires. The mean post-operative QuickDASH score in this cohort of patients was twenty-five on a scale of zero to one hundred, with a higher score representing a greater disability. Self-reported scar-related post-operative complications included: altered sensation in ten patients; sensitivity in nine patients; and pain in three patients. Other complications included: residual symptoms in ten patients; elbow stiffness and reduced range of movement in three patients; and wound infection in one patient.

Conclusions: Decompression and anterior subcutaneous transposition of the ulnar nerve is an effective procedure associated with good post-operative functional outcomes for the majority of patients with cubital tunnel syndrome. Residual symptoms, scar related problems, and elbow stiffness are all significant potential complications of this procedure. Prospective studies including factors such as patient demographics, pre-operative symptoms and disabilities scores, and pre-operative degree of ulnar nerve dysfunction may help to determine which patients experience the most significant change in symptoms and/or function following this operation. This information may assist clinicians in patient selection and provide patients with further insight into their likely post-operative outcome.

Audit and Outcomes Research 0973

An Audit of Audit Performance

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Aims: Clinical audit is essential for the delivery of good patient care. Demonstrating measured improvements in practice can only be achieved through closure of the audit cycle, however only 17-29% of all audits performed by orthopaedic departments go on to do this. We aim to determine how many audits undertaken by the orthopaedic department at our institution go on to complete the cycle, as well as meet best practice criteria.

Methods: Retrospective analysis of project reports and presentation slides for all orthopaedic projects registered with the trust's audit department. The NICE definition for clinical audit was used as a standard, and the Healthcare Quality Improvement Partnership (HQIP) Criteria for Best Audit Practice were used to assess quality.

Results: Between July 2011 and March 2013, 32 projects were identified of which only 17(53%) could be considered audits by NICE definition. The remainder were research or case-series reports, and were thus excluded. Of the 17 audits: 12(71%) used clear standards/guidelines; 15(88%) made any recommendations for improvement; 8(47%) completed the audit cycle with 7(41%) demonstrating an improvement in service. Only 5(29%) fulfilled HQIP best practice criteria.

Conclusions: Nearly all audits that close the loop show an improvement in patient service, however less than half of audits ever achieve this. Fewer still meet all the 'best practice' criteria. By enhancing both the quality and proportion of audits that complete the cycle it will be possible to demonstrate more improvements being made in patient care.

Audit and Outcomes Research 0999

A Clinical Audit of Enhanced Recovery after Surgery (ERAS) Pathways in Colorectal and Hepato-pancreato-biliary (HPB) Surgery at Queen's Medical Centre, Nottingham University Hospital

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Aims: The aim of this re-audit is to determine the rate of success of the ERAS pathways in Colorectal and HPB surgery, but also relating compliance to specific protocols within the programmes and their impact on the success of ERAS.

Methods: Pre-, peri- and post-operative data of 56 Colorectal and 9 HPB patients was collected prospectively between October and December 2013. Primary outcomes of ERAS success (% discharged on or before clinically expected day) and length of stay (LOS) were analysed with both univariate and multivariate tests using SPSS version 21.0.

Results: ERAS success in colorectal surgery rose to 39·3% after a general decline from 2010–2012. Mean LOS for open and laparoscopic Colorectal procedures was reduced by 2·8 and 2·6 days respectively. After univariate analysis 21 protocols were found to be significantly associated with Colorectal success. Further multivariate analysis established 12 protocols as significant predictors of success. These included PCA or epidural removal before 12·00 am ($p = 0·004$), urinary catheter removal a day after the operation ($p = 0·005$) and length of surgery ($p = 0·017$). Health-care associated infections (HCAIs) on the Colorectal ward decreased to 14·3% from 31·0% the previous year. HPB surgery saw a slight drop in ERAS success from 50·0% to 44·4%, only univariate analysis found 1 component to be significantly associated with ERAS success; patient consuming lunch a day after the operation ($p = 0·016$).

Conclusions: The improvement in colorectal ERAS success suggests effective revision of the protocols, but could also be reflected by an overall increase in protocol compliance as well as a decrease in HCAIs. As before the HPB results are clinically irrelevant due to the small sample size and a larger one would be necessary before considering national expansion. Recommendations put forward regarding both specialities should be implemented and in the ensuing re-audit one could expect it to show an increased ERAS success.

Audit and Outcomes Research 1002

Complicated vs Complications. A Service Evaluation of Acute Appendicitis Management in a Tertiary Centre

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Aims: A previous audit undertaken at the Bristol Children's Hospital identified a higher rate of complicated appendicitis (perforated or gangrenous) intra-operatively than the national average. We designed and implemented a service evaluation to identify any potential pre-operative and post-operative factors.

Methods: All patients treated at BRCH in a 1 year period with appendicitis were identified and reviewed. Patients identified as 'complicated' were audited further. We defined 'complicated' as any re-attendance, perforated appendicitis histologically, and inpatient stay of 5 days plus. Outcomes included age, previous antibiotics, time to theatre, pathology, cultures, type of operation, presenting symptoms compared to the Paediatric Assessment Score and influence of USS.

Results: 128 appendicectomies were performed, 27% were laparoscopic. 83 (63%) patients met our inclusion criteria for complicated appendicitis. Mean inpatient stay was 5 days (2–16 days). 17% had a re-operation or re-admission. There was no evidence to suggest age of patient contributed to the higher rate of perforated appendicitis. There was no statistical difference in time to theatre between complicated and uncomplicated appendicitis.

Conclusions: No individual outcome was found to be the single cause of a higher rate of complicated appendicitis. Further investigation is in progress evaluating the role of USS delaying theatre when the clinical features indicate appendicitis.

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Audit and Outcomes Research 1005

Flexible Sigmoidoscopy in the Elderly: More Harm than Good?

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Aims: Flexible sigmoidoscopy is a less invasive investigation than full colonoscopy and requires less bowel preparation and sedation. However, little is known about the post-procedural mortality in the elderly population following this investigation. We sought to define short-term mortality rates in patients aged ≥80 years in the 6 months following flexible sigmoidoscopy.
Methods: Data from all patients aged ≥80-years who underwent flexible sigmoidoscopy in one acute hospital trust from 2007 to 2010 were analysed retrospectively. Information on the procedure, bowel preparation and sedation use were extracted from the prospectively maintained endoscopy reporting system. Patient data were linked to the Trakcare Patient Management System to ascertain vital status (alive/dead) at 6 months.
Results: Over the 4-year period, 803 patients aged ≥80 years underwent flexible sigmoidoscopy. Of these, 153 (19·1%) received intravenous (IV) sedation and 455 (56·7%) had full bowel preparation. Overall, the post-procedure mortality rate was 3·4% at 30 days and13·8% at 6 months. Of those who died at <30 days, 33·3% had had full bowel preparation and 3·2% had received IV sedation at flexible sigmoidoscopy.
Conclusion: Short term mortality following flexible sigmoidoscopy was significant. A proportion of patients received full bowel preparation, presumably with the intention of performing colonoscopy. The subsequent recording of a flexible sigmoidoscopy has implications for the accurate recording of colonoscopy completion rates. Careful patient selection, optimisation of co-morbid medical conditions and reduced use of full bowel preparation and IV sedation are likely to lead to improvements in short-term outcomes. Prospective examination of cause of death following flexible sigmoidoscopy in the elderly is required.

Audit and Outcomes Research 1029

A Comparison of the Rate of Surgical Site Infection (SSI) in Laparotomy Patients Undergoing Pre-Operative Skin Preparation with Chlorhexidine-Alcohol versus Aqueous Povidone-Iodine

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Aims: SSIs contribute to almost a 1/4 of all healthcare-associated infections and are associated with increased morbidity and extended hospital stay. We assessed the rate of SSIs between laparotomy patients having received aqueous povidone-iodine versus alcoholic chlorhexidine pre-operative skin preparation.
Methods: All adult patients having elective or emergency laparotomy at our centre, over a 6-month period were identified from theatre records and clinical coding. The skin preparation solution used in each case was ascertained from direct questioning of the operating surgeon and from operation notes. Clinical outcomes were identified from case notes and then cross-referenced with the official department of microbiology database to obtain a complete picture of the rate of SSI within 30 days of laparotomy surgery.
Results: 45 patients were identified (26 M, 19 F) - 30 were emergency and 15 were elective laparotomies. Mean Length of Stay (LoS) for the chlorhexidine group was 13·9 days, SD 7·8. Mean LoS for the povidone-iodine group was 15·4 days, SD 14·5. *Emergency laparotomy*
Results: Chlorhexidine was used in 33% and povidone-iodine in 67% of patients. In the chlorhexidine group: 2/10 developed SSI. In the povidone-iodine group: 6/20 developed SSI of which 4 had clean-contaminated wounds, 1 was contaminated and 1 was dirty according to the CDC classification of surgical wounds. One patient was diabetic. *Elective laparotomy*
Results: Chlorhexidine was used in 13% of patients and povidone-iodine in 87%. In the chlorhexidine group: 0/2 developed SSI. In the povidone-iodine group: 2/13 developed SSI, both had clean contaminated surgical wounds, neither patient was diabetic.
Conclusions: We found the incidence of SSI was lower in laparotomy patients receiving chlorhexidine over povidone iodine pre-operative skin preparation. Implementing a change in practice whereby chlorhexidine is primarily used for skin antisepsis could improve patient outcomes and reduce hospital stay.

Audit and Outcomes Research 1039

Success Rates of Peripheral Venous Catheter Insertion Among Foundation Year One Doctors

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Aims: To assess how successful foundation year one (FY1) doctors are at inserting peripheral venous catheters (PVC)
Methods: A proforma was displayed in the Junior doctors' office in a busy surgical receiving unit. FY1 doctors were asked to complete this proforma every time they cannulated a patient in the surgical receiving unit. The proforma documented the age, sex, site of the peripheral venous catheter and how many times the FY1 tried to insert the PVC before they were successful. The data was then collated and recorded in Microsoft Excel.
Results: Data for a 173 patients were obtained. 126 (72·8%) patients were successfully cannulated after one attempt. 29 (16·8%) patients required a second attempt before the cannula was successfully inserted. 5 (2·9%) patients required threee attempts and 1 (0·6%) patients had 4 attempts. 9 (5·2%) out of the 173 required to be escalated to someone more experienced for cannula insertion, and 3 (1·7%) patients were not successfully cannulated despite senior input.
Conclusions: Only 72·8% of patients were successfully cannulated in one attempt. There are currently no set standards on the success rates of cannual insertion. However there may be multi-factorial causes for this success rate, which includes quality of insertion technique, patient factors (quality of veins, obesity, hydration status, history of intravenous drug abuse). Although patient factors would be difficult to improve upon, the quality of insertion technique could be improved in order to increase success rates.

Audit and Outcomes Research 1042

Patient Survey Identifying Patients Preferred Site for Peripheral Venous Catheter Insertion

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Aims: To identify patients preferred site for peripheral venous catheter insertion.
Methods: A questionnaire was created which asked the following:

- Patients age
- If they have had a cannula inserted on this admission (Y/N)
- How many times they would allow a junior doctor to attempt inserting a peripheral venous catheter before they should ask someone more senior?
- Which is their preferred side of insertion?

Patients admitted to general surgical wards were individually asked the above questions and the data was collected on Microsoft Excel.
Results: 60 patients were indentified over 3 separate days in 2 general surgical wards.
The average age of the patients was 57·65.
On average patients state that junior doctors should have 2·4 attempts at inserting a peripheral venous cannula and should consult someone of greater experience if further attempts are to be made.
60% of patients state that the back of the hand was the ideal place ti have a cannuale inserted. 25% stated that the forearm was adequate, and 15% stated that the antecubital fossa was preferred.
Conclusions: Patient's preferred site of peripheral catheter insertion is the back of the hand. Furthermore, patients feel that junior doctors should have 2·4 attempts at inserting a cannula after which they should consult someone more experienced.

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Audit and Outcomes Research 1078

The Outcomes of Adult Appendicectomy at a District General Hospital

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Aims: The aim of this audit was to review all appendicectomies performed over a 10-month period, analysing the complication rates and reasons for these complications.

Methods: We performed a retrospective analysis of all adult appendicectomies performed at our institution from 05/10/2012 to 09/08/2013 with nil exclusions, using case notes and online data, including discharge letters, drug chats, histology results and operative notes.

Results: 130 adult patients had appendicectomies performed in this period. The male to female ratio was 1·36:1. The mean duration of symptoms was 2·0 days (range 1–14 days). 53 (40·8%) patients received no imaging, 31 (23·8%) had abdominal ultrasounds and 29 (22·3%) received a CT abdomen and pelvis prior to operative intervention. The procedure was performed laparoscopically in 82·4%, open in 10·7% and conversion to open in 6·9%. 14 (10·8%) patients had operations lasting longer than 2 hours. The diagnostic accuracy was 85%. 85 patients had severe, complicated, or perforated appendicitis, of which 30 (35·3%) received less than the recommended 5-day post-operative course of antibiotic treatment. There were 22 (16·9%) complications comprising of 14 (10·4%) intra-abdominal collections, 3 (2·3%) Ileus, 2 (1·5%) wound infections, 1(0·7%) bowel obstruction and 2 (1·5%) other (pulmonary oedema and urinary retention). 17 (77·2%) of the 22 complications occurred in patients who had one or more of the following variables: presentation two days after onset of symptoms, operation longer than 2 hours, or severe appendicitis with incomplete antibiotic treatment.

Conclusions: The risk factors for developing complications were presentation greater than 2 days after onset of symptoms, operating time longer than 2 hours, and severe appendicitis with incomplete antibiotic therapy.

Audit and Outcomes Research 1084

Laparoscopic Cholecystectomy: Indications, Waiting Time and Complications

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Aims: Laparoscopic cholecystectomy is the gold standard management of gallstone disease. In cases of gallstone pancreatitis, cholecystectomy should be performed within two weeks. This audit will review cholecystectomies performed within the general surgical department at a district general hospital looking at indication, waiting time, readmissions while waiting and complications.

Methods: Cholecystectomies performed between August 2011 and August 2012 were identified by coding. Data was retrieved retrospectively from the Meditech system.

Results: 319 cholecystectomies were performed; 94% were elective procedures and 6% emergency. 69% were performed for simple biliary colic alone, 15% for cholecystitis and 9% for pancreatitis.

The median time to procedure was 4 months. For emergency procedures this was 3 days. For patients diagnosed with gallstone pancreatitis the median wait was 2 months; only 23% were performed within the recommended 2 weeks.

13% of patients were re-admitted to hospital while awaiting cholecystectomy and 32% attended A&E.

2% of procedures were converted to open, though 10% for emergency procedures. 7% had documented complications including bile leak and small bowel injury. There were no bile duct injuries.

Conclusions: Guidelines for urgent cholecystectomy in gallstone pancreatitis were not met for the majority of patients during this audit period. Readmissions while awaiting cholecystectomy are frequent. We propose to re-audit with a surgical ambulatory care unit surgical ambulatory care unit running dedicated emergency and urgent cholecystectomy lists.

Audit and Outcomes Research 1091

Peptic Ulcer Disease: Has a Decade of Experience Improved Outcomes?

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Aims: Peptic Ulcer Disease (PUD) is classified as a breach in the mucosal surface of the gastrointestinal tract, resulting from the caustic effects of pepsin and acid secretions into the gastrointestinal lumen. PUD can be subdivided into Gastric Ulcers (GU) and Duodenal Ulcers (DU).

PUD is a relatively common condition which carries the potential for significant mortality and morbidity, as well as a significant economic burden on the National Health Service. There has been a growing trend within the Primary Care setting of the prescription of Protein Pump Inhibitors for patients describing symptomatology of dyspepsia.

The aim was to ascertain the multifactorial elements of PUD and whether '*improvements*' in medical management and resulted in beneficial outcomes.

Methods: A retrospective analysis of 422 cases of GU and DU over a 10 year period at a single institution was performed. Correlation was examined between the nature of the ulcer, ethnicity, age, and socio-economic background, against the length of stay, need for further operative intervention, and outcomes in terms of mortality and morbidity.

Results: The results failed to demonstrate any correlation between improved positive outcome performance and advances in medical practice over the past 10 years.

Conclusions: Changes in Primary and Secondary Care management in PUD in the past decade have failed to improve outcomes in PUD and suggest much more work in this field is required.

Audit and Outcomes Research 1126

Audit of Emergency General Surgery in a Tertiary Trauma Centre: Are we Adhering to Guidelines?

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Aims: Guidance on emergency surgery issued by the Royal College of Surgeons states a consultant surgeon and anaesthetist should be present in all emergency cases with high predicted mortality and these should be performed promptly, in order to improve outcome. This audit aims to identify whether the guidance has been met in a tertiary referral centre (for trauma and general surgery) across a 3-month period.

Methods: Retrospective audit including all emergency cases between March-May 2013 (92 days) that were not performed in the dedicated trauma (orthopaedic) theatre. Cases were identified using electronic coding. Operation notes and clinical summaries were used for data collection and P-POSSUM scores were calculated.

Results: Overall, 473 emergency cases were performed outside the "orthopaedic trauma list", 67% of which were general surgical cases; 87 (18%) laparotomies and 148 (31%) complex major procedure were included. Also, 235 cases were clustered as high-risk (defined as any of the following: ASA ≥ 3, age ≥ 65, predicted mortality $\geq 5\%$). Median waiting time for a laparotomy was 3 hours (IQ range: 4:45) and for high-risk cases 4:50 hours (IQ range: 8:23). Consultant surgeons were present in 59% and anaesthetists in 78% of laparotomies, which however did not impact on mortality ($p > 0{\cdot}6$ in both cases).

Conclusions: The current set up of emergency surgery leads to delays in starting non-orthopaedic emergencies, which may impact on the outcome of emergency surgery, calling for a review of services in the trust and similar providers of emergency surgery.

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Audit and Outcomes Research 1129

Clinical Outcomes in Patients with Ultrasound Proven Biliary Sludge vs. Biliary Microlithiasis

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Aims: The current evidence based guidance suggests that symptomatic patients with radiological evidence of gallstones should receive intervention. However, the management for patients with a diagnosis of biliary sludge is unclear. The aim of our study was to compare the clinical outcomes and management decisions of patients diagnosed with biliary sludge and compare this with those diagnosed with biliary stones.
Methods: To identify our patients, we selected abdominal ultrasound scans reported in the period January-April 2012 at Aintree University Hospital in Liverpool. We included those scans where the report contained the terms "sludge" or "microlithiasis." We collected data including: symptoms, number of biliary related acute hospital admissions, total length of hospital stay and any interventions that were performed.
Results: 170 patients were included in this study. Of those, 82 patients had radiological evidence of microlithiasis and 88 patients had evidence of sludge. We found that 59·75% of the people with a diagnosis of gallstones were symptomatic, compared with 35·22% of those with biliary sludge. In total, 13·68% of the patients with biliary sludge had an intervention (either ERCP or cholecystectomy), and 35·36% of the patients with biliary stones had an intervention. 35·4% of the patients with symptomatic sludge had an intervention, compared with 55·1% of the patients with symptomatic stones. The average number of admissions was greater for patients with biliary stones (0·57 vs. 0·34) but the average length of stay was shorter (10·29 vs. 16·12).
Conclusions: Our study demonstrates that people with biliary stones have a higher number of admissions and are more likely to need intervention. However, over a third of patients with symptomatic sludge benefited from intervention. The evidence therefore suggests that the decision for intervention should be based on the patient's symptoms rather than on the radiological features.

Audit and Outcomes Research 1146

The Value of Routine Review of Surgical Admissions: The Doncaster Acute Surgery Handover (DASH) Database Experience

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Background The Doncaster Acute Surgery Handover (DASH) database was developed to facilitate accurate handover of emergency surgical patients and provide a resource for departmental audit. Details of emergency patients are prospectively entered onto the database on admission, with a diagnosis added on discharge. The aim of this study was to evaluate the utility of routinely reviewing emergency surgical workload.
Methods: Data was retrospectively retrieved from the database from all emergency surgical admissions over a 3 month period (Jun 2013 – Aug 2013). Missing diagnoses were identified through electronic discharge letters. Internal validity was checked by sampling of 50 admissions.
Results: There were 1459 admissions in the review period, of which 1358 (93·1%) had a diagnosis from the database (1018) or discharge letter (340). Internal validity was confirmed. Urological and vascular problems accounted for 15% and 4% of admissions respectively. Care was transferred to other specialties in 97 (6·6%). Gallstone disease (excluding pancreatitis) accounted for the majority of general surgical admissions (20·4%), followed by readmissions from previous surgery (9·6%), appendicitis (8·1%), abscesses (7·4%), trauma (5·7%) and small bowel obstruction (5·2%).
Conclusion: The use of a prospective database has improved handover and has led to accurate and contemporaneous data collection following most admissions. Routine analysis of this data has resulted in a departmental review of our capacity for provision of acute laparoscopic cholecystectomy. The higher than expected readmission rate for post-operative patients has become the subject of a further audit. Periodic review of robustly collected data of emergency patients may assist clinical governance and resource allocation decisions.

Audit and Outcomes Research 1147

Optimising the Requesting of Non-Contrast, Low Dose CT Urinary Tract in the Investigation of Renal Colic – A Quality Improvement Project

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Aims: Non contrast CT urinary tract is the gold standard investigation for renal colic. The majority of investigations are requested by junior members of staff who may not have a good understanding of the scans available for renal disease. Our quality improvement project aimed to improve requesting of CT scans through our electronic pathway by simplifying the nomenclature of the CT scan titles.
Methods: The first cycle of data were collected for CT requests in renal colic between 1st June and the 31st August 2013. CT title nomenclature was simplified as in the table below:

First cycle	Second cycle
CT renal both	CT renal both
CT urogram (IV)	CT urogram (IV contrast)
CT urinary tract low dose	CT urinary tract (stones/no contrast)

The second cycle was collected from the 1st October to the 31st December 2013.
Results: In the first cycle 76 patients underwent CT scanning for investigation of renal colic with 53 in the second cycle. The correct CT was requested in 46% of patient in the first cycle compared to 98% in the second cycle. All scans were amended by the radiology department and no patient underwent the incorrect investigation or received IV contrast inappropriately.
Conclusions: Our study has successfully improved requesting of CTs in the investigation of renal colic. This has reduced the workload for radiology and reduced the number of patient delays.

Audit and Outcomes Research 1149

Effectiveness of an ERAS Programme on Lowering Length of Stay – the Number Needed to Treat

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Aims: ERAS programs are designed to augment the body's stress response in order to expedite patient recovery and hence length of stay (LOS). We aim to assess the effect of an ERAS protocol on LOS as well as the number needed to be treated with ERAS for an effect on LOS to be seen.
Methods: A single-centre prospectively maintained database of 196 colorectal patients enrolled in an ERAS programme from April 2011 to April 2013 was compared with a pre-ERAS cohort of 101 patients from April 2010 to April 2011. Target LOS was 6 days for colonic procedures and 8 for rectal procedures.
Results: Age (71(48–95) vs 68(26–88), p = 0·223), male gender (52(51·5%) vs 116(59·2%), p = 0·205), rectal procedures (52(51·5%) vs 114(58·2%), p = 0·40), complex procedures (10(9·9%) vs 14(7·1%), p = 0·409) and laparoscopic procedures (27(26·7%) vs 73(37·2%), p = 0·069) were comparable between the pre-ERAS and ERAS groups as was mortality 1(1·0%) vs 3(1·5%), p = 1·0). LOS is significantly higher in the pre-ERAS group (13(4–69) days vs 10(4–121), p = 0·014) and target LOS was achieved more frequently in the ERAS group (55(29·4%) vs 16(16·5%), p = 0·017). For every 8 patients enrolled in the ERAS programme, 1 patient achieved the target LOS. ERAS compliance was a median of 16(7–20) elements overall with pre-op compliance of 60·5%, operative compliance of 45·1% and post-operative compliance of 5·1%.
Conclusions: The pre-ERAS and ERAS groups appear to have comparable characteristics. ERAS is associated with a reduction of LOS and an increased frequency of attaining target LOS. The number needed to treat with an ERAS protocol to achieve the target LOS is relatively high at 8 patients, suggesting that ERAS may not be a panacea for all patients. However, significant improvements to ERAS compliance could bring this number down and increase the success of ERAS further.

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Audit and Outcomes Research 1159

The Outcome of Octogenarians Undergoing Laparoscopic Colorectal Resection within a DGH

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Aims: Colorectal resections (CRs) in older patients are increasing, whilst NBOCAP data demonstrates increased mortality in this group. We assessed the uptake and outcome of octogenarians undergoing laparoscopic CRs.
Methods: A single-centre prospectively maintained database of 195 patients undergoing CRs enrolled in an ERAS programme from April 2011 to April 2013 was reviewed.
Results: 73(37·4%) CRs were performed laparoscopically, with a conversion rate of 11(15·1%). 25(12·8%) resections were performed in octogenarians, with 9(36·0%) laparoscopic resections.
Age (81(80–88) vs 82(80–88) yrs, p = 0·730), ASA grade (3(2–4) vs 2·5(1–3), p = 0·109)), BMI (27·5(4·2) vs 26·2(4·7), p = 0·243), male gender (5(55·6%) vs 9(56·3%), p = 1·0) and frequency of rectal procedures (4(44%) vs 4(25%), p = 0·394) were comparable between octogenarians undergoing laparoscopic and open CRs. The laparoscopic group sustained fewer post-operative complications 2(22·2%) vs 11(68·8%), p = 0·041), and a reduced length of stay (LOS) (7·5(5–39) vs 10·5(5–34) days, (p = 0·218), although not statistically significant. Readmission (1(11·1%) vs 1(6·3%), p = 1·0) and reoperation rates (1(11·1%0 vs 2(12·5%), p = 1·0) were comparable. Compared to their younger counterparts, octogenarians undergoing laparoscopy had a higher ASA grade (3(2–4) vs 2(1–3), p = 0·003), with higher rates of IHD (5(55·6%) vs 4(6·6%), p = 0·003). BMI (28(4·2) vs 28(5·4), p = 0·863), male gender (5(55·6%) vs 41(65·1%), p = 0·714) and frequency of rectal procedures (4(44·4%) vs 36(57·1%), 0·498) were comparable. Post-operative complications (2(22·2%), 32(50·8%), p = 0·158), readmission (1(11·1%) vs 6(9·5%), p = 1), and reoperation rates (1(11·1%) vs 6(9·5%), p = 1·0) were similar between the two groups, as was LOS (7·5(5–39) vs 7(4–31) days, p = 0·473).
Conclusions: Despite their older age and higher co-morbid load, octogenarians have a comparable outcome to their younger counterparts in laparoscopic surgery. Octogenarians also demonstrate a better outcome when undergoing laparoscopic CRs than open. In this cohort, these groups are homogeneous and clinician bias may be reducing uptake of laparoscopic surgery in the octogenarian. Laparoscopy should be considered in these patients as significant benefits may be attained.

Audit and Outcomes Research 1195

International Study Group of Pancreatic Surgery Classified Outcome Analysis of Pancreaticogastrostomy and Pancreaticojejunostomy Following Whipples Resection

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Aims: This study aims to compare complications, in accordance with the International Study Group of Pancreatic Surgery (ISGPS) classifications, between pancreaticogastrostomy (PG) and pancreaticojejunostomy (PJ) reconstruction following pancreaticoduodenectomy (PD).
Methods: Retrospective analysis was performed on prospectively collected data from all patients undergoing PD from March 2006 to September 2013 at a UK Tertiary Pancreatic Surgery Unit. Pancreatic fistula (PF), Delayed gastric emptying (DGE) and Post pancreatic haemorrhage (PPH) were recorded as per the ISGPS classifications. Fisher's exact test was used for statistical analysis.
Results: 272 patients underwent PD: 164 patients were reconstructed with PG and 108 with PJ. The groups were well matched. The age, BMI, proportion stented, proportion requiring portal vein resection, the relative proportions of ASA status, pancreatic consistency and duct dilation were not significantly different between groups. There were significantly more deaths in the PJ group than the PG (7·41% v. 1·2%, $P = 0·018$) with significantly more deaths from sepsis due to PF (PG 1 v. PJ 5, $P = 0·038$). Overall PF rates were similar between both groups (PG 14·6% v. PJ 19·6%, $P = 0·320$) but significantly more patients suffered Grade C PF in PJ (7·4% v. 1·2%, $P = 0·016$). PG experienced significantly more DGE (12·2% v 5·6%, $P < 0·001$). Intraluminal PPH was significantly more common following PG (5·5% v. 0·9%, $P < 0·01$). Significantly more patients requiring endoscopic intervention for intraluminal PPH (Grade C) in the PG group (4·3% v. 0%, $P = 0·044$). There was no difference in the incidence of extraluminal haemorrhage in either group (PG 1·2% v. PJ 1·9%).
Conclusions: This study demonstrates that despite differences in morbidity, PG has a significant mortality advantage over PJ reconstruction following PD.

Audit and Outcomes Research 1200

Avoidable Resections for Colorectal Polyps? A Single Centreu Experience

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Aims: Improvements in endoscopic mucosal resection (EMR) techniques mean larger polyps can be removed with less morbidity than colorectal resections, and can be thought of as the "most" minimally invasive technique. However, there is wide variation in practice among endoscopists. We examined the practice at a single centre to see if all appropriate polyps were being considered for EMR.
Methods: All colorectal resections performed for benign polyps in a single centre between Jan 2007 and Dec 2012 were identified from the local histopathological database. Medical notes and endoscopy reports were then reviewed to identify the reason for resection, to assess whether EMR had been considered, and identify any morbidity or mortality.
Results: 115 resections were identified (96 colonic, 18 rectal). 43 had coexisting carcinoma (39 colonic, 4 rectal), and 5 medical notes were unavailable. In 5/14 rectal and 11/52 colonic cases, dysplastic polyps were an incidental finding in resections carried out for other indications. In the remaining 9 rectal resections (5 male, median age 75 [44–85] yrs, median polyp size 40 [10–65]mm), 5 were deemed unsuitable for EMR (too large or low), one had an unsuccessful EMR, one was a multinodular recurrence following TEMS, and in 2 patients reasons for resection over EMR were unclear. There was one unrelated death at 34 months and one patient developed a local recurrence at 1 year and required a TEMS. In the remaining 41 colonic resections (23 male, median age 70 [51–85]yrs, median polyp size 35 [5–100]mm), 12 were deemed unsuitable for EMR, 10 "looked malignant", 9 had attempted but incomplete EMR, 6 had previous EMR with recurrence, 2 resections were carried out for patient choice, one patient could not be endoscoped, and reasons were unclear in one patient. There were 2 anastomotic leaks and one unrelated death at 15 months.
Conclusions: In this series the majority of resections were appropriate, however, 24% of colonic resections were probably not appropriate. The decision making process was not always clear in the notes. We suggest the need for a "polyp MDT" to ensure all appropriate cases are considered for EMR by an experienced endoscopist. All endoscopists should identify polyps that are potential candidates for EMR so that inappropriate biopsies that may result in EMR being unsuccessful are avoided.

Audit and Outcomes Research 1207

Cystic Duct Stones During Laparoscopic Cholecystectomy are Associated with Bile Duct Stones

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Aims: Cystic duct stones (CDS) are occasionally encountered during laparoscopic cholecystectomy (LC). The aim of this study was to evaluate the association between CDS and common bile duct (CBD) stones.
Methods: Prospectively collected data for patients undergoing laparoscopic biliary surgery over 20 years (n = 3607) was analysed. We reviewed the data for patients who were found to have cystic duct stone.
Results: Cystic duct stones were documented in 529 cases (14·6%). The average age was 57years (range 15–89 years). 73% were females and 27% were males. The preoperative risk factors were acute biliary pain (32%), acute cholecystitis (8%), pancreatitis (11%), jaundice (22·4%) and acute cholangitis (3·4%). American Society of Anaesthesiologists (ASA) score was as follow: ASA1 (37·6%), ASA2 (41·2%) ASA3 (12·9%) and ASA4 (0·4%).

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Difficulty grading of gallbladder was as follow: GI in 113 cases (21·3%), GII in 156 cases (29·4%), GIII in 143 cases (27%), GIV in 105 cases (19·8%) and GV in 4 cases (0·7%). Gall bladder dissection had to be carried out fundus-first in 24 cases (4·5%). The CD was reported to be wide in 181 cases (34%).
Simple removal of the stones was possible in most cases occasionally CDS needed be crushed or the CD incised in order to facilitate delivering the stone, conversion to open surgery was necessary to deal with a difficult Gall bladder in 2 cases (0·3%). Intraoperative cholangiogram (IOC) was attempted in all cases; it was normal in (53%), and failed in (1·8%).
CBD stone were found in (37·4%) of CDS cases. Preoperative risk factor for CBD stones were present in 268 cases (50%), only 141 cases (52%) proved to have CBD stones. 57 patients (28·7%) with cystic duct stones and bile duct stones had no preoperative risk factors for BD stones.
Conclusions: 37·4% of cystic duct stones were associated with bile duct stones. Moreover the CDS was the only risk factor for CBDS in (28·7%). Therefore even if IOC is not carried out on a routine basis, it becomes mandatory if CDS are encountered intra operatively.

Audit and Outcomes Research 1217

A Difficulty Grading System for Laparoscopic Cholecystectomy

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Aims: The aim of this study was to describe a difficulty grading system for laparoscopic cholecystectomy aiming at standardizing the description of operative findings, planning the management, predicting the outcomes, and facilitating comparison of studies from different centres.
Methods: Prospectively collected data for patients undergoing biliary surgery over 20 years (n = 3607) was analysed. Laparoscopic cholecystectomies (LC) were classified prospectively into five difficulty grades based on the appearance and condition of the gallbladder (GB), the anatomy and ease of dissection of the cystic pedicle, and the presence of adhesions around the gallbladder.
Results: Difficulty grading was recorded for 3563 LC as follow: Grade I in 34·3%, Grade II in 31·1%, Grade III in 19·3%, Grade IV in 14·3% and Grade V in 0·78%.
Mean age was 50 years, 23% of patients were males, and 37·4% of cases were emergencies.
Difficult gallbladders were associated with male gender (41% in GIV), age above 50y (73% in GIV and 85% in GV), emergency admission (65% in GIV and GV), acute cholecystitis (29% in GIV), previous cholecystitis (17·5% in GIV and 23% in GV), thick walled GB in preoperative US (42% in GIV and GV).
Intraoperatively, difficult gallbladders were associated with cystic duct stone (20% in GIV and GIII), common bile duct stones (35% in GIV and GV).
Fundus first dissection of the GB was performed more frequently in GIV 11·3% and GV 39%. Conversion to open rate was significantly higher in GV 32% and in GIV 2·1%, when compared to overall rate of 0·7%. Surgical drain was used more frequently in GIII 70%, GIV 92% and GV 85%.
Surgical gallbladder perforation, operative time, hospital stay and morbidity were consistent with increasing difficulty grading.
Conclusions: Preoperative risk factors for difficult GB were male gender, age above 50y, emergency admission, previous and acute cholecystitis and US finding of thick walled GB. Difficulty grading may help the surgeon planning surgery and avoiding complications. It is a useful classification of laparoscopic cholecystectomy for descriptive, training and audit purposes.

Audit and Outcomes Research 1225

Routine Use of Drains During Kidney Transplant Operation: Are They Essential?

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Aims: Data are sparse evaluating the utility of drains inserted during kidney transplant (KTx) operation. The cost of one drain (including insertion and removal) equates to £13·41 per patient, and in a centre performing 150 procedures, the cost escalates to about £2000 per year (excluding labour costs) for a single drain.
Methods: Retrospective univariate analysis comparing the post-transplant outcomes between the cohorts with and without a drain insertion during KTx operation in consecutive adult patients in a single centre. The study period was 01/2013 through 07/2013, with a median follow-up of 9 months (range 6–12).
Results: Of the 112 KTx performed during the study period, 80 (71·4%) had drain (DY) and 32 (28·6%) did not (DN). Of DY patients, 59% has 2 drains inserted and 41% one drain. Comparison of DY and DN cohorts showed that the wound complication rates were similar [6 (7·5%) DY vs. 2 (6·2%) DN, p = NS]. There was 1 lymphocele requiring percutaneous drainage in DN group, 4 haematomas (1 in DN and 3 in DY, of which 1 haematoma in DY group required re-exploration), 2 wound dehiscences in DY and 1 wound cellulitis in DY. The incidence of ureteric complication was significantly higher [4 (5%) DY vs. 0 DN, p = 0·04], and vascular complications was slightly higher [2 (2·5%) DY vs. 0 DN, p = 0·16] in the DY compared to the DN group. Incidence of delayed graft function was similar [32% DY vs. 37% DN, p = NS]. There was no significant difference in patient survival [99% DY vs. 97% DN] or death-censored kidney allograft survival [98% DY vs. 100% DN, both p = NS]. There was no significant difference in the initial length of post-operative hospital stay between the 2 groups (median length was 8 days in both)
Conclusions: The results of our study suggest that the prophylactic usage of drain during kidney transplant operation may not be essential, and impacts additional resource utilisation. However our study is retrospective and limited by small numbers, and may benefit from a random controlled trial for a definitive conclusion.

Audit and Outcomes Research 1234

Impact of Risk Stratification in the Management of Differentiated Thyroid Cancer: A Systematic Review and Meta-Analysis of Outcomes

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Aims: Despite validated risk stratification systems for differentiated thyroid cancer (DTC), the extent of intervention in low risk disease remains variable. No trial has addressed the impact of risk-stratified (RS), compared with non-risk-stratified (NRS) approaches. The perioperative/safety, disease-control and survival outcomes of RS, compared to NRS management in DTC were compared through systematic review and meta-analysis of the literature.
Methods: A tool was developed to enable objective, reproducible assignment of RS/NRS, accounting for the combination of extent of thyroidectomy, nodal surgery, radioiodine, and study population. Accurate RS/NRS category assignment of any study was essential inclusion criterion; other criteria included primary management among DTC only, with relevant outcomes data. Due to data complexity, only English language reports were retrieved, from MEDLINE and EMBASE 1970–2012. Risk of bias was assessed using a specific, validated tool for case series.
Results: 76 datasets were identified, with no randomised trials nor prospective comparative series. Patients, disease and practice were described and compared, confirming significant variation in practice. Weighted mean effect sizes were calculated and compared for RS/NRS cohorts' outcomes. Sensitivity analysis was performed around population and practice items. Broad equivalence was demonstrated across safety, disease-control and survival outcomes for RS/NRS approaches, with trends for better safety and disease-control outcomes in RS.
Conclusions: Lack of time-specific data and variations in definitions (relevant to both interventions and outcomes) were significant limiting factors in analysis. Systematic methodology allowed robust comparison of approaches, confirming equivalence for rationalised, risk-stratified management of DTC - indicative of need to avoid over-treatment.

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Audit and Outcomes Research 1249

List Planning for Laparoscopic Cholecystectomy: Factors Affecting Operative Time

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Aims: Accurate operative list planning optimises use of the theatre resource. Our study aims to investigate operative time in laparoscopic cholecystectomy and identifies patient risk factors that affect this and could enable better list planning.
Methods: Data was collected for all patients undergoing elective laparoscopic cholecystectomy between October 2007 and March 2010. Operative time, mode of presentation, gallbladder wall thickness on ultrasound and any unplanned gallbladder related admissions in patients while on the waiting list for surgery were recorded.
Results: There were 804 patients identified with a median age of 55 (range 16–91). The majority of patients, 543 (67%) were listed for surgery following a routine outpatient appointment with the remaining 261 (33%) being listed following an emergency admission for gallstone related disease. The median operative time was 42 minutes (range 10–240 minutes). This was significantly longer in patients who had been listed for surgery following an emergency admission for gallstone related disease, 49 minutes ($P < 0{\cdot}001$) as well as patients with an unplanned admission whilst on the waiting list for surgery 54 minutes ($P = 0{\cdot}014$) and those with a thick walled gallbladder confirmed on ultrasound imaging 48 minutes ($P = 0{\cdot}012$).
Conclusions: More accurate list planning to avoid under or over runs is likely to result if the factors identified above are considered.

Audit and Outcomes Research 1276

Effects of Incorrect Clinical Coding on Day Surgery Readmission Rates

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Aims: Readmission rates are used as performance indicators of surgeons and hospitals. Incorrect coding of readmission rates can have adverse effects on performance indicators of surgeons and hospitals and effect funding of hospitals.
Methods: Last 50 consecutive cases coded as day surgery readmissions (30 days within procedure) were identified. 48 out of 50 cases were accessible. Notes and electronic patient records of the identified cases were reviewed.
Results: 17 cases (35%) coded as day surgery readmission were readmissions following endoscopy performed by surgeons. 1 case (2%) coded as day surgery readmission was a planned admission under the abscess pathway. 1 case coded as day surgery readmission was of a cancelled flexible sigmoidoscopy on a surgeon's list following complaint of chest pain and being referred to the emergency department. In total 19 cases (40%) were identified incorrectly as day surgery readmissions.
Conclusions: Clinical coding needs to be done more diligently. Accuracy in clinical coding will help improve performance indicators of surgeons and hospitals as well as improve funding issues of hospitals. More work needs to be done to review clinical coding and how it may be improved nationwide.

Audit and Outcomes Research 1285

General Surgical Weekend Handover – Improving Patient Safety and Helping to Reduce Mortality Rates

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Aims: An audit on general surgical weekend handover was conducted. With seven general surgical teams, it was noted that weekend handover was notorious for often not happening and handover was limited. This was significantly hindering the efficacy of surgical teams managing patients, putting patient safety and care at risk. This audit was conducted to compare the current handover to the quality standards for handover to identify weaknesses and introduce a more effective handover ensuring patient safety is paramount.
The aims included:

- Assessing compliance with attendance at handover
- Identifying who is handing over and methods of handover.
- How effective handover is for weekend teams alongside observing weekend mortality rates.

Methods: A pro-forma that was completed at each surgical handover identified methods, details, members handing over and absentees.

- Mortality rates at weekends were calculated.

Results: Mostly FY1s handing over verbally

- Not all teams present
- Handover often interrupted
- High weekend mortality rates

Conclusions: This audit highlighted the importance of good handover as a key duty of a doctor (GMC Good Medical Practice Guidelines). Simple changes like our collated list can improve patient care. Further improvements to handover based on key standards from the Royal College of Surgeons and the BMA have been agreed upon such as a bleep free environment, set handover room and time, mandatory 70% attendance record, leadership of handover, mandatory teaching and training in good handover techniques and continual training on use of the new universal handover list.
Good communication and team commitment is vital for patient care and successful continuity of any change in procedures.

Audit and Outcomes Research 1306

Can PR Bleed be Safely Treated Using an Ambulatory Pathway?

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Aims: PR bleed is a common presenting symptom to the acute surgery unit. Anecdotally it rarely seems to require surgery and frequently no transfusion is needed. Based on this the old teaching of admitting to observe in case of life threatening haemorrhage seemed to be wasting bad day occupancy on a surgical unit. However, given the potential risk in not admitting, is there any criteria on which to safely treat part of this group in an ambulatory fashion?
Methods: An audit was made retrospectively of all admissions with PR bleed to a large university hospital over a cnsecutive 6 month period from January - June 2013. Several parameters were collected and the data analysed to see if a group could be identified that can be safely treated in an ambulatory fashion.
Results: 65 patients were admitted over the study period with a PR bleed. The median age was 75 years (range 25–98 years). 13 patients required a blood transfusion and no patients required surgery. Of the 13 patients all either had prior anticoagulant therapy and or an admission haemoglobin count of <105 g/dl.
Conclusions: Patients presenting with simple PR bleeding that are haemodynamically stable,not on anticoagulants (warafarin or clopidogrel) and have an Hb of 105 or higher on the admission full blood count never require transfusing and could be treated on an ambulatory care pathway. Perhaps with hot clinic follow up at 24 hours to ensure they remain well and an out patient flexible sigmoidoscopy to confirm cause of PR bleed.

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Basic and Applied Clinical Science

Basic and Applied Clinical Science 0227

Colonic Length and Mobility: Is there Scope for More Research?

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Aims: Loco-regional variation in the human colon is important in surgical practice; the length and mobility of different colonic regions impacts on laparoscopic and endoscopic colorectal procedures. This study aims to refine anatomical understanding of the colon, in terms of segmental length and mobility.
Methods: The colons of 35 cadavers were examined to determine lengths of ascending, transverse, descending, and rectosigmoid colon, and to characterise colonic mobility at each location in terms of the mesenteric attachments. The presence of Jackson's membrane (a congenital peritoneal band of the right colon) was also noted.
Results: The mean total colonic length was 131·2 ± 13·4 cm. There was no correlation with height, age or gender; the best predictor of total colonic length was the length of the rectosigmoid segment. The length of the transverse mesocolon was 7·4 ± 3·6 cm, and that of the sigmoid mesocolon was 6·3 cm ± 2·6 cm. Two thirds had a mobile portion of the ascending; nearly one third had a mobile descending colon. A mobile ascending colon was significantly more common in females. Jackson's membrane was present in 66%.
Conclusions: This cadaveric study suggests that rectosigmoid length accounts for most of the variability in total colonic length. The significant proportion of colons with mobility of the ascending and descending segments prompts revision of the traditional anatomical teaching of these segments as fixed and retroperitoneal. Mobility of the ascending colon may account for the anecdotal finding that colonoscopy is more challenging in females. Jackson's membrane was identified in most colons.

Basic and Applied Clinical Science 0243

Evaluation of a Tissue Stabilisation Gel to Facilitate Clinical Sampling in Translational Surgical Trials

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Aims: Tissue sampling for translational research traditionally requires liquid nitrogen and archiving facilities in a −80 °C freezer. These facilities are not routinely available outside the teaching hospital environment. We aimed to establish the feasibility of using a tissue stabilisation gel (Allprotect^{TM}) to facilitate collection of clinical samples for translational research in surgical trials.
Methods: Tissue was sampled from colorectal tumours (n = 5) and divided into 10 fragments, 5 of which were processed immediately after removal of the surgical specimen in one of the following manners: (1) - snap frozen in liquid nitrogen, (2) - gel at room temperature, (3) - gel at 8 °C, (4) - gel at −20 °C and (5) - gel at −80 °C. The remaining 5 fragments were left in theatre and then processed at the end of the operation as above. Protein content was compared by gel electrophoresis, Coomassie staining and western blotting. Protein function was compared by LC-MS/MS. RNA and DNA extraction was compared using a Qiagen^{TM} Quality Control-RT array and qPCR.
Results: Coomassie staining and western blot analysis (for HMGB1 and CES1) was comparable irrespective of stabilisation technique ($p < 0{\cdot}05$, Dunnett's test). Mass spectrometry demonstrated similar SN38 production in all samples following incubation with irinotecan. RNA retrieval was consistently high, with no impurities and comparable nanodrop indices/RIN. Similar Ct values at qPCR were found for mRNA for HMGB1 and CES1 ($p < 0{\cdot}05$). miRNAs were also preserved. Comparable DNA was extracted from all samples with reproducible KRAS testing.
Conclusions: Samples stabilised in Allprotect^{TM} are comparable to those snap frozen in liquid nitrogen for the extraction and downstream utilisation of all 3 biomolecules studied. There was no difference observed when samples were stabilised at the end of the operation, removing the need for additional personnel. Allprotect^{TM} adequately permits the acquisition of clinical samples for translational research and may be of most benefit outside the teaching hospital environment.

Basic and Applied Clinical Science 0303

Genomic Biomarkers of Oesophageal Cancer Survival and Response to Therapy

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Aims: Prognosis and response to treatment of oesophageal cancer remain poor and incompletely understood. There is an urgent need for biomarkers to help predict both, and guide clinical decision-making. Recent advances in next-generation sequencing have brought the potential for genomic sequence markers to the fore. We conducted a systematic review to identify, stratify and meta-analyse all evidence available for DNA sequence biomarkers, associated with clinical and pathological outcome for oesophageal cancer.
Methods: A systematic review and meta-analysis was performed of the PubMed, Embase and Cochrane databases in April 2013 to identify all markers reported to be associated with oesophageal cancer outcome.
Results: 3315 articles were identified, with 681 retrieved for evaluation. 514 of these were excluded (509 due to a lack of association with outcome, 5 due to incorporation of gene expression data). 167 articles, published between 1989 and 2013, met the inclusion criteria. 132 studies assessed markers within the context of clinical outcome; 87 markers were associated with outcome for which 44 individual metaanalyses were performed, Overall evidence quality was poor, with considerable methodological heterogeneity. Significant associations with survival were demonstrated on meta-analysis for mutant tumour p53, 8 germline polymorphisms, 1 null genotype (GSTT1), 2 tumour copy number variants (ERBB2/HER2 and CCND1), and chromosomal instability; mutant p53 was also associated with response to chemo(radio)therapy.
Conclusions: A large number of studies have assessed genomic sequence markers of oesophageal cancer outcome, yet few markers are backed by good quality evidence. The most robust evidence was available for p53 exon mutations, and ERBB2/HER2 and CCND1 copy number variants. This is the first study of which we are aware to demonstrate these associations by meta-analysis. Consequently, these are urgent candidates for assessment in larger, multi-centre robust prospective trials, to guide decision-making and assess their functional mechanisms.

Basic and Applied Clinical Science 0519

Role of Anal Pain in the Pathophysiology of Chronic Anal Fissure

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Aims: To study the different manometric data of patients with chronic anal fissure before and after the application of local anesthetics. Such study aims at studying the role of such commonly used medication which may throw the light on the pathophysiology of this disorder and create new perspectives regarding the management. All of this will deepen the insight towards better understanding of the anorectal physiology.

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Methods: Twenty Patients with chronic anal fissure, attending Kasr Al-Ainy outpatient clinic were included in this study. Patients associated with other specific anal pathology, previous anal surgery or any neurological disorders affecting pain perception were excluded from this study. The anorectal manometry was done before and after topical application of local anesthetic, its effects are measured by visual analogue pain scale.
Results: History of incontinence (65%, with varying degrees,) in many of our studied patients raise the importance of anorectal physiology studies in the management and decision making even in simple anorectal disorders. Regarding the manometry results, there was significant decrease in resting anal pressures ($p = 0{\cdot}01$). However, anal squeeze pressures and endurance squeeze pressures were significantly higher ($p < 0{\cdot}01$) . Rectal pressure during the defecation trial increased significantly, indicating improvement in the defecation process ($p < 0{\cdot}01$). The threshold volumes for initiation of different rectal sensations (constant sensation, first urge, maximal tolerable volume) were also significantly higher ($p = 0{\cdot}02$-$0{\cdot}04$) Not only increasing the rectal capacity, but also decreasing the rectal pressures during urgency, improving significantly overall rectal compliance.($p = 0{\cdot}02$)
Conclusions: The effect of anal pain extends from just symptomatic discomfort to affect the highly integrated ano-rectum segment both in continence and defecation. This can only be explained by the high integration and interaction between the anal canal and the rectum. This subject is under further research in the colorectal research unit.

Basic and Applied Clinical Science 0520

Physiology of Cough Response and Insight on Pathophysiology of Stress Fecal Incontinence

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Aims: In this study, Anorectal manometry (with surface EMG recording whenever possible) is used to assess normal physiological response to cough in normal control patients (twenty patients). The study will extend to include patients presenting with stress fecal incontinence, comparing both groups of patients. This may help not only better understanding of different physiological mechanisms underlying such condition, but also may open new pathways in the management of stress fecal incontinence.
Methods: Anorectal Manometry (using MMS pnemohydrolic capillary perfusion system, eight-channel catheter and computerized data analysis -MMS analysis software 2009) will be done to twenty normal control patients, studying cough reflex and will extend to include patients presenting with stress fecal incontinence (It will be presented as preliminary results)
Results: The study included twelve males and eight females normal controls; with age range of 18 to 48 years old. Timing is zero at start of increased rectal pressure curve. The increase in anal sphincter pressures precedes that of rectal pressure by 0·2 (0·16-0·3) msec. There was no significant difference in timing between the peak of rectal pressure and anal pressure. The end of increased rectal pressure curve is at 0·6 msec from the start. However, anal sphincters remains contracted afterwards about 0·2 msec (total time of increased anal pressure equals =0·8 msec). The average rectal pressure during cough reaches 38 mmHg, while the maximal pressure is 73 mmHg. The average anal pressure during cough is 87 mmHg , and maximal anal pressure reaches 104 mmHg. Preliminary results of the study on patients with stress fecal incontinence reveals either weak sphincters or problem with the timing of anal contraction either with or without weakness.
Conclusions: The anal sphincter contraction precedes and remains contracting even after the increased rectal pressure evident by manometry & EMG. he anal sphincters contraction represents an integral part of the whole dynamic cough response, with high integration timing and pressure increase evident from the previous manometric study. Early findings in stress FI may help pre-programming of the sphincters with biofeedback protocol in patients with timing problem.

Basic and Applied Clinical Science 0561

Enhanced Mesenchymal Stem Cell Immunomodulatory Potency Through Intracellular Microparticles

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Aims: Inadequate immunomodulatory potency of mesenchymal stem cells (MSC) may limit their ability to treat numerous inflammatory conditions, with clinical studies yielding mixed results. Here we show that budesonide significantly augments MSC expression of indoleamine-2,3-dioxygenase (IDO), a primary mediator of MSC immunomodulatory function. We additionally describe a strategy to continuously expose MSC to budesonide using intracellular microparticles (MP), potentially allowing control over MSC potency post-translation. This could be employed in conditions such as inflammatory bowel disease (IBD) and tissue allograft rejection in reducing the surgical burden and the side-effects of immunosuppression.
Methods: To simulate the inflammatory environment, human MSC were pre-treated with IFN-γ. IFN-γ-MSC were treated with free budesonide, budesonide-MP and blank MP. The immunosuppressive effects of IFN-γ-MSC were assessed by quantifying IDO expression and by co-culturing them with peripheral blood mononuclear cells stimulated by CD3/CD28 Dynabeads.
Results: Free budesonide increased IFN-γ-MSC IDO expression. Continuous exposure of IFN-γ-MSC to budesonide was achieved by allowing MSC to internalise budesonide-MP. Compared with blank MP, internalised budesonide-MP increased IDO expression 5-fold. During co-culture, IFN-γ-MSC loaded with budesonide-MP (BUD-MSC) decreased proliferation of and IFN-γ secretion by stimulated PBMC. Inhibition of IDO by 1-methyl-tryptophan completely abolished these effects, implicating IDO as a primary mediator of BUD-MSC immunosuppressive effects.
Conclusions: Intracellular microparticles that continuously release drugs to the host cell may offer stronger and longer-term enhancement of cellular function, compared with *ex vivo* small molecule pre-treatment. Given the ubiquitous benefits of IDO in inflammatory conditions, our strategy may improve the efficacy of MSC therapy in multiple clinical indications.

Basic and Applied Clinical Science 0648

Efficacy of a Laparoscopically Delivered Transversus Abdominis Plane Block Technique During Elective Laparoscopic Cholecystectomy; A Prospective Double Blind Randomised Trial

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Aims: The management of post-operative pain is paramount in order to facilitate the delivery of an efficient and effective day case surgical programme. In recent years, the complexity of procedures carried out has increased with a wider range of procedures, including laparoscopic cholecystectomy (LC) now considered suitable for day case surgery. The aim of this pilot study is to evaluate the impact of laparoscopic-assisted four-quadrant transversus abdominis plane (TAP) block versus peri-portal local anaesthetic wound infiltration in managing postoperative pain.
Methods: A prospective, randomized, double-blinded trial was performed on patients presenting to the surgical unit for elective LC. Patients were randomised using computerised "random number table" technique into a Test group which received laparoscopic-assisted TAP block with bupivacaine with peri-portal saline injection and a Control group which received a laparoscopic-assisted TAP block with saline and peri-portal bupivacaine. All patients received concomitant intra-peritoneal instillation of Bupivacaine in the gallbladder bed. Postoperative pain scores were recorded by two observers using visual analogue scores (VAS) at rest and during coughing and recorded at dedicated time points for 24 hours post procedure. Post-operative analgesic regimen was standardised for both groups and any additional analgesic requirements were recorded. Statistical analysis was carried out using Minitab V.18 with $p < 0{\cdot}05$ considered significant.
Results: To date 59 patients, (52f, 7 m) have been enrolled with 28 patients randomised to the Control group and 31 to the Test group. Age, ASA score

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and BMI were comparable between both groups. No adverse events were encountered with the administration of TAP blocks. VAS were significantly reduced in the Test group at 6 hours rest ($p < 0{\cdot}05$). Furthermore VAS was significantly reduced at 24 hours at rest and during coughing ($p = 0{\cdot}035$, $0{\cdot}037$) respectively. There was no statistical difference in post-operative analgesic requirements between both groups ($p > 0{\cdot}05$).

Conclusions: This preliminary analysis of postoperative pain scores has confirmed the therapeutic benefit of laparoscopically delivered TAP blocks in elective LC. As a result, this has now facilitated a policy of ambulatory LC in our unit.

Basic and Applied Clinical Science 0768

The Role of Dendritic and T-Cell Function and Migration in the Development of Cutaneous Wound Failure in Crohn's Disease

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Aims:

1 To characterise wound Dendritic Cells (DCs) that have not been previously identified
2 To assess changes in immune cell migration and function from blood and wound tissue (WT) in Crohn's Disease (CD).

Methods: Peripheral blood mononuclear cells from CD patients and non-CD patients with perineal wounds were obtained by centrifugation over Ficoll-gradient. WT cells were obtained by walk-out assay culturing biopsies overnight with collection of cells migrated in the supernatant. Expression of tissue-homing molecules was determined on DCs and T-cells by flow cytometry. DCs were co-cultured with T-Cells in a 5-day mixed leucocyte reaction to analyse DCs stimulatory capacity and their ability to imprint homing properties on T-Cells.

Results: Expression of skin-homing molecule (CLA) was reduced on DCs in CD WT compared with control ($48{\cdot}3\% \pm 8{\cdot}2$ vs.$69{\cdot}9\% \pm 4{\cdot}7$, $p < 0{\cdot}05$).
T-Cell proliferation was significantly reduced upon culturing WT and blood DCs from CD patients. However, there was increased CLA expression on dividing T-Cells in CD compared with controls in blood ($28{\cdot}3\% \pm 3{\cdot}2$ vs.$12{\cdot}5\% \pm 3{\cdot}7$, $p < 0{\cdot}05$) and WT ($16{\cdot}7\% \pm 1{\cdot}1$ vs. $7{\cdot}1\% \pm 1{\cdot}5$, $p < 0{\cdot}05$).

Conclusions: These results suggest DCs migration is directed away from the skin in CD wounds, and stimulated T-Cells are directed towards. Furthermore, a reduction in the stimulatory capacity may reflect a loss of DCs function, potentially contributing to wound failure in CD.

Basic and Applied Clinical Science 0981

Using a Urea to Creatinine Ratio to Identify Obstructive Uropathy as a Cause of Acute Kidney Injury

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Aims: Acute kidney injury (AKI) is common amongst hospitalised patients and is associated with increased morbidity and mortality. Although the commonest causes of AKI are sepsis, acute tubular necrosis and pre-renal states, renal ultrasound (USS KUB) is often performed to detect hydronephrosis and urinary tract obstruction. Indiscriminate use of USS KUB is costly and labour intensive with low diagnostic yield (5%). Consequently targeted imaging is advocated. This study assesses use of a creatinine:urea ratio to identify patients with increased probability of an obstructive cause of AKI.

Methods: A retrospective observational cohort study of patients with stage 3 AKI or worse was performed over 3 months. Using 100 and 8 as respective upper limits of normal, a creatinine:urea ratio was derived. Patient imaging was reviewed and presence of hydronephrosis documented.

Results: 355 patients stage 3 AKI or worse were identified. 125 (35%) had upper tract imaging and 25% had hydronephrosis. Mean creatinine and urea were 452 (range 120–1331) and 24 (range 6·2-51) respectively. 45% of patients with a creatinine:urea ratio over 1·5 had hydronephrosis on imaging compared to 9% of patients with a ratio of 1·5 or less (OR 8·89, 95% CI 3·30,23·95).

Conclusions: This study highlights the high incidence of AKI and the indiscriminate use of USS KUB in patient work-up. A creatinine:urea ratio may be a crude but useful way of identifying patients with increased chance of an obstructive cause for AKI. Consequently initial management would be influenced by earlier finding of hydronephrosis. A ratio of 1·5 or less would not preclude using USS KUB, but imaging could be delayed until conservative management has failed.

Basic and Applied Clinical Science 1179

The Use of Cardiopulmonary Exercise Testing to Predict Risk and Post-Operative Levels of Care in Patients Undergoing Major Colorectal Surgery

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Aims: Cardiopulmonary Exercise Testing (CPET) is being gradually accepted as a useful means of predicting morbidity and mortality risks in major elective colorectal surgery. However, it is becoming clear that CPET provides additional information for the surgeon such as the likely post-operative level of care required. We investigated the calculated risk prediction by CPET and compared it to the established risk prediction afforded by the Physiological and Operative Severity Score for the Enumeration of Morbidity and Mortality (p-POSSUM), looking at concordance between the predicted risks, and additionally investigated the role of the individual parameters within CPET and their function in predicting the required post-operative level of care.

Methods: 169 patients undergoing major elective open and laparoscopic colorectal surgery between 2009 and 2013 in a District General Hospital were investigated. Full CPET testing was carried out on all patients and risk stratification performed. p-POSSUM values were then calculated on the same patients, and the results compared. The post-operative level of care afforded to the patients was noted, together with any variations from the level predicted by CPET. Post-operative morbidity and 30-day mortality were also calculated.

Results: 97 males and 72 females underwent surgery, with a mean age of 70·9 years (range 46–92 years). The mortality risk predicted by p-POSSUM was higher in all patients compared with CPET, and this was also true in high risk patients (defined by CPET as having 1:50 risk of death). The components of CPET, which were found to be most accurate in predicting the post-operative level of care for patients, were anaerobic threshold (AT), VO_2, FEV_1, VE/VCO_2.

Conclusions: p-POSSUM remains an important tool in predicting morbidity and mortality in emergency surgery. However, in elective major surgery such as colorectal surgery, the routine use of CPET and its comprehensive nature appears to be more accurate, as well as helping surgeons and anaesthetists plan for the likely level of post-operative care required, helping to minimise potential morbidity and mortality.

Basic and Applied Clinical Science 1257

MBL and the Acute Phase Response: A Factor in Post-Operative Infection Following Liver Resection?

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Aims: Mannose binding lectin (MBL) is an acute phase protein (APP) synthesised in the liver. Our aim is (a) to analyse patients undergoing liver resection for MBL "at risk" genotypes, MBL levels and infection, and (b) to assess the trend of APP after liver resection, and its association with hepatic dysfunction and infection.

Methods: Analysis of 28 patients admitted for liver resection to a single unit were tested for 5 different MBL alleles associated with reduced MBL levels, by DNA microarray-based PCR genotyping. Samples of acute phase proteins

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(MBL, CRP, haptoglobin, fibronectin and fetuin-A) were taken pre-operatively, then day 1, 4 and 7 post-operatively. Liver volumetry assessed residual liver volume. Presence of post-operative hepatic dysfunction and infection were recorded.

Results: Twenty patients underwent liver resection, with 8 undergoing laparotomy only due to extent of disease. Six patients (30%) carried an "at risk" MBL genotype, demonstrating low levels of MBL ($p < 0{\cdot}05$). Fifty percent developed infection (3/3) versus 23% of those not at risk ($p = 0{\cdot}32$).

Haptoglobin (D1, 4 &7), fibronectin (D1) and fetuin-A (D1) were all significantly lower in the liver resection group ($p = <0{\cdot}05$) compared to laparotomy only.

Six (30%) of patients developed hepatic dysfunction, and subsequently had lower haptoglobin (D1, 4 & 7) and fibronectin (D1) ($p = <0{\cdot}05$). Half of patients with hepatic dysfunction developed infection (3/3) versus 27·3% of the remaining patients with none/mild hepatic dysfunction.

Patients with lower haptoglobin (D1 &4) and MBL (D1) were at increased risk of infection ($p = <0{\cdot}05$). Haptoglobin on day 4 was the best predictor of infection, with area under the curve of 0·903.

Conclusions: In this ongoing project, a trend for MBL genotypes "at risk" and low serum MBL, thus increased infection was seen (not statistically significant). Infection increases in the context of impairment of certain acute phase proteins.

Basic and Applied Clinical Science 1290

Study of Cardiovascular Markers Clot After RyGB Surgery

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Aims: The study sought to determine the change in cardiovascular markers before and after bariatric surgery comparing normoglycemic and dysglycemic groups.

Methods: 31 patients (16 Normoglycemic, 15 dysglycemic) had cardiovascular markers measured before bariatric surgery and at intervals of postoperative day 3, 2 months and 8 months post-RyGB surgery. p-value 0·05 was considered statistically significant.

Results: BMI, waist circumference and waist-hip ratio dropped significantly in both groups ($p = <0{\cdot}001$ each). However difference among groups for BMI ($p = 0{\cdot}364$), waist circumference ($p = 0{\cdot}391$) and waist-hip ratio ($p = 0{\cdot}606$) at each observation time postoperatively was not found to be statistically significant. Fasting HbA1c reduced to 5·9% ($p = <0{\cdot}001$) at 8 months postoperatively in dysglycemic group while similar effect was observed in normoglycemic group ($p = <0{\cdot}001$).

Clot analysis showed overall effect of significant drop in maximum absorbance ($p = <0{\cdot}001$), clot initiation to 50% lysis ($p = 0{\cdot}003$), maximum clot formation to 50% lysis ($p = 0{\cdot}04$). However, clot formation time increased significantly in both groups ($p = 0{\cdot}001$). The difference between both groups for each of clot structure and function comparing both groups pre and postoperatively.

Conclusions: RyGB surgery significantly improved measures of visceral obesity. Clot structure and function was significantly improved after surgery irrespective of glycemic status of patients.

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Breast/Endocrine

Breast/Endocrine 0055

Should we be Operating on all Thyroid Cancers? The Paradigm of Papillary Thyroid Microcarcinomas

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Aims: Thyroid cancer is the commonest endocrine malignancy with a rising incidence. Wider access to imaging investigations has increased the detection of asymptomatic thyroid nodules known as "incidentalomas". This combined with the introduction of thyroid cancer screening programmes in certain countries has lead to a surge in the diagnosis of papillary thyroid microcarcinoma (PTMC). PTMC (<1 cm in diameter) generally follows an indolent course and carries an excellent prognosis. The aim of this evidence-based review is to assess whether all confirmed thyroid cancers require surgery or whether certain forms such as incidentally-detected PTMC can be safely dealt with conservatively contrary to popular belief.
Methods: A systematic review was conducted by searching the Cochrane Controlled Trials Register, Medline, EMBASE and Google Scholar databases from 1966 onwards. A total of 159 studies were retrieved. Based on design, number of patients and origin (high volume/specialised centres and national registries) 12 papers were identified that provided the best evidence to answer the question.
Results: The clinical behaviour of PTMC tends to be indolent and the associated prognosis excellent. The literature suggest that when PTMC is <5 mm, unifocal, confined to the thyroid parenchyma and there is no evidence of metastases or BRAF mutation, the risk of mortality is very low (<0·1%) - even without treatment. Cadaveric studies further confirm the high prevalence (6-36%) of subclinical PTMC in patients dying of other causes.
Conclusions: Patients diagnosed with incidental PTMC <5 mm confined to the parenchyma of the thyroid gland with no evidence of metastases, BRAF mutation, family history of thyroid cancer or history of ionising radiation exposure may opt for conservative management based on the reported findings. Serial ultrasound imaging with regular outpatient review may represent an alternative to surgery.

Breast/Endocrine 0062

Use of Autologous Fat Grafting for Reconstruction Post-Mastectomy and Breast Conserving Surgery: A Systematic Review and Meta-Analysis

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Aims: There is growing interest in the potential of autologous fat grafting (AFG) for breast reconstruction. However, concerns remains regarding it´s effectiveness, safety and intereference with mammography.
Methods: A protocol was published *a priori*. All studies investigating AFG for women undergoing reconstruction post mastectomy or breast conserving surgery for treatment of breast cancer were considered. We assessed six domains; Oncological, clinical, aesthetic/functional, patient reported, process and radiological. Electronic databases were searched to June 2013; additional grey literature searches were also performed. Two independent reviewers assessed eligibility of articles for inclusion and performed data extraction.
Results: 31 studies were included in this review (3,521 patients). Current studies have a median follow up of 14·8 months, and a high degree of patient and surgeon satisfaction over an average of 1·9 sessions. Fat necrosis is the commonest complication in 4·4% and the majority were *Clavien-Dindo* Grade 1. Other harms include further radiological investigation (interval mammograms in 11·5%) and the need for biopsy (2·5%) to exclude malignancy. The weighted mean recurrence rate was 4·4% at a median of 18·3 months. Restricting to moderate quality studies focusing on in-situ disease, the recurrence rate was 9·4%, compared with 1·6% in matched controls (p = 0·03).
Conclusions: AFG is a potentially useful tool within the armamentarium of those performing breast reconstruction. The need for long-term follow up is underscored by this review. High quality research is required to demonstrate long-term oncological ramifications and to determine the potential for AFG as a total breast reconstruction method.

Breast/Endocrine 0300

Breast Cancer in Symptomatic Patients who have Normal USS and/or Mammogram Findings; A Re-Audit

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Aims: There is little data published on the incidence of patients who present symptomatically to the breast clinic (with either a lump or thickening), and hav normal or benign findings on USS and/or mammogram, however subsequently have biopsy proven cancers.
The aim of our study was to determine this number in our centre over a 2 year time period, and compare this to our findings from the previous 2 year audit.
Methods: We called all of the patient's notes who were diagnosed with breast cancer between 1st October 2011 and 1st October 2013 in our trust.
We retrospectively reviewed all presenting complaints, radiology and histology findings, and multi-disciplinary team meeting decisions.
Results: In total we found 251 patients who were diagnosed with breast cancer during this period. Out of these, 7% (n = 18) had normal imaging initially, however had histologically confirmed breast cancer/in-situ cancer on FNAC/core biopsy of the symptomatic area.
This contrasts with 5% during the previously audited period (Oct 2009 – Oct 2011).
Conclusions: Our study shows that a significant proportion of patients presenting to the symptomatic breast clinic, who have normal imaging initially, will still have biopsy proven malignancies.
This highlight's the importance of a thorough triple assessment in all patients presenting to the breast clinic, irrespective of normal imaging reports.

Breast/Endocrine 0307

Suitable Protocols for Day Case Mastectomy - A Prospective Pilot Study

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Aims: We aimed to achieve day case status for patients undergoing mastectomies without compromising patient care
Methods: Ten patients were included in the prospective pilot study. Routine day case surgery inclusion criteria such as ASA status I/II and patient motivation to participate applied
Results: Care was given in preventing intraoperative hypotension,postoperative nausea and vomiting,early detection of postoperative bleeding and pain management.Intraoperative blood pressures were maintained to within 20% of their preoperative mean arterial pressure using a combination of intravenous fluids and small vasopressor boluses. Prior to closure of surgical field a target systolic blood pressure less than 20% of preoperative readings was intended as an aid to surgical haemostasis. Opiate and paracetamol analgesia were given alongside two antiemetics intra-operatively. Patients had a nurse led discharge from the ward with verbal advice, information leaflets and pain

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relief packs. Community follow up by district nurses to ensure progress and troubleshoot any difficulties encountered by patients were in place.Nine out of the ten patients were discharged on the day of the procedure. The median time for induction, surgery, recovery and discharge were 21, 55, 60 and 217 minutes respectively.

Conclusions: A multidisciplinary approach including surgical expertise alongside simple anesthetic measures are key contributors to achieve day case mastectomies.

Breast/Endocrine 0310

Investigating Node Positive Axillae in Women with Breast Cancer - Do We Need to Change Practice?

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Aims: Axillary node assessment in breast cancer patients is required for pre-operative staging and planning surgery. With no national guidelines, Fine Needle Aspiration Cytology (FNAC) remains the primary investigation done by several breast units.

Methods: We assessed the accuracy of the performed staging investigations (FNAC; Core biopsy (CB); Ultrasound assessment) for consecutive breast cancer patients with pre-operatively detected abnormal axillary nodes, over a one year period.

Results: 121(25%) of the 480 breast cancer patients had abnormal axillary nodes. FNAC was the primary investigation in 108 (89%) patients (C1/C2-37; C3-4; C4-5; C5-62). 29 patients proceeded to Sentinel Lymph Node Biopsy (SLNB)-of which 9(31%) were positive. Sensitivity, specificity, Positive and Negative Predictive Value (PPV and NPV) of FNAC was 73%, 90%,96% and 51% respectively. CB was performed in 28 patients (primary investigation - 13; secondary to FNAC- 15) (B1/B2/B3-6;B4/B5-22).Five patients proceeded to SLNB-of which one (20%) was positive. Sensitivity, specificity, PPV and NPV of CB was 91%, 100%, 100% and 80% respectively. Ultrasound assessment in accurately identifying abnormal nodes was 96% sensitive and specific with a PPV/ NPV of 99% /89% respectively.

Conclusions: Core biopsy with its own limitations has a higher accuracy compared to fine needle aspiration cytology in pre-operative axillary staging in breast cancer patients.

Breast/Endocrine 0334

Determining Risk of Further Axillary Metastases: Predictive Factors Following OSNA Sentinel Node Analysis

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Aims: In breast cancer patients undergoing sentinel lymph node biopsy (SLNB) analysis using one-step nucleic acid amplification (OSNA), clarity is required as to the determinants of further metastasis risk upon completion axillary lymph node dissection (ALND). This study aims to identify whether the proportion of sentinel nodes containing metastases predicts risk of further axillary disease.

Methods: We conducted a cohort study using prospectively collected data on 856 SLNB specimens analysed using OSNA, from patients with cT_{1-3} clinically node-negative invasive breast cancer. Completion ALND was performed in 289 cases following a positive SLNB. Extent of sentinel node positivity was analysed by categorising positive SLNB samples into: solitary positive lymph node (solitary), multiple lymph nodes of which only some are positive (multiple incomplete positive), and multiple lymph nodes all of which are positive (multiple all positive).

Results: Non-sentinel lymph node (NSLN) metastases were identified in 73 (25 · 3%) completion ALNDs. Factors predicting greater risk of NSLN involvement on multivariate analysis were: SLNB macrometastases (cytokeratin-19 mRNA count >5000copies/μl) (OR = 3·01; 95% CI, 1·61-5 · 66; p = 0·0006), multiple all positive SLNB (OR = 2·92; 95% CI, 1 · 38-6 · 19; p = 0·0050), and those undergoing mastectomy (OR = 1·89; 95% CI, 1 · 00-3·55; p = 0·0486). Risk of NSLN involvement amongst multiple all positive, solitary and multiple incomplete positive SLNBs was 51 · 1%, 29 · 8% and 17 · 3% respectively. Amongst multiple incomplete positive SLNBs, an 8 · 8% NSLN risk was identified when only micrometastases were present.

Conclusions: The extent of sentinel lymph node positivity measured using OSNA predicts risk of NSLN metastases, and would assist in decisions surrounding extent of further axillary lymphadenectomy.

Breast/Endocrine 0371

Perinodal Fat from Sentinel Lymph Node Biopsy – To Send or Not To Send

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Aims: NICE guidelines now recommend One Step Nucleic Acid Amplification (OSNA) as an intraoperative assessment tool for the detection of sentinel node metastases in breast cancer. Fat needs to be trimmed from the sentinel node for OSNA assay. We have been assessing the excised fat histologically. The aim of this study was to analyse the results of this additional examination

Methods: Our hospital introduced OSNA in 2012. Histological findings in perinodal fat analysis in patients having OSNA from November2012 to October2013 were collected and analysed utilising the pathology database.

Results: 179 perinodal fat samples from 179 SLNBs were analysed. 32 out of 179 (17·9%) SLNBs were OSNA positive for macrometastases and 147 (82·1%) were OSNA negative (n = 117) or had micrometastases (n = 30). 2 perinodal fat specimens out of 32 (6·25%) from OSNA positive samples showed presence of malignant cells in lymphoid tissue fragments without evidence of genuine extranodal spread. The perinodal fat from the 147 OSNA negative cases or micrometastases showed no abnormality. Although extranodal spread was seen in 4 out of the 32 axillary clearance specimens following identification of OSNA positive macrometastases, none of them demonstrated extranodal spread in the sentinel node perinodal fat.

Conclusions: The results suggest that only perinodal fat from OSNA positive nodes should be submitted for histological examination. It is not necessary to examine fat from nodes which are negative or contain micrometastases on OSNA assessment. By sending the perinodal fat for histology selectively, there are significant implications on time and cost of pathology services.

Breast/Endocrine 0377

One Step Nucleic Acid Amplification (OSNA): The Ratio of OSNA Positive to Harvested Nodes can Correlate with Additional Histopathological NSLN Metastases for Both Micro-Metastases and Macro-Metastases

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Introduction: OSNA, a highly sensitive assay of cytokeratin 19 mRNA, is used intra-operatively for the detection of sentinel lymph node (SLN) macro- and micro-metastases in breast cancer. The clinical significance of micro-metastases and subsequent axillary surgery is currently under debate.

Aim: To review the rate of micro-metastases and factors predictive of further NSLN metastases, in our unit over a period of 53 months.

Methods: Data was collected prospectively (01/12/2008 to 31/05/2013) for all eligible patients (clinical and radiological negative axilla). SLN biopsy was performed using blue dye and radioisotope. Patients with micro-metastases (+) underwent level I and those with macro-metastases (++) had level II/III axillary nodal dissection (AND).

Results: 1008 patients had 2151 SLN analysed. 336 (34%) were OSNA positive and had further AND. Of these, 152 (45%) had macro-metastases (++) and 184 (55%) had micro-metastases (+). A quarter of OSNA positive (85/336) had positive NSLN, with (++) having 38% (57/152) and (+) having 15% (28/184) further positive NLSNs ($p < 0{\cdot}05$). The ratio of positive SLN/harvested SLN is constant at 1 in patients with positive NSLNs, in both (+) and (++). In micro-metastases, 5·4% (10/184) had overall nodal count of ≥4, needing adjuvant radiotherapy and the positive SLN/SLN ratio in these patients (≥4 positive

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nodes) also showed a consistent trend of 1, correlating with size and number of metastases.
Conclusion Our study reflects the tumour burden of NSLN based on molecular SLN analysis. OSNA detected molecular micro-metastatic disease may guide towards accurate axillary staging. Also highlighted are certain factors that may predict NSLN metastases and validation by long term data will facilitate goal directed treatment.

Breast/Endocrine 0404

The Impact of One-Step Nucleic Acid Amplification (OSNA) on Operative Efficiency

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Aims: NICE recommends OSNA as the intra-operative sentinel lymph node biopsy (SLNB) assessment tool in breast cancer. However, OSNA may have implications on operative time hence affecting number of breast cancer operations performed annually. We introduced OSNA in November 2012 and aimed to assess the number of breast cancer operations performed and the operative times pre and post implementation of OSNA.
Methods: Retrospective review of data from the Somerset cancer register system and the Operating Room Management Information System was carried out. Mann–Whitney U test was used to compare median operative times ($p < 0.05$, significantly different).
Results: The annual number of breast cancer operations performed pre and post-OSNA were 472 and 474 respectively. The median operative time for breast conservation surgery (BCS) plus SLNB was significantly longer in the post-OSNA group by 17 minutes ($p = 0.045$). There was no difference in the median operative time for mastectomy (Mx) plus SLNB between the pre and post-OSNA group ($p = 0.562$). The median operative time for axillary clearance (ANC) as a separate procedure (post SLNB) was 74 minutes. Considering the additional second procedure, the median operative times for SLNB and ANC was significantly shorter in the post-OSNA group for both BCS and the Mx cohorts by 19 ($p = 0.009$) and 62 ($p = 0.001$) minutes respectively.
Conclusions: Implementation of OSNA does not influence the annual number of breast cancer operations performed despite a significantly longer median operative time in BCS plus SLNB. The use of OSNA is beneficial considering the avoidance of a second procedure.

Breast/Endocrine 0412

The Management of Micrometastases Found at Sentinel Node Biopsy in Breast Cancer: Which Variables Predict Axillary Disease Burden?

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Aims: NHS practice advocates the use of sentinel lymph node biopsy (SLNB) at the time of primary breast cancer excision to assess if there are metastases. Those found to have positive lymph nodes usually then undergo axillary lymph node clearance (ALNC). Recent studies have questioned the value of ALNC for micrometastases found at SLNB and the management and outcome of these patients remains an area of debate. We audited our breast unit's outcomes to identify variables that predicted greater axillary disease burden.
Methods: A 3 year, retrospective analysis of all breast cancer patients undergoing SLNB at a University hospital breast unit was performed. Patient demographics and histological data was reviewed including tumour size, grade, receptor status and the number of sentinel nodes cleared. The sentinel node positivity rate was analysed, determining if the nodes contained micro- or macrometastatic deposits. Non-sentinel node positivity was then calculated in those undergoing ALNC and compared against variables of primary tumour data to identify if any factors increased the risk of axillary disease.
Results: 614 SLNBs were performed. 154 showed evidence of positive sentinel lymph nodes. Of these, 28 contained micrometastases and 127 contained macrometastases. On ALNC, rates of further positivity were 17·6% and 41·3% respectively ($p = 0.10$). When variables were analysed, only vascular invasion in the primary tumour, increased the risk of a positive ALNC. This was true for all metastatic types (0·59 vs 0·29 $p = 0.0001$), and for macrometastases (0·60 vs 0·34 $p = 0.02$) and micrometastases (0·50 vs 0·08 $p = 0.12$) subsets.
Conclusions: Vascular invasion in a primary breast cancer with positive SLNB is associated with increased axillary disease burden on axillary clearance. While the micrometastases increase was not statistically significant due to sample size, all cases were associated with macrometastatic disease at clearance in the presence of vascular invasion. Given the level of disease burden identified, we would recommend consideration of ALNC for all patients with micrometastases found at sentinel lymph node biopsy when associated with vascular invasion positive breast cancers.

Breast/Endocrine 0488

Evaluation of Outcome of Breast Conservation Surgery

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Aims: We assessed the outcome of breast conservation surgery (BCS) in cancer patients requiring sizeable wide local excisions, of near 20% of the size of the breast.
Methods: Consecutive patients ($n = 60$) undergoing BCS by the same surgeon (Jan-Dec 2013) had their breast measured and weight of excision specimens recorded. 15 patients (age 39–87, mean:61) with excisions approaching 20% of the size of the breast (30-275 g, m:139 g) were included in the study. Opinion with regard to the outcome of surgery was recorded on an analogue 0–10 scale (very bad, bad, satisfactory, good, very good) by the patient, the operating surgeon, 2 independent breast surgeons and a random panel of 10 assessors by photograph: 3 radiologists, 3 breast care nurses and 4 other nurses. Of the 15 patients, 6 (40%) had comorbidity and 6 (40%) were smokers. Mean BMI and bust size was 29 (21–48) and 38in (34–42) respectively. Mean cancer size was 25 mm (9-68 mm) on mammogram and 19 mm (0-43 mm) on ultrasound. The mean total size with the associated DCIS in final specimens was 32 mm (7-66 mm). All margins were clear. All patients had radiotherapy, 5 (33%) chemotherapy.
Results: Patient assessment of outcome scored highest (m:8·5, very good), with similar score by the operating surgeon (8·1). Slightly lower scores were given by the independent breast surgeons (6·7, good) and the panel of assessors (6·6, good).
Conclusions: Good results can be achieved with BCS in challenging cases, where excisions approach 20% of the size of the breast. Perception of outcome in breast surgery is variable, dependent on different subjective views.

Breast/Endocrine 0669

"The Angelina Effect": The Effect of High Profile Media Coverage on Referrals to a Family History Breast Clinic

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Aims: To investigate the impact of publicity on the number of referrals to our family history breast clinic following Angelina Jolie's announcement in May 2013 that she had undergone bilateral mastectomies and reconstruction as she is a BRCA1 gene carrier ("The Angelina Effect").
Methods: The number of monthly referrals and estimated lifetime risk of developing breast cancer [population (<17% risk), moderate (17-30%) and high (>30%)] were reviewed retrospectively and compared between 2012 and 2013.
Results: In June 2013, referrals tripled as compared to the previous month and year and the increased number of referrals appears to continue, but there was no difference in the proportions in each lifetime risk group as shown in the table.

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	Total referrals (n)		Proportion (%) in lifetime risk groups					
			Population		Moderate		High	
Month	2012	2013	2012	2013	2012	2013	2012	2013
January	16	24	9·1	33·3	54·5	38·9	36·4	27·8
February	22	29	17·6	14·3	17·6	61·9	64·7	23·8
March	21	28	40·0	16·7	40·0	37·5	20·0	45·8
April	26	24	25·0	30·0	40·0	45·0	35·0	25·0
May	20	24	38·5	0·0	23·1	75·0	38·5	25·0
June	22	69	12·5	24·5	62·5	36·7	25·0	38·8
July	9	55	20·0	40·0	40·0	36·7	40·0	23·3
August	23	34	18·8	21·1	50·0	57·9	31·3	21·1
September	4	24	100·0	50·0	0·0	25·0	0·0	25·0
October	32	50	16·7	70·0	54·2	20·0	29·2	10·0
November	27	18	8·7	100·0	47·8	0·0	43·5	0·0
December	13	-	33·3	-	33·3	-	33·3	-

Conclusions: Angelina Jolie's announcement increased referrals to our family history breast clinic. This has implications for our service but the downstream effects in genetics and surgery may not be substantial if there is no increase in the proportion of women estimated to have a high lifetime risk of breast cancer.

Breast/Endocrine 0676

Post-Operative Complications Following Breast Cancer Day Case Surgery

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Aims: More breast cancer surgical procedures are performed as day case. The patients are discharged the same day. The aim of this study was to review the complication and re-admissions following day case surgery

Methods: Data from Jan, 2011 to Dec. 2012 were reviewed for patients undergoing breast cancer surgery as day case in a district general hospital. All the operative data and post-operative course were reviewed. The data were then analysed for readmission and complications

Results: A total of n = 232 patients underwent breast cancer surgery as a day case procedure and were discharged the same day. 9 (n = 3·8%) patients were readmitted for wound infection and treated with IV antibiotics. Three (1·2%) patients were taken to theatre following a readmission for evacuation of haematoma. 26 (11%) patients had clinical seroma which were managed by needle aspiration. There was no post-operative mortality. There was no difference when this data was compared with patients undergoing breast cancer surgery as inpatient.

Conclusions: Breast cancer procedures can successfully be performed as day case. If patients fit the criteria for a day case surgery it should be offered to decrease morbidity and inpatient hospital stay.

Breast/Endocrine 0692

Validation of a Post-Thyroidectomy Hypocalcaemia Prediction Nomogram in a UK District General Hospital

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Aims: To assess the performance of a previously published hypocalcaemia prediction tool on UK population.

Methods: Review of patients who underwent total or completion thyroidectomy between June 2012 and November 2013. Data collection included age, gender, central neck dissection, history of non-thyroid malignancy, pre-operative calcium/alkaline phosphatase/creatinine levels, histology and medication history. All variables were used to generate individual risk prediction for each patient which was compared with the lowest post-operative calcium result. Discrimination was measured with the concordance index from 0·5 (no discrimination) to 0·0/1·0 (perfect discrimination).

Results: Results of 42 patients were identified, 40 had total and 2 completion thyroidectomy. There were 8 men (19%) and 34 women (81%), with a mean age of 48·5 years. 7 (17%) patients had a history of non-thyroid malignancy, 11 (26%) patients were operated on for thyroid malignancy, 7 (17%) had central neck dissection, and 4 (10%) had Grave's disease. 8 (19%) became hypocalcaemic (<2·2 mmol/L). Factors predictive of hypocalcaemia included preceding history of non-thyroid malignancy (hypocalcaemia rate 29% versus 3%, p = 0·016), thyroid malignancy (33% versus 0% p = 0·003) and central neck dissection (43% versus 0% p < 0·001). The concordance index calculated using the nomogram was 0·49.

Conclusions: When applied to a UK community population, the nomogram tested performed poorly. This may be due to inherent differences between a UK population and a US cancer centre. Further refinement of the nomogram, by incorporating data from less cancer specific setting will improve the accuracy of the tool and allow its application to the wider population.

Breast/Endocrine 0751

The Use of Ultrasound in Detecting Cervical Nodal Metastases in Patients with Differentiated Thyroid Carcinoma

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Aims: Patients undergoing surgery for thyroid cancer all undergo pre-operative ultrasound (USS) as per the American Thyroid Association Guidelines. Papillary thyroid cancer involves cervical lymph nodes in 20-50% of cases. However, ultrasound only detects suspicious cervical lymphadenopathy in 20-31% of cases. Radiological evidence of nodal spread can alter the surgical approach in these patients.

The aim of this study was to evaluate the use of ultrasound in patients undergoing surgery for differentiated thyroid cancer.

Methods: Radiology, Cytology and Histology were reviewed for differentiated thyroid cancer cases between January 2010 to December 2013 at a single tertiary centre. Sonographic features of metastatic nodal spread (hypoechogenicity,cystic change and hypervascularity) were noted.

Results: 72 patients were diagnosed with papillary cancer. 16 patients had USS evidence of cervical nodal metastases in Level II – V , underwent lateral neck dissection which confirmed metastatic disease. 44% of these patients had clinical evidence of nodal metastases. Sensitivity and specificity of ultrasound was noted to be 100% in the lateral neck compartment.

19 patients underwent prophylactic central lymph node dissection, of which 32% had Level VI nodal metastases.

Conclusions: Our study illustrates that pre-operative USS is accurate in the detection of cervical node metastases in the lateral neck, however its accuracy is poor in the central compartment. This could be attributed to the presence of overlying thyroid tissue. Use of CT or MRI may aid in the diagnosis in these cohort of patients.

Breast/Endocrine 0754

The Role of Prophylactic Level VI Node Dissection in Papillary Cancer

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Background Nodal involvement in papillary thyroid cancer is common: 90% of cases have evidence of micrometastases. Controversy remains on the management of central nodes in patients with no radiological or operative evidence of central nodal metastases.

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Prophylactic central lymph node (CLN) dissection reduces the chance of future locoregional recurrence.
Critics state little benefit in long term survival with a higher risk of recurrent laryngeal nerve injury (0-15%) versus thyroidectomy alone (1-2%). The aim of this study was to establish the safety and feasibility of CLN dissection.
Method Radiology, Cytology and Histology were reviewed for thyroid cancer cases between January 2010 to date.
Results: 71 papillary cancers, total thyroidectomy with or without prophylactic CLN dissection were performed in 19 and 52 patients respectively.
32% of patients had prophylactic CLN dissection were found to have positive lymph nodes on final histology of which 5 patients over age 45 were upstaged to pathological N1a disesae.
There was no significant difference in morbidity and demographic between the two cohorts.
Conclusion Prophylactic CLN dissection can be achieved with a low morbidity in experienced hands in the management of patients with papillary cancer. Prospective randomized trials are needed to evaluate the benefits of different approaches.

Breast/Endocrine 0765

A Major Surgical Endocrine Unit's Experience: The Combined Role of Ultrasound Scans and Fine Needle Aspiration in the Management of Thyroid Nodules

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Aims: The standard first-line investigation of thyroid nodules is ultrasonography. It is safe, quick and radiation-free. Since the introduction of fine needle aspiration cytology (FNAC) in the last two decades, the diagnostic accuracy of thyroid malignancy has massively improved. This study aims to examine the sensitivities of ultrasonography and FNAC respectively, evaluating our centre's practice.
Methods: Retrospective data were collected from ultrasound scan and FNAC reports of patients who were histologically proved to have thyroid malignancy after thyroidectomy between the period of January 2010 and October 2013 in a major regional surgical endocrine unit in the UK. Ultrasound scan results were categorised into benign, indeterminate and suspicious of malignancy; while FNAC results had five categories including non-diagnostic (Thy1), non-neoplastic (Thy2), follicular (Thy3), suspicious (Thy4) and diagnostic (Thy5). Sensitivities of these test results were determined.
Results: 100 patients were histologically diagnosed with thyroid malignancy during the period. 81 patients had both ultrasound scan and FNAC reported. The sensitivity of ultrasonography was 39% (results were considered positive if suspicious of malignancy) and that of FNAC was 59% (positive FNAC if Thy3, 4 or 5). Of the positive scan results for thyroid malignancy, 66·6% also had a positive FNAC. The average number of months between ultrasound appointment and first surgical procedure was 2·8.
Conclusions: The combined sensitivity of ultrasonography and FNAC is statistically higher than that of each test on its own in the management of thyroid malignancy. Most patients have both tests done especially if there is diagnostic ambiguity on their clinical presentations before thyroidectomy. Based on the results of this study and the consistency in recent literatures, FNAC should be readily available at ultrasound appointment to avoid the delay of any surgical management. This study warrants the use of one-stop clinic providing ultrasound-guided FNAC that would not only enhance the diagnostic accuracy but also provide more efficient care for patients presenting with thyroid nodules. Further research is required to investigate the cost-effectiveness of a one-stop clinic.

Breast/Endocrine 0773

Intra-operative Sentinel Node Frozen Section Analysis in Patients with Early Breast Cancer - 1 Year Study

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Aims: Dual technique axillary sentinel lymph node biopsy using Patent blue and Tc99m colloid marking is the standard protocol according to NICE for early breast cancer. Using intra-operative Frozen section has shown to be effective in the literature. This study using the dual technique has been done as a follow up of previous study at our unit where only Patent blue dye technique was used.
Methods: Retrospective 1 year study. 107 patients undergoing Sentinel Lymph Node Biopsy for early breast cancer 1/2011-12/2011 were included. We looked at conversion rate to axillary clearance and recorded our false negative/positive results of both Frozen section and Sentinel Lymph node biopsy. Data was collected from operation notes, radiology and histology reports.
Results: Total of 107 patients had Sentinel lymph node biopsy out of which 21 patients were converted to axillary clearance on basis of positive intra-operative Frozen section with no false positive results (0/21).
76 histology results out of 107 were confirmed reactive on Frozen section with 3·94% (3/76) false negative rate identified on final Histology and demonstrated 2·63% (2/76) false negative rate for dual technique
Conclusions: Based on our results Sentinel lymph node biopsy with the availability of Frozen section demonstrated 0% false positive results and 3·94% false negative result which I still within less than 5% NICE standards.
In comparison to our previous study our results suggest a mild improvement in detection rate of Sentinel lymph node biopsy using dual technique with 2·63% and still maintaining false negative results below 4% and 0% false positive results.

Breast/Endocrine 0777

Tumour Size and Multifocality are not Reliable Indicators of Axillary Involvement

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Aims: Indication for Axillary Sentinel Lymph Node Biopsy vs Axillary Clearance in patients with solitary single Breast Cancer with size over 3 cm or multifocality is controversial.
Methods: We included 124 patients undergoing axillary surgery for breast cancer over 1 year period in this retrospective study to determine if tumour size over 30 mm or tumour multifocality causes significantly higher rates of axillary involvement. Patients were divided according to their tumour size and multifocality diagnosed radiologically and compared to final histology results. We also looked at detection rate of axillary disease by USS by dividing these patients into groups U1/2-U5. Data was collected from operation notes, radiology and histology/cytology reports.
Results: 65/124 patients with tumour size smaller than 30 mm on pre-op imaging, 27/65 (41·54%) had nodes positive on final Histology
49/124 patients with tumour larger than 30 mm on pre-op imaging, 27/49(55·10%) had nodes positive on final Histology.
10/124 patients had multifocal tumour on pre-op imaging, 3/10 patients had nodes positive on final Histology.
We found that 30·26% of axillary USS marked as U1/2 showed metastasis on final Histology.
Patients with benign cytology results in U3 axillae had 47·37% positive results on final Histology and in U4 with negative cytology had 66·6% positive results on final Histology. 1 patient with a U5 axillary USS and benign Cytology who proceeded to axillary clearance was negative on final histology. All patients with positive cytology results proceeded to axillary clearance and all demonstrated metastasis on final histology.
Conclusions: Our results demonstrate that unless Axillary Lymph Node Cytology confirms metastasis, trial of dual technique Sentinel Lymph Node Biopsy would be the surgical staging method of choice for all tumours independent of size and multifocality.

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Breast/Endocrine 0800

Ultrasonography as a First-Line Investigation of Thyroid Nodule – Is it Still the Case? An Audit to Examine and Reflect on our Practice in a Regional Surgical Unit

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Aims: Thyroid nodules are common – approximately 5% of the population have a palpable thyroid nodule; somewhat 45% have a non-palpable thyroid nodule, which can be detected by ultrasound scan. This audit, based on the American Thyroid Association (ATA) Management Guidelines (revised in 2009), aims to establish if our regional surgical endocrine unit meets the recommended standards of using ultrasonography to aid the management of thyroid malignancy and to make further suggestions to improve practice.
Methods: Retrospective data were collected from ultrasound scan reports of patients who had thyroid malignancy in a major surgical unit in the UK. Inclusion criteria: scans between January 2010 and October 2013; histological diagnosis of malignancy after thyroidectomy. Ultrasound scan results were reported as benign, indeterminate and suspicious of malignancy by experienced ultrasonographers. ATA recommends that "thyroid ultrasounography should be performed in all patients with known or suspected thyroid nodules".
Results: Out of the 100 patients who had a histological diagnosis of thyroid malignancy, 23% was reported to have benign nodules, 32% indeterminate, 39% suspicious of malignancy, 4% not have theirs reported and 2% not have scan performed. It is unclear why some ultrasound results were not reported. The two cases which did not have an ultrasound scan done presented with massive thyroid nodules with significant tracheal deviation.
Conclusions: Although only 94% of patients with thyroid nodules had ultrasound scans, one may suspect that the two cases without scan might not have been put through unnecessary investigations due to their clinical presentations highly suggesting a malignancy. A protocol should be established to ensure all scan results were reported to facilitate future references in the management of thyroid malignancy. Moreover, this audit also prompts the revalidation of ultasonography as a first-line investigation. With the increasing reliability of fine needle aspiration (FNA) in the diagnosis of thyroid nodules, ultrasound scan might not add extra information and guidance to the management. Follow-up study is needed to examine the isolated and combined benefits of ultrasound scan and FNA.

Breast/Endocrine 0805

The Necessity of Axillary Lymph Node Status for Adjuvant Chemotherapy Planning: A Relative or an Absolute Must in the Multidisciplinary Meeting?

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Aims: Axillary surgery is associated with significant morbidity and consequently, affects quality of life in breast cancer survivors. Therefore, we raise the question of axillary lymph node necessity in chemotherapy planning.
Methods: Fifty-four prospective breast cancer cases were treated as per standard axillary surgical protocols over six months (mean age 59 (range 37–92)). These cases were subsequently discussed at the multidisciplinary meeting, where all histopathological data was made available, but the axillary nodal status was blinded to the team initially. This enabled adjuvant chemotherapy discussion with AND without axillary nodal status. Following that, the outcome was compared.
Results: The team consisted of a breast surgeon, oncologist, breast-care nurse and radiologist. The average attendance was 4 members (range 2–7). Tumours were classified as: grade 1 (9%), grade 2 (54%), grade 3 (37%). ER and HER2 receptor status were positive in 89% and 13% respectively. Average tumour size was 22 mm (range 37–92 mm) and the average nodal harvest was 8 (range 1–24). Lymphovascular invasion was detected in 19% of cases. Without nodal status, the team achieved a consensus of opinion regarding treatment in 25 cases (46%). This was the correct decision in 23 cases (43% overall) following disclosure of nodal status.
Conclusions: The need for adjuvant chemotherapy can be reliably predicted in a specific subset of breast cancer patients without axillary lymph node status. In an age of axillary surgical conservatism and molecular predictors in breast cancer, we question the true need of axillary lymph node status in adjuvant chemotherapy planning.

Breast/Endocrine 0970

Breast Cancer Awareness in Young Women - A National Survey

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Aims: 'CoppaFeel!' is a registered charity that aims to improve breast cancer awareness in young women. With funding from the charity, we conducted a national survey of women's perceptions of breast cancer. Specifically, we assessed attitudes to the risk of developing breast cancer, knowledge of the symptoms of breast cancer, the degree of self checking for signs of breast cancer and the perceived barriers to accessing specialist breast services. Finally, we assessed the impact of breast awareness charities.
Methods: Between July 1st and 31st 2013, 1383 women from 11 regions nationwide repsonded to an online survey. The 39 question survey was designed by CoppaFeel! and implemented by 'Vision Critical', an independent market researcher. Inclusion criteria were women aged 18–30 years with a random mix of working status and social class.
Results: 69% were not worried about breast cancer at their age, only 39% felt confident recognising the signs and symptoms of breast cancer. 32% had never self examined their breasts & only 10% did regularly. 50% felt the biggest barrier to accessing the advice was feeling they would be wasting the doctor's time. 37% reported being prompted to self check by TV programmes whilst only 8% by breast awareness charities, rising to 16% in universities with a CoppaFeel! presence.
Conclusions: A significant proportion of those surveyed had a poor understanding of breast cancer, despite it being the most common cancer in young females. Importantly, 90% do not regularly self examine and more than a third do not recognise the symptoms. CoppaFeel! aims to improve this through its university programmes and their annual media awareness campaign. Their latest initiative, the #rethinkcancer campaign, aims to lobby for cancer awareness to be a mandatory topic of the national school curriculum.

Breast/Endocrine 1040

Use of Surgical Sealant Devices in Thyroid Surgery

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Aims: Advances in surgical technology have lead to the development of devices that achieve vessel division, haemostasis and minimise operative time and morbidity. However, studies have shown that the risk of damage to adjacent structures cannot be completely excluded.
The aim of this study was to evaluate the use of two surgical devices and compare outcomes to conventional clamp-and-tie technique.
Methods: Radiology, histology and operative records for thyroidectomies carried out in our tertiary unit between 2011 to 2013 were reviewed. Harmonic Ace^{Tm} and Ligasure^{Tm} were the devices used by a single surgeon.
Results: 262 cases were reviewed. This included 29 total thyroidectomies with lymph node dissection, 132 hemithyroidectomies and 92 total thyroidectomies: 109 cases were for thyroid cancers. Female to male ratio was 193:69, median age 48 (17–87), median weight of specimens 26 g (4–254). There was no significant difference in operative time between the two devices.
There were no returns to theatre for bleeding. One permanent and two temporary cases of recurrent laryngeal nerve injury occurred.
Conclusions: This study demonstrates that both devices can be employed safely in thyroid surgery with minimal morbidity particularly in respect of bleeding. Further, in experienced, high volume centres, the risk of injury to the recurrent laryngeal nerve is minimal.

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Breast/Endocrine 1043

Wide Local Excision of Breast Cancer Under Local Anaesthetic: A Treatment Option for Elderly

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Aims: Elderly and medically unfit patients make up a small but significant proportion of breast cancer patients. Treatment of such patients can be challenging.
Methods: A prospective study of breast cancer wide local excisions (WLE) performed under local anaesthesia (LA) over a period of 9 years. Preoperative assessment included calculation of ASA status, PPOSSUM score, mini mental state examination (MMSE) and oestrogen receptor status.
Results: 36 patients were included, with median age of 82 years (range 59 – 95 years). 13 patients had ASA grade 2, 22 patients had ASA grade 3 and 1 patient had ASA grade 4 (median ASA grade =3). Reasons for LA included anaesthetic concern (n = 28) and patient/surgeon choice (n = 8). 35 patients had WLE and one had mastectomy under LA. Expected procedural morbidity was 28·8% (range = 14-60%) and mortality was 1·9% (range = 0·9-6·1%), calculated by PPOSSUM scores. MMSE range was 8–10 (average 8·75).
Size range of cancer was 13-47 mm with median of 26 mm. One patient had involved margins needing further wider excision under LA. All patients were offered appropriate adjuvant treatment (29 had anti-oestrogen therapy, 16 had radiotherapy and one had chemotherapy).
2 patients developed local recurrences, at 3 months and 12 months respectively from the original operation, both treated with further WLE under LA. 12 patients (33%) have died; 3 from metastatic spread of cancer and 9 from unrelated causes. Average time to death from the original operation in metastatic cancer group was 43 months (range = 39-47 months) and in unrelated deaths group was 36 months (range = 5-113 months). 24 surviving patients (67%) have a median follow-up of 44 months (range = 2–60 months).
Conclusions: WLE of breast cancer under LA is a useful option. All patients in this selected 'unfit' group were treated as day cases. A large volume of LA should be used to achieve adequate anaesthesia. Patient selection should be careful; they should not be confused or agitated with good MMSE scores.

Breast/Endocrine 1045

Is Breast MRI Useful?

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Aims: Breast magnetic resonance imaging (MRI) is highly sensitive in detecting breast cancer and implant rupture. We investigated the indications of MRI and in what proportion of patients did it influence change in the management.
Methods: Consecutive breast MRIs performed over 10 months period were studied.
Results: 78 patients had breast MRI with the following indications:

Indications	n (%)			Change in management
Implant rupture?	31 (40)			13 (ruptures)
Surveillance	20 (26)	Mammographically occult cancers	9	1 (cancer recurrence)
		Young & strong family history	6	
		Miscellaneous	5	
Lobular cancer	19 (24)			4 (21%)
Miscellaneous	8 (10) e.g. occult cancer, discrepancy in size, inflammatory cancer			1 (larger size of cancer)
Total	78			19 (24%)

4 out of 19 patients in lobular cancer group (21%) had change in their planned operation from breast conserving surgery (BCS) to mastectomy based on the MRI. This included 3 patients with multifocal cancers and one with significantly larger size of the cancer shown on the MRI than mammogram and ultrasound. 1 out of 20 patients in surveillance group was found to have a cancer recurrence on MRI, requiring further surgery. 1 patient in 'miscellaneous' group had mastectomy instead of BCS due to MRI showing much bigger cancer than mammogram. Overall 6 patients with cancer and 13 with implants had change in their management based on the MRI.
Conclusions: Commonest indication (40%) of breast MRI was to detect implant rupture. One out of every five patients with lobular cancer had a change in planned operation due to MRI. Overall 24% patients had a change in their management based on their MRI, hence proving its usefulness in breast surgery.

Breast/Endocrine 1074

Minimally Invasive Retroperitoneoscopic Adrenalectomy (MIRA) is Technically Possible and Safe Using the Single-Incision Gelpoint^{tm} System

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Aims: Laparoscopic adrenalectomy has become the standard procedure of choice for the removal of adrenal tumours <6 cm in size. Recent reports suggest that trans-abdominal laparo-endoscopic single site surgery (LESS) has the potential to further reduce post-operative pain and cosmesis, as does multi-port laparoscopic retroperitoneal (retroperitoneoscopic) adrenalectomy. We aimed to determine whether posterior retroperitoneal adrenalectomy could be performed laparoscopically through a single incision with further benefit. Bilateral minimally invasive retroperitoneoscopic adrenalectomy (MIRA) has not been previously reported in the literature to our knowledge - we present our initial experience.
Methods: In December 2013, we performed MIRA procedures on a 72 year-old female with a 4·0 cm adrenal adenoma and an 82 year-old female with bilateral phaeochromocytomas (the larger tumour measuring 5·2 cm). The operations were performed via posterior retroperitoneal approach using a commercially available single-port access device (GelPoint^{TM} or GelPoint-mini^{TM}) with a standard 5 mm 30 degree laparoscope, conventional laparoscopic instruments and Harmonic^{TM} dissector. A 2·5 cm incision was made in both cases for the Gelpoint-mini^{TM} device, and a 3 cm incision for the GelPoint^{TM} device to remove the larger tumour.
Results: The operating time was 108 min in the unilateral case and 256 min for the bilateral case. Both patients remained in hospital overnight due to their age and general mobility, but were fully recovered, able to mobilise and fit for discharge on the following day. Their post-operative recovery was uneventful.
Conclusions: Our initial experience shows that single-incision MIRA is technically feasible and safe in bilateral operations. Operation time was comparable to that in reported studies, though slightly longer than our multi-port procedures; we envisage this is simply due to the novel approach. MIRA reduces post-operative pain (which is associated with transperitoneal procedures), is cosmetically favourable, yet allows visualisation similar to the multi-port approach, and does not require a higher technical ability for an experienced laparoscopic surgeon.

Breast/Endocrine 1194

Investigating the Management of Symptomatic and Presymptomatic BRCA Gene Mutation Carriers in an Irish Tertiary Referral Centre

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Aims: Germline mutations within *BRCA1* and 2 confer a high risk of breast cancer susceptibility. Studies of large breast cancer families propose that the risk of developing breast cancer by age 70 is 87% for *BRCA1* carriers and 84%

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for *BRCA2* carriers. The contribution of causative mutations in these genes to the excess familial risk of breast cancer is estimated to be 15-25%. It is well recognised BRCA 1 and BRCA 2 mutations confer risk of different disease phenotypes. The aim of our study was to outline the disease phenotype of BRCA gene mutation carriers in the West of Ireland, and to examine the management of symptomatic and presymptomatic patients

Methods: A longitudinal cohort study was undertaken, with the cohort under scrutiny including all patients identified as bearing a single gene mutation in BRCA1 or BRCA2 between 2000 and 2013. Demographic and clinic-pathological information was obtained by chart review.

Results: One hundred and eighty-seven patients from 124 families underwent testing for genetic mutations. Pathogenic mutations were identified in BRCA1 in 24 families and in BRCA2 in 20 families. Forty-one patients developed breast cancer, of whom 17 had mutations in BRCA1 and 24 mutations in BRCA2. Median age of onset of breast cancer in BRCA1 mutation carriers was 40years (25–67) compared to 45years (35–64) in BRCA2 mutation carriers ($p = 0{\cdot}02$, Mann–Whitney). Eight patients developed bilateral breast cancers, of whom six carried mutations in BRCA1. Six patients developed ovarian cancer, including 5 BRCA1 mutation carriers. Of pre-symptomatic carriers of BRCA gene mutations ($n = 51$), 10 underwent surgical prophylaxis, including 9 prophylactic mastectomies and 5 oophorectomies. The remaining 41 patients elected to undergo surveillance only.

Conclusions: BRCA gene mutations account for only a small proportion of inherited predisposition to breast cancer but carriers of these types of mutations require intensive surveillance or surgical prophylaxis. Counselling and testing of presymptomatic family members can facilitate this intervention and modify disease phenotype.

Breast/Endocrine 1238

Optimising surgical Care by Predicting Axillary Lymph Node Metastasis in Breast Cancer

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Aims: Establishing presence or absence of lymph node metastasis is critical in the management of primary breast cancer. A reliable tool to predict the probability of axillary lymph node metastasis would lead to improved efficiencies of care and reduce morbidity of axillary surgery, especially if One Step Nucleic acid Amplification (OSNA) is to be used for intra-operative lymph node analysis.

Methods: 324 patients were diagnosed with primary invasive breast cancer over a twelve month period, including symptomatic and screening patients. Data were collected and analysed from the hospital computer system and clinical letters. Multivariate statistical analysis with logistic regression was used and results compared to the Memorial Sloan-Kettering predictive tool. Preoperative ultrasound results together with the predictive probabilities were used to select patients who might theoretically benefit from OSNA.

Results: Tumour size and presence of lympho-vascular invasion are significant predictors of axillary lymph node metastasis. The Memorial Sloan Kettering centre predictive tool showed a positive predictive value of 71%, negative predictive value 70%, positive likelihood ratio of 2·8 and negative likelihood ratio of 0·58. Using the predictive tool in patient with a normal axilla on ultrasound will have a positive predictive value of 50% and negative predictive value of 79%. Twenty five patients were offered OSNA all of them had normal axilla on Ultrasound, using the predictive tool on these patients managed to identify 40 % of patients with positive lymph nodes and also save the unnecessary use of OSNA in 90% of patients with negative lymph nodes, applying the same principle on the rest of the patient showed similar results of 43% and 82% respectively.

Conclusions: Using the normogram created in Memorial Sloan Kettering centre in patients with normal axillary ultrasound and offering them intraoperative axillary lymph node assessment can decrease the number of readmissions for axillary clearance as well as maximizing the utilization of theatre time and minimize unnecessary cost of OSNA.

Breast/Endocrine 1289

Is Routine Serum Calcium Measurement Following Total Thyroidectomy Useful?

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Aims: It is standard practice to check for hypocalcaemia within the first 24 hours post-total thyroidectomy. The aim of this study was to investigate whether serum calcium measurement within the first 24 hours post-op is a reliable predictor of future hypocalcaemia.

Methods: Data was collected from all patients undergoing parathyroid-sparing total thyroidectomy at our hospital. 310 patients were recruited into the study. They were all examined post-operatively for signs and symptoms of hypocalcaemia and given calcium supplements to take home in case they developed any of the signs or symptoms which they were informed about. The serum calcium was also measured within the first 24 hours. They were then reviewed in clinic to see whether they had developed any symptoms of hypocalcaemia and required supplements.

Results: The data showed 5% of patients had hypocalcaemia biochemically. However around 9% of the total number of patients were symptomatic but only 20% of these had a low serum calcium on the 24 hour check.

Conclusions: Post-operative serum calcium measurement in the first 24 hours is a poor predictor of future hypocalcaemia. Testing on a symptomatic basis would therefore be more cost-effective.

Breast/Endocrine 1293

The Utility of Utrasonographic Features on the Accuracy of Diagnosing Individual Thyroid Malignancies

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Aims: The American Thyroid Association strongly recommends that a diagnostic thyroid ultrasound scan should be performed in all patients with any suspected thyroid nodule, goitre or incidental radiographic abnormality. Recent studies have shown that different ultrasound features of a thyroid nodule are associated with a high probability of malignancy. The purpose of the study is to evaluate the sensitivities of each of the identified ultrasound features and to determine which types of thyroid carcinoma they are most sensitive to.

Methods: Retrospective data from January 2010 to October 2013 were collected in a regional thyroid unit in the UK. Patients who had thyroidectomy and were histologically proved to have thyroid malignancy were included in the study. Their ultrasound scan reports and post-thyroidectomy histological reports were obtained and analysed.

Results: 100 patients were histologically diagnosed with thyroid malignancy during the period. Five recurrent ultrasound characteristics were identified from the reports of these patients: microcalcification (19%), hypoechogenicity (32%), intranodular-vascularity (34%), irregularity (15%) and halo-like (5%). Their types of malignancy were papillary (63%), follicular (23%), medullary (3%) and Hurthle cell (7%) carcinomas. However, none of the ultrasound features was particularly sensitive to any of the carcinoma types, i.e. papillary and follicular carcinomas had similar sensitivities to individual ultrasound features; medullary and Hurthle cell carcinomas were too few to be included in the calculations.

Conclusions: We conclude that there is no single ultrasound feature or combination of features having a high sensitivity to individual thyroid malignancies. The limitations of this study are: 1) not all ultrasound features of the thyroid nodules were reported; 2) some patients did not have ultrasound scan reports or histological reports; 3) the sample size might limit the potential to evaluate all carcinoma types. Further research is required to standardise the implementation and reporting of thyroid ultrasound scan to allow continuous practice evaluation and provision of effective management of thyroid nodules.

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Breast/Endocrine 1308

A Retrospective Study on the Utilisation of Magnetic Resonance Imaging in the Investigation of Invasive Lobular Carcinoma in two District General Hospitals

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Aims: Invasive lobular carcinoma (ILC) accounts for 10% of breast cancers and is associated with multifocal and contralateral breast involvement. The National Institute of Clinical Excellence (NICE) guidelines (2009) recommended the use of Magnetic Resonance Imaging (MRI) in the preoperative assessment of ILC. This study aims to assess compliance with guidelines in two District General hospitals and the utility of MRI in the investigation of ILC.

Methods: All cases of ILC in 2011 AND 2012 were retrospectively identified from the pathology database and their breast imaging findings were reviewed.

Results: 107 patients had ILC, of these 41 had MRI preoperatively (38%). MRI upgraded mammography/Ultrasound diagnoses in 8 patients (19·5%). MRI showed multifocal disease in 13 patients (31·7%) occult on ultrasound/mammogram, with these patients undergoing mastectomy. MRI showed a contralateral lesion in 9 patients, 4 (9·8%) of which were ILC (5 benign) with these patients having bilateral surgery. MRI also downgraded 4 patients to unifocal disease with reported multifocal appearances on mammography/Ultrasound, and MRI findings confirmed histologically.

Conclusions: MRI is highly accurate in the diagnosis of both multifocal and contralateral disease in ILC and should be undertaken in all such cases preoperatively assuming no contraindication.

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Cancer/Surgical Oncology (GI)

Cancer/Surgical Oncology (GI) 0043

Prediction of Survival from Pancreatic Adenocarcinoma Following Intended Curative Pancreaticoduodenectomy Using an Artificial Neural Network

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Aims: Pancreatic cancer remains the fourth leading cause of death in the western world. Most patients present with advanced disease. Predictive systems may provide prognostic information for these patients. Artificial Neural Networks (ANNs) are data analysis algorithms that can be trained to identify patterns within a dataset associated with a desired outcome. The aim of this study was to assess the feasibility of ANNs to predict survival in patients with pancreatic adenocarcinoma who have undergone potentially curative resection.

Methods: All patients between September 2004 and November 2011 who underwent pancreaticoduodenectomy for pancreatic adenocarcinoma were identified in a specialist hepatobiliary unit. Pre-operative, post-operative and pathological factors were retrieved. Recursive partitioning was used to select the input nodes. Seventy-five percent of the data was used to train the ANN and twenty-five percent used to internally validate the trained ANN.

Results: Ninety-seven patients (53 males, 44 females) were identified. Median age of patients was 65 (42–83) years. Median length of post-operative stay was 11 (5–63) days with two hospital deaths. The median follow-up duration was 415 (14–2651) days. Overall 1-year survival was 65·9%; overall 5-year survival 10·8%. Eleven input variables were selected from 40 potential variables to construct the ANN. Input variables included margin and lymph node involvement, lymphovascular invasion and tumour differentiation. Two multilayer perceptron ANNs were designed that could predict survival at 1 and 2 years. The process of ANN training was smooth. Each model became better at predicting survival outcome with the validation data after each iteration. A satisfactory minimisation of the mean squared error (MSE) for both models (<0·05) was obtained within the allocated number of runs.

Conclusions: Histological factors remain key prognostic variables. ANNs have the potential to predict outcome in pancreatic cancer resection and can therefore aid in counselling individual patients on survival following intended curative resection.

Cancer/Surgical Oncology (GI) 0064

Outcomes of Splenic Flexure Carcinomas

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Aims: Splenic flexure carcinomas (SFC) account for 3-8% of all colonic cancers and have been reportedly associated with high local recurrence rates and poor survival. Due to the variable blood supply of the splenic flexure, optimum surgical technique has been debated. The aims of our study were to assess the outcomes of patients with SFC within our unit.

Methods: We performed a retrospective review of all consecutive patients who underwent resectional surgery for splenic flexure adenocarcinomas between March 2004 and September 2012.

Results: 23 patients were included. Median age was 70 years (range 52–86 years). 18 were males. 3 patients underwent emergency surgery. 15 patients underwent extended right hemicolectomies, 5 had left hemicolectomies and 3 had total colectomies. 4 patients underwent concurrent splenectomy. 14 patients had Dukes' B disease at presentation, 7 patients had Dukes' C disease at presentation and 2 patients had Dukes' D disease at presentation. Median lymph node harvest was 13 for right sided resections, 10 for left sided resections and 21 for total colectomies. Median length of stay was 12 days (range 5–32). Our 30 day mortality rate was 4·3%. Local Recurrence Rate was 4·3%. Median survival was 20 months (0–103 months). Median follow-up was 52 months. Our 1 year and 5 year survival rates were 85% and 69% respectively. There was no statistically significant difference between type of operation performed and local recurrence rate or survival.

Conclusions: Our 1 year and 5 year survival rates were comparable to the national average for all colonic cancers. Outcomes were similar when comparing type of operation performed; however we recognise the small sample size and therefore recommend larger studies to investigate this further.

Cancer/Surgical Oncology (GI) 0069

Routine vs. Selective Histological Analysis of Gallbladder Specimens. A Retrospective Review over 9 Years of Activity with a Special Focus on Patients' Age

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Aims: Incidental gallbladder cancer is an infrequent possibility in patients undergoing cholecystectomies. The aim of our study was to present the incidence of such disease and to correlate age and the pathologic data.

Methods: A retrospective review was conducted for all gallbladder specimens following cholecystectomies during the last 9 years of activity in our hospital. For all cases of non-gallstone pathology found at histological analysis the medical notes and the hospital electronic databases were screened and perioperative clinical and radiological data were gathered.

Results: 3330 cholecystectomies were performed. Indications for surgery were mostly biliary colic (n = 11; 44%) and cholecystitis (9; 36%). Preoperative imaging identified gallstones with normal common bile duct (CBD) (19; 76%), gallstones and abnormal CBD (4; 16%), abnormal CBD (1; 4%) and gallstones with abnormal mass (1; 4%). Twenty-five cases (0·7%) of non-gallstone pathology were identified, 18 males (72%) median age 65 years (range 18–85). Eleven patients were found with dysplasia, one adenoma, thirteen patients with cancer: 7 adenocarcinomas, 2 metastases from ovarian cancer, 1 adenosquamous carcinoma, 1 chronic lymphocytic leukemia, 1 neuroendocrine carcinoma, 1 Non-Hodgkin Lymphoma. Median age for cancer patients was 70 years (range 51–85) 57 years for dysplasia (range 15–75).

Conclusions: Incidental gallbladder cancer is a rare event. In our series no patient below the age of 51 years old experienced a malignant disease, therefore age could be considered as an additional factor for a selective approach to histological analysis.

Conclusions: Incidental gallbladder cancer is a rare event. In our series no patient below the age of 51 years old experienced a malignant disease, therefore age could be considered as an additional factor for a selective approach to histological analysis.

Cancer/Surgical Oncology (GI) 0083

Colonoscopy vs. Flexible Sigmoidoscopy for Fresh Rectal Bleeding

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Aims: Our aim was to determine the efficacy flexible sigmoidoscopy rather than colonoscopy at detecting cancer in patients presenting with fresh rectal bleeding.

Methods: Colonoscopy and histology reports were analysed from 174 patients who underwent colonoscopy for isolated rectal bleeding without the presence of other symptoms or signs of colorectal cancer.

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Results: Of the 174 cases included. 52 (30%) had no pathology identified, 11 (6%) had colitis/proctitits, 39 (22%) had polyps, 62 (36%) had benign pathology (haemorrhoids/diverticular disease) and 10 (6%) had adneocarcimoma.
Of the 10 patients with adenocarcinoma 2 had cancers proximal to the splenic flexure, these had both presented with blood mixed in with the stool on admission.
Of the remaining 8 patients with cancers distal to the splenic flexure, 7 had presented with fresh PR bleeding separate from the stool and one had presented with altered blood mixed in with the stool.
Conclusions: This study suggests that the presence of fresh rectal bleeding in the absence of other symptoms related to colorectal cancer is unlikely to be due to a cancer proximal to the splenic flexure ($p = 0{\cdot}067$). Flexible sigmoidoscopy rather than colonoscopy may be a more appropriate investigation for patients presenting in this way.

Cancer/Surgical Oncology (GI) 0086

Emergency Palliative Colorectal Cancer Surgery in the Elderly

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Aims: To determine whether resection of the obstructing primary tumour provides any survival advantage over non-resectional decompressive surgery in elderly patients with metastastic colorectal cancer.
Methods: This is a retrospective study of elderly patients, aged 75 years or older, suffering from intestinal obstruction caused by metastatic colorectal cancer. From 1/1/2007 to 30/12/2012, 51 patients received palliative decompressive treatment. Demographic data, co-morbidities, and disease status of patients receiving colorectal resection (CR) of the primary tumour were compared to patients receiving non-resectional (NR) palliative procedures, including by-pass operations, stenting, and diversion stomas. Short-term outcomes including peri-operative complications and mortality, and long-term outcomes including survival were compared.
Results: The two groups were comparable with regard to demographics, co-morbidities, and metastatic load. Significantly more patients in the NR group had rectal tumours below the peritoneal reflection (NR: 88%, CR: 17%, $p = 0{\cdot}026$). No significant difference was found in the median overall survival between the two groups (NR: 6 months, CR: 6 months), and the number of eventual tumour related deaths (NR:43%. CR: 55%. $P = 0{\cdot}354$). Operative time was significantly longer in patients receiving colorectal resection (CR:170 min, NR: 90 min, $p = 0{\cdot}00$), with significantly greater blood loss (CR: 100 mL, NR: 7·5 mL, $p = 0{\cdot}001$). The CR group also suffered from significantly more major post-operative complications requiring invasive intervention (34% vs. 9%, $p = 0{\cdot}048$). No significant difference in peri-operative mortality was found (NR: 9%, CR: 3%, $p = 0{\cdot}571$).
Conclusions: Primary tumour resection offers no survival benefit over non-resectional palliative procedures for elderly patients with obstructing metastatic colorectal cancer. It is associated with a higher major complication rate and should not be recommended.

Cancer/Surgical Oncology (GI) 0116

Prognostic Significance of Deprivation in Upper Gastrointestinal Cancer

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Aims: To determine the influence of the Index of Multiple Deprivation (IMD) and health deprivation (HD) on upper gastrointestinal (UGI) cancer outcome.
Methods: 1185 consecutive patients (697 oesophageal, 488 gastric cancer) were studied prospectively and deprivation scores calculated using the IMD of Welsh Government. Primary outcome measure was survival from diagnosis.
Results: Open and close laparotomy for all surgical patients was commoner in patients residing in deprived geographical areas with a 6·5% open and close rate in the least deprived IMD quintile versus 13·5% in the most deprived quintile ($p < 0{\cdot}0001$). On post-operative histopathology, IMD was associated with pT ($R = -0{\cdot}146$, $p = 0{\cdot}043$), pN ($R = -0{\cdot}158$, $p = 0{\cdot}029$), and pM stage ($R = -0{\cdot}189$, $p = 0{\cdot}016$). On univariate analysis survival was associated with oesophageal versus gastric tumour site ($p = 0{\cdot}028$), histopathological cell type ($p < 0{\cdot}0001$), age ($p < 0{\cdot}0001$), radiological (r) TNM stage ($p < 0{\cdot}0001$), radical treatment intent ($p < 0{\cdot}0001$), IMD ($p < 0{\cdot}0001$), and HD ($p < 0{\cdot}0001$). On multivariate analysis of all patients, age (HR 1·021, 95% CI 1·014-1·028, $p < 0{\cdot}0001$), rTNM stage (HR 1·559, 95% CI 1·427-1·704 $p < 0{\cdot}0001$), radical treatment intent (HR 0·338, 95% CI 0·274-0·418, $p < 0{\cdot}0001$), and IMD rank (HR 1·000, 95% CI, 1·000-1·000, $p = 0{\cdot}084$) were associated with duration of survival. Median (1 and 2 year) survival for patients residing in the most deprived quintile was 9months (36%, 22%) compared with 11 months (45%, 28%) for patients residing in the least deprived quintile.
Conclusions: Deprivation is an important, but not independent, prognostic indicator in UGI cancer.

Cancer/Surgical Oncology (GI) 0198

Endoscopic Tattooing to Aid Intra-Operative Tumour Localisation: Are We Getting it Right?

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Aims: Endoscopic tattooing is a useful tool as colonoscopy has a considerable error rate (21%) for localisation of colorectal tumours and the laparoscopic surgeon does not have the benefit of being able to palpate the colon to locate the tumour. Furthermore, current trends towards less use of bowel preparation can make tumour localisation even more challenging. We aimed to assess concordance with Trust guidelines for endoscopic tattooing of colorectal tumours prior to surgical resection.
Methods: Data was collected from October 2012 to May 2013. Theatre records were used to identify all colorectal resections carried out for malignancy or polyps. Endoscopy reports and operation notes were then used to determine which of these lesions had been tattooed. The site of each lesion and the circumstances of the resection were recorded and taken into account during the analysis.
Results: From October 2012 to May 2013 there were 49 resections for colorectal polyps or tumours. 14 (29%) of these lesions had been tattooed pre-operatively. 24 (49%) had a clinical reason for not having a tattoo sited (mainly due to tumour location in the rectum or caecum or in emergency resections) and 11 (22%) did not have a tattoo with no clear clinical reason for this. In 9 of the 14 cases which had been tattooed preoperatively, this was not recorded on the endoscopy report. Instead the information was taken from the operation note and therefore relied upon the operating surgeon to make a note of whether or not they saw the tattoo.
Conclusions: Endoscopic tattooing has gained importance in tumour localisation in recent years due to the move towards laparoscopic resections and less use of bowel preparation. Localisation at colonoscopy has a high error rate and cannot be relied up when the tumour is not visible or palpable. Almost a quarter of patients having colorectal resections had no tattoo without a discernable reason. We would advocate clear guidelines for endoscopists and mandatory documentation of tattooing or the reason for not carrying this out.

Cancer/Surgical Oncology (GI) 0215

Does Pre-Operative Haemoglobin Level Influence Post-Operative Outcome?

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Introduction: Patients diagnosed with colorectal cancer can present with anaemia. A low preoperative Haemoglobin (Hb) level can be associated with increased risk of adverse post-operative outcomes. We aimed to determine if a low pre-operative haemoglobin level was associated with poorer post-operative outcomes in patients undergoing elective laparoscopic colorectal surgery for bowel cancer.

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Methods: Prospective data was collected for patients undergoing elective laparoscopic colorectal cancer resections from February 2010 to November 2013. The pre-operative Hb levels were measured for all patients, and operative outcome data including post-operative 30-day morbidity and mortality, length of hospital stay, re-admission and re-operation within 30 days, was collected. Outcome data was compared for patients with pre-operative Hb levels greater than or equal to 110 g/l (range: 111–164) with those with Haemoglobin levels below 110 g/l (range: 82–107). Patients with preoperative blood transfusions, open operations, and laparoscopic conversions were excluded.
Results: The median age, length of hospital stay and body mass index were equivocal in the two groups. There was no 30-day mortality in either group. Significantly higher 30-day re-admission and reoperation rates, were noted in patients with Hb ≥11 gm/dl. There was a decreased incidence of post-operative complications in patients with Hb <11 g/dl.
Conclusions: A lower pre-operative haemoglobin level does not adversely affect the post-operative outcomes, and furthermore, a lower pre-operative haemoglobin level is associated with reduced incidence of post-operative morbidity. Haemoglobin level alone is not a reliable indicator or predictor of operative outcome in laparoscopic colorectal cancer surgery.

Cancer/Surgical Oncology (GI) 0240

Postoperative Complications do not Impact on Recurrence and Survival After Curative Resection of Gastric Cancer

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Aims: To assess the impact of postoperative complications on recurrence and survival after curative gastric cancer resection.
Methods: Between Jan, 90 and Dec, 09, consecutive patients with R0 gastric cancer resection were identified in a prospective database. Patients who received neoadjuvant therapy or with synchronous tumours were excluded. Complications were classified according to Clavien-Dindo (CD) grades and the Comprehensive Complication Index (CCI). Infectious complications (sepsis and intra-abdominal sepsis –IAS-) and perioperative blood transfusion (PBT) were also evaluated. Cox regression analyses to relate complications and clinicopathological variables to recurrence-free (RFS) and overall survival (OS) were used.
Results: A cohort of 271 pts was included. Median (P_{25}-P_{75}) follow-up was 63·4 (23·6-143·3) months. At the end of the study, 116 pts were alive, 87 died of cancer and 59 died of other causes. Complications were observed in 168 (62%) pts (CD1: 1·1%, CD2: 43·9%, CD3A: 8·5%, CD3B: 4·8%, CD4A: 2·2%, CD4B: 1·5%. Median CCI was 20·9 (20·9-30·8) points. Sepsis and IAS were diagnosed in 61 (22·5%) and 46 (17%) pts. A total of 122 pts (45%) received PBT. Tumour relapse was detected in 88 pts (32·4%). Bivariate analysis withheld age, weight loss >10%, PBT, pTstage, pNstage, pStage, lymphatic invasion, vascular invasion, perineural invasion, and grade of curability as factors associated with significantly worse RFS. At multivariate analysis independent predictors of short RFS were pStage [HR; (95% CI)] [8·9; (4·7-16·8], age [1·04; (1·02-1·05)], vascular invasion [0·61; (0·4-0·93)], weight loss >10% [1·7; (1·06-2·8)] and lymphatic invasion [0·64; (0·43-0·95)]. In relation to OS, bivariate analysis showed age, cardiac comorbidity, pTstage, pNstage, pStage, lymphatic invasion, perineural invasion and grade of curability as factors associated with significantly shorter OS. In the multivariate analysis pStage [9·46; (5·0-17·9)], age [1·03; (1·02-1·05)], vascular invasion [0·55; (0·35-0·86)] and lymphatic invasion [0·59; (0·4-0·88)] remained as independent prognostic factors for OS.
Conclusions: Postoperative complications do not impact on recurrence and survival after curative gastric cancer resection.

Cancer/Surgical Oncology (GI) 0241

Audit of Extended Thromboprophylaxis Use for Colorectal Cancer Resections

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Aims: NICE guidelines (2010) state that pharmacological venous thromboembolism (VTE) prophylaxis should be extended to 28 days postoperatively for patients who have had major cancer surgery in the abdomen or pelvis.
The aim was to audit the compliance to these guidelines in a single colorectal department.
Methods: Data was collected retrospectively for all patients that underwent resections for colorectal cancer in a 2 month period from a local electronic database. The discharge summaries for these patients were reviewed to assess whether they had been prescribed a total of 28 days VTE prophylaxis after surgery with Enoxaparin (or an alternative drug such as warfarin if they had been commenced/re-commenced on this during their admission).
The same data was re-audited after providing training, discussing the guidelines in the junior doctors' induction program and highlighting the duration of Enoxaparin use on the drug chart on admission, thus completing the audit cycle.
Results: 10 out of the 16 included patients (63%) were prescribed extended VTE prophylaxis during the initial audit period. All 10 of included patients (100%) were prescribed extended VTE prophylaxis after training and changes to the induction program were implemented.
Conclusions: VTE prophylaxis is important for reducing post-operative morbidity and mortality. This audit cycle demonstrates that compliance to national guidelines can be improved with targeted training and amendments to the drug chart format.

Cancer/Surgical Oncology (GI) 0254

Neo-Adjuvant Chemotherapy and Primary-First Approach for Rectal Cancer with Synchronous Liver Metastases

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Aims: To review the outcomes of our patients with synchronous rectal liver metastases treated with a curative intent by neo-adjuvant chemotherapy with or without chemoradiotherapy followed by resection of the primary tumor and then resection of liver metastases.
Methods: Between 2004 and 2012, patients who presented with rectal cancer and synchronous liver metastasis were treated with curative intent with perioperative systemic chemotherapy as the 1st line of treatment. Responders to chemotherapy underwent resection of the primary tumor with or without preoperative chemoradiotherapy (CRT) followed by hepatic resection.
Results: Fifty-three rectal cancer patients with 152 synchronous liver lesions were identified. After a median follow-up of 29·6 months (range, 6·07-107·6 months) 30 patients (57%) were alive (9 patients alive with disease) and 23 (43%) had died. Overall survival (OS) was 59% at 3 years and 39% at 5 years.
Conclusions: Rectal resection before hepatic resection, combined with perioperative chemotherapy is associated with promising clinical outcome. It allows down-staging of liver lesions and removal of the primary tumor before the progression of further micrometastases. Furthermore, patients that do not respond to chemotherapy can be identified and may avoid major surgical intervention.

Cancer/Surgical Oncology (GI) 0402

The Impact of Surgical Specialisation on Survival Following Surgery for Colon Cancer: A Clinical Cohort Study

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Aims: Reorganisation of colorectal cancer services in the UK has led to surgery being increasingly, but not exclusively, delivered by specialist surgeons. Current evidence suggests that specialisation is associated with improved outcomes following surgery for rectal cancer. However, it remains unclear as to the role of healthcare provide characteristics on outcomes after surgery for colon cancer. Therefore, the aim of this study is to examine short and longer-term outcomes after colon cancer surgery performed by specialist colorectal surgeons compared to non-specialists.

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Methods: Patients undergoing surgery for colon cancer in 16 hospitals from 2001–2004 were identified from a prospectively maintained regional audit database. Patients were identified as having surgery under the care of a specialist or non-specialist. Post-operative mortality (<30-days) and 5-year relative survival rates were compared.
Results: In a total of 2,618 patients, 1,724 (65·9%) were treated by a specialist and 894 (34·2%) by a non-specialist surgeon. Patients undergoing surgery by a specialist were more likely to be deprived (P = 0·001), present electively (P < 0·001), have more Stage I tumours (P = 0·001), undergo surgery with curative intent (P = 0·024) and have >12 lymph nodes examined (P = 0·004) than those treated by a non-specialist surgeon. Post-operative mortality was lower (7·0% vs 11·4%; P < 0·001) and 5-year relative survival was higher (65·0% vs 52·1%; P < 0·001) among those treated by a specialist surgeon. In multivariate analysis, surgery by non-specialists was independently associated with increased post-operative mortality (adjusted OR 1·39 (95%CI 1·02-1·90; P = 0·036)) and poorer 5-year relative survival (adjusted RER 1·17 (95%CI 1·01-1·36; P = 0·035)).
Conclusions: Short and longer-term survival after surgery for colon cancer were higher in those treated by specialist colorectal surgeons compared to non-specialists.

Cancer/Surgical Oncology (GI) 0424

Does Compliance with the 2 Week Wait Colorectal Cancer Referral System Lead to a Higher Cancer Detection Rate?

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Aims: Current guidelines suggest that patients with a suspected colorectal cancer are seen within 2 weeks of the referral made by general practitioners. Recent data has shown an increase in referrals with a decrease in cancer yield, with up to 25% of all referrals made not meeting referral guidelines. This study aims to determine if there is a higher cancer detection rate in referrals compliant with the referral criteria.
Methods: A retrospective study of patients referred to a 2-week wait colorectal clinic over a 3-month period was performed. Referral proformas and initial clinic letters were assessed to determine compliancy with the 2 week wait criteria and number of cancers diagnosed.
Results: 287 patients were seen in the 3 month period. 38% of referrals were not compliant with the referral criteria. The main reasons for non-compliance were age of the patient (28%) and duration of symptoms (21%). 15 (5·2%) patients were diagnosed with cancer. Compliant referrals had higher cancer detection rate, 13/180 patients (7·2%) when compared with non-compliant referrals, 2/107 patients (1·9%).
Conclusions: Compliance with the referral criteria is associated with a higher cancer detection rate. Better education for general practitioners may help to reduce the number of non-compliant referrals reducing work load on strained colorectal units.

Cancer/Surgical Oncology (GI) 0426

The Impact of Chronic Kidney Disease on Postoperative Outcome Following Colorectal Cancer Surgery

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Aims: Chronic kidney disease (CKD) is increasing in prevalence and is associated with cardiovascular events and mortality in asymptomatic and vascular surgery populations. This study aims to determine the role of CKD in stratifying peri- and postoperative risk for colorectal cancer patients with non-metastatic disease undergoing elective curative resection.
Methods: Patients diagnosed with non-metastatic colorectal adenocarcinoma undergoing surgical resection between 2006 and 2011 were identified from a prospectively collated database. Further information on survival and cause of death were gathered from a regional cancer registry. Estimated glomerular filtration rates were calculated using the Modified of Diet in Renal Disease (MDRD) equation. Kaplan-Meier survival curves were constructed for disease-free and overall survival. Multivariate Cox regression models were used to determine the role of CKD after stratification by several clinicopathological factors.
Results: 708 colorectal resection were studied (Median follow-up: 45 months [IQR, 21–65]). Overall postoperative complications were similar, but CKD patients were more likely to develop cardiovascular morbidity (P < 0·001) and 30-day mortality (4·8%(6/124) vs 2·1%(12/580). Kaplan-Meier analysis revealed poorer overall survival for both localized (stage I-II) (p = 0·019) and stage III (p = 0·001) colorectal cancer in the CKD population. Multivariate Cox regression analysis identified CKD as an independent prognostic factor for non-cancer death (Hazard ratio (HR) 1·82, (95% CI 1·07 – 3·10); P = 0·027) but not for overall survival (HR 1·21, (95% CI 0·90 – 1·47); P = 0·116).
Conclusion Patients with CKD may be more likely to develop cardiovascular complications following colorectal cancer resection and have an increased risk of a non-cancer death. Future research should explore the interaction of CKD in competing mortality risks following colorectal cancer surgery.

Cancer/Surgical Oncology (GI) 0446

Role of Defunctioning Stoma in Management of Patients with Left-Sided Colorectal Cancer

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Aims: Colorectal cancer is the third commonest cancer and the second commonest cause of cancer-related death in the UK[1]. In 2011–2012, 62% of resections in the UK were for left-sided cancer while 24% accounted for rectal cancer; 21% of patients presented as an emergency[2]. Treatment often involves a loop ileostomy, which is envisaged to be temporary, and therefore patients often expect a prompt reversal. However, reversal itself is a significant operation with possible associated morbidity and mortality. The National Bowel Cancer Audit found that at 18 months, 30% of anterior resections still had a stoma. This study aims to evaluate the role of stomas in management of left-sided colorectal cancer.
Methods: All patients who had a loop-ileostomy fashioned over a two-year period (Sept 2011-Aug 2013) were identified from the local Colorectal cancer database. Patient demographics, indications, stoma-related details (date of reversal and reasons for non-reversal) were retrieved and analysed from patient notes.
Results: A total of 86 patients had a loop ileostomy fashioned of whom 54(63%) were male and 32 (37%) were female; median age was 66 (21–95) years. Of these 66 (77%) were for left-sided colorectal cancer and 10 (12%) patients had presented as an emergency. Elective reversal took place in 45 (68%) cases with a median time to reversal of 30 (8–82) weeks. Reasons for non-reversal included: awaiting reversal at the time of analysis 9 (43%), perioperative complications at primary surgery 5 (24%), disease progression 4 (19%), significant patient co-morbidities 2 (10%) and patient preference 1 (5%). Mean length of stay for reversal was 6 days. There was associated morbidity recorded in 5 (11%).
Conclusions: Only about 2/3rd of loop ileostomies, formed as part of treatment for left-sided colorectal cancers, were reversed with a median time to reversal of 30 weeks. This should be emphasised at the time of consent.

1. Cancer Registration Statistics, Office for National Statistics, England, 2011.
2. National bowel cancer audit 2013.

Cancer/Surgical Oncology (GI) 0470

Poor Level of Agreement between Pre-operative Chemical Shift MR Imaging and Digital Histology to Quantify Intra-hepatic Fat in Patients Undergoing Resection for Colorectal Liver Metastases

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Aims: Excess intra-hepatic fat (IHF), commonly expressed as steatosis, is present in one third of patients undergoing resection for colorectal liver

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metastases (CLM), and may predict for an adverse post-operative outcome, but non-invasive pre-operative quantification is poorly defined. We assessed the feasibility of using chemical shift sequences from routine pre-operative magnetic resonance (MR) scans to quantify IHF content in patients undergoing resection for CLM.

Methods: In a prospective study recruiting patients undergoing first-time resection for CLM, we established a multi-section digital histological quantification of IHF in peri-tumour sections (7 slides) as the gold standard (inter- and intra-rater concordance =0·97 and 0·98 respectively). We compared derived In-Out of phase ratios from the mean difference in signal intensity in Couinaud segments II, V and VIII on pre-operative chemical shift MR scans, using two observers. Correlations were expressed as Spearman's rank coefficient; level of agreement was assessed using Bland-Altman plots.

Results: Digital histology quantification was performed in resections from 35 patients (20 males, median age =64 years). The median IHF percentage by MR was 2·29 (range 0–11·64) and digital histology was 1·13 (range 0–9·78). Pre-operative In-Out ratio correlated well with digitally determined IHF content (rho =0·626, *P* =0·0001), but MR consistently overestimated IHF (mean difference by Bland-Altman =1·37), with a wide range of differences in mean values (0·01-10·71).

Conclusions: Clinical chemical shift MR protocols are heavily T1 weighted to reduce scan acquisition time (for example, repetition time of 100 msec). This means that whilst In-Out ratios correlate with digitally-determined fat content on histology, systematic overestimation bias and lack of agreement at an individual level mean these sequences cannot be used to accurately determine IHF content. The use of chemical shift MR to identify high-risk patients prior to liver resection surgery is questioned.

Cancer/Surgical Oncology (GI) 0505

Are Non-Target Colorectal Cancer Patients Disadvantaged Because of the Two-Week Wait Pathway?

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Aims: We compared waiting time to colonoscopy and incidence of colorectal cancer in two patient groups: Target (T) (2 week wait) and Non-Target (NT).

Methods: All diagnostic colonoscopies at a North London University Hospital between January and December 2012 were retrospectively analysed. Waiting times from referral to colonoscopy in T and NT patients as well as the incidence of colorectal cancer in the two groups were compared. Patients with incomplete data were excluded from the analysis. Mean differences in waiting time were evaluated using Student's unpaired t-test. Two-tailed p-value ≤0·05 was considered significant.

Results: 1907 diagnostic colonoscopies were carried out: 755(39·6%) T and 1152(60·4%) NT. Table 1 shows colonoscopy waiting times. NT waited on average 47·5 days (SD [standard deviation] 29·5) for colonoscopy vs. 27·4 days (SD 23·0) days for T, (mean difference 20·1 days, 95% CI 17·60 to 22·59; p < 0·0001). 92 patients were diagnosed with colorectal cancers, of whom 22 were excluded because of incomplete data, and of whom 47 (67·1%) were in T and 23 (32·9%) in NT groups. Colorectal cancer was diagnosed in 6% of T and 2% of NT patients. Table 2 shows waiting time to colonoscopy in patients diagnosed with cancer. In these patients waiting time to colonoscopy was 10·2 (21·18 to 0·66; p = 0·07) days longer in NT (29·2 ± 23·9 days) than T (19·0 ± 12·8).

Table 1	< 14 days	< 21 days	< 28 days
NT n(%)	86(7·5%)	158(13·7%)	253(22·0%)
T n(%)	226(29·9%)	383(50·7%)	491(65·0%)

Table 2	<14 days	<21 days	<28 days
NT with cancer	4(30·8%)	5(38·5%)	7(53·8%)
T with cancer	14(42·4%)	20(60·6%)	26(78·8%)

Conclusions: The cancer detection rate in target patients is lower than expected. Target patients were significantly more likely to have a colonoscopy within two to four weeks from referral. Patients with colorectal cancer not referred via the two-week wait pathway were disadvantaged by longer waiting time to diagnostic colonoscopy.

Cancer/Surgical Oncology (GI) 0515

Area of Submucosal Invasion and Width of Invasion Predicts Lymph Node Metastasis in Pt1 Colorectal Cancers

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Aims: The increased detection of pT1 colorectal cancers (CRC) in the UK National Health Service Bowel Cancer Screening Programme (NHSBCSP) raises new worries for clinicians in terms of treatment choices. The aim of this study is to investigate the phenotypic features and behaviour of pT1 CRC and to identify new high risk features that are associated with lymph node metastasis (LNM).

Methods: Two hundred and seven pT1 CRC were obtained from Northern and Yorkshire Cancer Registry and Information Services database and digitally scanned. Phenotypic features of the pT1 CRC were evaluated. LNM status was known through official pathology reports and high risk phenotypic features were identified. Modified receiver operating characteristic (ROC) curves were generated for significant phenotypic quantitative features.

Results: LNM was noted in 19 patients (9·2%). pT1 CRC with LNM had a significantly wider area of invasion (p = 0·001) and a greater area of submucosal invasion (p <0·001) compared to pT1 CRC without LNM. Qualitative features such as grade of differentiation (poor vs non-poor), vascular and lymphatic invasion were also significant predictors of LNM (p < 0·0001, p = 0·039 and p = 0·018 respectively). Modified ROC curves generated cut-off values of 11·5 mm for the width of invasion and 35 mm2 for the area of submucosal invasion. Width of invasion greater than 11·5 mm was predictive of LNM on univariate analysis (Odds ratio[OR] = 9·46, Confidence interval[CI] = 2·13–42·07, p = 0·003) but not on multivariate analysis (OR = 5·59, CI = 0·92–34·12, p = 0·062) analysis. Area of submucosal invasion greater than 35 mm2 was predictive of LNM on both univariate(OR = 20·9, CI = 2·73– 159·74, p = 0·003) and multivariate(OR = 12·48, CI = 1·44–108·07, p = 0·022)analysis.

Conclusions: This study has shown that quantitative phenotypic features such as width of the invading carcinoma and area of submucosal invasion can be used as a valid parameter in predicting LNM.

Cancer/Surgical Oncology (GI) 0575

Quality of Life of Patients with Gastro-Oesophageal Cancer who Underwent Surgical or Endoscopic Intervention

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Aims: Upper gastro-intestinal (GI) surgery is associated with high rates of morbidity and the post-operative complications may have a detrimental impact on patients' quality of life (QOL). Therapeutic endoscopy is a less invasive procedure with a high 5-year survival rate but is only suitable to a specific group of patients. The aim of this study is to evaluate and compare the QOL in patients with high-grade dysplasia or gastro-oesophageal cancer who underwent surgical or endoscopic intervention.

Methods: A cross-sectional study of patients who had treatment between October 2010 and December 2012 was conducted using the European Organisation for Research and Treatment of Cancer (EORTC) QOL Questionnaires C30 and OG25 to assess the QOL in both treatment groups. Median scores were used to assess QOL in each group of patients at 6 weeks, 6 months, 1 year and 2 years post intervention.

Results: 68 out of the 131 patients (52%) completed the questionnaires. 56 patients underwent oesophagectomy or gastrectomy and 12 patients underwent

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therapeutic endoscopy. At 6 weeks after surgery, the functional scale reported lowest score in role function and the higher scores on symptom scale were fatigue, insomnia and loss of appetite. At 6 months after surgery, the main symptoms affecting QOL were fatigue, anxiety and weight loss. The overall functional, symptom and global QOL score improved at 1 to 2 years after surgery. In comparison, patients who underwent endoscopic intervention reported having worse abdominal pain and discomfort but still achieved an overall higher functional score and lower symptom score.
Conclusion: The adverse impact of surgery on QOL was apparent particularly in patients at 6 weeks and 6 months after surgery. Data from this study can help patients to be better informed regarding their QOL and the potential limitations in functions and symptoms they may experience at the various time points.

Cancer/Surgical Oncology (GI) 0597

Colorectal Cancer About 98 Cases Treated National Centre Hospital Nouakchott – Mauritania

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Aims: Colorectal carcinoma (CRC) is one of the most common cancers in the world. Mauritania is the most common gastrointestinal cancer. We present a retrospective study of the clinical and pathological characteristics of colorectal cancer based on the lesion seat, age and sex. The aim is to discuss the diagnostic and therapeutic options pathology to improve the management of CRC General Surgery National Hospital Nouakchott in Mauritania.
Methods: This is a non-screened 96 patients newly diagnosed CRC and supported the National Hospital Nouakchott population. Were included all patients undergoing colorectal malignancy during the period January 2008 to December 2011. Databases have been studied and statistically analyzed by SPSS system and variables used were age, sex, ethnicity, history, clinical, Biology, Endoscopy, Imaging, Surgery, Complications, Pathology, Evolution, Radiotherapy, Chemotherapy and length of stay.
Results: It is 58 (60%) men and 38 (40%) women with a mean age of 45 years (range: 17–72 years), a. The Arab-Berber ethnic group is dominant (77%) and 23% of Africans Mauritanian History are dominated by tobacco (9%), diarrhea with constipation 9%. Clinically occlusive syndrome accounted for 45 % of cases, the abdominal mass was found in 41 % of cases and rectal bleeding in 14 % of cases. Rectal touch was that in 22 (23 %) patients. On the imaging plane X-ray abdominal was done in 54·5 % of cases, ultrasound was contributory in 45·5 % of cases, CT was performed in 68 (77·5 %) patients. The enema was found in 20 (22·7) cases. The operative risk was present in 12 (13·6%) patients (Score ASA III). Emergency 44 patients were operated with colectomy in 4 patients and oostomy was performed in 32 (35%) cases, which (16 cases of Hartmann type and 16 side ostomy) . There were 4 cases of perforations diastatic and 2 cases of iatrogenic perforation (colonoscopy). Endoscopy with biopsy was found in 32 (35%) cases. Colonic tumor seat was right in 36 (37 %) cases and left colic in 42 (44 %) patients. Biologically tumor markers were found in 22·7 % of cases and the transfusion was necessary in 16 patients. On the procedure technically we found in records 28 cases of left colectomy , 16 cases of straight colectomy , 8 cases of sigmoidectomies . The final stoma was performed in 12 patients, and ileo - colonic anastomosis in 20 patients. Twenty patients were in unresectable advanced stage. Ascites was found in 16 (18·2%) patients, meta- chronous metastases (liver: 33%) were observed in 12 patients and 16 cases of synchronous metastases (liver: 75% - ovary: 25%). Transit tract was taken on average a 3·5j. The mortality rate was 20% and morbidity was 25% with 14 % infection, 9% fistula and 2 cases of ureteral ligation. The evolution towards carcinomatosis was found in 28 (32 %) patients. The average length of stay was 13 days (7- 22j). Histologically we could find in 28 (31·8 %) cases of pathological findings with a rate of 42·8 % margin of healthy section. ADK well differentiated were the most frequent (85 %). The decline 5 years was determined in 48 patients with greater than 5 years survival of 9% and 27·3 % in 3 years. Locoregional recurrence was observed in 24 (27·3%) patients. Chemotherapy was performed in 8 (9·1 %) patients and no trace of radiation was found in the files.
Conclusion The results of this study suggest that the tumor seat of colorectal cancer is similar to that observed in high-incidence countries such as the United States of America and parts of Europe, but differs from the African continent with a proportion of rectal tumors. Improving the management of CCR must go through sensitization of all physicians with recommendations for screening, diagnosis and treatment.
Conclusions: The results of this study suggest that the tumor seat of colorectal cancer is similar to that observed in high-incidence countries such as the United States of America and parts of Europe, but differs from the African continent with a proportion of rectal tumors. Improving the management of CCR must go through sensitization of all physicians with recommendations for screening, diagnosis and treatment.

Cancer/Surgical Oncology (GI) 0609

The Role of C-Reactive Protein in Stratifying Colorectal Cancer Patients: A Systematic Review

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Aims: With the advent of several different therapeutic strategies to manage the different stages of colorectal cancer, it would be beneficial to allow sub-stratification of patients into groups most likely to benefit from costly interventions. C-Reactive Protein (CRP) is a cheap and readily available blood test performed pre-operatively. The purpose of this review is to analyse the evidence from several retrospective studies examining the prognostic significance of CRP.
Methods: A literature search was performed using PubMed, Embase, Cochrane Library, CINAHL and Google scholar databases to identify studies, which analysed CRP and its prognostic significance in all stage operable CRC. The primary outcomes of interest were overall survival and disease free survival.
Results: A total of 205 studies were identified by our search strategy. Twelve articles were included, involving 1705 patients Three of the included studies, comprising 305 patients looked at Stage IV colorectal cancer and the impact of CRP on survival. Overall survival and disease free survival were shorter in the presence of an elevated pre-operative CRP in both local and advanced CRC.
Conclusions: CRP is useful as a prognostic adjunct in regard to CRC management and should be undertaken routinely in the pre-operative build up. Further well-designed, prospective studies are needed to validate its role in sub-stratification of patients for consideration of (neo)adjuvant therapies.

Cancer/Surgical Oncology (GI) 0650

Sarcopenia in Gastric Cancer Surgery: Is it a Predictor for Postoperative Outcomes?

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Aims: Determine whether sarcopenia (assessed with CT-imaging) is associated with adverse outcomes after gastric cancer surgery as has been showed in other surgical populations.
Methods: Preoperative CT-scans were obtained from all patients who underwent surgery for gastric adenocarcinoma between January 2005 and September 2012. Total muscle cross-sectional area was measured at the level of the transverse processes of lumbar vertebra L3 using OsiriX5·5.2 software and corrected for height. Cutoff values for sarcopenia were 52·4 cm2/m2 for men and 38·5 cm2/m2 for women. Primary outcome was in-hospital mortality. Secondary outcomes were severe complications (i.e. Clavien-Dindo classification ≥3a complications) and six-month mortality. Also, association between sarcopenia and specific complications were analyzed (these were: anastomotic leakage, abscess, sepsis, fascia dehiscence, ileus, surgical site infection, pneumonia, urinary tract infection, cardiac complication and postoperative delirium).

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Results: A total of 180 patients underwent surgery for gastric cancer in the study period. In 157 (87%) cases a CT was available for analysis. In total 95 (60%) of the patients were sarcopenic: 68% in men (63/92) and 49% in women (32/65). In univariate analysis sarcopenia was no predictor for in-hospital mortality (P = 1·00), severe complications (Clavien-Dindo classification ≥3a, P = 1·00) or six-month mortality (P = 0·24). Also, no association between sarcopenia and the abovementioned specific complications was found.
Conclusions: In this population of patients who underwent oncological gastric surgery sarcopenia was not associated with postoperative morbidity or mortality. The prevalence of sarcopenia, 60% in this population, is far greater than in other published surgical oncology populations (15% and 19% in surgery for colorectal liver metastases). Another predictor for morbidity and mortality is needed to better assess risks of these vulnerable patients preoperatively.

Cancer/Surgical Oncology (GI) 0667

Declining Operative Experience in Colorectal Malignancy; Adequacy of Oncologic Resection

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Aims: With the advent of the national cancer strategy (NCS) in 2008, the management of rectal cancer has been centralised to eight hospitals in Ireland. At present colon surgery continues to be performed electively and emergently outside of designated specialist centres. The aim of this study was to analyse the adequacy of oncologic resections performed by a single surgeon over a ten year period, pre and post implementation of the NCS.
Methods: An analysis of a prospectively updated colorectal cancer database was performed of all cases during the study period. All histopathological reports for the individual resections were collated and analysed. Statistical analysis was performed using Minitab V.18 and $p < 0{\cdot}05$ considered significant.
Results: There were 114 operations performed over ten year period, 77 elective (68%) and 37 (32%) emergency procedures. Seventy-six (67%) of these were performed pre-NCS and 38 (33%) post-NCS. This represents a reduction of 50% in operative procedures since 2008. The mean lymph node harvest recorded was 10 for both elective and emergency procedures over the ten year period. The mean lymph node harvest pre-implementation of the cancer strategy was 8, compared to 17 post-NCS ($p < 0{\cdot}05$). Clear resection margins were achieved in 109 of 114 cases (96%), with positive microscopic margins noted in five patients.
Conclusions: These data have implications for surgeons performing colonic surgery outside of specialist centres. In this study, despite reducing operative exposure, the mean numbers of lymph nodes harvested have increased significantly, in keeping with improved reporting standards of histopathological reporting as directed by the National Cancer Strategy.

Cancer/Surgical Oncology (GI) 0678

Survivorship and Quality of Life in Patients Following Surgery for Oesophagogastric Cancer: A Psychometric Analysis

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Aims: The importance of Survivorship in long term cancer survivors is increasingly recognised. Whilst much research has informed Quality of Life after oesophagogastric (OG) cancer treatment, there is a paucity of information about Survivorship, which this study sought to address.
Methods: The database of a tertiary referral oesophagogastric cancer centre identified 91 OG cancer survivors who were sent the validated Quality of Life – Cancer Survivors questionnaire (QOL-SC) a 41 item instrument measuring physical, psychological, social and spiritual well being. REC 13/SW/0100.
Results: 66 (73%) questionnaires were returned. Patients were grouped into 24–60 months (n = 30, median term survivors) or >60 months (n = 30, long term survivors) following surgery. 6 patients were <24 months from treatment and were excluded. The most striking finding was that the fear of development of metastatic disease and disease recurrence were significantly higher when compared to the 2012 Quality of Life of Cancer Survivors in England study by the Department of Health which investigated Survivorship in four of the most prevalent cancers (breast, colorectal, prostate cancers and Non-Hodgkin Lymphoma) up to 5 years after treatment. Furthermore, this increased fear persists in the long term rather than decreasing as is seen in other cancers. Encouragingly, Physical Wellbeing, Psychological Wellbeing and Social Concerns QOL scores all improved in long term OG cancer survivors.
Conclusions: The multidisciplinary team caring for patients treated for OG cancer need to be aware that they have a higher level of fear of developing metastatic disease and disease recurrence when compared to other cancers, which unlike other cancers persists even after 5 years. Novel strategies involving information and psychological support are required to improve the QOL of OG cancer survivors. Long term survivors can also be reassured that their overall quality of life continues to improve even after 5 years following treatment.

Cancer/Surgical Oncology (GI) 0680

Role of Diagnostic Laparoscopy in the Management of Upper Gastrointestinal Cancer

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Aims: The diagnostic laparoscopy has been used in the accurate staging of gastrointestinal cancers. The aim of this study was to evaluate the role of laparoscopy in comparison with computed tomography (CT) scan in staging patients with gastro-oesophageal junction (GOJ) and gastric cancer.
Methods: The data were collected for patients between 1996 and 2011 for patients undergoing investigation and treatment for GOJ and gastric cancer at a single institute. The pre-operative data (staging data), intra-operative details, post-operative course and outpatient follow-up were analysed for individual cases.
Results: Staging laparoscopy changed treatment plan in 52 (17%) of 287 patients. Patients with negative staging CT scan, 10% (Grade I GOJ) were identified with pathological intra-peritoeal nodes, metastatic intraperitoneal deposits (5%), ascitic fluid (ascitic tap positive for cancer cells, 3%). Patients with metastatic disease were referred for palliative chemotherapy.
Conclusions: Diagnostic laparoscopy is useful for detecting and confirming nodal involvement and distant metastatic disease not evident on the staging CT scan, that potentially could alter treatment and prognosis in patients with upper gastrointestinal cancer. Diagnostic laparoscopy should be performed as part of investigation and treatment planning for patients suffering from GOJ cancers. This can potentially avoid surgery in patients with advanced disease.

Cancer/Surgical Oncology (GI) 0701

Vertebral Body Cross-Sectional Area on Computerised Tomography Scanning is an Easy to Obtain Surrogate for Height

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Aims: Sarcopenia (age related loss of muscle mass) is associated with poor post-operative outcomes. Identification of sarcopenic patients may allow for peri-operative optimization, potentially improving outcomes. Pre-operative staging computer tomography (CT) scans can identify sarcopenia (with standardisation by patient height, not always available at the time of imaging) by measuring cross sectional area of muscle on images. Current imaging analysis software is costly, time consuming, and does not form part of routine radiological reporting. We aimed to determine if vertebral body cross sectional area (VBCSA) on CT imaging could be used as a surrogate for patient height, and if this relationship held true using simple caliper measurements (antero-posterior and transverse) on Picture Archiving and Communication System (PACS) to calculate VBCSA.
Methods: 95 patients undergoing elective surgical resection for colorectal carcinoma between June 2011 and June 2012 were identified from a local colorectal

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cancer database. The pre-operative staging CT scan was identified on PACS and the transverse section through the body of the third lumbar vertebra identified. Patient height was obtained from medical notes. The VBCSA was determined using both the ImageJ™ analysis software (drawing around the circumference to calculate area, current gold standard) and PACS caliper method.

Results: Median patient height was 1·68 m (IQR 1·60-1·75), median VBCSA on ImageJ™ was 1092 mm^2 (IQR 934–1230) vs median VBCSA on PACS 1299 mm^2 (IQR 1112–1532). There was a significant correlation between patient height and VBCSA measured using image J ($r^2 = 0·61$, CI 0·43-0·74, $p < 0·01$) and PACS ($r^2 = 0·65$, CI 0·49-0·78, $p < 0·01$). There was a strong positive correlation between VBCSA measured using ImageJ™ vs simple PACS 'caliper' technique ($r^2 = 0·88$, CI 0·81-0·93, $p < 0·01$).

Conclusions: We have demonstrated a simple, cost effective measurement of VBCSA using PACS software that correlated well with patient height. This method allows timely and universally available estimation of sarcopenia at radiological staging and may be incorporated into pre-operative assessments to highlight patients at risk due to sarcopenia.

Cancer/Surgical Oncology (GI) 0709

Impact of Margin Status on Peri-Operative Outcomes, Survival, Recurrence After Liver Resection for Colorectal Liver Metastasis

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Aims: To determine the prognostic impact of positive margin status and neoadjuvant chemotherapy on local and systemic recurrence and overall-survival (OS) after liver resection for colorectal liver metastasis (CRLM).

Methods: Analysis of prospectively collected data for 1255 primary resections of CLRM between Jan 1993 and Aug 2011. Impact of anatomical and non-anatomical resections, neoadjuvant chemotherapy, site of recurrence, overall survival and disease free survival (DFS) was analysed between R0 and R1 groups.

Results: R0 and R1 resection rates were 67·8% (n = 865) and 30·6% (390) respectively. Median OS for the R0 group was 2·7 years (95% CI =2·56-2·85) and the R1 group 2·28 years (CI 2·06 – 2·52)($P < 0·001$). Median DFS for the R0 group was 1·52 years (CI 1·38-1·66) and for the R1 group was 1·04 years (CI 0·94-1·19) ($P < 0·001$). The overall 1-3-,5-,10 year survival of the cohort was 89%, 58%, 40%, 27%. Intrahepatic recurrence was higher in the R1 group 142 (16·4%) vs 132 (33·8%) ($P < 0·001$). 103 (11·9%) patients in the R0 group underwent redo liver resection for CRLM compared to 66 (16·9%) patients in R1 group ($P = 0·016$). There was no statistically significant difference in the R1 resection rates with anatomical and non-anatomical resections (26·3% vs. 25·3%, $P = 0·711$). Neoadjuvant chemotherapy did not have an impact on recurrence rate (57·8% vs. 61·5%, $P = 0·187$) and redo liver surgery (13% vs. 17%, $P = 0·092$). Within the R1 group, the recurrence rates were similar in patients with and without neo adjuvant chemotherapy 68·8% vs 72·4%($P = 0·442$).

Conclusions: R1 margin increases likelihood of recurrence in the liver and need for subsequent liver resection. Type of resection (anatomical vs. non anatomical) does not impact margin status. Neoadjuvant chemotherapy does not improve margin status, recurrence or reduce need for redo liver surgery for recurrence. In margin positive patients, Neoadjuvant chemotherapy does not affect recurrence rates.

Cancer/Surgical Oncology (GI) 0736

Extended Distal Pancreatectomy for Advanced Pancreas Neck Cancer: Technical Aspect

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Aims: To investigate the clinical applicability of extended distal pancreatectomy in patients with pancreas neck cancer accompanied with distal pancreatic atrophy, with special emphasis on the technical aspects in using the linear stapling device when the target organ is bulky.

Methods: From March 2010 to September 2013, a total of 46 patients with pancreatic adenocarcinoma underwent radical pancreatic resection at our institute. Among them, 3 patients (6·5%) who underwent extended distal pancreatectomy were reviewed retrospectively. A linear stapling device and a vise-grip locking pliers were used to resect distal pancreas, duodenal first portion, and distal common bile duct, en-bloc. In 2 patients, the invaded portion of the superior mesenteric vein was also resected, with reconstruction using an artificial graft. The gastrointestinal continuity was restored by Roux-en-Y hepaticojejunostomy, gastro- or duodenojejunostomy, and jejunojejunostomy, respectively. The postoperative complications and the follow-up data are also presented.

Results: All the 3 patients presented with jaundice, and the pancreatic duct to parenchymal thickness ratio of the pancreas body were greater than 0·5. The operation required from 9 to 13 hours, and the estimated blood loss was from 1000 to 1800 mL. Grade A pancreatic fistula developed in all the cases, but none of them was lethal. One patient suffered from long standing ascites drainage. Pathological staging was T3N1M0 in all patients. At the last follow-up, two patients were alive with liver metastasis at 4 and 10 postoperative months, respectively, and one patient died of liver metastasis at 5 months postoperatively.

Conclusions: While the prognosis of the advanced pancreas neck adenocarcinoma is still dismal, an extended distal pancreatectomy can be a valid option, especially when the distal pancreas is atrophic. At least, the procedure is technically feasible, and further refinement is mandatory to improve the patient survival.

Cancer/Surgical Oncology (GI) 0741

Clinico-Pathological Factors Associated with Brain Metastasis in Colorectal Cancer: A Meta-Analysis

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Aims: To determine what factors are associated with the development of brain metastasis in patients with colorectal cancer

Methods: A literature search of Pubmed, Medline, Embase was conducted using the terms 'colorectal cancer', 'colorectal malignancy', 'rectal cancer', 'metastasis', 'brain metastasis'. The relevant case series of patients with brain metastasis from colorectal cancers were selected according to pre-defined criteria and data extracted for the meta-analysis.

Results: Seven studies were identified with a total of 353 patients (M:F =60·1:39·9). The mean age of the patients was 60·1 and the average duration since the diagnosis of colorectal cancer to the development or detection of brain metastasis was 26·2 months. There was no statistically significant difference in the proportion of right and left colonic cancers developing brain metastasis (57·45% and 42·55% respectively, $p = 0·37$). The proportion of brain metastasis arising from rectal cancers was significantly higher than that from right and left colonic cancers (73·14% and 26·86% respectively, $p < 0·001$). A similar effect was noted in patients who had lung metastasis as opposed to liver metastasis alone (71·92% and 28·08% respectively, $p < 0·05$). Also, the progression to brain metastasis was significantly higher in male as opposed to females patients ($p < 0·005$).

Conclusions: Based on our analysis, we conclude that a primary rectal cancer, the presence of lung metastasis and male sex are factors associated with the develpment of brain metastasis. Although rare, this debilitating condition is likely to become increasingly common as life expectancy for colorectal malignancies increases with improved therapies and therefore 'at risk' patients may benefit from improved and increased monitoring.

Cancer/Surgical Oncology (GI) 0758

FDG-PET-CT can be used to Assess the Response of Locally Advanced Rectal Cancer to Neoadjuvant Chemoradiotherapy: Evidence from Meta-Analysis

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Aims: Fluorodeoxyglucose-positron emission tomography-computed tomography (FDG-PET-CT) can be used to assess the response of locally advanced

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rectal cancer to neoadjuvant chemoradiotherapy. However reported literature demonstrates wide variance in methodology, analysis and findings. This meta-analysis aimed to evaluate the response to chemoradiotherapy of locally advanced rectal cancers by FDG-PET-CT.

Methods: The search terms "PET-CT", "Rectal Cancer", "Neoadjuvant", "Chemotherapy" and "Radiotherapy" were combined to identify papers from PubMed. Abstracts and full text were manually reviewed to find papers with an index test of pre- and post-chemoradiotherapy (CRT) PET-CT scans and a reference test of pathological response grading (Dworak or Mandard) after surgical resection. QUADAS analysis was used to assess the quality of papers. Comparative analysis between responder and non-responder groups was performed. The response index (RI) and post-CRT maximum standardised uptake value (SUVmax) were analysed.

Results: Main findings are summarised in the below table. Paper compliance with QUADAS criteria was between 85·7% and 92·9%.

PET-CT Parameter	Papers Used for Meta-Analysis	Total Patients Included	Mean Difference Between Responders and Non-Responders (Favouring Responders)	Range of Values for Responders
RI	7	355	12·21% (95% CI 6·51-17·91, p < 0·00001)	59·7 - 79·9%
Post-CRT SUVmax	6	333	–2·48 (95% CI –3·06- -1·89, p < 0·00001)	3·0 – 5·0

Conclusions: This study shows both RI and post-CRT SUVmax values have the ability to differentiate responding tumours from non-responders. Yet for a modality to be clinically relevant for assessing good vs. poor responders there needs to be a universally agreed definition for good vs. poor response. All of the studies are limited by a lack of validated definition for good vs. poor response.

Cancer/Surgical Oncology (GI) 0766

Perineal Excision of Ano-Rectal Cancer - Does One Size Fit All?

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Aims: Increasing concern over low rectal cancer local recurrence (LR) has lead to a recommendation of extensive perineal excision for all T-stages.Our aim is to analyse the outcomes of a tailored approach to perineal excision.

Setup: Our DGH policy is:a)Neo-adjuvant chemo/radiotherapy for a pre-operative threatened margin b)Wide levator excision plus pelvic floor mesh repair for T3/T4 disease c)Adequate but not wide levator excision for T1/T2 cancers.

Methods: Analysis of a prospective database of a single consultant's practice between 2001–2012. Patients had extensive follow-up with 6month clinical examination, CEA levels and annual CT scans. Patients with <24months follow-up were excluded. All patients, including palliative resections were included. Diagnosis of LR was either histological and/or radiological.

Results: 31patients were identified (23males), median age = 67years (50–86). Laparoscopic resection rate = 61% (1conversion; 5·3%). There was one 30-day mortality(3·2%).16patients had T1/T2 disease,5 had T3/T4 & 10patients had neoadjuvant CRT. There were 4(13%) CRM positive.2patients(6·5%) had LR(both high risk).3and5year survival rates are80%and62·5%,respectively. 4patients developed metastatic disease during follow-up, only 1associated with LR. Major surgical morbidity = 9·7%;1intestinal obstruction/pelvic collection and 2perineal wound breakdown.

Conclusions: A tailored perineal excision in an attempt to minimise perineal wound complication can achieve good oncological control of disease and acceptable survival figures. Centralisation of perineal excision is only required for selected cases.

Cancer/Surgical Oncology (GI) 0779

Patterns of Recurrence After Radical Gastrectomy for Gastric Adenocarcinoma in Chemotherapy-Naive Patients

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Aims: This study describes patterns of recurrence and predictive factors for development of recurrent disease after radical gastrectomy for gastric adenocarcinoma.

Methods: From January 2005 to December 2012, 149 patients underwent gastrectomy for gastric adenocarcinoma. No patients had neo-adjuvant chemotherapy. Patterns of first disease recurrence, overall survival and predictive factors for recurrence were analysed.

Results: There were 93 men (62%); median age was 76 years (25–92). 88 patients (59%) had a subtotal gastrectomy and 140 patients (94%) had a D2 lymphadenectomy; the remaining 9 patients had a D1 lymphadenectomy. 108 patients (73%) had an open operation, 37 had a laparoscopic operation (25%) and 4 patients had a laparoscopic operation that was converted to an open procedure. Median lymph node yield was 25 nodes (0–93); 128 patients (86%) had a nodal yield of 15 or more nodes. 40 patients (27%) had T0 or T1 (early gastric cancer) disease and 93 patients (62%) had node-positive disease; 83 patients (56%) had vascular invasion and 78 patients (52%) had perineural invasion. 91 patients (61%) had poorly-differentiated tumour.

Overall, 55 patients (37%) developed recurrent disease. Median time to recurrence was 13 months (3–77). Patterns of disease recurrence included distant only (28 patients, 19%), peritoneal only (10 patients, 7%), peritoneal + distant (5 patients, 3%), locoregional only (11 patients, 7%) and locoregional + distant (1 patient, 1%).

Factors predictive of recurrent disease were T2-T4 disease (hazard ratio [HR], 7·9; P < 0·001), node positive disease (HR 35·7; P < 0·001) perineural invasion (HR 4·9; P < 0·001) and vascular invasion (HR 5·3; P < 0·001). 23 patients received adjuvant chemotherapy of whom 15 developed recurrence. Actual 1-year survival was 77% and estimated 3-and 5-year survival (Kaplan-Meier) was 48% and 38% respectively.

Conclusions: Recurrence after gastrectomy for gastric adenocarcinoma was relatively common in 37% of patients. Isolated locoregional recurrence was rare; most cases involved distant metastases. Patients with node positive disease, vascular or perineural invasion or advanced gastric cancer may be considered for adjuvant chemotherapy to reduce risk of recurrent disease.

Cancer/Surgical Oncology (GI) 0781

Colorectal Surgery in the Octogenarian: A Retrospective Study of Clinical Outcome

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Aims: Management of the elderly patient is a complex yet common scenario in colorectal surgery. The aim of this study therefore was to audit clinical outcomes of surgery in the octogenarian, with particular focus on postoperative complications.

Methods: We carried out a retrospective audit of 220 patients aged 80 and over, who underwent elective or emergency colorectal surgery between 2008

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and 2012. Comorbidities were assessed using the Charlson Comorbidity index (CCI) and ASA grading, and clinical outcome studied using post-operative complications, readmission rates and 30-day morbidity. 30-day and 1-year mortality rates were also calculated.

Results: The mean age was 84·3 (sd 3·6), with a 56·4% to 43·6% female to male ratio. Mean CCI was 6·5 (sd 1·6) and 51·8% of patients were ASA grade 3 or above. 189 patients had a final diagnosis of Adenocarcinoma, with 37% of these as Dukes C1 or above. In total, 6·8% of patients had perioperative complications with 13·6% requiring unplanned ITU stays. Mean length of stay was 20 days, with 7·3% readmitted to hospital within 28 days of discharge and 3·6% requiring reoperation. Interestingly, 55% of both the elective and emergency groups had patients with at least one postoperative complication. Additionally, both the 30-day mortality (13% vs 6·0%) and 1-year mortality (31·9% vs 17·2%) were greater in the emergency group respectively.

Conclusions: Our findings suggest that good colorectal outcomes can be achieved in the octogenarian despite the undertaking not being without risk. Surgery should not be withheld due to age alone, but instead an appreciation of comorbidity related complications kept at the forefront of the surgeons mind.

Cancer/Surgical Oncology (GI) 0813

Caecal Schwannoma: A Rare Case Report and Review of the Literature

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Aims: To present a rare case report of a benign caecal schwannoma masquerading as a polyp. Combined with a literature review regarding the presentation, management and histopathogical findings of caecal schwannomas.

Methods: A case report of a benign caecal schwannoma was reviewed, and a Combined Medline Embase literature search was undertaken. Keywords included "schwannoma", "schwann cell tumour", "nerve sheath myxoma", "neurilemma", "gastrointestinal diseases", "gastrointestinal tract", "colorectal" and "caecum".

Results: A 69 year old female was investigated following a 12-month history of dull right-sided abdominal pain. A barium enema detected 3 cm polypoid mass within the caecum. Endoscopic biopsies demonstrated "granulation tissue and a fibro-purulent exudate-ulcer". A right hemicolectomy was subsequently performed. A 3·5 cm tumour was obtained which showed proliferating spindle cell proliferation with a heavy lymphoid infiltrate. Immunohistochemically the tumour cells were S-100 protein positive. The pathological diagnosis was a benign caecal schwannoma. The literature search identified 5 reported cases of caecal schwannoma, 60% (n = 3) female, 40% (n = 2) male. Mean age of presentation was 62·4 years (range 35–78). 1 patient presented with abdominal pain and melena. 2 patients presented with right-sided abdominal pain, with an associated abdominal mass on clinical examination. 2 patients were asymptomatic and were investigated following positive findings on routine colonic screening. All the patients underwent a colonoscopy to obtain biopsies. Immunohistochemistry demonstrated S-100 protein positive tumour cells in all of the five reported cases. Treatment for all the reported cases was surgical excision with tumour free margins without chemo-or radiation therapy. The surgical approach was a right hemicolectomy in 80% (n = 4) of the cases and a laparoscopic wedge resection in 20% (n = 1) of the cases.

Conclusions: Caecal schwannoma are rare mesenchymal neoplasms of the gastrointestinal tract, manifesting themselves with varied clinical features. Immunohistochemistry is required for definitive classification. Surgical excision with tumour-margins without adjuvant therapy remains the first line treatment.

Cancer/Surgical Oncology (GI) 0824

Lower Limb Muscle Power Output, Functional Ability and Quality of Life in Patients with Cancer Cachexia

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Aims: Muscle wasting associated with cancer cachexia is thought to profoundly affect muscle function and quality of life. This study aimed to assess whether lower limb muscle power and quality of life would be influenced by degree of weight loss in patients with upper gastrointestinal cancer (UGIC) and whether lower limb muscle power would be associated with power-related functional ability.

Methods: 54 patients with UGIC participated (mean (SD) age 65 (11) years, 35 men, 19 women). Average weight loss was 8·4 (9·4)%. Lower limb explosive muscle power was measured using a Nottingham Power Rig and timed-up-and-go (TUG) and sit-to-stand (STS) times were measured as indicators of functional ability. Global quality of life (QoL), physical function (PF) and fatigue (FA) scores were assessed using the EORTC QLQ-C30 questionnaire. Data were analysed using SPSS.

Results: Mean (SD) lower limb power was 1·5 (0·6) Wkg^{-1} in men and 1·0 (0·3) Wkg^{-1} in women. Average TUG was 7·2 (1·8) s and 7·4 (1·8) s and average STS time was 0·65 (0·20) s and 0·68 (0·19) s in men and women respectively. In men, there was a significant negative correlation (Pearson's product moment) between lower limb power and both TUG (R −0·57, p = 0·001) and STS (R −0·67, p < 0·001). Furthermore in men, percentage weight loss positively correlated with STS (R 0·37, p = 0·046) and FA (R 0·47, p = 0·007) and negatively correlated with QoL (R −0·52, p = 0·003), PF (R −0·48, p = 0·007). In women, there was a trend towards a negative correlation between lower limb power and TUG (R −0·52, p = 0·058), but there were no significant correlations between either percentage weight loss or lower limb power and the other measured variables.

Conclusions: This study has shown significant associations between lower limb power, functional ability, weight loss and quality of life in male UGIC patients. This supports a rationale for developing interventions to improve power output in men with cancer cachexia. However, women did not show such strong associations suggesting sex-differences in the response to cachexia that deserve further exploration.

Cancer/Surgical Oncology (GI) 0855

Pseudomyxoma Peritonei of Appendiceal Origin: Mode of Presentation in the Modern Era

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Aims: Pseudomyxoma peritonei (PMP) is characterised by mucinous ascites usually originating from a perforated appendiceal epithelial tumour. PMP may present with gross abdominal distension and simulate ovarian malignancy or disseminated carcinomatosis or may be found incidentally at laparoscopy or laparotomy, or as mucin in a new onset hernia. Thus all general surgeons may occasionally encounter PMP. Traditionally patients with advanced disease underwent diagnostic laparotomy or laparoscopy, but recently widespread availability of cross sectional imaging, particularly CT, has resulted in more frequent image based suspicion of the diagnosis. The aim of this study was to evaluate the mode of presentation of PMP in the modern era.

Methods: We performed a retrospective review of a prospectively collected database on patients undergoing surgery in a tertiary referral centre for PMP of appendiceal origin between January 2010 and December 2012. Data collected included patient age, gender and mode of diagnosis.

Results: In total 222 patients underwent surgery in the two year period, median age 58 (range 25–83), 68% female. Overall CT was the main diagnostic method with 81/222 (36·5%) diagnosed pre-operatively with CT alone (with or without biopsy) and 32/222 (14·4%) following a suspicious CT which led to operative confirmation. The next most frequent mechanism was during laparoscopy/laparotomy for an acute abdomen or on subsequent appendix histology in 46/222 (20·7%). Other presentations were ovarian/pelvic mass in 14·4% (21·2% of females), diagnostic laparoscopy in 5·4%, new onset hernia in 5% and miscellaneous in 3·6%.

Conclusions: Approximately 50% of patients with PMP currently are diagnosed by cross-sectional imaging for abdominal symptoms, avoiding the need for diagnostic surgical intervention. Unexpected findings at laparoscopy, laparotomy or appendiceal pathology is the presenting mechanism in approximately 20·7%. Surgeons should be aware of the possibility of PMP and seek appropriate advice when suspicion exists as optimal outcome follows primary operative intervention in a specialised centre.

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Defining Characteristics of Patients with Colorectal Cancer Requiring Emergency Surgery

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Aims: Emergency surgery for colorectal cancer has been associated with a high morbidity and mortality. The aim of this study is to determine factors predictive of an emergency admission and identify patient groups at risk of death within thirty days of emergency colorectal surgery.

Methods: All patients in our Colorectal Cancer Database undergoing surgery for colorectal cancer between 2004 and 2011 were included. Data on patient demographics, tumour staging, admission type, Faecal Occult Blood Testing (FOBT) screening, comorbidity score, social deprivation and ethnicity were analysed.

Results: A total of 1,261 patients underwent elective and emergency surgery for colorectal cancer. Of the 236 patients who underwent emergency surgery 39·8% (n = 94) had right-sided colonic cancers and 43·2% (n = 102) were aged >75 years. Multivariate analyses determined right-sided cancers to be a significant predictor (p = <0·001) of emergency presentation when compared to cancer of the rectum (OR 2·76, CI: 1·49-5·10). Tumour staging was also a significant predictor (Stage III OR 7·96, CI: 2·78-22·78, Stage IV OR 18·22, CI: 5·99 – 55·40 p = <0·001) of undergoing emergency surgery. Thirty-day mortality was significantly higher in the emergency group (OR 9·56, CI 7·38-17-93, p = <0·01). Within the emergency surgery subgroup, females and patients of advanced age were at increased risk of mortality within thirty days of undergoing surgery compared with patients in the 18–65 year old group (OR 4·81, CI 1·36-16·96, p = 0·015). Nearly 40% of the deaths in the emergency group were patients with right-sided colon cancers. Cancer detection through FOBT amongst this group is low with three out of four patients with cancer testing negative on FOB testing.

Conclusions: Avoiding an emergency presentation is necessary to improve survival in colorectal cancer. Patients with advanced proximal as well as distal colonic tumours are at risk of presenting as emergencies. Alternative screening strategies that improve detection of proximal colon cancers may help to identify these patients at an earlier disease stage and potentially reduce the number of patients undergoing emergency surgery for right-sided cancers.

Cancer/Surgical Oncology (GI) 0864

Inequalities in Colorectal Cancer Risk and Educational Level in Developed Countries: A Systematic Review and Meta-Analysis of Observational Studies

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Aims: Education level is a potential risk factor for colorectal cancer. This systematic review and meta-analysis aims to determine whether there are disparities in colorectal cancer risk between basic (up to end of primary school) and higher educational level (university and beyond) groups.

Method Ovid Medline and EMBASE databases were searched for studies published between 1946 and 2013. Data were extracted and pooled analyses were undertaken using random effect, inference of variance statistical models.

Results: Pooled analyses including 14,996 patients for colon and 9,778 for rectal cancer were carried out. Amongst males, the higher education group had a higher incidence of colon cancer compared with the basic education group (OR 1·13, CI: 1·02-1·27, p = 0·030). Amongst females, the reverse was observed (OR 0·93, CI: 0·88-0·98, p = 0·005). For rectal cancer, females within the higher education group again had lower incidence of cancer (OR 0·91, CI:0·84-0·98, p = 0·020) whilst there was no difference between the two education groups for males (OR 0·91, CI: 0·80-1·05, p = 0·19).

Conclusion Male patients of a higher educational background have a higher incidence of colon cancer than their less educated counterparts, while university educated females tend to have a lower risk. Rectal cancer also appears to be less prevalent amongst females of a higher educational background.

Cancer/Surgical Oncology (GI) 0905

Recruitment to the FOxTROT Trial may be Limited by Failure of Radiological Tumour Identification

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Aims: Colorectal cancer (CRC) is the second most common neoplasm in developed countries, with cancer registry data indicating that overall survival of colonic cancer is now inferior to that of rectal cancer. NICE guidelines state that all patients with colon cancer should have preoperative staging with CT scanning. Low risk tumours (T0-2) do not warrant neoadjuvant chemotherapy, however whether neoadjuvant chemotherapy can improve disease free survival for those with high risk tumours (T3-4) remains to be established. The multicentre FOxTROT trial aims to establish whether neoadjuvant chemotherapy ± panitumumab followed by deferred surgery can improve outcomes in this high risk group. This study aimed to evaluate the feasibility of a DGH accurately determining inclusion criteria and participating in the trial.

Methods: A prospectively maintained database was interrogated to identify all patients discussed at a specialist colorectal MDT in a single centre over a 12 month period between Nov 2012 and Nov 2013. All cases were double reported by a specialist GI radiologist preoperatively and a GI pathologist post-operatively. Patients were categorised by tumour anatomical location. Pre- and post-operative staging data was collected and compared for accuracy.

Results: 89 patients with CRC were discussed at the colorectal MDT, of which 40 (44·9%) were primary colon cancers treated operatively and included in the study. 25/40 (62·5%) were right sided tumours, 15/40 (37·5%) were left sided tumours. Preoperative radiological staging was available for 39(97·5%) cases. Staging was routinely stated in the radiology report in 14/39(35·9%). Tumour staging was accurate in 16/39(41·0%) cases, understaged in 7(17·9%), over staged in 3(7·7%) and the tumour was not visualised in 13(33·3%). Nodal staging was accurate in 16/39(41·0%), understaged in 15(38·5%) and overstaged in 8(20·5%). Using pre-operative staging, 22/39(56·4%) would have been considered eligible for the trial. Histological staging confirmed eligibility was accurate for 21/39(53·8%) cases. 17/39(43·6%) patients were not considered eligible for the study. For 13/39(33·3%) this was because the tumour was not visible on preoperative staging. For the remaining 4, two were accurately assessed as ineligible and two should have been eligible according to histology findings. Of those not visualised on radiology, 9/39(23·1%) would have eligible for the study and 4 would have been ineligible. Of those where the tumour was not visualised, 10/13(76·9%) were right sided and 3 were left sided.

Conclusions: Radiological staging is important in assessing prognostic risk in CRC however is infrequently included in routine radiology reports. Multidisciplinary discussion and evaluation is important to determine further management and prognosis. In a DGH setting, radiological staging has limited accuracy in assessing tumour and nodal staging, however has a high predictive power for identifying high risk tumours when the tumour is visualised. Inability to visualise the tumour is common and will limit trial recruitment. More detailed endoscopic reporting may guide tumour identification to optimise recruitment into the FOxTROT trial.

Cancer/Surgical Oncology (GI) 0911

Mean Vascular Endothelial Growth Factor (VEGF) and Interleukin-6 (IL-6) Levels are Higher in Colorectal Cancer Patients with Right Sided Colonic Tumours

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Aims: Evidence suggests a role for pro-inflammatory cytokines during tumour development. Increased expression of IL-6 has been associated with an unfavourable prognosis in sporadic and colitis associated colorectal cancer. High serum VEGF levels pre-operatively have also been associated with reduced survival in colorectal cancer patients. Our aim was to correlate pre-operative levels of pro-inflammatory cytokines with tumour size, TNM stage, outcome and to establish if there was any association between tumour characteristics and patient outcome.

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Methods: A prospective database was maintained. Data collected included patient demographics, tumour characteristics and post-operative follow-up. Data was tabulated and statistical analysis was performed using SPSS software (version 20).
Results: A total of 26 patients were included for analysis, ranging in age from 29 to 85 years. A majority of tumours were right sided (n = 16). IL-6 levels were approaching significance when taking into account tumour size >50 mm (p = 0·052). Mean pre-op CEA was higher in right sided than left sided tumours (12·71 cf 2·97), (p = 0·154). Mean VEGF levels at 3, 6 and 24 were higher in T4 tumours though these results were not statistically significant. Mean VEGF levels at 6 and 24 hours were significantly higher in right-sided tumours (p = 0·005, p = 0·001). Mean IL-6 levels at 6 hours were higher in patients who subsequently developed recurrence (p = 0·053)
Conclusions: VEGF levels were statistically significantly higher at 6 and 24 hours in colorectal cancer patients with right-sided colonic tumours. Mean IL-6 levels were higher in patients who subsequently developed recurrence, and this trended towards significance. The correlation between right-sided tumours and higher IL-6 and VEGF levels is a novel finding with potential for further research.

Cancer/Surgical Oncology (GI) 0931

Systematic Review and Meta Analysis of Portal Vein Ligation Versus Embolization Before Liver Resection for Colorectal Liver Metastasis (CRLM)

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Introduction: This meta analysis aimed to review the peri-operative outcomes and future liver remnant (FLR) following portal vein ligation (PVL) and embolization (PVE) before liver resection for colorectal liver metastasis (CRLM).
Methods: An electronic search was performed of the MEDLINE, EMBASE, PubMed databases using both subject headings (MeSH) and truncated word searches to identify all articles published that related to this topic. Pooled risk ratios were calculated for categorical outcomes, and mean differences for secondary continuous outcomes, using the fixed-effects and random-effects models for meta-analysis
Results: 5 studies encompassing 324 patients met the inclusion criteria. There was no difference in the operating time (mean difference md. -28·76 [−65·25, 7·72] p = 0·12), intraoperative blood loss (mean difference md. -112·22 [−313·45, 89·1]; p = 0·27), and number requiring transfusion (OR 0·64[0·26, 1·58] between the PVL and PVE groups. Similarly, there was no difference in the morbidity and mortality in the 2 groups post liver resection. The length of hospital stay was longer in the PVL group post liver resection (md. -8·67 [−13·29,-4·06]; p = 0·0002). Whilst awaiting liver resection after PVL and PVE, no difference was noted in the number of patients developing disease progression (OR 0·91[042, 1·99],p = 0·81). There was no significant difference in the FLR between the 2 groups (md 0·38 [−10·72, 11·48], p = 0·95).
Conclusion Portal vein ligation and embolization result in comparable increase in FLR. The morbidity and mortality are similar post liver resection with both techniques apart from a longer postoperative hospital stay with PVL.

Cancer/Surgical Oncology (GI) 0967

Laparoscopic Anterior Resection versus Open Anterior Resection for rectal cancer

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Aims: Until 1930's, Abdomino-perineal resection (APR) was the standard treatment for rectal cancers. Anterior Resection (AR) offers: sphincter preserving surgery for upper & mid rectal cancers, has comparable oncological results & improved quality of life than patients undergoing APR/Hartmann's operation. Developments in rectal resection surgery (e.g. laparoscopy, use of mechanical stapling devices) have allowed laparoscopic AR to become more widely available. The aim of this study is to evaluate laparoscopic AR carried out at single institution.
Methods: This is a retrospective study carried out since 2008 at Macclesfield District General Hospital. Patient factors, histopathology, and surgical outcomes were evaluated for all elective laparoscopic Anterior Resections. All Open Anterior Resections carried out since 2008 were used as controls.
Results:

	Laparoscopic AR (n =82)	Open AR (n =92)	Mann Whitney U (p value)
Age (yrs)	67·3 ± 1·1	69·7 ± 1·1	NS
Sex (M : F)	44 : 38	54 : 38	NS
ASA (median)	2	2	NS
BMI	26·9 ± 0·5	26·31 ± 0·5	NS
Short / long course DXT	18 / 15	10 / 24	NS
Operation time (mins)	225·8 ± 6·6	160·9 ± 6·9	< 0·05
High AR (>12 cm)	37	40	NS
Low AR (6 – 12 cm)	42	48	NS
Ultra low (<6 cm)	3	4	NS
Loop ileostomy	30	34	NS
Diverticulosis	32	33	NS
Specimen length (mm)	190·3 ± 6·9	245·3 ± 13·49	< 0·05
LN harvest (median)	13·5 ± 4	14·5 ± 2	NS
CRM + ve	4	8	NS
LOS (days)	7 ± 4	10 ± 4·5	< 0·05
Lap – open conversions	19		
Leak	3	4	NS
Survival rates (%)	96·7	92·9	Logrank p value
1st year	92·8	83·8	<0·05
3rd year	92·8	71·7	
5th year			

Conclusions: Despite a more prolonged operation, laparoscopic AR produced a smaller specimen size but equivalent Lymph Node (LN) yield an, a shorter hospital stay (LOS) but an improved survival as compared to Open AR. Reasons for lap – open conversions include: predominantly adhesions with fatty omentum & mesentery, bleeding, difficult pelvic dissection (narrow pelvis in males or bulky fibroid uterus in females), concerns of anastomotic viability, and difficult tumour localization.

Cancer/Surgical Oncology (GI) 0979

Socioeconomic Deprivation Influences the Likelihood of Undergoing Liver Resection for Colorectal Liver Metastases but not Outcome

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Aims: The aim of this study was to compare degree of socioeconomic deprivation of patients undergoing liver resection for colorectal liver metastases in a regional hepatopancreatobiliary unit with those of the local population. A further aim was to determine if degree of deprivation is associated with tumour recurrence and survival.
Methods: A retrospective analysis of patients undergoing liver resection for colorectal liver metastases was performed. Degree of socioeconomic deprivation was calculated based on postcode using ACORN®, a commercially available geodemographic segmentation tool.
Results: During a seven year period 303 patients underwent resection for colorectal liver metastases. The proportion of patients in the least deprived quintile

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(46·4%) undergoing resection was greater than that of the local population (34·6%) and the proportion in the most deprived quintile was lower (7·8 vs. 13·9%) (P < 0·001). There was no difference in recurrence rate (P = 0·810) or in the disease-free survival curves of each quintile (P = 0·913). Multivariate analysis demonstrated no association between socioeconomic deprivation and tumour recurrence (P = 0·700).

Conclusions: Liver resection for colorectal metastases is performed more commonly among the least socioeconomically deprived population compared to the most deprived. However, degree of deprivation was not associated with tumour recurrence or survival after resection.

Cancer/Surgical Oncology (GI) 0996

Colorectal Cancer in the Elderly and the Influence of Lead Time Bias: Better Survival does not Equate with Improved Life Expectancy

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Aims: Poorer outcomes in those aged ≥80 years who undergo surgery for colorectal cancer have been previously reported. However, little is known about the natural history of those who are managed non-operatively. We sought to explore outcomes in all patients with colorectal cancer aged ≥80 years at time of diagnosis based on treatment received.

Methods: Patients aged ≥80 years who were diagnosed with colorectal cancer in one acute hospital trust between 1998 and 2011 were identified from a prospectively maintained audit database. Primary endpoints were age at diagnosis, age at death/censor and mortality at 30, 90 and 365 days following diagnosis.

Results: A total of 668 patients were identified, of which, 412 (61·7%) underwent surgery, 44 (6·6%) received endoscopic therapy and 212 (31·7%) had no active treatment. Of those who underwent surgery, 359 (87·1%) had resectional surgery, 34 (8·3%) underwent defunctioning only, 13 (3·2%) received bypass surgery, and 6 (1·5%) had an open and close laparotomy. The mean age at diagnosis was younger in those who underwent surgical resection of the primary tumour (83·7 years) compared to those who underwent defunctioning surgery (84·9 years; P = 0·043), endoscopic therapy (85·1 years; P = 0·008) or those who did not undergo any surgical intervention (85·6 years; P < 0·001). There was no significant difference in the mean age of death or censor between groups. The 1-year mortality in those undergoing surgical resection was 30·1% compared to 67·7% in those who underwent defunctioning only, 76·9% after bypass surgery and 63·2% in those who had no active treatment (Log rank P < 0·001).

Conclusions: These results show that there was no significant difference in age at death or censor between treatment groups among patients aged ≥80 years presenting with colorectal cancer. This suggests that differences in the observed survival time in those aged ≥80 years are heavily influenced by lead time bias. Therefore, age at death or censor should be reported in addition to survival times in this age group to enable fair comparison of outcomes.

Cancer/Surgical Oncology (GI) 1023

Histopathological Assessment of 'Doughnuts' After Anterior Resection. A Regional Survey and Single Institution Audit

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Aims: Circular stapling devices are commonly used to form anastomoses during anterior resection. Two tissue 'doughnuts' are produced: a colonic 'doughnut', from the proximal colon; and a rectal 'doughnut', which is an incomplete section of the distal resection margin. In 2007 The 'Royal College of Pathologists' and the 'Association of Coloproctologists of Great Britain and Ireland' published guidelines stating that histopathological analysis of 'doughnuts' was unnecessary if the tumour was more than 30 mm from the distal resection margin. The aim of this study was to determine current regional practice and audit our institutional practice against national guidelines.

Methods: A 5-item multiple-choice questionnaire was emailed to the lead colorectal pathologist at all 11 centres in the region. All patients undergoing anterior resection for cancer at our institution between September 2007 and January 2013 were included in a retrospective audit by review of electronic records, 'Avon and Somerset' database and histopathology reports.

Results: In the single institution audit 127 patients were identified. 'Doughnuts' were sent for histopathological assessment in 100% of cases, with both 'doughnuts' sent in 76% of cases. The distance from the distal resection margin in the main specimen was more than 30 mm in 46% of cases. During the audit period 154 specimens were sent unnecessarily, according to the guidelines, with an estimated cost to the institution of £3080 for specimen analysis. No 'doughnuts' were positive for adenocarcinoma. Seven pathologists returned the questionnaire (64%). A high proportion of pathologists (86%) reported that 'doughnuts' were sent in the majority of cases, with 100% reporting that both 'doughnuts' were sent.

Conclusions: Despite current guidance, surgeons continue to routinely send 'doughnuts' for histopathological analysis. Whilst costs to a single institution are relatively small, there are wider cost implications to the NHS as a result of habitual ingrained practice that is slow to change.

Cancer/Surgical Oncology (GI) 1041

Six Monthly CEA Monitoring Helps in the Early Detection of Metastatic Disease Following Colorectal Cancer Resection

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Aims: Follow-up after colorectal cancer resections has been variable. NICE guidelines now state that, following potentially curative resection, all patients should undergo 6-monthly measurement of carcinoembryonic antigen (CEA). Our aim was to assess clinical adherence to these guidelines and evaluate the management of patients with abnormal results.

Methods: Data were collected prospectively over the first two years of follow up on patients who underwent elective resection for colorectal cancer between 1st January 2011 and 30th June 2011. CEA results, investigations arranged following an abnormal CEA result, and patient outcome were evaluated. Patients found to have metastatic disease were excluded from ongoing analysis.

Results: There were 64 patients in the study. CEA was checked in 78%, 95%, 89% and 91% at 6, 12, 18 and 24 months respectively. Abnormal CEAs were found in 22% of patients at 6 months. 16% of patients had abnormal CEAs at each of the 12, 18 and 24 month checks. Nineteen patients had abnormal CEAs during the course of follow-up. The abnormality initiated radiological investigation in 15 patients, 7 of whom were proven to have metastases. Four had early repeat CEAs, 3 of which were normal, the fourth had a subsequent normal CT. In 2 patients a later rise in CEA led to the detection of metastases. Overall ten patients had radiological investigations outside the normal follow-up regime. Six of nine patients with metastases had a rise in CEA within 12 months of their surgery.

Conclusions: Despite a lower compliance at 6 months, this study shows that CEA monitoring, particularly in the first year helps identify patients with metastatic disease. This does not lead to an excess burden on radiological services. The study supports the use of 6 monthly CEA monitoring in follow-up of patients with colorectal cancer.

Cancer/Surgical Oncology (GI) 1067

An Audit of the Management of Vena Caval Filters in Patients with Venous Thromboembolism Undergoing Colorectal Surgery

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Aims: Removable vena cava filters for venous thromboembolism was proposed in 1967. There is little evidence on the management of such filters in patients undergoing major colorectal surgery. Suggested removal time is 2–3 weeks following anticoagulation to minimise the risk of further events. Our objective was to review current practice in our trust.

Methods: We identified 17 patients who fit the criteria from January 2009 to December 2011. Data was collected prospectively from radiology reports and patient notes.

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Results: Demographics revealed a male: female ratio of 1:2·4 and median age 78. Twelve patients were elective admissions and 5 emergency admissions. Fourteen went on to have planned surgery with 9 laparoscopic and 5 open cases. These were hemicolectomies (5), anterior resections (5), abdominoperineal resections (2) Hartmann's (1) and palliative bypass surgery (1). Surgery was deferred in 2 patients due to disease progression. In 14 patients, indications for filter insertion were current pulmonary embolism or deep venous thrombosis whilst the remaining patients had a history of previous venous thromboembolic event. All the filters were inserted by the radiologist using the right femoral vein approach with Cook Celect Cava filters. The median time for insertion of filter was 2 days prior to surgery. All patients were on therapeutic enoxaparin peri-operatively with warfarin conversion at a suitable point after surgery. Time to removal of the filter following surgery was variable in our practice (range 7–202) due to the lack of a set protocol. Removal was possible only in 6 patients out of planned 13 due to disease progression (5) or technical difficulty (2). These patients were prescribed long term warfarin.

Conclusions: This study illustrates a variation in management of these patients and highlights the need for more research to be done for a consensus for management of these patients.

Cancer/Surgical Oncology (GI) 1080

Role of Neo-Adjuvant Treatment in Managing Rectal Cancers in a Tertiary Centre

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Aims: Rectal cancer accounts for 35% of all cases of bowel cancer in the UK. Following the CR07 trial, treatment of operable rectal cancer has been fairly standardised. Surgery remains the mainstay with radiation or chemo-radiotherapy. The aim was to evaluate the impact of neo-adjuvant therapy in patients who underwent treatment of rectal cancers at our unit.

Methods: A prospective analysis of 287 patients with rectal cancer treated at our institution from 2009 to 2012 was performed. Data was collected from radiology reports, pathology reports and patient notes and collaborated.

Results: Demographics was M: F ratio of 1·6: 1 and mean age 68 (range 41–91). Patients were divided into high, moderate or low risk of local recurrence as per NICE guidelines. In the low risk category (T1,T2,T3a N0), there were 81 patients. Pre-operative radiotherapy was given to 9·9% and pre-operative chemotherapy to 6·2%. Of these, post-operative histology was 69·2% ypT3, 15·4% ypT2 and 15·4% ypT0. In the moderate risk category (T3 N1 onwards), there were 172 patients. Pre-operative chemo-radiotherapy was performed in 22·7%, pre-operative radiotherapy alone 7% and pre-operative chemotherapy alone 2·3%. Post-operative histology was 67·3% ypT3, 12·7% ypT0, 9·1% ypT2, 9·1% ypT4, 1·8% ypT1. In high risk category (threatened CRM), 34 patients were identified. Pre-operative chemo-radiotherapy was performed in 35·3%% and pre-operative chemotherapy alone in 2·9%. Post-operative histology was 69·2% ypT3, 15·4% ypT2 and 15·4% ypT0. Our analysis shows that in more than 10% of patients regardless of stage of disease, neo-adjuvant treatment results in a complete pathological response.

Conclusions: Neo-adjuvant treatment alone may play a role in high risk patients in moderate or late stage disease who might be unsuitable for surgery.

Cancer/Surgical Oncology (GI) 1081

CRP and White-Cell-Count Lymphocyte Ratio (WLR) are the Most Accurate Inflammatory Parameters in Distinguishing Complicated and Uncomplicated Diverticulitis

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Aims: The lack of a single sensitive test for diverticulitis (DD) has posed a great challenge in assessing disease severity. The aim of this study was to determine whether inflammatory markers and hematological ratios could be utilized to predict disease activity in DD.

Methods: Hematological and inflammatory indices were recorded for each admission with CT confirmed DD (101 complicated, 127 uncomplicated). Cases were divided into training (n =20) and test sets (n =208). A classification and regression tree analysis was employed in the training set to identify optimal inflammatory marker cut-off points associated with complicated DD. Samples (test set) were categorized as A) greater than and B) less than CART identified cut-off points. The predictive properties of inflammatory marker cut-off points (in distinguishing complicated DD) were assessed using a univariate logistic regression analysis and summary receiver operating characteristic curves (sROC).

Results: CRP >109 (odds/OR ratio 3·07, 95% CI 1·43 – 6·61, p = 0·004, area under the curve/AUC =0·64) and white cell lymphocyte ratio (WLR) >17·72 (OR 4·23, 95% CI 1·95 - 9·17, p <0·001, AUC =0·64) were the most accurate parameters in distinguishing complicated and uncomplicated diverticulitis. WCC >21 (p =0·02, AUC =0·60) and lymphocyte count >0·55 (p =0·009, AUC 0·60) were less accurate.

Conclusions: The current study demonstrates the predictive properties of inflammatory markers in identifying complicated DD. CRP and WLR are the most accurate parameters in distinguishing complicated and uncomplicated DD.

Cancer/Surgical Oncology (GI) 1089

The use of Carbohydrate Antigen 19–9 (Ca19-9) in Diagnosis and Follow up of Colorectal Cancer

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Aims: Ca19-9 has been shown in several case series to be a negative prognostic indicator in metastatic colorectal cancer, with both raised pre-operative and post-operative levels being significant. However it's use in order to aid diagnosis and identify recurrence has not been previously evaluated. CEA testing is currently recommended as follow up for all colorectal cancer patients, but Ca19-9 is not currently included. The aim of this study is to identify whether there is any place for Ca19-9 testing in both the screening of new patients with 'red flag' symptoms and in the follow up of post resection patients.

Methods: A retrospective 12 month audit was carried out for all patients with suspected or treated colorectal cancer and a Ca 19–9 blood test. Their Ca 19–9 result was then correlated with further imaging or histological evidence.

Results:

	New 'red flag' symptoms	Colorectal cancer follow up
Number	110	93
Sensitivity	26·9%	5·6%
Specificity	87·9%	90·7%
PPV	67·0%	12·5%
NPV	57·3%	80·0%

Conclusions: For both patient groups Ca19-9 was found to have an extremely low sensitivity. This was particularly the case for colorectal cancer follow up patients, 18 patients had recurrence of their disease, where only 1 had positive Ca19-9 levels. Specificity and negative predictive values were more acceptable but given the use of Ca19-9 is being evaluated as a tool to rule out colorectal cancer sensitivity is much more important. For this reason we would recommend that Ca19-9 is not used as part of colorectal cancer screening, both for new patients or follow up. There is however limited data for its use in prognosis of known metastatic disease.

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Cancer/Surgical Oncology (GI) 1145

Managing Malignant Colonic Polyps Detected at Bowel Cancer Screening: Surveillance or Resection?

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Aims: The definitive treatment of malignant colonic polyps (MCP) is controversial with strategies comprising endoscopic resection alone to surgical colonic resection. With the introduction of bowel cancer screening programmes the detection of MCPs will increase. We aimed to study the clinical outcome of patients with MCPs managed within a single trust.
Methods: We interrogated prospectively screen detected colonic malignancies diagnosed over 3 years (January 2010 - December 2012). Patient case-notes were analysed to identify demographic, clinical, histological data and overall outcome.
Results: Screening detected 103 patients with colonic adenocarcinoma of which 36 were ultimately staged as T1 (28 men, mean age 67 years). 13 patients (36%) underwent snare polypectomy followed by endoscopic surveillance alone. These cases were exclusively pedunculated colonic polyps with a median excision margin of 2 mm and their disease-free survival is 100% at a median follow-up period of nearly 3 years (range 10–43 months). The remaining 23 patients underwent colectomy due to either involved polypectomy / EMR margins (10 cases), 'biopsied only' polyps (10) or multiple polyps (3). At histological assessment of resection specimens 12 (52%) demonstrated no residual tumour. A further 9 cases were staged T1 N0 and two staged T1 N1. There was one death resulting from an anastomotic leak after a high anterior resection.
Conclusions: Endoscopic excision as the definitive treatment of malignant colonic polyps is well accepted and appears a safe approach in a screened cohort. Major surgery may not confer a distinct benefit and each MDT must carefully consider the justification for colonic resection.

Cancer/Surgical Oncology (GI) 1153

Anaemia from Diagnosis to Discharge: Are We Falling Short in Major Colorectal Surgery?

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Aims: Patients with colorectal cancer often present with anaemia. The focus has been on managing this pre-operatively to reduce transfusion requirements. Our aim was to investigate the management of pre and postoperative anaemia in patients undergoing major colorectal surgery.
Methods: A retrospective study of 100 patients undergoing major colorectal surgery. Data used had been prospectively collected on the Enhanced Recovery database. Discharge summaries and pathology records were examined. Data was collected pre and post operatively and included: haemoglobin; ferritin; transferrin saturation; perioperative blood transfusion and prescription of iron supplements.
Results: A total of 100 patients were included (48 female); 50 right hemicolectomies and 50 left sided operations. 87 % of patients had a diagnosis of colorectal cancer. 75% of operations were laparoscopic. Median length of stay was 4 days. Pre-operatively 32 % (32/100) of patients were anaemic. This was more common in patients undergoing right hemicolectomies (24/50) than left sided operations (8/50). 59% (19/32) of anaemic patients referred from the community were not prescribed pre-operative iron supplements and 13 % had no ferritin level recorded (4/32). No patients had a transferrin saturation recorded in the community. Post operatively 64% (64/100) of patients were anaemic. Of these 35 patients had right hemicolectomies and 29 had left sided operations. 63% (40/64) of anaemic patients were not appropriately discharged on iron supplements post operatively. This was a more common problem in left sided operations. In total 11/100 patients received perioperative blood transfusions. 9/11 of these patients underwent right hemicolectomies. Median number of units transfused was two.
Conclusions: Anaemia in patients undergoing major colorectal surgery is a common problem in our trust. Many eligible patients are not receiving appropriate iron supplementation either before or after their operation. A standardised pathway from diagnosis in the community to discharge from hospital would reduce inconsistency in our practice and improve adherence to national standards.

Cancer/Surgical Oncology (GI) 1181

The use of Vertical Rectus Abdominus Myocutaneous (VRAM) Flaps in the Closure of Perineal Wounds Following Abdomino-Perineal Excision of the Rectum (APER); Do the Benefits Outweigh the Risks?

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Aim: Compare outcomes from direct primary closure of perineal wounds versus the use of VRAM flaps following APER.
Introduction: High complication rates associated with primary closure of perineal defects post-APER are well documented. Consequently, the LOREC programme recommends reconstructive surgery, often using a VRAM flap.
Method Patients were retrospectively extracted from a dedicated colorectal cancer database. All had histologically proven adenocarcinoma, and underwent radiological staging and MDT discussion.
Results: Between 2004 and 2013, 64 patients underwent APER. 38 perineal wounds were closed primarily, 26 underwent VRAM flap reconstruction.
Ten VRAM patients suffered complications (38·5% (95%CI 19·8%-57·2%)). These included flap necrosis (n = 3(11·5%)), hematoma (n = 2(7·7%)), dehiscence (n = 1(3·8%)), infection (n = 1(3·8%)), return to theatre (n = 5(19·2%)) and unexpected ITU admission (n = 5(19·2%)). 12 primary repairs encountered complications (31·6% (95%CI 16·8%-46·4%)), including sinus formation (n = 4(10·5%)), infection (n = 7(18·4%)), dehiscence (n = 2(5·3%)), the need for vacuum assisted closure (n = 3(7·9%)) and return to theatre (n = 2(5·2%)).
Conclusions: Employing VRAM flaps for perineal wound closure post-APER carries its own risks. In our small population, VRAM flaps were associated with greater morbidity, including ITU admission and need to return to theatre. Further prospective studies are required to identify the best means of perineal reconstruction following APER.

Cancer/Surgical Oncology (GI) 1189

Does the Two Week Referral Pathway for Suspected Colorectal Cancer Alter Management in Patients over the Age of 80? A Study of 354 Patients

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Aims: The two-week referral pathway for colorectal cancer has a reported diagnostic cancer pick-up rate of 3 - 14%. The aim of this study was to investigate the diagnostic pick-up rate of colorectal cancer and outcomes in patients over 80 who presented to the colorectal cancer rapid access clinic, to see if this pathway altered their management.
Methods: From 1st March 2012 to 30th August 2012, data was collected on consecutive patients over 80 years old referred via the two-week referral pathway for suspected colorectal cancer. Data was collected on presenting symptoms, investigations and management.
Results: A total of 354 patients were included (median age 84, range 80–98). 244/354 (70%) were discharged after investigations revealed no pathology or a benign pathology; 58/354 (16%) patients were discharged without any investigations after the first consultation. None of these patients represented within the 1st year. 40/354 (11%) patients were diagnosed with colorectal cancer. 17/40 (43%) patients underwent resection, of which 4 patients died postoperatively. The remaining 23 had palliative treatment The commonest presentations of patients with cancer were change in bowel habit, iron deficiency anaemia and rectal bleeding.
Conclusions: Although the study shows the pick-up rate for colorectal cancer in this age group is in keeping with published reports at 11%, cancer resection rate was low at only 5% of all referrals and 43% of patients diagnosed with cancer. Of patients over the age of 80 having surgery, mortality was high with a quarter of patients not surviving surgery. We recommend the design of a referral

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system which takes in to account patients' fitness for bowel cancer surgery prior to urgent referral for exclusion of colorectal cancer.

Cancer/Surgical Oncology (GI) 1245

Accurate Lesion Localisation at Colonoscopy: An Analysis of Potential Influencing Factors

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Aims: Colonoscopy is widely accepted as the gold standard modality for the detection of colorectal cancer. In this modern surgical era of laparoscopic resections and bowel cancer screening, the accuracy of colonoscopy for pre-operatively localising tumours has taken on a new importance. This prospective study aimed to elucidate factors which potentially influence this accuracy.

Methods: Patients who underwent surgical resection for a colorectal tumour identified at colonoscopy were recruited from five West of Scotland centres. To determine localisation accuracy, the bowel was divided segmentally and tumour location as reported by colonoscopy and radiological imaging was compared with "true" (intra-operative) location. Also recorded were patient and colonoscopic data, and changes in surgical management as a result of inaccurate localisation.

Results: Tumour location at colonoscopy matched true location in 88 of 111 patients (79·3%). It was found that if patient BMI was $\geq 27{\cdot}0\,kg/m^2$ and if colonoscopy was completed tumours were more likely to be accurately localised by colonoscopy ($p < 0{\cdot}05$). Combination of eight bowel segments into three "super-segments" revealed decreased localisation accuracy in tumours colonoscopically localised from sigmoid colon to hepatic flexure, in comparison to those localised to rectum, and ascending colon to caecum ($p < 0{\cdot}05$).

Conclusions: This study adds information to a topic whose coverage thus far has been sparse. The observations of increased likelihood of inaccurate localisation ($p < 0{\cdot}05$) when colonoscopy is incomplete, patient BMI is $<27{\cdot}0\,kg/m^2$, or a tumour is colonoscopically localised from sigmoid colon to hepatic flexure may be worth carrying forward to clinical practice.

Cancer/Surgical Oncology (GI) 1255

Multidisciplinary Management of Gastrointestinal Stromal Tumours: Long Term Outcomes and Treatment

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Aims: Gastrointestinal Stromal Tumours (GISTs) are a rare tumour for which adjuvant chemotherapy in the form of tyrosine kinase inhibitors (TKIs) has improved outcomes. Yet the precise role for TKIs in treatment remains unclear and the timing of liver resection remains uncertain. The aim of this study was to review a single centres outcomes and management of GISTs and hepatic metastases, with relation to the recently proposed pre-treatment classification by Cananzi et al.

Methods: A retrospective case note analysis of all surgical resections for GISTs by a regional network was performed. Data were collected on patient demographics, treatment and recurrence. Pre-treatment disease extent was classified as per Cananzi et al: type I-II primary local disease; III-IV primary metastatic disease; type Va and b recurrent disease. The primary outcome was 5-year survival; secondary outcomes were disease recurrence and treatment practices.

Results: Twenty-two patients with complete data underwent resection for GISTs between 1992 and 2011. (median age 60, OS 7·9 years). Pre-treatment, patients were classified as: type I in 3; type II in 14; type III in 2; type IV in 3. Five-year survival was 100%, 71·4%, 50% and 66·7% in these groups respectively. Type I to III patients were treated initially with surgical resection, 1 of 3, 0 of 14 and 0 of 2 patients received adjuvant chemotherapy. Hepatic recurrence was seen in 3 of 3; 7 of 14; and 1 of 2 patients, 73, 16 and 34 months after primary resection respectively. Type IV disease was successfully downstaged with neo-adjuvant chemotherapy in three patients and two of them are alive at 72 months and 74 months post-operatively. In total 11 patients underwent hepatic resections, 5-year survival after resection was 54·5%.

Conclusions: The suggested pre-treatment classification allows comparison of outcomes across centres. Patients with resectable hepatic GIST metastases had acceptable survival but frequently required further hepatic resection. Large-scale studies are necessary in order to identify correlations between the type of primary tumour, clinic-pathological parameters and treatment outcomes.

Cancer/Surgical Oncology (GI) 1263

Sexual Dysfunction and Faecal Incontinence After Pelvic Colorectal Cancer Surgery

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Aims: Sexual dysfunction and faecal incontinence can affect up to 75% of men after colorectal cancer surgery. There is paucity of data with regards to these issues, particularly sexual dysfunction as what is currently available is mostly extrapolated from prostate cancer studies. The aim was to gauge our trust practice and obtain preliminary information to plan a larger prospective questionnaire survey.

Methods: A questionnaire was sent out to all male patients who had undergone pelvic colorectal cancer surgery from Jan 2011 to Dec 2012, identifying 71 patients. The questionnaire consisted of the Wexner score and International Index of Erectile dysfunction (IIEF-5) scoring system.

Results: Our response rate was 47·9%. Patients who did not feel they were appropriately counselled about the risk of erectile dysfunction (ED) post surgery was 47%. Of these, 68·8% said they would have preferred to have had a detailed discussion regarding this pre-operatively. On the IIEF-5, 31·2% patients had moderate ED, 12·5% had mild to moderate ED, 25% had mild ED whilst 31·2% had no ED post-operatively. In contrast, 35·2% felt they had not been appropriately counselled about the risk of faecal incontinence post surgery and 83·3% felt they would have preferred to have had this discussion. A majority (58·8%) of patients never suffered from faecal incontinence prior to surgery. After surgery, 15·2% patients scored 10 or more on the faecal incontinence score (0 no incontinence and 20 severe incontinence). Interestingly, a majority of patients also filled in the comments free text portion of the questionnaire highlighting how they were unaware of how to deal with their sexual dysfunction or faecal incontinence issues and feeling too embarrassed to approach their GP or surgeon.

Conclusions: In conclusion, ED and faecal incontinence post pelvic colorectal cancer surgery are issues that need to be addressed in our trust and also worldwide. Patients need to be counselled regarding the risk of sexual dysfunction and faecal incontinence in a timely manner whilst dealing with the diagnosis of cancer. The data from this study will be used to form a larger prospective questionnaire review in our trust.

Cancer/Surgical Oncology (GI) 1291

Availability, and Feasibility of Routinely Measuring Co-Morbidity in a Colorectal Cancer MDT

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Background Co-morbid diseases affect cancer treatment pathways and may negatively impact on the treatment outcomes and eventual prognosis. With an ageing population the prevalence of co-morbidities is set to increase risking quality of existence of cancer survivors.

Aims: The primary aim of this study was to determine the feasibility of routine collection of co-morbidity data using the validated ACE-27 questionnaire in a CRC MDT setting. Secondary aims included determining the optimal time,

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and method of co-morbidity data acquisition, influence of ethnic variation, educational and social background on the method of data collection, and extra resource necessary to collect ACE-27 data.

Methods: This feasibility study was conducted in an inner London CRC MDT serving a multi-ethnic, predominantly deprived population. In phase I, a retrospective mapping exercise of MDT data examined the availability of co-morbidity data of a historic cohort for a six months period. In phase II, co-morbidity data was prospectively collected for a three months period. It was anticipated that the outcome of phase I will inform on the exact methodology of phase II.

Results: In phase I, 73 (54%) of the historic cohort (n = 135) had co-morbidity data available for discussion at MDT. Of the remaining 62 patients with no co-morbidity, detailed assessment revealed 41 (30%) to have co-morbid diseases including ≥2 major system disorders in 21 (16%) patients. Common sources of referral to the MDT were surgical out-patients (42%), and endoscopy (13%). The average lead time to index MDT discussion was 14-days. In phase II, ACE-27 was administered in 50-patients with a mean age of 54 (range 20–84) years. Male: female ratio was 26: 24. Average time taken to administer the ACE-27 questionnaire was 4·8 (range 1–15) minutes.

Conclusions: The retrospective component of the study confirmed the previously widely acknowledged view of poor data capture on co-morbidity for a CRC MDT. Phase II of the current study confirmed the feasibility and optimal method to routinely capture co-morbidity data.

Cancer/Surgical Oncology (GI) 1300

Topical Imiquimod is Highly Effective in the Treatment of High-Grade Squamous Intraepithelial Dysplasia of the Lower Anogenital Tract: A Systematic Review and Meta-Analysis of Randomised Controlled Trials

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Aims: High grade squamous intraepithelial dysplasia (HSIL) of the lower anogenital tract is mediated by human papilloma virus (HPV). Surgery or ablative therapy is performed to avoid progression to squamous cell carcinoma but is associated with significant morbidity. Several cohort studies and small RCT's have suggested that HSIL may be treated effectively with topical immunomodulatory drugs without major morbidity. We therefore performed a meta-analysis of randomised controlled trials to assess the efficacy of topical Imiquimod for treating anogenital HSIL.

Methods: A systematic review of RCT's was performed comparing Imiquimod versus placebo for the treatment of HSIL. The primary outcome was histological regression of HSIL. Secondary outcomes were complete histological regression and morbidity. The risk ratio (RR) was estimated with 95% confidence intervals (CI) based on an intention-to-treat analysis.

Results: Four RCT's out of 409 papers identified were selected with a total of 206 patients. 113 were randomised to Imiquimod and 93 to placebo. Histological regression of HSIL was significantly higher in the Imiquimod group versus placebo (65·5% vs. 12·9%; RR 9·14, 95% CI 1·07-78·25, P = 0·04). Complete histological clearance of HSIL was higher in the Imiquimod group versus the placebo (38·9% vs. 5·4%; RR 4·48, 95% CI 1·99-10·12, P = 0·0003). The most common side effect of Imiquimod was pruritus (n = 24, 21%), there were no serious complications reported.

Conclusions: Topical Imiquimod is highly effective in the treatment of lower anogenital HSIL. Further studies should be directed at ascertaining the optimal dose, frequency and treatment duration.

Cancer/Surgical Oncology (GI) 1310

Aggressive Treatment of Pre-Invasive Disease Improves Outcomes in Multi-Focal Ano-Genital Neoplasia

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Aims: To evaluate the outcomes of ablative treatment of high-grade lower anogenital neoplasia in a population at high-risk for cancer

Methods: Retrospective data analysis of a cohort of women with lower anogenital neoplasia in local cancer network collaboration in East London. Comparisons were made between the group that developed cancer and those without cancer.

Results: During the study period, 12 women had cancer while 12 women did not. Of the 12 cases with cancer, 9 had a previous diagnosis of cancer before their referral, while 3 cases were detected at their first visit. Mean age between the groups did not differ. Following laser ablation, 16 of 24 cases (66·6%) did not develop cancer, while 3 of 24 cases developed cancer (12·5%). Two cases of cancer developed in those with previous malignant disease, with one case at a remote site (new malignant focus at fourchette, after ablation of perineal disease), while the other developed cancer at the anal verge after ablation of anal canal disease. In the third case, patient had laser ablation to VIN3 disease, was lost to follow-up, and 9 months later presented with perianal carcinoma in the untreated PAIN3 disease area.

Conclusions: The preliminary findings from this data suggest that aggressive treatment of pre-invasive disease in anogenital neoplasia may help prevent subsequent development of invasive cancer.

Cancer/Surgical Oncology (GI) 1313

Outcomes in Metastatic Colorectal Cancer: Is Surgery Beneficial?

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Aims: National data suggests that 14% of patients with colorectal cancer present with distant metastases (Dukes D); 35% of patients present to our Trust at this stage of disease. This retrospective observational study aimed to assess the management and outcomes of patients presenting with Dukes D colorectal cancer at our unit.

Methods: All patients presenting with Dukes D colorectal cancer between 2004&2013 were identified. Case-note review yielded data on patient demographics, physiological status (ASA), tumour characteristics, management interventions, complications& survival.

Results: 103 patients were identified; data was available for 87. Thirty-seven patients had right colon tumours (43%); 50 had left-sided tumours (57%). Thirty patients underwent elective or emergency surgery (34%); 20 then received chemotherapy (23%). Thirty patients received systemic treatment alone (34%); 27 did not undergo any intervention (32%).

Overall survival was 10 months. Mean survival was 13·8 months for patients who underwent surgery and systemic therapy; 11·7 months for systemic therapy alone; 4·6 months for those who did not receive either.

Conclusions: In our series, survival was higher for patients who underwent surgery in addition to adjuvant therapy compared to systemic treatment alone (not significant, $p = 0·63$). Further work is required to establish the benefit and timing of primary initial surgery in asymptomatic patients.

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Cancer/Surgical Oncology (Other)

Cancer/Surgical Oncology (Other) 0015

A New Surgical Protocol to Reduce Re-Operation Rates in Breast Conserving Surgery

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Aims: The challenge of breast conserving surgery (BCS) with Wide Local Excision (WLE) is to balance oncological control in a single procedure with good long-term, aesthetic results. Later re-excision surgery for close or involved margins can be difficult and may delay subsequent adjuvant therapies. The aim of this study was to quantify re-excision rates in a single breast centre and to introduce a new local protocol to reduce the need for re-excision.
Methods: Over six-month period re-excision rates were recorded of consecutive patients undergoing BCS for invasive disease. A new protocol was introduced where additional cavity shave excision biopsies were taken at the time of WLE and re-excision rates were reviewed. Histological assessment was performed by a dedicated breast pathologist and re-excision recommended if invasive or in-situ disease was found within 2 mm of any new resection margin.
Results: In the initial cohort of 81 patients (age range 25·9 – 82·1 years, median 62·5), 27 (33%) had close or involved margins. Following the introduction of complete cavity shaves there was no difference in the mean total weight of the specimens (34·6 g vs 33·5 g, p = 0·720 on T-test) or the mean diameter of invasive disease in each cohort were similar (16·8 mm vs 19·6 mm p = 0·100 on T-test). In the second group of 81 patients (age 34·7 – 83·4 years, median 63·7 years) only 15 (18·5%) (p = 0·048, Chi-square =3·89, dF =1) required a second operation due to involved margins.
Conclusions: The introduction of cavity shaves can significantly reduce re-excision rates following BCS in invasive breast cancer. This does not affect the total volume of tissue resected and we infer that this allowed us to optimise oncological treatments with equivalent breast cosmesis.

Cancer/Surgical Oncology (Other) 0053

Is There a Role for Robotic Surgery in the Treatment of Differentiated Thyroid Cancer?

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Aims: To assess the role of robotic thyroidectomy (RT) in the treatment of differentiated thyroid cancer (DTC) and compare it to the current gold-standard, open thyroidectomy.
Methods: A systematic review was conducted by searching the Cochrane Controlled Trials Register, Medline, EMBASE and Google Scholar databases from 1966 onwards. A total of 88 studies were retrieved. Based on design, number of patients and origin (high volume/specialised centres and national registries) 7 studies were identified that provided the best evidence to answer the question.
Results: No randomised controlled trials exist on the subject. Seven prospective comparative studies have been published encompassing 1,740 patients (696 RT, 939 open and 105 endoscopic thyroidectomies). Analysis showed that there was no significant difference with regards to postoperative complication rates and oncological outcomes between RT and open thyroidectomy including margin clearance, postoperative radioiodine uptake and stimulated serum thyroglobulin levels, number of retrieved lymph nodes and 2-year survival. However, brachial plexus neurapraxia was identified as a potential complication of RT. This was rare and transient with no long-term adverse effects. Following adjustment of ipsilateral arm positioning, this complication was abolished. Cosmetic satisfaction was higher with RT but operative time was longer though this rapidly decreased with surgical experience demonstrating a steep learning curve.
Conclusions: The findings from the literature suggest that, in experienced hands, RT is as oncologically effective and safe as open thyroidectomy for the treatment of early stage DTC but in addition provides superior cosmetic satisfaction as it leaves no neck scar. Moreover, RT offers the option of performing a concomitant neck dissection with no difference in the number of retrieved central and lateral compartment lymph nodes compared to open surgery. These however represent early results and long-term oncological and functional outcomes are awaited.

Cancer/Surgical Oncology (Other) 0101

Use of the Cook-Swartz Doppler Probe in Post-Operative Free Flap Monitoring

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Aims: Microvascular free tissue transfer is a reliable method for reconstruction of complex surgical defects. However, urgent re-exploration is required in the minority of flaps that experience ischaemic complications. Early detection of vascular compromise is the primary outcome determinant.
The reliability of clinical monitoring alone as a 'gold standard' is now being scrutinised. Moreover, adjunct technologies are increasingly being used in routine surveillance.
Aims: To critically appraise the role of implantable Doppler technologies in post-operative free flap monitoring and its implications for transplant surveillance.
Methods: Systematic review.
Results: The implantable Doppler probe allows continuous or periodic monitoring of anastomotic flow. Large-scale trials have demonstrated significantly improved salvage rates for failing grafts, without an unacceptably high false-positive rate. Their systematic use both intra- and post-operatively appears to be cost-effective: modest estimates predict a net saving of approximately 6% per flap.
Conclusions: This technology may be applicable to the transplant setting, where rapid detection of acutely compromised solid organ allografts is desirable. At present, repeat percutaneous Doppler ultrasound represents the mainstay surveillance method. However, preliminary studies suggest a significant increase in diagnostic accuracy with the addition of an implantable probe in both liver and kidney transplantation.

Cancer/Surgical Oncology (Other) 0395

A Systematic Review of Patient Preference Elicitation Methods in Colorectal Cancer Treatment

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Aims: Eliciting patient preference is important for shared decision-making in colorectal cancer treatment. The evolution of newer treatments in colorectal cancer, which balance quality of life and overall survival, make this an important future focus. The aim of this systematic review was to assess the use of patient preference elicitation in colorectal cancer treatment.
Methods: A systematic search strategy of MEDLINE, EMBASE, PsycINFO, CINAHL and the Cochrane Database for Systematic Reviews was undertaken to obtain relevant articles. Information regarding the type of patients included, preference instruments, study settings, outcomes and limitations was extracted.
Results: Eight articles formed the basis of this review. All articles described an empirical study using a validated instrument to define patient preference for an aspect of colorectal cancer treatment. The methods for assessing patient preference were varied, including standard gamble, time trade-off and discrete choice experiments. The evidence suggests that patients are prepared to trade significant reductions in life expectancy and overall survival in order to avoid certain complications of colorectal surgery, particularly stoma formation. In the

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adjuvant setting, patients are prepared to risk significant treatment side effects to gain small potential increases in both life expectancy and chance of survival. However, where neoadjuvant or adjuvant treatment risks worsening functional outcome then patients generally forego any potential increases in survival to improve bowel function, and therefore their quality of life. The only predictors of preference were tertiary education and previous cancer treatment.

Conclusions: The published evidence suggests that the majority of patients judge moderate survival benefits sufficient to make adjuvant therapy for colorectal cancer worthwhile, but are also prepared to trade significant potential reductions in life expectancy and survival to avoid certain surgical sequelae. The findings of this systematic review provide useful guidance for clinical discussions about management of colorectal cancer and for future preference studies.

Cancer/Surgical Oncology (Other) 0437

Risk Factors for Inoperability of Colorectal Liver Metastases

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Aims: To identify risk factors which may predict the inoperability of colorectal liver metastases (CRLM).

Methods: A prospectively kept 5-year database of patients at a single institution who underwent surgery for CRLM was analyzed. Univariate and multivariate logistic regression analysis and Pearson chi square tests were used to identify risk factors predicting the inoperability of CRLM.

Results: A total of 716 patients (435 male, 281 female) underwent surgery for CRLM between 2008 and 2013. Mean age was 64 ± 5 years. 27 patients (3·7%) were found to be inoperable at laparotomy. The cause for inoperability was peritoneal metastases 15 (55%) and irresectable disease in 12 (45%) patients. A univariate and multivariate analysis showed that age (<65 vs >65, p = 0·3), gender (p = 0·2), timing of metastases (synchronous vs metachronous p = 0·29), family history of colorectal cancer (p = 0·45),size of tumour (<5 cm vs >5 cm, p = 0·14) and unilateral multiple metastases (p = 0·2) could not predict inoperability, whereas presence of bilateral multiple tumours (p = 0·02) and a preoperative MRI scan more than 6 weeks (p = 0·01) prior to surgery were identified as risk factors for inoperability.

Conclusions: The only modifiable risk factor identified in this study was timing of preoperative MRI. We recommend preoperative liver MRI within 6 weeks of planned liver resection for CRLM to reduce the incidence of patients undergoing an unnecessary operation.

Cancer/Surgical Oncology (Other) 0904

Persistent Decreases in Circulating Levels of Both B Lymphocytes and Vaccination-Related Antibodies Following Breast Cancer Chemotherapy

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Aims: We aimed to compare levels of B lymphocytes and specific antibodies before and after chemotherapy for breast cancer, to assess influences of chemotherapy on immune health.

Methods: Peripheral blood was collected from 63 breast cancer patients before chemotherapy and 2 weeks, 3 months and 9 months after the end of chemotherapy. Circulating levels of B lymphocytes and pneumococcal- or tetanus-specific antibodies were measured using flow cytometry or ELISA respectively. Data were analysed using Wilcoxan Signed Rank Tests.

Results: There was a significant reduction in B cell levels after chemotherapy: levels were reduced at 2 weeks post-chemotherapy to only 5·3% of pre-chemotherapy levels (p < 0·001), and these recovered 9 months post-chemotherapy to only 67·8% (p < 0·001). Pneumococcal antibody levels were reduced 2 weeks post-chemotherapy in all patients, falling to 63% of pre-chemotherapy levels (p < 0·001). Overall, levels recovered slowly (3 months, to 65%; 9 months, to 71%). However, this masks wide individual variations; eg, 36% of patients showed levels falling between 3 and 9 months (p = 0·037). Tetanus antibody levels were also reduced 2 weeks post-chemotherapy to 72% (p = 0·001), although falls were seen in only 74% of patients. Levels recovered to 87% of pre-chemotherapy levels by 9 months (p = 0·001). However, surprisingly, in this case a majority of patients (57%) showed levels falling between 3 and 9 months (p = 0·031).

Conclusions: B lymphocytes and specific antibodies remain significantly depressed even 9 months post-chemotherapy. This raises the possibility of the need for re-vaccination in some patients.

Cancer/Surgical Oncology (Other) 0997

Number of Lymph Nodes Removed During Radical Prostatectomy for Early Prostate Cancer as it Relates to Outcome

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Aims: To find an optimum number LN which are removed during LN excision in radical prostatectomy for LPC investigating post-operative complications, biochemical recurrence (BCR), pathological TNM and pathological Gleason score.

Methodology applying PRISMA we searched PubMed and Sciencedirect .all articles published in English since 1996 with: radical prostatectomy, pelvic lymphadenectomy , studies with non-metastatic prostate cancer (T1-T2,N0, M0), articles which include number of lymph nodes removed, studies mentioning Pre and post-operative complications and oncological outcomes.

Results: 26 studies were analysed. The mean number of LN removed during pelvic lymphadenectomy in radical prostatectomy ranged from 4–28. Post-operative lymphocoeles (Clavien score IIIa) were the highest reported complication of 161 cases associated with the excision of a mean number of 17·7 LN.

Neuropraxia was second recorded complication associated with a removal of 17·8 LN. The third post-operative complication was SSIs associated with a removal of a mean number of 18 LN. DVT and PE both were associated with the removal of a mean number of 28 LN. On the oncological outcomes , high number NL removed (23·1) uncovered larger number of patients with positive biochemical recurrence (BCR) (91%). Longer follow-up period (152–2831 days) does play a role in uncovering more patients with positive biochemical recurrence. When BCR was analyzed it showed a strong association with T2 pathological stage. Survival rates were not always reported .Two studies reported that 81% and 83% of their patients had a 5-year survival (Masterson et al. and Toujier et al. respectively). Both these studies remove a mean number of 9 lymph nodes and 12 lymph nodes respectively.

Conclusion In the absence of large sample single-center studies, No clear cut off point can be drawn from the available literature .A unified reporting system is highly warranted in future studies for better analysis comparative evaluation toward a more definitive cut off point of optimum number LN.

Cancer/Surgical Oncology (Other) 1050

Breast Cancer Treatment and Outcomes – Young Versus Elderly

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Aims: Breast cancer remains the most common cancer affecting women in the UK. We compare younger and elder breast cancer patients in terms of treatments given and their outcomes.

Methods: All breast cancer patients aged 50 and above in the last five years were included. Comparison was made between two age groups; 50–70 and over 70. Standard treatment included general anaesthetic surgery with adjuvant treatment. Non-standard treatment included primary endocrine therapy, palliative radiotherapy and local anaesthetic surgery.

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Results: A total of 559 patients were seen.

Total		Age 50-70	Age over 70	p value
n = 559		297 (53%)	262 (47%)	
Standard		277 (93%)	192 (73%)	
Non-standard		20 (7%)	70 (27%)	
Median Age (years)		61	79	
Surgery		274 (92%)	204 (78%)	< 0·001
Mastectomies		55 (20%)	69 (34%)	
Adjuvant treatment	Chemotherapy	116 (39%)	14 (5%)	< 0·001
	Radiotherapy	241 (81%)	152 (58%)	n/s
	Hormone treatment	243 (81%)	221 (84%)	n/s
	Herceptin	20 (7%)	7 (3%)	< 0·001
Mortality		18 (6%)	47 (18%)	< 0·001
Median Follow-up (months)		29	30	n/s

Reasons for inclusion in non-standard treatment in both age groups included medically unfit, metastatic disease, mental health issues and patients choice.

Conclusion Majority of patients in both age groups were offered standard treatment. Younger patients had more breast conserving surgeries (80%) than elderly (66%). No significant difference was seen in the proportion of patients receiving radiotherapy and hormone treatment in both age groups. Over 70s had significantly higher mortality than under 70s, over an equal period of follow-up.

Cancer/Surgical Oncology (Other) 1142

Combined Laparoscopic Abdominoperineal Excision of the Rectum and Retropubic Prostatectomy: A Single Centre Experience

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Aims: The two most common male pelvic cancers, prostate and rectal, may present synchronously or metachronously. We present our experience of four patients undergoing combined laparoscopic abdominoperineal excision of the rectum (APER) and radical en bloc prostatectomy and one undergoing laparoscopic anterior resection and prostatectomy. We aim to show that this can be performed safely in combination, and contribute to early mobilisation, feeding and discharge.

Methods: In each patient, laparoscopic radical prostatectomy dissection, with bilateral lymph node harvest, was performed initially. Then the rectum was dissected in the posterior and lateral total mesenteric excision plane to the pelvic floor, leaving the prostate attached anteriorly. The colon was transected and the prostate divided from the bladder and distal urethra. Intersphincteric dissection allowed removal of the rectum, anus and prostate en bloc perineally, before layered closure of the pelvic floor. An end colostomy was constructed in the left iliac fossa and vesicourethral anastomosis completed over a urethral catheter. We also include one patient who underwent combined laparoscopic anterior resection and prostatectomy. All patients were managed according to our Enhanced Recovery Program.

Results: Mean operating time was 373 minutes, with no conversions. All patients commenced a soft diet on day one, with 80% mobilising on day one too. Median discharge was 4 days post op (length of stay 3–11 days). Post-operative complications included one seroma and one DVT in the same patient, one urethrovesical anastomotic leak and one port site hernia. At follow up (max 47 months) there has been no tumour recurrence.

Conclusions: Combined laparoscopic APER and prostatectomy is feasible and can be performed safely on patients with both rectal and prostate cancer. A combination of laparoscopic surgery and an Enhanced Recovery Programme leads to early mobilisation, feeding and discharge.

Cancer/Surgical Oncology (Other) 1156

The Sensitivity and Specificity of Urine Cytology in the Follow Up of Patients with Recurrent NMIBC

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Introduction: Urine cytology (UC) is considered an adjunctive investigation to cystoscopy in the follow up of patients with recurrent non-muscle invasive bladder cancer (NMIBC). Both cystoscopy and UC are routinely utilised in the follow up of patients with NMIBC. This study is aimed at establishing whether UC has a robust sensitivity and specificity alongside a favourable positive predictive value so that it may be utilised solely in the follow up of patients with a high grade (grade 2 (high) or grade 3) NMIBC and obviate the need for cystoscopy which is both invasive and expensive.

Patients & Methods 113 patients (82 male and 31 female) with a mean age of 74 (range: 47 – 92) with a histological diagnosis of a grade 2 (high) or a grade 3 NMIBC were retrospectively identified. Cytology results and cystoscopy reports, over an 8-year period (2005 – 2013), were retrieved from electronic patient records.

Results: When compared to the gold standard of cystoscopy, UC has a specificity of 97·7% and a sensitivity of 40·7% when used in the follow up of patients with high grade NMIBC. In addition, UC returned a positive predictive value (PPV) of 81·5% and a negative predictive value (NPV) of 86%.

Conclusion UC has good specificity but poor sensitivity in the follow up of patients with recurrent grade 2 (high) NMIBC or grade 3 NMIBC. Specifically, the findings advocate that UC cannot be used on its own due its potential to miss up to 59·3% of recurrence. Furthermore, UC has a reasonable PPV and NPV. However, a significant proportion of patients, 18·5% and 14% respectively, would receive a false positive or false negative result. UC itself appears to be a waste of time and resource.

Cancer/Surgical Oncology (Other) 1188

Comparison of Outcomes Between Left Transthoracic and Ivor-Lewis Oesophagectomies for the Treatment of Oesophageal Cancer in One Centre

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Aims: The aim of this analysis is to compare the outcomes of left transthoracic (one-stage) versus Ivor- Lewis (two-stage) oesophagectomies for oesophageal cancer. Currently, there is no gold-standard approach and the decision regarding the choice of procedure rests largely on operator experience and a case by case assessment of the individual patient.

Methods: All patients who underwent one-stage (n = 44) and two-stage (n = 73) oesophagectomies at a large teaching hospital between October 2007 and October 2012 were included in this study. All patients were cared for in the same perioperative environment. Health records were used to collect data on patient demographics, existing comorbidities, tumour characteristics, staging including lymph node count and post-operative complications as well as 30-day and long-term mortality.

Results: Both groups are comparable in terms of demographic data, tumour position and staging. There is a higher incidence of adenocarcinoma in the two-stage cohort. Higher lymph node yield from patients undergoing two-stage compared to one-stage procedure is suggested (mean 26·4 v 19·5 lymph nodes) but this did not reach statistical significance. Post-operative complications occurred in 29/44 (66%) of patients undergoing one-stage and 38/73 (52%) of patients undergoing two-stage oesophagectomy (p =0·178). There is no significant difference in readmission rates, operative mortality and long-term survival (average follow up 2 years and 10 months).

Conclusions: There does not appear to be a significant difference between the left-transthoracic and Ivor-Lewis oesophagectomies with regards to morbidity, 30 day mortality, readmission rates and long-term survival. Until longer follow up studies assessing survival as well as multicentre analyses are available, both surgical procedures are feasible options for the treatment of oesophageal cancer.

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Cancer/Surgical Oncology (Other) 1278

Transjugular Intrahepatic Portosystemic Shunting Prior to Open Colorectal Cancer Resection Reduce Morbidity and Mortality in Patients with Liver Cirrhosis

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Aims: Performing surgical procedures on patients with raised portal vein pressure and variceal disease is fraught with difficulties, resulting in high morbidity and mortality rates. Reducing portal vein pressure using a Transjugular Intrahepatic Portosystemic Shunt (TIPSS) has been advocated pre-operatively for general surgical procedures. We aim to investigate the feasibility of performing colorectal carcinoma resections in high risk cirrhotic patients using TIPPS prior to procedure

Methods: A retrospective analysis was performed on patients who had a TIPSS procedure prior to colorectal carcinoma operations between Jan'08-Jan'13, by a single surgeon at a single institution. Primary operative outcomes were recorded (Operative difficulty, Intraoperative blood loss, operative time, early complications) and secondary outcomes (30 day mortality, complications, long term follow up).

Results: Three patients with Child's Pugh B liver disease (median age 70) had 4 elective colonic procedures (1 High Anterior resection followed by AP Resection, 1 right hemicolectomy, 1 Hartmann's procedure). TIPPS procedures were performed approximately 4 weeks prior to operation. There were no complications with the TIPSS procedure, which was performed by a single interventional radiologist. All three procedures were technically challenging with moderate ascites, varices, extensive adhesions & fibrosis. Two patients (50%) required high dependency post-operatively and two (50%) had early bleeding complications (1 required a blood transfusion and 1 returned to theatre for peritoneal lavage and haemostasis). Median Length of stay was 12 days (Range 10–32 days). There were no 30-day mortality and overall mortality is 33%, one patient died at 8 months post operatively of medical co-morbidities. There were no late complications; one patient had a second procedure for a new primary tumour.

Conclusions: Patients with liver cirrhosis are often deemed too high risk to operate upon. Performing a TIPSS intervention successfully reduces the morbidity of the procedure. There are still extensive bleeding risks and the patient should be closely monitored on a high dependency unit. TIPSS is a procedure not available to many institutions, requiring experienced intervention radiologists. High-risk patients should be referred to tertiary care centres for assessment & management.

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Education and Training

Education and Training 0007

A National Survey of Reasons why Students and Junior Doctors Choose not to Pursue a Career in Surgery

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Aims: A career is surgery has always been a highly desired pathway for trainee doctors. However, cutbacks in training posts and limitations imposed on junior doctors as a result of the European Working Time Directive mean that a surgical career is quickly becoming an even more intensely competitive and somewhat daunting pathway to endure. Are these factors discouraging medical graduates before they even embark on their foundation training?

Methods: Online questionnaires were sent to final year medical students attending 13 different medical schools across the United Kingdom. The questions asked related to demographics, career intentions and, where applicable, reasons for not choosing to pursue a surgical career.

Results: 932 questionnaire responses were received. The most popular intended career route was core medical training (459), followed closely by general practice (360), with paediatrics, acute care common stem and obstetrics and gynaecology trailing behind (346, 275 and 254 respectively). Less popular still was core surgical training (240) ahead of only anaesthetics, psychiatry, ophthalmology, radiology and public health medicine. Of the reasons given for not wishing to pursue a surgical career incompatibility with lifestyle, poor anatomy teaching at medical school, competition and perceived aggressive surgical culture were of greatest influence (538, 528, 511 and 448 respectively). Of concern was the perceived gender obstacle stated by 6 of the female respondents.

Conclusions: Overall our survey has not demonstrated a concerning decline in the proportion of medical students wishing to pursue a career in surgery but it has highlighted a number of important influential factors as to why some do not. Surgery continues to face the challenge of dispelling the somewhat already established image as a male dominated hostile speciality but it also has to acknowledge newly recognised issues, in particular insufficient anatomy teaching.

Education and Training 0008

Effect of Student Surgical Society Membership on Future Career Aspirations

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Aims: To assess the perceived value of medical school surgical society membership and its effect on determining future career aspirations.

Methods: An anonymous 10-question survey (1–5 Likert-type items), administered via an online survey engine (QuestionPro), was distributed to undergraduate and postgraduate members of three UK medical school surgical societies. All surgical society members were emailed an invitation to independently complete the survey.

Results: Sixty (50·4%) out of 119 students completed the survey. Of these, 35 (58·3%) were male and 25 (41·7%) were female. Twenty-seven (45·0%) were pre-clinical students and 24 (40·0%) were clinical students. Only 28 (46·7%) respondents had decided on a career in surgery before they joined the surgical society. Thirty-eight (62·3%) respondents indicated that the surgical society had increased their awareness and knowledge about the different surgical specialties. Thirty-two (53·3%) participants stated that membership to the society had directly contributed to their decision to pursue a career in surgery. Of the respondents who had decided on a career in surgery before joining the society, 23 (67·6%) stated that participating in society events had better prepared them for the career. Plastic surgery (13·3%), general surgery (11·7%) and neurosurgery (11·7%) were the three most popular specialties for future careers. Surgical skills workshops (21·9%), conferences (21·1%) and careers talks (16·4%) were chosen by students as the most useful career-guiding events organised by surgical societies.

Conclusion Participation in medical school surgical societies can be a valuable part of undergraduate and postgraduate medical education. This is particularly relevant given that adequate exposure to surgical specialties, surgical skills training and career guidance may be difficult to obtain within the current medical curriculum.

Education and Training 0018

A Single Intervention to Improve Both an ENT Registrar's Outpatient Service and Their Training

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Aims: To identify whether a period of supernumerary outpatient training for an otolaryngology higher surgical trainee (HST) results in: 1) improved clinic service delivery by the HST after the exposure, and 2) improved training during the supernumerary period.

Methods: A classic audit loop was completed.

First arm: an otolaryngology HST spent a 3-month period seeing pooled new patients independently (although under ultimate Consultant supervision) in a Consultant's clinic.

Intervention: subsequently the HST spent a 3-month period as a supernumerary clinician observing, and being observed, by a Consultant in the same clinic.

Second arm: the HST then spent another three months seeing pooled new patients independently (although under ultimate Consultant supervision) in a Consultant's clinic.

During each three month period, trainee performance data was collected with respect to patient outcomes and the number of clinic-based workplace based assessments (WBAs) the HST performed.

Results:

1. Clinic service delivery (patients seen by HST). Ongoing patient episode rate (follow-up appointments): pre-supernumerary training - 40%; post-supernumerary training - 32·5% ($p = <0·05$).
2. Training. Clinic-based WBA number: pre-supernumerary training - 2; during supernumerary training – 19; post-supernumerary training – 2.

Conclusions: Supernumerary training of a HST in clinic can improve their outpatient service delivery and training.

Education and Training 0019

ENT WBAs in the Wales Deanery: the First Six Years

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Aims: Workplace based assessments (WBAs) are an integral part of the Intercollegiate Surgical Curriculum Programme's (ISCP) assessment system. They are intended to be used as a 'formative assessment to support learning.' ENT Higher Surgical Trainees in the Wales Deanery have been completing them since December 2007. This study examines how they have been utilised since their introduction.

Methods: A single Deanery's pooled ENT Higher Surgical Trainees' WBAs were analysed with respect to frequency and subtype.

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Results: 1356 WPBAs were analysed. They were completed between December 2007 and June 2013 inclusive. Procedure based assessments (PBAs) totalled 567; case based discussions (CBDs) totalled 388; clinical evaluation exercises (CEX) totalled 269; and direct observation of procedural skills in surgery (DOPs) totalled 132. The mean number of WBAs performed was highest in May (34·7), immediately prior to the Annual Review of Competence Progression (ARCP). The lowest mean number performed was in July (7·8). The total number performed annually has risen every year since their introduction.
Conclusions: WBAs have been readily adopted across ENT Wales. However, to fulfil their intended use as a formative assessment, one would hope that their completion becomes more uniform across the year. Furthermore, one should aim for a more even spread between the different subtypes of WBA as they assess different domains of a surgical trainee's practice.

Education and Training 0030

High Fidelity Simulation & Human Factors in Core Surgical Training: A Pilot Course

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Aims: Using high fidelity patient simulators to recreate highly realistic scenarios to:

1 Highlight the acute management of common conditions.
2 Appreciate how human factors can have a negative effect.
3 Telephone communication to senior surgical/non-surgical specialties.

This pilot course for CT1/2 s is the first of its kind in the South East of England.
Methods: High fidelity simulation is financially and resource expensive. A one day course for CT1/2 s to experience and observe scenarios was created. Staffing included technicians for the hardware and a mix of surgical, anaesthetic and ICU faculty all of whom had experience in simulation and facilitated feedback. Scenarios lasted 20 minutes with the faculty observing behind a one-way mirrored wall providing input to the mannequin's observation, the patient's voice, any telephone interactions as well as directing a nurse in the scenario via one way radio. The feedback was done in a formal manner focusing on the human factors.
Results: All the candidates had pre and post course questionnaires to evaluate their experiences. Most had undertaken some form of high fidelity simulation but never in a surgical setting. There was a varied level subjectively of their own experiences of taking charge in an acute situation, communicating with senior clinicians and nurses as well as appreciation of what human factors are and how they would affect daily practise. Post course questionnaires showed marginally improved number rating of their experiences but their free comments were all very positive on what specific points they had learnt from the day and what they had never been taught in the past in any other teaching format.
Conclusions: The course is running again in 2014 and fully booked within 24hours of being advertised. Even though the costs are high the safe training in "realistic" environments cannot be matched in any other way. Experienced faculty is key to maximising the candidates' experience and teaching in any simulation course.

Education and Training 0045

An Alternative Certification Examination 'ACE' to Ensure Fit for Purpose Interns

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Background Medical students struggle to bridge the theory-practice gap relating to certain clinical skills. In current curricula, emphasis is on facilitating the safe performance of classroom taught clinical skills in the realities of clinical practice. This study sought to compare student's performance in an integrative alternative certification examination "ACE" with a subsequent traditional long case.
Methods: 143 final year medical students were invited to participate in the "ACE" in February 2013. 137 agreed to participate (95·8 %) of the class. The "ACE" format consisted of 4 sequential patient encounters with 2 independent examiners. It involved observed assessments of history taking, examination, data interpretation, diagnosis and treatment planning. Communication skills and time management were also assessed. The exam was run over two days with a change of case on day 2. The level of difficulty was comparable between cases.
Results: There was a statistically significantly difference between the grades in the "ACE" and long case ($p < 0{\cdot}001$). Failure rates were higher in the "ACE" with 27 (18·9%) students failing whilst 6 (4·2%) failed the long case. The inclusion of avoidance of an egregious error in the pass criteria of the "ACE" resulted in 14 students failing. Regarding inter-rater reliability - the correlation of grades between independent examiners in the "ACE" was strong at 0·907 (CI 0·766, 1) - Cronbachs Alpha.
Conclusion The "ACE" exam format is integrative, has higher specificity than the long case and shows potential as a certification examination format for objectively identifying future Interns who are fit for purpose.

Education and Training 0046

Assessment of Surgical Skills Competence Using fMRI: A Feasibility Study

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Background Patient safety is fundamental to modern medical practice. Assuring surgical competence is becoming more important at a time when Surgeons are being trained in fewer hours. Accurate objective assessment of technical skills ability is difficult. Functional Magnetic Resonance Imaging (fMRI) has a long history in neuroscience and cognitive studies; however, little is published on actual rather than perceived motor skill ability. This study sought to assess the feasibility of measuring blood oxygen level dependent signal changes (BOLD) in specific brain regions via fMRI during motor activity.
Methods: fMRI images were acquired in 9 subjects (3 Experts, 3 Intermediates, 3 Novices) whilst performing a basic surgical skill: hand tying of knots which was videoed and photographed. Quantity and quality of knots were independently assessed by subject experts who were blinded to the categorisation of participants. The effect of subject head motion caused by the task itself was assessed.
Results: Voxel-shifts of less than 1 voxel were recorded in all participants. It proved feasible to perform actual motor actions in the scanner whilst recording meaningful data. Experts and Intermediates performed consistently with 100% square knots. Novices had 2 slip knots. Regarding quantity novices ranged from 14–26 knots, Intermediates 54–58 and Experts 38–47. A Kruskal Wallace Rank Sum Test revealed the difference between the 3 groups was statistically significant with regard to quantity of square knots tied, $p = 0{\cdot}147$. There was increased BOLD activity observed in Novices compared to Experts when tieing knots- not statistically significant. Specific Regions of Interest identified whilst performing the surgical task concur with previous studies findings
Conclusion fMRI is a feasible method of assessing actual as well as perceived motor skill. Head motion during performance of a motor skill does not preclude the attainment of meaningful data. Larger numbers are needed to investigate further.
Ethics approval was gained from St James and Tallaght Research and Ethics Committee to undertake this study.

Education and Training 0065

Multisource Feedback at Core Surgical Training Level: Does it do what it says on the Tin?

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Aim: MSF has become part of the current discourse around assessment in medical education. This paper will focus on the role of MSF as a tool for formative learning in the education of Core Surgical Trainees (CSTs), to assess

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its role as a Work Place Based Assessment (WPBA), in the development of future consultant surgeons.

Method A phenomenological approach with a multi-method enquiry was used. Data was generated from a CST focus group including an interview with the focus group moderator, from an observational study of an Education Supervisor (ES) and CST feedback session and from interviews of a representative sample of surgical ESs. Data was thematically coded and analysed, with further triangulation of the data from the researcher's reflective research diary.

Results: The findings showed that CSTs value MSF as a helpful tool for overall assessment of their practice, with a view of it being an overall positive experience. However they were of the opinion that there is a lot more potential that can be derived from this WPBA.

The logistics of the current system were criticized by both the CSTs and the ESs. The rater selection was particularly singled out as it currently is at the CST's discretion, and this could lead to scoring bias. The current three point scoring system was deemed too inflexible, with the free comments section by the scorer being underutilized. With average timings for the CST/ES feedback session being less than ten minutes, the CSTs felt it was more of a 'pat on the back' approach rather than a constructive dialogue.

Unlike CSTs who would have had three or more MSFs since graduation, the ESs themselves on average only had one MSF in their career, as part of the recently introduced appraisal process.

Conclusions: Changes in the rater selection process and the scoring system, could result in a more helpful and formative use of this WPBA. A cultural change is needed with the CSTs s leading in the ES feedback session, to make MSF a more effective and useful educational tool. The provision of regular updates for ESs in the use and educational value of MSF at CST level, could also help.

Education and Training 0076

A Functional Model to Demonstrate Finger Tendon Mechanics & Pathology

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Aims: Three dimensional models have been used in anatomy teaching for decades, however the vast majority of these do not demonstrate the mechanics involved, and how pathology affects the function of joints and limbs. The aim was to develop a functional finger model prototype to be used as a teaching aid for demonstrating functional anatomy, as well as diagnosis and management of pathology.

Methods: Funding for the project was applied for successfully through the deanery Initial prototypes were developed using wood, Dacron and elastic chord. The services of a local plastics engineering company were used to produce CAD designs from which an injection moulding tool was produced to manufacture articulating bones for the finger model. The pulleys were moulded separately and the tendons, cut from silicone material.

Results: The current prototype accurately displays the relationship of the tendons, pulleys and bones of the finger as well as demonstrating finger mechanics. The tendons of the finger can be cut or disconnected to demonstrate pathology such *as* boutonniere and mallet deformities. The cut tendons can also be used to practice sutured tendon repairs.

Conclusions: It is hoped that this prototype will lead to production of an innovative learning and teaching tool, and will be used to enhance the education of medical students, junior doctors and other clinical staff in the future.

Education and Training 0079

Tracheostomies and Laryngectomies: Are Junior Doctors Confident at Managing These in an Emergency?

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Aims: This survey sought to establish the level of junior doctors' knowledge with regards to distinguishing between a tracheostomy and a laryngectomy, the management of such patients in an emergency and to assess the need for further training.

Methods: Thirty-six junior doctors (11 Foundation year 1 s, 16 Foundation year 2 s and 9 junior doctors in other posts) within one Foundation Trust were invited to complete a survey to establish their knowledge of anatomical differences between a tracheostomy and laryngectomy, and the correct route of emergency oxygen delivery. Respondents were also asked if they felt they had received sufficient training in this area.

Results: The results showed an obvious lack of confidence amongst junior doctors with only 19% who felt confident in differentiating between a tracheostomy and a laryngectomy. Only 31% were able to correctly describe the anatomical difference**.** 75% were unable to identify the correct route of oxygen administration in laryngectomy patients, and 61% wrongly identified the route of oxygen administration in tracheostomy patients in an emergency situation. 97% of respondents did not think they had received sufficient training in emergency management of these patients. All doctors had completed a life support course.

Conclusions: It is critical to identify a laryngectomy or tracheostomy patient, particularly in an emergency. Our survey results indicated that our respondents had a poor level of understanding and confidence regarding the differentiation and management of patients with tracheostomies and laryngectomies, and demonstrate that there is a clear need for additional training in this field.

Education and Training 0097

Factors Influencing Medical Student Interest in Plastic Surgery and how they can be Utilised to Develop Evidenced-Based Undergraduate Surgical Training

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Aims: Plastic surgery is a competitive career choice despite minimal exposure at medical school. This research quantifies the factors influencing medical student career interest in plastic surgery and identifies why the speciality appeals to students. These findings provide an evidence-base to tailor undergraduate plastic surgery training and postgraduate selection criteria.

Methods: Medical students from two national plastic surgery undergraduate courses were invited to complete a questionnaire. Questions included past experience and career interest in plastic surgery, sources of exposure, and motivational factors for a career in plastic surgery. Linear regression quantified associations for significance.

Results: 172 students completed the questionnaire. A significant positive association between duration of medical student exposure and career interest in plastic surgery was found ($r^2 = 0{\cdot}157$; $p < 0{\cdot}0001$). Sources of exposure most influential were (1) Operating Room (2) Consultant interaction (3) Trainee interaction. The most commonly cited motivational factors towards a career in plastic surgery were operative satisfaction (90·8%), improving patients' quality of life (88·5%) and performing reconstructive surgery (88·0%).

Conclusions: This study identified the most influential factors upon decision making towards a career in plastic surgery. Medical student exposure and teaching can be tailored to include these positively influential factors in order to augment evidence-based training in plastic surgery.

Education and Training 0103

The Path to a Michelin Star; How does an Expert Chef's Perception of the Journey Illuminate Development of Expertise in Modern Surgical Training?

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Aims: The acquisition of expertise is a complex phenomenon. Few become true experts and there appears to be certain factors, innate and acquired, personal and environmental, that influence the development of expertise**.** This study aims

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to understand the acquisition of expertise by comparing the development of expertise between Michelin star chefs and consultant plastic surgeons.
Methods: Four consultant plastic surgeons and three Michelin star chefs were interviewed. Interviews were recorded, transcribed and analysed. Themes related to the acquisition of expertise were identified.
Results: Themes identified during the interviews were analysed in conjunction with educational theories explaining learning, development and the acquisition of expertise. Specific factors were identified that proved fundamental in becoming an expert and maintaining expertise. These factors were personal factors such as talent, motivation, deliberate self-practice and adaptability, and external factors such as the environment and time.
Conclusions: "*The spinning top model*" was constructed to explain how the coordination of specific factors over time enabled the development of expertise. Experts never lost momentum and acquired skills through deliberate self-practice, persistent motivation and the "*hunger to be better.*" The spinning top model can be applied to modern plastic surgery training as it emphasises that innate ability and talent play only a small part in development of expertise, more important were motivation, deliberate practice and adaptability. The model can be used to promote confidence and encourage trainees in that while innate ability is important the ability to become an expert is within their own hands.

Education and Training 0106

Relative Boost Provided by a Core Surgical Training Year 3 in ST3 Selection

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Aims: Despite the General Medical Council setting the maximum length of core surgical training (CST) at 2 years, currently as many as a third of deaneries offer an additional experiential year of CST, either termed CT2+ or CT3. Data from past rounds of national selection demonstrate that less than a third of CT2 trainees progress directly to ST3. This study aimed to quantify the benefit of an additional year of CST related to successful ST3 selection.
Methods: Fifty-eight CSTs appointed to CT1 within a single Deanery in 2010 were identified and the career progression of this cohort followed for the subsequent 3 years.
Results: Standard 2 year CST resulted in 3 (5·2%) trainees achieving successful ST3 selection (General Surgery, ENT and Maxillofacial Surgery) and a further 3 were appointed to LAT posts (General Surgery, Plastic Surgery and Trauma and Orthopaedic Surgery). Sixteen trainees (27·6%) left surgery to pursue alternative medical careers and one trainee entered research. 35 (60·3%) remained in CST within the Deanery, at either CT2 or CT3 level, depending on ARCP outcome and achievement of core competencies. This additional year resulted in a further 6 ST3 appointments (17·1%) and 7 ST3 LAT appointments (total 37·1%). This represents a significantly increased success rate after 3 years of core training (37% vs. 10% after 2 years, p = 0·002).
Conclusions: With a minority of CT2 trainees appointed directly into NTN ST3 posts, the fitness for purpose of contemporary CST needs questioning. A 3-fold boost to ST3 selection was provided by an additional year of CST. With many NHS Trusts and Local Health Boards struggling to fill rota gaps, and operative experience proving increasingly difficult to obtain, partly as a result of a reduction in duty hours following EWTD implementation, an optional third year of training may arguably benefit trainees and Trusts alike.

Education and Training 0114

The Surgical Gender Gap; Closing or not?

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Aims: Surgery remains a male dominated arena across all levels and subspecialties. Evidence exists, both within medicine and the wider academic world, that males publish more than females, but little has been published to substantiate this claim within surgery alone. This study aimed to identify whether or not there are measurable differences in the portfolios and CVs of contemporary Higher Surgical Trainees (HSTs), related to gender.
Methods: The ISCP portfolios and CVs of 91 consecutive HSTs (59 males and 32 females) were examined for: operative logbook with specific reference to numbers, communications to learned societies, and higher degree awards.
Results: Total operative caseloads were similar (median male vs. female 135 vs. 140, p = 0·608), but male trainees recorded performed (ISCP categories S-TS, S-TU, P or TJ) more frequently than females (67·3% vs. 63·6%, p = 0·030). Male trainees also had more overall publications (median 9 vs. 4, p = 0·01), and 1st author publications (median 2 vs. 1, p = 0·007) than their female colleagues. Despite the above differences in scholarly activity, there was no significant difference in the proportion of male and female trainees who had been awarded a higher degree (49% vs. 34%, p = 0·175).
Conclusions: Despite the increase in overall numbers of female trainees in surgical specialties over recent years, inequality still exists in portfolios related to gender. With regard to operative experience, it is not clear from this study whether females actually perform fewer operations than their male colleagues, or if this difference is due to the way in which male and female trainees record their experience. Further qualitative data collection would be welcome to determine if this is a genuine training issue.

Education and Training 0122

A Bovine Torso Model for Training Colorectal Surgeons in Laparoscopic Rectal Dissection

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Aims: Porcine models, live and cadaveric, have been used extensively in laparoscopic training. They allow features of rectal surgery to be simulated but are unrealistic in terms of size, the mesorectal and rectal tissues are flimsy, fat is lacking and the dissection is insufficiently challenging. The pelvis is too small for a low stapled anastomosis. This study aimed to identify a more realistic and more challenging model of laparoscopic rectal dissection.
Methods: The torso of a 30 kg calf with intact pelvis and diaphragm were purchased from a medical meat company. The shaved calf was placed on its back with sandbags used to maintain position and simulate tilt. Pneumoperitoneum was established. The key steps and techniques of laparoscopic rectal dissection and stapled anastomosis were completed by 20 trainees under supervision. Evaluation forms were completed by these participants and expert faculty.
Results: Analysis of the feedback shows all found the model to be a realistic approximation in terms of anatomy, tissue colour, consistency and organ tactility, to human rectal dissection (average score of 4·3 on a Likert scale of 1(unrealistic/poor) to 5 (realistic/useful)). The feedback on the calf model for port insertion, anatomy, rectal dissection, retraction and access, stapled anastomosis were scored as 3·9, 4·0, 4·0, 4·0 and 4·3 respectively. All those with experience of both, rated the calf superior to the porcine model. 6 delegates and all 5 faculty rated the bovine was better than the porcine model used before.
Conclusions: This calf torso model can be easily obtained and appears valuable as part of a multi-modal training programme for skills acquisition in laparoscopic rectal dissection and anastomosis. Some of the disadvantages of the porcine model are addressed allowing the more advanced trainees to be stretched.

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Education and Training 0124

Planning Courses Using Thiel Fixed Human Cadavers for Multiple Laparoscopic Procedures Training in Different Specialties and Time Scale

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Aims: The aim of this study was to describe a strategy of planning course using Thiel fixed human cadavers that were different from the fresh-frozen technique for multiple laparoscopic procedures training in different specialities and time scale.

Methods: Thiel fixed cadavers were used in 9 intensive 2 day training programme. Careful plan of courses for differently specialties according to the anatomy involved was carried out before the courses, which maximized the use of the body. The same bodies were reused for different procedures until all the related anatomies provided their service. All participants completed a five-point Likert scale satisfaction questionnaire after their training sessions. The quality of cadaveric tissue and the training session were assessed with particular emphasis placed on the ease of patient positioning, trocar placement, the preservation of tissue planes, quality of tissue dissection, and the quality of tissue preservation.

Results: 70 laparoscopic trainees attended the 9 courses and 35 Thiel method preserved human cadavers were used for different specialities during 2011 to 2013. Oder of courses were sequenced as laparoscopic gastric banding, sleeve gastrectomy, gastric bypass, laparoscopic right hemicolectomy, left hemicolectomy, anterior resection, and laparoscopic nephrectomy. All participants highly rated the overall quality of the cadaveric tissue embalmed by Thiel's method (mean scores for quality on the five-point Likert scale (maximum of 5) were 4·6 and 4·4 by the trainees and experienced laparoscopic surgeons, respectively). All of the steps of laparoscopic renal resection were rated 4·4 or more on the Likert scale by both trainees and faculty members.

Conclusions: Thiel method preserved human cadavers can provide a highly realistic training model for many commonly laparoscopic procedures. Courses can be planned for multiple laparoscopic procedures training based on the speciality and time for the maximal use of the cadavers.

Education and Training 0133

Research Collaboratives: Does Working Together Work?

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Aims: The West Midlands Research Collaborative undertook the first trainee-led, multi-centre randomised controlled trial, the Rossini (Reduction of Surgical Site Infection using Novel Intervention) Trial, recruiting 769 patients and closing 2 months early as recruitment rates were so high. Since their success, trainee-led Research Collaboratives have been introduced in most regions across the country and high-quality trials have been launched in three regions.

Methods: The North West Research Collaborative (NWRC) was established in July 2012 and is open to General Surgical Registrars and Core Trainees.

Results: The NWRC has over 60 members who have participated in two National Audits on Sepsis and the Conduct of Surgical Ward Rounds. A regional audit of Coding, which took place over nine sites and involved 200 patients, has been completed. Furthermore, a regional audit of the Operative Management of Perianal Abscesses has been presented at two national and one regional conference. The NWRC has launched an observational study, funded by the Bowel Disease Research Foundation, on the natural history and management of perianal abscesses. Ethical approval has been granted for the study. It has been adopted by the Liverpool Cancer Trials Unit and onto the National Institute for Health Research Clinical Research Network portfolio. This study aims to inform the design of a seamless phase II/III trial of packing versus non-packing of perianal abscesses: a national, multicentre randomised controlled trial with over 1000 patients participating. The idea for the trial won the British Journal of Surgery New Project Prize at the National Research Collaborative's 4th Annual Meeting. The collaborative has registered a Cochrane review on dressings for healing perianal abscesses. It is now designing a second trial looking at breast implant loss. Finally, the collaborative has launched a website (nwresearch.org).

Conclusions: The NWRC has achieved a great deal in the 16 months since its inception. Collaboration allows trainees to gain experience of research methodology and conduct meaningful studies without taking time out from training. This has been a very successful initiative.

Education and Training 0144

The Face of a New Specialty: Characteristics of the First Intake of Vascular Trainees

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Aims: The first cohort of trainees enrolled on to the new Vascular Specialty training programme started in October 2013. The aim of this study was to define the characteristics of the trainees selected in the new programme.

Methods: All trainees attending the national vascular induction completed a 6-part questionnaire. The results were collated and analysed.

Results: A total of 21 trainees (12 male, 9 female) completed the questionnaire. The average age at the time of appointment was 30 years and the majority were UK nationals graduating from UK universities.

The majority had at least 6 months' experience of vascular surgery, in either a tertiary centre (12/21) or a district general hospital (14/21). All trainees had been exposed to open vascular surgical procedures in theatre; endovascular experience was more limited (15/21).

11/21 trainees had previously applied for a general surgical ST3 number. 8/21 progressed directly from core training; 7/21 came from a LAT/LAS/general surgical ST3 year and 6/21 progressed from a higher degree.

Vascular surgery was the first choice for all 21 trainees; 15/21 also applied for general surgery, whilst 6/21 only applied for the vascular specialty programme.

The majority (19/21) expressed an interest in an out of programme experience and 16/21 indicated they would like an academic component to their career.

Trainees were concerned about the amount of operative experience they would gain in the new programme, particularly with regards to open surgery.

Conclusions: The majority of the new vascular ST3s are UK undergraduate trainees with prior experience of vascular surgical rotations at a foundation or core training level and with an academic interest. Information on the career intentions of these trainees over the coming years will help with workforce planning in vascular surgery, with the first wave of specialist consultants starting between 2019–2023.

Education and Training 0146

Learning Opportunities in the Operating Room

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Background The European Working Time Directive (EWTD) has reduced the working time and operative experience of trainee surgeons. Training time can be improved by focused directed, learning with immediate constructive feedback. Pre-operative planning provides an ideal opportunity for focused directed learning that meets individual training needs. The plan offers a useful tool for critical self reflection and is able to demonstrate experiential learning.

Aims: Does pre operative planning provide sufficient learning opportunity to meet individual learning needs? Is it effective for critical self reflection?

Methods: A practitioner research (action research) project with a single trainer and 5 trainees carried out over 3 months.

Qualitative data was obtained by semi structured interview between trainer and trainees and triangulated with procedural observational log and critical reflective review.

A surgical plan was constructed prior to operation collectively by trainee and trainer. It belonged to the trainee doing the majority of the operating. Following the procedure the plan was critically analysed.

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Results: Evidence of learning through focused activity.
Evidence of meeting individual learning needs, and differentiated learning.
Provides a useful template for critical self reflection.
With repeated use improving confidence in judgement.
Demonstrable improvement in technical skills.
Conclusions: The routine use of pre-operative planning in the operating theatre maximises the learning opportunities trainees, demonstrates experiential learning and offers a template for lifelong critical self reflection.

Education and Training 0161

Improving the Experience of Core Surgical Trainees using a new Trainee Experience Assessment (TEA) at a London Teaching Hospital

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Aims: The London Deanery for Core Surgical Training (CST) dictates trainee timetables include a minimum of 4 theatre sessions and 1 day of clinic per week. Trainees must accumulate a minimum of 120 cases in their logbooks, of which 40% should be supervised performed, and must also complete a minimum of 80 Work Based Assessments (WBA) throughout the year. We sought to create a tool to monitor trainee progress throughout the year.
Methods: The Trainee Experience Assessment (TEA) - a 6 point online survey - was sent to 10 trainees rotating through 7 different 4-month specialty rotations every 2 months (50 responses). Findings were formally presented to South East London Surgical Faculty at the mid-point of each rotation. All training issues were addressed directly. Additionally, Intercollegiate Surgical Curriculum Programme (ISCP) logbook records and WBAs were examined.
Results: ISCP and TEA outcomes were compared. Objectively, trainees were involved in a mean number of 93 cases/rotation, and reported a mean of 4·2 theatre sessions/week, with no statistical difference ($p = 0{\cdot}4$). Logbook accounts showed a mean of 21% supervised cases/rotation ($n = 19$), with a mean reported rate of 21%, with no statistical difference ($p = 0{\cdot}9$). There was also no statistical significance between the number of WBAs achieved (mean 35/rotation) and the reported satisfaction rate per rotation (mean 7·7/10; $p = 0{\cdot}4$). TEA identified 14 training issues throughout the year, all of which were addressed by the faculty; notably when the faculty intervened to improve trainee rotas. TEA identified 14 training issues throughout the year, all of which were addressed by the faculty; notably when the faculty intervened to improve trainee rotas following negative TEAs. This improved experiences of feeling supported ($p = 0{\cdot}02$) and rotation rating ($p = 0{\cdot}04$). All 7 rotations met targets for total cases and supervised cases and 6/7 met WBA targets. However, all 9 trainees who completed CST met all their annual objectives.
Conclusions: TEA is a valid tool for assessing the quality of CST and can clearly identify training issues to improve the CST experience for trainees.

Education and Training 0183

Awareness Among Doctors Regarding the Do Not Attempt Cardio Pulmonary Resuscitation (DNACPR) Guidelines

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Aims: Lot of importance been given currently in NHS regarding End Of Life care(EOLC). It helps patients to live as well as possible until they die, and to die with dignity. Do Not Attempt CardioPulmonary resuscitation (DNACPR) advanced order is a part of caring a terminally ill patient. It is essential for every doctors including surgeons to be aware of the guidelines surrounding DNACPR and to make proper assessment and judgement before placing any such orders. This study was conducted to assess the awareness among the doctors at our hospital regarding DNACPR guidelines.
Methods: We reviewed our Trust guidelines on DNACPR and GMC guide, treatment and care towards the end of life May 2010 statement. Based on these guidelines, we prepared 9 Single Best Answer survey questions related to decision making in different clinical contexts. We invited all doctors of surgical division of our hospital to participate in this survey. The responses were analysed based on the grade of the doctor.
Results: There were 60 responses at the end of 2 weeks. The average score from all respondents was 63%, with only a 2% difference in the average score between FY1s and Consultants. The associate specialists got 44% of the questions right, whereas FY1s scored 70% and other grades of doctors scoring in between. The correct answer to individual question varied from 32% to 97% among all grades.
Conclusions: It is evident from the results that there is still a fair amount of improvement that can be done to increase the understanding of guidelines surrounding DNACPR decisions at our Hospital, across all grades of doctors. Good communication among the team members and regular teaching and training will help the doctors to improve their understanding DNACPR guidelines and therby to make proper assessment of individual patient before signing Do Not Attempt Resuscitation orders.

Education and Training 0203

The European Board of Hand Surgery (EBHS) Diploma Examination

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Aims: To describe the history and the current state of the EBHS examination in hand surgery
Methods: The examination was first held under the auspices of the Federation of European Societies for Surgery of the Hand (FESSH) in 1996. In 2010 Hand Surgery was described as a separate board by the UEMS, and in recognition the EBHS was established. This paper reviews the history and the statistics for the exam. We discuss examiner selection, question preparation (both written and oral) and the format of the examination.
The examination covers all aspects of hand surgery, including anatomy and basic science, trauma and elective surgery from congenital to degenerative. It consists of a written paper (300 true/ false MCQ's) and of two 45 minute viva voce examinations.
Results: The examination attracts more candidates year by year, from a low of 5 in 2003 to a high of 56 in 2012. Investment in technology has allowed the written exam to be entirely computerised, allowing it to be held locally in March in multiple centres across Europe. This arrangement also allows ready analysis of questions. The *viva voce* examinations are held in May two days before the FESSH annual meeting, in whichever city is hosting the congress. Historically the examination was held in five languages, but the official language is now English. Examiners are drawn from across Europe. The candidates are mainly European, but some come from Australia, Malaysia and the Middle East. The historical pass rate is 77% (range 69 to 95).
Conclusions: We believe that the examination is a way of standardising the demonstration of achievement in hand surgery for surgeons from across Europe and from further afield. We also believe that it provides an impetus to improving standards in hand surgery. It may offer a template for standardisation of assessment in other fields of surgery.

Education and Training 0205

Simulation Can Cultivate Medical Students' Interest in ENT Surgery

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Aims: Between October and December 2013, we had 37 final year medical students rotating through the ENT department with an average of 4–5 students per week. Prior to commencement of the study, it was noted that only 1 out of 37 (2·7%) students would consider ENT Surgery as career choice. Studies have shown that ENT Surgery is under-represented in the undergraduate medical education despite the high patient load and the wide scope of clinical practice in this specialty. In this study, we aim to assess our hypothesis that mentored simulation session can help cultivate medical students' interest in ENT surgery.

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Methods: Final year medical students rotating through our department from December 2013 onwards are given a mentored simulation session on myringotomy and grommet insertion and microsuction using low-fidelity simulators. After the session, they are given a questionnaire to assess their attitude towards simulation and interest towards the specialty measured on a Likert Scale.
Results: All the students had no previous experience of simulation. 100% agreed that simulation has created awareness towards the basic procedures in ENT. 75% of the students agree that simulation has helped them cultivate an interest towards ENT specialty. 75% agree that ENT simulation should be made mandatory in the undergraduate ENT Curriculum.
Conclusion Simulation in ENT surgery is a valuable educational tool that can help cultivate interest towards the specialty among the undergraduates.

Education and Training 0214

Who's Being Trained to Repair Your Hernia?

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Aims: Inguinal hernia surgery remains the cornerstone of general surgical practice with 70,000 repairs in England each year. Its role in surgical training has been underlined with its inclusion as one of the procedures with indicative numbers in the 2013 curriculum for general surgery. But are current general surgical trainees trained to perform this procedure, and will they be competent at CCT to provide this fundamental surgical procedure ?
Methods: A single 12 months "snap shot" of surgical training was taken from the evidence on the ISCP website of competency and training in a single region in England.
End points assessed included total number of procedures performed per trainee, level of supervision, level of competence assessed by procedure based assessment (PBA) and progression of competence during the time period.
Results: A total of 665 hernias were recorded by 40 trainees over the period of assessment, with a median of 13·5 per trainee. Of these, 252 (38%) were performed independently or whilst training more junior colleagues. Direct supervision occurred on 285(43%) occasions. The number of trainees demonstrating level 4 competency was 18 (45%). Evidence of competency progression was scant with only 12 (30%) of trainees showing increasing levels attainment during the period of assessment. Only 7 posts showed any evidence of training in hernia surgery.
Conclusions: Despite the fundamental nature of hernia repair to surgical practice its provision in surgical training is erratic and not universal. Hard evidence of true training and competency progression is equally scant. The need for focus training and modular training may be one solution to the essential requirements of general surgical training.

Education and Training 0218

An intensive Teaching Session Improves Confidence in Performing an e-FAST Scan

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Aims: Extended Focussed Abdominal Sonography for Trauma (e-FAST) offers a rapid scan of the torso for possible sources of bleeding. This study aimed to determine whether a short intensive teaching session could improve confidence in novices performing an e-FAST scan.
Methods: Participants recruited were specialists in trauma and austerity care who had never performed an e-FAST examination before. All candidates received an intensive tutorial which consisted of a teaching presentation outlining the purposes of e-FAST, the different ultrasound probes required, ultrasound settings, guidance on optimal handling of the probe and the ideal view required at each anatomical area for a positive result. This was followed by a practical training session on a high fidelity e-FAST phantom. Each participant was taught by an expert sonographer on a one-to-one basis until they could competently acquire a positive e-FAST scan at each anatomical area of interest. A pre and post teaching intervention questionnaire was completed for further evaluation.
Results: All participants (n = 22) were specialists in Trauma and Austerity care and comprised of 18 Consultants and 4 Registrars. The total time for the intensive tutorial and to conduct the practical session was 90 minutes for all subjects. After the tutorial, there was a statistically significant improvement in the candidates comfort in performing an e-FAST scan ($p < 0{\cdot}001$) with higher median scores on all questions. Overall confidence in being able to perform an e-FAST examination was also significantly improved ($p < 0{\cdot}001$).
Conclusions: This study demonstrates that a short intensive teaching session on a high fidelity ultrasound simulator can improve confidence in correctly performing an e-FAST examination. As with any recently acquired skill, further practice is vital to improve proficiency in performing an e-FAST scan. Scope for further research would include a learning curve analysis to show an improvement in performance with repeated practice.

Education and Training 0228

Outcome of Surgical Training in Oesophago-Gastric Cancer Surgery

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Aims: The threat to surgical training from the twin pressures of the high risk nature of the surgery and initiatives to publish surgeons' results are well known. This study analysed the outcome of surgery for oesophago-gastric cancer performed by a consultant surgeon compared with that of trainees under direct supervision.
Methods: Data were collected prospectively over a 10 year period on all patients who had radical 2-stage oesophagectomy or D2 gastrectomy under a single surgeon from 2003 to 2012. Clinical outcomes, morbidity and pathological characteristics were recorded. All patients received uniform pre- and post-operative care including an epidural anaesthetic, extubation immediately after surgery and no routine TPN or feeding jejunostomy.
Results: There were 257 cases during the study period: 133 D2 gastrectomies and 124 oesophagectomies; 100 cases (39%) were carried out by the trainee (38 oesophagectomy, 62 gastrectomy). Overall mortality was 0·8% (1/124) for oesophagectomy and 0·7% (1/133) for gastrectomy. Morbidity was 21% after oesophagectomy and 18% after gastrectomy. There were no significant clinical or pathological differences in cases performed by the consultant or the trainee.

	Oesophagectomy (n = 124)		Gastrectomy (n = 133)	
	Trainee (n = 38)	Cons (n = 86)	Trainee (n = 62)	Cons (n = 71)
Median age	64 years	66 years	71 years	73 years
Mortality	0	1	0	1
Morbidity	11 (29%)	15 (17%)	12 (17%)	12 (18%)
Clinical leak	1 (2·6%)	1 (1·2%)	3 (4·8%)	1 (1·4%)
T3/T4 disease	23 (61%)	55 (64%)	36 (58%)	36 (51%)
Node + ve	18 (47%)	44 (51%)	38 (61%)	52 (73%)
Nodal yield (range)	25 (4–55)	29 (9–65)	26 (9–68)	27 (7–87)

Conclusions: Almost 40% of cases in this series have been performed by the surgical trainee under direct consultant supervision with no compromise in clinical or pathological outcome.

Education and Training 0235

Educational Benefits of YouTube

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Aims: Medical education has evolved in recent years with students utilising online sources of information more than textbooks for quick references of topics to aid their understanding and revision. Wikipedia is recognised as a website

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which is widely used by medical students nationally, although discredited by most lecturers as an unreliable source of information. YouTube has become the 'new' arena for students to search medical topics or examinations and functions as a quick and accessible learning tool. The aim of this study is to gauge whether medical students feel that they benefit more from online sources and whether there is still a place for textbooks in today's medical education.

Methods: Three ENT educational videos aimed at final year medical students were designed. They demonstrate and explain the basic clinical examination of the ear, nose and neck and last between 6 – 13 minutes in total each. The videos were then uploaded onto YouTube for open access to the general public. These videos were then shown to 100 final year medical students at a UK medical school. The students were then asked to complete a questionnaire to gauge their opinions on online educational videos.

Results: The three videos have been watched 13,568 times online (Ear – 4824, Nose – 2693 and Throat 6051) over a period of 5 months since being uploaded to YouTube. The students opinions were: 98% found the videos useful and informative; 100% would recommend these videos; 91% have used YouTube in the past for educational purposes; 75% use YouTube videos as a revision tool, whilst 16% said they used it as the basis of their knowledge. 82% view educational videos on YouTube from countries other than the UK. 100% of the students still use textbooks for revision.

Conclusions: This study shows that there is a growing appetite for online learning, with videos becoming easier to produce and access. The sources however can be unreliable and students run the risk of learning incorrect material.

Education and Training 0258

General Surgical Trainees' Experience of Training Feedback in a District General Hospital; Is the Current Process Up-To-Date and Effective?

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Aims: Feedback is an important integral part of training. It is particularly significant within the apprenticeship model of surgical training carrying the potential to enhance trainees' professional- and self-confidence, reinforce strengths and provide strategies to improve weaknesses. The aim of this study was to capture the general surgical trainees' experience of receiving personal training feedback in our unit.

Methods: A questionnaire consisting of 32 questions using a 5 point Likert scale was constructed based on current literature evidence of good feedback techniques and emailed to all surgical trainees in the unit, a moderate sized district general hospital employing 13 surgical consultant trainers. Inter-group statistical analysis was performed using Fisher's exact test (two-tailed).

Results: Six StR3 - StR8 (group 1), seven FY2 – CT2 (group 2) and two SHO locum appointees for service (group 3), completed the questionnaire anonymously (94% response rate). Primary source of feedback for the first group were consultants and StR3-8 level trainees for the latter. The feedback process was reported as mainly informal (53%), face-to-face (80%), occurring on the same day (60%), in private (47%) or in the clinical environment (40%). Predominantly feedback was perceived as non-embarrassing (87%), non-judgemental (60%) and descriptive (60%). Nearly half of trainees found feedback to be mostly generic rather than issue-focused and are often not allowed to reason, discuss their actions or raise concerns. Deviation from expected standards is not routinely explained and improvement strategies are not regularly offered, especially to StRs (83% group 1, 29% group 2, $p = 0{\cdot}04$). A third of trainees reported that most of the time feedback improves their self-esteem, motivation and performance, with 83% indicating some constructive effect.

Conclusions: Improvement in the trainers' feedback process is required employing greater trainee involvement with specific explanations and agreed development strategies, particularly targeted towards higher surgical trainees, within a less formative structure.

Education and Training 0259

Clinical Examination Diagrams Of Signs: CEDOS Survey

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Aims: Electronic patient records (EPR) mandate efficient and accurate medical documentation. Diagrams are a commonly used platform to demonstrate signs found during clinical examination. The way doctors draw and interpret diagrams varies and has not been previously tested. This study investigates understanding of commonly used diagrams, with the aim of creating a common language to be used in advanced digital clinical examination pro-formas.

Methods: Cross-sectional survey utilizing a multiple-choice questionnaire carried out across London hospitals. Initially 40 junior doctors were asked to document various clinical findings diagrammatically. Secondly, seventeen digitalized examination diagrams were included in a multiple-choice questionnaire to examine doctors' perception, and was given to 694 trainee doctors.

Results: The initial questionnaire found a range of diagrams were being used to represent each clinical sign. For the second questionnaire, 206 responses were received (31 FY1's, 45 FY2's, 94 core surgical trainees and 36 core medical trainees). 75% of the responses were in consensus. Most doctors (94%) felt that diagrams helped the understanding of clinical examination, site of pathology and improved the efficiency of documentation. 100% of doctors felt that diagrams may benefit overall medical practice provision.

Conclusions: Digitalizing the diagrammatic representation of signs and symptoms in EPR will enhance clinical documentation and may contribute to better patient care. Doctors should be encouraged to use standard diagrams in EPR to improve clinical documentation. Standardized electronic pro-formas should be included into EPR to improve efficiency and accuracy of clinical examination documentation.

Education and Training 0267

What Should be Included in a Simulation Course for Urologists? The Merseyside Trainee Perspective

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Aims: Simulated technical and non-technical skills have been demonstrated to positively impact training in all surgical specialties. The British Association of Urological Surgeons have recommended such training, however a needs analysis is required prior to implementing such a programme. Our aims were to survey urology trainees in Merseyside regarding what they would hope to achieve from a simulation course and to also further code their responses into domains of practice. This information would ensure that a comprehensive package of training is delivered to UK trainees in urology aligned to identified needs.

Methods: All urology trainees in the Mersey Deanery were administered a previously validated questionnaire. Responses were coded into Knowledge, Skills and Behaviour domains. Inter-rater agreement was then measured using Fleiss' kappa, where a result of 0·81-1·0 was interpreted as almost perfect agreement.

Results: None of the trainees had previously attended a non-technical skills based simulation course. The majority of the trainees would like simulation to be mandatory. The attributes expressed as being most desirable in a Consultant by the trainees were Behavioural and not derived from Skills or Knowledge domains. There was excellent congruence amongst the coders.

Conclusions: Trainees recognised the value of acquisition of both technical and non-technical skills on their way to becoming a Consultant. As a result of this work, we are trialling a non-technical skills simulation course amongst urology trainees within the deanery. A balanced programme of simulation based learning in urology will contribute to the enhancement of their training.

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Education and Training 0311

Synchronous e-Learning vs. Face-To-Face Teaching using ENT Emergencies as an Educational Intervention

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Aims: The aim of this study was to compare a traditional instructor-led lecture with synchronous e-learning using ENT emergencies as an educational intervention.

Methods: A randomized controlled trial was designed involving two groups of participants observing a single educational event; one present face-to-face (FtF) and the other viewing the streamed lecture online. Prior to the start of the lecture, participants were asked to answer pre-event quiz assessing their knowledge of ENT. Following the educational event, a questionnaire was undertaken including the post-event quiz. In addition to this, participants in both groups were asked to assess the overall value of the teaching they received in terms of usefulness and whether it met their education needs. Statistical analysis was used to assess for improvements pre and post event and for differences between the two groups.

Results: 25 students attended the live lecture and 18 viewed the lecture using webinar. There were no statistical differences in the both groups in terms of sex and year of study ($p > 0{\cdot}1$). Overall, the lecture and its contents were well received by both groups.

Quantitatively students in both groups had improved knowledge scores following the ($p < 0{\cdot}001$) and there was no statistical difference between the two groups ($p = 0{\cdot}23$). Similar results were obtained for the usefulness of the lecture ($p = 0{\cdot}19$) and meeting the educational needs of students ($p = 0{\cdot}39$). The FtF group however, were more satisfied overall ($p < 0{\cdot}01$) overwhelmingly due to technical issues with the online transmission of the synchronous e-learning.

Conclusions: Synchronous e-learning as the potential to be a powerful educational tool but major technical issues need to be accounted for before we conclusively say that it is as effective as FtF teaching. Our results demonstrate the effectiveness of synchronous e-learning, overcoming the difficulties associated with same place same time requirements of FtF teaching. With the ongoing technological advances, changes in learning and geographically dispersed learning groups, its role in medical education will undoubtedly grow in the future.

Education and Training 0327

Maximising Training Opportunities in the Operating Theatre: Piloting a National Survey Tool

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Aims: Effective surgical training is dependent upon the quality of theatre-based learning experiences, yet the quality of in-theatre education is subject to little scrutiny in the literature. This study aimed to pilot a research tool in its iterative development and provide a brief snapshot of current practice across two centres.

Methods: Peterson's (1976, p14) *Seven Steps in Constructing a Questionnaire* provided a systematic and sequential framework for the design of a pilot survey based on a published, validated research tool. Twenty surgical trainers and trainees across surgical subspecialties at a Welsh DGH and a London university hospital were invited to complete the survey. Feedback for tool development was obtained via semi-structured interviews in advance of a planned multicentre distribution.

Results: Twenty responses were received (10 trainees, 10 trainers). While two-thirds (60%) of trainers felt that the patient's procedure indication was reviewed before "most cases", no trainee respondents agreed. No respondents felt that specific reading was recommended for "most cases", although half of the trainers (50%) felt it necessary in "some cases". Mental rehearsal was encouraged by 9/10 trainers, albeit in "few cases". A learning goal discussion before "most cases" was reported by 30% of trainers and 10% of trainees. Time constraints led 50% of trainers to take over procedures in "many" or "most cases". Just one trainer reported giving positive feedback in "most cases", none discussing areas for improvement in "most cases". Half of trainee respondents reported completing workplace-based assessments for "many cases", and half also logged >50% of cases as 'STS', 'STU' or 'performed'. Post-survey interviews provided insightful and useful feedback for tool development across administrative, behavioural and cognitive (ABC) domains.

Conclusions: Numerous opportunities for learning exist around the theatre environment. These initial results suggest wide variability, but generally low uptake of these opportunities, with an apparent discrepancy between trainers' and trainees' perspectives. This pilot provided highly valuable information to inform the development of an effective survey tool for use in the resultant research project.

Education and Training 0338

Novel Genes in Bone Biology: Characterisation of the Craniofacial Phenotype of the YODA Mutant Mouse

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Aims: Ankrd11-nuclear receptor transactivation is an important tool for assessing pharyngeal arch mesodermal and neural crest development, and may underlie common bone disorders including craniosynostosis, immature bony fusion of skull sutures. We hypothesised that tissue-specific depletion of Ankrd11 results in two distinct anomalies in mutant mice. First craniofacial truncation may be attributed to impaired growth at the frontonasal suture, and ultimately results in premature mineralisation of the frontal and nasal bones at suture junctions. Second, Ankrd11 expression may have downstream effects on hormone synthesis inevitably influencing bone development via nuclear receptor expression, potentially accounting for a sexually dimorphic phenotype.

Methods: Histomorphometric study was performed on cranial sutures from eight heterozygous mutant mice and compared with wild-type littermates to assess the extent of bone and cartilage reduction at sites overlying the growth plates.

Results: Results had shown craniofacial deformity extended throughout the skull vault resulting in shorter and wider skulls in YODA mutants. Squared nasal bones were visibly shorter in YODA females and lengths of frontonasal sections were slightly reduced. We found that lack of Ankrd11 expression at the developing bone fronts resulted in incomplete closure of the interfrontal sutures and disturbed frontonasal suture growth.

Conclusions: Results provided firm evidence to suggest Ankrd11 expression defines precursors for several craniofacial tissues, including suture junctions residing between nasal, frontal, and premaxillary bones. Gender differences did exist between male and female YODA mice which may also indicate downstream effects of gene depletion on nuclear receptor expression. Ankrd11 expression may be used to predict growth at suture junctions by coordinating osteoblast and osteoclast activity. Its importance in gene therapy cannot be underestimated, particularly when applied to osteogenic disorders in humans.

Education and Training 0347

Simulated Management of Acutely Unwell Surgical Patients Improves Medical Student's Confidence

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Aims: Simulated learning is an increasingly important tool for medical education that recreates the stresses of healthcare delivery and pressurised decision making in a safe environment. We developed a series of scenarios using the SimMan simulated patient to facilitate medical student learning of the management of acutely unwell surgical patients. We aimed to investigate student perceptions of simulated training in the management of four important acutely unwell surgical patient scenarios (appendicitis, ruptured aortic aneurysm, lower GI bleed and post-operative peritonitis).

Methods: Data was collected by questionnaire completed by students before and after the session (one 30 minute session per student, facilitated by surgical

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trainees in the Royal Free Simulation Centre). Eight sessions were run, with 28 individual student feedback forms received (completion rate 100%). Students rated their confidence dealing with unwell patients before and after the session, and the overall session usefulness, using a visual analogue scale (0 lowest, 10 highest).

Results: Confidence to manage acutely unwell surgical patients pre session was mean 3·1 (+/– SD 1·4), and post session was 6·8 (1·1), an increase in confidence of 3·6 (1·1) out of 10. The overall session rating was 9·9 (0·4). Students regularly commented that the practical application of their theoretical learning was extremely valuable.

Conclusions: Students both enjoyed learning about management of the acutely unwell surgical patient through simulation and felt more confident to manage these situations after the session. Simulated learning should be made more widely available to medical students.

Education and Training 0361

Thiel Soft Embalmed Cadavers as a Model for Surgical Training

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Aims: In this paper we analyse our experience with the use of Thiel soft embalmed cadavers as a model for surgical training, give an overview of our research underpinning the cadavers' use as a model and discuss their potential for further development of innovative training.

Methods: Between November 2009 and December 2013 we have facilitated more than 60 courses in a wide range of surgical and clinical skills along with pilot studies for further procedures. This includes laparoscopic procedures, orthopaedics, plastic surgery and interventional radiography.

Studies using engineering techniques have been undertaken to investigate and validate tissue parameters. Research is taking place to develop the cadavers as an advanced model for more complex procedures.

Results: Qualitative feedback from course faculty and participants has been positive. The suitability of the cadavers for various imaging modalities, including ultrasound, CT and MRI has been confirmed. Individual cadavers have been successfully used for a series of procedures spanning several years.

While initial results from quantitative technical indicate some changes in tissue properties compared to living patients these remain within normal ranges, confirming them as a realistic clinical model. Cadavers have been ventilated and the lifelike motion of organs, particularly liver, has been confirmed. Vascular procedures have been undertaken to recreate blood flow in vessels.

Some limitations are attributed to the general age and health of the donors as well as changes due to the embalming process. These are more significant for some procedures more than others.

Conclusions: Thiel embalmed cadavers form a valid alternative to formalin embalmed or fresh frozen cadavers and show potential for development of novel training methods.

Education and Training 0379

Training Trainees; A snapshot review of Surgical Training in a 12 month period – A Single Centre Study of 734 Procedures

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Aims: Since the application of the European Working Time Directive (EWTD) to current working practice in August 2009, concerns have been raised about how competencies are to be achieved.

In this study we review the theatre lists from two random weeks from a 12 month period to establish what participation trainees have within current NHS theatre lists in a District General Hospital.

Methods: Weeks were randomly selected from the first and last quarter of the medical year running from 06/08/2012 to 04/08/2013 (which excluded the August change-over both years). For each week, every case performed in main theatres or day theatres (as recorded on the electronic "theatre utilisation list") was audited to record the grade of each surgeon present, the responsible surgical specialty, the procedure, the operation duration, and whether the list overran. A measure of surgical complexity, the BUPA score, was recorded for each case. Equivalent anaesthetic data was also collected.

Results: A total of 734 procedures were performed in the 2 weeks that have been assessed. A total of 396 (53·9%) single surgeon cases and 338 (46·0%) multi-surgeon cases were performed. Trainees performed 41 (10·4%) of single surgeon cases and 64 (18·9%) of multi-surgeon cases. In 42 (12·4%) of the multi-surgeon were performed by a trainee with supervision from a more senior colleague. 29 (64·4%) of these training cases were performed within main theatres on scheduled procedures. Following assessment of the data with BUPA scores, procedures rated 'Inter' were most often performed by trainees in both single and multi-surgeon cases. On review if surgery under different specialties; Urology, ENT and Maxillary-Facial provided the most training opportunities.

Conclusions: Over the two week snapshot that we have reviewed only 14% of operations were performed by trainees. This low proportion is suggestive that both reduction of hours 'on the job' and a move towards service provision due to constraints on resources have reduced the training available to trainees.

Education and Training 0381

The use of Simulation to Promote a Safe Learning Environment for all UK Surgical Trainees by Mapping Simulation to Learning Objectives of the Curriculum and Recording on ISCP

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Aims: Map simulation based learning to the curriculum applying recommendations of GMC and DH Technology Enhanced Learning Framework. Inclusion of simulation in curricula will enable trainees to practice demonstrate and record evidence of technical, generic non-technical and targeted skills learnt in a safe environment before managing patients safely under appropriate supervision.

Methods: The methodology involved the various steps as listed below and in line with recommendations of DH Technology Enhanced Learning framework - Creation of Surgical Simulation working group.

Survey of surgical trainers and trainees, to gather information as to how simulation is used and accessed in the various Schools of surgery in the UK.

Nominate simulation leads in each surgical specialty and core surgical training.

Revision of curriculum in all surgical specialties, core surgical training and Professionalism by the relevant training committees.

Define learning objectives in each component of the curriculum and use of simulation recommended where appropriate.

All stakeholders e.g. lay members, trainees, trainers, colleges, CoPMED, employers and educational institutions consulted and their contribution included.

Submission of the above revised curricula to GMC for approval.

Re-survey to interrogate use of simulation as per recommendations in curriculum.

Results: GMC has approved 9 of the 10 curricula for surgical specialties (with one new curriculum pending), including Core training and Professionalism. The survey shows good access to simulation for the strongly recommended element in core surgical training. Simulation is included in the ISCP thus allowing formative assessment and appropriate recording of achieved competencies.

Conclusions: Simulation has been included in the surgical curriculum and will provide good learning of technical and generic skills including human factors. Skills learnt would be transferable and will provide improved safe patient care.

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Education and Training 0383

Pan-Deanery Assessment of Core Surgery Educational Training Days – Are we Getting the Same Deal?

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Aims: Most Core Surgical Trainees are expected to attend deanery-wide teaching sessions, which compliment the Intercollegiate Surgical Curriculum Programme (ISCP). This study aims to explore the similarities and discrepancies in the educational sessions provided by individual deaneries across the United Kingdom (UK) and how certain components of the ISCP curricula are met.
Methods: A customised, 20-item, anonymous survey was distributed electronically to all 17 UK core surgery deaneries from the 2012–2013 national intake. The survey sought information on the format and nature of training days, curriculum coverage and trainee opinion of the teaching they receive.
Results: Deanery response rate was 58·8% (N =10). Monthly sessions of ≥5 hours duration were the most common form of teaching. 70·1% of trainees are expected to attend ≥70% of teaching, with 18·2% granted protected study time to attend. Teaching is delivered in order of frequency, as lectures (28·9%), practical sessions (23·9%), tutorials (16·8%), simulation (14·2%) and combined (12·8%). 68·9% of trainees receive teaching on ISCP topics such as surgical skills. 48·1% have access to laparoscopic training facilities, of which 27% are provided with a personal laparoscopic box. Of the 59·7% who receive formal anatomy teaching, 28·6% report ≥5 hours of teaching per rotation and 33·8% have the opportunity to teach anatomy themselves. Overall, trainees wished for more teaching on 6 of 10 listed surgical specialties. 63·7% were satisfied with the training days their deaneries provide and 54·6% believed they would meet ISCP criteria as a whole.
Conclusions: This study confirms educational days are highly valued by Core Surgical trainees and cover a range of ISCP topics. However, trainees felt key topics such as anatomy and practical skills should be taught more frequently. There is notable variability in access to training equipment, specialty teaching and ISCP topic coverage, raising the question on whether trainees receive comparable learning experiences in some of the areas explored by this study.

Education and Training 0400

Learning Experience as Simulated Patients During the MCh Trauma and Orthopaedics, Objective Structured Clinical Examination (OSCE)

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Aims: The use of simulated patients to train medical students and health care providers in a safe and standardised setting is well known. Apart from professionally trained actors and patients, healthcare professionals and trainees often participate as simulated patients in these sessions. We aim to adopt Miller's pyramid as a learning and assessment tool. There are four stages in Miller's pyramid which are Knows, Knows How, Shows and Does.
Methods: As junior doctors, we acted as simulated patients at an OSCE.
Results: Our knowledge in clinical anatomy and orthopaedic examinations were enhanced through the observation of experienced trainees examining us as simulated patients. It allowed us to learn from mistakes and adopt more appropriate techniques having had feedback from examiners.
Miller's pyramid comes into place:
We have basic knowledge through lectures and self-directed learning on how to perform Orthopaedic examinations and basic x-ray interpretations (KNOWS).
Our observation as simulated patients allowed us to reinforce existing knowledge, identify new learning areas and subsequently the application of these knowledge through discussions (KNOWS HOW).
This acts as a platform for the continuation of professional development which will allow us to exhibit our skills and improve our performance via OSCEs, workplace based assessments and in clinical practice (SHOWS / DOES).
Conclusions: This enriching experience as simulated patients has definitely helped develop our knowledge and skills as medical practitioners and future OSCE candidates in specialist examinations. We believe participation from healthcare professionals and trainees in OSCEs as simulated patients would definitely be beneficial.

Education and Training 0413

Trainees Have Similar Operative Outcomes to Consultants when Mentored using a Modular Laparoscopic Training Programme in Colorectal Surgery

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Aims: Laparoscopic colorectal surgery is known to have a long learning curve and dependent on appropriate case-selection. Using a modular-based training programme has been shown to shorten this learning curve. This study aimed to compare the operative and short-term outcomes between trainees undergoing a mentored modular-based training programme and consultant trainers.
Methods: A prospective study comparing trainees and consultants was carried out between 2009 and 2012 in a single institution. All trainees were mentored by a National Laparoscopic Trainer (Lapco). Data on operative outcomes for all laparoscopic colorectal resections was recorded. Continuous data was presented with means (SD) and analysed using t-test. Categorical data was presented with median (IQR) and compared with Fisher's exact test or Chi-square test was used to compare categorical data. A p-value <0·05 was considered significant.
Results: 300 cases were included in the analysis. Only stoma formation and LOS were different between the groups. All other outcome measures were similar.

Table 1. Comparison of outcomes between trainees and trainers

Outcome measure	Trainee n = 101	Trainer n = 199	p Value
Operation Time – mins	169 (59·6)	183·9 (57·9)	0·06
Blood Loss - ml	41 (61·9)	39·2 (49·8)	0·79
Stoma	12 (11·8)	50 (25·1)	***<0·01***
Length of stay (LOS) - days	2 (2–4)	3 (2–5)	***0·03***
Conversion to open	3 (2·9)	1 (0·5)	0·11
Complications	16 (15·8)	45 (22·6)	0·22
Unplanned HDU Admissions	0 (0)	7 (3·5)	0·10
Anastomotic Leaks	2 (1·9)	1 (0·5)	0·26
Readmissions	9 (8·9)	18 (9·0)	1·00
Death	5 (4·9)	1 0 (5·0)	1·00

Conclusions: Although operative time is longer for trainee surgeons, other short-term outcomes including blood loss, perioperative complications, anastomotic leaks, readmission and length of stay are similar compared to consultant trainers. Using a modular-based training programme leads to good short-term outcomes.

Education and Training 0417

Identifying the Leadership "Radar" of Junior Medical and Surgical Trainees

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Aims: The Royal College of Surgeons highlights the importance of leadership and good team-working skills in the performance of clinical teams and the resulting positive outcomes for patient safety. The College council mentions Awareness of leadership style can improve team interactions and result in positive outcomes for patient safety. Furthermore the College affirms that it is

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the consultant's responsibility to develop an effective team in the clinical setting through leadership and good team dynamics.The aim of this study is to identify the leadership profile of the junior medical and surgical trainee.

Methods: Between 2012–2013, the Mental Muscle Diagram Indicator (MMDI) questionnaire was administered online to junior trainees including Core Medical (CMTs), Core Surgical (CSTs) and Foundation trainees (FYs). The information was kept confidential and all participants received a report about their leadership profile and explanation of their accompanying characteristics.

Results: 157 MMDI questionnaires were completed from FYs (n = 72), CMTs (n = 24) and CSTs (n = 40). The most common leadership profile starting from the dominant type was Action-Oriented, Ideological, Participative and Change-Oriented whereas Goal-Oriented, Executive, Theoretical and Visionary were less popular characteristics in junior trainees. Core Medical trainees tend to be more Ideological whereas Core Surgical trainees are more Action-Oriented (p = 0·51). Foundation Doctors similar leadership profile with Core Surgical Trainees.

Conclusion Junior trainees' values consist of team work, action, change, and focusing on important things. An early understanding of the leadership profile may be valuable for encouraging junior trainees in building effective team relationships.

Education and Training 0434

Two Consultant Operating: The Perceived Benefits

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Aims: There have been few detailed reports concerning two consultants operating together for complex spine surgery (e.g Scoliosis). The purpose of this study is to analyze the perceived benefits for patients and surgeons if two consultants operate on complex spinal cases.

Methods: A five question survey related to the perceived benefits of joint consultant operating was conducted and sent to 300 spinal consultants in the UK. There were 105 responses.

Results: Our survey demonstrated that 93·88% had been involved in joint consultant operating and 92·93% feel that joint operating is beneficial. It was found that the more complex and less preformed cases were favoured for joint consultant surgery. The perceived benefits for the patient include shorter surgery time, less blood loss and fewer post-operative complications. The perceived benefits for the surgeon include being less stressful with shared responsibility and experience.

Conclusions: The survey analysis indicated that joint consultant operating is beneficial for the patient and the surgeon. As a result further data analysis comparing two consultant operating with one consultant operating will be carried out in the future.

Education and Training 0440

Facebook, Continued Surgical Education (CSE) and Cross Sectional Research: An Analysis of over 5 Million Interactions on Facebook

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Aims: Social networks allow users to receive a constant up-dated feed of information tailored to their interests. This study investigates if and how users engage with a Facebook page designed to deliver CSE and if these users collaborate in cross-sectional, global research.

Methods: 1,971 posts containing CSE were uploaded between October 2011 and September 2013 and use and engagement of the Schoolofsurgery.org Facebook Page was monitored. Users were grouped based on their country's Gross National Income. Mann–Whitney U tests were used to determine differences.

Results: During this period the page was viewed 5,155,051 times from 51 countries. Viewers were from low- and middle-income rather than high-income countries (80·85% vs. 19·15%, respectively). Numbers of people who saw any page content or who shared CSE were significantly higher on days posts were uploaded compared to days when no posts were uploaded (15,706 (IQR 5965–19902) vs. 7,767 (IQR 471–14,676), p < 0·001). Numbers of people who saw a post shared by a friend was higher on days posts were uploaded (2,515 (IQR 165–4,300) vs. 653 (IQR 57–3,155), p < 0·001). During March 2013, posts containing a link to a cross-sectional, observational study investigating the use of the Surgical Safety Checklist were uploaded producing 6,269 responses. Responses to the study were higher on days when links to the study were uploaded compared to other days (310 (IQR 222–500) vs. 85 (IQR 6–108), p < 0·001).

Conclusions: Facebook can have a diverse impact in surgery from a powerful tool in disseminating CSE in low- and middle-income countries to finding global collaborators in research.

Education and Training 0443

A Global Delphi Consensus Study on Defining and Measuring Quality in Surgical Training

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Aims: Evidence suggests that patient outcomes can be associated with the quality of training programs. To raise standards of surgical training, a tool to measure training quality is needed. This study sought to define elements of high quality surgical training and methods to measure them.

Methods: Modified Delphi methodology was employed to achieve international expert consensus. Seventy statements regarding indicators and measures of training quality were developed based on themes from semi-structured interviews of twenty consultant and trainee surgeons. Eighty-three experts in surgical education from 13 countries were identified and invited to complete an online survey ranking each statement on a 5-point Likert scale. Consensus was predefined as Cronbach's-α ≥0·80. Once consensus was achieved, statements ranked ≥4 by ≥80% of experts were used as themes to develop the Surgical training – Quality Assessment Tool (S-QAT).

Results: Fifty-three (64%) experts from 11 countries responded. Consensus was achieved after 2 rounds of voting (Cronbach's-α =0·93). Thirty-five statements were selected as themes for the S-QAT. Statements defining training quality covered the following subjects: relationship between the trainer and trainee, operative exposure, supervision, feedback, structure and organisation, and structured teaching programmes. Consensus statements regarding measuring training quality included: trainee feedback, trainer feedback, timetable structure, and trainee improvement. There was agreement that measuring training quality would have a positive effect on training.

Conclusions: International expert consensus was achieved on defining and measuring high quality surgical training. This has been translated into the S-QAT to evaluate surgical training programs. Competition created by comparing training quality may raise standards of surgical training.

Education and Training 0523

Four Years On – Post-EWTR: Are UK Hospitals Best for Surgical Training and Patient Care? Results of a Prospective Online Survey

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Aims: We aim to survey surgical junior doctors working in the UK on whether surgical training is excellent in UK hospitals and whether patient safety and quality of patient care has improved four-years on post-European Working Time Regulations (EWTR).

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Methods: An online prospective 19-question survey was launched via a Survey website. The survey has been advertised on two websites. Several deaneries have been contacted too.
Results: 268 responses have been received. All levels of training and deaneries were represented. When asked whether UK surgical training was excellent, only 8·24% respondents agreed. Only 15·8% agreed that their rota was EWTR-compliant in practice. Just over 1/3rd respondents agreed that their staffing levels were sufficient. 53·1% respondents' ward workload enabled them to get to theatre regularly. Just over 2/3rd respondents believe that their Educational Supervisor (AES) is interested in their progress, with 63% finding it easy to arrange AES meetings but only 44·5% finding it easy to arrange workplace-based assessments.
44·36% respondents thought that working 57–72 hours would optimise surgical training and provide sufficient service cover. When asked whether patient safety had improved/deteriorated post-EWTR, 59·1% respondents said that patient safety had deteriorated. Factors causing a negative effect on patient safety included 'Doctors Working Hours Restrictions and Rest Requirements' (46·2%), 'Quality of Training' (73·3%), 'Morale and Enthusiasm' (70·1%), 'Hospital at Night' (59·1%), 'Locum Cover' (72·2%), 'Lack of Communication and Teamworking' (48·9%) and 'Shift Patterns' (73·8%). 62·3% respondents thought that quality of patient care had deteriorated post-EWTR, with the same factors responsible for the negative impact.
Conclusions: Majority of survey respondents say that surgical training is not excellent, and that patient safety and quality of patient care have deteriorated post-EWTR. We propose a national consensus to improve these areas by addressing the core reasons for such deterioration as a priority.

Education and Training 0526

Face Validity Study of Cadavers using Thiel Method of Embalming for Endoscopic Surgery in Urology

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Aims: The study describes face validity of ureterorenoscopy (URS) and transurethral resection of prostate (TURP) in human cadaveric models embalmed using Thiel's method.
Methods: The University of Dundee has developed a facility for embalming cadavers using Thiels method for embalming specifically to address challenge of surgical skills training and research. These cadavers were used as models for assessing suitability for endoscopic (upper and lower urinary tract) skills training. Eleven practicing urologists (4 experts and seven trainees) were recruited to evaluate this model. Respondents were asked to perform part of whole procedure and complete a rating survey (Linkert scale 1 to five) upon completion specifically assessing positioning, tissue quality, resemblance to normal and preservation anatomical landmarks.
Results: In using a Likert scale between 1 and 5, results for anatomic preservation and resemblance to "real-life" were favourable, with the best scores for overall anatomical landmarks for ureteroscopy and stent insertion (4·7) and for patients positioning and endoscopic placement of instruments (4·5). The poorest scores were for the use of Thiel specific fluid for endoscopic resection (3·3), however this was improved using alternate fluid for irrigation. Scores for haptic realism were good as well. The average score for the question "overall, how valuable is the model as a surgical simulator" was 4·1. The experts felt that trainees (specialist trainees year 1–3) would benefit most from this surgical education model.
Conclusions: The cadavers using Thiel's method for embalming can be considered to have face validity for lower and upper tract endoscopy. Improvements will continue to be made to address some of the deficiencies in the type of fluid to be used for endoscopic resection using this model.

Education and Training 0529

Medical Students' Knowledge, Perceptions and Attitudes towards Organ Donation and Transplantation

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Aims: The shortage of organ donors is a fundamental problem in the UK. Many strategies have been put forward to overcome this, one of which aims to improve awareness of organ donation and transplantation (ODT) at medical student level. This survey seeks to investigate the knowledge, perceptions and attitudes of the medical students in the UK towards ODT.
Methods: A 32-item online questionnaire was distributed to 957 medical students at the University of Leeds (October-December 2012).
Results: There were 216 (22·6%) respondents. Students were aware of kidney, heart and liver transplantation (91·6%, 88·8% and 86·5%). Awareness of small intestine (36·7%) and islet of Langerhans (33·0%) transplants were poor. Students understood the term Brain Stem Death (BSD, 82·3%), however they lacked understanding of criteria used for BSD testing (75·8%).
59·5% indicated they would feel comfortable addressing a patient's questions about ODT and 43·3% were unhappy with their current knowledge. 87·6% agree that ODT teaching should be included in the curriculum. 63·3% would select a topic of transplantation for their student-selected module.
Conclusions: Students have basic understanding of ODT but they lack detailed knowledge. They accept its importance and desire further teaching to supplement their current knowledge about ODT.

Education and Training 0542

Research Output in Trauma and Orthopaedics in the UK

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Aims: The aim of this study is to quantify the research output in trauma and orthopaedics from different Local Education and Training Boards (LETBs) around the country. This was measured through conference abstracts that were accepted for oral or poster presentation from the 2013 BOA congress.
Methods: Abstracts were analysed according to the LETB of the first author for each abstract in the proceedings from the 2013 BOA congress. Mean numbers of Core Surgical Trainee were obtained taken from the surgical recruitment website, and output quotient (OQ) was compared across the UK.
Results: 387 abstracts were included in the study.
The 3 best LETBs for research per CT1 were:

1. Health Education England: Kent, Surrey and Sussex – 0·96
2. Health Education England: East Midlands – 0·95
3. Wales – 0·93

The 3 worst LETBs for research per CT1 were:

1. Health Education England: Yorkshire – 0·21
2. Health Education England: East of England - 0·34
3. Health Education England: Thames Valley – 0·41

Conclusions: Research is a crucial aspect of all medical and surgical training; not only because it allows development of written and oral presentation skills, but because it forms a significant part of job applications. In the British Orthopaedic Association (BOA) guidelines for registrar (ST3) applications, research experience contributes 38·5% of points available in the portfolio station. Knowledge of research activity is therefore important for any trainee.
There is a significant difference in the amount of orthopaedic research output around the country's LETBs. In further analysis number of teaching hospitals in each LETB or numbers of medical schools does not appear to have an influence on output quotient.

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Education and Training 0554

Surgical Trainers' Perspectives of Work Based Assessments

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Aims: Work based assessments (WBAs) form an essential part of formative assessment in surgical training. They are used to evaluate trainees' educational progress and are intergral to the ISCP curriculum. Several WBAs are employed to help evaluate competence; case based discussion, procedure based assessments, and mini-clinical evaluation exercises. However, they have not been completely accepted by trainers and trainees due to concerns regarding validity and reliability.
The aim of this study was to evaluate the experience and views of surgical trainers with respect to work based assessments.
Methods: An online questionnaire survey was carried out among the clinical and educational supervisors nationally.
Results: 63 responses were collected. M:F 53:10, 80% had >5 years experience as surgical consultant. 85% had no previous experience of work based assessments as trainees. Trainers had greater experience with PBAs in comparison to other assessments. Only 6% of trainers always used the performance at WBAs to alter the training needs 13% allocated specific sessions for assessment. In general all WBAs were regarded as having value but free text responses indicated a concern regarding validity, format of assessments and trainee engagement.
Conclusions: Trainers felt WBAs were of greater benefit to core surgical trainees than higher surgical trainees. Procedure based assessments and case based discussions were seen as the most valuable tools for assessing trainees. A common theme among the trainers was that WBAs were trainee led and there was insufficient time to carry out WBAs during regular working hours. Overall WBAs were seen as a useful tool in assessing trainees, but trainers felt time constraints had a negative impact on their effectiveness as a training tool.

Education and Training 0569

An Immersive "Simulation Week" Enhances Clinical Outcomes for Incoming Surgical Foundation Doctors

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Aims: The transition from student to Foundation Doctor can be challenging. The 'August or July effect' describes increased errors and reduced patient safety during this transition. The study objectives were to develop, pilot and evaluate clinical outcomes following an immersive simulation course for incoming doctors.
Methods: Graduating students were recruited for a one-week immersive simulation course. Controls received no simulation training. Primary outcome (at baseline, one and six months) was clinical performance on Objective Structured Clinical Examinations (OSCE) of basic clinical procedures and surgical technical skills. Secondary outcomes were self-reported confidence and clinical procedure logbook data.
Results: Of nineteen students recruited, sixteen completed the six-month follow-up; ten interventions, six controls. No significant differences were demonstrated between interventions and controls at baseline (OSCE [median 66 versus 78, $p=0{\cdot}181$], surgical skills [48 versus 52·5, $p=0{\cdot}381$], confidence [101 versus 96, $p=0{\cdot}368$]). Interventions outperformed controls at one month (OSCE [111 versus 82, $p=0{\cdot}001$], surgical skills [78·5 versus 63, $p=0{\cdot}030$], confidence [142 versus 119, $p<0{\cdot}001$]). Interventions continued to outperform controls at six months (OSCE [107 versus 93, $p=0{\cdot}007$], surgical skills [92·5 versus 69, $p=0{\cdot}044$], confidence [148 versus 129, $p=0{\cdot}022$]). No significant differences were observed in numbers of clinical procedures performed at 1 month (71 versus 74, $p=0{\cdot}958$) and in one-week samples at 4 (28·5 versus 17·5, $p=0{\cdot}093$) and 6 months (19 versus 15·5, $p=0{\cdot}713$).
Conclusions: The immersive simulation course objectively improved subjects' clinical skills, technical skills and confidence. Despite similar clinical experience as controls, the improved performance of the intervention group persisted at both 1 month and 6 months. This feasible, effective intervention to ease transition from student to Foundation Doctor could reduce error and enhance patient safety.

Education and Training 0576

An Electronic Teaching Log: Initial Results of an Innovative Approach to Recording and Rewarding Surgical Trainees' Teaching Experience

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Aims: A record of teaching experience is often requested in training portfolios and is now a common question at surgical interview. At present few tools exist to allow doctors to record their teaching experience "as they go" like they do with the Intercollegiate E-Logbook for their operative experience. We aimed to increase the reliability and validity of surgeons' teaching records whilst simplifying the process.
Methods: An electronic Teaching Log (T-Log) was designed and piloted by trainees. Doctors can use it on smartphones, tablets or computers. Each time they teach they enter identifiers (including GMC) electronically along with the session details: date, audience, group size, format, subject, optional reflection. The trainee is emailed a quarterly PDF report to recognize their experience. T-Log data was used to assess trainees' uptake of the application.
Results: From 1st September 2013 to 2nd January 2014 556 teaching episodes were recorded on T-Log by 75 doctors (F1-Consultant) in our institution. Junior doctors in surgical specialties delivered 186. 11·3% were foundation and 30·6% core trainees. 46·2% of surgical sessions were delivered to 3rd year and 40·9% to 5th year medical students. 8·6% were lectures, 29·6% tutorials, 11·8% clinical skills and 23·1% bedside. The most common surgical topic was "acute abdomen." 59·1% taught groups of ≤5 and 14·5% groups of >20. The total number of sessions T-logged is increasing and feedback from trainees shows that this is an easier approach to logging teaching than the alternatives.
Conclusions: T-Log is an innovative approach to increasing the reliability and validity of surgical trainees' teaching records. Further specialties are joining and T-Log use is increasing. It has the potential to be used at a regional or national level.

Education and Training 0580

The Importance of Simulation Within the Core Surgical Trainee's Curriculum. Does Simulation Makes Core Trainees Fit for Purpose?

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Aims: 1.To enable surgical trainees to acquire clinical and practical skills within a safe environment by using simulation training. 2. To create an environment that fosters "permission to fail" and create a model of" teaching true mistake". 3. To develop psychomotor and cognitive skills which are transferable to clinical and operative environments. 4. To ensure that core trainees are "fit for purpose" at the time of the selection to ST3.
Method The core surgical training curriculum must be delivered within reducing training hours. The LEP (Local Educational Provider) has set up simulation training days for all core trainees. We have reviewed simulation training provided by LEP and "lessons learned" from faculty and core trainees by using standardised reflective questionnaire.
Results: Surgical simulation was piloted for core trainees prior to August 2012. From 8/2012-8/2013 12 teaching trusts provided 9 simulation days for number of the core trainees. Additional simulation operative skills days were run by 6 of the local trusts. Core trainees were expected to attend a single day in the CT1/CT2 year. The simulation events were required to reflect every day elective and emergency clinical scenarios by using "sim man" and educational input from multidisciplinary faculty members. Faculty and trainees appreciated the importance of a safe environment for training, use of real case scenarios and a "one to one" feedback from highly skilled trainers.
Conclusions: Simulation offers valuable training within a safe environment with a unique input from highly skilled trainers. It develops the trainee's ability to adjust to difficult situations and think "outside the box". Surgical simulation is important contributing factor to optimise surgical skills within reduced working hours.

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Education and Training 0584

Standardized Patients in Graduate Medical Education: A Systematic Review

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Aims: To systematically review the integration of standardized patients (SPs) into graduate medical education.
Methods: A literature search of English-language articles in graduate medical education that integrate SPs as part of training and evaluation processes was conducted. PubMed, EMBASE, and Cochrane Library databases (January 1990 - November 2013) were queried. Two independent reviewers screened titles, abstracts, and full text according to PRISMA guidelines for studies that met predefined criteria. Articles were categorized by medical specialty and subject domain.
Results: There were 201 articles involving 8,511 physician learners and 677 distinct SP scenarios, including 19 studies (9%) that incorporated unannounced SPs. By specialty, family medicine (53 articles, 26%), together with general and internal medicine (51 articles, 25%) were the most frequently represented. Surgical specialties comprised 40 articles (20%), of which 28 represented general surgery, the remainder from OB/GYN (n = 5), urology (n = 2), otorhinolaryngology (n = 2), plastic surgery (n = 2), and orthopaedic surgery (n = 1). Paediatrics and emergency medicine included 21 (10%) and 13 articles (6%) respectively, and 9 articles (4%) focused on psychiatry. By subject domain, communication was the most frequently addressed by 72 studies (36%), of which 22 focused on the subject of difficult conversations, e.g. breaking bad news. Assessment and improvement of overall clinical performance comprised 63 articles (31%). Attempts to measure or influence specific clinical behaviours and skills in physicians (such as screening for specific risk factors or physical findings) represented 48 articles (24%).
Conclusions: Standardized patients have a variety of educational uses across specialties in graduate medical education. Teaching and evaluation of communication skills in the primary care setting were the most commonly reported. According to the literature, there is underutilization of SPs in surgical specialties. The integration of SPs into surgical residency education is encouraged with regard to development of the complete physician.

Education and Training 0590

A Systematic Review of the Learning Curve for Single Incision Laparoscopic Cholecystectomy (SILC)

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Aims: The objective of this review was to assess the learning curves of single incision laparoscopic cholecystectomy; what outcomes are measured and to find an approximation of the learning curve for these different measures. Defining the learning curve would have implications for training, quality improvement, and patient safety.
Methods: A systematic search was performed of MEDLINE, EMBASE, ISI Web of Science, ERIC and the Cochrane Library from 1985 to August 21, 2012. The inclusion and exclusion criteria are minimally invasive abdominal surgery formally analysing the learning curve and English language. The articles that addressed SILC in humans were then selected and reviewed in detail. 15 (0·3%) of the identified studies met the selection criteria. A second reviewer assessed 10% of the articles and any discrepancies were resolved by consensus. Each article was graded using a six-point system to assess quality and validity. Given the limitations of the data no formal statistical analysis was undertaken, but a qualitative review was done.
Results: Fifteen studies involving 1120 surgeries were included in this analysis; the median size (25–75 quartiles) of the studies was 56 (47–102·5) operations, with a range of 20–150 cases. Operative time was used as a proxy for the learning curve in all of the studies. In addition, complications were measured in 6 (40%) of the studies, conversions in 5 (33%) and length of stay in 3 (20%). The studies that did note a statistically significant learning curve using time (12, 80%), found the inflection point or plateau of the curve at a varying number of procedures from 5 to 75. The operative time at this point displayed a mean (SD, range) of 65·5 (10·3, 50–83) minutes. The data for SILC learning curves varied significantly: different studies used different techniques, and the surgeons had varying levels of experience.
Conclusions: Most studies did find a reduction in the operative time with increasing experience and procedure number. There are significant limitations of literature making extracting an overall learning curve difficult including not having similar surgical technique and measuring the outcomes in the same way. If we could define this curve, we would be able to use it to inform surgical training and hospital policy. Larger, more uniform studies are needed to elucidate the learning curve further.

Education and Training 0593

Gender Differences in Surgical Leadership

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Aims: The demographic diversity within modern surgical trainees presents a range of different behaviours and attitudes, forming different styles of leaders. This poses an important challenge for surgical leaders and education providers. There is little published empirical evidence for a correlation between gender differences and surgical leadership styles. We reviewed the domains of trainee gender and their opinions on leadership styles.
Methods: We conducted an online survey reviewing demographics of surgical trainees and their opinion on leadership within the Local Education Provider (LEP). The primary outcome measure comprise of gender and leadership styles. Secondary outcome measures comprise of different approaches to leadership.
Results: Seventy-three surgical trainees (Median level of surgical training ST3, range CT1-ST8 and 68% males) from the Local Education Provider took part in an online survey on leadership styles. Most trainees feel they adopt a democratic leadership. The top three choices of leadership styles from male trainees are democratic, task-orientated and autocratic; female trainees are democratic, task-orientated and relation-related. Male trainees feel they practice a more assertive (54%) and direct (64%) approach whilst female trainees feel they adopt a friendlier (83%) and indirect (70%) approach to leadership (P = 0·0046 and 0·0112). 79% of trainees expressed that good surgical leader required focused teaching and guidance.
Conclusions: Gender plays a statically significant role in different leadership styles employed by surgical trainees. It is important for education providers to include demographic factors such as gender that present diverse trainee attitudes and motivations, into leadership training.

Education and Training 0601

Fitness for Practice: How can Junior Doctors Ensure they Keep up to Date?

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Aims: Producing medical students who are fit to work as junior doctors by the time of their graduation is a key consideration for medical schools. Remaining up-to-date in developments in professional skills and knowledge is a must for a Doctor [1]. Current guidelines such as Tomorrow's Doctors [2] highlight the need for this to occur early in a student's career. One way of maintaining up-to-date knowledge is through the National Institute of Health and Care Excellence (NICE) Evidence service, which provides rapid access to evidence from a range of accredited sources, via a web-based portal. The "NICE Student Champion Scheme" [3] utilises peer education to provide cascade sessions.
Methods: This presentation focusses on the NICE Student Champion Scheme implemented at a UK University. Attendance at a 30 to 60 minute training session was compulsory for all 4th year (clinical phase) students, where they were taught how to use the NICE Evidence portal by students involved as

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NICE Champions. To assess the effectiveness of these sessions, questionnaires were distributed to all students prior to and three months after the teaching sessions.

Results: Before attending the session 60% of students had tried using NICE evidence search however only 34% felt confident using it. After the session, 85% of students were either 'confident' or 'very confident' at searching for health and social care information using NICE evidence search. Within 3 months of the session 82% of students had already used NICE evidence search for their studies and a further 15% planned to. The main reasons students used NICE Evidence Search was for 'pathological/diagnostic information', 'medicines/prescribing information' and 'evidence based recommendations and guidelines'

Conclusions: Students regularly use a variety of web-based resources to search for up-to-date guidelines and information. These web based resources vary considerably in reliability and accuracy. The provision of a single education session improved student's confidence in using the NICE Evidence Search.

With improved knowledge and confidence of the search facility, students made more use of NICE Evidence Search. We therefore conclude that using a cascade model of student education improves students' knowledge and confidence in how to access up-to-date information. This ultimately increases their fitness for practise and purpose.

Education and Training 0623

Porcine Cadaveric Models can be used Effectively and Aid in Increasing Trainee Confidence in Assessing and Managing Trauma

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Aims: The relative low exposure to trauma means trainees may not be fully prepared to assess and manage traumatic injuries. We aim to assess the impact of a one day emergency surgical trauma course on trainees perceived confidence in managing these patients and whether porcine cadaveric models were considered a useful tool for trauma education.

Methods: 12–24 months after attending the course, candidates were asked to complete an electronic questionnaire rating their confidence in assessing and managing trauma and how realistic they found the porcine cadaveric model.

Results: All participants who responded agreed that the porcine animal model was a useful adjunct to trauma training. 87·5% agreed that the porcine chest model had tissue properties similar to that of human tissue and was anatomically accurate. 75% found porcine abdominal model to be similar to human tissue while 50% found it anatomically useful. Less that 20% thought a synthetic human model would be preferable to animal models. Reported confidence in assessing and managing traumatic injuries improved significantly after attending the course ($P < 0{\cdot}0001$). 100% would recommend the course to colleagues and 87·5% felt the course should be a mandatory part of general surgical training.

Conclusions: Porcine cadaveric models can successfully be used as part of a structured trauma training course to improve trainees confidence in assessing and managing traumatic injuries.

Education and Training 0631

Development of an Ex Vivo Porcine Training Model for Laparoscopic Right Hemicolectomy

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Aims: Our aim was to develop a high fidelity, cost-effective model for laparoscopic right hemi-colectomy training. Despite increasing evidence for the clinical benefits of laparoscopic colorectal surgery, the dissemination of this technique has been slow, mainly due to the steep learning curve involved. Novel simulation techniques designed specifically for laparoscopic colorectal surgery have been developed. Box trainers or virtual reality simulators are well suited for training technical skills and hand–eye coordination but lack the training with tissue handling, surgical field interpretation, and anatomical recognition.

Methods: We identified the key steps involved in performing a laparoscopic right hemi-colectomy. After exploring the use of synthetic and animal tissue, we found using the porcine alimentary canal, with specifically selected surrounding organs, produced the most anatomically correct model. The alimentary canal and other organs are dissected and sutured into place on a corkboard in a configuration that closely resembles the human anatomy that would be encountered. The construct is then placed within a standard laparoscopic box trainer. The model was piloted among experienced colorectal surgeons to ensure the realism of the model (face validity) and whether all the steps of the procedure could be illustrated using the model (construct validity). A cost-effectiveness financial analysis was performed.

Results: We have created a porcine tissue model that is able to illustrate the individual stages required to perform a laparoscopic right hemi-colectomy. The model allows practice with tissue handling, hand-eye coordination, intra-corporeal suturing, stapling and anastomosis techniques. Excluding the fixed costs of the hardware platform, a single model costs less than £100 to construct.

Conclusions: Increased rates of adverse clinical outcomes at the early stage of the learning curve raise ethical questions and highlight the need for mechanisms to reduce complications and conversions during the initial stage of independent practice. We believe that we have developed a high fidelity model that demonstrates excellent face and construct validity. We consider this model to be a viable tool due to its ease of reproducibility, without incurring significant financial outlay. There has been no similar model described in the literature.

Education and Training 0641

Collaboration, Innovation, and Reflection on Developing E-Learning Modules for Surgical Education

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Aims: To reflect both on the development of innovative e-learning modules and the benefits and challenges of a collaborative approach to producing material. To survey trainees opinions on working on a pilot project, with external agencies.

Methods: Surgical trainees (CT1-ST7) were selected to develop up-to-date e-learning modules on pancreatic cancer for international dissemination via ecancer.org, the first project of its kind. Trainees reflected on previous e-learning experiences and their goals and challenges for the project. They were also asked to consider what they had gained from the project and how successful they felt it had been.

Results: Trainees had limited e-learning experience. A common aim was to explore the possibilities for innovative information delivery. Trainees wished to further their own knowledge of pancreatic cancer whilst improving educational skills.

Trainees felt they had developed numerous transferable skills during the course of the project including team-working, communication and leadership, which would benefit them throughout their surgical careers. The main challenges were organisational, co-ordinating face-to-face meetings, liaising within the team to link up different units and deciding how best to present our work.

Overall the trainees unanimously found the project beneficial and would participate again.

Successes to date are an international poster presentation and progress to completion of module development.

Conclusions: Collaborative projects are beneficial at individual and team level. Development of up-to-date, innovative e-learning content is challenging, but with appropriate planning, organisation and leadership, quality material can be produced. Trainees benefit from transferable skill acquisition in leadership, team-working and developing e-learning content.

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Education and Training 0642

Design and Quality Assurance (QA) of a Novel Simulation-Based Induction Programme for ST3 Registrars in General Surgery

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Aims: We have designed and assessed a novel curriculum-linked, simulation-based induction programme for registrars commencing ST3 training in our region.

Methods: The programme comprised 3, 2-day courses (Emergency, Laparoscopic and Trauma & Vascular Surgery) of lectures, demonstrations and technical skills practice (whole cadaveric pigs, prosthetic models [laparoscopic box trainers, open appendicectomy]). The Joint Committee on Surgical Training QA tool was used to evaluate feedback (quantitative & qualitative) from trainees, faculty and the courses organiser.

Results: Feedback rates were 96·5% (trainees) and 66·5% (faculty). Quantitative feedback demonstrated high satisfaction with all aspects of the courses (Table: score 1–5, means). Qualitatively, trainees and faculty viewed the use of animal tissue as invaluable whilst web-cam laparoscopic trainers (versus theatre stacks) were considered an obstacle to developing suturing skills. The course organiser highlighted the importance of experienced technical staff (absent for one course).

Conclusions: Targeted, simulation-based skills training was considered an effective tool to bridge the gap in psychomotor skills between core and higher training. The fidelity of fresh animal tissue proved particularly useful. However, a successful programme requires investment in resources and technician time. Absence of these would adversely affect programme delivery.

Category	Trainees	Faculty
Quality of teaching environment	4·63	4·47
Joining Instructions	4·46	4·83
Quality of refreshments and breaks	4·83	4·57
Health and Safety	4·76	4·17
Clarity of course objectives	4·69	4·27
Faculty preparation	4·90	4·47
Quality of equipment and consumables	4·33	4·07
Delivery of course objectives	4·56	4·37
Appropriateness to needs	4·66	4·43

Education and Training 0679

Improving Patient Safety in Emergency Surgical Situations: A Multi-Professional, Multi-Disciplinary Course Focusing on Non-Technical Skills

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Aims: Providing teaching on non-technical skills, or 'human factors' in emergencies, is of increasing interest to surgeons, yet it is rarely universally taught, unless separately by profession or grade. Teams of healthcare professionals continue to make human errors despite technical expertise and knowledge, compromising patient safety. Our aim was to design a one-day, multi-professional, multidisciplinary course to teach, practice and apply non-technical and team-working skills in emergency situations through simulated scenarios in a safe, open, environment.

Methods: The course comprised a morning of lectures and case studies on CRM techniques in the emergency setting, incorporating films and interactive team-working exercises. The afternoon divided the group of 16 into 4 teams - made up of anaesthetists, ODPs/Outreach nurses, surgical trainees/ emergency medics and nurses - to rotate around 4 scenarios. During the scenarios teams were encouraged to focus on non-technical skills, including communication strategies, situational awareness and prompts such as checklists to improve team-working. A thorough debrief with highly experienced senior clinical observers (from surgical/ anaesthetic and nursing backgrounds) followed.

Results: Over 100 healthcare professionals have completed the course. All participants felt the course had a clear structure and that learning objectives were explicit. 95% felt the scenarios had good or excellent relevance to clinical practice. 100% found the course useful and would recommend it to their colleagues. Longer-term data (up to 1 year post course completion) revealed 98% of participants had incorporated the non-technical skills learnt into clinical practice.

Conclusions: There is a real demand and enthusiasm for developing non-technical skills within modern surgical training. A training course which includes simulation, focusing on human factors in a multiprofessional and multidisciplinary environment will improve not only team-working, but the culture in general and, ultimately, patient safety.

Education and Training 0704

'Weight Loss Surgery' Information on the Internet: Which Search Engine is Better? (Google vs. Yahoo)

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Background The Internet is a widely used information resource for patients wishing to undergo weight loss surgery. The aims of this study are to compare the content and quality of bariatric surgery information presented on the internet using the search engines Google and Yahoo; as well as to test the hypothesis that more popular sites (i.e. higher search engine rank) are of higher quality.

Methods: The top 50 websites that appear in Google and Yahoo using the term "weight loss surgery" were analysed. Websites were then evaluated using (a) JAMA benchmarks (authorship, references, currency, and disclosure), and (b) an Information Score (IS) that is generated by awarding websites points (0 –100) for specific information on five domains of weight loss surgery (procedure details, suitability of procedure, risks and benefits, expected results, and life after surgery)

Results: Only one (2%) website met all 4 criteria of the JAMA benchmarks on Google. The Yahoo search obtained 4 (8%) websites that met all 4 criteria. The median IS was 10·5 (range 0 – 73·5) on Google vs. a median IS of 38·5 (range 0 – 78·5) on Yahoo ($p = 0·015$, Mann Whitney U test).

There was no significant correlation with Google ranking and IS ($r = 0·223$, $p = 0·062$). However Yahoo ranking displayed a significant correlation with IS ($r = 0·340$, $p = 0·008$).

Conclusion Yahoo appears to be superior search engine to Google in identifying better quality websites. However, there remains a marked variation in the quality, integrity, and currency of the information on the internet for patients wishing to undergo weight loss surgery.

Education and Training 0719

Developing an 'iHandbook' for Clinical Medical Students: Capitalising on Tablet Technology

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Aim: Detailed online feedback via SurveyMonkey from two cohorts of 5th Year medical students on an Orthopaedic rotation highlighted a need for better firm structure, up-to-date teaching timetables and clear learning objectives.

We developed an interactive learning tool to help meet these needs and at the same time engage students and maximise learning opportunities.

Method We created a Student 'iHandbook' for download on iPad Mini's issued by the medical school.

Retrospective analysis of feedback from two control student cohorts (groups who did not have access to the Student 'iHandbook', n =20), enabled development of focussed content, such as regularly updated clinic and theatre timetables, comprehensive learning goals and a logbook to assist with objective assessment

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of learning. The Student 'iHandbook' also includes interactive features using clinical pictures, anatomical diagrams, radiographs and spot diagnoses. Tutors utilised this as a novel learning adjunct during structured teaching sessions.We piloted the use of the iHandbook with a test cohort of students (n = 10) who had not previously had access to the download and prospectively analysed feedback.

Results: Initial feedback from the Student 'iHandbook' pilot was positive. 10 out of 10 students felt opportunities for self-directed learning were improved, that the handbook helped focus learning goals and made structured teaching sessions more interactive. When surveyed at the end of a Trauma and Orthopaedics clinical attachment, 100% of the test cohort rated the available teaching and learning opportunities as 'Good' or 'Satisfactory' compared to just 25% of the control cohort.

Discussion Tablet devices are increasingly used as an educational medium. Few studies have been published on the efficacy and attitudes towards use of these devices. We present an effective method of harnessing the potential of tablet devices provided by the medical school to maximise learning opportunities.

Education and Training 0726

Surgeons' Experiences of Teaching Medical Students in the Operating Theatre: A Pan-Specialty Regional Study

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Aims: Operating theatres offer a unique and rich learning environment for medical students. Recent evidence indicates medical student attendance at operating theatre teaching is low. There is limited evidence of the perceptions of the teacher in this setting. This study characterised the experiences of consultant surgeons and their teaching practices with medical students in the operating theatre.

Methods: A novel 22-item self-administered questionnaire survey was posted to all consultant surgeons in 5 specialties delivering medical education at all 5 hospitals affiliated to one UK medical school. Ethical approval was sought prior to commencing the study and a waiver was granted. Responses were anonymous and results were analysed using GraphPad Prism 6·0.

Results: Questionnaires were returned by 99/154 (response rate: 64%); 90 male (91%) and 9 female (9%); mean years as a consultant surgeon - 12 (range: 1–30). 80 (80%) enjoyed teaching medical students in the operating theatre. A quarter did not feel that they knew the skills, knowledge and behaviours the curriculum expected students to learn in theatre. 35 (35%) currently set learning objectives for students. 62 (62%) agreed that these could aid student teaching in this setting, however this group was no more likely to set objectives ($p = 0{\cdot}1668$). There was a significant positive correlation between knowing the curriculum and setting learning objectives ($r = 0{\cdot}41$, $p < 0{\cdot}001$). 65% of respondents stated that they would not let students perform procedures in the operating theatre; this was not significantly related to specialty or length of time as a consultant. The main factors affecting inviting students to scrub and/or actively participate were: student's enthusiasm (90%), clinical knowledge (58%) and duration or type of operation (53%).

Conclusions: Consultant surgeons enjoy teaching medical students in the operating theatre environment yet a quarter does not feel they know what needs to be taught. Teacher training with clearer medical school and GMC guidance on the undergraduate surgical curriculum may help facilitate setting learning objectives, ensuring students derive maximum benefit from this learning environment.

Education and Training 0738

Does the Current Structure of Core Surgical Training Produce a Cohort of Junior Doctors that are Competent, Confident and are Ready to Meet the Challenges of the Registrar Years?

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Aims: To assess whether the current structure of Core surgical training in the UK equips SHOs with the essential criteria for ST3 applications and if it produces a cohort of surgical trainees confident with their clinical skills to step up to the next level or does it leave one desiring for more? Are trainees able to demonstrate knowledge, skills and professional behaviour during their training that is required of them by the ISCP Surgical Curriculum? If deficient, what can be improved? Is there anything that can be improved? Is the ISCP Surgical Curriculum a comprehensive guide of what needs to be achieved and accomplished as a Core Trainee? To compare the surgical training schemes of Canada, America, Australia and Europe to that of UK and application of the strengths of those systems to that in the UK.

Methods: We have conducted an email survey via Survey Monkey in the first stage across our deanery targeted at Core Surgical Trainees In the next stage, we are planning to conduct this study across all the deaneries in the UK .The aim is to have this second stage ready for presentation at ICOSET 2014. We have also taken into account the experience of surgical Educational Supervisors by asking them to complete the survey as well.

Results: (to be elaborated in further detail in the presentation)
The trainee response rate in our deanery was 80%. Trainees preferred themed core surgical programs as opposed to broad-based training programs. Responses were varied when it came to competency in surgical skills. Most trainees felt they did not feel equipped to step up to the next stage at ST3 in their chosen sub-specialities. Trainees having spent 3 years as an SHO felt more confident. Most trainees felt the training would benefit from a rotation as an anatomy demonstrator and the intensive care. Second stage results to follow. Surgical simulation was rated highly as a learning tool by trainees apting towards certain sub-specialities.

Conclusions: Our findings and recommendations will be presented to the Chair of The Joint Committee on Surgical Training (JCST) and will hopefully improve the surgical training at the Core Surgery level producing confident, capable and competent Registrars.

Education and Training 0785

An Evaluation of the Accuracy of Peer to Peer Surgical Teaching and the Role of the Peer Review Process

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Aims: Peer to peer learning is a well-established learning modality which has been shown to improve learning outcomes, with positive implications for clinical practice. Surgent University (www.pilgrimshospital.com) is an online clinical teaching repository which facilitates the modality of peer-assisted learning (PAL) among surgical trainees and students. This study describes a web-based strategy with a peer review process that values critical feedback amongst peers and also allows for modification of information according to peer feedback. This study was designed to assess content accuracy and evaluate the benefit of the peer review process.

Methods: Over the past three years, surgical students from across Ireland and Toronto have been invited to upload learning points daily, while paired with their peers in a peer reviewing process. A reflective content sample was selected from the database representing all gastrointestinal (GI) surgical entries. All questions and answers were double corrected by four university lecturers/tutors. Correctors were blinded to the 'review' status of the entries. Statistical analysis was performed to compare accuracy between 'reviewed' and 'non-reviewed' entries.

Results: There were 15,569 individual entries from 2009–2013. GI surgery accounted for 2977 entries of which 678 (23%) were peer reviewed. Marked out of 5, accuracy in the reviewed group was 4·24 and in the non-reviewed group, 4·14. This was not statistically different ($p = 0{\cdot}11$). Accuracy did not differ between universities or grade of tutors.

Conclusions: A process of student data upload has several previously documented benefits. Such a system is accurate and this accuracy is not improved further through peer review. This represents an easy, valuable and safe method of capturing surgical oral ward based teaching.

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Education and Training 0809

A Better Way to Teach Basic Surgical Skills? A Randomized Control Trial Examining the Effect of an E-Textbook and the Reverse Classroom on Basic Surgical Skills Teaching

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Aims: To try to improve the teaching of basic surgical skills, we developed an e-textbook and employed a novel pedagogy (the reverse classroom) and compared this to traditional teaching methods.

Methods: A single-blinded, randomized control study was conducted to compare an iPad based e-textbook, coupled with a face to face teaching session; to a face to face teaching session alone. The intervention group had access to the e-textbook before, during and after a face to face teaching session. The control group only received a face to face teaching session. The same educational materials were used for each group. Participants were recorded tying knots immediately following the teaching session and one week later. Performance was assessed by a blinded examiner using the previously validated Objective Structured Assessment of Technical Skills.

Results: The intervention group required significantly less time to perform the knot-tying task in the classroom ($p = 0{\cdot}02$). Immediately following the teaching session, there was no difference between the control and intervention group at assessment of knot tying ($p = 0{\cdot}272$). However, after one week, the intervention group performed significantly better than control participants ($p = 0{\cdot}037$).

Conclusions: The use of an e-textbook and the reverse classroom was shown to be both more efficient and pervasive at teaching basic knot tying skills than traditional face to face teaching sessions alone. This method of curriculum delivery could easily be expanded to other areas, with significant benefits to the education of students.

Education and Training 0818

Improving Team Training through TTIPS (Team Training of Inter-Professional Students)

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Aims: A cultural work environment characterized by inter-professional friction and a "silo mentality" exerts a profound impact on healthcare professional students interacting with clinicians in the workplace, perpetuating poor team interaction. Simulation-based training (SBT) of inter-professional teams of healthcare students provides an opportunity to counteract modelling of ineffective team-based behaviours encountered in the clinical environment. We investigated the impact of SBT of undergraduate nursing and medical student teams on the participants' teamwork attitudes.

Methods: The five domain Agency for Healthcare Research and Quality (AHRQ) endorsed TeamSTEPPS™ Teamwork Attitudes Questionnaire (T-TAQ) was administered to all students in the third year medical and senior undergraduate nursing student classes at the beginning and end of the 2011–2012 academic year. During the year, forty-two inter-professional teams of third year medical students and senior undergraduate nursing students underwent SBT using a two scenario format with immediate after action structured debriefing. After each scenario, trained observers rated team-based participant performance using an 11-item Likert-type teamwork scale divided into three subscales. Mean scores and gains for observer-based assessments and the T-TAQ were calculated and compared using paired t-test. ANOVA was used to compare T-TAQ mean gain scores of students having undergone training to those who had not.

Results: Observer-based assessments demonstrated significant mean score gains for participants on every subscale from scenario 1 to scenario 2. Both student groups had statistically significant improvements in the T-TAQ mutual support subscale; medical students also showed a statistically significant improvement in the T-TAQ team structure subscale. Finally, students having participated in SBT demonstrated significant improvements in the T-TAQ team structure subscale compared to students who did not.

Conclusions: Team training of inter-professional students can be integrated into the everyday curricula of students in the Schools of Medicine and Nursing. It appears to promote inter-professional learning and may improve teamwork. attitudes over the long term, especially those related to team structure.

Education and Training 0823

The Role of Demonstrating in Surgical Training

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Aims: Surgical Trainees in the London Deanery are required to undertake 30 sessions (each approximately half a day) of Anatomy teaching in their second year of specialist training. To date, there is no literature evaluating the perception of how beneficial anatomy demonstrating is to surgical trainees hence, this study is the first to do so.

Methods: A focus group was convened to ascertain surgical trainees' perspectives on demonstrating Anatomy to students, to identify key problems and improvement strategies to optimise the trainees' skills to enhance students' learning of Clinical Anatomy. A questionnaire was formulated using the outcome of the focus group and all 2nd Year Core Surgical Trainees in the London Deanery were asked to complete the survey. Views on anatomy teaching both of cohort 2012 and 2013 CT2 trainees were obtained.

Results: 12 people attended the Focus group session and a total of 109 trainees completed the questionnaire. The focus group highlighted a vast number of themes for example, the problems trainee's faced in fulfilling the necessary sessions for demonstrating to pass the year. Results from the questionnaire included, 56% of trainees agreed that demonstrating had helped them prepare for surgical training and 56% of trainees also agreed that the anatomy teaching sessions at CT1 had prepared them for teaching the students at CT2.

Conclusions: This study has highlighted the need for improved communication between the trainee and the Deanery / Medical Schools / NHS Trusts to address issues, such as the perceived unrealistic expectations of fulfilling the teaching session requirement. The stakeholders will hopefully acknowledge and address the outcomes of the focus group and questionnaire in order to improve the experience and efficacy of demonstrating, for both surgical trainees and medical students.

Education and Training 0836

Can Surgeons Accurately Self-Assess Their Performance? A Systematic Review

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Aims: Accurate self-assessment in medical training allows limitations to be recognised and promotes individual professional development. This is the first systematic review evaluating the accuracy of self-assessment of technical surgical skills. The primary aim of this systematic review was to identify if self-assessment is an accurate form of technical skills appraisal in general surgery. Secondary aims were to identify whether the accuracy of self-assessment is affected by the participant, the skill performed, the method of assessment or the assessor themselves.

Methods: MEDLINE, PubMed, Embase and the Cochrane Database were searched according to PRISMA guidelines. Studies assessing the reliability of self-assessment of technical skills in general surgery were included. For each study, we recorded the participant demographics, skill assessed, the assessment methods used, and compared common endpoints reported.

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Results: Twelve studies met the inclusion criteria from 22,292 initial papers. The accuracy of self-assessment improved with increasing experience (level 2 recommendation), higher surgical level, and older participant age (level 3 recommendation). It was also enhanced for less advanced skills (level 2 recommendation) and upon retrospective video-playback analysis (level 3 recommendation).
Conclusions: Surgeons are capable of accurately evaluating their own technical skills. Self-assessment offers an efficient method of self-improving technical capabilities without the need for faculty feedback. Future studies should scrutinize the assessment tool used in more detail and evaluate the reliability of self-assessment in the live operating setting.

Education and Training 0841

An Assessment of Attainment of Surgical Skills and Competencies Obtained During Medical Student Elective Periods

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Aims: All UK Medical Students are required to undergo an 'elective period' as part of their undergraduate training. Early acquisition of surgical competencies has been suggested to reduce anxiety prior to commencing surgical jobs and to improve quality and efficiency of patient care. The acquisition of confidence and competence through surgical electives has not previously been assessed. The aim of this study was to evaluate the development of basic surgical skills and ward-based competencies amongst students undertaking surgically-themed electives in centres across the UK and abroad.
Methods: Paired pre-post questionnaires. Two-sets of paired questionnaires (SurveyMonkeyTM) were distributed amongst the final year cohort of Cardiff Medical School (2012/13) pre- and post-elective. Confidence and competence in nine basic surgical skills was quantified using a Likert scale. Participation was encouraged with a randomly allocated 'surgical electives bursary'. Statistical analysis was carried out using SPSS® v19·0 (Chicago, Illnois).
Results: Students (n = 18) reported that surgical electives gave exposure to a high-volume of surgical cases and to diverse, novel patient demographics. Self-perceived competence and confidence was seen to improve in all 9 skills assessed ($p < 0{\cdot}05$). The most significant improvements were seen in 'Knot-Tying (Two Handed)' and 'Suturing (Interrupted)'.
Conclusions: Surgical elective periods taken in the UK and abroad are a useful tool for developing early confidence and competence in both ward and theatre-based proficiencies. Further interrogation of the factors determining most beneficial elective types for the surgically-minded student will facilitate the creation of an elective planning tool based on individual learning goals.

Education and Training 0854

Improving Cancer Teaching through Video-Conferenced Multi-Disciplinary Team Meetings

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Aims: Cancer patients are discussed at multi-disciplinary team meetings (MDTs). The complex and jargon-heavy decision-making process, means that students often feel ignored, become passive to the process and an excellent learning opportunity is lost. New modalities of cancer teaching should be explored.
Methods: 4th year medical students with the University of XXXX, attend weekly gastrointestinal cancer MDTs (GI-MDTs). From August 2012, a 'video-linked' GI-MDT teaching session was trialled. The students video-conferenced in to the meeting, accompanied by a dedicated tutor: in this case a clinical teaching fellow, watching a small number of pre-selected cases. The video-link connection was then disabled and the tutor discussed the cases in depth. The teaching was student-driven, but commonly included reviewing radiological-staging investigations, interpreting pathology reports and explaining surgical and oncological treatments. Students were encouraged to attend and evaluate both 'standard' and 'video-linked' GI-MDT meetings; by means of a questionnaire, with a 10-point Likert-scale assessing usefulness and enjoyment of the meetings.
Results: 46 students completed evaluation questionnaires over 18 months. Students felt video-linked GI-MDT's to be more beneficial than standard meetings, with mean student usefulness scores of 9·28 and 3·52 respectively (p-value <0·0001). Video-linked GI-MDT's were also enjoyed more, with mean student enjoyment scores of 9·26 and 3·22 respectively (p-values <0·0001). Qualitative student feedback reflected on three major benefits of the video-linked GI-MDT sessions over its standard counterpart:

(i) The pace of delivery better suits undergraduate teaching.
(ii) Allows complex management plans and jargon to be deconstructed.
(iii) Provides an interactive and safe-learning environment for students.

Conclusions: Not all hospitals have access to Clinical Teaching Fellows. However, there is no reason why an enthusiastic surgical or oncology trainee couldn't deliver these sessions. Despite initial concerns, this style of video-conference teaching has not been technically challenging to set up and has become an asset to our university in the delivery of cancer education.

Education and Training 0856

Driven to Distraction. Improving Patient Safety Teaching Through the use of a Simulated Ward Round Experience: A Prospective Control Study

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Aims: Medical error is common, with poor situational awareness an important aetiological dynamic. This is a key consideration for junior surgeons, for whom distraction and interruption are endemic in clinical work. Objective: Can a simulated ward experience with feedback be used to improve distractor management to reduce medical-error making behaviour?
Methods: A simulated ward round for final year medical students, with a focus on medical error and distraction was designed. Conducted as a prospective control trial, 14 students were enrolled to an intervention group. Students undertook a baseline ward round and received individualised feedback, focused on distractor management and medical error. Following a lag time of four weeks students participated in a post-intervention ward round of comparable rigor. An independent group of 14 students were recruited to a control group – who underwent the same experience, but with minimal feedback. Error rates and distractor management were assessed during simulations and analysed using SPSS® software utilizing student t-tests and correlation co-efficients.
Results: There was positive correlation between medical error-making and the mismanagement of distractions (Spearman's co-efficient 0·663). At baseline medical error rates were high – with 72 and 76 mistakes in the intervention and control groups respectively: many errors were life-threatening. Simulation training minimised error-making: with errors falling by 76% in the intervention group (p-value <0·0001) and 42% in the control group (p-value <0·0001).
Conclusions: Medical students and future surgeons are not inherently equipped to manage common ward-based distractions in order to mitigate medical error, but these skills can be readily taught through simulation. In light of the Francis report, patient safety teaching will come under sharper focus. In response, this is the first study of its kind to demonstrate an undergraduate teaching intervention with resultant positive change in patient safety behaviour.

Education and Training 0882

STARSurgUK: Improving Medical Student's Perceptions of Surgical Academia Through Participation in a Collaborative, Multi-Centre, National Cohort Study

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Aims: Medical students can struggle to engage in high-quality research and audit outside of formal programmes, such as intercalated degrees. STARSurgUK is the world's first student-led research collaborative network in

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surgery, completing its first national study in 2013; 253 students participated across 110 hospital centres. This parallel study assessed the educational baseline and impact of participation.

Methods: Practical experience gained through STARSurgUK participation was supplemented with educational interventions including a 1-day training meeting at the RCSEng, e-learning modules, and YouTube educational videos. A pre-post, self-reported, non-mandatory electronic survey assessed collaborators' understanding and perceptions of academic research, audit, careers and the collaborative research model. Likert scales were utilised to compare data prior to and following participation in STARSurgUK. Paired differences were assessed using Wilcoxon signed rank tests (alpha = 0·05).

Results: 55 paired pre-post responses (23%) were received (M:F 58:42; median age = 23; planning a surgical career = 62%). Participation led to increased confidence in key generic academic activities including: appropriate data collection in a clinical setting ($p < 0·001$), presentation of scientific results ($p < 0·013$), communication with local research governance bodies ($p < 0·001$) and approaching clinical staff for local collaboration ($p < 0·001$). Collaborators also described an increased appreciation of research, audit and study design ($p = 0·001$). The majority of collaborators (98%) disclosed no previous interaction with trainee-led research collaborative networks but 95% were likely to engage further following participation in STARSurgUK. Collaborators' perceptions of academic careers remained unchanged.

Conclusions: This collaborative study empowered students to engage in surgical academia and promoted integration into trainee-led research networks. Collaborators reported increased appreciation and confidence in relation to essential generic academic principles and skills. The educational benefit of participating in such multi-centre collaborative studies warrants further attention.

Education and Training 0885

School of Surgery: Results from the Launch of an Open Access Surgical Education Platform

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Aims: Rapid technological innovations have led to a growing demand for online and portable learning resources. We have developed a series of audio and visual podcasts available free via Podomatic®, iTunes® and Facebook® based on a combination of undergraduate and ISCP learning objectives. We report a summary of the uptake following the first six months since launch.

Methods: Podcasts were made with subject matter mapped to curricular outcomes on the Intercollegiate Surgical Curriculum Programme (www.iscp.ac.uk). Following previous work by or group, audio podcasts were recorded as dialogue between interviewer and expert and all podcasts were around 10 minutes long as an optimal time for download speed and user acceptability. Podcasts were released weekly since launch in June 2014. Podcasts were hosted on Podomatic® (www.podomatic.com), syndicated via iTunes® and new releases announced via Facebook® (www.facebook.com/surgeryschool). Usage data was collected from statistics provided by Facebook and Podomatic.

Results: Forty one podcasts have been released at an average of 1·2 per week. Eighteen (44%) were supplemented with video or slides. The median duration of podcasts was 10·28 minutes (range 2·51-19·11 minutes). Twenty seven (66%) were dialogue and 31/41 of contributors (76%) involved were consultants. Eight broad topics were covered with colorectal surgery the specialty most frequently covered (15). To date, there have been 7200 downloads across 27 countries. There was an 11-fold increase in monthly downloads since launching, with current monthly download figures standing at 2000. UK downloads account for 46% of total downloads, followed by the US (20%), Australia (8%) and Canada (5%). The peak download time is 6 pm GMT with >50% of all downloads occurring between the hours 6 pm-12 pm.

Conclusions: Open access surgical education using audio-visual media is a feasible and popular resource. Online platforms and social media spaces can be used to both host and promote these resources. Utilising social media can increase exposure on a global level and also generate meaningful data about target audiences and their online learning habits.

Education and Training 0890

Homemade Laparoscopic Simulators: A Viable Option for Surgical Training?

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Aims: The aim of this study was to evaluate whether basic visuospatial skills are improved by using a low-cost homemade laparoscopic simulators, thus making them a viable option for training junior surgical trainees.

Methods: 30 Medical Students were recruited to a 90-minute session using homemade laparoscopic simulators. Participants were asked to perform two tasks at the beginning, middle, and end of the session. Task 1 required 3 sugar cubes to be stacked, and in Task 2, 3 polo mints to be threaded onto a length of string.

We used the Shapiro-Wilk Test to see if our data was normally distributed, and analysed the time taken for each task attempt using Freidman's Rank Sum Test. We considered $p < 0·05$ as statistically significant.

Results: The mean time taken for Task 1 improved by 126 seconds, whereas mean time taken for Task 2 improved by 119 seconds.

The Shapiro-Wilk test showed our data wasn't normally distributed. Improvements in time taken for both tasks were statistically significant ($\chi^2(2) > 13·816$, $p < 0·001$).

Conclusions: An improvement in the mean time taken to complete Task 1 & Task 2 was seen, and those improvements were shown to be statistically significant. Our results suggest that low-cost simulation is a valid tool for improving visuo-spatial skills and could be used to train surgical trainees.

Education and Training 0891

A EWTD-compliant Rota Which Protects Elective Training Opportunities is Safe and Provides Sufficient Exposure to Emergency General Surgery: A Prospective Study

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Aims: Most studies conclude that training opportunities have decreased dramatically since the introduction of the European Working Time Directive (EWTD). In order to maximise training opportunities our institution introduced a EWTD compliant rota in which registrars do not work night shifts and elective training opportunities are protected. The aim of our study was to determine the safety and effectiveness of a EWTD compliant rota, which retains full exposure to elective opportunities, in achieving exposure of trainees to acute general surgical admissions and operations.

Methods: A prospective study of consecutive emergency surgical admissions. Data collected included time of admission, diagnosis, operative procedures, and several outcome measures. The data was analysed to compare exposure to acute admissions and operative procedures and patient outcomes during day and night shifts.

Results: There were 1156 emergency admissions over the study period. The diagnoses on admission covered a broad range of acute general surgical conditions. Significantly more patients were admitted during the day shift (mean 4·9 vs 1·6, $p < 0·001$) and almost all emergency procedures were performed during the day shift (mean 2·1 vs 0·3 procedures, $p < 0·001$). A registrar was the primary operating surgeon in 49% of cases and directly involved in over 65%. There were no differences between patients admitted during the day and night shifts in mortality rate ($p = 0·57$), length of stay ($p = 0·18$), admission to ICU ($p = 0·32$), requirement for surgery ($p = 0·26$) or re-admission rates ($p = 0·60$).

Conclusions: A EWTD compliant rota that protects elective training opportunities is safe for patients and provides adequate exposure to training opportunities in emergency surgery.

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Education and Training 0899

Piloting Smart Phone Software Applications for Assessment and Preoperative Treatment for Neck of Femur Fracture Patients: the NoF9

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Aims: It is well documented that neck of femur fractures represent significant levels of morbidity and mortality. It is also recognised that timely preoperative preparation can lessen poor outcomes.
Methods: Algorithms and guidelines from across the UK were analysed and broken down into a simple smart phone software application. This was then piloted within a local emergency department. Usage was monitored and personnel were surveyed on their thoughts as to its impact. A separate analysis of data on admitted patients from 6 weeks prior to the pilot commencing and 6 weeks after was analysed to examine if there had been any short term change in practice as a result of the app being implemented.
Results: Though long term data would have to be analysed in order to determine if there was any actual impact on morbidity or morality the initial findings of this pilot showed excellent use of app and also via the analysis of patients pre and post app implementation a greater compliance to protocols promoted via the app.
Conclusions: Though we would concede that any witnessed increase in compliance could be the effect of promotion of existing protocols via the smart phone app, the positive data regarding usage should not be ignored. Using smart phone applications to highlight local/national protocols in an easy and accessible manner, where we anticipate a boom of smart phone/tablet based software.

Education and Training 0921

Achieving Basic Surgical Competence in Botswana

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Aims: Worldwide basic surgical trainees (BST) struggle to achieve competence in surgical procedures. In Africa this may be partly due to the low numbers of trained surgeons to provide supervision. In Botswana two referral hospitals perform the majority of surgery. To improve access to surgery The Botswana Ministry of Health (MoH) has proposed basic surgical competencies for Medical Officers (MO). Our aims were to assess if the MoH competencies were attainable in 1 year and compare this to the training of BST in the developed world.
Methods: A logbook review of procedures performed by a MO in the academic surgery service in a Botswana referral hospital was performed. This was compared to the competencies drawn up by the MoH and data available from Ireland[1].
Results: In 6 months the MO was involved in 65 major and intermediate operations, 23 as assistant, 27 performed assisted by consultant, 6 with consultant present not scrubbed and 9 independently. 69 minor operations and 29 bedside procedures were performed. The table below gives samples of data from 6 months in Botswana and 2 year means for Irish BSTs.

Procedure	MO Performed	MoH target	Mean Nos for Irish BSTs	Irish target	% Irish BSTs reaching target
Appendicetomy	10	5	4·0	5	33
Inguinal Hernia	8	5	2·2	1	67
Wound Debride	3	5	0·8	2	16
CVP line	12	5	0·2	5	2
Chest drain	9	3	0·4	1	23
Wide excision	7	3	19·7	5	64

Conclusions: Attaining the basic surgical competencies drawn up by the Botswana MoH is possible in 12 months. This should enable MOs to perform basic surgery when posted to District Hospitals. Given the case load and supervised training BSTs from a developed country would gain a significant volume of appropriate surgical exposure from a rotation in Botswana.

1. Lonergan et al. BMC Medical Education 2011, 11:70

Education and Training 0933

SHO Lead Teaching – The Untapped Resource

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Aims: Teaching is not only obligation of doctors but also essential for an undergraduate department to meet their students' learning requirements. With increasingly hands-on clinical roles for consultants this is getting harder to do. Near-peer teaching has been described as a potential beneficial method of teaching for both the students and junior doctors involved, but it faces practical issues in its application. We aimed to establish if such a teaching method would meet teaching needs and practically possible in a busy surgical department.
Methods: Surveys were sent electronically to medical students and junior doctors placed at a large teaching hospital that were designed to establish the amount of clinical teaching being given, compare perceptions of junior doctor lead teaching to consultant lead teaching and establish if junior doctors were willing and able to provide teaching. SHOs in three surgical departments were then timetabled to provide teaching at a set time each week, for the third year students under their teams, as part of their rota. The student questionnaire was then repeated.
Results: Of the 21 SHOs 61% felt they were teaching only once a month; 85% of this being ad hoc. 71% were offering students teaching on the wards and 90% would like teaching to be part of their rota. 85% felt they had 1 to 3 hours available for teaching. SHOs were ranked as the best grade for teaching by the students before (n = 19) and after the programme (n = 23); 100% felt it is pitched at the right level and is more useful than consultant teaching (mean ratings 8·4: 7·4/10). Sixty-nine percent described SHOs giving at least half of their teaching and 92% stated the sessions were for at least 30mins after the programme compared to 15% and 52% respectively before ($p < 0·005$). Cancelled sessions increased; 56% described sessions being called off 'often' or 'all the time'.
Conclusions: SHO lead teaching is becoming desirable necessity with practical issues that need to be addressed. This programme increased SHO lead teaching by using a whole team to cover one tutorial session at a set time and so allow for their continually changing working patterns. However, issues with cancellations or doctors being called away continued. Formalising the teaching schedule by agreeing set times within the SHO timetable addresses this issue.

Education and Training 0953

Laparoscopic Inguinal Hernia Repair Training – Trainees View

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Aim: Laparoscopic inguinal hernia repair (LIHR) is recommended by NICE as the preferred technique for bilateral and recurrent hernias, and an accepted option for unilateral hernias. In the future it may become a best practice for inguinal hernia repair. This study aims to assess the trainees' views regarding LIHR in terms of its advantages, their interest in the technique and the available training opportunities.
Method We conducted a survey using SurveyMonkey® amongst the current surgical trainees in the West of Scotland Deanery (WoSD) utilising a simple questionnaire. We analysed their stage of training and their views on the best method of repair, any perceived advantages of LIHR, their interest in learning the technique, their current opportunities for training in LIHR and suggestions to improve the training.

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Results: 45 (41%) of trainees within the WoSD responded to our survey. All respondents were ST3 or above, with 19 (42%) in their final stages of training (ST5-8). Most believed both open mesh repair and LIHR were satisfactory techniques. Faster recovery and less acute and chronic pain were identified as the main advantages of LIHR. 5 (11%) trainees neither observed or assisted at LIHR in the past year. 27 (60%) trainees didn't perform LIHR during past year; 10 (22%) trainees performed less than 5 LIHR, 8 (18%) have performed 5 or more, with only 2 (4%) performing more than 20 LIHR. 31 (68%) respondents were keen to get trained in LIHR. 32 (71%) considered that either the training didn't exist, or was less than satisfactory in their current post. In terms of improving training 30 (66%) suggested a dedicated trainer in each hospital and 11 (24%) suggested centralising LIHR, with placement of trainees who wish to learn the technique.

Conclusion From our survey it is evident that a majority of trainees are keen to be trained in LIHR, but are dissatisfied with their current training opportunities. Centralising the service and dedicated trainers may be ways to provide structured training in LIHR in the WoSD.

Education and Training 0974

"Taking Surgical Recruitment to the Orchard" - A Review of School-Going Students Interested in Becoming Surgeons

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Aims: Each year University College Cork invites Munster secondary school students to experience life as a medical student. The second half of the day is spent at Cork University Hospital experiencing clinical life with an emphasis on surgical practice. This study sought to quantify surgical interest and explore the motivating factors among these students.

Methods: A focused questionnaire was developed containing a mixture of open answer, yes/no and Likert scale responses. All students were invited to participate. Data was tabulated and statistical analysis performed using SPSS (version 20).

Results: 88/96 (92%) students responded to the questionnaire, (31 males and 57 females) aged between 15–18 years of age. Surgery was the most popular speciality amongst both genders with 20 (22·7%) students wishing to become surgeons. Medical dramas influenced 22 (25%) with *Grey's Anatomy* being the most watched TV show (56·8%). Among these viewers there was a trend towards a surgical career ($p = 0·063$). 63 (71·6%) rated job satisfaction as the most important reason for their career choice while the prime concern of students (45·5%, n =40) was the long hours involved

Conclusions: Surgery is the most popular speciality among school going students interested in studying medicine. Many are influenced by television medical dramas, the most popular of which centres on surgical residents. From here onwards, until a trainee finally commits to a postgraduate career, this interest in surgery will depreciate. A better understanding of the motivating factors at each educational stage will allow us to better support trainees throughout their education.

Education and Training 0978

Surgical Training in Primary Care: A Cross Sectional Study of General Practitioners with Specialist Interests (GPwSI) in Surgery

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Aims: Government plans to increase the range of NHS services provided in primary care may affect surgical training. The aim of this study is to delineate the current volume of surgical procedures being performed in the community, and to assess the appetite for teaching surgical trainees in the primary care setting.

Methods: Delegates at the Association of Surgery in Primary Care (ASPC) Conference were asked to complete a non-mandatory 13-item questionnaire survey. The ASPC comprises General Practitioners with a Specialist Interest (GPwSI) in Surgery. Delegates were awarded 1-CPD point for completing the questionnaire. There were no consultant surgeons subcontracted to primary care in the cohort.

Results: Of 105 delegates, 65 (62%) completed the questionnaire. Each GPwSI performed a mean of 40·1 procedures per month (range 8–150). The most common procedure performed in primary care was vasectomy, followed by minor skin surgery. 98% of respondents regularly performed vasectomy, and 40% performed minor skin surgery. All believed that surgical training in primary care would be valuable for surgical trainees. While 78% (or 76%) felt competent to train Foundation (or Core) Trainees, only 51% (or 35%) felt competent to train ST3-4 (or ST5-8) surgical trainees ($p = 0·0012$). Procedures that GPwSI felt competent to teach surgical trainees ranged from endoscopy to carpal tunnel decompression, and abdominal wall hernia repair. Up to 60% felt competent to teach minor skin surgery and/or vasectomy. Three quarters of respondents would commit ≥25% of their lists to training, in return for professional recognition and/or payment. 35% of respondents had MRCS/FRCS, while 29% had no formal surgical qualifications. 25% had completed a surgical certificate/diploma or course of less than 1-year duration.

Conclusions: Surgical training of GPwSI is variable. For surgical training to take place in the community, the procedures performed in the community should be integrated into the ISCP, and training in primary care should be regulated. Neither of these currently takes place.

Education and Training 0989

Surgical Skill Video Resources for Workshop Use and Online Access By Medical Students

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Aims: The cost of undergraduate medical training in the United Kingdom has risen due to increased University fees. Long-term surgical skill acquisition requires repetition but online resources demonstrating skills often incur a fee. We aimed to produce video resources for use in skills workshops run by the undergraduate surgical society 'Scalpel' and for online access. We evaluated the value in a workshop setting. In this workshop's attendees, we evaluated intentions and opportunities to maintain surgical skills and to access the videos online.

Methods: Video were shot using a Canon Legria HF M52 HD Camcorder, audio accompaniment produced separately and combined using Apple iMovie software. Equipment was loaned from the University of Manchester. Demonstration of surgical technique followed a sequential pattern of: skill demonstration; step-by-step skill breakdown, including repetition of key steps and use of different camera angles; repeated skill demonstration. Video efficacy was evaluated through a questionnaire to attendees of the knot-tying workshop at the Scalpel annual conference. A scale from 1 to 7, with 7 being *strongly agree* and 1 being *strongly disagree*, was used for responses.

Results: No costs were incurred. Three videos were produced: One handed reef knot tying; instrument tying; tying at depth. These videos were uploaded to the Scalpel surgical society website for open access. Twenty-nine students attended the workshop. Attendees gave questions on ease of following the video, understanding instructions and appropriate video pace, median scores of 6·5, 6·5 and 7 respectively. Most attendees intended on accessing the video resource post-course (median score 6·5, range 4–7) but a wider range of responses to future plans to maintain new skills (median score 6, range 1–7) and the presence of surgical skills in the undergraduate curriculum (median 6, range 3–7) were seen.

Conclusions: Video resources can be made for medical students to teach surgical skills at no cost to an undergraduate society. These allow students to maintain and refresh skills at their convenience. In a self-selected group attending an undergraduate surgical conference, good motivation and adequate opportunity to maintain skills was seen. Further videos are now planned for the future

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Education and Training 1000

Developing an Assessment Framework for a Five-Day Course on the Management of Surgical Emergencies (MSE)

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Aim: To develop and evaluate an assessment framework for the MSE course through assessing correct domains of learning, using assessment tools that produce results that are valid, reliable and feasible, so that courses can be offered to the same standard for future handover to the College of Surgery of East, Central and Southern Africa (COSECSA).
Methods: Domains of learning for assessment were established; essential skills (e.g. CPR) were identified. Content validity was ensured through end-of-course tests and a generic continuous assessment tool. Predictive and face validity were evaluated from 6-month post-course feedback and construct validity from rating scores on behavioural skills. Reliability was assessed through comparing intra-course variation for individual trainees and comparing inter-course variation in distribution curves of scores. Feasibility was improved through extensive informal and formal feedback from local tutors and participants.
Results: In 2011–2013 MSE was successfully completed by >70 surgical trainees who were assessed in Knowledge, Technical proficiency, Communication and Teamwork, and Judgement and Decision Making. There was good correlation between scores from different assessment methods and different course modules; continuous assessment and summative scores correlated well. Both excellent trainees and those that needed extra help were identified early on the course. There was good inter-observer and inter-course reliability and 6-month feedback confirmed good predictive, construct and face validity.
Conclusion It was possible to develop a robust assessment framework for a skills course in a foreign clinical and teaching environment that showed excellent validity and reliability, and is practical and feasible for handover to COSECSA tutors in 2014.

Education and Training 1001

Laparoscopic Skills, like Riding a Bike or you lose what you do not use!?

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Aim: The validity of virtual reality training has been repeatedly proven, However, The ideal time to start training remains a question that still needs to be answered. Is learning laparoscopic skills like riding a bike or you lose what you do not use?
To investigate the learning curves toward proficiency in laparoscopic cholecystectomy using virtual reality and the to test the retainability of skills after a significant time of no training and no laparoscopic exposure
Methods: We randomly recruited and progressively trained 30 novices toward full laparoscopic cholecystectomy procedure, on a high-fidelity, commercially available Virtual Reality simulator (Lap Mentor, Simbionix) using a validated training curriculum with expert performance used as proficiency criteria. We re-tested the novices one year after the initial training to investigate the skills retainability.
Results: All novices reached proficiency level in all tasks, ($P < 0{\cdot}000$) Time taken to finish the full procedure decreased from 9:57 to 7:10 min in MTST of 30:04 minute. Economy of movement improved from 551 to 363 and the Total path length improved from 1368 – 807 cm number in of 3·4 trials. One year after the initial training with no further exposure to laparoscopy or simulation we investigated the retainability of the skills. 90% of the participants kept their time proficiency, 80% kept the economy of movement and 60% remained within the TPL proficiency.
Conclusion The role of Virtual reality is evident and more prominently the skills obtained using VR were kept even after significant time of no training and no exposure.

Education and Training 1006

Developing a Surgical Critical Care (CC) Teaching Portfolio for East/Central Africa

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Aim: To evaluate how a CC teaching portfolio was developed for surgery service providers in COSECSA countries (College of Surgeons of East, Central and Southern Africa), as requested by local surgeons, consisting of taught courses, reading material, thorough assessment and open course evaluation opportunities.
Methods: CC training courses aimed at different levels of need were developed over a four year period from established principles of teaching CC in the UK, but course contents and delivery were adapted to local needs. An open source learning resource was developed through online review articles written for purpose, leading to an electronic handbook. Feedback opportunities for local tutors and course participants were created through informal feedback sessions, end-of-course rating and open text course evaluation forms, pre- and post-course surveys and 6-month post-course evaluation forms.
Results: Since 2009 eleven courses for health officers, surgical trainees, senior surgeons, nurses and anaesthetic assistants have been run in four COSECSA countries. The course curriculum has been established with high feasibility, with constant revision. Consistently high feedback scores show excellent inter-observer reliability. Qualitative feedback confirmed good predictive and face validity with 95-100% of participants indicating that course had a significant impact on surgical practice.
Conclusions: CC teaching to fit in with COSECSA goals can be delivered through a small group of visiting tutors, with input from local surgeons and course participants, with high validity, reliability and feasibility ratings. Feedback indicate that CC courses fill a specific need that have not been available previously; it improves clinical decision making, teamwork and communication in high pressure clinical situations.

Education and Training 1007

Laparoscopic Training in Virtual Reality: Haptic vs. None Haptic

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Aim: Simulation training have been proven effective, however the superiority of different simulators is still under investigation. In our study, we examine the effect of haptic feedback on learning processes.
Methodology: 42 novices were recruited and trained using validated training curriculum with proficiency criteria, using commercially available VR simulators, with and without haptic feedback.
Results: Thirty-nine novices completed the training curriculum and reached proficiency levels In the Haptic (HF): In basic tasks 5 proficiency reached in mean total simulator time (MTST) of 12:49 compared to 16:28 minute for none haptic (NHF), with average number trials of 7·3 compared to 7·7 respectively. In basic tasks 6, HF proficiency reached in MTST of 12:20 minute compared to 19:22 minute for NHF with average number of trials of 7·2 compared to 9 respectively. In procedural task 3 HF proficiency reached MTST of 26:42 minute compared to 59:19 minute for NHF with average number of trials of 5·33 compared to 12·4. In procedural task 4 HF proficiency reached in MTST of 27:40 compared to 1:05:25 minute for NHF with average number of trials of 5·2 compared to 8. In full Procedural LC HF proficiency reached in MTST of 30:04 compared to 1:27:43 minute for NHF with average number of trials of 3·4 compared to 8·1.
Conclusion As the complexity of the tasks increases the superiority of the haptic feedback becomes more prominent. While both groups reached proficiency at rather close averages, the novices trained on haptic feed back simulator demonstrated faster learning curve and required less simulator time.

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Education and Training 1030

Foundation Year Doctors as Teachers of Year 3 Medical Students. Collective Analysis of Pilot Schemes Undertaken at Multiple NHS Trusts

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Aims: The UK Foundation Programme Curriculum, which oversees the training of newly graduated doctors, places an emphasis on delivering medical student teaching as a core competency. Pilot schemes were carried out at a University Hospital (UH) and a District General Hospital (DGH), where Foundation Year 1 and Year 2 doctors (FYDs) provided teaching for Year 3 medical students via a teaching scheme. The aim was to assess the level of student engagement and the impact of these schemes, co-ordinated by FYDs themselves.

Methods: All 48 and 36 Year 3 medical students on placement at a UH and DGH respectively were invited to participate. UH arranged teaching into small group sessions (6 students) whilst DGH ran seminars for the entire group. Tutors were FYDs who volunteered to teach one of several topics including physical examination and data interpretation. FYDs were given considerable flexibility in designing their own sessions. The schemes ran for one academic semester.

Results: Qualitative data collection using free text feedback questionnaires from both the students and FYDs was undertaken. At the UH, students rated the teaching as either excellent 44% (16/36) or good 56% (20/36). All 36 respondents felt that the teaching scheme was useful in addition to their regular scheduled teaching. At the DGH, 87% of responses commented the teaching was at the right level. Free text feedback from the FYDs (19/35 UH) and (11/12 DGH) reflected that that the experience was rewarding and an indicated it was a good opportunity to improve their teaching skills. At both Trusts, students performing clinical examinations, overseen by FYDs, was greatly appreciated. Improved confidence of the students was a common theme.

Conclusions: These pilot teaching schemes demonstrate an effective way of engaging Foundation Year Doctors in education and also providing Year 3 medical students with additional useful teaching. The teaching timetable idea underpinning the scheme could be easily reproduced at other hospitals in the UK.

Education and Training 1058

Outcomes of a Local Delivered Training Programme: Trainee Viewpoints

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Aims: With the current reduction in trainee hours worked, there has been concern raised that traditional surgical teaching methodology is not adequate to supply all learning requirements for trainees. Our unit introduced a programme to ensure that core-learning needs were being met.

The programme devised covered technical skills (using wet-lab & simulation); case discussions in small groups & knowledge based learning (journal club format). These were consultant led sessions.

We describe the trainee-reported viewpoint of this programme.

Methods: Following the programme, trainees were sent a questionnaire examining particular aspects of the training programme and asking them to rate the overall utility of the programme to the individual. Data was collected using a web-based questionnaire, with a combination of Likert-type scales and open box questions. Results were then collated and key themes from the questionnaire identified.

Results: During the study period, eleven surgical registrars were involved with the teaching programme. Seven completed responses were obtained. Trainees were between ST3 – ST6. Overall, 85·7% of the respondents reported this training programme provided an "excellent" addition to their current existing training. 80% of respondents found technical skills labs to be "very relevant" for their current state of training. 100% of respondents reported the same for case discussions & journal exercises.

Conclusions: Overall, there was a very high satisfaction level amongst trainees with the programme. Respondents perceive a need for additional training opportunities and a programme such as we have devised appears to provide a number of teaching goals.

Education and Training 1064

Ten Tips for Training in Upper Gastrointestinal Endoscopy – Lateral Deviation is the Key for Visual Intubation

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Aims: Training in upper gastrointestinal endoscopy is often based on the trainer's own method and experience. Specifically, the technique for oesophageal intubation is often poorly taught, and if performed incorrectly, may cause irritation to the vocal cords, causing distress to the patient and premature termination of the training opportunity. The JAG endoscopy training system DOPS evaluation describes "oesophageal intubation while maintaining a luminal view" but does not specify how to achieve this. We aimed to create a simple ten-step method to provide a framework for teaching oesophageal intubation.

Methods: The online learning tool was developed, systematically dividing the procedure into ten simple-to-follow and easily reproducible steps. Each step was illustrated with endoscopic photographs and a video of the complete procedure. The tool was linked to the trust endoscopy training page on the trust website.

Results: The learning tool was based on ten simple steps. For example, Step 1) Check the instrument – insufflation, irrigation and suction. Check both wheels and their locks. Check that the light is on. Step 2) Lock the small wheel horizontally and check that when the up/down wheel is turned, the scope bends in a straight line without deviating to either side. Step 3) With the head of the scope in the left hand, firmly hold the gastroscope 20 cm from its end.....etc.

Conclusions: Our experience using this tool indicates that trainees with no prior experience of upper gastrointestinal endoscopy can achieve successful oesophageal intubation consistently with minimal distress to the patient. Further evaluation is being performed using outcomes of patient comfort, number of attempts and success of oesophageal intubation. This method should be adopted for standardised training of future endoscopists.

Education and Training 1070

"Dentists in the Hospital" Confidence of Maxillo-Facial Trainees in Managing Surgical Patients on the Ward

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Aims: Maxillo-facial surgery (OMFS) senior house officers (SHOs) with undergraduate dental degrees enter into the unfamiliar medical hospital environment each year, often with limited experience.

This project examined the confidence of OMFS SHOs in the management of surgical patients on the ward, highlighting shortfalls in knowledge and training with the aim to address these, and influence future trainee education

Methods: New dentistry-trained maxillo-facial core trainees from 4 different hospitals in a single Strategic Health Authority were asked via questionnaire about their preparedness and understanding of what their new job entailed. A key focus was peri-operative assessment.

100% of trainees felt unsure or unprepared.

When asked about treating patients, only one trainee felt confident to treat Acute Coronary Syndrome (ACS) and no trainees felt confident they could treat sepsis.

A teaching session on management of post-op and medical complications was subsequently arranged and attended voluntarily by the trainees. The session included simulation of ward-bleep conversations and simulated patient scenarios.

Results: After the session greater than 80% of trainees in attendance were confident to treat ACS, anaphylaxis, sepsis and Pulmonary Embolism.

Conclusions: Our project demonstrated inadequate knowledge in various areas of 'ward medicine' which, with minimal additional teaching, may be effectively addressed. There should be a greater emphasis on the identified

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areas in OMFS trainees' induction program and we hope that our findings can encourage relevant stakeholders to establish formal pre-job medical training with simulation for all incoming dentistry-trained maxillofacial core trainees.

Education and Training 1099

The Development of an Objective Structured Teaching Examination for Doctors

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Aims: Teaching is an important role of all doctors. In the UK there is no formal programme for teaching doctors to teach or to assess their teaching. We aimed to devise a feasible and reliable teaching assessment.
Methods: US Objective Structured Teaching Examination (OSTE) stations were reviewed and found to be unfeasible for use with UK doctors. An expert panel created six stations. We ran an OSTE in which foundation doctors taught, and were assessed by, students. We collected evidence regarding the acceptability, feasibility, validity and reliability of our OSTE.
Results: The students were able to complete mark sheets easily. Simple linear regressions of checklist to global scores ranged from 0·29 to 0·91. Internal consistency reliability was 0·682 (Cronbach's alpha). Students and doctors reported that the experience was very beneficial.
Conclusions: The OSTE was feasible and acceptable to both students and foundation doctors. There is evidence of validity in four stations with moderate associations of checklist and global scores. The internal consistency reliability was moderate to high: good for a small sample size. The OSTE was feasible, acceptable, valid and reliable. We need to train and assess doctors in teaching. The OSTE is a promising way of doing this.

Education and Training 1118

What is the Most Effective Pedagogic Practice for Operative Learning for Junior Surgical Trainees?

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Aims: To determine which pedagogic practice was superior for surgical learning

(a) learner watching an operative case
(b) learner watching the case with explicit description by the trainer
(c) learner performing the operative case under direct supervision and instruction This study is important as it is not known whether trainees initially benefit from watching a case before the additional cognitive requirements of being invited to perform the case under instruction.

Methods: This experimental study was conducted in a simulated operating theatre. The operative case was a cadaveric porcine liver-gallbladder placed within a box-trainer and draped as for a laparoscopic cholecystectomy. Matched participants were randomized to the three experimental groups and exposed to 15 simulated operations each. 225 simulated operations were performed in total and learners were assessed from video recorded footage on 5 separate occasions, over the course of the study, performing the operation unassisted. The validated OSATS tool (global rating) and CAT tool (procedure specific rating) were used by two independent blinded assessors to rate technical performance.
Results: Significant learning was demonstrated by a Pearson product moment correlation in the learners trained by performing the operative case under supervision p =0·033 OSATS scores and p <0·005 CAT scores.
No learning was demonstrated in the experimental group purely watching the procedure p =0·864 OSATS scores and p =0·757 CAT scores.
Explicit description by the trainer appeared to enhance learning p =0·074 OSATS and p =0·077
Conclusions: When safe to do so junior surgeons should be enabled to perform operative cases under supervision, or if this is not possible, to receive explicit description from a trainer about what they are doing, as this significantly enhances trainee learning.

Education and Training 1123

Mature Student Medical School Graduates have a Better Experience as Surgical F1 Doctors than School Leaver Graduates

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Aims: This study aimed to assess and compare the reported experiences of mature student medical school graduates and school leavers working as Surgical F1 Doctors.
Methods: A survey of 59 surgical F1s was conducted. The survey tool consisted of a 34 item, paper based, anonymous, self report survey. It covered 10 areas: On the Ward; Formal Teaching & Assessment; Feedback about Clinical Work; Support; Organisation & Management; Learning Resources, Research & Audit; Personal Development; Workload; Motivation; and Overall Experience. Each question used a 5 point Likert scale. The Mann–Whitney U-Test was used for statistical analysis. $P < 0.05$ was considered statistically significant.
Results: 11 of 11 mature student graduates and 46 of 48 school leaver graduates completed the survey. A more satisfactory overall experience was reported by mature student graduate F1 doctors (mean scores =4·3 v. 3·7, $P < 0.05$). Mean scores in all other categories were broadly equal.
Conclusions: This study suggests that mature students have a more positive experience as F1s than school leavers.

Education and Training 1132

The Role of Student Led Events in Addressing Misconceptions of a Career in Surgery for Women

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Aims: Research by the Women in Surgery (WinS) group and the University of Exeter in 2011 highlighted that only 26% of surgical trainees and 9% of surgical consultants were female. Authors suggested women felt less likely to succeed in a surgical career. This study aims to investigate the use of a student led conference to address this concept.
Methods: In January 2013, the first national student led WinS conference occurred. Attendees (160 females) were invited to complete an anonymised 5-point Likert scale questionnaire following the conference. The paired t-test was used for statistical analysis.
Results: There was a significant increase in female students considering a surgical career after (88·0%) compared with before (62·7%) the conference ($p < 0.001$). Common misconceptions were significantly reduced ($p = 0.005$). A high percentage of students agreed that the conference helped refine goals (82·7%), inspire (100%) and increase understanding of the role of WinS (77·3%). Students enjoyed the practical workshops (98·7%) and the majority (77·3%) wished for further WinS events to occur.
Conclusions: This novel event suggests that the combination of talks discussing the role of women in surgery, together with practical elements, is useful for female undergraduates interested in a surgical career. A reduction in misconceptions and increase in awareness will ensure a robust future for surgery.

Education and Training 1137

Patient Feedback During Core Surgical Training: Development and Feasibility of a New Workplace Based Assessment

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Aims: To develop an effective and user-friendly patient feedback tool for use during Core Surgical Training, in order to help trainees reflect upon and improve patient interaction skills at an early stage in their careers.

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Methods: A standardised form was developed to include the most important aspects of the doctor-patient interaction. We gathered the trainees' opinions about the predicted usefulness of patient feedback before introducing the process, as well as a self-assessment of communication skills.
Eight Core Surgical Trainees (CSTs) in one hospital were asked to request feedback from 15 patients within a month period in a variety of clinical settings. Trainees were asked to discuss their feedback with an educational or clinical supervisor as part of their multisource feedback. Subsequently, trainees were asked to give their feedback on the process by completing an evaluation questionnaire and attending small group discussions and the results analysed.
Problems with the process were identified and changes were made to the process before being introduced to all CSTs in 15 hospitals within the same deanery.
Results: Before taking part, the majority of the trainees rated their own communication skills highly but felt that patient feedback would still be useful to improve and develop their professional practice. Several practical problems were encountered in the process of incorporating the tool into their training. These included problems of selection bias, assuring anonymity and the time taken for patients to complete the questionnaire. Most trainees had identified shortcomings in their communication skills and felt more able to improve upon these as a result. Overall, trainees felt that the process had been very useful and would be happy to undertake the exercise again.
Conclusions: Using a patient feedback tool to improve consultation skills during Core Surgical Training is feasible, useful and cost-effective. It would prove an invaluable part of the multisource feedback as a workplace based assessment and prepare surgical trainees for similar requirements at GMC Revalidation.

Education and Training 1151

Surgical F1 Doctors on Firm Based Attachments Report a Better Learning Experience than those on Ward Based Attachments

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Aims: The change from a F1 ward based structure to a firm based structure at a large city centre hospital enabled assessment of this on F1 learning experience. This study aimed to compare the perceived learning experience of Surgical F1 Doctors when working on a single ward supporting multiple firms or when working as part of a single firm across the hospital.
Methods: Two surveys were conducted of surgical F1s during the final week of a 4 month ward based surgical attachment and the final week of a 4 month firm based surgical attachment. The survey tool consisted of a 34 item, paper based, anonymous, self reported survey. It covered 10 areas: Experience on the Ward; Formal Teaching & Assessment; Feedback about Clinical Work; Support; Organisation & Management; Learning Resources, Research & Audit; Personal Development; Workload; Motivation; and Overall Experience. Each question used a 5 point Likert scale. Average responses are reported as Mean (Mn) and Mode (Md). The Mann–Whitney U-Test was used for statistical analysis. $P < 0{\cdot}01$ was considered significant.
Results: 21 of 21 Ward based F1s (WBF) and 19 of 20 Firm based F1s (FBF) completed the survey. Higher satisfaction was reported by FB versus WB in the categories of: Experience on the Ward (Mn 3·8 v. 3·1; Md 5 v. 4; $P < 0{\cdot}01$); Clinical feedback (Mn 3·8 v. 3·3; Md 4 v. 3; $P < 0{\cdot}01$); and Organisation and Management (Mn 3·9 v. 3·1; Md 5 v. 4; $P < 0{\cdot}001$).
Conclusions: This study supports the positive learning experience of F1s in a firm based structure in areas that would be expected from closer links with senior doctors and more consistent access to patients during their admission. It does not highlight any benefits from a ward based structure on learning experience.

Education and Training 1154

Does an FRCS Deanery Teaching Programme (DTP) Fulfil Training and Educational Requirements for Completion Certificate of Training (CCT) and Consultant Practice in General Surgery?

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Aims: Our aim was to elicit any deficiencies in training for a CCT in general surgery for registrars within our deanery. Excellent and dedicated teaching programmes have been well established but focus on passing the FRCS exit examination and may not fulfil all the educational requirements for consultant practice.
Methods: Using small focus groups and one to one interviews with 10 Speciality Trainees (STs) whom had passed the FRCS exam, data was collected to establish any deficiencies and propose a syllabus of educational interventions to address these. The format, frequency and subject matter of educational sessions were calculated based on the needs of the STs from this appraisal process.
Results: The median time left remaining in training to CCT was >18 months. All trainees felt the need for generic ongoing teaching to meet the requirements of consultant practice and optimal use of the remaining educational time was of paramount importance. Most highlighted deficiencies were not speciality specific and requirements were broadly categorised into 3 groups.

1. preparation for consultant practice, finance/leadership and human factors
2. obtaining a position and interview skills, process and hot topics
3. retaining a position, complaints and job planning

The syllabus was presented to the programme director and formalised as part of the ST training with Post FRCS status. The programme has now become registrar lead and is constantly updated and evolving to meet the needs of the registrar body. 4–5 whole educational days per annum are industry sponsored and mandatory attendance. Feedback from the first cycle has been unanimously positive.
Conclusions: Post graduate education needs for ST trainees need to be expanded to help adapt for consultant appointments and practice. A bespoke registrar lead programme can provide this with generic topics and training evolving as required. We have invited cross speciality and cross deanery trainees to attend in the future to learn from our experience and help instigate similar programmes locally using our model.

Education and Training 1174

Utilising the Primary Arteriovenous Fistula as a Training Platform

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Aims: Arteriovenous fistulae (AVFs) are the preferred option for vascular access as they are associated with lower mortality in haemodialysis patients compared to those patients with arteriovenous grafts (AVGs) or central venous catheters (CVCs). We sought to assess whether vascular access outcomes for surgical trainees are comparable to fully trained consultants or associate specialists.
Methods: A prospectively collected database of patients was created and information was collected regarding patient demographics, past medical history, pre-operative investigations, grade of operating surgeon, type of AVF formed, primary AVF patency rate and the cumulative AVF survival.
Results: One hundred and sixty-two patients were identified as having had vascular access procedures during the 6 month study period. Primary AVF patency was established in 123 (86%) of these AVFs and 87 (70·7%) were used for dialysis. There was no significant difference in survival of AVFs according to grade of surgeon (consultants and associate specialists versus trainee surgeons; log rank x^2 0·984 p =0·61) or type of AVF (radiocephalic versus brachiocephalic AVF; log rank x^2 0·472 p =0·79). Patency rates of successful AVFs at one and two years were 60·9% and 47·9% respectively.
Conclusions: We have demonstrated that there are no significant differences in outcomes of primary AVFs formed by trained versus trainee surgeons. Creation of a primary AVF represents an excellent training platform for intermediate stage surgeons across general and vascular surgical specialties.

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Education and Training 1192

General Surgical Trainee Feedback-Seeking Behaviour in the Context of Workplace Assessment (WPBA)

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Aims: To investigate surgical trainees' feedback seeking behaviour in the context of WPBA.
Methods: Questionnaire to General surgical trainees in 23 sites across England, Wales and Scotland. Questionnaire devised used validated instruments from psychology. A hypothetical model devised on the basis that trainees actively seek feedback in the workplace both within and outside WPBA. Psychological research (business people and helicopter pilots) suggests that goal orientation can inform individuals perceiving feedback benefits and costs which can determine individuals engaging in seeking feedback via inquiry and monitoring. Supervision (supportive and instrumental) is important in feedback seeking behaviour. Goal orientation (learning = "*desire to develop new skills and improve*" and performance = "*desire to prove competence and gain favourable judgements*")(vandeWalle). Supportive and instrumental leadership (Stogdill). Feedback benefits "*to meet goals/ego enhancement*" and costs "*feedback which doesn't fit self-image or makes them look incompetent*" (Ashford). Feedback monitoring "*trainees observing cues from their surroundings and interpreting interactions with trainers*" and inquiry "*directly asking for feedback*" (Fedor, Ashford). Data analysed using SPSS v21.
Results: 76% response rate (178/235). FY2 (5·6%), CT1-2 (38·2%), ST3-5 (39·3%) and ST6+ (16·9%). 65% M: 35% F. Overall Cronbachs alpha >0·75. Trainees completed average 48 WPBA/yr. Trainees viewed WPBA as an assessment (mean =4·2) on a scale of Learning =1 to Assessment =6. 73% trainees felt they received feedback when completing WPBA. Modelled data (all statistically sig $p < 0·05$) shows "learning goal orientation" associated with perceiving high "feedback benefits" which associated with seeking feedback via "inquiry" and "monitoring". "Performance goal orientated" trainees perceived high "feedback costs" which led them not to seek feedback directly via inquiry within/outside WPBA. Strong supervision associated "learning goal orientation".
Conclusions: Trainees tend to perceive WPBA as a test. Learning goal orientated trainees seek feedback via WPBA. Supportive and instrumental supervision has an important role to play in encouraging trainee feedback seeking behaviour.

Education and Training 1197

ACE (Advanced Clinical Experience) Medical Students and ePosters

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Aims: To use ePosters as an innovate method to teach Surgery to Final Year Medical Students.
Methods: Eighteen Final Year Medical Students at our institution were tasked with giving a five minute ePoster presentation to their peers at the end of their surgical attachment. Students had to learn a topic based on a case that they had themselves researched and then present this succinctly.
A strict five minute time slot was allowed for each presenter, with a further minute for questions from the audience. The students prepared a single slide as a visual ePoster to aid their presentation.
Three Teaching Fellows attended and marked the eposter presentations on a numerical mark sheet out of 50. A free text box for both positives and areas for improvement was included and written feedback was given to students that requested it.
Results: The Students scores were variable as expected. However the variety both in selection of surgical cases and the style and delivery of eposters was informative to both students and teaching fellows alike. The top three posters were illuminating enough to be selected for display within the learning environment. The winning poster used invention and song to illustrate the case and has been video recorded for further educational purposes.
Verbal feedback from Students was initially positive but written feedback given subsequent to the attachment confirmed the merit of this novel teaching method.
Conclusions: Students demonstrated learning across visual, auditory and in one case kinesthetic domains in this innovative educational session. The success of the project has meant inclusion in other areas of medical student teaching.

Education and Training 1198

The Impact of Music Tutelage On Surgical Performance

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Aim: Assess the impact of music tutelage and the crossing effect and its impact on performance of laparoscopic skills in novice surgeons.
Methods: We did a prospective study, 50 novices were openly and randomly recruited and trained toward proficiency. The instruction and assessment were implemented using the validated Fundamental of Laparoscopic Surgery (FLS) tasks. All candidates stated their experience in playing musical instruments in term of type and period of learning. The performance of individuals with musical experience was analyzed and compared to their other novice's counterparts. General liner modal was used to analyses the effect of music tutelage on laparoscopic performance.
Results: All completed the curriculum in accordance with laparoscopic proficiency criteria. All candidates were right handed apart from two. 28% were educated in either playing or tutoring musical instruments with at least 3 years of experience, with the piano and guitar being the most common musical instrument played. Music tutelage had no statistical significant effect on the median total time ($p = <0·974$) and total repetition ($p = <0·664$) to reach laparoscopic proficiency. In addition music tutelage had no effect of the number of errors made ($p = 0·935$).
Conclusion Despite the positive effect of music instruments playing on the visual-spatial and dexterity there is no major impact on surgical performance. Surgeons with previous exposure to musical tutelage appear to be at no added advantage.

Education and Training 1214

Statistics in the Surgical Community Essentiality or a Burden: A National Survey

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Aims: To determine the view of surgical tutors and trainees in their current level in interpreting statistics, probability and epidemiological methods and if such skills are useful in practice.
Methods: 123 trainees and consultants surgeons were interviewed through filling a validated questionnaire that investigates issues of interpreting statistics, probability and epidemiological methods in their current practice. There are five main domains (demographics, current work, undergraduate teaching in statistics, opinion about current undergraduate and interpretation of research findings) with multiple subheadings which were collected. Descriptive statistics carried out on each response and data analysed using SPSS and Stata.
Results: The average year of qualification was 2000; 24% (n = 30) were consultants and 72% (n = 89) were trainees.36% had post graduate research qualifications (MRes, MD, MSc, MPhil, PhD). Surgeons response to that probability and statistics is useful for activities like: accessing clinical guidelines and evidence summaries were (74%), explaining levels of risk to patients (70·7%), interpreting results of screening tests (59·3%), reading research papers and publications (71·5%), using research publications to explore management options(45·5%), and analysing numerical data (65%).51·8% hope they know more about statistics and if they had better understanding this will be highly manifested in the quality of their future surgical research.42·7%suggested that current curriculum should give medical students more basic and applied statistics to make it related to their future training.

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Conclusions: With the majority of the surgeons admitting on the importance of the statistics only 63·3% received undergraduate tutelage which reflect a great gap in our current curriculum, a problem that needs addressing. Furthermore teaching statistics in medical school should be more correlated to address medical research.

Education and Training 1224

A Multicentre Review of Case Based Discussion use in Learning from Perceived Errors within Surgical Teams

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Aims: To evaluate the use and perceived value of Case Based Discussions (CBD's) across grades and trusts within surgical teams. To establish to degree to which CBD's are used to reflect upon, and learn from adverse events. To identify ways in which CBD use might be improved and encouraged.
Methods: A four part questionnaire was distributed at the sites. The questionnaire was comprised of; CBD use estimation, incident recall, CBD coverage of the incident and freehand space to describe barriers to CBD effectiveness.
Results were collated, interpreted and analysed using excel.
Results: 40 respondents recalled a total of 80 incidents. The majority of respondents were SHO's (60%) and ST3's (25%) the majority of incidents recorded were recalled by this demographic (84%). 55% of respondents reported using CBD's frequently. Most frequently recalled incidents were documentation (27%), communication (21%) and failure to escalate (15%). Overall, only 42% of respondents used their perceived incidents as the basis of a CBD. However 75% of respondents stated that a CBD would have been valuable. 42% of respondents not using CBD's stated they were time consuming and difficult to use effectively with senior grades.
Conclusions: The CBD remains a valuable tool to reflect upon and learn from adverse events, but remains poorly used with less than half of respondents benefiting from their use. Time constraints and trainer availability have been suggested as major barriers to effective use, suggesting the need for dedicated time set aside for surgical trainees to benefit from Case Based Discussions. The majority of surgical trainees appear to value the opportunity to examine and learn from adverse incidents, but may require more support and guidance in doing so.

Education and Training 1243

Healthcare in your Pocket: A Quality Improvement Project to Reduce Anxiety in Senior Surgical House Officers when Starting a New Rotation

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Aims: 1. Assess the confidence of senior house officers (SHOs) when starting a new rotation in an oral and maxillofacial surgery (OMFS) unit at a busy teaching hospital in London.
2. Improve the local induction, patient safety and adherence to trust protocols.
Methods: The SHOs completed an online survey at the beginning of their rotation in the OMFS department. In response to the survey, a comprehensive e-induction manual was created and circulated amongst the SHOs in a format they could access and search on their smartphones. A second online survey was completed 1 month after the manual had been in use.
Results: The study was carried out from June - September 2013. 7 OMFS SHOs completed the original survey: dentists (n = 5) and core surgical trainees (n = 2). 2 were very anxious, 4 were anxious and 1 was confident when starting the role. Previously, a word document existed as the source of induction material. None of the SHOs had a formal local induction. 100% felt that an improved induction would increase their self-confidence and protect patient safety. The repeat survey revealed an improvement in confidence from all SHOs and 100% felt it was a useful resource in terms of content and accessibility.
Conclusions: There is a lack of confidence when SHOs join new departments, particularly dentists with no prior hospital or medical experience. This was further impacted by an outdated induction. In line with the 2012 Department of Health Framework for Technology Enhanced Learning we report our success in the use of innovative technology in providing access to information for busy junior surgeons. Further, our initiative is been considered for trust wide application in improving usability of induction material.

Education and Training 1247

A Pilot OSTE to Assess Teaching for Foundation Doctors

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Aims: The Objective Structured Teaching Examination (OSTE) has been used to assess quality of clinical teaching in America but has not transferred well to the UK. This study aimed to assess whether a Pilot Objective Structured Teaching Examination for Foundation Doctors (F1s) could become an assessment tool for the teaching and assessment of the teaching skills of junior doctors.
Methods: All parties consented to participate. The Pilot OSTE was structured like an OSCE. A cycles of six stations was performed by eleven volunteer F1s. Each station required the F1 to teach a medical student a specific ward based skill e.g. abdominal examination. A second student acted as a simulated patient where required. Both Students and F1s were also given a PowerPoint presentation with background and instructions for the OSTE beforehand and were asked to fill out questionnaires before and after the OSTE (100% compliance). Student Markers filled out mark sheets on each candidate in each station.
Results:

- Acceptability: average student response to "I am enthusiastic about the OSTE" on a likert scale of 1–5 was 4·25 out of 5. Average F1 score was 4·45.
- Feasibility: Students generally felt capable of filling in the mark sheets. Average score was 3·63 out of 5.
- Face Validity: F1s responses to "I felt that the skills today were appropriate". Average score 4·64 out of 5

Conclusions: Teaching is an important role of all doctors. The GMC states that only those who are adequately trained and qualified should be involved in teaching. There is currently no assessment of junior doctors teaching quality in the UK. Yet junior doctors are relied upon to teach students. This pilot OSTE showed running an OSTE with junior doctors and medical students was acceptable and feasible. Further work is required and a larger study is planned.

Education and Training 1250

Needle Guide Quickenshortens: The Learning Curve for Simulated Ultrasound Assisted Simulated Venous Needle Puncture; A Randomised Trial

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Aims: The task of US guided vessel cannulation can be technically difficult requiring the acquisition of hand eye coordination to direct both the probe and needle according to image display. Needle guides have been designed for use in conjunction with US probes to facilitate vessel puncture. We aimed to identify the learning curve of participants using conventional 'free hand' (FH) and 'needle guide' assisted (NG) techniques.
Methods: 36 participants were randomly allocated to either FH or NG group. They were asked to consecutively perform up to 30 vessel punctures on a simulated phantom model. Quantitative metrics (Total time, number of skin punctures and posterior wall punctures) were recorded and compared between the two groups. The moving average and Cumulative sum methods were used to delineate learning curves.

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Results: There was a significantly higher rate of posterior wall punctures in the FH group compared to the NG group (26% vs. 15%, p <0·0001). Participants in the NG group performed significantly less number of skin punctures than the FH group (mean: 405 vs. 515; p <0·0001). Using the CUSUM analysis, the acquisition of the learning curve was shorter for the NG group (mean 14·22 attempts, IQR 10·0-18·0) compared to the FH group (mean 20·36, IQR 14·0-28·0). The mean number of attempts to cross the threshold was significantly less for the FH group

Conclusions: Using this simulated model, subjects acquired needle puncture skills following consecutive needle puncture attempts using both the FH and NG assisted techniques. The NG assisted puncture appears to be more intuitive with a shorter learning curve. NG assisted puncture may have a shorter path to proficiency, allowing trainees to attempt needle puncture earlier and with a greater degree of safety.

Education and Training 1254

Development of an Emergency Cross-Cover Course for Surgical Trainees: Lessons and Outcomes from the Pilot

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Aims: An Association of Surgeons in Training (ASiT) position statement highlighted concerns regarding provision of out-of-hours (OOH) surgical cover. In response, we developed a one-day course for junior surgical trainees expected to cross-cover surgical specialities. Evaluating the impact of such courses on trainees remains a challenge. We present evaluation from our pilot and its impact on future course development.

Methods: Course content was designed by ASiT Speciality Representatives and delivered through lectures and group sessions over one day. Attendees completed pre- and post-course questionnaires. Standard evaluation data on perception of specific outcome attainment and usefulness was also collected. As a novel extension, data was collected on behavioural domains (capability, opportunity, and motivation) to determine barriers to utilisation of course knowledge and skills.

Results: 24 delegates attended the pilot; 14 were core trainees, 10 Foundation doctors. Ten surgical specialities delivered teaching and 85% of sessions were rated as 'useful or very useful'. Post-course, 55% of delegates felt that they could manage key emergency cross cover (ECC) presentations from all 10 surgical specialities 'totally independently' and 40% 'with help'. Overall, delegates felt that the teaching would alter their management of previous clinical situations. Significant barriers to the future implementation of the knowledge and skills learnt on this course were: perceived lack of responsibility, lack of senior support, and time pressure during OOH cover.

Conclusions: This ECC course was well received. It meets a definite educational need due to the changing surgical workforce structure. After the course, delegates felt able to lead the management for a wide-range of key surgical presentations. Delegates recognised that their learning on the ECC course would change previous management. Future course iterations will utilise more case scenarios, aimed to test decision making and practise senior discussions. We need to develop outcome measures to assess changes post-course in trainee confidence and influence on patient management. Through our Regional Representatives, we hope to run this course throughout the United Kingdom.

Education and Training 1273

Association of Surgeons in Training (ASiT) Foundation Skills in Surgery Course: 6 years of Aspiring Surgeons

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Aims: The Association of Surgeons in Training (ASiT) has run 16 iterations of it's one-day Foundation Skills in Surgery (FFS) course over the past 6-years, throughout the United Kingdom (UK). The course curriculum is aimed at senior medical students and Foundation Year (FY) doctors, to teach basic surgical skills and provide an introduction to life as a surgeon. This study aimed to review and evaluate the course content and subsequent career progression of delegates.

Methods: A non-mandatory online questionnaire was distributed to all previous FSS course delegates via email. Questions focused on demographics, career intentions and course feedback.

Results: Of the 267 course delegates, 63 responded (23·6%); 55·0% were male, 45·0% female. Of these, 28·4% Core Surgical Trainees, 21·7% were current FY 2 doctors and 18·30% were 5th year medical students.
43·3% reported that they attended the course as an FY1 doctor and 16·7% as a 4th year medical student. 88·3% intended on a career in surgery when they attended the course. 88·3% currently intended on a career in surgery; the most popular specialities were Orthopaedics (24·1%) and General Surgery (18·5%).
95·0% of delegates said they would recommend the course to a colleague and felt it had benefitted their surgical training. Over 51·7% of respondents reported that the course 'very much' enhanced their knowledge of basic surgical technique, and helped develop their surgical skills. 78·3% reported feeling 'more confident' in their surgical skills. The most enjoyable aspects of the course were reported as high tutor: delegate ratios during suturing, opportunity to practice and the orthopaedic skills sessions. The main changes suggested included more advanced suturing exercises and a higher practical: lecture ratio.

Conclusions: Evaluation of the current course format indicates it is successful in meeting its aims, with high reported satisfaction from delegates. Future development suggestions include maintaining orthopaedic skills and ensuring exercises for all skills levels.

Education and Training 1280

The Lesser-Spotted Medical Student: Understanding and Facilitating Student Presence on Wards

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Aims: To understand factors affecting medical student ward activity and how increased activity might be incentivised.

Methods: Medical students in their clinical attachments were emailed a link to an online survey containing ten questions pertaining to ward activity. Participants were asked about time spent on the ward, activities completed, their motivating and limiting factors and what would encourage them to increase their activity level.

Results: A total of 122 students responded to the survey. A majority of students (38%) stated that they had completed 1–5 hours of ward work in the past week. The most cited motivators were OSCE-related skills practice (74%), attainment of F1-level occupational skills (70%) and compulsory rotation sign-offs (58%). Students commonly identified feeling unwelcome (55%), not feeling part of the team (55%), exam pressure (57%) and staff busyness (50%) as factors which limited their ward activity. In addition, the most common user-defined limiting factor (62·5% of 16 user-defined responses) was insufficient time/over-timetabling. The least-identified learning outcome was inter-professional teamwork (20%). The most popular incentives identified were scheduled ward time with a teaching fellow (71%), an assigned ward contact/mentor (67%) and assigned patients/responsibilities (60%); the least popular incentives included the use of an attendance record (8%) or rota (17%).

Conclusions: Medical students have specific, skills-related objectives for their limited ward time and welcome modifications which better structure this time. This study has identified several viable, low resource-intensity interventions to encourage students to increase their ward activity. Although activity can be facilitated environmentally and extrinsically, medical students may need support to develop their independence and confidence as activity is reportedly dependent on the perceived attitudes of other staff members. Poor social dynamics is an important and modifiable limiting factor affecting ward activity.

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Education and Training 1281

ENT Junior on Calls: The Role of Education in Cross Covering

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Aims: Cross covering of craft specialties such as ENT is not uncommon and may increase with future training reforms. We aimed to determine the level of educational support for doctors cross covering ENT and their level of confidence in doing so.

Methods: An online survey was sent to foundation doctors and surgical core trainees throughout the UK. Views on cross covering of ENT on calls and levels of confidence in doing so were assessed. Views towards perceived appropriate teaching prior to cross covering were obtained. Additionally, experience in caring for paediatric patients and completion of paediatric life support training was assessed.

Results: 66 responses were received. Of these, 9 doctors had cross-covered ENT either in their present or a past placement. Of these, 67% did not feel competent to cross cover ENT, though only 33% had ever been in a situation in which they did not feel competent to deal with the clinical scenario at hand. Only 1 of the 9 cross covering doctors had received teaching prior to cross covering. Of all 66 doctors surveyed, 24% felt it was appropriate for other specialties to cross cover ENT. 96% felt that teaching should be provided prior to cross covering, for which written information was the most popular mode. Of those who had done an ENT job, 58% had no paediatric life support training. Only 2 of the 9 cross covering doctors felt competent in managing paediatric ENT patients.

Conclusions: The recent Shape of Training Review highlighted the need for increased utilisation of NHS doctors for generic service provision. It has been suggested that specialities are 'grouped' which may lead to increased cross covering of on call commitments and need to develop wider skills sets for existing trainees. It is therefore important that appropriate training is provided to these doctors. We suggest use of e-learning programmes to provide this.

Education and Training 1315

National Surgical Mentoring Scheme Pilot: Preliminary Results

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Aims: There is a growing body of evidence that mentoring is beneficial to career satisfaction, progression and life/work balance. The Association of Surgeons in Training have created a national mentoring scheme for surgical trainees, including training in coaching techniques for mentors. This study aimed to undertake a preliminary evaluation of the pilot scheme currently running and to identify challenges to its implementation.

Method All mentors and mentees volunteered to participate. Mentors were required to complete a formal training process with an accredited coach. The pilot and training scheme was created using a collaborative of all mentors, in conjunction with the mentoring coach. All mentor and mentee pairs signed a mentorship agreement, agreed on a code of conduct and the outcomes of meetings and objectives were recorded for later analysis. Demographic details were recorded for mentors and mentees. A novel 20-item self-administered online questionnaire was distributed to mentees to provide pilot evaluation.

Results: 18 trainees volunteered to become mentors. 7 have dropped out (39%); 5 were unable to make the initial training weekend, 1 due to ill health and 1 unable to complete the training. Mentors range from FY1 to Registrar, came from 6 different surgical specialties and from training regions ranging from Scotland to Peninsula and the Republic of Ireland. 31 trainees applied to be mentees. 8 (26%) dropped out; of these 4 did not fill in the survey and 4 dropped out prior to matching. Mentees were from all training grades, and came from 7 different surgical specialties and a variety of training regions. Matching was complicated by a disparity in region and specialty, but video calls (e.g. Skype®) were one solution.

Conclusion Pilot evaluation has highlighted a number of important factors for consideration including high drop-out rates. Dates for mentoring training must be established in advance of advertising. Dropouts are inevitable, but further investigation is required to elucidate reasons for mentees leaving the scheme. This pilot is a novel surgical trainee led scheme and will run until the end of January 2014 with further evaluation of perceived mentoring effectiveness based on multiple factors, for example: seniority, specialty and meeting format.

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Emergency Surgery

Emergency Surgery 0005

Hyperbilirubinaemia in Appendicitis: The Diagnostic Value for Prediction of Appendicitis and Appendiceal Perforation

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Aims: The aim of this study is to evaluate the diagnostic value of pre-operative bilirubin levels in the diagnosis of acute appendicitis and appendiceal perforation.

Methods: A retrospective analysis of 557 patients undergoing emergency appendicectomy over a 24 month period at a large teaching hospital. Hyperbilirubinaemia was defined as >25 μmol/L. Data was analysed using descriptive statistics.

Results: 484 of the 557 (86·9%) operated cases were found histologically to be appendicitis. 116 cases of the 484 were perforated (24%). Bilirubin levels were significantly higher in the group with appendicitis versus the group found to have a normal appendix at histology, (median (IQR) 12·0 μmol/L (9·00) vs. 8·0 μmol/L (7·00) respectively, $p < 0·001$), despite being within normal serum bilirubin range. Sensitivity of hyperbilirubinaemia for acute appendicitis was only 8%, however specificity was 94%. PPV was 85% and NPV was 26%.

While bilirubin was higher in patients with a perforated appendix vs. acute appendicitis (median (IQR) 13·0 μmol/L (9·00) vs. 11·0 μmol/L (9·00) respectively), there was no statistically significant difference in preoperative bilirubin levels between the perforated appendicitis cases and the non-perforated appendicitis cases ($p = 0·326$). However specificity of hyperbilirubinaemia for perforated appendicitis was 93%. Sensitivity was 9·4%, PPV was 24% and NPV was 82%.

Conclusions: Bilirubin levels may be high, but remain within normal range, in cases of appendicitis. Therefore bilirubin levels may be a useful measurement when investigating a patient with suspected appendicitis.

Hyperbilirubinaemia is highly specific with regards to perforation, a finding supported by other studies. However, possibly because of the few perforated cases in this study, we cannot recommend that hyperbilirubinaemia is used to predict perforation.

Emergency Surgery 0017

Current Evidence and Practice of Assessing Patient Reported Outcomes in RCTs of Unplanned Surgery

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Aims: Unplanned (non-elective) gastro-intestinal (GI) surgery represents a major workload for general surgeons and requires evaluation with patient reported outcomes (PROs) in addition to standard clinical measures. Little is known about PROs in this setting, however, where data collection is likely to pose particular challenges. This study aimed to assess PRO measurement and reporting in randomised controlled trials (RCTs) of unplanned gastrointestinal surgery.

Methods: A systematic review identified RCTs reporting PRO measures (PROMs) in five commonly performed unplanned GI procedures: appendicitis, gallbladder disease, small/large bowel emergencies, perianal abscesses and abdominal wall herniae. Details of the PROMs, standards of PRO reporting and risk of bias were assessed with the PRO CONSORT extension and Cochrane Risk of Bias tool, respectively. Reporting details of baseline and follow up assessments were scrutinised and data from core PRO domains were synthesised to examine treatment effects.

Results: Screening of 12,519 abstracts identified 20 full text papers with data from 2037 patients. Thirty five different PROMs were identified with the visual analogue scale for pain most frequently used (n = 13). Nine of the PROMs were identified as either primary or secondary outcomes in the abstract and PRO-specific hypotheses were stated for 5 studies. Evidence of instrument validity and reliability was provided in 8 PROMs. An explicit statement of the methods used to deal with missing data was made in one paper. The PRO-related methodological limitations of the studies were reported in 8 studies and in 18, PRO data were interpreted alongside clinical outcomes. Of 116 Risk of Bias assessments across the 20 included RCTs, 77 (66%) were judged as being at a high or unclear risk. Data from the PROMs were not synthesised because of the heterogeneity of tools,conditions and interventions.

Conclusions: There is a lack of well-designed and conducted RCTs in unplanned GI surgery that include PRO assessment. Development of a core set of outcomes that includes PROs is needed for use in future studies in unplanned general surgical settings.

Emergency Surgery 0067

Readmission Rate Following Appendicectomy – A Large Retrospective Study

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Aims: The evidence in the literature shows no difference in pelvic sepsis following laparoscopic and open appendicectomy. The purpose of this study was to assess the rate of re-admission following appendicectomy, length of hospital stay and management.

Methods: A retrospective analysis of all patients readmitted following emergency appendicectomy between January 2012 and May 2013 at a single tertiary care referral centre was included in this study. We analysed the length of hospital stay, modes of presentation and the costing's.

Results: 555 patients underwent appendicectomy during the study period. 534 (97%) were Laparoscopic appendicectomy(LA), 15 (2·7%) were Open appendicectomy(OA) and 3(0·3%) had conversion to open(LCO). There were 18(3%) readmissions within 28 days. Among the readmissions 15(83%) were following LA and all 3(17%) patients who had LCO were readmitted. Mean hospital stay following the primary appendicectomy was 2 days while the mean hospital stay following readmission was 4·4 days. 14/18 (77%) presented with generalized abdominal pain, 2/18 (11%) complained of right iliac fossa pain. One patient each presented with vomiting and constipation. 8/18 patients had intrabdominal collections and all these patients were following LA. One of the patients with LCO was readmitted with ileus. One patient had laparotomy and washout while two patients had Ultra Sound guided drainage costing £18000·00. All other patients were managed conservatively costing £19000·00.

Conclusions: In contrary to the literature our study shows an increase risk in pelvic sepsis following LA. It has been reported that pelvic sepsis is increased in patients having perforated or gangrenous appendix at the first operation. However in our study the appendix was only inflamed with no perforation or gangrene in the primary operation. The mean hospital stay following readmission is 2·4 days more than the first admission thus increasing the overall cost of treatment. Therefore based on our findings there is potential for a further long term study with a larger number of patients to analyse these data.

Emergency Surgery 0077

Imaging in Acute Appendicitis – Lessons Learned in Appendicectomy Patients at 2 District General Hospitals over a 6 Year Period

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Aims: To evaluate utilisation and diagnostic accuracy of imaging for suspected appendicitis, in context of the overall negative appendicectomy rate (NAR).

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Methods: A database of patients who underwent appendicectomy for suspected appendicitis over 6 years, in two district general hospitals, was compiled. Data was collected on imaging undertaken, including abdominal radiograph (AXR), trans-abdominal ultrasound (TAUSS), trans-vaginal ultrasound (TVUSS) and Computed Tomography of the abdomen and pelvis (CTAP). Results were compared with histology, and data analysed by sex in 4 age cohorts; ages 0–16, 17–30, 31–59 and >60.
Results: 2017 patients underwent appendicectomy: 1023 females, 994 males. 37·6% received imaging during work-up (415 AXR, 348 TAUSS, 141 CT AP, 88 TVUSS). 30·6% of females <30 and 22·2% of those >30 underwent TAUSS. TAUSS use in men was 6·9% across all cohorts. TAUSS had a sensitivity of 71·5%, and positive predictive value (PPV) of 81·3%. CT was used in 1·9% of patients <30, compared with 14·3% of patients >30. CTAP had a sensitivity of 94%, and PPV of 87·2%. AXR and TVUSS showed low sensitivities. The overall NAR was 27·2%. The highest NAR was seen in women aged 17–30 (42·8%), the lowest in females >60 (12·4%) and boys (18·1%).
Conclusions: The NAR is higher than in other studies where imaging use is more prevalent. Diagnosis of appendicitis is largely clinical. CT shows particularly good diagnostic accuracy. Our work suggests we should be making use of imaging pre-operatively; TAUSS as first line perhaps in those <30, but with a low threshold for CTAP in all age groups using dose reduction regimes.

Emergency Surgery 0095

Intraperitoneal Drains During Open Appendicectomy for Gangrenous and Perforated Appendicitis: A Systematic Review

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Aims: Intra-abdominal drains are still routinely used in the surgical management of gangrenous and perforated appendicitis. A systematic review was performed with the aim of establishing their influence on postoperative complications.
Methods: A literature search was conducted using the search engines PubMed and Cochrane Central Register of Controlled Trials (CENTRAL). Included were retrospective case-controlled and prospective randomized controlled trials on the use of drain for open appendicectomy in gangrenous and perforated appendicitis.
Results: Twelve articles were found that met the inclusion criteria. Intra-abdominal abscesses, postoperative ileus, surgical site infections, faecal fistulas and burst abdomen had significant higher incidences in the drain vs. non drain group (10·3%, 20·3%, 32·5%, 3·4% and 5·7% vs. 4·7%, 8·5%, 16·2%, 0% and 0% respectively). In most cases the risk was more than doubled in the drain group compared to the non-drain one. There were no significant differences among groups in terms of mortality while the results were underpowered to effectively evaluate wound dehiscence and adhesions.
Conclusions: The use of intraperitoneal drains for gangrenous or perforated appendicitis remains a contentious issue. Considering the management of gangrenous or perforated appendicitis by open appendicectomy, all but one study failed to demonstrate any reduction in the rate of postoperative complications and the majority of them found higher incidences associated with the use of drains.

Emergency Surgery 0153

Practice Patterns of Surgical Exploration for the Acute Scrotum

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Aims: Several aspects of management and intra-operative technique for the exploration of the acute scrotum are controversial. This study aims to quantify variation in surgical practice when exploring the acute scrotum and review current evidence regarding best practice.
Methods: A retrospective study of theatre records for acute scrotal exploration performed over the previous year at our unit was conducted. Parameters included: incision type; intra-operative findings; whether unilateral or bilateral fixation (orchidopexy) was performed; number of fixation points; suture material, whether the sac was everted; whether orchidectomy was needed; whether a urologist was present; the seniority of the performing surgeon; and whether a consultant was present.
Results: 27 acute scrotal explorations were performed.12 (44%) were positive explorations: confirming the presence of a testis with compromised blood supply. Of these, 9 (33%) were true testicular torsions. A further 2 explorations revealed a dusky testis; likely to have spontaneously detorted. A single scrotum had a non-viable, but non-torted testis. 15 (56%) were negative scrotal explorations: revealing a testis with adequate blood supply. The commonest finding for a negative exploration (7/15 or 47%) was a torted testicular appendage. With regards to fixation rates of one or both testes, these were: 11/12 (92%) for the positive explorations vs. 11/15 (73%) for the negative explorations. Of the 22 scrotums that underwent fixation, 8/22 (36%) were fixed bilaterally, 14/22 (64%) were fixed ipsilaterally. A remaining 5/27 (19%) underwent no fixation whatsoever. 16/22 (73%) of surgeons performed 3-point fixation, 15/22 (68%) using absorbable suture to do so. 6/27 (22%) of scrotal explorations resulted in orchidectomy. 20/27 (74%) of cases had a urologist present, with 14/27 (52%) performed by the registrar. A consultant was present in theatre for a third of cases (9/27).
Conclusions: A significant variation in surgical practice was observed. Whether to routinely explore both hemiscrotums in the context of a negative exploration and whether to perform orchidopexy in the context of a non-torted testis are controversial points. There is limited evidence to support specific practices: identifying a need for evidence-based guidelines to underpin best practice in the context of exploration of the acute scrotum.

Emergency Surgery 0163

Audit of Emergency Laparotomy Provision Against NHS London Emergency Surgery Standards

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Aims: To compare emergency laparotomy provision against NHS London standards for provision of emergency surgical care. A re-audit of a previous external audit.
Methods: A retrospective case note review of all patients undergoing emergency laparotomy between 1·10·12 and 31·12·12 at our institution.
Results: 39 laparotomies in 32 patients were included. 7 laparotomies took place at the weekend, 7 laparotomies started after 2200 hrs. ASA grade was not recorded in 12 cases and was grade 4 or 4e in 10. The procedure was carried out under the direct supervision of a consultant surgeon and consultant anaesthetist in 16/37 cases (0/20 previous audit). In ASA3 and above patients, anaesthesia was provided by a consultant anaesthetist in 8/17 cases (6/20 previous audit). The operations carried out at night were under the direct supervision of a consultant surgeon 4/7 cases (3/20 previous audit). A consultant surgeon was present in 28 laparotomies overall. A consultant anaesthetist was present in 19 laparotomies but 0/7 starting after 2200 hrs. Both consultant anaesthetist and surgeon were present in 7/17 cases with ASA of 3 or more. 22 patients survived to acute hospital discharge. Perforated viscus was the most common pathology, 12 cases. 9 laparotomies were for a complication of another procedure, 2 of these did not survive to discharge. Only 8 laparotomies commenced between 0800-1400 hrs.
Conclusions: The results represent an improvement of a previous external audit of compliance against NHS London standards, although with room for improvement. The relatively low numbers of laparotomies undertaken in the morning supports the provision of additional emergency theatre space, now in place. There remains room for improvement in the provision of senior support to higher ASA grade patients and during night-time operating.

Emergency Surgery 0170

Development of a Scoring Tool Against the Modified Glasgow Score Allows Prompt Identification of Patients with Acute Severe Pancreatitis

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Aims: Pancreatitis is the leading cause of benign hospital admission. Severe acute pancreatitis can lead to mortality in excess of 10% of patients affected by the disease. Several scoring systems are used to predict severity of an attack of acute pancreatitis. It is our experience that many patients are not scored promptly to identify the potential of developing complications. We devised a scoring tool based on the Modified Glasgow Score in the form of a sticker with the aim of improving detection of disease severity.
Methods: Retrospective (August 2012-April 2013) and prospective (April 2013-July 2013) consecutive cases of patients presenting with acute pancreatitis were evaluated. Patients identified prospectively with pancreatitis were scored on admission using stickers included in their notes. Data were analysed for patients identified with disease severity within 48 hours, admission to high dependency, complications and death. Statistical analysis was performed using the Fisher exact test. Significance was set at $p < 0{\cdot}05$.
Results: A total of 40 patients (19 M: 21 F; age 31–99 years) were evaluated. Gallstone disease was the most common aetiology (53 %; n = 21). The use of a scoring tool significantly increased detection of those with potential disease severity ($p = 0{\cdot}003$). However, there was no significant difference between the prospective and retrospective groups for admission to high dependency, complication rate, or mortality.
Conclusion: The use of a sticker as a scoring tool significantly increases detection of patients with acute pancreatitis. We recommend the implementation of this tool as part of the initial assessment of patients with the disease.

Emergency Surgery 0229

Emergency Appendicectomy- What Happens in the Remote and Rural Setting?

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Aims: To audit the practice and outcomes of emergency appendicectomy in the remote and rural setting. Findings are compared with a recent multicentre study investigating variation in provision and outcome of emergency appendicectomy.
Methods: Retrospective study of consecutive appendicectomies done over 3 year period in a remote and rural hospital (1/10/2010 - 1/10/2013). 104 patients were identified from the pathology specimen book held in theatre. Principal outcome measure was negative appendicectomy rate as determined by local histopathology services. Secondary outcome measures were laparoscopy rate and 30 day adverse event rate. Analysis focused on hospital related predictors of outcome.
Results: 99 patients were included in the study. Negative appendicectomy rate was lower compared to recent multicentre study (14·1% v 21·6%). Laparoscopy rate was lower than in the muliticentre study (44·4%v59%) Combined 30 day adverse event rate was lower also (8·1%v12·5%). Use of pre-operative radiology was low (9·1% USS and 9·1%CT). A consultant surgeon was present in theatre for 80·1% of cases. Patients undergoing CT were more likely to have complex appendicitis (perforated/ abscess formation) and develop complications. Overall complex appendicitis rate was comparable (19·2%v 24·4%)
Conclusions: Patients undergoing appendicectomy in this remote and rural hospital can expect to have good outcomes in terms of negative appendicectomy rate and complication rate. Possible reasons may include that the vast majority of cases in the remote and rural setting are managed and operated on by a consultant surgeon. Use of pre-operative imaging is likely to be low due to more limited radiology services. Use of laparoscopy may be lower due to the fact that remote and rural hospitals are sometimes staffed by locum surgeons who may not be familiar with laparoscopy. Collaboration with other remote and rural hospitals providing emergency general surgical services would be useful.

Emergency Surgery 0272

Outcome Following Emergency Laparotomy

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Aims: To compare our outcomes following emergency laparotomy (or equivalent) against national standards.
Methods: Retrospective analysis of patients undergoing emergency laparotomy or equivalent procedure from Nov 2012 to Nov 2013 were analyzed. Data was collected from clinical coding and case notes. Data was collected for demographics, procedure, grade of surgeon, operating time, morbidity and mortality.
Results: 265 emergency laparotomy or equivalent procedure were carried out during 1 year period from Nov 2012 to Nov 2013. 150 out of 265 (57%) were female and 115 (43%) were male. 120 out of 265 (45%) were aged between 50–70 years. 85 out of 265 (32%) were due to Small bowel related and 100 out of 265 (38%) were related to large bowel. 80 out of 265 (30%) were done laparoscopically. 15 out of 265 (6%) required more than 1 laparotomy. 60 out of 265 (23%) were performed under upper G.I. team (2 consultants) and 215 (77%) by colorectal team (6 consultants). 20 out of 265 (7·5%) were done by registrars, 7·5% by post-CCT fellows, 11% by registrar with consultant and 74% by consultants as first surgeon. 140 out of 265 (53%) were during out of hours. 19 out of 265 (7%) died on same admission 12 out of 265 (4·5%) died within 6months.
Conclusions:

1. 1 in 15 required more than one operation.
2. 77% of emergency laparotomies were done under colorectal team.
3. 53% of emergency laparotomies were done during out of hours.
4. 30-day mortality rate was 7% with late mortality rate of 4·5%.
5. Our mortality rate following emergency laparotomy is less than the national standards (12-18%)
6. 74% of emergency laparotomy or equivalent procedure, were performed by consultants.
7. We recommend that consultant surgeon should be present for all emergency laparotomy or equivalent procedure to improve mortality rate.

Emergency Surgery 0335

Does Peritoenal Fluid/Pus Culture Necessary and Cost Effective in Appendicectomy?

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Aims: Appendicectomy is the most common emergency surgical procedure performed across the country and thus consuming significant cost and resources of NHS. Use of peritoneal fluid/pus for microscopy, culture & sensitivity (MCS) is commonly practiced in appendicectomy cases. We aim to look at the general surgeons' practice and the cost effectiveness of the peritoneal fluid/pus MCS in these cases. Through this study we aim to determine any need for development of guidelines for peritoneal fluid/pus MCS in these cases.
Methods: This study is a prospective study in the form of a locally validated questionnaire. The questionnaire was used over a period of three months on the ASGBI website to be completed by general surgeons. Data was collected from the received responses, collated and analysed using Microsoft Excel 2003.
Results: Fifteen responses were received over three month period. Fourteen were from substantive surgeons while one was from locum position. Eight surgeons were consultants for more than ten years. Four surgeons were consultants for <5 years and three had experience of 5–10 years at consultant position. Almost half of them (7) had colorectal as their subspecialty. Seven surgeons performed under 50 appendicectomy a year, while six surgeons performed 50 to 100 procedures a year. Eleven surgeons considered pus/peritoneal fluid culture in cases of appendicular abscess, while eight surgeons preferred this in cases of perforated appendix with localised or generalised peritonitis. Nine surgeons changed the antibiotics according to the results of MCS. Only one surgeon knew the cost of peritoneal fluid/pus MCS. Twelve surgeons would prefer the evidence based guidelines regarding the pus/peritoneal fluid MCS in cases of appendicectomy.
Conclusions: This study concludes that peritoneal fluid/pus MCS in cases of appendicectomy has been used subjectively by consultant surgeons. In current practice 80% of consultant surgeons preferred the evidence based guidelines for the use of peritoneal fluid/pus MCS in appendicectomy cases. This guideline would help to establish cost effectiveness of the same. However, considering the

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limitation in the form of number of surgeons, we suggest similar study at larger scale across country.

Emergency Surgery 0380

Elevated Total Serum Bilirubin – A Predictive Marker for the Diagnosis of Acute Appendicitis

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Aims: Acute appendicitis is the commonest surgical emergency. Delay in diagnosis and treatment can lead to perforation of an inflamed appendix leading to peritonitis. The aim of this study was to compare the diagnostic accuracy of elevated serum total bilirubin and neutrophils in the diagnosis of appendicitis.
Methods: Data was collected for consecutive patients undergoing emergency appendicectomy over a period of 3 years (2010–2013). Neutrophilia ($\geq 8{\cdot}5 \times 10^9$/l) and hyperbilirubinemia (total serum bilirubin ≥21 mg/dl) were compared for Sensitivity, Specificity, Positive predictive value (PPV) and Negative predictive value (NPV) for the diagnosis of appendicitis. Variations in bilirubin levels across age and sex were determined with Kruskal-Wallis Test and Mann–Whitney U Test, respectively.
Results: Patients (n = 2590) undergoing emergency appendicectomy were identified from the hospital information system – a complete data set was available for 2170 patients. 315 (14·5%) patients (M:F = 2·2:1, median age = 28 years) were identified with hyperbilirubinemia. There was no significant variation in the level of hyperbilirubinemia across age ($P = 0{\cdot}417$) and sex ($P = 0{\cdot}794$). Hyperbilirubinemia was found to have significantly (p = 0·05) higher sensitivity of 86·98% (95%CI 82·76-90·49%) and specificity of 93·37% (95%CI 91·33-95·05%) when compared to the sensitivity of 77·14% (95%CI 74·79-79·38%) and specificity of 79·40% (95%CI 76·56-82·04%) associated with neutrophilia. There was no significant difference for positive predictive values (84·83% vs. 85·15%), However, the negative predictive value of 94·39% (95%CI 92·47-95·95%) for hyperbilirubinemia was higher compared to that of neutrophilia 69·42% (95%CI 66·45-72·27%).
Conclusions: Hyperbilirubinemia is a useful predictive marker for the diagnosis of acute appendicitis.

Emergency Surgery 0427

Re-audit of Timeliness to Emergency Surgery: Are we Meeting RCS Standards?

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Aims: A prospective audit on "timeliness-to-surgery" for general surgical emergency patients was performed in our hospital (July 2012). This demonstrated deficiencies in emergency theatre access, with only 44% "severely septic" and 20% "septic" patients undergoing emergency surgery within RCS recommended times. Following the introduction of pre-operative risk stratification and dissemination of the first audit findings to clinical and theatre staff, the aim of this re-audit was to establish if there were improvements in emergency surgical care with respect to RCS "timeliness-to-surgery" standards.
Methods: Data on emergency admissions requiring surgical intervention (1/2/13 - 3/3/13) was prospectively collected. Patients were clinically risk stratified for morbidity/mortality rates using P-POSSUM scoring and compared to RCS standards.
Results: 53 operations were performed (28% of admissions). Median age 38 yrs (range 18–86) with 5·6% post-operative mortality.100% "on-going haemorrhage" and "septic shock" patients went to theatre immediately and within 3 hours respectively; 75% "severe sepsis" patients went to theatre within 6 hours, and 68% "septic" patients went to theatre within 18 hours. Other specialties utilising theatre (30%) and recovery issues (40%) accounted for the main reasons for delays to theatre.
Conclusions: Implementation of changes has led to some improvements in timeliness-to-surgery; however two standards were still not met. "Single specialty" theatre allocation and an increase in recovery staff numbers could potentially improve the delivery of emergency surgical care in our hospital.

Emergency Surgery 0486

The use of CT Scanning in the Acute Abdomen

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Aims: CT is able to detect a wide range of surgical problems; it also shows the exact site of the problem thus helping determine surgical approach. However it has disadvantages including contrast induced nephropathy and some believe that the incidence of fatal carcinomas is as many as 1 in 2000. We set out to determine whether CT scanning is useful in avoiding unnecessary diagnostic operations. We also wanted to determine if the use of CT scanning changed the management plan.
Methods: CT scans were performed on 65 acute surgical admissions during August 2012 in a district general hospital. The indication for CT was reviewed together with presumed diagnosis, findings and outcomes by reviewing patients' notes.
Results: Findings on CT included acute appendicitis, acute diverticulitis, renal calculi, bowel obstruction, perforated viscus and bowel ischaemia. Average time from admission to scan was 1·1 days. Pain was the most common indication with 47 patients (72%). Nine patients (13·8%) had a normal scan. A further nine patients (13·8%) proceeded to operation with abnormal findings on CT. 36 patients (55%) were managed conservatively. 2 patients (3%) died. Clinical impression was correct in 63% patients with right iliac fossa tenderness, 100% in patients with left iliac fossa, right upper quadrant, central and generalised abdominal tenderness. The correct clinical impression was confirmed on CT in only 25% of people presenting with flank pain. The impression in 8 patients with flank pain was ureteric calculi however CT showed a wide array of diagnoses including ovarian mass, faecal loading, perforated duodenal ulcer, acute pancreatitis and intrathoracic stomach.
Conclusions: CT scanning is both a sensitive and specific diagnostic tool in the most common surgical presentations. CT is most useful in patients presenting with flank pain as the differential is wide and clinical impression often incorrect. Negative scans can avoid unnecessary diagnostic laparoscopy and the costs involved in this. Positive scans can help aid the correct surgical approach to management.

Emergency Surgery 0527

Relative Accuracy of Computed Tomography Examination of the Acute Abdomen: A Prospective Observational Cohort Study

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Aims: Computed Tomographic (CT) examination prior to emergency laparotomy has become almost ubiquitous in contemporary UK NHS practice, but little data exists on the relative accuracy of CT in this context. The aim of this study was to determine the strength of agreement between pre-operative CT diagnosis and the gold standard operative findings.
Methods: Analysis of prospectively collected data was performed for patients undergoing emergency laparotomy who had undergone pre-operative CT over a calendar year in a university teaching hospital. The CT diagnosis was compared with operative findings and histopathological diagnoses by means of the weighted Kappa statistic [Kw range −1 (no agreement) to +1 (perfect agreement)].
Results: Two hundred and fifteen of 310 patients [69·4%, median age 68 (18–93) yr, 106 male], underwent pre emergency laparotomy CT. Overall sensitivity, specificity, PPV and NPV were 93·4, 98·0, 93·3 and 98·3% respectively. Overall Kw was 0·866 , 95% CI 0·808 - 0·924, $p < 0{\cdot}001$. However, with regard to foregut, midgut and hindgut pathology, Kw varied from 0·668 (Upper GI

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0·470 to 0·866, p < 0·001), 0·802 (small bowel, 0·688 to 0·916, p = 0·001), and 0·765 (Lower GI 0·645 to 0·855, p < 0·001).
Conclusions: Overall CT accuracy was in the excellent category, but varied with regard to the anatomical site of the pathology and was most accurate for mid gut related rather than Upper and Lower GI diagnoses.

Emergency Surgery 0585

New Guideline Indications for MRCP in Acute Cholecystitis

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Aims: The diagnostic value of Magnetic Resonance Cholangiopancreatography (MRCP) has increased over recent years and is now the diagnostic test of choice where common bile duct (CBD) stones are suspected[1]. However there may also be a tendency to over investigate patients by MRCP and thus stretch limited resources causing excess workload and delaying definitive treatment.
We have previously audited the use of MRCP in acute cholecystitis and used the findings to formulate new guidelines to target MRCP requests. This study prospectively appraises these new guidelines and quantifies their accuracy in detecting stones in the CBD.
Methods: Prospective data was analysed on all patients admitted with acute cholecystitis with possible CBD stones over a four month period. The guideline recommended preoperative MRCP where bilirubin was >40 and/or CBD >8 mm. All other patients with acute cholecystitis who did not meet this criteria went straight to surgery with On Table Cholangiogram (OTC). Specific outcome measures were to assess the sensitivity of the guidelines therefore we recorded the laboratory and radiology results in a prospective database.
Results: 28 patients were in this study. Ultimately 8/28 (28·5%) had CBD stones leaving 20/28 (71%) who did not. There were 12 guideline violations and only 16/28 (57%) would have had MRCP's if guidelines were strictly adhered to. The guidelines would have identify 7/8 (87%) CBD stones pre-operatively the last diagnosed with OTC. Of the remaining twenty patients twelve would have been spared an unnecessary MRCP under the new guidelines.
Conclusions: Had we complied with the guidelines the rate of negative MRCP's would be halved. All patients with CBD stones would have been picked up with these new guidelines with only one being newly diagnosed intraoperatively. These guidelines may reduce the rate of (and wait for) negative MRCPs whilst maintaining sensitivity for the detection of CBD stones.

Emergency Surgery 0612

Operations for Suspected Appendicitis. How Good are we?

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Aims: Appendicectomy is the most commonly performed acute general surgical procedure in the United Kingdom. The earlier a patient is taken to theatre the less the risk of intra-operative and post-operative complications. Length of stay in an acute hospital bed is also reduced. The aim of this audit is to determine the number of cases operated on within 24 hours of admission in an acute trust.
Methods: Retrospective study of 100 cases over a 3 month period in an acute trust with surgery performed by both Lower and Upper Gastrointestinal (GI) surgeons. All the surgeons had the same access to the acute and C-POD theatre lists. Data was collected regarding the time to surgery, scans performed and the time the patient waited to get the scan performed, the total length of stay in acute hospital bed and histology result.
Results: In the 100 cases reviewed there was a 25% Negative Appendicectomy rate (14 Diagnostic Laparoscopies and 11 Normal histology).This is slightly higher than accepted negative rate of 15-20%. On average it took 28·46 (hrs:mins) to get a case to theatre, which is also longer than the desired 24 hours. Of note was the difference between the surgeon groups with Lower GI at (26·01) and Upper GI at (32·30). A t-test proves this difference to be statistically significant (p = 0·01). 56% of patients received some form of imaging prior to surgery (39 USS, 14 CT, 3 CTKUB's). With a 19% (4/21) false positive rate in those whose scan suggested appendicitis as the underlying pathology whose resulting histology was normal.
Conclusions: In this acute trust there is a significant difference between the surgeon groups Lower/Upper GI in time to theatre. However, overall there is still room for improvement with more cases needed to be taken to theatre within 24 hours of hospital admission. The role of imaging in cases of suspected acute appendicitis should be considered with such a high false positive in this data set. Though more data needs to be collected to confirm this.

Emergency Surgery 0622

Emergency Trephine Colectomy and an End Colostomy for Recurrent Sigmoid Volvulus in the Challenging Elderly Patients: How I do it

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Aims: Our experience with emergency trephine colectomy and an end colostomy in for recurrent sigmoid volvulus in medically challenging elderly patients.
Methods: Prospective data on elderly patients offered emergency trephine colectomy and an end colostomy over a year-period for recurrent sigmoid vovulus and previous multiple hospital admissions.
Technique: Patient clinical condition optimised by involving of our anaesthetic colleagues. Operation was performed under GA with a small transverse incision 5-6 cm over the premarked stoma site in the left iliac fossa dividing the abdominal wall fascia but not muscle to enter the peritoneal cavity. The dilated sigmoid colon is delivered to the surface detorted before standard colectomy. An end left iliac fossa is fashioned after closing the abdominal fascia defect. Efforts must be made to ensure adequate haemostasis, avoid faecal spillage and exteriorisation of proximal limb as an end colostomy.
Results: Five elderly patients were operated between April 2012 and March 2013 with mean age of 79 (74–88) years and male to female ratio of 2:3. All patients had significant medical comorbities with poor mobility and require significant care assistance. Previous presentations with recurrent volvulus range between 1–4 and treated with repeated endoscopy and flatus tube decompression. The mean duration of surgery was 68 (60–75) minutes. The mean length of sigmoid colon resected was 39 (18–60) cm with average diameter of 13·5 (8–20) cm. The average hospital stay was 28 (18–48) days. The prolonged stay was due to delay in reaching decision to operate, stoma fitness and social factors. There were no significant operative related complications or mortality reported.
Conclusions: Trephine colectomy and fashioning of an end colostomy enables treatment of recurrent sigmoid volvulus in the medically challenging elderly patients with no recourse to a full laparotomy. However, caution must be exercised in the selection of patient.

Emergency Surgery 0647

Combined Laparoscopy and Enteroscopy for Management of Gastrointestinal Bleed of Small Bowel Origin

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Aims: The aim of this study was to review the usefulness of combined laparoscopy and on-table enteroscopy in managing patients with significant bleeding of small bowel origin.
Methods: All patients who presented with gastrointestinal(GI) bleed were evaluated systematically. Oesophagoduodenoscopy and colonoscopy was done for all patients who presented with haematochezia. Once large bowel and upper gastrointestinal system were excluded as possible sources of bleed (by endoscopic evaluation), patients underwent laparoscopy. Under laparoscopic guidance, suspicious areas were identified and the involved segment of small bowel delivered through a minilaparotomy. A small enterotomy was done adjacent to the suspicious area and colonoscope was introduced to perform an enteroscopy in both directions. Case records of patients who underwent laparoscopy and on-table enteroscopy were reviewed. Bleeding lesions were

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dealt by appropriate resection. All case notes were reviewed. Follow up was available up to six months.

Results: During a two year period, we had 89 patients with significant gastrointestinal bleed. Of these 82 were due to upper gastrointestinal causes. Five were of lower gastrointestinal origin (colitis 2, clopidogrel 2, tumour1). Two patients had bleed from ulcers in the ileum (one due to typhoid and the other due to tuberculosis). Both were successfully managed by small bowel resection. Diagnosis was confirmed histologically.

Conclusions: In developing countries small bowel lesions due to infectious causes can produce significant lower GI bleed. Combined laparoscopy and enteroscopy helps to accurately pinpoint the nature and number of these lesions. Appropriate limited resection of small bowel can be done. Hence combined laparoscopy and enteroscopy should be considered in patients with significant ongoing bleed where upper GI endoscopy and colonoscopy are negative.

Emergency Surgery 0695

Heterogeneity in the Management of the Acute Scrotum

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Aims: There is international consensus that patients with torsion must undergo both ipsilateral and contralateral fixation, but not in the absence of torsion. There is heterogeneity in practice, and we aim to identify aspects for improvement.

Methods: All patients undergoing scrotal exploration for suspected torsion at a single NHS Trust from 1st August 2012 – 1st July 2013 were included. Urologists managed patients >18 years and general surgeons managed those <18 years. Demographic and admission details, diagnosis, surgical technique, and specialty of surgeon were recorded. Duration of pain, time from arrival to specialist review and surgery, diagnosis and management of torsion and non-torsion were examined.

Results: 73 emergency scrotal explorations followed a mean duration of pain of 27 hours. Median age was 17 years. General surgeons operated on 53%. Those with torsion had shorter histories than those without torsion [$p < 0{\cdot}01$]. 22/73 (30%) patients had an intra-operatively confirmed diagnosis of torsion of the testis and 8/22 (36%) required orchidectomy. There was no significant difference in time from arrival to surgery between torsion and non-torsion groups. 14/22 (64%) of patients with an intraoperative diagnosis of torsion and clinically salvageable testes underwent ipsilateral fixation. There was 99% adherence to guidelines for contralateral fixation. Of the remaining 52/73 (70%) emergency patients without torsion, 29/52 (56%) underwent ipsilateral fixation, 7/52 (13%) contralateral fixation. General surgeons performed ipsilateral fixation more than urologists ($p < 0{\cdot}001$).

Conclusions: There are variations in practice between surgeons in the management of the acute scrotum, including in the absence of the intraoperative diagnosis of torsion. Attention must be given to consensus management of the acute scrotum between specialist colleagues who manage suspected torsion with shared responsibility in the same organisation.

Emergency Surgery 0710

Diagnostic Value of Abdominal Ultrasound for the Detection of Appendicitis

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Aims: The primary aim was to ascertain the diagnostic value of abdominal ultrasound (US) for the detection of appendicitis in clinical practice by calculating the frequency with which the appendix is not visualized and determining the sensitivity and specificity of US in appendicitis. Results from May 2011 – April 2012 were to be compared with those obtained in a prior audit in 2010.

Methods: Histopathology and ultrasound results were collected retrospectively from Casenotes and PACS. Inclusion criteria from clinical coding were patients with diagnosis of 'RIF pain', 'appendicitis', and 'appendix operation'.

Results: Over a twelve month period, 629 patients underwent an appendicectomy and were included in the audit, mean age 29·5years, 307 females (48·8%). 412 (65%) had acute appendicitis histologically (classified as 'positive'), 144 (23%) had normal appendix histology, 73 patients (12%) were diagnosed with other pathology. 200 patients had an abdominal ultrasound prior to surgery. The appendix was seen in 78 (39%) cases only. Sensitivity of US for appendicitis was 73·1% and specificity was 49·2%. Positive predictive value =64·0%, negative predictive value =59·6%. Results showed an improvement compared to 2010 audit carried out by Paediatric Radiology department.

Conclusions: US has been described in previous studies as having a sensitivity of up to 87% or specificity of up to 91%. Our results confirm our clinical experience of ultrasound - that it commonly does not visualize the appendix. 61% of the 200 scans performed in the study did not identify the appendix. Explanations for such differences in clinical practice vs clinical trials include divergence in US scanning skills and time pressure. We conclude that ultrasound is not a reliable diagnostic tool for appendicitis and that a higher clinical threshold for laparoscopy and use of computerised tomography (CT) scan would improve the negative appendicectomy rate.

Emergency Surgery 0802

Incidence of Surgical Site Infection and Intraoperative Grading of Severity of Acute Appendicitis; can we Reduce SSI By Identifying at Risk Group – A Prospective Study

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Aims: To Identify the incidence of surgical site infection in patients undergoing emergency appendicectomy and the severity of intraoperative findings to identify at risk group for SSI.

Methods: A prospective study was conducted on patients who were admitted with diagnosis of Acute appendicitis and underwent emergency open or laparoscopic appendicectomy during their stay. A written consent obtained from each patient to be contacted thirty day post operatively by phone to check the incidence of SSI. A Proforma was designed to collect data for patient demographics, bio chemistry, pre op imaging, pre and post-operative use of antibiotics, histology results, and incidence of SSI. Intraoperative findings were categorised using the grading criteria for severity from grade 1 to 5.

Results: There were 46 patients included in the study, 26 male and 20 female. During this period 22 laparoscopic and 24 open appendicectomies were performed. Both CRP and WBC was raised in 23 patients.12 patients had only raised WBC and 6 had only CRP. 25 patients (54%) had no pre op imaging prior to appendicectomy. Intra operatively 6 (13%) patients were reported as normal and 40 (87%) as acute appendicitis. The severity was categorised in 34 patients as grade 1–2. Six patients were grade 3 or above. The histology confirmed acute appendicitis in 35 (76%) patients and 11 (23%) had normal histology. Five patients lost to phone follow up out of 46; 6 (13%) patients developed surgical site infection. Out of 6 patients, 5 had incisional SSI and 1 had organ space infection. All SSI developed in patients who had intraoperative severity grade 3 or above. Length of stay was prolonged more than 4 days in patients who have severity grade 4 or 5.

Conclusions: The patients with grade 3 or above intra operative severity of acute appendicitis were at higher risk of developing SSI. We will recommend documentation of intraoperative findings to indicate severity by using grading system to help identify at risk group for SSI. Follow up with in 30 days might identify SSI early and avoid further complication and hospital stay.

Emergency Surgery 0815

Changing Trends in Emergency Surgical Admissions; Planning for the Future

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Aims: To review data on emergency general surgical admissions in two large acute hospitals within the same Local Health Board to assess any change in admission trends and the implications this may have on future planning and training.
Methods: A retrospective study of all emergency general surgical admissions to two acute teaching hospitals in South Wales between April 2011 and March 2013 inclusively. Both hospitals are members of the same Local *Health Board.*
Results: *In total* 16,384 patients were admitted during the 2-year study period. Despite a decrease in acute surgical admissions (8,586 in the first year comparing to 7,767 in the second year), the number of operations performed increased from 2,803 to 2,940. Non specific lower abdominal pain was the most common diagnosis (11·05%) followed by gallstones (8·19%) which ranked considerably higher than admissions for appendicitis (3·23%).
Conclusions: This study has shown that admissions related to gallstones now are exceeding those for appendicitis. This suggests that greater training and resources for surgeons are required in order to accommodate the forthcoming need for cholecystectomies at both elective and emergency basis. Consequently, the availability of radiological modalities including ultrasound scans and MRCP became a must during normal working hours and out of hours. Although there was no increase in admissions over the two years in our study, increasing emergency admissions have been noted in several other studies.

Emergency Surgery 0819

Audit of 30-day Mortality Following Emergency Laparotomy

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Aims: In 2010 the National Emergancy Laparotomy Network (NELN) conducted a multi-centre audit to measure outcomes following emergency laparotomy. This demonstrated high mortality rates and variability in care between centres. The National Emergency Laparotomy Audit (NELA) is being undertaken in all centres nationally to further evaluate outcomes. We aimed to audit outcomes at our centre against national figures already published prior to the start of NELA.
Methods: Data was collected retrospectively, using the NELN dataset, for patients who underwent an emergency laparotomy between January and December 2012. All general surgical patients, over the age of 18, undergoing unscheduled major abdominal surgery were included.
Results: Data from 176 patients was collected. Median age was 68 (range 18–94) with 18% of laparotomies being undertaken in the over 80s. 30-day mortality for all patients who underwent laparotomy was 9·7% compared to 14·9% in the NELN audit. In the over 80 population our 30-day mortality was 20% compared to the 24·4% in the NELN audit.
Similar to the NELN audit our data suggests an association between increasing age and higher ASA grade with increased mortality. 30-day mortality rates were 0%, 7% and 12% for patients in their 50s, 60s and 70s respectively. Patients who with ASA grades VI and above demonstrated a 40% 30-day mortality rate compared to 3·4% in patients with ASA I-III.
Conclusions: Our centres mortality rates following emergency laparotomy compare favourably to national figures however these procedures carry a high mortality rate especially in the elderly and in those with significant co-morbidity.

Emergency Surgery 0870

Emergency Abdominal Wall Hernia Repairs: Patient Characteristics and Outcomes

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Aims: Elective anterior abdominal wall hernia repairs are amongst the most commonly performed operations in general surgery, usually as day cases with minimal (<1%) mortality. Despite the NHS offering an efficient hernia repair service within the "18-week" rule, patients still come in as emergencies. Our aim is to study the patient population presenting as emergencies with an abdominal wall hernia and their outcomes.
Methods: We identified, using computer records, all patients admitted as an emergency with an obstructed/strangulated hernia over a period of 2 years from April 2010 to March 2012 at one NHS hospital covering a population of 310,000 and reviewed the electronic and paper patient records with regards to the nature of the hernia and outcome.
Results: Eighty-nine patients were admitted with an obstructed/strangulated hernia. Median age 64 years (26–94). 93% were primary hernias, and 7% were recurrent. The commonest type was paraumbilical (40%), followed by inguinal (27%), femoral (11%), incisional (11%) and others (11%). 98% of patients underwent emergency hernia repair, of which 16% required bowel resection. Median length of hospital stay was 4 nights (0–33). 9 patients (10%) required ITU admission post-operatively. Mortality was 5·6% (n = 5)
Conclusions: Paraumbilical hernias constitute the majority of emergency admissions. The most likely reason is that these hernias are often small, minimally symptomatic and do not contain bowel, thus these patients are often not offered elective surgery. Emergency hernia repairs continue to be associated with significant bowel resection rates, prolonged hospital stay and mortality rates of nearly 6%.

Emergency Surgery 0903

Do we Need on Site Gynaecologists in the Management of Acute Right Iliac Fossa Pain in Women? A Study of Right Iliac Fossa Pain in Women in a Hospital in Transition

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Aims: This study was conducted to assess the impact of "off-site" gynaecologists in the management of right iliac fossa pain in women attending the Accident and Emergency department.
Methods: A retrospective study over 3 months was conducted between 1st May 2013 to 31st July 2013. Patient notes were reviewed for women of all ages admitted with right iliac fossa pain
Results: 91 patients had been coded to have had an acute admission with Right Iliac Fossa Pain under the General Surgery department. 58 patient notes (64%) were available for review.
Of the 58 notes reviewed, 29 (50%) required no operation, 25 (43%) had a laparoscopic appendicectomy, 1 patient required haemostasis of ruptured ovarian cyst plus appendicectomy and 3 patients (5%) required other operations. 2 patients required a transfer to another hospital to the care of Obstetric and Gynaecology specialists; this was arranged the same day. 3 patients (5%) required telephone advice, 3 patients (5%) required the GP to refer electively to gynaecologists, and 1 patient required urgent attendance of the gynaecologist to theatre; there was no undue delay in the gynaecologist attending for this case. Indications for operation included, 15 patients (60%) with raised inflammatory markers, 13 patients (52%) with ultrasound evidence of appendicitis and 3 patients (12%) with CT findings.
Conclusions: Despite centralisation of specialist services, women with right iliac fossa pain can be appropriately assessed and managed by general surgeons. Care pathways with easy access to gynaecology services is essential in organisations without on-site gynaecologists in the management of these patients.

Emergency Surgery 0924

Presentation and Outcomes of Patients Attending an Acute Surgical Review Clinic

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Aims: An acute, consultant-led, daily surgical clinic was introduced to our hospital in January 2013, set up with the aim of reducing emergency, surgical

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admissions and facilitating early review after discharge. The study aim was to evaluate this new service.

Methods: A retrospective case note review was performed for all patients attending this clinic over the last 12 months. Data was extracted on demographics, presentation, investigations and follow-up.

Results: From January to December 2013, 186 patients attended the clinic. Median age was 45·3 years (range 11·8 -89·9); 45% male; 55% female.

The presentation profile was varied: 44 (23·7%) for wound/ drain review; 38 (20·4%) with abdominal pain; 16 (8·6%) with abscesses; 15 (8·1%) with hernias; 60 (32·2%) anorectal complaints; 13 (7·0%) had no presenting complaint recorded.

Following review, 75 (40·3%) patients were referred for an outpatient specialist appointment; 9 (4·8%) required GP follow-up only; 56 (30·1%) were discharged without any recorded follow-up; 15 (8·1%) were scheduled for elective surgery. 31 patients (16·7%) were admitted from the clinic and 11 (5·9%) of these went on to have emergency surgery.

73 patients (39·2%) underwent urgent imaging, 28 (15·1%) as outpatients, including 39 ultrasounds and 25 CT scans (of which 34 (46·6%) had normal results). 39 patients had positive results (53·4%). Of those patients with positive results, 4 required emergency surgery.

Conclusions: An acute surgical clinic allows patients a timely consultant review with early, focussed management plans whilst limiting unnecessary or prolonged inpatient admissions.

Emergency Surgery 0944

Emergency out of Hours Care - An Audit with Model Rota to Show how this can be Achieved in the Modern NHS

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Aims: With recent issues surrounding the NHS and out of hours care, we have undertaken an audit to show how a model rota can provide 24 hour consultant care 7 days a week as per new required standards. Coupled with ample training opportunities fit registrar training grades. The on call commitments have been set out by the London NHS commissioning board. These include but are not limited to; All patients being seen within 12 hours admission, 7 day a week twice daily consultant ward rounds for on call team, on call team to be free from all clinical commitments during on call week and access to 24 hour a day emergency theatres

Week	Cons Timetable	Registrar Timetable
1	Normal Timetable	On call Fri-Sun 0800-2000
2	On call Thurs 1600-0800	Nights on call resident Fri-Sun 2000-0800
3	On call Wed 1600-0800	Normal Timetable
4	On call Tues 1600-0800	Normal Timetable
5	On call Mon 1600-0800	Normal Timetable
6	Off from all clinical commitments	Night on call resident Mon-Thurs 200-0800
7	On call Friday-Monday 0800–1600 On call Tues-Thurs 0800–1600 BD ward rounds at 0800 & 1600	On call Mon-Thurs 0800-2000

Methods: Prospective audit of notes on ward rounds, with retrospective auditing of discharge summaries.

Results: Looked at 85 acute admissions over a 3 week cycle of consultant on calls. Average time to be seen 7·04 hrs (Range 0-20 hrs). Delay in 3 patients being seen after 12 hours of admission. This was due to night admission and patient being seen at end of morning ward round. Most common diagnosis at d/c non-specific abdo pain 17/85 (20%). Average length of stay 4·1 days. 1 patient developed high stoma output and 2 lobar pneumonia.

Conclusions: We show here a model working rota that provides 24 hour consultant care 7 days a week, that adheres to commissioning standards for out of hour care. This rota also provides the least disruption to training for registrars.

Emergency Surgery 0949

Do we Really Need to Ultrasound Every General Surgical Admission with Lower Abdominal Pain?

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Aims: Controlling the appropriateness of emergency ultrasound (USS) requests for lower abdominal pain is a problem facing many trusts such as ours where USS is freely available on surgical request. During a previous audit we found that 18% of the USS were performed on inappropriate patients (based on Royal College of Radiology guidance). We then formulated and disseminated guidelines. The aim of this re-audit was to ensure that we have subsequently improved the appropriateness of our USS requesting.

Methods: All USS performed to investigate lower abdominal pain in adult emergency General Surgical admissions over 8 weeks were recorded prospectively, collecting demographics, USS request details, USS results and patient outcomes. Patients who had surgery within the last 28 days were excluded. Women of childbearing age (WCBA) was defined using WHO criteria (16–49).

Results: A total of 49 patients had USS over the study period (96% female). 45 (92%) USS were in accordance with our guidelines. There was a decrease of inappropriate USS by 50% (8 to 4, $p = 0{\cdot}188$). 12/45 scans performed on WCBA found pathology, 8/12 were ovarian in origin (7/8 were referred to the gynaecologists, 1/8 had an open appendicectomy). USS suggested appendicitis in 2/12 of WBCA but on laparoscopy only one had an appendicitis. 33/45 WCBA had normal USS with 8/33 having laparoscopies (4 appendicitis, 2 gynaecological pathology, one free fluid only, one was normal). 25/33 WCBA were discharged with no further inpatient treatment.

Only 1/4 inappropriate USS (performed on males and non-WCBA) were positive, incidentally revealing liver metastases from colorectal cancer.

Conclusions: The annual savings to the trust based only on avoiding unnecessary USS would be £1600. The study though underpowered, still shows an improvement in our practice after just displaying our simple guidelines in clinical areas. This audit exhibits the usefulness of USS in WCBA, while suggesting a low sensitivity of USS for appendicitis and its limited usefulness in men and older women.

Emergency Surgery 0950

Delayed Oesophageal Repair - A New Standard of Management for Spontaneous Oesophageal Rupture? A Case Series

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Aims: Oesophageal rupture is a rare surgical emergency that is diagnostically and therapeutically challenging. This case study aims to examine a possible best practice for the management of oesophageal ruptures requiring surgical repair and asks; should primary salvage and delayed anastomosis be the standard approach in these cases?

Methods: Two patients presented with oesophageal rupture from Boerhaave's syndrome, the third with gastric rupture of unknown aetiology to two large district general hospitals in 2013. These patients were managed with resection, venting gastrostomy and feeding jejunostomy formation, followed by delayed anastomosis. The clinical outcomes of these patients were followed.

Results: All three patients presented in a critical condition at the time of initial rupture. with an average ICU stay following salvage of 13 days. All the patients survived this period and went on to have a delayed oesophageal reconstruction following an average time of 76 days of rehabilitation, consisting of intensive dietetic and physiotherapy input, between initial resection and the delayed anastomosis.. Post-surgical complications following reconstruction occurred in two out of three patients. These included chest sepsis, fast AF and pleural

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effusions. All three patients survived, and have been seen to have excellent recoveries with good long term outcomes.

Conclusions: This case series of three patients presenting in a critical condition following spontaneous oesophageal and gastric rupture were all managed with salvage followed by delayed reconstruction. All three patients survived and had good outcomes on discharge. We, therefore ask whether this approach should be considered for all presentations of oesophageal rupture requiring anastomotic surgical repair as an alternative to primary anastomosis?

Emergency Surgery 0988

The Impact of the 'Surgeon of the Week' Model on the Outcome of Emergency General Surgical Care: The View from a District General Hospital

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Aims: Emergency general surgery accounts for up to 50% of all general surgical activity in most acute trusts in the United Kingdom. Over 70% of units have adopted a 'surgeon of the week' (SOTW) model, although there has been little data to support its introduction. This study aimed to determine whether a change in service delivery from the traditional 'day on call' to the SOTW model improved efficiency and clinical outcomes.

Methods: Data on all emergency general surgical admissions from November 2011 to August 2012 (period 1) and November 2012 to August 2013 (period 2) were prospectively collected. In November 2012, the SOTW model, using a four day/three day weekend split, was adopted by seven consultant general surgeons. Consultants and registrars were freed of all elective daytime commitments with a different consultant on call from 17·00 to 08·00 Monday to Thursday.

Results: There were 2137 admissions during period 1 and 2249 admissions during period 2. Following the introduction of SOTW, the median length of hospital stay was reduced from 3·0 days to 2·0 days ($p < 0·001$) resulting in a saving of 1867 bed days. However, the readmission rate increased from 15·1% to 18·1% ($p = 0·008$). The mean time from referral by the emergency department to surgical review was reduced from 78 minutes to 65 minutes ($p = 0·013$) with a reduction in four-hour wait breaches from 9·0% to 5·9% ($p = 0·038$). There were reductions in mortality from emergency laparotomy (12·4% to 6·4%) and overall operative mortality (3·3% to 2·0%), although these were not statistically significant ($p = 0·486$ and $p = 0·277$, respectively).

Conclusions: The consultant delivered continuity of care provided by the SOTW model improved service efficiency, particularly with regard to the length of hospital stay. This represents a potentially major financial saving. There may also be clinical benefits, although the reduction in operative mortality in this study was not significant. Future validation studies should address patient reported outcome measures as well as quality of training.

Emergency Surgery 0994

Management of Oesophageal Perforations: Thoracic or Abdominal Approach?

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Aims: Oesophageal perforation is an uncommon condition and often diagnosed late leading to increased morbidity and mortality. Management varies according to aetiology, clinical presentation and site of perforation. The traditional surgical approach for mid/lower third perforations is a thoracotomy and repair with/without a T-tube. Our aim was to review our management in our specialized unit.

Methods: All patients presenting between 2009 and 2013 was identified. Data collection included demographics, operative approach and complications.

Results: There were 30 patients with a median age of 59 years (M: F = 3:1). Perforation was confirmed by CECT. There were 24 spontaneous perforation (Boerhaave), 3 food bolus, 2 iatrogenic (oesophageal dilatation) and 1 oesophageal cancer. One patient had a recurrent Boerhaave. Five patients were treated conservatively (5/30). An OGD was performed in theatre to define the site, extent of perforation and choice of approach- abdominal or thoracic. The abdominal approach (rooftop) and trans-hiatal repair with lavage of one/both pleural cavities was performed in 56% of patients (14/25). A further six patients had an attempted repair via the abdominal route. The other 5 had a planned thoracotomy. A T-tube was used in 92% (23/25) patients. Two patients had a cardio-oesophagectomy. The median ITU stay was 21 days because of AF and respiratory complications in 14/25 (68%) patients. There was no increase in respiratory complications in patients who had an abdominal repair (7/14 versus 7/11; P-value 0·68). A subsequent thoracotomy was required in 2 patients following trans-hiatal repair (empyema and mediastinitis respectively). Another needed a re-thoracotomy (massive hemothorax). The median hospital stay was 45 days. The overall morbidity and mortality was 68% and 16% respectively.

Conclusion: The abdominal approach with transhiatal repair and lavage of both pleural cavities is feasible in a select group of lower third oesophageal perforations without the need for thoracotomy and with no increase in morbidity.

Emergency Surgery 1019

An Emergency Laparotomy Audit: Results from a District General Hospital in the Initial Pilot Audit

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Aims: Outcomes for emergency laparotomies have traditionally been inferior to elective procedures, there are well recognised contributory factors including pre-operative medical condition and procedure time of day. As emergency surgery develops into its own speciality, there will be an increased onus on better outcomes. Our aim was to audit the outcomes for patients undergoing emergency laparotomies to determine factors associated with a poor outcome.

Methods: A prospective audit was commenced between December 2012 to December 2013, case specific data parameters including patient demographics, diagnosis, procedure, grade of surgeon and anaesthetist and peri as well and post-operative management. The outcomes were standardised and compared to other hospitals within the pilot audit. A local database was used to collate the data.

Results: A total of 161 laparotomies were performed and included in the audit, 65 male and 96 female (age range 19–93 years). 69 (43%) procedures were colonic, 44 of which were for a malignancy, 69 (43%) small bowel procedures. 7 perforated peptic ulcer repairs, 8 open abdominal abscess washouts, 4 pancreatic necrosectomies, 2 palliative laparotomies with no procedure performed and 2 negative laparotomies. 105 (65%) procedures had consultant surgeon presence, with 160 (99%) having consultant anaesthetist presence. 87 (54%) patients had goal directed therapy, 135 (84%) patients required post-operative critical care admission. Audit mortality rate was 8·1%, mean of 7% in pilot study.

Conclusions: Emergency laparotomies make up a significant workload for both general surgeons and anaesthetists. Gastrointestinal procedures make up the bulk of procedures, with half being for malignancy. It is important to implement goal-directed therapy in order to secure the best outcomes. It is vital to treat these patients as elective patients with high consultant input from the onset. Our study has provided an impetus for the implementation of the National Laparotomy Audit (NELA), which is now being introduced.

Emergency Surgery 1061

Appendicitis in Women of Child Bearing Age – The Current Diagnostic Process in a Busy London Teaching Hospital

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Aims: The diagnostic process for appendicitis in women of child bearing age is challenging with subsequent strain on time and resources. The aim was to examine this diagnostic process.

Methods: All females with histological confirmation of appendicitis between September and November 2013 were included. Mode of referral, histology type, postoperative complications, inhospital stay and readmission rates were recorded. The diagnostic process was categorised as: *clinical diagnosis only* (i.e. history and examination, inflammatory markers and/or plain radiographs), *use of ultrasound scan (USS) or computed topography (CT)*, *vetting by gynaecologists (who*

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may/may not organise scan) or *diagnostic laparoscopy*. Child bearing age was defined as 16 to 45 years. Of note the gynaecology services are not based locally and therefore patients must be referred and transferred to the adjacent hospital.

Results: There were 27 histologically confirmed appendicitidies (4 inflamed, 11 suppurative, 5 gangrenous, 7 perforated) over a 3 month period (age range 17–41 years). 15 were referred by the general practitioner, 7 by the Emergency department, 1 directly by gynaecologists, 4 from another medical specialty.

3 underwent appendicectomy following clinical diagnosis only; 19 following diagnosis by radiological adjunct (15 USS, 4 CT); 4 following evaluation by the gynaecologists (all underwent transvaginal and transabdominal USS) and 1 following diagnostic laparoscopy.

There were 7 cases of surgical site infection (SSI); 4 superficial and 3 intra abdominal infections. 2 of 3 intra abdominal collections were radiologically drained; 1 required reoperation for drainage and washout. There were 9 cases of ileus. 11 patients stayed in hospital >7 days. 5 were readmitted (3 with pain with no cause identified, 2 SSIs).

Conclusions: The diagnostic process is heavily reliant on use of radiological adjunct, USS more than CT. This, together with referral and subsequent transfer to gynaecology in another hospital is costly and causes delay to operation with subsequent complication. Diagnostic laparoscopy is a quick, safe and cost effective intervention in equivocal cases and should be more widely adopted.

Emergency Surgery 1082

Outcomes of Emergency Surgery in the Over 80s

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Aims: As the aging population increases, we would expect operating on elderly patients to become more of a clinical issue. We set out to evaluate the outcomes and mortality associated with emergency laparotomies in this age group over a ten year period.

Method: Data was collected retrospectively from the theatre database for all emergency laparotomies carried out in the emergency theatre at one busy district general hospital from October 2003 to October 2013. Additional information was taken from hospital computer systems. Appendicectomies, vascular procedures and post-operative complications from elective cases were excluded.

Results: 422 patients over 80 had an emergency laparotomy over a 10 year period. 53 of these were over 90 years old. The median age was 84, with a range of 80–98. 65·4% (276) were female. The median ASA grade was 3. The mean length of stay post operatively was 30·2 days (range 1–167). The majority (54·2%) of operations were performed between 08:00 and 17:00, 34·6% between 17:00 and 23:59 and 11·1% after midnight. An operative duration of over 2 hours did not significantly affect in-patient mortality (p = 0·65). 58·5% of patients had a pre-operative CT scan. There was no significant difference in the number of operations performed each year (p = 0·56).

115 (27·3%) patients died during that admission. Of the 307 patients that were discharged from hospital, a further 31 (10·1%) died within 3 months and a total of 88 (20·9%) died within a year. The overall 12 month mortality was 47·6%.

Conclusions: There is a significant inpatient mortality associated with emergency laparotomies in the over 80s. Our data also suggests that almost 50% will be dead within a year of the operation. These operations are life saving but significantly decrease life expectancy. Patients and relatives should be appropriately counselled regarding this as part of the consent process.

Emergency Surgery 1087

Mortality in Emergency General Surgical Admissions in Patients Aged Over 70 is not Affected by Being Admitted at the Weekend

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Aims: There has been considerable media spotlight placed on the quality of out of hours care and care of the elderly population, particularly at weekends. This is likely to form the cornerstone of contractual negotiations for both junior doctors and consultants working in the NHS over the coming year. We aimed to determine whether mortality in the over 70 age group is affected by weekend admission.

Methods: Retrospective analysis of emergency admissions to general surgery in those aged 70 and over between May 2010 and June 2012. We obtained mortality data at 30 days, 1 year and 2 years in two cohorts: patients admitted on a weekday (Monday to Friday) versus the weekend (Saturday & Sunday).

Results: During the study period, 1953 patients aged 70 years and above were admitted as a surgical emergency. This represents 27% of our total admissions. Of these, 1449 (74·2%) were admitted during a weekday, with 504 (25·8%) admitted at the weekend. This equates to 3·4 admissions per weekday and 2·9 per weekend day. Mortality data is presented below.

Mortality	Total cohort (n = 1953)	Weekday (n = 1449)	Weekend (n = 504)	p-value
30 days	9·9%	9·8%	10·3%	0·73
1 year	26·9%	27·1%	26·4%	0·82
2 years	35·7%	35·5%	36·2%	0·85

Conclusions: Our study demonstrates no significant difference in mortality in patients aged over 70 admitted to general surgery at the weekend. Our data also suggests that the mean number of admissions is not significantly different on a weekday versus a weekend day. This adds weight to the argument that staffing levels and available facilities should be the same at the weekend as they are during the week.

Emergency Surgery 1095

Early Surgical Mortality in Those over 70 Requiring Emergency Laparotomy is Worse if Taken to Theatre From Outwith Acute Surgical Receiving Ward

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Aims: Outcome following emergency laparotomy is recognised to carry significant risk in the elderly population. We sought to determine whether there was a difference in mortality in those aged over 70 requiring emergency laparotomy in two cohorts: those admitted directly to our acute surgical receiving ward versus those who went to theatre from elsewhere within the hospital.

Methods: Retrospective analysis of patients aged 70 and over requiring emergency laparotomy between May 2010 and June 2012. We obtained 30 day, 1 year and 2 year mortality data in those taken to theatre directly from the dedicated acute surgical receiving ward versus those from other wards in our hospital.

Results: 188 patients (58·0% female, mean age 78, range 70 to 100 years) aged 70 and over underwent a laparotomy during the study period. 153 of these were taken to theatre directly from our acute surgical receiving ward. 55 patients were taken to theatre from elsewhere in the hospital (other surgical or non surgical wards). Mortality data is presented below.

	Over 70		
Mortality	Receiving ward (n = 133)	Non receiving ward (n = 55)	p-value
30 day	13·5%	27·3%	**0·03**
1 year	32·3%	43·6%	0·18
2 year	47·1%	58·7%	0·22

Conclusions: Our study demonstrates a significantly increased risk of mortality at 30 days in those patients who require emergency laparotomy who did

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not go to theatre directly from our surgical receiving ward. This could be due to patients developing complications or a deterioration in their clinical condition in hospital either in a surgical or medical ward. It may also be attributed to patients with significant comorbidity, or in whom a non-surgical diagnosis was suspected when initially admitted under a non-surgical specialty and subsequently transferred for definitive care.

Emergency Surgery 1101

Who Still Inverts the Appendix Stump in Open Appendicectomy?

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Aims: Open appendicectomy traditionally involves inversion of the appendix base into the caecum. This surgical step is not routinely performed during laparoscopic appendicectomy. An inverted stump can mimic caecal pathology in later life and evidence to support the practice of inversion is minimal. This review aims to evaluate surgical management of the appendix stump amongst surgical trainees.

Methods: An anonymous online questionnaire assessed surgical practice amongst trainees in England in 2009 and was re-circulated again in 2013. Data collected included surgical grade, Deanery, operative experience and technique for appendix stump management.

Results: 578 responders completed the questionnaire (296 in 2009, 282 in 2013).

89% perform open and laparoscopic appendicectomy. 98% of trainees do not ever invert the stump laparoscopically.

Regarding management of the stump in open appendicectomy: between 2009 and 2013 overall rate of simple ligation was similar 16·1% vs 17·4%, transfixation rate increased from 44·3% to 54·3%. There was a corresponding fall in rate of stump inversion from 39·6% to 28·3%, though this did not reach significance ($p < 0{\cdot}41$ chi squared).

Choice of stump inversion technique remained similar over time (Z-stitch 15·6% vs 11·6%, purse-string 82·6% vs 86%).

Reasons given for routinely inverting the stump were: 42·2% preferred security over simple ligation, 40·4% were taught that way, 26·5% did so to reduce adhesion formation.

Conclusions: Fewer trainees routinely invert the appendix stump in open appendicectomy than four years ago. More widespread practice of laparoscopic appendicectomy may be responsible. Inversion of the appendix stump is potentially harmful and should be avoided where possible.

Emergency Surgery 1107

Midnight Operating – Organisational Delays Exacerbate the Number of Procedures Performed After Midnight

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Aims: Reduced trainee numbers and experience mandate consultant presence during overnight operations to supervise or assist. Increasing night work means that daytime consultant activity is reduced with impact on service delivery. We have examined if overnight surgery in our unit is appropriate and unavoidable.

Methods: Patients who were in the operating theatre between midnight and 08:00 for a 20 month period were identified. The time from booking to getting to theatre was recorded. Operations were grouped into major – laparotomy, thoracotomy or major emergency procedures definitely requiring consultant presence and others - which a consultant might have to attend to assist only e.g. open/laparoscopic appendicectomies, abscesses and wound complications.

Results: One hundred and forty-five patients were identified. Twenty-two were excluded with incomplete data and 123 (mean age 52, age range 16–88, 50% male) analysed. Only sixty-two operations (50%) were major.

Table 1. Comparison of time taken to get to emergency theatre over a 20 month period.

Time Taken to get to Emergency Theatre	<1 hour	>1hour <3 hours	>3 hours	>6 hours	Total
Major Procedures	20	22	12	6	62
Other Procedures	14	12	9	26	61
Total	34	34	21	32	123

Conclusions: Of the major procedures requiring consultant presence, most got to theatre within three hours of booking. However, half were not major and were booked many hours previously. These cases might require consultant presence just to assist and should only rarely be performed after midnight and theatre access remains a problem.

Emergency Surgery 1120

The Emergency Laparotomy; Post-Operative Mortality and Length of Stay in Hospital

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Aims: Recent reports have shown considerable variation in care standards for patients undergoing emergency laparotomies. A contemporary study in England showed a 30 day mortality rate of 15·6%[1]. However, mortality rates of close to 50% have been reported at other centres[2]. The current study aimed to assess the mortality and length of stay following emergency laparotomy in our institution.

Methods: Electronic and paper based theatre logbooks were searched to identify all consecutive patients undergoing emergency laparotomies over a 6 month period (January-June 2013). Patients' online electronic clinical records were also reviewed and demographics, diagnosis, procedure and outcome documented. Data was analysed using Microsoft Excel software.

Results: 70 patients (male: 32, female: 38) were included in the study. Median (SD) age was 61 (19) years (range 21–92 years). The most common reason for a laparotomy was for bowel obstruction which accounted for 15·7% of cases. Perforated diverticular disease accounted for 14·3% of cases, while stabbings and blunt force trauma accounted for 4·3% of cases. Median length of stay in hospital was 17 (19) days (range 1–115), while the median time from laparotomy to discharge was 15 (17) days (range 1–109). 30 day mortality rate was 11%.

Conclusions: This study has demonstrated low post-operative mortality rates following emergency laparotomy at our institution, comparable with contemporary data. Although length of stay in hospital post-operatively was just over 2 weeks, there was a wide range (up to 109 days) which deserves further exploration.

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Emergency Surgery 1138

The Journey from Solitary Gallstone to Gallstone Ileus: A Case Report and Management Strategy Review

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Aims: Gallstone ileus causes only 1-4% of small bowel obstruction, with only 0·3-0·5% of cholecystectomies performed having a cholecystenteric fistula.

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This case displays the transition of solitary gallstone to obstructing enterolith demonstrated by CT tomography at one week interval, with a subsequent review of gallstone ileus and their preceeding fistulae.
Case report: An elderly man underwent a CT scan after presenting with non-specific symptoms demonstrating a large solitary gallstone causing chronic cholecystitis. Symptoms initially settled with conservative treatment. Following hospitalization with vomiting and systemic upset plain abdominal film showed an ectopic concentric opacity but no pneumobilia consistent with the previous gallstone. Further CT scan demonstrated the previous large solitary gallstone in the ileum with distal small bowel obstruction. He underwent a laparotomy and enterolithotomy. Antibiotics were continued he recovered well and was discharged shortly afterwards.
Methods: An online search via the Ovid-Medline interface was completed – Keywords included [Gallstone ileus] OR [Cholecystenteric OR cholecystduodenal OR cholecystcolonic OR biliary fistula]. Limitations were initially set to [Abstract, Human and English papers]. Abstracts were reviewed and those for pathology such as malignancy or fistulae not related to gallstones were excluded. Information regarding presenting features and surgical management were extracted and reviewed.
Results: From 1987 to 2013 there were 222 papers in English with keyword [gallstone ileus]: 29 were review articles, 4 as comparative studies and 180 case reports outlining presentation, imaging and management. There was diverse presentation of gallstone ileus. Surgical management from endoscopic, laparoscopic, lap-assisted two stage procedures with interval cholecystectomy to one stage procedure of enterolithotomy and cholecystectomy have been described. There was only one further case independently demonstrating interval CT before and after gallstone transition to enterolith.
Conclusions: Gallstone ileus has a multitude of presentations depending on level of the obstruction. Diagnosis includes clinical and radiological evidence. Treatment options range from laparotomy to minimally invasive techniques. Evidence regarding management is extrapolated and based on small comparative studies and case reports. Our case highlights the progression from solitary gallstone to cause of ileus with interval CT scans as an educational case with a comprehensive review of current management options.

Emergency Surgery 1143

The Referring Doctor's Diagnostic Accuracy in an Acute Surgical Service

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Aims: Using a newly developed acute surgical service with access to hot clinics, assessment unit and planned CEPOD capacity, we wanted to find out if the referring doctor's diagnostic accuracy could help create ambulatory care pathways in acute surgery.
Methods: Using prospectively collected data, from March-June 2013, we took the referral diagnosis (recorded by the hospital admissions team – from ED and GP) and compared it to the final diagnosis written on the patient discharge document for all patients referred to the acute surgical unit.
Results: 1356 admission and discharge episodes were recorded during the study period. Table 1 shows the accuracy of common referrals. (PPV – positive predictive value, NPV – negative predictive value)

Referral diagnosis	Abscess	Appendicitis	RIFitis & appendicitis	Biliary	Bowel obstruction	Diverticulitis	LLQitis & diverticulitis	Hernia	Ischaemic bowel	Pancreatitis	PR bleed	Renal colic
%referrals	4·57	7·52	11·6	6·64	5·68	2·95	4·35	1·77	0·37	4·65	3·32	6·86
%pathology	4·50	6·49	6·49	7·45	5·16	3·24	3·24	1·70	0·29	4·72	2·80	6·05
PPV (%)	93·5	59·8	47·7	72·2	62·3	62·5	50·8	75·0	40·0	81·0	77·8	73·1
NPV (%)	99·8	99·0	99·0	97·3	98·4	99·0	99·0	99·6	99·9	99·0	99·8	99·0

25·1% of referrals were abdominal pain with no specific diagnosis suggested.

Conclusions: It is not possible to bypass an initial assessment on an acute surgical unit for any condition except abscesses. There may be scope to create ambulatory pathways for conditions that can be safely managed from an ambulatory care unit, given appropriate resources. Abscesses can be managed using day case care in most instances.

Emergency Surgery 1166

Comparison of Outcomes in the Emergency Management of Colorectal Cancer- Is There a Weekend Effect?

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Aims: The effect of timing of surgery in patient outcomes has had a great deal of exposure in both the lay and medical press in recent months. We compared clinical and outcome parameters in patients who had undergone emergency management of colorectal cancer to determine if there were any differences in outcome, depending on whether the index procedure was performed on a weekday or at the weekend.
Methods: Patients who had undergone emergency management of colorectal cancer between 2008 and 2012 in a single general surgical unit were identified from a prospectively maintained audit database. Pertinent demographic, clinical and disease specific parameters were analysed in the context of overall outcome and the day of intervention.
Results: A total of 72 patients were identified for analysis of which 55 (76·4%) underwent their index procedure on a weekday and 17 (23·6%) at the weekend. There was a preponderance of male patients in the weekend group (70·1% Vs 49·1%), but there was no significant difference in mean age (64·1 ± 3·0 years Vs 66·0 ± 1·9 years, $p > 0·05$). There was no significant difference in overall mean survival between the weekend (246·4 ± 124·7 days) and weekday (260·6 ± 46·0 days) groups. 30 day and 1 year mortality in the weekend group was 23·5% and 41·2%, and in the weekday group was 5·45% and 36·4% respectively. 30 day mortality in the weekend group was significantly higher (Log Rank $p < 0·05$). There no significant difference in the spectrum of ASA grades between the two groups.
Conclusions: Although there was no difference in overall survival between the two groups, 30 day mortality was greater in patients operated on at the weekend. Our data support the concept of a 'weekend' effect in emergency surgery with the reasons behind this effect likely to be multi-factorial and multi-disciplinary.

Emergency Surgery 1182

The Effect of Instituting a Departmental Policy for Removal of the Macroscopically Normal Appendix at Laparoscopy

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Aims: To evaluate the introduction of a departmental policy to remove all appendixes at diagnostic laparoscopy for right iliac fossa pain, even if the appendix appeared macroscopically normal.

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Methods: An initial audit of all appendicectomies undertaken by the department was completed detailing the proportion performed laparoscopically, and the rate of negative appendicectomies, intra-abdominal collections and wound infections. After an audit presentation a policy was agreed for the removal of the macroscopically normal appendix at laparoscopy for right ilia fossa pain. Following this change in practice, appendicectomies were again audited. A negative appendicectomy was defined as a histologically normal appendix.
Results: The initial audit reviewed 229 appendicectomies, of which 62% were performed laparoscopically. The overall negative appendicectomy rate was 26%, with a negative rate in laparoscopic appendicectomies of 31%. The overall perforation rate was 14%. The rate of wound infection rate was 4·4% and intra-abdominal collection was 2·6%
The re-audit reviewed 62 appendicectomies, of which 45% were performed laparoscopically. The overall negative appendicectomy rate was 14·5% with a perforation rate of 11·3%. The negative rate in laparoscopic appendicectomies was 21·4%. The rate of wound infection rate was 3·2% and intra-abdominal collection was 1·6%.
Conclusions: Following the introduction of this policy, there was no increase in the percentage of negative appendicectomies, wound infections or intra-abdominal collections. While acknowledging that the numbers in this early audit were small, and that a larger cohort would be required to confirm these results, we feel they demonstrate a convincing trend. The introduction of this policy enabled a standard of care to be set, did not adversely affect our rate of negative appendicectomies, and may prevent leaving histologically abnormal appendixes in situ.

Emergency Surgery 1209

Gallbladder Pathology in Acute Surgical Patients and it's Management

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Aims: To identify patients with acute surgical admissions secondary to gallbladder pathology, and the way in which they are managed in a district general hospital (DGH).
Methods: Patients admitted acutely over a 6 month period with gallbladder pathology were identified from coding. These were then scrutinised for diagnosis, management and readmission.
Results: 130 admissions were identified, 81 of these were in female patients. Ages ranged from 17 to 96 years, with a mean of 56·4. Diagnoses were divided into biliary colic (37%), cholecystitis (28%), common bile duct (CBD) stone with or without cholangitis (18%) and acute pancreatitis (17%). 61% of patients were treated operatively, with the remaining 39% receiving non-operative management with any combination of analgesia, antibiotics, ERCP +/− sphincterotomy. 63% of those in the non-operative group were deemed "not fit" for operation. Other reasons included patient choice, previous cholecystectomy and subsequent failed clinic attendance. Fifty-five patients progressed to laparoscopic cholecystectomy with only 22 having the operation during the same admission. Elective waiting times ranged from 7–378 days, with a mean of 92·6 days, compared to 0–9 and 2·6 days in the acute group. Fourteen patients were discharged without definitive management were re-admitted on at least one occasion, with a maximum of a further 4 presentations.
Conclusions: Gallstone pathology is common on acute surgical take in a DGH, with the majority of patients being middle aged women. Presentation is most commonly due to biliary colic. 61% of our patients were treated operatively, 40% of those in the same admission. The majority of patients treated non-operatively were deemed "not fit" for surgery. Elective cholecystectomy waiting times varied greatly (7–278 days), with an average of 3 months. This had an impact on the readmissions. If acute admissions, discharged for elective cholecystectomy were prioritised, or treated acutely the readmission rate would likely reduce.

Emergency Surgery 1210

Use of Abdominal CT During Acute Surgical Admissions

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Aims: A recent national analysis of hospital episode statistics in the UK revealed increased use of CT to be an independent predictor of reduced mortality in the general hospital population. We investigated the use of CT during acute surgical admissions at our unit and analysed how usage has changed over time.
Methods: A retrospective analysis of PACS data and eSearcher (our electronic patient record database) was performed. Two separate but similar 3 month periods were selected for analysis: 1st Jan to 31st March in 2006 and in 2013. All abdominal and pelvic CTs performed under the care of a general surgical Consultant during an unplanned admission were included.
Results: The number of acute admissions under general surgery over 3 months in 2006 and 2013 was 719 vs 609 respectively. The number of acute CTs was 43 in 2006 vs 120 in 2013; the proportions of acute patients scanned were therefore 5·96% and 19·3% respectively ($p < 0·0001$). All Consultants demonstrated increased use of acute CT from 2006 to 2013. The proportion done out of hours was 7% in 2006 vs 24% in 2013 ($p = 0·036$). There was increased use of CT across all age groups, in particular ages 70-79 yrs in 2013. There were four major discrepancies between CT and laparotomy findings.
Conclusions: Use of emergency CT at our unit has increased just over threefold at our unit in the last 7 years. There has been a particular rise in use of out of hours CT. This is balanced by a reduction in out of hours operating. Whilst reports indicate a small increase in long-term risk of cancer with CT, this is balanced by increased diagnostic accuracy and reduced hospital mortality. The reasons for increased use of CT include increased availability, increased diagnostic accuracy of CT due to more sophisticated technology, increased patient expectations and a drive to reduce overnight operating. Although by no means replacing clinical assessment, there is a clear justification for using CT in the acute surgical patient to assist in diagnosis, pre-operative planning and the reduction of mortality.

Emergency Surgery 1226

ABThera™ Open Abdomen Negative Pressure Therapy System Versus Traditional Temporary Closure Methods in the Management of the Acute Abdomen

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Aims: There are many described techniques for management of the open abdomen including vacuum assisted closure, mesh, Bogota bag and Wittmann patch. The ABThera negative pressure therapy system is a new system for the management of the open abdomen which we sought to evaluate in the setting of the acute abdomen in our institution.
Methods: A retrospective analysis of prospectively collated database was performed of all patients managed using the ABThera™ open abdomen negative pressure therapy system as well as traditional temporary closure methods in our institution since the introduction of the ABThera. Data was collected on demographics, reason for the use of the dressing, duration of therapy, wound closure rates and subsequent wound complications
Results: Eighteen patients in our unit had an open abdomen managed with the ABThera system and 18 patients with traditional closure methods between April 2012 and January 2013. The indications for this were trauma (10 with ABThera versus 9 traditional), perforation (4 versus 7) and post-surgical complications (4 versus 2). The duration of therapy was significantly reduced in the ABThera group (median 2 days versus 3 days in the traditional group; $p = 0·0164$). Four patients died with the ABThera in situ and one in the traditional group. Of those who survived, closure was achieved in 100% of patients in the ABThera group with no post-operative wound complications. In the traditionally managed group, 88% achieved closure, which was not significantly different to in the ABThera group ($p = 0·448$). There was a significantly increased incidence of wound complications in this group, with 3 cases developing full thickness

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abdominal wall dehiscence and one developing an enterocutaneous fistula and subsequent large incisional hernia, representing 33% of all patients who had their abdomen closed prior to discharge. The wound complication rate was significantly higher in the traditionally managed group (p = 0·0421)

Conclusions: In our series all cases achieved closure of the open abdomen following therapy with the ABThera negative pressure therapy system, with a 100% rate of closure in the this cohort and significantly lower rate of wound complications compared to traditional dressing techniques.

Emergency Surgery 1241

Development of a Clinical Management Algorithm for Patients Presenting with Ingested Magnetic Foreign Bodies

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Aim: The incidence of ingested magnetic foreign material in teenagers has increased recently, due to the increase in the use of cosmetic magnetic accessories (such as magnetic tongue studs) in that age group. This increase is reflected in the number of published case reports recently. The aim of this case series is to highlight the challenges in the management of these patients for the general surgeon and provide a management algorithm.

Methods: The cases of seven patients between 13 and 15 years old, who ingested magnetic tongue studs were studied. These patients presented to a single district general hospital, within a period of seven days. The rationale in the diagnosis, operative management and postoperative care were analysed and combined with available literature to formulate a management algorithm.

Results: Four out of seven patients were discharged on the day of presentation as they had passed the ingested magnets naturally. One patient had serial X-rays every 2 days to confirm passage of the foreign bodies. Two out of seven patients were operated. One of these patients required two limited small bowel resections and an ileocaecectomy. The second patient had a short segment enteroenteric fistula diagnosed laparoscopically, which was managed without resection.

We found that the main challenge in these patients, was establishing the relevant history of foreign body ingestion, as none of the patients offered this information on initial assessment. Furthermore, the timing and type of surgical intervention was another area of controversy particularly in that age group.

Available literature on the topic, which was mainly comprised of case reports and case series and local experience were combined to formulate a management algorithm to inform the general surgeon.

Conclusion: The rise in the incidence of this rare but challenging clinical entity, dictates that oncall general surgeons should have a high index of suspicion and utilise a management algorithm as an adjunct for their clinical decision making.

Emergency Surgery 1256

The Rising Challenges of Emergency Biliary Surgery. Reducing the Readmissions

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Aims: Emergency cholecystectomy outcomes are not as unfavourable as previously anticipated. Conversion and readmission rates vary between trusts but retained stones appear to associate with subtotal cholecystectomies as a cause of post operative pain and readmissions. We aimed to audit our practice in Derby for all emergency biliary procedures identifying ways to reduce complications.

Methods: Cholecystectomies carried out in the emergency theatre for all indications were identified between April 2011 and July 2013. Data on preoperative imaging, bloods, intra and post operative complications, length of post operative stay and readmissions were collected. Operations were carried out by 4 consultant Upper GI and HPB surgeons. Where subtotal cholecystectomies are required, a choledochoscope is routinely used at the time of surgery to visualise the gall bladder remnant and cystic duct to ensure no gall stones are impacted that could cause post operative complications and readmissions.

Results: 223 cholecystectomies were performed during the study period. 20 of these were for patients presenting with pancreatitis, the rest for biliary colic, cholecystitis and cholangitis. There were 152 females. Median age was 50 (range 17 – 87). Median no of days to surgery was 2 (range 0–25) and median post op stay was 2 days (range 0 – 27). 87 patients (39%) had an on table cholangiogram, 40 (18%) had a common bile duct exploration and only 7 (3%) were converted to an open cholecystectomy. 6 patients had a subtotal cholecystectomy, only 1 of which represented with a retained stone post op.

12 patients were readmitted within 30 days (5·4%) 2 required relaparoscopy for a bile leak from accessory ducts and one an ERCP for a retained stone. The rest were treated conservatively for minor complications. 3 patients (1·3%) had a retained stone and 2 (0·9%) had a bile leak within the follow up period.

Conclusions: Conversion and readmission rates for acute cholecystectomies in our unit remained favourably low as did the median post op length of stay, despite the number of complicated presentations and duct explorations. Visualising the gall bladder remnant after a subtotal cholecystectomy with a choledochoscope may reduce the incidence of retained stones post op causing readmissions.

Emergency Surgery 1275

What is Negative about Negative Appendicectomy?

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Aims: Negative appendicectomy rate is an important outcome measure following appendicectomy and there is a huge variation on the quoted rates amongst various institutions globally. Our aim is analyse the outcomes following appendicectomy especially in relation to the histologically normal appendix and establish the clinical implications.

Methods: Data was collected from the OPCS database from 2010 – 2011 of all emergency appendicectomies and analysis of all consecutive negative appendicectomies were carried out in that period. Clinically convincing appendicitis was only included in the study and for this reason laparoscopic appendicectomy were excluded from the study as this carried an element of diagnostic uncertainty.

Results: 200 open appendicectomy operations were performed in the study period with age ranging from 4 to 87 years. There were 101 male and 99 female patients and 63 in the paediatric age group. The length of stay varied from 2 days to 10 days with an average of 3·8 days. 48 patients had negative histology for appendicitis but included faecoliths (11), fibrous obliteration (16), worms (6), non specific congestion (4), crohns (1), carcinoid (1), lymphoid hyperplasia (3) and serositis (1) as per the pathology report. 5 patients had peritonitis from an alternative pathology at open appendicectomy. There was no 30- day readmission recorded for patients in the negative appendicectomy group.

Conclusions: Although the negative appendicectomy rates are decreasing globally with the use of imaging modalities the arguments for removing a macroscopically normal appendix still exists. With the varied pathology noted in a macroscopically normal appendix it is justified to remove the appendix and question the definition of a negative appendicectomy as an outcome measure as it certainly has improved the clinical outcome.

Emergency Surgery 1287

Time Taken for CT Head Scans in Cases of Adult Head Injury – an Audit Against NICE CG 56 Guidance

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Aims: NICE guidance 56, gives indications for the appropriate requesting of CT head scans in patients with head injury. The guidance states the time between the requesting and reporting of CT head scans should be less than either 1 or 8 hours, depending on the indication. We audited our DGH against the NICE guidance.

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Methods: Adult patients were identified from the radiology database; 50 in cycle 1 and 100 in cycle 2. Times of admission, CT scan requesting, scanning and reporting were recorded from the radiology database and A&E records. Indications from the NICE guidance were identified from the clinical notes.
Results: In cycle 1, 25/50 patients had indications for a CT within 1 hr of request, and 11/50 within 8 hrs. 14/50 had no indications for a CT. Overall, the median time from scan request to report was 2 hrs 5mins, with patients required to have a scan within 1 hr or 8 hrs receiving their reported scan in a median of 1 hr 45mins and 1 hr 26mins respectively. Only 6/25 of patients requiring a scan within 1 hr received it within this timeframe. Scans required in 8 hrs were achieved in 10/11 patients. In cycle 2, following interventions of clinician education and deployment of better IT systems to more accurately track patients at each time point, overall median time for scanning had fallen to 1 hr 56mins. However, the proportion of inappropriate scanning had risen - only 39/100 patients had indications for a scan within 1 hr, 17/100 for one within 8 hrs, and 44/100 had no indication at all. Moreover, in the group of patients that required a scan within 1 hr, the median time had fallen to 1 hr 54mins, and in the 8 hr group to 2 hrs 4mins. Only 4/39 patients requiring a scan within 1 hr received it in this time, but all 17/17 patients requiring a scan within 8 hrs received it in this time. Many clinicians scanned asymptomatic patients on anticoagulants - something not recommended by NICE guidance. None of these 13 patients had positive findings on CT and even in patients with symptoms, anticoagulants did not increase the chance of positive findings on CT.
Conclusions: Many CT head scans in trauma were inappropriately requested and even after education, despite an overall improvement in speed, there was a lack prioritisation for those patients at highest risk. Additionally, our study suggests anticoagulants carry no independent risk factor in head injury.

Emergency Surgery 1298

An Abscess Pathway Could Help Reduce Length of Stay

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Aims: Using the results of a local study on the accuracy of referrer diagnosis to an acute surgery unit, 93% of patients with an abscess were referred accurately. Based on this we were able to develop a pathway for managing abscesses with the aim of reducing in-patient stay and time to treatment. Prior to the pathway being used all patients were having assessment prior to listing for a GA abscess incision and drainage, with many waiting more than 24 hours for surgery and then remaining as an in patient for a further 24 hours to change packing on day 1.
Methods: Data was collected prospectively over 2 months, Oct-Dec 2013, after initiation of the pathways. Two pathways were created seperating a local anaesthetic route from a general anaesthetic route. Those patients with abscesses not deemed suitable for LA and systemically well were given a patient advice sheet and sent home with a plan to return starved, at 7 am the next day to the daycase unit. Priority operating capacity was supposed to be given to these cases, treated first on a list and discharged following recovery. The mean expected length of stay on the daycase pathway was 6 hours. All LA and GA daycases were booked to be seen in a hot clinic the next day to ensure resolution of symptoms and to do the first pack change.
Results: 41 patients were treated in the initial study period. 25(61%) were treated using the pathways. 13 were treated as daycases according to the pathway. 4 patients had a LA daycase treatment, 9 had a GA daycase treatment.16/41 (39%) patients did not follow the pathway appropriately. Of those not managed according to the pathway 16/41 (39%), review of the notes showed that they could have been. The main reason for non-adherence was failure to have a protected theatre slot for use by the acute surgical unit. This patient group occupied 28 excess bed days preventing up to 28 patients from having elective surgery as this period coincided with elective surgery cancellations due to bed shortages.
Conclusions: The pathway was successfully used in 61%, and daycase could have been used in 82% of abscesses. Failure to use the daycase pathway cost the Trust 28 excess bed days, leading to some elective case cancellations.

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General

General 0028

An Audit of Acute Pancreatitis Scoring within a Single Pancreas Unit

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Aims: Acute severe pancreatitis (AP) is recognized as having a mortality of approximately 10%. Severity scoring is an essential component in the assessment of all patients. Risk stratification can be used as marker of optimum clinical care for patients with AP and we examined the impact of centralizing care for all patients with AP to a single tertiary referral HPB unit.
Methods: Patients with a diagnosis of acute pancreatitis were randomly selected and data was collected regarding use of and timing of the modified Glasgow score. This data was compared to the use of the Glasgow score in risk stratification prior to centralizing services for AP.
Results: Fifty-eight patients were recorded pre intervention and 34 post intervention. The percentage of patients with a calculated modified Glasgow score rose from 41·4% (24/58) to 79·6% (27/34.)
Conclusions: Centralising care for patients with AP to a single dedicated unit improves risk stratification. It remains to be seen if this translates into better survival figures and more work is required to examine this.

General 0036

The Relationship Perioperative Blood Loss and BMI to Recovery Following Total Knee and Hip Arthroplasty

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Aims: Total hip arthroplasty (THA) and total knee arthroplasty (TKA) are major orthopaedic operations with previously described high blood losses and transfusion rates. The aims of this study were to examine the average drop in haemoglobin (Hb) and associated transfusion rates in patients undergoing primary THA or TKA, and to examine how this impacted upon length of patient stay (LOS) in a teaching hospital using an Enhanced Recovery After Surgery (ERAS) care system.
Methods: Patients who had recently undergone primary THA or TKA were identified from the local arthroplasty database. These included Exeter THAs and a mixture of PFC and Triathlon TKA prostheses. Electronic and operative records were used to ascertain pre-operative Hb, lowest post-operative Hb at three days, length of stay, diagnosis, height, weight, method of anaesthesia and noted complications. Results were collated and analysed using PASW statistical software.
Results: 105 patients of average age 70 years (range 26·3-86·5) were identified, of which 104 underwent spinal anaesthesia. 57·1 % of patients were female and 42·9% male. 53 THAs and 52 TKAs were identified, and opearative indications were osteoarthritis in 87·6%, rheumatoid arthritis in 3·8% and other diagnoses in 8·6%. Average decrease in Hb was 2·61 g/dl (S.D 1·28) for THAs and 2·20 g/dl (S.D 1·23) for TKAs with no significant difference found ($P = 0·099$). Male patients had a significantly higher drop in Hb post-operatively compared to females ($P < 0·0001$), although female patients had a significantly lower pre-operative Hb ($P < 0·0001$) and only 1·9 % of patients were transfused overall. Patient BMI, age and diagnosis no correlation with decrease in Hb. LOS positively correlated with decrease in Hb ($r = 0·33$, $p = 0·001$) and BMI ($p = 0·001$, $r = 0·33$), and was positively predicted by BMI ($p < 0·0001$). Average length of stay was 4·8 days (S.D 2·52) for THAs and 5·7 days (S.D 3·88) for TKAs with no statistical difference found($p = 0·162$).
Conclusions: Low transfusion rates and short lengths of stay were found within a hospital using an ERAS approach. Patients with higher BMIs and those experincing larger drops in Hb had increased lengths of stay. Although male patients experienced significantly larger drops in Hb, this did not translate into increased transfusion rates or LOS.

General 0042

An Audit of GP Referral Letters for Elective Hernia Day Cases in Greater Glasgow and Clyde

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Aims: Day case hernia repairs in otherwise healthy individuals are commonplace on general surgical elective theatre lists. Currently, a GP referral must first be seen in a general surgical clinic before being referred to pre-assessment and placed on a theatre list. This audit was performed as a pilot study to assess the feasibility of a one stop hernia clinic by determining GP's diagnostic accuracy.
Methods: Details of hernia operations labelled as day case or 23 hour (by management intent) performed in GGC hospitals between 1st September 2012 and 1st March 2013 were obtained. In those hospitals where electronic records of their surgery was available on clinical portal, the GP referral letter, clinic letter, and operation details were gathered and analysed.
Results: 94% ($n = 297$) of cases analysed were referred by GPs. 95% ($n = 281$) of all GP referrals ($n = 297$) were accurate with hernia diagnosis. 88% ($n = 253$) of patients were categorised as ASA1 or ASA2 indicating the vast majority of patients referred are low risk patients. 91% ($n = 262$) of day case/23 hour patients were discharged within target timeline and without early post-operative complications.
Conclusions: With such a high accuracy percentage of diagnosis, a one stop hernia clinic from GP referral letters could be a realistic option and would reduce patient waiting times, prevent unnecessary hospital visits and lower administrative costs.

General 0051

Outcomes of Laparoscopic Fundoplication with the use of Bio-Mesh in Patients with GORD or Large Symptomatic Hiatal Hernias

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Aims: Since 2011 in cases where we have identified a large hiatus hernia during Laparoscopic fundoplication, the hiatal repair was augmented with biosynthetic mesh (Gore Bio-A®). With this audit we aimed to establish the impact of the addition of mesh on symptomatic outcomes.
Methods: All Laparoscopic fundoplication's performed between October 2011 and January 2013 by a single surgeon were included. The data were collected retrospectively and patient outcomes (GORD-HRQL quality of life questionnaire) were obtained both pre and post-operatively.
Results: 23 patients with a median age of 63 years underwent the procedure, 14 of which received mesh augmentation. Comparable symptomatic improvement (GORD-HRQL) was seen in both groups.
Three patients (13%) complained of mild dysphagia (2 in the mesh group), one patient from the mesh group had a minor surgical site infection and one patient from each group had a post-operative pneumonia. No patient required a re-operation for recurrence of symptoms.
Conclusions: Augmentation of the hiatal repair with biosynthetic mesh may be necessary to achieve comparable postoperative outcomes in selected cases with a large hiatus hernia. We suggest a randomised control trial with long term follow-up for definitive evaluation.

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General 0082

Service Provision and Patient Acceptability of Totally Extraperitoneal Inguinal Hernia Repair versus Open: 2 Year Results from a District General Hospital

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Aims: Within the past decade there has been a significant shift towards minimally invasive techniques in the UK. Following that trend, many centres have employed laparoscopic techniques for common operations such as inguinal hernia repairs. There have been several studies comparing open and laparoscopic techniques in terms of complication and recurrence rates. Very few however, have been published on service provision and patient acceptability, particularly regarding District General Hospitals. This study aims to assess service provision and patient acceptability of a minimally invasive inguinal hernia repair compared to an open mesh repair technique.
Methods: Over a period of two years, 98 patients (Male: 89, Female: 9 Mean age: 59) underwent inguinal hernia repair at Nobles Hospital, under the care of the same surgical team. 61 were laparoscopic, Totally Extra peritoneal (TEP) approach and 37 were open mesh repair. All patients were given a questionnaire asking them to report their agreement with various statements on a 0 to 10 scale. Review of case notes were used to report other variables.
Results: The open group had 5 complications. TEP group had 9 (p value 0·932, Chi square test). There were 2 recurrences in the laparoscopic group. There was one recurrence in the open group. Mean hospital stay for TEP repair was 1·84 and for open 1·34 (p value 0·152, Mann Whitney test). Same day discharge was considered as 1 day of hospital stay. The results for the questions were as follows: Were you provided with sufficient information about the Hernia repair? Open 8·66, TEP 8·7, Did you have any pain or discomfort after the surgery? Open 4·2, TEP 3·5. How happy were you with the cosmetic results? Open 7·9, TEP 8·2. How quickly did you return to your regular daily routine? Open 5·9, TEP 7·1. Overall, have you been treated with dignity by the surgical team (Doctors and nurses)? Open 9, TEP 9. How satisfied are you with the procedure you underwent? Open 8·6, TEP 8·4.
Conclusions: TEP hernia repair performed by a single surgical team has similar complication rates, hospital stay and recurrence rates to the open approach. This study could indicates it is safe and feasible to perform TEP inguinal hernia in district general hospitals. Patients with TEP repair had 7% less post-operative pain and returned to daily activities 12% faster compared to open approach.

General 0135

RCT of Either Traditional Haemorrhoidectomy or Stapled Haemorrhoidopexy for Haemorrhoidal Disease – Current Status of the Largest Trial of its Kind

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Aims: Haemorrhoids are common in all age groups from mid-teens onwards. The two most common surgical interventions to treat symptoms are traditional surgical haemorrhoidectomy (TH) and Stapled Haemorrhoidopexy (SH). Although SH has been used in practice for over 10 years, some important gaps in the literature remain about how it compares to TH. The question addressed in the eTHoS trial is whether SH is more effective and cost-effective compared with TH. The trial is particularly pertinent as there is currently no high quality multicentre randomised controlled evidence for the use of TH or SH and more recently Haemorrhoid Artery Ligation is becoming more commonly adopted in European surgical practice.
Methods: Design: A pragmatic multicentre RCT comparing stapled haemorrhoidopexy to traditional excisional surgery for haemorrhoidal disease.
Setting: Thirty-one UK sites are taking part.
Primary outcomes: Patient-centred, quality of life profile (area under the curve derived from EQ-5D measurements at baseline, 1 week, 3 weeks, 6 weeks, 12 months and 24 months); Economic, incremental cost per quality adjusted life year (QALY) gained with QALYs based on the responses to the EQ-5D.
Results: Recruitment: The recruitment target is 800 participants; 839 have been considered for inclusion; 622 have been randomised (310 to TH, 312 to SH; 6 and 5 post-randomisation exclusions respectively).
Conclusions: Recruitment is ongoing, ending in 2014. This trial is currently the largest trial of its type in the world. Progress to date will be presented

General 0141

Does Size Matter? Probably – Betteridge's Law and Medical Literature Headlines

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Aims: The phrase "Does size matter?" is a frequent sighting in the media, but Betteridge's law of Headlines states that "any headline which ends in a question mark can be answered by the word no". We aim to investigate if this principle applies to published medical literature.
Methods: A literature review of articles proposing the question "Does size matter?" within the headline was performed using the Scopus index of papers published since 1960. Articles were excluded if they were non-clinical studies, letters, replies or editorials. Size was determined to be significant if the primary outcome had a statistically significant result related to the size under analysis.
Results: Of 117 papers, 53 papers were eligible for analysis. Size was statistically significant in 33 (62%) papers, equivocal in 7 (13%), and non-significant in 13 (25%). Histogram analysis suggests that the term, first used in the 1980's, is also becoming used more frequently every year, with histrogram skewness at −0·871 (P = 0·003) and over 60% of papers using it being published in the last 5 years alone.
Conclusions: It appears that Betteridge's law does not apply to medicine. The use of the journalistic phrase "does size matter?" may be a symptom of increasingly media savvy journals or a desire of the article authors to add "impact" to their work.

General 0160

A Survey of Contemporary Hernia Truss Users

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Aims: Against British Hernia Society guidance, hernia trusses continue to be used in large numbers. We decided to survey contemporary truss wearers at our institution.
Methods: Patients issued inguinal hernia trusses from our surgical appliance department between 1·12·2006 and 1·6.2013 were identified and contacted to undertake a telephone questionnaire survey.
Results: 26 patients were identified, 8 had since died. 12 patients were successfully contacted via telephone and undertook a structured questionnaire. 11 males and 1 female responded, mean age of 74 (55 – 93 range). Reasons for truss use were lack of perceived surgical fitness 8/12, symptom control whilst awaiting surgery 3/12 and unknown 1/12.
5/12 continued to use trusses. 6/12 stopped following surgery, 1/12 stopped for unknown reasons. 7/12 had worn the truss daily. The mean length of truss use was 22 months (median 6 months). 10/12 reported improvement in pain. 9/12 reported improvement in swelling. 9/12 reported the truss as either comfortable or very comfortable. 1/12 would recommend a friend with a hernia trying a truss.
Conclusions: Very few patients are referred for a truss. Referral was associated with a high mortality. Those referred reported symptom relief. The majority of truss wearers recommending trusses to a friend provides food for thought for surgeons considering management options amongst higher risk patients or those declining surgery.

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General 0164

Virtual Ward: A Reality in Acute General Surgical Practice

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Aims: It has been well recognised that over a period of time, there has been gradual increase in the workload of NHS in all subspecialties including general surgery. With increasing expectations of patients in their care, it has been challenging to cope with this workload. This has been worsened by the increase in number of hospital closures and implementation of European working time directives across the country. In our trust, we initiated a service called the "virtual ward" to improve the cost effectiveness of our acute general surgical practice and to enhance patient satisfaction.
Methods: The data were collected in a prospective manner over a period of four weeks at St. Peter's Hospital. Strict inclusion and exclusion criteria were used to include patients eligible to be treated on virtual ward basis. Data were collected and analysed using Microsoft Excel 2003.
Results: Forty one patients were treated on a virtual ward basis. The male:female ratio was 14:27 The average age of male patients was 52 (range 20–81) and female patients was 46 (range 14–88). Thirty three patients had general surgical conditions, six had colorectal, one had vascular and one had upper GI conditions. None of the patient was re-admitted at a later date. Sixteen patients attended virtual ward for review, six had a surgical procedure, six had radiological investigations, seven had home phone calls, four had review of their wound and one had a dressing change.
Conclusions: With increasing workload and patients' expectations, virtual ward does provide the opportunity to improve the clinical outcomes with safe practice. It also reduces the re-admission rates and cost of hospital stay. We recommend the use of this service across all the NHS trusts.

General 0177

The Application of Local Anaesthetic to the Peritoneum in Laparoscopic Inguinal Hernia Surgery: A Systematic Review and Meta-Analysis

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Aims: There are two principal laparoscopic methods for repairing inguinal hernia: totally extra-peritoneal (TEP) and trans-abdominal pre-peritoneal (TAPP). It is possible to administer local anaesthetic (LA) agents to the peritoneum in an attempt to reduce post-operative pain but the results of existing randomised controlled trials (RCTs) have not consistently shown a benefit. Our aim was to establish if there was in fact a benefit by conducting a meta-analysis.
Methods: A systematic review was conducted to identify relevant RCTs from the literature. In order to be included in our meta-analysis, RCTs needed to assess the severity of post-operative pain using a visual analogue scale (VAS) within the first 24hours of surgery. The mean VAS score during the initial 24hours was then used for our primary meta-analysis comparison. We also attempted to compare the total consumption of analgesia in the immediate post-operative period.
Results: A total of ten RCTs were included in the meta-analysis; all assessed the use of bupivacaine during TEP repairs. The control solution in each RCT was 0·9% sodium chloride. There was a lower mean VAS score in the patients who had received LA but this did not reach statistical significance. The overall mean difference across the trials was 0·87 (0·87; 95% confidence interval [−0·9, 2·71]) suggesting that there is no statistically significant difference in pain score after surgery between the two groups. The test for heterogeneity gave a non-significant P value of 1 again indicating a lack of real benefit of LA. There was not enough consistency in the reporting of analgesic consumption to perform a meta-analysis. However, some RCTs revealed a significantly reduced consumption of analgesia in patients who received LA to the peritoneum, suggesting there may be a benefit when pain is assessed in this more objective fashion.
Conclusions: The application of LA to the peritoneum during laparoscopic inguinal hernia surgery does not appear to reduce the intensity of post-operative pain. However, lack of uniformity in the dosage of LA and use of other analgesia means that a true benefit may be revealed by future clinical trials.

General 0224

Applicability of BSG Guideline for Gallstone Pancreatitis in DGH

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Aims: BGS guideline on management of pancreatitis recommends that ERCP is best carried out within the first 72 hours in cases of severe pancreatitis and cholecystectomy during the same admission unless a clear plan has been made for definitive treatment within the next two weeks. Our aim was to compare our practice against the guideline.
Methods: Retrospective analysis of patients admitted with gallstone pancreatitis for two years from 2011 to 2013. Data were collected from clinical coding, GI reporting tool, and case notes. Data collected included demographics, consultant in charge of care, Glasgow scoring, clinical course including ERCP and laparoscopic cholecystectomy including surgeon.
Results: 47 patients were admitted with gallstone pancreatitis. 18 of 47 were male and 29 were female. 11 out of 47 had severe pancreatitis. 16 of 47 were under uGI surgeons and 31 were under the colorectal surgeons. 5 out of 47 died, of which 4 were severe pancreatitis. 8 out of 47 required ITU. 8 out of 47 had ERCP, of which 3 took place within 72 hours. 31 out of 47 had laparoscopic cholecystectomy, 6 of them within 2 weeks. 2 out of 47 were delayed due to clinical reasons, 3 due to cancellations, and 26 had no documented cause. 19 out of 31 were done by uGI surgeons, 12 by colorectal surgeons. 2 out of 47 were not for candidate due to high risk, 2 were cancelled, and 1 was referred to the local hospital. 6 out of 47 were re-admitted with gallstone-related problems, 4 of them being pancreatitis.
Conclusions: 34% of gallstone pancreatitis was managed under uGI surgeons.
23% had severe gallstone pancreatitis. 17% required ITU.
10% mortality rate (36% for severe pancreatitis).
17% had ERCP, 13% ERCP only and 6% within 72 hours as per guideline.
66% had laparoscopic cholecystectomy, 13% within 2 weeks as per guideline.
4% had clinical reason for delay, 6% had cancellations, and 55% had no statements.
8% was re-admitted with recurrent pancreatitis.
This raises a question for BSG guideline in view of its logistics, availability of ERCP facilities, and possibility of higher complication rate in early cholecystectomy.

General 0230

Meta-analysis of Self-Gripping Mesh Versus Sutured Mesh in Open Inguinal Hernia Repair

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Aims: To systematically analyse all published randomized controlled trials comparing self-gripping mesh (ProGrip) and sutured mesh to analyse early and long term outcomes for open inguinal hernia repair.
Methods: A literature search was performed using the Cochrane Colorectal Cancer Group Controlled Trials Register, the Cochrane Central Register of Controlled Trials in the Cochrane Library, MEDLINE, Embase and Science Citation Index Expanded. Randomized trials comparing self-gripping mesh with sutured mesh were included. Statistical analysis was performed using Review Manager Version 5·2 software. The primary outcome measures were hernia recurrence and chronic pain after operation. Secondary outcome measures included surgical time, wound complications and perioperative complications.
Results: Five randomized trials were identified as suitable, including 1170 patients. There was no significant difference between the two types of mesh

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repairs in perioperative complications, wound haematoma, chronic groin pain and hernia recurrence. Wound infection was lower in self-gripping mesh group compared to sutured mesh but this was statistically not significant (risk ratio (RR) 0·57, 95% confidence interval 0·30-1·06, P =0·08). The duration of operation was significantly shorter with self-gripping mesh compared to sutured mesh with a mean difference of −5·48 minutes [−9·31, −1·64] Z =2·80 (P =0·005).

Conclusions: Self-gripping mesh was associated with shorter operative time compared to sutured mesh. Both types of mesh repairs have comparable perioperative and long-term outcomes.

General 0244

Inguinal Hernia Surgery in Nigeria: A Prospective Observational Study and Assessment of Perceived Health States

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Aims: The prevalence of inguinal hernias in Africa is high due to lower rates of elective operation and genetic factors leading to a narrower pelvis. In rural areas of Africa up to 30% of hernias present acutely. Around 24% will have a bowel resection and the mortality in this group can reach 40%. Little is known about the epidemiological burden of disease due to hernias in Nigeria, although giant inguinoscrotal hernias are a recognised problem. We aimed to correlate the characteristics of inguinal hernias with a patient assessment of perceived health state.

Methods: A team from the UK travelled to Benue state, Nigeria in September 2013 for a 7 day hernia camp with the charity Operation Hernia. Data pertaining to patient demographics, hernia characteristics and surgery performed were collected prospectively and all patients completed the EuroQOL EQ-5D health questionnaire.

Results: The team performed 84 operations on 78 patients, of which 54 were open adult inguinal hernia repairs (tension free with mosquito-net mesh). The median (IQR) age of patients was 40 (30–49) years, 68% of which were male. Bilateral hernias were seen in 8%, and the mean reported time with symptoms was 6 years. Patients travelled an average of 15 km to the hernia camp for an operation which took a mean of 45 minutes; 74% were performed under local anaesthetic. Using the Kingsnorth Classification 34% were H1 (spontaneously reduce), 36% H2 (easily reduce with pressure), 26% H3 (inguinoscrotal) and 4% H4 (incarcerated). The median (IQR) global health score was 80 (70–82), which did not appear to correlate with either hernia classification or longevity.

Conclusions: The global burden of disease from hernias is largely unknown, however if left untreated there is a risk of significant morbidity and mortality. Further evaluation is needed, and the study is currently being repeated in the UK to allow comparison.

General 0278

Endoscopic Balloon Dilation of Upper GI Strictures by a New Technique

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Aims: Hydrostatic balloon dilatation of upper GI strictures is associated with a risk of perforation which varies with the underlying pathology and the technique employed. We propose an innovative technique that is both safe and allows for the early recognition of any complications during the procedure.

Methods: We analysed 100 consecutive patients undergoing through the scope (TTS) balloon dilation of oesophageal strictures between 1st May 2011 and 1st Oct 2013. We employ a technique based on the oil- immersion phenomenon used in microscopes to allow us to look through the balloon while dilating. This not only allows assessment of tolerance of the stricture to dilation but also allows early recognition of inadvertent deep mucosal and tran-mural tears.

Results: A total of 100 patients underwent 186 dilatations with 34 having multiple procedures (Mean 1·86). 68 patients had anastomotic strictures, 25 had strictures due to gastro esophageal reflux disease, 6 had malignant strictures and just 1 was due to eosinophillic esophagitis. All had strictures ranging from 5-11 mm (Mean 8·49 mm) and most underwent multiple dilations up to a maximum of 20 mm (Mean 14·7 mm). 56 patients were male and 44 female with an average age of 62·5 years (Min 17 and max 89 years). Only one patient (0·5% of total procedures, OR 0·2985, p = 0·3008) had a full thickness perforation requiring intervention and one patient had a deep mucosal tear not requiring any intervention

Conclusions: We feel that this is a very safe technique with a short learning curve allowing potentially difficult dilatations to be performed safely with an exceptionally low complication rate of less than 1%.

General 0286

Are Permanent Stomas Being Routinely Augmented with Prophylactic Mesh? International Colorectal Opinion Suggests not

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Aims: Permanent end stomas ("iatrogenic hernias") are often complicated by further herniation ("parastomal") that is difficult to manage. Whilst not all stomas necessarily need augmenting with mesh, there is evidence that prophylactic mesh lowers the incidence of later herniation.

Methods: We sent an email survey to 200 authors of original work published in 'Colorectal Disease' (Impact Factor 2·1) and 'Diseases of the Colon and Rectum' (IF 3·3).

Results: There were 111 responders (55%), of whom 65 (59%) were senior surgeons from numerous countries. Only 17% said that they had used, or observed the use of prophylactic mesh at the last elective permanent colostomy they had done or seen. In emergency end colostomy, if the patient was unlikely to undergo reversal, 43% of respondents said they would 'consider' use of a prophylactic mesh. This ambivalence was independent of the level of specialist experience (42 – 49%). If the surgeon were to personally require an elective permanent end colostomy, 73% stated they would not want the site augmented with mesh.

Conclusions: Practicing colorectal surgeons still avoid the use of prophylactic mesh when raising a permanent stoma despite the available evidence. Personal audits and large prospective trials are required to evaluate the many methods of stoma formation.

General 0288

Outcomes of Cholecystectomies in Ultra Octogenarians and Risk Factors for Postoperative Morbidity and Mortality

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Aims: The aim of this study was to review cholecystectomy results in ultra octogenarians and investigate common risk factors for postoperative morbidity and mortality.

Methods: A retrospective analysis was conducted over the last nine years of activity. Included were patients aged 80 years or older. Factors considered potentially influencing the postoperative morbidity or mortality were the modality of operation (emergency vs. elective), type of operation (laparoscopic, laparoscopic converted to open, open cholecystectomy) and the ASA score.

Results: 104 patients were analysed. Elective operations were 96 (92·3%) and emergency 8 (7·7%). Most patients underwent LC (n = 58; 55·8%), followed by OC (n = 30; 28·8%) and LCC (n = 16; 15·4%). Hospital stay was 4·8 ± 2·5 days. 18·3% of patients experienced a postoperative complication, 2·9% died. Operations conducted as an emergency, the open or laparoscopic converted to open approaches had a significant higher morbidity and mortality. The ASA score did not seem to influence the postoperative outcomes.

Conclusions: Cholecystectomies conducted in ultra octogenarians harbor significant increased risks compared to classic literature data. Among them operations conducted as an emergency, OC and LCC had the worst outcomes. These factors should be taken into account for an adequate preoperative counseling and help the surgeon in the decision-making process.

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General 0299

Transferring Blood Products Between Hospitals in Vascular Emergencies is Associated with Significant Wastage – Is it Possible to Change our Practice?

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Aims: Wastage of blood products can occur as a result of transferring units with patients between hospitals in emergency situations. Significant changes in the clinical management of patients with major bleeding, the increased centralization of emergency services as well as the regulatory framework requirement of a vein-to-vein audit trail between donor and recipient have all prompted the development of new guidelines to govern the transfer of blood products in clinical emergencies. In this study we aim to audit the practice of transferring blood products within a regional vascular network in the UK.
Methods: Retrospective review of all transfer records at the Transfusion Laboratory of a large DGH within the vascular region was undertaken to cover the period of 9 years. This included the review of the Blood Components Transfer Forms and relevant Compatibility Slips.
Results: Records of 52 episodes of transfer of blood products in clinical emergencies were found in the period from February 2004 to April 2013. In 96% of the episodes, more than two units were transferred with the patient. Out of the 318 units of RBCs which were transferred, 170 (53%) were used by the intended (transferred) patient, 56 (18%) were returned to stock, 84 (26%) were wasted and 8 (3%) were of an unknown fate. Partial wastage of the transferred blood products occurred in 34% of the transfer episodes, whilst total wastage occurred in 19% of the episodes.
Conclusions: Wastage of all or some of the transferred blood products with patients in clinical emergencies occurs in a significant proportion of such transfers. Poor record-keeping at the receiving site represents the main cause of wastage due to the resultant disruption to the cold chain records. Nevertheless, the clinical practice in this area warrants revision especially in light of the new national guidelines on this issue.

General 0341

Wound Management using Negative Pressure Wound Therapy in High Risk Surgical Patients

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Aims: To assess the role of Negative Pressure Wound Therapy (NPWT) in the management of wounds in surgical patients, considered to be high risk of developing wound complications. There have been no studies till date to evaluate the role of prophylactic use of NPWT in surgical patients undergoing laparotomy.
Methods: Patients undergoing laparotomy at OLLH Drogheda, between October 2010 and March 2012 comprised the study group. A total of 317 patients underwent Laparotomy. 136 patients were excluded, because they were considered low risk for wound complications. Of 179 patients included, 69 patients received NPWT, 112 patients received conventional non-NPWT dressings. Mean age in NPWT group was 66·46 sd 8·999 (range 45–89) and in non-NPWT group it was 65·58 sd 8·799 (range 46–87).
Results: 2 patients (2·89%) in NPWT group and 23 patients (20·5%) in non-NPWT group developed complications of wound. p <0·0018 and RR was 0·6801(0·5785-0·7996); OR 0·1454(0·0332-0·6362).
Conclusions: Our results have demonstrated that NPWT significantly reduces the risk of wound infections in patients considered to have high risks of developing wound complications.

General 0349

The use of Ultrasonography in the Diagnosis of Appendicitis in Clinically Equivocal Cases - Pilot Results from a DGH Centre

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Aims: Appendicitis is one of the common causes of lower abdominal pain which is a common acute surgical problem. Surgery without imaging for suspected appendicitis is carried out in a significant proportion of patients; however this practice harbours the risk of carrying out unnecessary surgery. Ultrasonography (US) is a risk-free imaging modality, which can be used to diagnose appendicitis; however it requires specialist expertise to obtain optimal results. This study reports the initial results of utilisation of US in the assessment of clinically equivocal cases of Right Iliac Fossa (RIF) pain at a DGH centre.
Methods: Radiological records of all lower abdominal US studies performed during the study period were analysed. Clinical case notes and histology results of excised appendices were also reviewed and the sensitivity and specificity of US in the diagnosis of appendicitis were determined. Positive US scan for appendicitis was determined if a thickened appendix was visualised (Category 1 positivity) or if secondary signs of appendiceal inflammation were seen without visualisation of an inflamed appendix (Category 2 positivity). Definitive diagnosis of appendicitis was dependent on the histological examination of the operative specimen, on the operative findings if no specimen was obtained and on the clinical course of the patient if no surgery was undertaken.
Results: Forty one scans were performed for suspected appendicitis during the five months' study period. Nine cases were excluded due to atypical clinical situations or lack of clinical data. The median age of the study population was 20 years and 81% (26) of patients were female. The median modified Alvarado score of patients was 4 and the interval from admission to scanning was around 24 hours. US was positive in 8 cases (25%), negative in 21 (66%) and was attempted but found not conclusive in 3 (9%). Sensitivity of US in the diagnosis of appendicitis was 86% and specificity was 100%.
Conclusions: US for the diagnosis of appendicitis has very high specificity and good sensitivity when performed by experts and can potentially reduce unnecessary surgery for patients presenting with RIF pain. Currently, this practice is not widely adopted in the UK and we recommend further larger studies to examine this further.

General 0445

Cloacal Defect Repair

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Aims: This pelvic floor video presentation reports a case history and demonstrates an operative approach for cloacal defect repair.
Methods: A 40 year old female with longstanding faecal incontinence and occasional symptoms of obstructive defecation was investigated with anorectal physiology and endoanal ultrasound studies. An overlapping external sphincter repair of the cloacal defect was performed and this technique is clearly demonstrated in a narrated video within this presentation.
Results: Preoperative Wexner score was 12 with frequent solid and liquid stool incontinence. Anorectal physiology studies revealed poor internal anal sphincter tone and poor external anal sphincter pressure responses. There was no movement on attempted pseudodefecation. An anterior sphincter defect was seen at endoanal ultrasound.
Following operative repair the patient's symptoms improved significantly with no further solid or liquid stool incontinence. The postoperative Wexner score improved to 2.
Conclusions: An overlapping external sphincter repair can provide significant symptomatic improvement in carefully selected patients.

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General 0465

Milligan-Morgan versus Ferguson Haemorrhoidectomy: A Systematic Review and Meta-Analysis of Published Randomized, Controlled Trials

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Aims: Theoretically the closed or Ferguson haemorrhoidectomy (CH) should lead to primary and quicker wound healing, lesser scarring, lesser pain and greater preservation of anal sensitivity. The purpose of this article is to systematically analyse the randomized, controlled trials (RCTs) comparing CH versus open or Milligan-Morgan haemorrhoidectomy (OH) haemorrhoidectomy in the management of haemorrhoidal disease (HD).
Methods: RCTs on the effectiveness of CH and OH in the management of HD were analysed systematically by using RevMan® where combined outcome was expressed as odds ratio (OR) and standardised mean difference (SMD). The trial selection was based upon the PRISMA protocol and trial quality was evaluated according to the published guidelines of Jaddad et al and Chalmers et al.
Results: Eleven CRTs encompassing 1326 patients were analysed systematically. There was significant heterogeneity among included trials. Therefore, in the random effects model, CH was comparable to OH in terms of postoperative pain (SMD, −0·35; 95% CI, −0·72, 0·03; z =1·82; p =0·07), pain on defecation (SMD, −0·33; 95% CI, −0·68, 0·03; z =1·82; p =0·07), hospital stay, complications, recurrence and wound infection. However, CH was associated with faster wound healing (OR, 0·08; 95% CI, 0·02, 0·24; z =4·33; p <0·0001), lesser risk of postoperative bleeding (OR, 0·50; 95% CI, 0·27, 0·91; z =2·27; p <0·02) and longer duration of operation (SMD, 6·10; 95% CI, 3·21, 8·98; z =4·13; p <0·0001).
Conclusion: CH failed to show clinically measurable advantages over OH apart from slightly faster wound healing and a reduced risk of postoperative bleeding. Duration of operation was also longer for CH compared to OH. This conclusion is based on the combined analysis of clinically and methodologically diverse trials and therefore should be taken cautiously. High quality multicentre trial conducted according to CONSORT guideline is required to validate these findings.

General 0481

Paediatric Scrotal Pathology: who Should it be Referred to?

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Aim: Paediatric patients (up to their 17th birthday) may be referred to a secondary care setting for the investigation and treatment of scrotal pathology. We compare patients referred through a two week wait pathway (2WW) to a paediatric oncologist, to those referred to a general paediatric surgeon (GPS).
Method: Five years of prospective data was interrogated for each of the patient groups; Group I (2WW), Group II (GPS). The time from referral to the first clinic appointment, investigations undertaken and outcome are reported.
Results: There were 15 patients in Group I, mean age 13 years 11 months (range 14 months - 15 years 9 months), and 215 patients in Group II, mean age 4 years 9 months (range 1 day - 16 years 8 months). For Group I, the mean time from referral to first appointment was 8 days (range 5 to 14 days) and for Group II, 48 days (range 0 to 230 days). All boys in Group I were investigated with scrotal USS and alpha-fetoprotein; hydrocoele (n = 6), epididymal cyst (n = 5), tumour (n = 1), post trauma (n = 1), varicocoele (n = 1), no diagnosis recorded (n = 1). Eight patients (55%) were subsequently referred to the GPS. The testicular tumour was diagnosed 17 days and operated 18 days after referral in a child of 14 months. Only 5 patients in Group II underwent investigation (2·23%); hydrocoele (n = 117), inguinal hernia (n = 84), epididymal cyst (n = 5), varicocoele (n = 5), no diagnosis recorded (n = 4). One hundred and thirty five patients (63%) proceeded to surgery with a mean waiting time of 187 days (range 1 to 646 days), dependent upon the pathology, the patient's age and decision to operate.
Conclusions: The number of boys referred under the 2WW pathway is small, with 55% eventually being referred to the GPS, including testicular tumours. We recommend that referrals for scrotal swellings, ensuring 'fast tracking' for suspected testicular tumours, should be made to a GPS, with referral to the paediatric oncologist if a tumour is confirmed.

General 0483

Audit of the Prescription and Administration of Variable Rate Insulin Infusions in Patients with IDDM Admitted to SAU

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Aims: Junior doctors are prescribing Variable Rate Insulin Infusion's (VRII) without a glucose containing crystalloid when blood sugars are above a certain value. With clear guidelines regarding the perioperative management of IDDM and prescription of insulin we aimed to investigate how VRII is prescribed and administered in the SAU at two hospital sites.
Methods: Coders were contacted for a list of patients admitted with IDDM to the general surgical admission unit at two hospital sites between 7/11/12 and 20/7/13. Various factors were investigated including the number of days on VRII, the range of BM's, any incidences of hypoglycaemic events (BM < 4), frequency of BM checks and the type of fluid prescribed with the VRII's.
Results: 76 patients were randomly selected and their notes were reviewed. 24 patients were excluded due to lack of VRII prescription (21), patients not admitted (2) and self discharged (1).
In the resultant 52 patients, the mean age of patients was 59·5 years, with 22 F and 30 M.
The mean number of days on VRII was 2·9 days (range 1–16) with a range of BM's (1·2-30). The total number of patients with documented hypoglycaemic events was 13 (25%).
21 (40·4%) prescriptions did not have frequency of BM checks documented and the mean time of BM checks was 5·03 hours (range 1–21). In only 28 (53·8%) cases specific fluid was prescribed with the VRII and in 19 (36·5%) cases patients were prescribed normal saline / Hartmann's if BM's were variable or over a certain level (e.g. 10/12/15) with a variety of regimes used.
Conclusions: This research demonstrates a lack of consistency in the prescription of fluid with VRII that is not in line with local hospital and national guidelines. There is also poor compliance and lack of consistency with BM checks, which potentially has very serious ramifications. We recommended liaison with our local diabetic team to amend the diabetic prescription chart so that it clearly states the recommended fluid regimes and frequency of BM checks required. Further training of junior medical and nursing staff is required in order to address this issue and the results of this audit will be fed back to the medical school in order to correct undergraduate teaching.

General 0524

Hernias and Hydroceles in the Developing World – how big is the Problem?

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Aims: In many developing countries groin hernias and hydroceles are often assigned a low priority and many patients go untreated. We aimed to investigate how great a burden these conditions are.
Methods: During a 10-day medical-surgical camp in rural Sierra Leone, patients with groin hernias and/or hydroceles were listed for surgery. Pre-operatively they were interviewed using a semi-structured questionnaire.
Results: A total of 39 procedures were performed in 31 patients. These included 27 inguinal hernioplasties (17 for large inguino-scrotal hernias), 9 hydrocele repairs and 3 femoral hernia repairs. Patients had a mean age of

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46 (range 20–75) years, 29 (94%) were male and 27 (87%) were manual labourers – mostly farmers. Their hernias and hydroceles had been present for a mean of 7 (range 1·5 – 20) years, with 20 (65%) being present for five or more years. All but one were symptomatic. Pain was present in 25 (81%) and rated as severe by 16 (64%). Mobility was impaired either because of pain or the size of the hernia/hydrocele in 25 (81%) patients. Their conditions made working life difficult for 23 (74%) patients and impossible for 2 (6%) patients.

Conclusions: The lack of available treatments for these conditions has resulted in hernias and hydroceles being present for many years. As a consequence they become large and often painful, subsequently impairing mobility and restricting the working life of the patient. This makes their treatment a significant public health issue.

General 0530

Systemic Comorbidity in Cohort of Patients with Retinal Vein Occlusion

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Aims: Retinal vein occlusions (RVO) are the second most common form of retinal vascular disorders. This study aims to identify the risk factors of RVO in Bradford and to establish whether risk factors differ between types and occurrences of RVO's.

Methods: A retrospective study was undertaken of 126 patients (58 M; 68 F; mean age 74·3) who presented with a RVO at Bradford Royal Infirmary between December 2008 and June 2012. The Medisoft system was used to collate the data.

Results: Hypertension (48·4%) and diabetes (46·0%) were major risk factors for the development of RVO. Hypertension was more prevalent in those with CRVO (60·4%) and diabetes was more prevalent in those with BRVO (48/7%). Those with a recurrent RVO (n = 15) had higher prevalence of hypertension (66·7%) than those with single occlusions (45·9%).

Conclusions: Hypertension was a statistically significant risk factor for the development of CRVO than for BRVO contradicting existing published information. The study can be seen to show that no single risk factor can be associated with one particular type of RVO meaning that studies that have shown a positive cause-effect relationship between risk factors and a certain type of RVO were simply due to chance. Thus proving that pathogenesis of various types of RVO is multifactorial. Promotion of awareness and management of risk factors needs to be advocated. Management should be targeted for all risk factors at the earliest stage possible irrespective of the type of RVO.

General 0555

A Retrospective Diagnostic Study of Ultrasound Accuracy in Lipomatous Tumours of the Trunk and Extremities

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Aims: Fatty masses of the extremities and trunk that are clinically suspicious of sarcomatous change are imaged by ultrasound and/or MRI prior to biopsy or excision. The diagnostic accuracy of MRI in differentiating between lipomas and liposarcomas has been studied widely, but no studies of the diagnostic accuracy of ultrasound are available. We therefore performed a retrospective study of all lipomatous tumours of the trunk and extremities that had undergone an ultrasound prior to excision.

Methods: All fatty tumours excised from the trunk and extremities over two years, that had both a histological diagnoses and ultrasound assessment pre-excision were included. Ultrasound assessment was dichotomised as suspicious or not suspicious.

Results: Histopathological database identified 520 lipomata and 23 liposarcomata. Of these, 98 lesions had undergone ultrasound assessment pre-operatively.

Analysis of 98 lesions on ultrasound:

	Histopathology = liposarcoma	Histopathology = lipoma	Totals
US suspicious of liposarcoma	6	7	13
US not suspicious of liposarcoma	3	82	85
Totals	9	89	98

Sensitivity 0·67, Specificity 0·92; LR- =0·36, LR + =8·4

Conclusions: In this retrospective study, a LR- of 0·36 suggests that an ultrasound scan that does not show any suspicious features moderately decreases the likelihood of the lesion being a liposarcoma but does not rule it out. Conversely, an ultrasound scan suspicious for liposarcoma markedly increases the likelihood of disease and may be regarded as diagnostic of liposarcoma if other features are supportive.

General 0558

Suspect Nicorandil in a Persistent Non-Healing Anal Ulcer

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Aims: Nicorandil induced anal ulceration is underdiagnosed. Epidemiological statistics is lacking partly due to under-recognition and under-reporting of this entity. To report our experience with nicorandil induced anal ulceration.

Methods: We prospectively collected data on patients who presented to our colorectal clinic with nicorandil induced ulcers over a 3-year period. Data collected relate to demographics and clinical including medical, drug history, morphological and histological features of the anal ulcers. Patients were managed in association with the cardiologists by discontinuing nicorandil in all cases replacing it with a safe alternative. All patients underwent biopsy of the ulcers for histology. The progress of the ulcer was monitored noting the time to healing from discontinuation of nicorandil.

Results: There were 8 patients with 2–3 patients per year. The mean age was 78·5 (71–88) years with 6 males and 2 females. The mean duration between the commencement of nicorandil and development of anal ulcer was 10 (5–16) years. The doses of nicorandil were 20 mg bid in 6 and 30 mg bid in 2 patients respectively. The duration of the anal ulceration before presentation was 4 (1·5-8) months. The average widest diameter of the ulcers was 3·5 (2–5) cm. 60% of the patients had associated low superficial wide fistulous tract in association with the ulcer. The histological features following biopsy showed non-specific inflammatory cells and granulation tissues in all cases with no evidence of malignancy. The mean duration to wound healing from the time of discontinuation of nicorandil was 11 (8–16) weeks except in one patient who failed to heal after 4 months and therefore treated with anal advancement flap with satisfactory healing. The average duration of follow up was 7 (4–15) months.

Conclusions: The awareness of nicorandil induced ulcer needs to be raised so as to improve its recognition. The ulcer generally heals with the cessation of nicorandil.

General 0562

The Current Era Of Merging NHS Trusts – Impact on Patient Experience and Satisfaction to Re-Organised Surgical Services

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South London Healthcare NHS Trust, Kent, UK

Aims: To investigate any difference in patient's experience between acute and elective hospital sites managed under a recently merged NHS trust.

Methods: A local review board approved the study and signed informed consent was obtained from all participants. A questionnaire-based evaluation of patient satisfaction was conducted during April–June 2013. All patients

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attending for day-surgery completed a structured questionnaire about their stay. Responses from two sites were compared. Stepwise multiple regression was used to assess the significance of 'age', 'speciality department', 'hospital' and 'gender' in determining satisfaction.

Results: 217/300 patients (median age 50 years, range 17–81; F:M 2:1; Acute site 60, Elective site 156) from general surgery (62·2%), gynaecology (24·9%), orthopaedics (6·5%) and other (6·5%) specialities returned completed questionnaires. The explored variables did not predict 'explanation', 'pre-visit information', 'staff attitude', 'staff being helpful', 'cleanliness', 'quietness', 'overcrowding', 'waiting time' (to be discharged), or 'willingness to return'. Recommendation ($F(1,169) = 7{\cdot}633$, $p = 0{\cdot}006$), and response to whether waiting time to see staff was acceptable ($F(1,167) = 4{\cdot}833$, $p = 0{\cdot}03$) were both dependent on gender, with women more likely to find these satisfactory.

Conclusions: In general, patients from both sites were equally satisfied with the day-surgery service. Patients at the acute site waited longer to see staff. Special pre-admission information service for the elderly may help improve experience in this population.

General 0574

Departmental Information and Communication: a National Audit of NHS Trust General Surgery Webpages in England

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Aims: Patient satisfaction and overall care can be enhanced by accurate, accessible and high-quality information regarding local services. Increasingly, patients use the Internet to obtain this information and empower treatment choices. Trust websites are ideal frameworks to meet this demand. This study examined the content and quality of general surgery websites for all acute NHS trusts in England.

Methods: Websites of all 160 acute trusts in England were systematically evaluated for general surgery content including services provided, staff profiles, patient information, and outcome data. 16 specialist hospitals without adult general surgery departments were excluded.

Results: 83/144 (57%) of Trusts providing general surgery had a general surgery webpage. 48% listed services provided. 56% of trusts listed general surgeons' names, and 33% had consultant profiles. 12% had accessible downloadable patient information leaflets. Use of images and videos was scarce, and 4·9% offered feedback facilities. 5% of websites indicated a revision date, with only one occuring in the last six months.

Conclusions: Patients increasingly seek up-to-date, accurate information about the healthcare services they use. Despite this, data is poor with less than half of English trusts listing available services and many omitting surgeons' names. General surgery departments are missing a valuable opportunity to interact with their patients.

General 0581

Chronic Groin Pain in Patients Undergoing Inguinal Hernia Repair

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Aims: Chronic groin pain post inguinal hernia repair is defined as persistent pain lasting greater than 3 months without an obvious clinical cause. Its incidence ranges between 5-10%. We aimed to investigate all inguinal hernia repairs in our hospital between 1st January 2009 and 31st March 2013 and assess their follow up for the incidence of chronic groin pain.

Methods: Retrospective study using our hospital hernia database to generate patients having inguinal hernia repair during the study period. Electronic patient records were used for follow up assessment and data collection. We compared data for local vs general anaesthetic, open vs laparoscopic (TAPP repair), and elective vs emergency hernia repairs. 2 sample Z test used to assess for statistical significance ($p = <0{\cdot}05$).

Results: During the study period 1,572 inguinal hernia repairs were performed. 1,464 (93·1%) were male, 108 (6·9%) female. 1,487 (94·6%) were elective, 85 emergency (5·4%). 1,503 (95·6%) were open repairs, 69 (4·4%) laparoscopic. 1,363 (86·7%) were general, 209 (13·3%) local anaesthetic repairs. 96 patients (6·1%) had chronic groin pain. A strongly significant statistical difference ($p = <0{\cdot}0001$) was only seen in the laparoscopic (18·8% incidence) vs open (5·5% incidence) group.

Conclusions: The incidence of chronic groin pain post inguinal hernia repair was 6·1%, similar to previous studies. However this is significantly higher in laparoscopic repairs compared with open. Follow up for all laparoscopic cases was over one year, whereas most open cases did not have follow up beyond 6 weeks. Only those referred back with ongoing pain had a longer follow up. Our results could be explained by a lack of adequate follow up time to assess for chronic pain in open inguinal hernia repairs.

General 0594

Prospective Outcomes Following Haemorrhoid Artery Ligation in Grade 2 vs. Grade 3 Piles

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Aims: Haemorrhoid artery ligation with rectoanal repair (HAL-RAR) has been introduced as an alternative to conventional haemorrhoidectomy for symptomatic piles. This study is a prospective evaluation of outcomes post HAL-RAR for patients presenting with Grade 2 and Grade 3 piles.

Methods: A prospective standardised telephone questionnaire was used to evaluate all patients treated at a single centre with HAL-RAR from May 2012 – May 2013. Outcomes included reduction in symptom scoring and patient satisfaction with the procedure. Data was analysed using Fisher tests.

Results: A total of 39 patients (Median age 48 years and 56% males) underwent HAL-RAR during the study period. All 39 responded to the telephone questionnaire. The median (range 4 – 46 weeks) follow-up time was 26 weeks. 52% of patients reported being symptom free from itching, discomfort, prolapse, bleeding and discharge. 89% of patients recommend HAL-RAR over previous treatments.

27 patients suffered from Grade 2 and 12 suffered from Grade 3 piles. Patients with Grade 2 piles reported a greater reduction of symptoms as follows: itching (65·2% vs 58·3%, $p = 1{\cdot}000$), discomfort (73·1% vs 50·0%, $p = 0{\cdot}4761$), prolapse (92·3% vs 75·0%, $p = 0{\cdot}5977$), bleeding (85·0% vs 55·6%, $p = 0{\cdot}225$) and discharge (100% vs 100% $p = 1{\cdot}000$) respectively. Satisfaction in Grade 2 vs Grade 3 piles was 8·88 vs 8·58 out of 10.

Conclusions: HAL-RAR results in reduction in symptoms for grade 2 and grade 3 piles but is more effective for grade 2 disease. Patient satisfaction with the procedure was high for both grades. HAL-RAR can be used as a less painful alternative to open haemorrhoidectomy but further assessment of long-term outcomes is awaited.

General 0600

Predictors of Mortality Following Primary Total Hip Replacement for Osteoarthritis: A 10 Year Survival Analysis

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Aims: Studies have previously investigated the effects of pre-operative patient characteristics on the combined mortality of hip and knee replacements. The effects of pre-operative factors on functional outcomes of primary total hip replacement have also been reported. However, no studies have investigated the long-term predictors of mortality following primary total hip replacement.

We aim to investigate the pre-operative predictors of mortality following primary total hip replacement and establish the overall mortality rate from total hip replacement up to ten years post operatively.

Methods: Dedicated arthroplasty audit nurses prospectively collected demographic and hip specific data. It was entered it into a regional hip arthroplasty database. Retrospective review was undertaken of a consecutive series of 2308 patients undergoing unilateral hip arthroplasty for osteoarthritis. All other causes were excluded.

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Kaplan Meier survivorship analyses were conducted on each variable to assess its influence on mortality. Factors associated with mortality were further analysed using stepwise multiple regression analysis, to examine the independent effects of these factors on mortality.

Results: There were altogether 879 men (38·2%) and 1423 women (61·8%), with a mean age of 76 years (34 to 93). 647 deaths occur during the study period. The overall survivorship was 97·9% (95% confidence interval (CI) 97·3 to 98·5) at one year, 86·8% (95% CI 85·4 to 88·2) at five years, and 69% (95% CI 66·6 to 71·6) at ten years.

Gender, hypertension and socioeconomic deprivation were not associated with increased mortality. Pre-operative variables associated with greater mortality are: age at operation ($p < 0·0001$), cancer ($p < 0·0001$), coronary heart disease ($p < 0·0001$), diabetes ($p = 0·0171$), body mass index (BMI) $<25\ kg/m^2$ ($p = 0·0035$), American Society of Anesthesiologists (ASA) grade ($p < 0·0001$), smoking ($p = 0·0001$), low pre-operative Harris Hip Score (HHS) ($p < 0·0001$) and low pre-operative haemoglobin (Hb) levels ($p = 0·0003$). Stepwise multiple regression analysis confirmed that age at operation, cancer, pre-operative Hb, pre-operative HHS and ASA grade are independent predictors of mortality.

Conclusions: Identifying pre-operative predictors of mortality may allow clinicians to better consent patients of the associated risks. Some pre-operative factors may be modifiable, however the impact of early intervention on such factors requires further study. It is possible that the potentially modifiable variables such as low pre-operative haemoglobin or low BMI, may simply be surrogate markers for general frailty. A better understanding of the pre-operative predictors of mortality could allow the calculation of an individual mortality risk for patients undergoing hip replacement. This has potential benefits in terms of informed consent and implant selection.

General 0602

Consent. Are we Taking it Correctly?

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Aims: The General Medical Council (GMC) release regular guidance for consent. Consent is an integral part of surgical practice and a legal requirement prior to surgical intervention. We aim to audit practice at a District General Hospital with a gold standard of 100% of consent being taken correctly and in full.

Methods: Prospective data for 168 emergency and elective general surgery cases was collected. Data was collated on age, sex, surgery performed, adequacy of form completion, as well as surgeon responsible for taking the consent. Additional data for consent on common procedures (appendicectomy, inguinal hernia repair and cholecystectomy) was collected in relation to four specific risks or complications.

Results: The majority of consent 66·6% (112/168) was taken by Registrars, 27·3% (46/168) by Consultants and 5·9% (10/168) by Associate Specialists. In 7·7% (13/168) of consent forms, the patient statements were not completed in full. In 2/168 (0·1%) of cases, the patients had not signed, dated and printed their details. Routes of anaesthesia were poorly documented; none recorded in 21/168 (12·5%) cases and a further 94/168 (56·0%) cases did not mention local anaesthesia despite use. 23 inguinal hernia repairs were undertaken with failure to mention testicular injury (in male) 12/21 (57·1%), recurrence 1/23 (4·3%) and chronic pain 1/23 (4·3%). 22 cholecystectomies were performed with consent forms failing to mention bile leak in 2/22 (9·1%) cases and CBD/bile duct damage in 1/22 (4·5%) cases. 8 appendicectomies went to theatre with exclusion on consent of conversion to open 1/8 (12·5%) or persistent collection/infection 1/8 (12·5%).

Conclusions: Current consent practice needs to improve to fulfil GMC guidance. Introduction of a standardised consent form for specific day case surgical procedures should be considered. This may reduce the ambiguity when it comes to mentioning specific risks and complications which appear to be surgeon dependent. Staff re-training is planned with a resulting re-audit to assess the effectiveness of this intervention.

General 0625

Knowledge and Awareness of WHO Recommended Guidelines on Daily Fruit and Vegetable Consumption: A Cross-Sectional Survey at a UK Hospital

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Aims: To evaluate the knowledge and awareness regarding the WHO recommended guidelines on consumption of five portions of fruit and vegetables a day and the socioeconomic factors influencing these variables.

Methods: A total of 200 adults were handed the survey questionnaire but only 170 participants. The questionnaire captured participants' knowledge of what and how much constitutes five a day portions, their intake habit, educational, demographic and socioeconomic strata. We excluded 10 incomplete questionnaires of the 170 and only 160 returned completed were analysed.

Results: The response rate was 85%. The male to female ratio was 2:3 with 71% of the respondents above 40 years of age. 74·2% of the participants were educated to either GCSE or college level while 13·8% were graduates and 12% had postgraduate qualifications. About 50% of the respondents gave only 0–4 correct responses to the survey questions and in fact 6·3% showed complete lack of understanding of five portions of fruit and vegetables a day with incorrect responses to all the ten survey questions. The predictors of adequate knowledge of the contents and the recommended amount of fruit and vegetables in five portions a day were gender (p-value 0·010) and employment status (p-value 0·028). People in employment have better knowledge than the unemployed and those with low annual household income showed a tendency towards poorer knowledge (p-value 0·084) although not statistically significant.

Conclusions: This study suggests an overall low level knowledge and awareness of five portions of fruit and vegetables a day in the population surveyed.

General 0644

Long-Term Biliary Stents do not Cause Exocrine Pancreatic Insufficiency

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Aims: The gold standard management of choledocholithiasis, a relatively common condition remains a laparoscopic cholecystectomy and bile duct exploration. Due to extensive co-morbidities and large biliary stones, a proportion of patients underwent Endoscopic Retrograde Cholandio-Pancreatagrophay(ERCP), spincterotomy and placement of a 10 French biliary stent as a definitive procedure. The common bile duct(CBD) and the pancreatic duct normally share a common channel for several millimetres prior to entering the duodenum. The aim of the study was to investigate if the placement of this stent resulted in pancreatic exocrine insufficiency in this cohort of patients secondary to mechanical obstruction of the pancreatic duct.

Methods: Patients who underwent ERCP and biliary stenting as a definitive procedure were retrospectively identified and invited to clinic. Patients were asked about the presence of symptoms suggestive of exocrine pancreatic insufficiency. A faecal elastase was measured.

Results: Of 2252 patients who underwent ERCP between 1998 and 2013, 7(3 M/4 F) were identified. Mean age was 89 (range 81–97). A faecal elastase was normal in all patients. All patients experienced symptoms suggestive of pancreatic exocrine insufficiency.

Conclusions: A normal faecal elastase proves that placement of a long-term large plastic biliary stent does not result in mechanical obstruction of the pancreatic duct. All patients were elderly with significant co-morbities and it is likely that their symptoms were secondary to other disease processes.

This small study identified that long-term biliary stents do not result in exocrine pancreatic insufficiency.

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General 0659

Bionic Reconstruction of the Upper Limb

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Aims: To summarise current bionic upper limb reconstruction practice, making reference to alternative techniques and suggesting future directions for this innovative field.
Methods: A PubMed search was undertaken, gathering literature on the subject in question, using keywords including 'bionic reconstruction', 'targeted muscle reinnervation' and 'arm transplantation'. A summary of limb reconstruction practices was completed, with techniques compared and evaluated in brief.
Results: Whilst bionic reconstruction of the upper limb is technically complex, prohibitively expensive and unavailable to most patients, the benefits over composite tissue allografting (upper limb transplantation) are considerable – principally because there is no need for systemic immunomodulation.
Conclusions: Bionic reconstruction of the upper limb is a fledgling technique that should be part of the surgeon's armamentarium when presented with upper limb paralysis or loss. Today's bionic prostheses enable a high degree of limb functionality. There are some clear advantages over limb transplantation, though there are also not inconsiderable downsides. The frenetic pace of advance within the field ensures bionic reconstruction will become more widely available and increasingly viable as an alternative to other limb reconstruction and rehabilitation techniques.

General 0677

Primary vs Revision Roux en Y Gastric Bypass are Outcomes Comparable? A Local Perspective

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Aims: We report a case series of patients who underwent revisional roux-en-Y-gastric-bypass (RYGB) for failed primary weight loss procedures and compare the outcomes of both morbidity and weight loss to primary RYGB from a local perspective.
Methods: Retrospective analysis of all patients at our centre who underwent revisional RYGB. Data on comorbidities, complications and weight loss were collected from the National Bariatric Surgery Registry (NBSR) and case notes. A random selection of primary RYGB patients was used to compare outcomes.
Results: 5 revisional laparoscopic RYGB were performed between September 2012 and July 2013. Average age at revisional procedure was 39·2 (range 27 – 51), no post operative complications were seen, average percentage excess weight loss at 6 month follow up was 42·6 (range 14–69·1). Comparison was made with 5 random primary RYGB performed between November 2012 and February 2012. Average age 51 (range 48–59), no post operative complications were seen, average percentage excess weight loss at 6 month follow up was 50·88 (range 39·3 – 67·8).
Conclusions: From our small observational study we found that revisional RYGB is an effective and safe procedure to perform when primary weight loss surgery has failed. Longer follow-up of current patients operated and additional data collection on new revisional RYGB patients is required to further substantiate this finding.

General 0682

Hernia Referral Pathway – Streamlining Patient Referral Pathway to Deliver a Cost Effective, Efficient Patient Centred Care

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Aims: Evaluation of groin hernia referral pathway and streamlining patient referral by identifying factors influencing suitability for day case hernia repair.
Methods: A retrospective audit of groin hernia repair undertaken over 12 month period (100 patients) was evaluated for suitability under the proposed new pathway incorporating a 19 category Modified Charlson co-morbidity score (MC).
Results: 93% of patients had groin hernia repaired as day case procedure. The majority were male (31–98 yrs), 94% with unilateral hernia. The duration of hernia, primary or recurrent hernia did not influence day case rates or overall outcome. Most hernia repairs are without complication. 37% of patients had hypertension, which if well controlled did not affect the suitability of patients for streamlined direct referral and day case surgery. 7% of patients, required overnight admission following the procedure, which was unpredictable. An initial consultant led clinic appointment did not affect the overall outcome. Patient with MC Score ≤3 are suitable for the streamlined assessment pathway.
Conclusions: This audit has demonstrated a direct referral pathway for suitable patients with groin hernia straight to pre-operative assessment can help deliver cost effective and efficient patient care. The proposed pathway involves General Practitioners completing a standardised referral pathway form developed by the authors, which is then vetted by the consultant. This has the potential to reduce waiting times and help re-allocate clinic slots for patients with more complex needs.

General 0714

A Rare Case of 'Functional' Stroke following the use of Botulinum Toxoid for the Treatment of Anal Fissure

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Aims: Botulinum toxoid is used for the treatment of anal fissures when conservative management with creams/ laxatives have failed. There is minimal literature available about the risks/complications associated with its use. A 'very rare' side effect of the use of the botulinum toxoid can be 'exaggerated muscle weakness' (BNF). We recently had a patient with unusual neurological symptoms following intrasphincteric Botox. This case report aims to present this patient and highlight complications of Botulinum toxoid
Methods: A 49 year old lady presented electively for an examination under anaesthetic and intrasphincteric botox injection for a persistent anal fissure, present despite adequate conservative management. Five hours post operatively, she developed bilateral leg and right arm paralysis. This lasted for five days. She had no abnormal cardiac or respiratory function.
Results: She was reviewed by the stroke team and underwent a CT head and MRI brain/whole spine, all of which were normal (i. e. no evidence of acute infarct, focal demyelination, haemorrhage or extra axial collection). The temporary loss of motor function was diagnosed as a functional stroke. The patient recovered fully with no long term loss of motor or sensory function
Conclusions: This case highlights an unusual side effect of Botulinum Toxin type A use in anal fissures. Review of the limited literature available revealed a paper by Slawek et al (1) which discusses the side effects from a neurological, rehabilitation and gastroenterological point of view. The only mention of temporary motor loss was in the use of botox for spasticity due to cerebral palsy, which lasted an average of 13·8 days. Other documented side effects of Botulinum toxin are long term incontinence and perianal thrombosis. We present this case report with a view to highlighting some of the potential risks and more rare complications of Botulinum toxoid use in the treatment of anal fissures.

1 [Frequency of **side effects** after **botulinum toxin** A injections in neurology, rehabilitation and gastroenterology].
Sławek J, Madaliński MH, Maciag-Tymecka I, Duzyński W.
Pol Merkur Lekarski. 2005 Mar;18(105):298–302. Polish.

General 0716

An 8 Year Series Reporting the Success of an Un-fixated Bard 3D Max Mesh Laparoscopic TEPP Inguinal Hernia Repair Technique

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Aims: Inguinal hernia repair is the commonest operation performed in men over 18 years old. In 2003, less than 5% repairs were performed laparoscopically and mesh fixation was the standard approach. We describe a prospective series of Totally Extra-Peritoneal Procedures (TEPP) using a preformed mesh without fixation.
Methods: Over an 8 year period, a prospective database including 353 patients (553 TEPP procedures), has been collected from a single surgeon series using an unchanged technique. Triangulation of the data set was achieved through a patient questionnaire and also cross-referenced against the hospitals electronic patient records systems. The questionnaire was designed to assess patient experience including complications such as chronic pain and impact on quality of life. A free text box provided useful qualitative data.
Results: 212 patients (348 hernias) were included in the final data analysis. Only patients with a complete and triangulated data set were used. There were no known complications in excluded patients (Exclusions: 15 patients, deceased; 124 patients, non-responders; 2 patients, questionnaires inadequately completed). Mean follow up was 3 years. Generic 'problems' were reported by 47% of patients post-operatively – the vast majority of these would be considered 'expected' or 'normal' by most surgeons. 20% of patients sought consultation with a doctor post-operatively. The incidence of chronic pain was 4·1% (14/343* hernias). The incidence of chronic swelling was 0·86% (3/348hernias). The incidence of chronic numbness was 0·3% (1/348). The incidence of superficial SSI was 1·1% (4/348) and mesh infection 0% (0/348). There was one single side recurrence, 0·29% (1/348). [*5 further exclusions due to the chronic pain present pre-operatively associated with an earlier repair]
Conclusions: This study demonstrates that this is a reliable and safe technique that compares favourably with other techniques. Furthermore, there are some useful insights into patient experience that are not generally appreciated with modern follow up protocols.

General 0720

Could the Increase in Number of Repairs of Giant Hiatus Hernia be Explained by Centralisation of Cancer and Emergency Services?

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Aims: There is an increased number of operations performed for giant hiatus herniae. The reasons for this increase are not clear. We speculated that the centralisation of upper GI cancer services to our trust led to increase in emergency and elective referral of patients with giant hiatus hernia from the peripheral hospital. This study tests our hypothesis.
Methods: We performed a retrospective review of patients who underwent repair of giant hiatus hernia over a 13-year period from 2000 – November 2013. We collected data related to the distance between their place of residence and our hospitals and the urgency of the operation (elective, emergency and semi-elective after emergency admission). We have two hospital sites. Cancer and Emergency surgical services are based on one site and elective benign services (where most repairs were performed) are based on the other site.
Results: Seventy patients underwent repair of giant hiatus hernia between 2000 until November 2013, of whom, 63 patients (90%) underwent their operations since April 2009 when oesophagogastric cancer services were centralised to our trust.
The median distance between the patient's residence and the elective hospital where most operations were performed was 9·9 miles (range 4·6-27·3) before April 2009 and 11·8 miles (range 1·2- 260 miles). The difference was not significant ($p = 0·7$).
The distance between the patient's residence and the hospital in which emergency and cancer services are based was 10·4 miles (median, range 2·60-12·50) prior to April 2009 and 12·1 miles (median, range 0·5-249 miles). The difference again was not significant ($p = 0·3$).
All operation which were done before April 2009 were elective ($n = 7$), while 56 out of 63 operations performed after April 2009 (89%) were elective. The difference again was not significant ($p = 0·4$).
Conclusions: There is an increase in the number of operations performed for giant hiatus herniae in the recent years. This increase could neither be explained by centralisation of cancer services nor by increase in emergency and urgent operations. Other reasons (including increase incidence and increase use of imaging) should be explored.

General 0745

A Literature Based Review on Various Techniques of Laser Haemorrhoidectomy in the Management of Haemorrhoidal Disease

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Aims: The use of laser to treat haemorrhoids of all degrees has been reported with variable success. The objective of this article is to systematically analyse the published studies evaluating the effectiveness of all types of laser haemorrhoidectomy (LH) used in the management of haemorrhoidal disease (HD).
Methods: Clinical studies of any type, size and origin reporting the clinical effectiveness of LH in the management of HD were analysed systematically to achieve the summary evidence. All standard medical electronic databases were searched to find relevant articles and their data was utilized to generate summated outcome.
Results: The laser approach to treat haemorrhoids was reported in two types of procedures i.e. endolaser haemorrhoids coagulation and haemorrhoidal laser procedure. Three randomized, controlled trials and five experimental studies encompassing 1180 patients evaluating the laser treatment for haemorrhoids were analysed systematically. LH (both endolaser haemorrhoids coagulation and haemorrhoidal laser procedure) was found to be superior to rubber band ligation for symptomatic control (RR, 1·69; 95% CI, 1·18, 2·41; $z = 2·89$; $p < 0·004$) and statistically equivalent to conventional open Milligan Morgan haemorrhoidectomy (RR, 1·01; 95% CI, 0·89, 1·15; $z = 0·12$; $p = 0·90$) in the management of HD. In addition, LH was associated with lower postoperative pain score (SMD, −1·39; 95% CI, −2·11, −0·67; $z = 3·77$; $p < 0·0002$) and a reduced risk of perioperative bleeding (RR, 0·30; 95% CI, 0·18, 0·49; $z = 4·74$; $p < 0·00001$).
Conclusion: LH may be an effective alternative to conventional haemorrhoidectomy for the management of HD. However, due to fewer patients and paucity of trials this conclusion cannot be considered adequate. A major, multicentre, randomized, controlled trial is required to explore its role before considering LH a routine and alternative intervention to haemorrhoids.

General 0756

A Randomised Control Study to Assess the Effect of Digitation in the Management of Open Perineal Wounds

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Aims: To determine the efficacy of regular wound digitation on patient quality of life (QOL) and wound dimensions compared to community nurse-led dressing (CNLD) in the management of open perineal wounds.
Methods: Participants with open perineal wounds were randomly assigned to the digitation group ($n = 9$) or CNLD group ($n = 9$). Wound dimensions including wound area (length x width) were recorded and a QOL survey undertaken (modified Perineal Disease Activity Index Score). The digitation group digitated their wounds with a gloved finger twice a day. The control group participants were asked to continue on their current management strategy of wound dressings. At three weeks, wound dimensions and QOL survey were re-assessed.
Results: Overall, wound area dimensions reduced significantly in both groups at day 21 compared to day 1 (Digitation: D21 $3·8\,cm^2 \pm 1·6$ vs. D1 $13·9\,cm^2 \pm 3·9$, $p < 0·005$, CNLD: D21 $14·4\,cm^2 \pm 8·1$ vs. $22·1\,cm^2 \pm 9·5$, $p < 0·005$).
Wound area reduction in the digitation group appeared higher compared to the CNLD group, however the results did not reach significance (Digitation: 75·1 % ±3·1 vs. CNLD: 54·8 % ±9·8, $p = 0·06$).
Participants in the digitation group also reported less pain, discharge and quicker return to work compared to the CNLD group.

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Conclusions: The preliminary results on the management of open wounds by regular digitation are promising. Using a patient-operated method within the wound management algorithm could reduce attendance to healthcare establishments, whilst leading to a better quality of life, quicker return to work and potentially quicker healing.

General 0761

Control of Haemorrhoidal Symptoms and Improvement in Anal Incontinence Without Excisional Surgery

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Aims: Haemorrhoidal symptoms are common and many operations have been described for their treatment. Excisional surgery for haemorrhoids can be associated with high morbidity such as postoperative pain, bleeding, symptom recurrence and anal incontinence. Transanal haemorrhoidal dearterialisation (THD) with Doppler guidance is increasingly used as an alternative to haemorrhoid excision.

The aim was to measure patient reported haemorrhoidal symptom control following THD as part of a service evaluation. Changes in anal incontinence and complications were also recorded.

Methods: Patients who underwent THD between January and October 2013 were included. Each patient was asked to describe their worst haemorrhoidal symptom and to rate the severity on a scale from 0 (no symptom) to 10 (worst possible). Cleveland Clinic Incontinence scores (CCI) were also recorded. Patients were reviewed at 2 months.

Results: THD was carried out on 40 patients (29 women, mean age of 54 years) and complete data was available in 37 patients. The commonest presenting symptoms were pain (38%), bleeding (19%) and prolapse (14%). Average symptom severity score was 7·5, which improved to 3·5 after surgery ($P < 0{\cdot}01$). There were 4 readmissions within 30 days of surgery (constipation n = 1, significant rectal bleeding n = 3). Further haemorrhoidal surgery was required in 3 patients.

Severe anal incontinence (CCI > 8) was reported in 17 out of 35 (49%) patients before surgery but only 9 (26%) patients after surgery.

Conclusions: THD significantly improves haemorrhoidal symptoms and also reduces severe anal incontinence.

General 0787

Risk of Incisional Hernia Formation after Laparoscopic Anti-Reflux Surgery

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Aims: Laparoscopic Nissen fundoplication is the mainstay of surgical intervention for gastro-oesophageal reflux disease. Primary dilating trocars are commonly used for both establishment of pneumoperitoneum and for working port access. This study describes the incidence and management of incisional hernia after laparoscopic anti-reflux surgery.

Methods: Between October 2007 and October 2012, 85 patients underwent laparoscopic Nissen fundoplication for gastro-oesophageal reflux disease. Complete data were available for 80 patients. The standard laparoscopic approach was to use primary dilating trocars for all ports, with a 10 mm supra-umbilical camera port and 5 mm working ports (two left upper quadrant, one right upper quadrant, one epigastric). Fascial defects were not routinely closed after completion of surgery.

Results: There were 39 men (49%); median age was 55 years (19–83). The operation was completed entirely laparoscopically in 77 patients (96%) and in 3 patients, the operation was commenced laparoscopically and converted to an open procedure; two cases were for intra-operative bleeding and one was for an irreducible para-oesophageal hernia and gastric volvulus. All three patients who underwent open conversion developed subsequent incisional hernia formation and all three had underlying risk factors for poor healing (two patients with connective tissue disorder, one patient with morbid obesity). Six patients developed incisional port site hernia after entirely laparoscopic surgery. Three patients developed hernia at the primary 10 mm port site and three patients developed hernia at a 5 mm port site (1 epigastric port, 1 RUQ port and 1 LUQ port). All cases presented on an elective basis within 18 months of primary surgery and all were treated with open surgical repair. Of these six patients, 2 had connective tissue disorders and 4 had concurrent hiatus hernia repair.

Conclusions: The use of primary dilating trocars was associated with incisional port site hernia in 8% of patients, all of whom had hiatus hernia or connective tissue disorders. These data suggest that patients who develop incisional hernia may have systemic pre-disposition to hernia formation. Careful assessment of primary trocar sites and a low threshold for closure should be employed, even when using dilating trocars.

General 0812

Evaluation of Surgical Skin Adhesive in Renal Transplant Wound Closure using a Nursing Opinion Based Survey

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Aims: Nurse Satisfaction with wound closure reflects efficacy, ease of use and and also patient opinion. The aim of this survey was to evaluate nurse opinion on skin closure with Dermabond (Ethicon) vs. Surgical Clips in Renal Transplant

Methods: Renal transplant nursing staff from the wards and outpatient clinics were surveyed and those with experience of treating patients with Dermabond closure included. A paper data collection survey tool was used with a rating scale comparing with traditional closure.

Results: Overall the use of Dermabond glue was deemed more favourable. Over 75% of them felt glue was easier to care for, leaked less and took up less time. 100% believed they could also wash patients easier and sooner. 92·3% nursing staff received positive comments about glue from patients during their post op care and 90% of the nurses would prefer glue if they had an operation.

Conclusions: The opinions of nursing staff and patients to skin closure is a rarely considered but essential part of care. Easier and more manageable wounds result in reduced burden on nursing time in the wards and clinic with economic and organisational benefits.

There is also a direct benefit in the community with no need for district nurse input for dressing care. In addition to clinical benefits this study favours the use of adhesive closure in the wounds of renal transplant patients based on nurse satisfaction which indirectly reflects patient satisfaction.

General 0822

A Systematic Review and Meta-analysis of Epidural versus Local Anaesthetic Infiltration via Wound Catheters in Open Liver Resection

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Aims: This metaanalysis was designed to systematically analyse all published studies comparing local anaesthetic infiltration with wound catheters and epidural catheters in open liver resection.

Methods: A literature search was performed using the Cochrane Colorectal Cancer Group Controlled Trials Register, the Cochrane Central Register of Controlled Trials in the Cochrane Library, MEDLINE, Embase and Science Citation Index Expanded. Randomized trials, prospective and retrospective studies comparing wound catheters with epidural catheters were included. Statistical analysis was performed using Review Manager Version 5·2 software. The primary outcome measures were pain scores in the postoperative period operation. Secondary outcome measures were hospital stay, time to opening bowels, overall complications and analgesia specific complications.

Results: Four studies including 705 patients were included in the analysis. The pain scores with significantly lower epidural on the first postoperative day (POD) (mean difference (md) of −0·90 [−1·29, −0·52] $Z = 4{\cdot}61$ ($P < 0{\cdot}00001$) with comparable pain scores on POD 2 and 3. There was no significant difference in the time to opening bowels, opioid use and hospital stay between the techniques.

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The postoperative complication rate was higher in the epidural group RR 1·40 [1·07, 1·83]; $Chi^2 = 0·60$, df =1 (P =0·44); $I^2 = 0\%$; Z = 2·42 (P = 0·02).

Conclusions: Local anaesthetic infiltration via wound catheters combined with patient-controlled opiate analgesia provides comparable pain relief to epidural catheters except for the first POD. Both techniques are associated with similar hospital stay and opioid use with wound catheters associated with lower complication rate.

General 0838

Effectiveness of Botulinum Toxin A Injection for the Treatment of Chronic Anal Fissure

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Aims: Chronic anal fissure is a common benign condition that can be painful and debilitating for some patients. First line treatment in the community with Glyceryl trinitrate cream can achieve healing in a proportion of patients, however incomplete healing and recurrence of symptoms is common, and these patients often require second line treatment with injection of Botulinum Toxin A.

Methods: Data collected for patients undergoing examination under anaesthesia (EUA), and injection of botulinum toxin A for chronic anal fissure between February 2010 and October 2013 using a standardized injection technique. All patients were offered follow up at 2 months post procedure, and their symptoms were assessed. Outcome measures at follow up were asymptomatic patients, symptomatic patients requiring additional treatment, and symptomatic patients requiring lateral internal sphincterotomy.

Results: 68 patients had EUA and injection of Botox for chronic anal fissure. 53% (36 patients) were asymptomatic at 2 months. 29% (20) remained symptomatic requiring further treatment and of the symptomatic patients 13% (9) had subsequent lateral internal sphincterotomy. 13·3% (10) did not attend follow up.

Conclusion: Although Botulinum toxin injection can achieve chronic anal fissure healing in a majority of patients, a significant minority remain symptomatic post botulinum toxin treatment, and require other treatment modalities to complete fissure healing and achieve resolution of symptoms.

General 0851

Monitoring the Performance and Development of an Assessment Tool for the Colorectal Multidisciplinary Team (MDT)

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Aims: Multidisciplinary team (MDT) is an established practice for cancer service in the UK. Our aim is to evaluate the performance and the quality and to construct an assessment tool for the MDT in colorectal surgery in a district general hospital.

Methods: A scoring system was designed based on multiple variables. Scores of 1-3-5 were used to assess different aspects of the MDT. 58 cases were reviewed between six MDT meetings. These meetings were evaluated by a surgeon. We assessed case presentation, availability of radiological and pathological data. Psychosocial information and patients' wishes were included. Contribution of all MDT members were observed and evaluated.

Results: Contribution of surgeons and radiologists were the highest amongst the other MDT members. Cancer nurse specialist had the least contribution. Case presentation and availability of radiological data scored the highest while considering the patients' psychosocial status and views were the lowest.

Further analysis is being carried out at the time of writing this abstract and results will be available by time of presentation

Conclusions: Assessment of performance of the MDT meeting is a crucial part of the patient management to ensure delivery of safe and reliable care. Although it is our first time to implement this tool, we believe it is valuable. Future reliability and validity testing is required before using this tool for assessment of other meetings.

General 0865

Alternative Diagnoses Mimicking Ureteric Colic at CT-KUB: Management and Outcomes

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Aims: We investigate the incidence, diagnoses and clinical outcomes of patients following a CT KUB confirmed negative urolithiasis in suspected ureteric colic.

Methods: Between August 2011 and August 2012, all patients undergoing an urgent CT-KUB for suspected ureteric colic were prospectively analysed. Demographics, diagnosis, admission, management and length-of-stay were recorded.

Results: Of 664 acute CT-KUB investigations performed, 412 (62·0%) were negative for urolithiasis. Inpatient admission was required for 208 (50·5%) patients, with 70 (33·7%) admitted under General Surgery, 66 (31·7%) under Urology, 58 (27·9%) under Medicine and 14 (6·7%) under Gynaecology. The most common diagnosis was non-specific abdominal pain (n = 175, 42·5%), with diseases related to Urology (n = 92, 22·3%), Medicine (n = 63, 15·3%), General Surgery (n = 62, 15·0%) and Gynaecology (n = 20, 4·9%) contributing to the remainder. Simple analgesia was the most common treatment (n = 121, 66·1%) with antibiotics (n = 45, 24·6%), surgery (n = 23, 12·1%) and intensive care support (n = 1, 0·5%) also required. Of the 16 acute surgeries performed, the intra-abdominal pathology was diagnosed by CT KUB in 14 patients and confirmed in all patients at surgery (sensitivity 87·5%, specificity 100%). Admission under medicine was statistically longer (Kruskal-Wallis P = 0·004) with median days until discharge as follows; medicine 3·0 days (1·0-5·3 days), General Surgery 2·0 days (1·0-2·0 days), Gynaecology 1·5 days (1·0-3·3 days) and Urology 1 day (0·0-1·0 days).

Conclusions: In addition to providing rapid diagnosis in acute urolithiasis, the CT-KUB can provide helpful information in other acute presentations.

General 0887

Laparoscopic Colorectal Surgery in the Horizontal Position; the use of Endoractor

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Aims: Laparoscopic colorectal surgery is widely established throughout the UK. The benefits of laparoscopic versus open techniques are well documented. However, the necessity for a steep head down position during potentially prolonged laparoscopic colorectal procedures does compromise cardiovascular and respiratory function. Furthermore patient slippage has resulted in serious complications such as brachial plexus injury. Our aim was to assess the effectiveness of Endoractor, a new device to keep the table in the horizontal position during laparoscopic colorectal surgery.

Methods: We have used the Endoractor (a new, pioneering sponge that enables horizontal positioning of patients) in 3 patients. Patients were initially positioned head down to aid small bowel mobilization followed by Endoractor insertion via the 12 mm port to cover the ileocolic mesentery. The Endoractor was then sprayed with saline to allow expansion. Patients were returned to the horizontal position to conduct the operation and the Endoractor was then easily removed at the end via the 12 mm port site.

Results: The Endoractor was used in three laparoscopic colorectal procedures, 2 colorectal cancer resections and one ventral mesh rectopexy. On all 3 occasions it expanded sufficiently with a single spray of saline and enabled an adequate surgical field by securing the small bowel away from the operating field. In 2 patients Trendelenburg position recovered to nearly full horizontal position and in one patient with adhesions and high BMI to 30 degree. The small bowel remained clear of the operating field, thereby reducing operating duration.

Conclusions: The Endoractor was effective in allowing laparoscopic procedures at horizontal or near horizontal position. It needs to be assessed further in larger build patients. Endoractor would likely help to reduce complications that might arise due to patient positioning in laparoscopic colorectal procedures.

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General 0892

Baseline Investigations do not Correlate with Treatment Response of Trans-Anal Irrigation (TAI) for Chronic Constipation

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Aims: To correlate patients' baseline investigations on the Durham Constipation Clinic (DCC) prospective database (REC: 09/H0906/86) with the retrospective 2012 service evaluation of TAI usage.
Methods: A service evaluation was presented to the pelvic floor society in 2012 and this additional baseline information was requested. All patients in the 2012 service evaluation were identified on the database and prospective baseline investigation and PAC-SYM scores were extracted. Patients were excluded from a baseline analysis if any data was missing or incomplete. The database was source verified using the hospital online reporting system, and case files. The analysis for each baseline investigation comprised 1 and 2 year response as categorical data and total duration of therapy usage as continuous data.
Results: The results table highlights the demographics in the overall group and subgroup baseline analysis, which are comparable. There are no significant differences between baseline transit studies and isotope proctograms in either continuous use of therapy or categorical 1–2 year response to the treatment. There is a significant correlation between initial PAC-SYM severity of CIC and total duration of use, but categorical data do not reach significance.
Conclusions: Baseline transit studies, isotope Proctogram and PAC-SYM do not appear to predict 1 and 2 year response to treatment with TAI, or total duration of using the treatment. The correlation with duration of TAI use with lower PAC-SYM severity reflects that patients with severe symptoms fail treatments faster, which is not surprising. The treatment can be effective for all types of constipation, and for severe cases as well as mild.

Results table Demographics	Overall	Transit study analysis	Isotope Proctogram analysis		PAC-SYM analysis	
number	102	81	54		65	
male	6	5	5		4	
Female	96	76	49		61	
Mean age (SD)	48 (15)	47(14)	46(13)		46 (14)	
Mean Duration of CC (SD)	21 (17)	20(16)	20 (14)		20 (16)	
Baseline Investigations	Transit Studies		Isotope Proctogram		PAC-SYM	
Classification	Slow Transit (>45 @ day4)	Normal Transit (<45 @day 4)	< 70 % evacuation	> 70% evacuation	< 30 moderate symptoms	≥ 30 severe symptoms
Number	72	9	29	25	41	24
Mean age (SD)	47 (14)	45 (13)	43 (13)	50 (13)	47 (12)	45 (16)
Mean results	66 (7) markers	25 (15) markers	44 % (25) evacuation	82 % (7) evacuation	21 (6) score	36 (8) score
Mean length of use in weeks (SD)	61 (79)	85 (57) P = 0·38 ρ	45 (52)	63 (65) P = 0·29 ρ	74 (68)	32 (35) *P = 0·008 ρ
1 year responders observed	28	6	11	11	22	7
expected	30	4 P = 0·23 f	12	10 P = 0·73	18	11 P = 0·15
2 year responders observed	18	4	5	6	14	3
expected	20	2 P = 0·29 f	6	5 P = 0·67 f	11	6 P = 0·09 f

ρ Paired Student's t-test Chi-squared test f = Fisher's exact test

General 0895

Length of Hospital Stay is of Questionable Value as an Outcome Measure in Colorectal Surgery

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Aims: There has been increasing focus on outcome measures in colorectal surgery, especially in an era of reporting results of individual surgeons and colorectal units. Length of hospital stay is one of the most widely used outcome measures as it is seen as indicative of the quality of surgery and a surrogate for complications. However, it is also influenced by many factors unrelated to the surgeon or patient. The aim of this study was to identify factors associated with a delayed discharge following colectomy.
Methods: A retrospective analysis of a single laparoscopic colorectal surgeon series. Specific surgeon, patient, and operation related factors were analysed to determine if there was any association with a delayed post-operative discharge. Delayed discharge was defined as a post-operative hospital stay longer than 5 days.
Results: 62 of 177 patients had a delayed discharge. The only factors associated with a delayed discharge were an open operation (OR 6·5, $p < 0·001$) and post-operative complications (OR 4·3, $p < 0·001$). None of patient age, Charlson co-morbidity score, the type of colectomy, length of operation, locally advanced tumour or the year of surgery were associated with a delayed discharge. Having a post-operative complication was only a factor in 25 of 62 patients' delayed discharge.
Conclusions: The majority of patients had a delayed discharge as a result of factors other than a post-operative complication. No other significant factors were identified other than having an open operation. Length of hospital stay is of questionable reliability as an outcome measure for colorectal surgery.

General 0897

Elderly Patients Undergoing Elective Colorectal Resections have Similar Short-Term Outcomes to Younger Patients

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Aims: As a result of an ageing population, an increasing proportion of elderly patients are presenting with colorectal pathology potentially requiring colectomy. As this patient group has often been excluded from trials, little is known about the most appropriate treatments for them. The aim of this study was to determine the short-term outcomes following colectomy in a group of patients over 80 years old compared to younger patients.
Methods: A retrospective analysis of a single laparoscopic colorectal surgeon series. Comparisons were made between patients over 80 years of age and those younger than 80 years for outcomes including length of hospital stay, re-admission to hospital, post-operative complications, the need for a repeat operation and rates of stoma formation.
Results: 40 (23%) of 177 patients were over 80 years of age. There were no significant differences between these patients and patients younger than

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80 years in length of hospital stay (p = 0·83), re-admission rate (10% vs 12%, p = 0·68), post-operative complication rate (43% vs 37%, p = 0·49), re-operation rate (10% vs 9·5%, p = 0·92) and stoma rates (18% vs 22%, p = 0·55). A higher proportion of patients over 80 years had more locally advanced (T4) tumours (38% vs 13%, p = 0·005) and they had similar rates of neoadjuvant therapy to younger patients (p = 0·92).

Conclusions: Selected elderly patients have similar short term outcomes to younger patients following colectomy, despite more of them having locally advanced tumours in this series. Age should not necessarily determine a patient's suitability for a curative resection.

General 0901

Initial outcomes for Ventral and Incisional Hernia Repair Using Onlay Self-Fixating ProGrip® Mesh

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Aims: Recently there has been interest in using self-fixating ProGrip® mesh to repair inguinal hernias. To date there has been very few reports describing the use of ProGrip® for ventral and incisional hernia repair. We present the initial findings from a series of patients undergoing repair of either primary ventral or incisional hernias using ProGrip® mesh by an open onlay technique.

Methods: A retrospective review of all patients undergoing ventral and incisional hernia repair from April 2011 until present was undertaken. Demographic data was recorded as were co-morbidities which were scored using the Charleston Co-Morbidity Index. The primary outcome measures were early post operative complications such as wound infection, mesh infection, seroma/haematoma formation, pain, re-operation, removal of mesh, or mortality. Hernial recurrence was a secondary outcome given the relatively short follow-up.

Results: 25 consecutive patients were identified with at least 6 months follow-up. All patients underwent an open suture repair of the defect. This repair was then re-enforced using ProGrip® mesh in an onlay manner. Of the 25 patients 16 were females and 9 were males. Median age 53 yrs (range 23–79). Median Charleston score for comorbidities was 2 (range 0–6), median follow-up was 15 months (range 6–32). 22 hernias were incisional , 4 of which were recurrent and 3 primary para-umbilical hernias. There were 4 uninfected seromas managed conservatively, 3 superficial wound infections and 1 infected seroma all of which responded to antibiotics. 3 patients complained of mild pain at the operation site but this later resolved during follow up. 1 patient developed a discharging sinus requiring exploration revealing non-incorporation of part of the mesh which was excised following which the wound healed without sequelae. No mortality was recorded and to date there has been no hernial recurrence.

Conclusions: Initial results from the use of self fixing suggest a low rate of post operative complications most of which were minor and resolved with conservative measures, no recurrences were reported. Repair of ventral and incisional hernias using ProGrip® mesh by an onlay technique is safe and efficacious in the short term.

General 0912

Cost Effectiveness of Sacral Neuromodulation and Botulinum Toxin A in Managing Refractory Overactive Bladder

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Aims: Given that refractory Overactive bladder (OAB) is a chronic condition. This article will, therefore, evaluate which technique-- sacral neuromodulation (SNM) therapy or botolinium neurotoxin A (BoTN-A) injections-- is more cost effective in patients with OAB. Moreover, we compare the cost of minimally invasive procedures, such as SNM and BoTN-A, with surgical options, including augmentation cystoplasty (AC). Finally, we also aim to discuss the future direction of cost effective therapeutic options to treat patients with OAB.

Methods: Electronic databases (MEDLINE and EMBASE) were systematically searched form 2000 to February 2013 for studies comparing the cost-effectiveness of SNM and BoTN-A in patients with OAB. Furthermore, we searched for studies discussing, from a payers perspective, minimally invasive procedures with surgical techniques over the same time frame.

Results: Four articles met the criteria: 3 of which discussed the cost effectiveness of SNM with that BoTN-A and 1 article tackled the minimally invasive versus surgical procedures. Although SNM was more effective over a period of 2 years(1·70; 1·60 QALY), it was found to be more expensive than that of BoTN-A(15,700$ vs. 4,400$). However, medium- term analysis of SNM showed that there was a huge dropout in the value of incremental cost-effectiveness ratio ICER (27,9910 €/QALY) after 5 years.

The cost of SNM treatment was the most costly intervention after 3 years of treatment by 18,718$ (BoTN-A) and 12,032$ (AC).

Conclusions: BoTN-A is a cost effective treatment option in the first 2 years of therapy. However, SNM was found to be more cost effective than BoTN-A in medium- and long- term analysis.

General 0925

The use of Belatacept for Immunosuppression in a Young Adult Recipient Following Live Related Aboi Renal Transplant Post Calcineurin-Mediated Microangiopathic Haemolysis – A Successful New Approach

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Introduction: Since its introduction in the 1990s, ABO incompatible (ABOi) transplantation has since proven to be a safe and feasible approach for live donor renal transplant. Such transplants can be facilitated by (i) rituximab induced limitation of antibody formation and/or (ii) the use of antibody removal via immunoadsorption therapies or plasma exchange (PEX). Microangiopathic haemolytic anaemia is an unusual complication which seems to be a little more prevalent in this group of transplants. We report such a case of successfully treated with with Belatacept (a co-stimulatory blocker).

Case and Discussion: A 17 year old ABOi renal transplant recipient with severe learning disabilities received a kidney from his mother who was blood group A he being blood group O. This occurred after pre-treatment with rituximab (anti B lymphocyte monoclonal antibody) and immunoabsorption of immunoglobulin to remove anti A antibody. After initial good graft function, deteriorating function, dropping haemoglobin, platelet count and rising lactate dehydrogenase prompted a biopsy which confirmed micro-angiopathy induced by tacrolimus. After plasmapheresis and graft improvement cyclosporin was tried (an alternative calcineurin antagonist) which again induced MAHA. Belatacept is a co-stimulatory blocker which works via the CTLA-4 (CD28/80) cell blocking the co-stimulatory pathway which is required for antigen presentation together with MHC/T cell receptor interaction. Using such an agent means that Calcineurin inhibition is not required. Other anti-proliferative agents and steroids can also be reduced. The drug is administered monthly. Our patient is doing well 1 year post renal transplant.

Conclusion: Adequate immunosuppression can be maintained with Belatacept in the early post-transplant period in intolerant cases where complications arise due to the more commonly used immunosuppressive agents eg Calcineurin inhibitors.

General 0983

Outcomes of Colonic Stenting in a District General Hospital. Is there a Need for a National Colonic Stent Register?

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Aims: Patients with obstruction secondary to malignancy may benefit from decompressive colonic stenting- either as a bridge to surgery or for palliation of symptoms in those who are not surgical candidates. The aims were to evaluate the safety, success and outcomes of stenting in a district general hospital.

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Methods: All patients undergoing colonic stenting from January 2002 to June 2013 were included. Information regarding demographics, indication for stenting, technical success and outcomes (symptom relief, mortality and morbidity) was collected from patient notes.
Results: Stenting was attempted in 30 patients with one as a bridge to surgery and the remainder for palliation of symptoms. Average age of patients was 78·3 years (range: 58–100). Technical success was obtained in 83% and 11 were done as emergencies. The 30-day mortality in successfully stented patients was 24% (6/25). Complications included two perforations and two cases of stent migration. Symptom relief was clearly documented in 32% (8/25).
Conclusions: The majority of stenting was done for palliation of symptoms, offering good symptomatic relief in a significant proportion of patients not suitable for surgery. Although the procedural success rate was high, it is difficult to evaluate outcomes given the lack of formal follow-up. A national stenting register would allow more detailed analysis of results.

General 0984

Use of Serum Markers to Help Guide Management of Patients Presenting with Renal Colic

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Aims: Renal colic is a common urological emergency with a lifetime risk of 5-10%. A significant number of patients pass their stone spontaneously, but 20% may require intervention. Stone size and location are important determinants, but it is suggested serum markers can predict the need for intervention. This study assessed use of inflammatory markers and renal function in guiding management of renal colic patients.
Methods: A prospective observational cohort study of patients with radiologically confirmed ureteric colic was performed at a single institution over 6-months. Patients over 18 years were included and follow-up was carried out at 4–6 weeks. Outcome criteria included stone passage at follow-up and need for emergency intervention.
Results: 65 patients were followed-up. Average stone size was 4·9 mm and overall spontaneous passage rate was 57%. 68% of patients presented within 24 hours of pain onset. 38% had acute kidney injury (AKI) on initial bloods but 76% resolved with conservative management alone. On admission, 67% of patients had normal CRP and 63% had neutrophilia. There was no correlation between degree of neutrophilia and MSU result. Need for emergency intervention was similar for both patients with and without raised inflammatory markers.
Conclusions: Majority of patients with renal colic present within 24 hours of pain onset and the CRP is normal in most cases. Neutrophilia or new AKI should not be the sole reason for admitting an otherwise well patient into hospital. CRP and neutrophil count cannot be used to predict need for emergency intervention, this remains a clinical decision.

General1003

Comparing the Post-Operative Course of Crohn's Disease Patients Undergoing Ileo-Caecal Resections with Non-Crohn's Disease Patients Undergoing Right Hemicolectomies for Colorectal Cancer

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Aims: To examine the post-operative course of patients with Crohn's disease (CD) compared to patients without CD undergoing a similar operation for colorectal cancer, specifically looking at septic and respiratory complications.
Methods: All patients between January 2012 and May 2013 undergoing an ileo-caecal resection for CD were compared to patients undergoing right hemicolectomies for cancer within the same time period. The data included both open and laparoscopic procedures as well as emergency and elective procedures. Data was collected using the hospital online clinical portal and included demographics, length of stay, type of operation, post-operative complications and their management.
Results: Data was collected on 32 patients with CD undergoing ileo-caecal resections (29 were elective and 11 open) and 49 non-CD patients undergoing right hemicolectomies (48 were elective and 15 open). The average age in the CD group was 35 compared to 68 in the non-CD group. The ASA grade in the non-CD group was higher on average. Both groups had a comparable length of stay, incidence of SIRS (for any reason), respiratory complication rate and surgical complication rate (post-operative collection, wound infection and anastomotic leak).
Conclusions: Ileo-caecal resections for CD are not associated with an increased complication rate when compared with patients undergoing a similar operation for cancer. However, patients with CD were found on average to be 30 years younger than the non-CD group and had fewer co-morbidities. A reason for this lack of difference between the two groups, in part perhaps related to the systemic nature of CD, is not clear and requires further research.

General1010

A Systematic Review of 3-Dimensional (3D) Printing. Technology and their Use and Applications in Surgery

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Aims: 3D Printing (3DP) is a specific powder-based additive manufacturing technology (ADMT). Its increasing commercialisation heralds a new era of affordable, customised products on-demand at an individual level. This study reviews its current use in surgery, its development and potential applications.
Method A systematic literature review was conducted in accordance with the PRISMA statement, searching all years of PubMed and MEDLINE databases up to Dec 2013. We constructed a free-text search strategy using the terms '3D printing', 'three dimensional printing' and '3-dimensional printing'. Results were limited to English and full study publications with pre-determined exclusion criteria. Included studies were categorised by use, software design, surgical speciality, country of origin and year of publication.
Results: 558 papers were initially identified for review, of which 24 case reports and series were included following full text review. The majority of studies (62·5%) focused on the construction of surgical models and prostheses. They were used mainly for surgical planning (e.g. lesion visualisation for excision), education (e.g. complex clubfoot anatomy) and implantation (e.g. mandible bone reconstruction). 3DP use was also reported in an intra-operative context, making interventional splints and surgical templates. From our categorisation, Computer-aided design (CAD) software for 3DP varied widely, with Mimics® (21%) most commonly used. 3DP was most studied in Cranio-Maxillofacial (33%) and Orthopaedic Surgery (25%). Studies most frequently originated from Germany (24%) and the UK (16%). Overall, 3DP was found to be relatively accurate (0·67-3·14% dimensional error). Comparisons with other ADMTs such as PolyJet and Selective Laser Sintering, showed that 3DP was more cost effective and faster but less accurate.
Conclusions: The use of 3DP in surgery as a proof of concept is relatively well established in the literature. Its continuing commercialisation gives it the potential to become a 'disruptive technology', removing supply changes and revolutionising custom surgical materials and equipment. Larger feasibility studies including impacts on health economics are needed in order for more widespread use.

General1037

Within an ERAS Programme the ASA Grade Determines the Length of Stay of Elective Colorectal Resections

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Aims: The aim of the study was to establish if ASA grading (American Society of Anesthesiologists) affected patient's length of stay (LOS) for elective colorectal resections within an established enhanced recovery after surgery (ERAS) programme.

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Methods: A prospective database of all patients undergoing major elective colorectal resections within our surgical unit from January 2013 to November 2013 was analysed for procedure performed, laparoscopic or open technique, length of stay (LOS) and ASA grading.
Results: Table: Median length of stay (LOS) for ASA grades 1, 2 and 3 for right, left, laparoscopic and open colorectal resections (56 patients)

	Right Laparoscopic (17pts)	Right Open (17pts)	Left Laparoscopic (11pts)	Left Open (20pts)
Median LOS (Days)				
ASA 1	0 (0pts)	0 (0pts)	5 (2pts)	8 (1 pt)
ASA 2	3 (7pts)	4·5 (8pts)	3 (6pts)	7 (9pts)
ASA 3	6 (8pts)	7 (7pts)	5 (3pts)	9 (5pts)

Conclusions: There is a clear correlation between increasing ASA grade and increasing length of stay for elective colorectal resections, particularly so in right sided colorectal surgery. The ASA grade appears to be useful tool in predicting LOS not simply anaesthetic risk, it is likely to reflect the general frailty and cardiovascular status of the patient and the ability to recover after the physiological insult of surgery. This is important for teams to realise when planning pre-operatively and managing patient's expectations of their LOS.

General1055

Time as a Predictive Domain for Outcome of Emergency Appendicectomy

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Aims: It has been suggested that acute surgical admissions at the weekend or at night have a worse outcome than those during normal working hours. We sought to investigate time as a predictive domain for outcomes of urgent appendicectomy.
Methods: Retrospective chart review of a prospectively maintained database. All patients undergoing emergency appendicectomy for acute appendicitis (AA) between 1st Jan 2010 – 31st Dec 2012 were analysed. Primary outcomes: histopathological confirmation of AA and 30-day adverse events (composite outcome including: post-operative complications, return to theatre and return to hospital). Time & day of admission, procedure and discharge were extracted such that: (Day = 08:00–16:59; Evening = 17:00–22:59; Night = 23:00–07:59) and (Weekday = Mon 08:00-Fri 22:59; Weekend = Fri 23:00-Mon 07:59). Public holidays were considered Weekend days. Kruskal-Wallis and Chi-squared analyses were performed as appropriate (alpha = 0·05).
Results: 953 patients were identified (Male = 54%; median age = 29). Laparoscopy was the initial approach in 90·7% (n = 864). Average theatre–recovery time was 89 minutes. Adverse events occurred in 18% (n = 172) [post-operative complications: n = 79; return to theatre: n = 33; return to hospital: n = 92]. Greater incidence of adverse events were associated with weekend admissions (p = 0·027) but not with time (p = 0·066) or day (p = 0·486) of procedure. Histopathologically-proven non-AA appendicectomy occurred in 24·0% (n = 229) [normal appendix n = 100; other pathology n = 129). Increased incidence of normal histology was associated with procedures performed at night (p = 0·01), but not with time (p = 0·362) or day (p = 0·341) of admission.
Conclusions: The data highlights areas for targeted improvement in service delivery and gains in clinical efficiency for management of AA. Findings of greater adverse events for weekend admissions and normal histology leading to unnecessary procedures at night warrant continued attention.

General1056

Use of HIDA Scans and Laparoscopic Cholecystectomy for Acalculous Biliary Symptoms – A 4 Year Experience in a District General Hospital

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Aims: Recurrent reproducible RUQ pain in the absence of gallstones has been previously classified as acalculous biliary colic, and is commonly investigated with a radioactive labelled HIDA scan to look for biliary dyskinesia. Our aim was to report on 4 years experience of HIDA scans in the investigation of acalculous biliary colic and report on ejection fractions, histological changes in any resected gallbladders, and the efficacy of laparoscopic cholecystectomy as a treatment for these patients.
Methods: Hospital records were interrogated for all patients over the last 4 years who underwent a HIDA scan for investigation of recurrent biliary symptoms who had no gallstones demonstrable on USS. HIDA scan results were then combined with histology reports and telephone follow-up to determine presence of chronic cholecystitis and degree of any symptomatic improvement following cholecystectomy.
Results: 26 patients were investigated with a HIDA scan; 24 had acalculous biliary colic. A total of 13 patients underwent cholecystectomy. 12/13 (92%) had EF < 35% and 12/13 (92%) had chronic cholecystitis on histology. 7/7 patients available for long term telephone follow up reported significant or complete improvement in symptoms.
Conclusions: Despite the absence of gallstones on USS, patients with recurrent symptoms frequently have histological changes consistent with cholecystitis, and cholecystectomy is an appropriate treatment for these patients.

General1100

Management of Gallbladder Polyps: Are National Guidelines and Better NHS Coding Required?

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Aims: The detection, surveillance and management of gallbladder polyps is important given the dysplastic potential of certain gallbladder polyps. The increased use of ultrasound scans today has increased the detection of gallbladder polyps. Currently in the UK, the management of gallbladder polyps is primarily based on clinical judgement due to a lack of NHS guidelines. The aim of this study was to evaluate our practice of surveillance and management of gallbladder polyps.
Methods: Retrospective data over 5 years from October 2009 - October 2013 of patients given diagnostic coding of K82·8 (other specified diseases of gallbladder) were identified. During the study, we found that there is no specific coding for gallbladder polyps on the current coding system making audit and data recall difficult. Patients who had a diagnosis of gallbladder polyps on their initial ultrasound were included in the study. Demographic data, data on polyp size on initial and subsequent surveillance ultrasound scan or other imaging and on operative management was collected. This was then compared to best practice found within the literature.
Results: We identified 102 patients with a diagnosis code of K82·8. 15 (12 Female; 3 Male) patients had gallbladder polyps on the initial ultrasound scan. Median age was 58·5 years. 6 (40%) patients had no follow-up appointment after the initial or second ultrasound. 2 (13%) patients did not have gallbladder polyps detected on a second scan. 3 (20%) patients were found to have a polyp size of >10 mm on initial ultrasound scan. They all proceeded to have a laparoscopic cholecystectomy. 4 (27%) patients had a laparoscopic cholecystectomy for other indications. Histology from the 3 patients who had a laparoscopic cholecystectomy for gallbladder polyps showed severe dysplasia with probable early stromal invasion in 1 patient and only gallbladder calculi in the other 2.
Conclusions: This study reflects the importance of the surveillance and management of gallbladder polyps. It highlights the urgent need for an accurate code and implementation within the NHS to identify these patients so that we can implement optimal surveillance and operative management of gallbladder

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polyps. Furthermore it emphasises the need for a consensus on guidelines in the UK to manage gallbladder polyps.

General1105

Prucalopride for Treatment of Chronic Constipation – Are we Prescribing Correctly and is it Working?

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Aims: Prucalopride, a selective serotonin receptor agonist was licenced by NICE in 2010 for treatment of chronic constipation in women.
Methods: Clinical notes for Patients prescribed Prucalopride through the hospital pharmacy were investigated. Adherence to NICE guidance - patient selection, pre-requisite treatment, indications, and the eventual outcomes analysed.
Results: 30 patients were prescribed Prucalopride (28 female and 2 males) with an average age of 48 years (range 18–70 years).
All 24 Outpatient prescriptions were for chronic constipation, prescribed by Consultants with special interest.19 patients had a trial of 2 laxatives for 6 months. 7 patients had a good outcome with one later discontenting due to side effects. Prucalopride had no effect or produced intolerable side effects for 8 patients, 9 were lost to follow up.
5 prescriptions were for acute complications of constipation and 1 for gastroparesis. They all had poor outcomes and Prucalopride was not continued.
NICE guidance was followed in 17 cases in total, patients being male and not trialing laxatives were the reasons for non-compliance.
Conclusions: Outpatient prescriptions had a variable outcome where as acute prescriptions had poor outcomes with none having improvement in symptoms. However it remains a good treatment for this difficult to treat condition.

General1111

Consent for Open Inguinal Hernia Repair – How Well Do We Do It?

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Aims: As one of the most common day-case procedures, open inguinal hernia repairs are consented and performed by both junior and senior surgical staff in most institutions. Consequently, there is potential for variability in patient consent. This study reviews the consenting process in a district general hospital setting.
Methods: 74 male patients were identified from a prospective database over a 12 month period. Case notes were reviewed to identify various parameters including the consenting surgeon, discussion of alternative treatments in the clinic and documentation of significant/common complications on the consent form.
Results: 66 (89%) patients underwent a general anaesthetic, 7 (9%) local anaesthetic and 1 (2%) local anaesthetic/sedation. Discussion of alternative treatments/conservative management in the clinic occurred only in 17 cases (23%). The primary surgeon was a consultant in 40% (n = 30) of cases (versus 60% Specialist Registrar/Staff Grade/Core trainee (SR/SG/CT), n = 44). However, the consenting doctor was the SR/SG/CT in 82% (n = 61) of cases. Consent for complications varied according to grade – Consultant vs SR/SG/CT: Bleeding (50% vs 88%); infection (64% vs 88%); swelling/bruising (21% vs 22%); recurrence (29% vs 82%); chronic pain (64% vs 40%); numbness (29% vs 40%); vas deferens injury (0% vs 24%); urinary retention (0% vs 16%); and change in testicular size/function (0% vs 64%).
Conclusions: Complications are variably discussed and documented, and this also varies with the grade of doctor. To rectify this discrepancy, improve patient education and avoid litigation, a pre-typed consent form has been devised, describing the surgical procedure, alternative/conservative treatments, and common and significant complications.

General1116

An Analysis of Right Iliac Fossa Pain Emergency Surgical Admissions

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Aims: Patients with right iliac fossa (RIF) pain and suspected appendicitis comprise a large proportion of surgical emergency admissions. The management of male and female patients admitted with this symptom varies immensely, due to the multitude of differential diagnoses in females, which necessitates investigations such as scans and even diagnostic laparoscopy. Other conditions can also present with a similar clinical picture. The necessary investigations, observations and surgical procedures all result in considerable resource utilization. To ensure that we are managing our RIF pain patients appropriately, we performed an audit of these patients admitted to the surgical wards over a three month period, with special emphasis on appendicectomy/ other surgical procedures performed, investigations carried out and outcomes, with a view to developing strategies to reduce cost by reducing unnecessary admissions, investigations and surgical procedures.
Methods: We collected data retrospectively over a 3 month period for all emergency surgical admissions with RIF pain between 8 August and 11 November 2013. Data was obtained from case notes and the investigation results from the hospital's computers.
Results: Sixty five patients were identified, 18 male and 47 female. 50 % males underwent a radiological investigation (ultrasound/CT scan); 50% males had appendicectomy. One male with an appendix mass was managed conservatively. Hence 50% males had a definite diagnosis (all appendicitis). The rest (50%) were left with a diagnosis of non-specific abdominal pain. 85 % female patients underwent a radiological investigation; 11 % females underwent appendicectomy. Similar to the males, in 50% of the females, a definitive diagnosis was made (however the pathologies differed – only 11% had appendicitis, 24% a gynaecological pathology and others – carcinoma caecum, UTI, Crohn's, renal calculus, jejunojejunal intussusception). Again, the rest (50%) had a diagnosis of non-specific abdominal pain. The overall negative appendicectomy rate was 13·3%. The overall rate of surgery for RIF pain was 26%, of which the major procedure, as expected, was appendicectomy (23%).
Conclusions: The management of patients admitted with RIF pain remains a major part of the emergency surgical workload, with serious cost implications. The cost of blood and radiological investigations, bed occupancy, surgical procedures, medication etc all add up to astonishingly staggering costs. Streamlining the management of these patients by reducing unnecessary admissions, investigations and surgical procedures is essential for ensuring appropriate utilisation of limited hospital financial resources.

General1121

Should we Leave the Drain Longer to Reduce High Readmission Rates Following Percutaneous Cholecystostomy for Severe Cholecystitis?

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Aim& Introduction: Cholecystostomy is deemed a safe procedure for treatment of gallbladder empyema. Patients with severe cholecystitis and significant co morbidity are increasingly managed this way. Data were collected on cholecystostomy to assess the efficacy of this procedure in a DGH setup.
Method: Data were collected on consecutive cholecystostomy performed at the radiology department of a District General Hospital for rate of subsequent readmission for related pathology, interventions and timing of cholecystectomy among other demographic details using hospital databases.
Results: Twenty four patients were included in the study who had ultrasound guided cholecystostomy from Dec 2011 to Dec 2012. The average age was 73 years (range 52–99), with a median hospital stay of 10 days. While malignant obstruction accounted for 3 of the procedures and empyema of GB for 7, the rest of the patients had severe cholecystitis complicated by other systemic co-morbidity. Cholecystectomy was performed in 9 patients as follow up with an average waiting time of 6 months (186 days). There were no incidence of major bile leakage, and none of the drains were used for subsequent radiology

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investigations, as ERCP was preferred. Of the 10 patients who did not had cholecystectomy for reasons of high co morbidity, five required readmission for gall bladder related pathology following removal of the drain, 3 of which were multiple.

Discussion: Cholecystostomy was used as a definitive way of treating severe cholecystitis in patients with multiple co morbidity or age related concerns. Although subsequent cholecystectomy is preferred in those who are relatively fit, this data shows a high rate of re admission for those who failed criteria for such definitive treatment. Previous studies have suggested retaining the drain for longer to avoid recurrence of problem and should be considered as an option.

General1173

Prospective Audit of Prescription of Water and Electrolytes in Surgical Patients by Junior Doctors. Are Expected Standards Being Met?

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Aims: To audit the prescription of intravenous fluids against the recommended guidelines in haemodynamically stable surgical patients within the first 48 hours of admission.

Methods: Consecutive patients admitted to general surgical wards in a District General Hospital from September to November 2012 were included.
Haemodynamic stability was defined as Early Warning Score (EWS) of 2 or less. The type and volume of intravenous fluids prescribed for maintenance in three categories of surgical patients (A- non-operative emergency patients, B- post-operative elective patients, C- post-operative emergency patients) in the first 48 hours of admission was compared against the recommended daily fluid and electrolytes requirements. The British Consensus Guidelines on Intravenous Fluid Therapy for Adult Surgical Patients guidelines were used as standards.

Results: 50 patients (23 men, 27 women) met the inclusion criteria – 31 (62%) patients from category A, 14 patients (28%) from category B and 5 patients (10%) from category C. The median age was 69 (IQR 32–78) years.
The correct volume of fluids based on recommended requirements was prescribed in only 58 per cent of patients during the first 24 hours and in 84 per cent of patients during the subsequent 24 hours. Sodium was administered in excess of daily requirements in 88 per cent of patients in the first 24 hours and in 50 per cent of patients in the second 24 hours. Only 12% of patients received the recommended daily amounts of potassium.

Conclusions: Intravenous fluid prescribing in general surgical wards does not appear to follow recommended guidelines. There is an immediate need to educate junior doctors in the estimation of fluid and electrolyte requirements and its appropriate prescription in surgical patients.

General1211

Fat Wrapping is a Prognostic Biomarker in Crohn's Disease

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Aims: A significant proportion of patients with Crohn's disease (CD) require repeat surgical resection following initial curative resection. Mesenteric mesenchymal changes, such as fat wrapping (FW) are characteristic of CD but remarkably understudied. We aimed to investigate the relationship between FW and surgical recurrence (SR).

Methods: An institution-review-board-approved database was reviewed to identify all CD patients who underwent surgical resection between January 2001 and August 2013. FW was considered to be present when >50% of the bowel circumference was covered by mesenteric adipose tissue coupled with loss of the normal bowel-mesentery angle. SR was defined as recurrence necessitating repeat surgical intervention (s). The effects of FW on SR were determined using Fisher's exact test, Kaplan Meier estimates and Log-Rank comparisons. A p value of 0·05, or less, was considered statistically significant.

Results: 94 patients (45 M, 49 F) underwent a total of 115 resections during the 12-year study period. The mean (SD) follow-up was 67·4+/–43·6 months. Sixteen patients experienced SR (17%) after a mean of 44·2+/– 8·8 months following index resection. The commonest indication for reoperation was discharging fistulae while the commonest operation performed was ileocolic resection. Although FW was associated with fissuring ulceration ($p = 0·05$), there was no association with transmural inflammation ($p = 0·236$), stricture formation ($p = 0·560$), granuloma ($p = 0·489$), BMI ($p = 0·367$) or fistulae formation ($p = 0·137$). On univariate analysis, penetrating disease behaviour (OR 3·9, 95% CI: 1·4-11·5, $P = 0·012$) and FW (OR 10·1, 95% CI: 3·5-29·2, $P < 0·001$) were associated with SR. On multivariate analysis (catering also for smoking) only FW increased risk of SR (OR 8·6, 95% CI: 2·9-25·3, $P < 0·001$). FW was also associated with a shorter time to recurrence ($P < 0·001$, Log-rank test).

Conclusions: FW increases risk of, and decreases the time to, surgical recurrence in CD. Thus fat wrapping is a prognostic biomarker in CD.

General1232

The Real Burden of Bowel Dysfunction in Care Home Residents: A Cross-Sectional Survey

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Aims: The combination of comorbidities, advanced age and poor mobility contribute to the prevalence of bowel symptoms in care home residents.
To survey the bowel habits of the residents of care homes in Southend.

Methods: A cross-sectional survey of care home residents in Southend. The survey was over a 2-month period. The questionnaire captured the participants' demographic data and bowel habits and symptoms. There was an attached explanatory note as to the purpose, voluntary nature of participation and implied consent by completing the questionnaire. Participants were also notified of the confidentiality of the study.

Results: 87 questionnaires were completed giving a response rate of 87%. The mean age of the residents was 82 (21–103) years with the mean stay in the home of 31 (1–228) months. 92% of the respondents had experienced at least one form of change in their bowel habits in the last two years with associated rectal bleeding and pelvic pain in 19% and 10% respectively. The bowel habit patterns were variable with more than once daily, once daily, once in 2 days and twice weekly or less in 20%, 50%, 28% and 2% of the residents respectively.
26% of the residents reported regular loose or semi-formed stools while 25% had had hard to pebbly bowel motion in the previous two years. 40% needed to strain at defecation with 18% spending more than 10 minutes on the toilet. 57% use laxatives regularly to aid bowel movement.
63% of the residents had experienced faecal incontinence and 25% were incontinent of only flatus in the last two years. 45% regularly experienced urgency of defecation with few bowel accidents and 88% of the participants used continence pads regularly. 34% regularly experienced the feeling of incomplete bowel emptying. 54% of the residents admitted that their bowel habits were a source of embarrassment and 37% claimed that this had affected their daily activities and lifestyles.

Conclusions: Constipation and incontinence are prevalent among the residents of care homes. Majority do experience a significant change in their bowel habits which is a source of embarrassment and adversely affecting their daily lifestyles.

General1233

The Development of an Emergency and Elective Paperless Colorectal Service

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The Royal London Hospital, London, UK

Aims: To develop a full paperless colorectal service

Methods: Over a three month period from October 2013 – Dec 2013 all patients treated by a single consultant surgeon were seen, assessed and treated by a complete paperless system. This included all elective patients scheduled for

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minor, intermediate and major surgery, Outpatients, and emergency admissions. All junior staff training was carried out throughout the study.
Cerner Millennium® was used for all data and clinical interactions. Outpatient dictation utilised G2 speech® interactive recognition for real time dictation. A portable Computer on Wheels was used for ward rounds on the surgical admissions unit and main wards. All operation notes were entered onto millennium and outcome assessed by Surginet®. The level of interaction amongst the team was assessed by the Lightson software®
Results: Outpatients – a total of 312 patients were seen with no access to paper records. 18 Elective admissions and 29 emergency admissions – 18 major cases underwent a complete paperless pathway from admission to discharge with all entries from all health care professionals. Entries and "clicks" within CRS increased over the three months and the quality was improved
Conclusions: Advantages 1. Secretarial time now can be spent on pathway coordination rather than typing as the letters are sent from clinic and given to patients immediately. 2. There are no case notes in clinic reducing the cost of retrieving notes. 3. Health staff can access information on patients from anywhere in the hospital and update entries. 4. The clinical entries are clear and legible improving safety.
Disadvantages 1. Lack of integration across all systems 2. Constant training required to engage workforce. 3 Potential difficulties if computer systems crash. A paperless service can be set up and can utilise full CRS capability to create a seamless path from outpatients or casualty to discharge. To engage a workforce in developing a paperless service requires teamwork and continual self-motivation. This culture can be changed quickly. Further work may allow integration into community based systems and ipad/mobile connectivity.

General1240

The Surgeons' Attire and Patient's Perception. Analysis of its Effect on Trust and Confidence

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Aims: We sought to assess patient perception of surgeons' attire in an Irish surgical outpatient setting.
Methods: The study was conducted over a three-month period at a colorectal outpatient clinic. Patients attending were invited to examine photographs of surgeons wearing either white coat and tie, surgical scrubs, or an open necked short-sleeve shirt. Doctors staffing the clinic alternated between the three attire types on different days. Patient preferences including the impact of each attire on trust and confidence were assessed using a Likert scale.
Results: A total of 104 patient responses were obtained. The majority (59·6%, n = 62) indicated that the wearing of a white coat and tie was most appropriate. Of the remainder, 19·6% (n = 21) indicated surgical scrubs as their preference, with a comparable number (19·6%, n = 21) preferring short sleeve shirts. Preference was independent of patient age (p = 0·494) or gender (p = 0·339). However whether a patient was a new referral or a return patient significantly impacted on their preference, with new patients more likely to prefer their surgeon to wear surgical scrubs as compared to a white coat and tie compared to return patients (p = 0·004).
Conclusions: Despite infection prevention recommendations the wearing of short-sleeve open necked shirts or scrubs in surgical outpatients is not preferable attire for surgeons from the majority of patients perspectives.

General1268

Splenic Artery Haemorrhage in Severe Necrotising Pancreatitis

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Aims: A rare but potentially serious complication in acute severe necrotising pancreatitis is that of splenic artery haemorrhage. Our aims were to identify those patients with necrotising pancreatitis managed within a tertiary hepatobiliary centre who required splenic artery embolisation, and determine their aetiology, presentation and subsequent management.
Methods: This was an observational study performed retrospectively spanning 2010–2013. PACS imaging was cross-referenced with interventional radiology records to identify patients with acute pancreatitis who underwent splenic artery embolisation. Notes and imaging retrospectively reviewed.
Results: 14 patients with pancreatitis underwent splenic artery embolisation. Mean age 48 (range 27–74); M:F ratio:11:3. 13 (93%) patients required ITU support during admission.12/14 (85·71%) had undergone ≥1 radiological or surgical intervention, with 6 patients (42·86%) having had at least one prior necrosectomy in addition to multiple radiological procedures. 9(64·2%) patients presented with bleeding into the flank drain; 2/14 with evidence of gastrointestinal haemorrhage. 2/14 (14·29%) had bled spontaneously with haematoma/blood found at time of flank drain insertion. 1 patient had an unexplained haemoglobin drop. 11 patients underwent initial CT angiogram: only 2(18%) showed active contrast extravasation. Formal angiogram revealed active bleeding in 3 (16·67%) patients. Blood transfusion was required in 10 patients. One embolisation was complicated by complete splenic infarction. There were no further episodes of bleeding following embolisation in 85·71% of cases. In 2 patients, bleeding continued. One required laparotomy and right hemicolectomy, another embolisation of a gastroduodenal artery pseduoaneurysm. 10 patients required blood transfusion
Conclusions: In our study, splenic arterial haemorrhage was associated with surgical or radiological intervention in 86% of cases. Although active haemorrhage was not always demonstrated, embolisation stopped further bleeding in 86%. A high index of suspicion must be maintained in any patient with necrotising pancreatitis requiring intervention who develops evidence of bleeding with prompt intervention in order to prevent catastrophic haemorrhage.

General1283

The Effect of Patient Gender on the Quality and Time Allocation for Colonoscopies. A Study of 315 Patients

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Aims: The quality control guidelines and protocols introduced by JAG, in the restructuring of endoscopy services have significantly improved safety and efficiency. The aim of this study was to investigate the effect of patient gender alone in the quality of colonoscopic assessments and the duration of these procedures, in order to improve the efficiency of endoscopy services.
Methods: 315 continuous patients' records were retrieved from the endoscopy unit database of a large District General Hospital. The patients' records were cross-referenced with the hospital's patient management database to ensure accuracy of demographics. Descriptive and comparative statistics were performed using the StatsDirect statistical software package.
Results: The sample of 315 patients was comprised of 158 female and 157 male patients. The median age was 61 in both groups. Comparative analysis using the Mann–Whitney test revealed a significantly longer caecal intubation time in female patients over 50 years old, when compared to male patients (p < 0·0018). The 20 to 50 years old female group showed no statistical difference when compared to males. There were no significant differences when the caecal intubation rates, time to extubation, the use of a scope guide, bowel preparation and endoscopist, were compared between the two groups.
Conclusions: Gender may have an effect in the time required to achieve caecal intubation and should be considered in the planning of endoscopy lists.

General1304

Does Macroscopically Normal Appendix Mean Normal Histology?

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Aims: Acute appendicitis remains the most common surgical emergency. Controversy still exists amongst surgeons on removal of a macroscopically normal looking appendix (particularly at the time of laparoscopy). Our aim was to

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identify the correlation between macroscopic findings at appendicectomy and pathologists' assessment.

Methods: A retrospective case note review of all appendicetomies performed between (March 2011 – March 2013) was carried out in our Trust. Using a re-designed surgical proforma, data was extracted on demographics, type of operation, operative findings, and final histology.

Results: 584 appendicetomies were performed: Open 282 (48·2%), Laparoscopic 226 (38·6%), Laparotomy 5 (0·8%), not documented 43 (7·3%). Male: Female ratio 1:1·5. Median age was 28 (range 4–76); median inpatient stay was 1 day (range 0 – 17). Overall histology positive for appendicitis were found in 453 (77·5%); normal histological findings in 131 (22·5%). Surgeons' intra-operative findings of macroscopically normal appendix: 98 at laparoscopy. Of those 75 (76·5%) were normal; 23 (23·5%) had histological features of appendicitis. In cases where surgeons found macroscopic normal appendix, 24 (24·5%) documented small bowel inspection; 74 (75·5%) no documentation of small bowel inspection

Conclusions: We have shown that patients can have a macroscopically normal appendix: but nearly a quarter with positive histology shows it is important to remove appendix - particularly if patient is symptomatic. In the presence of macroscopically normal appendix we highlight the need for inspection of the small bowel and documentation in the operation note to rule out other pathology.

General1305

The Role of Imaging in Diagnosing Acute Appendicitis

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Aims: Acute appendicitis remains the most common surgical emergency. Diagnosis and decision is based on clinical assessment and investigations. Availability of imaging has meant an increase in its use for diagnosis. Our aim was to identify the accuracy and modality of imaging for diagnosing acute appendicitis.

Methods: A retrospective case note review of all appendicetomies performed between (March 2011 – March 2013) was carried out in our Trust. Using a re-designed surgical proforma, data was extracted on demographics, in-hospital stay type of operation, operative findings and final histology.

Results: 584 appendicetomies were performed between (March 2011 – March 2013). The type of operation was: Open 282 (48·2%), Laparoscopic 226 (38·6%), Laparotomy 5 (0·8%), not documented 43 (7·3%). Male: Female ratio 1:1·5. Median age was 28 (range 4–76); median inpatient stay was 1 day (range 0–17). Overall histology positive for appendicitis were found in 453 (77·5%). 157 (28·9%) underwent pre-operative imaging. Of those 80 (50·1%) underwent CT, 66 (42%) USS; 8 (5·1%) both CT and USS; 2 (1·3%) abdominal radiograph; 1 (0·6%) MRI. CT suggestive of appendicitis: 74 (84·1%). Of these CTs 67 (90·5%) has positive histology of appendicitis; 7 (9·5%) normal histology. USS suggestive of appendicitis 19 (25·6%); of this group 13 (68·4%) had positive histology of appendicitis; 6 (31·6%) normal histology.

Conclusions: Majority of patients do not have imaging in our Trust. CT appears more accurate for diagnosis of appendicitis, in line with current evidence. Though clinical observation remains an important tool in management, imaging is a useful too. However even with imaging, a small proportion of patients still have normal histology. Imaging should be combined with clinical assessment and acumen.

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Minimally Invasive Surgery and Technology

Minimally Invasive Surgery and Technology 0027

Improving the Same Day Discharge Rate Following a Laparoscopic Cholecystectomy

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Aims: Day case laparoscopic cholecystectomy (DCLC) is an established procedure attracting a higher tariff. Implementing DCLC can, however, be difficult in units where overnight stays are the established normal practice.
Methods: Using historical data to identify problems preventing same day discharge, a new clinical pathway was devised for same-day discharge after cholecystectomy. The new measures included a standardized anaesthetic protocol (avoiding opiate analgesia), intrabdominal instillation of local anaesthetic and ensuring discharge letters were completed in theatre. Nurses also underwent teaching sessions explaining the pathway and patients carefully counselled regarding daycase surgery. Prospective data collection was then undertaken of 110 consecutive laparoscopic cholecystectomies.
Results: From historical data, the same day discharge rate was 46·0%. Post intervention this increase to 75·7% (P <0·001). In the 56 patients contactable 48 hours post procedure; all patients were eating and drinking, passing urine and apyrexial. Fifty-three patients (94·6%) were pain free, 19 (34·5%) felt bloated and 7 (12·5 %) had a wound discharge. Qualitative analysis revealed that 75% of patients were completely satisfied with the information they received before the operation and 88·1% of patients would definitely recommend daycase surgery.
Conclusions: Implementing DCLC is low-cost and results in an immediate improvement in same-day discharge rates. Careful education of both patients and nursing staff is vital to ensure its success.

Minimally Invasive Surgery and Technology 0050

Drainage versus no Drainage in Laparoscopic Cholecystectomy: a Meta-Analysis

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Aims: Routine drainage after laparoscopic cholecystectomy is still controversial. The present meta-analysis was performed to assess the role of drains to reduce complications in laparoscopic cholecystectomy.
Methods: An electronic search of the Medline, Science Citation Index Expanded, Scopus and Cochrane library database from January 1990 to June 2013 was performed to identify randomized clinical trials that compare prophylactic drainage with no drainage in LC. Odds ratio for qualitative variables and standardized mean difference for continuous variables were calculated.
Results: Twelve randomized controlled trials were included in the meta-analysis, involving 1939 patients randomized to drain (960) versus no drain (979). Morbidity was lower in the no drain group (odds ratio 1·97, 95% confidence interval 1·26-3·10; p = 0·003). Wound infection rate was lower in the no drain group (odds ratio 2·35, 95% confidence interval 1·22–4·51; p = 0·01). Abdominal pain 24 hours after surgery was less severe in the no drain group (standardized mean difference 2·30, 95% confidence interval 1·27 to 3·34, p < 0·0001). No significant difference was present with respect to presence and quantity of subhepatic fluid collection, shoulder tip pain, parenteral ketorolac consumption, nausea, vomiting, and hospital stay.
Conclusions: The present study was unable to prove that drain was useful to reduce complications in laparoscopic cholecystectomy.

Minimally Invasive Surgery and Technology 0085

Managing Patient Expectations for Day One Discharge Following Laparoscopic Gastric Bypass Surgery

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Background: Laparoscopic Roux-en-Y gastric bypass has advantages over traditional open surgery including reduced post-operative pain and faster recovery times. Despite this, many patients still stay in hospital for several days following laparoscopic gastric bypass surgery due to concerns about potential sequelae. This study aims to evaluate the effectiveness of managing patient expectations for routine discharge one day after laparoscopic gastric bypass.
Methods: All patients who underwent laparoscopic gastric bypass surgery, conducted by a single surgeon, were included in the study (May 2010 - Oct 2013). All patients were counselled pre-operatively that, barring complications, they would be discharged the following day. Providing physiological parameters, clinical examination and blood tests (serum C-Reactive Protein and Full Blood Count) were satisfactory, all patients were again counselled post-operatively regarding discharge on day one.
Results: 112 patients who underwent a laparoscopic gastric bypass were included in the sample (35 male : 77 female, median age 44 [range 18–73], median BMI 49·4 [range 36·5 - 75·0]). Complications were observed in 5 patients (4·5%), Clavien-Dindo Grades I - IIIb. 98 patients (87·5%) were discharged one day following surgery. The average inpatient stay was 1 day (range 1–6). Of the 14 patients with a greater than one day in-patient stay, 7 remained in hospital for social reasons and were deemed to be fit for discharge on day 1. Consequently, 105 patients (94%) were fit for discharge on day 1. No patient discharged on day 1 was subsequently readmitted.
Conclusion: The majority of patients can safely be discharged one day following laparoscopic gastric bypass. Pre- and post-operative patient education helps to achieve this without affecting patient outcomes.

Minimally Invasive Surgery and Technology 0104

Unusual Complications of Laparoscopic Ventral Hernia Repair (LVHR) and Management

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Aims: there are fewer complications of LVHR then open repair. Common complications reported are pain, seroma, ileus, infection, bowel injuries and recurrences. We would like to report our experience with unusual complications encountered after LVHR repair and their management.
Methods: between January 1999 and July 2013, a total of 751 patients had their ventral hernia repair by various laparoscopic techniques. Retrospective data were collected from the clinical notes of patients. Type of repair varied according to the surgeons' choice, using tackers, sutures, or combinations of both. Depending on the availability various type of mesh were used including polypropylene, Dual mesh, Proceed mesh and Physiomesh.
Results: A total of 19 rare complications were seen majority presenting as surgical emergency, occurred between 3 weeks to 3 year after the surgery: infected posterior seroma and abscess formation(1), persistent anterior seroma in an obese lady for last six months presented with obstructed recurrent hernia under the seroma(1),entrapment and obstruction of bowel loop between the mesh and the anterior abdominal wall(1), intestinal obstruction secondary to failure of suture and reherniation of bowel loop in the previous defect(2), intestinal obstruction secondary to loose tacker (1), obstruction secondary to tacker band (1), Infected mesh cocoon (1), large hematoma at port site and subsequent development of obstructed port site hernia three months after surgery (1), hernia through a defect in the mesh (1), mesh displacement after

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tacker only fixation and recurrence (1), slow tacker erosion into bowel presenting as faecal fistula (1), suture hernias (3), mesh on mesh with third recurrence (1), tacker adhesions and obstruction (2), mesh shrinkage/small mesh/suture under tension/multiple suture hernia (1). Majority of these complications were managed successfully by laparoscopy. These complication are best demonstrated in a video presentation.

Conclusions: laparoscopic repair of ventral hernia is an evolving science; we are still learning to find an ideal mesh and the best way to fix it. Compared to open approach laparoscopic repair has lesser complications, shorten hospital stay and very low recurrences.

Minimally Invasive Surgery and Technology 0195

Operative Outcomes for Laparoscopic Cholecystectomy Performed by Trained Laparoscopic Colorectal Surgeons

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Introduction: Despite the drive for sub-speciality training, operations such as laparoscopic cholecystectomy have been performed by surgeons without specific laparoscopic or hepatobiliary training. We aim to evaluate the operative outcomes for patients undergoing laparoscopic cholecystectomy under the care of consultant surgeons trained in laparoscopic colorectal techniques and trained in laparoscopic cholecystectomy.

Method: A retrospective review of the operative outcomes for 218 patients who had a laparoscopic cholecystectomy under the care of two laparoscopic colorectal surgeons within a District General Hospital. The outcome measures selected were the 30 day post-operative morbidity and mortality, conversion to open cholecystectomy, length of hospital stay, re-admission and re-operation within 30 post-operative days.

Results: The median age at operation was 54 (range 20–85). The median length of stay was 1 (range 0–25). The male to female ratio was 1:3. The conversion rate was 7%. 4% had specific post-operative biliary tract complications. 6% had other post-operative morbidity. One patient was re-operated on same day for port side bleeding. 5%(10) of the patients were re-admitted within 30days. Six (3%) patients required ERCP within 30 days of operation. There were no deaths within 30 days.

Conclusion: Post-operative outcomes following laparoscopic cholecystectomy undertaken by laparoscopically trained colorectal surgeons are comparable to accepted standards for this procedure. Therefore we surmise that surgeons who have received adequate training in this procedure, and have generic laparoscopic skills irrespective of their surgical sub-speciality interest can safely undertake laparoscopic cholecystectomy.

Minimally Invasive Surgery and Technology 0207

Comparison Between Local Anaesthetic Transversus Abdominus Plane (TAP) Blocks and Wound Infiltration During Laparoscopic Cholecystectomy. A Single Surgeon's Results

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Aims: Transversus abdominus plane blocks have recently become a popular way of administering local anaesthetic. They block the abdominal wall efferents leading to analgesia post abdominal surgery. It has been postulated that this leads to less post operative analgesic requirements and in the case of laparoscopic cholecystectectomy, earlier discharge. We reviewed one surgeon's experience to see if this was the case.

Methods: 1 year of elective laparoscopic cholecystectomies were reviewed between Jan 2012 to Dec 2012. This consisted of 69 case notes. 6 cases were removed due to missing data, 1 removed due to emergency operation.
Total analysed n = 62. 20 had local anaesthetic wound infiltration at the end of the procedure prior to being woken. The surgeon then subsequently changed practice and therefore 44 had a laparoscopically guided TAP block performed at the start of the procedure.

Results: 81% of the patients were female with a median age of 49. Various intra-operative and post operative analgesia regimes were used. There was no significant difference in the rate of true day case discharges but there was an increased rate of discharge within 24 hours when the patients had a TAP block. 95·4% of the TAP group were being discharged within 1 day of their operation compared to 73·7% in the WI group.

Conclusion: TAP blocks are a promising route of nerve blockade in abdominal surgery. Although this study does demonstrate earlier discharger post TAP compared with local anaesthetic blockade the authors feel that larger studies are required.

Minimally Invasive Surgery and Technology 0253

The Hammersmith Laparoscopic Pancreaticogastrostomy: a Novel Laparoscopic Pancreatic Anastomosis During Central Pancreatectomy

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Aims: The aim of this study is to present the Hammersmith Laparoscopic Pancreaticogastrostomy (HLPG) technique, a novel method for reconstruction of the pancreatic stump during laparoscopic cetral pancreatectomy (CP) and to present our outcomes. This method is technically easier to perform than standard techniques.

Methods: From March 2012 to July 2013, four patients underwent HLPG during a laparoscopic CP. This involves creating a sleeve gastric tube for an end-to-end anastamosis between the distal pancreatic stump and the stomach. Operative outcomes were reviewed prospectively.

Results: Two males and two females with a median age of 49 years had a CP with HLPG. The total operative time was 437·4 ± 12 mins (mean ± sd) and the time taken for reconstruction of HLPG anastomosis was 37·6 ± 7·6 mins (mean ± sd). After a median follow-up of 27·5 months there was no mortality. One patient had a grade A postoperative pancreatic fistula (POPF) requiring no medical or surgical treatment.

Conclusions: The HLPG is technically easy to construct laparoscopically. It is a feasible operation which may reduce operative time and POPF rate. A larger series in the future will fully evaluate the operative outcomes.

Minimally Invasive Surgery and Technology 0277

A 10 Year Regional Comparison between Two Major UK Centres in the Provision of Bariatric Surgery

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Aims: The use of bariatric surgery as an intervention for morbid obesity is increasing rapidly in the UK. Despite national guidelines, referrals to weight loss services from primary and secondary care settings are variable by region. The aim of this study is to compare the demographics, socioeconomic status and case severity of patients at two major bariatric centres, centre 1 in the West Midlands and centre 2 in the South West.

Methods: Data were captured on all bariatric surgical episodes conducted in both centres between 2004–2013 involving patients resident in England. Data on BMI and gender were collected along with the patients' postcodes to obtain a neighbourhood deprivation score.

Results: Data was collected from 2926 cases in total, 1730 from centre 1 and 1196 cases from the centre 2. There was a statistically significant difference in the age distribution of patients at the two centres despite similar medians (centre 1–45 vs. centre 2–46 years old) ($p = 0{\cdot}01$; Wilcoxon rank test). The difference in BMI and deprivation score distributions were highly statistically significant with patients in the centre 2 having lower BMIs (median BMI centre 1–52 vs. centre 2–48·8) and resident in less deprived areas (median deprivation score centre 1–26·00 vs. centre 2–18·83) ($p < 0{\cdot}01$; Wilcoxon rank test).

Conclusions: There are significant differences in case mix between these two major centres. Patients being offered surgery in centre 1 have a higher BMI and

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are resident in more deprived areas. Whether this disparity reflects a differential distribution in obesity and deprivation or the referral/ surgical practices in the two regions would need to be investigated in a future study.

Minimally Invasive Surgery and Technology 0291

Modified Laparoscopic Roux en Y Gastric Bypass for Idiopatic Gastroparesis

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Aims: Show how the Roux en Y gastric bypass could be consider as an option for treatment of chronic idiopathic gastroparesis.
Methods: The authors report the clinical case of a 35 years old woman with a history of chronic vomiting for the last 4 years resistant to medical treatment. She had to be fed with percutaneous gastrostomy (PEG) tube for one year. She also developed abdominal pain going across as a band at the top part of her abdomen which normally occurred after eating. Her preoperative weight was 58 Kg. Amongst her numerous investigation she had multiple gastroscopies and upper gastrointestinal studies. None of these showed any anatomical abnormality with the oesophagus, stomach, pylorus or duodenum. A barium meal with follow through confirmed slow transit. A colonoscopy and an MRI enterogram which were both normal. A hydrogen urea breath test normal for bacterial overgrowth. A gastric emptying nuclear scan confirmed gastroparesis. The patient was reviewed by numerous gastrointestinal specialists who were unable to find the cause of her gastroparesis. She had been treated with numerous prokinetics, analgesic and antidepressant but these have not made any change in her upper gastro-intestinal symptoms. The procedure was performed by laparoscopy at St. Mary´s Hospital NHS Trust (Imperial college of London).
Results: Patient underwent a laparoscopic Roux en Y gastric bypass (Roux limb: 50 cm and Bilio-Pancreatic limb: 50 cm) and was discharged after 24 hours of the operation drinking without vomiting. One week after the operation a barium swallow meal and follow through showed normal emptying of the pouch into the jejunum and ileum. Patient was free of symptoms and weight stable postoperatively. Her weight 6 months after the surgery was 61 Kg.
Conclusions: Patients with severe gastroparesis resistant to medical treatment, a modified gastric bypass in Roux-Y should be consider has an option.

Minimally Invasive Surgery and Technology 0319

A Descriptive Case Series of a Blunt Optical Port Insertion Technique: A Safe Alternative for Laparoscopic First Port Entry

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Aims: The aim of this study is to describe a new technique for laparoscopic first port entry and display its advantages, compared to other laparoscopic first port entry methods.
Methods: 80 patients undergoing various laparoscopic procedures at a single district general hospital in the West of Scotland were included in this study as part of a case series. There were no exclusion criteria. The blunt optical port insertion technique as described by Al-Ani involves the use of a blunt optical trocar. The laparoscope is inserted into the blunt trocar which is within the 12 mm port and after making a skin incision, is bluntly inserted under direct vision using a twisting motion of the right hand. Pneumoperitoneum is confirmed under direct vision. This technique was used in all cases for the insertion of the first laparoscopic port. The outcomes of interest reported in this study were time taken to produce pneumoperitoneum, injury to intra-abdominal viscera (bowel and vascular), and conversion to an open method (Hasson).
Results: 80 patients were included in our analysis. 43% (n = 34) of patients underwent a colectomy (right (n = 17), left (n = 1), sigmoid (n = 15), subtotal (n = 1)). 13% (n = 10) underwent a proctectomy (AP resection (n = 2), anterior resection (n = 8)). 29% (n = 23) of patients had a laparoscopic appendicectomy. 11% (n = 9) of patients had a laparoscopic incisional hernia repair. 5% (n = 4) had a laparoscopic cholecystectomy. The mean time taken from skin incision to induction of pneumoperitoneum was less than 10 seconds in all cases. There were no injuries (0%) to intra-abdominal viscera in this cases series. There were no conversions to an open port insertion technique.
Conclusions: The use of the blunt optical trocar for laparoscopic first port entry is a safe alternative to traditional entry techniques. It is associated with quicker entry times, easier insertion and minimal complications. Future research should focus on randomised controlled trials that will validate the blunt optical port technique as a feasible and safe alternative to traditional port insertion techniques.

Minimally Invasive Surgery and Technology 0321

Short Term Outcome of Laparoscopic Gastric Plication for Treatment of Morbid Obesity

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Aims: Laparoscopic gastric plication is a star rising in the field of bariatric surgery having the advantage of being the least invasive restrictive procedure with potentially less complications and less cost. Fears are highlighted about the durability of the plicated stomach. The published material and number of cases are not enough to fully understand the operation outcomes. This study aimed at identifying the short term results of the gastric plication regarding weight loss and early postoperative complications to participate in the database and allowing better understanding of the procedure.
Methods: Data on 20 morbidly obese patients who underwent gastric plication in the period between 2010 and 2012 were prospectively collected and analysed using SPSS 20.
Results: This case series study included twenty morbidly obese patients (18 females) from Cairo University Hospital (CUH) in the period (8/2010 and 10/2012) of age (mean [±SD] age, 35 ± 9·54 years) ranges between 18 and 52 years. Preoperative Body Mass Index (BMI 0) ranges between 35 and 62, (mean [±SD] BMI, 49·8 ± 7). Excess Body weight (EBW) ranges between 28·4 and 91 Kg, (mean [±SD] EBW, 46·4 ± 17·8 kg). Operative time ranges between 100 and 200 min, (mean [±SD] operative time, 148 ± 34·3 min). Post-operative hospital stay (POS) ranges between 1 and 21 days, (mean [±SD] POS, 3·5 ± 4·2 days).Mean BMI was 44 ± 6 (31–59) after one month (BMI 1), 38 ± 6 (28–52) after six months (BMI 6). Mean Excess body weight loss (EBWL) was 26% ±8% (8%-36%) after one month (EBWL 1), and was 47% ± 14% (24%-73%) after six months (EBWL 6). None of the patients needed intra-operative blood transfusion or post-operative ICU admission. Readmission rate was zero during the study period. The only postoperative complication was prolonged vomiting (more than 7 days) in 2 cases.
Conclusions: Excess body weight loss after gastric plication is acceptable on the short term in comparison with other restrictive procedures, 50·6% 6 months after sleeve gastrectomy, although we put in mind that it takes longer time to perform which can be a drawback on the surgeon himself but, being a less invasive and potentially reversible procedure gives us the motivation to continue studies about longer term results.

Minimally Invasive Surgery and Technology 0407

Systematic Review of Perioperative Outcomes Following Laparoscopic Abdominal Aortic Aneurysm Repair

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Aims: To collate information currently available in the literature regarding peri-operative outcomes following elective laparoscopic abdominal aortic aneurysm repair, to better inform clinicians in decision-making.
Methods: Electronic databases were searched and a systematic review of the literature was performed, in compliance with the Preferred Reporting Items for

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Systematic Reviews and Meta-Analyses (PRISMA) 2009 guidelines. 1256 articles were screened, from which 8 studies were included for quantitative analysis. Perioperative outcomes which were analysed included overall mortality at 30 days, inpatient stay, ITU stay, re-interventions within 30 days of repair and complications within 30 days of repair. Technical outcomes included aortic cross clamp time, and conversion to open repair.

Results: In the totally laparoscopic repair of infra-renal aneurysms (n =203), thirty-day mortality ranged between 3-6% and in the laparoscopic-assisted cases (n =497), this figure ranged between 0-7%. In-patient stay ranged between 5 to 10 days with an average ITU stay of 1 to 2 days, and 4 to 7 days with average ITU stay of 1 to 14 days respectively. Of the totally laparoscopic repair group, 6-30% of cases were converted to open repair, with a 6% reintervention rate, whereas there was a 5-10% conversion rate and 3% reintervention rate in the laparoscopic-assisted repair cases.

Conclusions: The outcomes from the published studies discussed in this review demonstrate that elective laparoscopic repair of aortic aneurysms is feasible and comparable in safety to open repair. It remains unclear, however, whether there are marked advantages of this method compared with open and endovascular repair. Further training and research from high-output centres will enable firmer conclusions to be drawn.

Minimally Invasive Surgery and Technology 0409

Patients Undergoing Laparoscopic Anterior Resections can be Discharged <72 Hours with Low Readmission Rates when Combined with Enhanced Recovery

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Aims: Laparoscopic surgery has become well established in the management of colorectal cancer. Surgery for rectal cancer is considered to be the most challenging in colorectal disease and the role of laparoscopy for such cases remains contentious due to concerns with oncological compromise and risk of recurrence. We present the short-term operative and oncological outcomes of patients who have undergone laparoscopic anterior resection for rectal cancer.

Methods: A prospective study of consecutive patients undergoing laparoscopic anterior resection was carried out between 2009 and 2012 in a single institution. Data was recorded on patient characteristics, intra-operative and short-term outcomes including length of stay, and histopathology staging. Continuous data were expressed as means with standard deviation and categorical data as absolute number and percentage.

Results: A total of 124 cases were included in the analysis. There were 62 male and 62 female patients. Median BMI was 26 (23–30); median ASA 2 (1–2). 38 (30·6%) patients stomas. Median LOS was 3 days. 18 patients had complications which were graded as I-III on the Clavien Dindo scale including 12 readmissions. Mean operating time was 193·1 (43·8) mins with a mean blood loss of 30·1 (25·4) mls.

Staging/histopathology	No of patients
pT1	12
pT2	22
pT3	37
pT4	20
pN0	55
pN1	36
Lymph node yield	19 (15–26)

Conclusion: Laparoscopic anterior resection is a safe procedure with good short-term outcomes. It is associated with low morbidity and a short length of stay of 3 days.

Minimally Invasive Surgery and Technology 0467

Day Case Laparoscopic Cholecystectomy: The Outcomes from Analysis of 119 Consecutive Patients in a UK Based Hospital. What is a Good Standard of Care?

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Aims: Laparoscopic cholecystectomy has now become the gold standard operative technique. The benefits of laparoscopically completing an operation are mainly around the fact that patients tend to have a faster recovery and thus an ambulatory setting is appropriate for most of the patients undergoing this procedure with no major co-morbidities. The aim of this study was to assess the practice within this local hospital and to see how this compared to other areas with this established practice.

Methods: This was a retrospective study which examined the medical records of 126 patients whom had undergone multi-port laparoscopic cholecystectomy by a single consultants team from September 2010 to June 2012. Data was collected on the patients' age, sex, ASA grade, intraoperative and post operative medication as well as length of stay, complications and re-admission.

Results: Overall 119 of the cases were kept in the study. Patients were of a median age 47 range (20 to 87 years). 82% of the patients overall were female. 98 were booked day cases and 75 (76·5%) of the patients had a same day discharge and 23 had a delayed discharge ranging from 1 to 4 days. Only 9% of the patients were ASA 3 while the others were a grade 1 or 2. The most common reason for delayed discharge was intra-operative challenges which led to a drain being inserted. The second commonest reason was post operative pain. The average stay for patients post operative as day cases was 0·37 days per patient. 5 of the patients were re-admitted within 2 weeks of having the operation. Of the 21 inpatients 12 (57%) were discharged on day 1 post operatively and there were no intra operative complications in this group. One patient developed acute urinary retention post operatively. 17 of the 21 patients were deemed ASA I or 2 and the median age of these patients was 49 years (range 20–80).Overall only one case in this series had the laparoscopic procedure converted to open.

Conclusions: Day case laparoscopic cholecystectomy is a safe and effective mode of managing patients. Same day discharge is achievable in 80% of the cases and this may improve with a set protocol to determine which patients require inpatient stay from pre-assessment so as to avoid unnecessary admission.

Minimally Invasive Surgery and Technology 0502

Laparoscopic Insertion of Paediatric Peritoneal Dialysis Catheter: A Modified Technique

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Aims: In children placement of peritoneal dialysis catheter is a common procedure. Traditional open technique has the morbidity of open surgery. Laparoscopic assisted technique has become increasingly popular. We present a modified laparoscopic assisted technique.

Methods: From 1999 to 2013, 60 consecutive children (mean age, 8·4 years; range 1 week to 16 years; M/F 40/19) underwent laparoscopic-assisted placement of curled, single-cuffed catheters with (63%) or without (37%) omentectomy. The technique typically involved: with omentumectomy – a 2·5 cm long periumbilical incision that allowed omentumectomy to be carried externally and was closed partially before it was used for both laparoscope and catheter using Seldinger technique and peel-away sheath; without omentumectomy – two 5-10 mm long incisions, one for the laparoscope and the other for catheter. The catheter was placed in pelvis through an oblique route under laparoscopic vision and tunnelled subcutaneously. Enteral feeding was started on the day of surgery and peritoneal dialysis was commenced on the same or following day.

Results: There were peritoneal adhesions from previous surgery in 20 patients; change of pre-existent catheter 19, acute haemolytic uraemic syndrome 10, coagulopathy in 2 and chylous ascites 1. Subcutaenous tunnelling was difficult in 1 patient and no other operative complications. The average

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operating time was 57·1 minutes (range 29–95). Postoperative complications included: early- infection(4), blocked catheter (2); late – infections (3), blocked catheter (2), leak (1). All these patients required re-do surgery. The overall catheter survival rate was 80% at 12 months.

Conclusions: The technique combines the speed and simplicity of open method and advantages of minimally invasive approach. It has an acceptable long term patency rate and is particularly useful in patients who suffer an acute abdomen or previous abdominal scarring.

Minimally Invasive Surgery and Technology 0544

Could there still be a Postcode Lottery in the Provision of Bariatric Surgery in the West Midlands?

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Aims: The incidence of obesity has been increasing in most areas of the West Midlands, with a concurrent increase in the number of bariatric procedures. This study aims to map the referral pattern of bariatric surgery in the West Midlands and determine whether any clustering of cases correlates with the regional prevalence of obesity.

Methods: Data on all bariatric procedures conducted between 2003–2013 were collected. Postcodes of residence were used to obtain the middle layer super output areas (MSOAs) from which referrals were made. This data was geographically mapped alongside Public Health England 2006 estimates of MSOA obesity rates. Analysis was primarily conducted on the main catchment area of a major bariatric center in the region. A simple generalised linear model was made which tested the association between the counts of bariatric surgery cases in each of the 160 MSOAs in the region, with deprivation and the percentage of obesity in each one.

Results: Data was collected from 521 cases (mean age 63 years, median BMI 50·75, 73·5% female). For each MSOA, a 1% increase in IMD score was associated with less than a one percent increase in bariatric cases (IRR 1·008, LCI = 1·002, UCI = 1·014). However, there was a strong association between the supply of surgery and the demand of obesity, with a 1% increase in obesity being associated with a 3·6% increase in cases (IRR 1·036, LCI = 1·010, UCI = 1·063).

Conclusions: There has been a positive relationship between MSOA obesity rates and number of bariatric cases. This suggests that there is strong relationship between need and supply in the study region. However these findings may not be applicable to other areas with different trust policies and as such further research is required to fully elucidate these findings. Further research is needed to explore the effect of other variables such as GP practice characteristics.

Minimally Invasive Surgery and Technology 0589

Laparoscopic versus Open Approach to Resection of Hepatocellular Carcinoma in Patients with Known Cirrhosis: Systematic Review and Meta-Analysis

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Aims: To review the currently available literature comparing laparoscopic to open resection of hepatocellular carcinoma (HCC) in patients with known liver cirrhosis.

Methods: A literature search of MEDLINE, EMBASE, and Cochrane databases was conducted. The search terms used included (laparoscopic OR laparoscopy) AND (hepatic or liver) AND (surgery or resection) AND "hepatocellular carcinoma" AND (cirrhosis or cirrhotic). Furthermore, to widen the search, we also used the "related articles" section. Studies reporting a comparison of outcomes and methods of open versus laparoscopic hepatic resection for HCC in patients with liver cirrhosis were included. Meta-analysis of results was performed using a random effects model to compute relative risk (RR) and 95% confidence intervals (95% CI) for dichotomous variables and standard mean differences (SMD) for continuous variables.

Results: A total of 420 patients from 4 cohort studies were included in final analysis. Patients undergoing laparoscopic procedures had statistically less blood loss compared to the open cohort, SMD of −1·01 (95% CI −1·23, 0·79), $p < 0·001$, with a reduced risk of transfusion, RR 0·19 (95% CI 0·09, 0·38), $p < 0·001$. A wider clearance at tumour resection margins was achieved following a laparoscopic approach, SMD of 0·34 (95% CI 0·08, 0·60), $p = 0·011$. No significant difference was noted between laparoscopic and open resection operative times, SMD −0·15 (95% CI, 0·35, 0·05), $p = 0·142$. The overall RR of suffering from postoperative morbidity is 0·25 in favour of the open surgery cohort (95% CI 0·17, 0·37), $p < 0·001$. Patients under-going laparoscopic surgery had significantly shorter length of stays in hospital compared to the open cohort, SMD −0·53 (95% CI −0·73,-0·32), $p < 0·001$.

Conclusions: This review suggests that laparoscopic resection of hepatocellular carcinoma in patients with cirrhosis is safe and may provide improved patient outcomes when compared to the open technique.

Minimally Invasive Surgery and Technology 0628

Transanal Rectal Resection (TARR) : A Novel and Evolving Technique in the Operative Management of Low Rectal Pathology

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Aims: To assess the feasibility and safety of Transanal minimal access surgery as a tool in the operative management of patients undergoing Transanal rectal resection (TARR).

Methods: Patients undergoing TARR for a variety of indications were included in a prospectively maintained database in a unit with an established expertise in rectal cancer surgery. Demographic, clinical, operative and early outcome data were recorded.

Results: Eight patients (4 males: 4 females) with a mean age of 43 (range 23–80) years underwent TARR between January 2013 and November 2013. The indications were low rectal cancer (n = 4), ulcerative colitis (proctectomy & J pouch formation, n = 1; proctectomy, J-pouch and repair of parastomal hernia, n = 1) and Crohn's (proctectomy, n = 2). The mean operative time was 298 minutes with median length of stay of 9 (range 2–22) days. Patients with low rectal cancer underwent transanal total mesorectal excision (TME) with coloanal anastomosis (one pT1 and 3 pT3 cancers). Cancer resection margins were clear of tumour and the mean lymph node harvest was 13·5 nodes. The short term morbidity was limited to intraoperative pelvic bleeding treated by pelvic packs for 24 hours (n = 1), postoperative ileus (n = 2), and one high output stoma. One patient subsequently developed an anastomotic stricture which was successfully treated with dilatation. There were no leaks identified at water-soluble contrast study in those who had reconstruction. There was no operative mortality in our series of patients.

Conclusions: The Transanal Rectal Resection approach is a feasible and promising technique. It is best described as "minimal access" rather than "minimally invasive" and may be helpful in performing low rectal dissection in selected patients. Long term outcomes need to be measured and reported.

Minimally Invasive Surgery and Technology 0664

Modern Laparoscopic Biliary Surgery: Role of Fluorocholangiography

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Aims: Since the introduction of laparoscopic cholecystectomy (LC), the routine use of intra-operative cholangiography (IOC) has declined. Pre-operative endoscopic cholangio-pancreaticography and magnetic resonance cholangio-pancreaticography are being employed to diagnose common bile duct (CBD) stones. Our aim was to evaluate the routine use and clinical benefit of IOC during laparoscopic biliary surgery.

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Methods: A prospective study of patients undergoing LC and IOC (n = 3176) over 18 years was analysed. The pre-operative, intra-operative findings and post-operative course was analysed. A size 4 French ureteric catheter within an open cannula is used to perform IOC through subcostal port.
Results: There were 1372 abnormal cholangiograms, filling defects (692), dilated ducts (545) stricture (22) and abnormal ductal anatomy (24). 1156 patients (36%) had risk factors for CBD stones. IOC identified 652 (21%) with CBD stones. 133 patients (4·2%) with no risk factors for CBD stones were found to have CBD stones.
Conclusions: IOC can be safely and routinely performed with laparoscopic cholecystectomy. It helps in the identification of CBD stones even in patients with no known CBD stone risk factors, recognition of bile duct injuries and the facilitation of single stage management of CBD stones.

Minimally Invasive Surgery and Technology 0699

Bariatric Surgery, a Change in Practice: from Band to Sleeve

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Aims: Over the last 5 years, we have noticed a change in the profile of bariatric surgery in our unit: evolving from laparoscopic adjustable gastric band (LAGB) surgery to moving to laparoscopic sleeve gastrectomies (LSG). This study looks at this change in practice in a multi-disciplinary bariatric unit and compares the weight loss outcomes for the two procedures.
Methods: All patients undergoing bariatric surgery with either LAGB or a LSG at a newly designated, regional bariatric centre were included. The study period was from 2010–2013. Surgical details and post-operative weight loss data at 6 months were analysed. This was extracted from the bariatric database which is maintained by the multidisciplinary team including the surgeons, physicians, specialist bariatric nurses and dieticians.
Results: There were 58 bariatric surgical procedures in the last 12 months, of which 72% were LSG and 8% were LAGB insertions. In contrast, in 2011 there was only 1 LSG performed and 71·7% of all bariatric operations were LAGB insertions. The weight loss following the surgery was assessed during the first 6 months post procedure. The mean percentage excess weight loss 6 months after bariatric surgery was 24·2% for patients who had a LAGB insertion and 40·2% for patients who underwent a LSG.
Conclusions: The profile of bariatric surgery has changed from predominantly LAGB insertion to LSG. This change in practice is reinforced by the excellent post-operative weight loss outcomes that are seen in the LSG group. Patients who had a LSG lost a higher percentage of their excess weight during the first 6 month post-operative period, than those who had LAGB This demonstrates the short-term success of LSG, however a longitudinal study for both groups is needed to assess the long-term efficacy.

Minimally Invasive Surgery and Technology 0706

A Stitch in Time? Laparoscopic Cholecystectomy Duration and the Resulting Length of Stay in Hospital

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Aims: To determine the relationship between operation duration and length of stay in hospital following laparoscopic cholecystectomy.
Methods: 6,391 laparoscopic cholecystectomies (LCs) were recorded in a tertiary referral centre between 02/04/2004 and 31/12/2012. A database search identified all adults who underwent an elective LC. LCs were excluded where additional procedures (e.g. on table cholangiogram or hernia repair) might have inflated the recorded operation time (n =1494). Incorrectly coded values were identified and excluded (n =38). Operation duration (LOp in min) and length of post-operative hospital stay (LoS in days) were calculated for all remaining cases with usable data. Consultant surgeon specialty (upper gastro-intestinal; hepato-pancreato-biliary; general surgery) was examined as a potential factor affecting LOp.
Results: 3,438 LCs met the inclusion criteria. Mean LOp was 73 minutes. IQR was 50–89 so 90 min was used as a cutoff between 'normal' and 'prolonged' LCs. Mean LoS was 1·74 days (IQR 1–2). There was a significant (t (3434 = 7·68, p <0·001) positive correlation between LOp and LoS (r =0·27, p <0 .001). Mean LoS was significantly shorter for the 'normal' LOp group (<90mins; mean LoS =1·67 days, SE =0·05) than the 'prolonged' group (>90mins; mean LoS =3·15 days, SE =0·31). Significant differences in LOp were found between consultant specialty (p < 0·001).
Conclusions: This study demonstrates: (a) marked variability within LC duration; (b) a relationship between operation duration and length of stay; (c) a factor – consultant specialty - affecting LC duration; (d) large gaps in recorded LC data. The high frequency of LCs performed within the UK and the potential for life altering complications suggests great benefit would accrue from the establishment of a mandatory national cholecystectomy database. Such a database would allow collation of relevant surgical factors and resulting outcome data to allow identification of factors that contribute to adverse events and better planning.

Minimally Invasive Surgery and Technology 0717

Trans-Anal Microsurgery: The Experience of a UK District General Hospital

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Aims: Review of the first 3 years of trans-anal endoscopic microsurgery (TEMS) at a UK district general hospital.
Methods: Data collected from electronic databases for all patients undergoing TEMS from the first case in January 2009 to December 2012.
Results: 57 patients, 61 procedures (4 repeat procedures)
Mean age 68 years (38–86 years) Male: Female 33:28
Mean length of stay: 2·8 days (0–39)

	Adenoma	Adenocarcinoma	T1	T2	T3	Carcinoid
Cases	40 (65·6%)	20 (32·8%)	11	6	1	1 (1·6%)
Recurrence	3 (7·5%)	3 (15%)				0

Complications:
Mortality 0%
Major morbidity requiring laparotomy 2 (3·2%)
Acute Bleed 1
Pelvic abscess 1
Minor morbidity 9 (14·8%)
Rectal bleed 4
Reteroperitoneal emphysema with fever 2
Acute urinary retention 2
Rectal stenosis 1
Conclusions: Mortality, morbidity and local recurrence rates within published ranges. Post-operative haemorrhage was the most frequent and serious complication. Reteroperitoneal emphysema, a rare complication appeared alarming on CT scan but both cases settled without sequelae following conservative management.

Minimally Invasive Surgery and Technology 0839

Surgical Smoke During Laparoscopic Surgery: The Effect of Experience

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Aims: Visual clarity during laparoscopic surgery is an important aspect of theatre safety. Surgical smoke from energy-based dissection instruments can obscure the operative view. The aim of this study was to evaluate if surgical smoke becomes less perceptible with increasing surgical experience.
Methods: Thirty laparoscopic cholecystectomies were reviewed by 3 medical students, 3 foundation doctors, 3 SpRs and 3 consultants. Reviewers scored the % smoke present and the Visual Impairment (VI) (1 = imperceptible to 5 = very annoying). A smoke removal device (Ultravision^{TM}) was used in 15 procedures, forming an Active group.
Results: There was no statistically significant difference between the 4 reviewing groups for either the % smoke present or the VI ($p > 0{\cdot}05$). In the majority of cases, there was a statistically significant decrease in the % smoke present and the VI in the Active cases compared to Controls for all 4 reviewing groups ($p \leq 0{\cdot}01$).
Conclusions: Ultravision^{TM} is a novel method of improving the laparoscopic surgical view across all experience levels. The perception of surgical smoke is not significantly affected by experience. However, increased experience improves both inter-rater reliability and the ability to distinguish between different levels of surgical smoke. This supports the use of more senior reviewers, of a standardized experience level in future clinical trials. The % smoke present score is a novel, sensitive scoring system that may be used to evaluate surgical smoke present.

Minimally Invasive Surgery and Technology 0845

Laparoscopic Retrograde Cholecystectomy(LRC): An Alternative to Conversion for Difficult Gall Bladders

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Aim: Laparoscopic Cholecystectomy(LC) is considered the 'Gold Standard' for gall bladder(GB) diseases. To review the feasibility and safety of laparoscopic retrograde cholecystectomy in difficult Calot's triangle dissection where conversion is commonly advocated to avoid vascular/bile duct injury.
Patients and Method: A retrospective analysis of a prospectively collected data of 819 patients who underwent cholecystectomy in the upper gastrointestinal unit of a large district general hospital between August 2007 and December 2013. Data that included demographics, operative details including intra and post operative complications, postoperative stay and follow up were recorded and analysed in an excel spreadsheet.
Operative method for LRC included a 'fundus first approach' with transection at the gall bladder neck/Hartmann's pouch with a small gall bladder remnant that was stitched/endolooped.
Results: 819 included 186 and 633 male and female respectively with an age of 52*(18–89) years.
744(91%) and 50(6%) underwent LC ± OTC and LRC ± OTC with a stay of 1*(0–12) day. 50 had dense adhesion at the Calot's triangle with 9(18%),16 (32%) and 7(14%) having emphyema, severely contracted GB and Mirizzi respectively requiring an operative time of 120* (50–180) minutes. Of the 50, 6 (12%) required ERCP postoperatively: 3 (6%) for CBD stones and stent removal, 2(4%) bile leak and 1(2%) CBD stricture, 3 (6%) readmissions for pain and 1(2%) for collection in a follow up of 27*(1–70) months.
12(1·5%) underwent laparoscopic converted to an open cholecystectomy for severely distorted anatomy and another 13 (1·5%) had open cholecystectomy for previous multiple laparotomies and right sided stomas with a stay of 5*(1–10) days.
One (0·1%) died of severe haemorrhagic pancreatitis.
Conclusion: LRC avoided conversion in 6% of our patients. We believe LRC by experienced laparoscopic surgeons is a safe procedure with a good outcome that reduces avoidable conversions for difficult gall bladders.
* Median

Minimally Invasive Surgery and Technology 0846

Technique and Site of Optical Trocar Insertion for Laparoscopic Cholecystectomy in Obese Patients

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Background: Open Hasson technique at the umbilicus for access and camera is usually advocated by the general surgeons for laparoscopic cholecystectomy (LC). However, this can be difficult, time consuming, maintenance of leak-free seal challenging and view to the Calot's sub-optimal especially in obese patients. To review whether our technique and site of access with optical trocars for obese patients undergoing LC is quick, easy and safe with minimal sequel.
Patients And Method Retrospective analysis of a prospectively collected data showed 806 patients underwent LC in the upper gastrointestinal unit of a large district general hospital between August 2007 and December 2013. Our technique and site of optical trocar (OT) entry was for patients with BMI ≥30: a two-handed technique with the left hand performing the clock-anticlockwise rotation of the OT while the right hand maintained sustained controlled pressure with a 30° camera head that allowed the direct entry of the OT under vision for creation of pneumoperitoneum at a site identified by the intersection/meeting of two imaginary lines : a 15 cm oblique line starting from the point where the right mid-clavicular line cuts the right costal margin and directed medially to meet a vertical line that runs 3 cm parallel to the right of the midline.
Results: Of the 806,142(18%) patients had a BMI of 40*(30–65) and a male:female ratio of 22:120 with an age of 46*(18–78) years. Entry time was 44*(30–88)sec and none required conversion for access. One (0·7%) retroperitoneal bleeding occurred that required laparoscopic suture fixation. None required closure with no post operative complications recorded.
Conclusion: Our technique and site of optical trocar insertion for obese patients requiring LC is feasible and safe that allows quick entry and provides an excellent view of the Calot's triangle for a good outcome.
* Median

Minimally Invasive Surgery and Technology 0956

Post Laparoscopic Cholecystectomy Bile Leak - A Preventive Strategy

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Introduction: The incidence of post-cholecystectomy bile leakage (PCBL), with or without bile duct injury, is 0·3-2·7%. PCBL causes significant morbidity and increases healthcare costs. The main sources of PCBL are the cystic duct stump and accessory ducts. Many published literature have addressed the management of PCBL, however only a few published studies were concerned with identifying possible preventive measures. Having adopted a specific strategy for preventing PCBL over 20 years, we aim to review the effect in a large single surgeon series.
Methods: Suitable patients with symptomatic gallstones had laparoscopic cholecystectomy and cholangiogram. Procedures were carried out by a single surgeon or under his supervision. Diathermy hook dissection and metal clips for the cystic duct were avoided. Cystic ducts were ligated intra corporeally. Gallbladder dissection was carried out using an atraumatic duckbill grasper.
Result: There were 3650 cholecystectomies (1992–2012). 47 accessory ducts were encountered and dealt with. No endoclips have been used since 1998. There were 6 bile leaks which give overall PCBL rate of 0·16%. Two patients each required re-laparoscopy, ERCP and percutaneous drainage. The median hospital stay for these patients is 11·25 days (7–22 days). There was no mortality.
Conclusion: We believe that ligating the cystic duct intra corporeally prevents bile leak due to clip slipping. Diathermy hooks may cut and coagulate gallbladder attachments without giving the opportunity to identify ductal structures. Adapted dissection of the gall bladder and a deliberate search with blunt instrument provides a clear view of ductal structures, which can be saved or ligated properly. This will avoid bile leak from injury to accessory ducts.

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Minimally Invasive Surgery and Technology 1018

Prompt Elective Laparoscopic Repair for Giant Hiatus Hernias Prevents the High Mortality Associated with Acute Incarceration

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Aims: Giant hiatus hernias involve displacement of at least a third of the stomach into the thoracic cavity. Elective repair improves dysphagia and vomiting, while preventing acute gastric incarceration and gangrene. Increasing number of repairs are performed laparoscopically as access to the diaphragm hiatus is difficult. Here we present a series of elective and emergency repairs by a single surgeon, to highlight the importance of prompt elective laparoscopic repair

Methods: Retrospective analysis of all open & laparoscopic giant hiatal hernia repairs between January 2009 & October 2013, including both elective and emergency procedures. Data was collected for length of stay, re-operation & complications. The repair involves excision of the hernia sac with reduction of contents to the peritoneal cavity. Sutured cruropexy &mesh re-enforcement of the hernia defect prevents recurrence. Elective repair includes mobilization of the fundus to form a floppy wrap around the gastroesophageal junction.

Results: In total thirty-nine patients (mean age 71 years(37–90), F:M ratio 26:9) had giant hiatal hernia repair within the study period. All thirty-two elective procedures were performed laparoscopically. 7 patients presented as an emergency, of which 5 had an open procedure. 3 of these required a gastrectomy for gangrene. There were no deaths in the elective group, but 2 emergency patients with gastric gangrene died (stroke and renal failure) There were no conversions to open in either group. Two elective patients required an early re-operation as the wrap was too tight causing dysphagia to liquids. One elective patient demonstrated radiological recurrence at 3 weeks. However, as the patient remained asymptomatic, he did not require a re-operation. Apart from the 2 patients requiring a re-operation, the remaining elective patients were discharged within 48hours of the procedure. No laparoscopic patients required a blood transfusion post-operatively.

Conclusions: This patient cohort demonstrates the importance of an elective giant hiatal hernia repair to prevent the high morbidity associated with acute gastric incarceration and gangrene. Laparoscopic is safe and feasible for elective procedures but can be used in the emergency setting.

Minimally Invasive Surgery and Technology 1031

Comparison of Mortality Following Laparoscopic and Conventional Colorectal Resection amongst the Global Comparators Hospital Group

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Aims: Colorectal surgery is known to have a high complication rate. Laparoscopic surgery is known to reduce complications, however the effect on mortality is unknown. The aim of this study was to determine the difference in mortality between laparoscopic and open colorectal surgery.

Methods: The Doctor Foster Global Comparators Database is an international administrative database containing discharge information from 30 hospitals across the United States of America, United Kingdom, The Netherlands, Belgium and Italy. This database was used to search for patients who had undergone laparoscopic and open colorectal surgical resection between 2007 and 2011. 30-day-in-hospital mortality rates were compared between laparoscopic and open surgery using propensity score-matched cohorts. Secondary outcome measures were 30-day readmission rate, length of stay and 30-day reoperation rate.

Results: Following 2:1 propensity-score matching, mortality was 0·5% following laparoscopic colectomy and 1·2% after conventional open surgery (P < 0·001). On multivariate regression analyses, laparoscopy was a strong predictor of reduced 30-day-in hospital mortality (odds ratio, 0·42; 95% confidence interval, 0·3-0·6; P <0·001). Laparoscopy was also predictive of a reduced reoperation rate (odds ratio, 0·67; 95% confidence interval, 0·58-0·78; P <0·001), reduced likelihood of long length of stay (odds ratio, 0·44; 95% confidence interval, 0·41-0·48; P <0·001) and readmission rate (odds ratio, 0·75; 95% confidence interval, 0·68-0·82; P <0·001).

Conclusions: Laparoscopic colorectal surgery is associated with reduced in hospital mortality in propensity matched patients. This supports the increasing use of this technique for colorectal resection in both benign and malignant disease.

Minimally Invasive Surgery and Technology 1175

Is Laparoscopic Cholecystectomy in Obese Patients Irrespective of BMI Justified?

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Aims: The aim of this study was to determine whether there were any identifiable adverse clinical and other outcome parameters in obese patients undergoing laparoscopic cholecystectomy (LC) and routine intra-operative cholangiogram (IOC).

Methods: Analysis was performed using a prospectively maintained database of all LC performed by a single surgeon over a 20 year period. 409 patients were identified with a BMI >30, these patients were then stratified into obese (BMI 30–39, n =275) and morbidly obese (BMI >40, n =134) for comparative purposes.

Results: The majority of the patients from each group were female (BMI 30–39 58·6%, 40+ 79·9%) and the majority of the procedures were performed on an elective basis (BMI 30–39 74·2%, 40+ 55·2%). Of the emergencies, the most common indication for LC was acute biliary pain followed by acute cholecystitis, with the frequency almost double in the BMI 40+ group (acute biliary pain BMI 30–39 13·5% Vs BMI 40+ 28·4%; acute cholecystitis BMI 30–39 2·9% Vs BMI 40+ 6·7%). There were no conversions to open procedures, no re-admissions and no mortality in either group. The complication rate was 5·1% and 2·2% in the BMI 30–39 and BMI 40+ groups respectively. The higher BMI group were deemed higher risk operative candidates as determined by ASA grade (BMI 30–39 ASA II 49·8%, ASA III 5·5%; 40+ ASA II 64·9%, ASA III 14·9%). Mean operating time was statistically longer in the BMI 40+ group (BMI 30–39 59·4 ± 2·0 mins; 40+ 69·9 ± 2·9 mins, $p < 0·01$) and mean length of hospital stay was longer, but not significantly so in the BMI 40+ group (BMI 30–39 3·14 ± 0·44 days; 40+ 4·11 ± 0·49 days, $p > 0·05$).

Conclusions: These results justify our policy of performing LC and IOC on obese patients irrespective of their degree of obesity or whether the procedure is performed on an emergency or elective basis. This practice should prevent acute hospital admissions in obese patients with biliary disease as they will have had LC and IOC on their first presentation as an emergency, with no requirement to have a delayed procedure in order to lose weight. Based on our low complication rate and negligible differences in health economic variables we would recommend implementation of this management algorithm for biliary disease in obese patients.

Minimally Invasive Surgery and Technology 1227

The Role of Elective Subtotal Laparoscopic Cholecystectomy: Analysis of a Single Surgeon Experience

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Aims: Common bile duct (CBD) injuries are the cause of major morbidity after laparoscopic cholecystectomy. Subtotal laparoscopic cholecystectomy (SLC) is an alternative surgical option when safe dissection of Calot's triangle is not possible. The aim of this paper is to review the indications and results of SLC performed by a single upper GI surgeon.

Methods: We retrospectively analysed 1600 consecutive patients scheduled for elective laparoscopic cholecystectomy from January 2001 to August 2013.

Results: In total, 4 patients (0·25%) were converted from laparoscopic to open surgery. In this series there were no CBD injuries. Of the 1600 patients, 41 (2·6 %) underwent SLC (40 completed laparoscopically, 1 converted to open).

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Of the 41 patients; 19 were female and 22 male. The median age was 68 yrs (range 25–84). The indications for SLC were: cholecystocholedochal fistula (5/41), dense adhesion or fibrosis at Calot's triange (26/41), stone impacted in the Hartmann's pouch with adhesion/fistula (10/41). During laparoscopic cholecystectomy if the neck of the gallbladder could not be dissected and displayed safely, SLC was performed. The technique of SLC involved opening the anterior aspect of the body of the gallbladder or the Hartmann's pouch. The stones were retrieved and the anterior wall of the gallbladder excised. The stump of the gallbladder remnant was dealt with either Endoloop™ , EndoGIA, large clips, primary suturing or, if there was insufficient tissue, the stump was left open against an abdominal drain. At least two tube drains were placed in sub-diaphragmatic and sub-hepatic positions. The median hospital stay was 4 days (range 3 – 35 days). Three patients developed a postoperative biliary leak. Two were treated conservatively, one required ERCP and stenting. One patient required an ERCP for symptomatic small ductal stones 4 years after SLC.

Conclusion: In our experience, SLC is a safe approach for difficult cholecystectomy and minimises the risk of bile duct injury. This approach can be used selectively in patients when a full exposure of Calot's triangle is not feasible. High volume experience along with a low conversion rate and a strategy to employ SLC is associated with a low incidence of bile duct injury.

Minimally Invasive Surgery and Technology 1266

Laparoscopic Colectomy in the District Hospital; the Outcome Implications of the Lower Volume

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Aims: This study sought to compare outcomes of laparoscopic colectomy in a district hospital (lower volume) with the outcomes published in literature from the tertiary referral centres (higher volume).

Methods: This was a retrospective review of elective laparoscopic colectomy in a large district general hospital over a 51 month period (July 2008 to October 2012) using a prospectively created database. We analysed results for these laparoscopic procedures (right hemicolectomy, left hemicolectomy, total/ subtotal colectomy, anterior resection, abdomino-perineal resection and sigmoid colectomy). All of above colectomies was undertaken by the same surgeon. The primary outcome measure was length of postoperative hospital episode but complications rates were also considered.

Results: 209 elective colectomies were performed at the study hospital. 187 were undertaken by laparoscopic approach while 22 by the open approach.

The median patient age was 69 years (range 22–90 years). The median length of hospital stay was 4 days (range 1 – 48 days). Transient ileus was encountered in 3 (1·6%) patients, bowel obstruction (adhesive) requiring laparotomy occurred in 6 (3·2%) patients. 4 patients (2·1%) suffered anastomotic leak. 7 (3·7%) patients underwent conversion to open surgery for reasons varying from bleeding to tumour perforation. Re-admission occurred in 4 (2·1%) patients for small bowel obstruction (1), wound infection (1), anastomotic leak (1) and colo-vaginal fistula (1). There were 2 (1·05%) deaths in this group.

The median age for the open colectomy group was 64 (range 39 to 87) years. Key outcomes in this group include mean length of stay of 6 (range 2–28) days, anastomotic leak rate of 13·6% (3/22) and mortality rate of 9% (2/22).

Conclusions: Our review of local outcomes at this district hospital has revealed that the good outcomes reported from larger (higher volume) referral hospitals are obtainable at the district hospital level. These admirable results were achieved without negative patient safety outcomes.

Minimally Invasive Surgery and Technology 1270

A Comparison of the Transcystic and Transcholedochal Approaches to Laparoscopic Bile Duct Clearance

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Aims: Laparoscopic bile duct exploration (LBDE) and Endoscopic retrograde cholangiopancreatography (ERCP) are deemed safe methods of clearing bile duct stones. Known long term complications of ERCP means that LBDE is becoming an increasingly popular treatment option. We aim to compare clinical outcomes and safety of the two techniques for LBDE, transcystic(TC) and transcholedochotomy (TCh) as good evidence regarding which technique to use, and when is lacking.

Methods: A retrospective review of all records from consecutive patients that underwent LBDE between 2006 and 2013 in a large DGH, was conducted. Successful clearance was defined as achieving duct clearance by the end of the operation with no retained stones discovered later.

Results: 77 patients underwent LBDE. (mean age 46, female n =64) with 65(84%) successful clearances and 10(13%) conversions to open. Of these, 47 were attempted TC and 30 were TCh explorations. Successful clearance was achieved in 27(57%) of TC and 26(87%) of TCh ($p = 0{\cdot}006$) – Of the failed TC explorations 12 (60%) were converted to TCh, because of impacted stones or difficult cystic duct anatomy, for which 100% clearance was achieved.

Median hospital stay was 2 days in TC and 5 days in TCh ($p = 0{\cdot}0004$).

There were no mortalities. Bile leaks occurred in 6 patients (3 in TCh and 3 in the TC converted to TCh group) of whom 2 required interventions (1 laparotomy, 1 ERCP). Other significant operative complications occurred in 6 patients (2 in TC and 4 TCh group).

In the 12 patients that had a failed LBDE, 8 underwent ERCP and the remaining 4 were found to have spontaneously passed their stone on imaging.

Conclusions: Short term outcomes from our practice of LBDE support the safety and effectiveness of both TC and TCh approaches. TC exploration is technically less demanding thus may reduce risk of biliary complications. TCh exploration however does allow for more successful duct clearance, particularly in large or distally impacted stones. Long term safety and clinical outcomes of both these techniques are as yet undefined, with results of such studies eagerly anticipated.

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Patient Safety

Patient Safety 0022

Adherence to VTE Guidelines on Surgical Wards

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Aims: Venous thromboembolism is estimated to cause 25,000 deaths per year. Despite this, a national report in 2013 found that 72% of CCGs do not undertake regular audit of local providers' compliance. It is thought that compliance reduces around the period of junior doctors' change over because of frequent job rotation. This audit assesses compliance of VTE prophylaxis assessments and prescribing in surgical patients around the period of junior doctors' change over.
Methods: Initial audit was performed to assess compliance.VTE assessment, reassessment within 24 hours and VTE prophylaxis prescriptions were documented. Initial audit results were presented to both nursing colleagues and junior doctors as part of the Foundation year teaching programme. Re-audit was performed after 2 months. Chi-squared test was applied to identify statistically significant changes.
Results: Initial audit included 110 patients, and demonstrated that 99 (90%) had initial VTE assessment and 70 (64%) had second VTE assessment. 101 (92%) were prescribed fragmin and 69 (63%) were prescribed mechanical prophylaxis (TEDS). Re-audit showed that 91 (91%) had initial VTE assessment, 63 (66%) had second VTE assessment. Meanwhile 84 (88%) were prescribed fragmin and 67 (68%) were prescribed TEDS.
Conclusions: Good adherence to guidelines and high level of assessment was observed at both audits yet prescription of mechanical prophylaxis (TEDs) requires improvement. Solutions to improve compliance include continued education of junior doctors and greater prominence to mechanical thromboprophylaxis on prescription charts.

Patient Safety 0129

Improving the Accessibility of Emergency Trust Guidelines

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Aims: To improve the accessibility of emergency surgical and medical guidelines across our Trust
Methods: Initially 40 junior doctors were asked to locate 3 Trust guidelines: VTE prophylaxis; antibiotic prescribing; management of upper GI bleed (UGIB). For each doctor the time taken and number of mouse clicks to access each guideline was recorded. Following successful redesign of the trust intranet we completed a re-audit.
Results: Initial results showed 48 % of doctors could not locate the UGIB or the VTE guidelines in less than 5 minutes For those that could locate them it took an average of 111 seconds and 17 mouse clicks. Antibiotic guidelines, located on a single port of access, were found by 100 % in 12 seconds and with 2 clicks.
Following successful redesign of the Trust intranet 100 % of doctors located all three guidelines in an average time of 7·2 seconds and in 2·1 clicks. Improvement in access to VTE prophylaxis and UGIB was statistically significant (P =0·001).
Conclusions: By re-designing the Trust intranet homepage we were able to show a statistically significant improvement tin the accessibility of emergency surgical and medical guidelines.

Patient Safety 0162

A Survey of Incident Reporting Feedback Experience

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Aims: Staff survey results from Oct 2012 demonstrated an increased reluctance to complete incidence forms and a lack of feedback at our institution. The incident reporting process is currently under review. This study aimed to establish Incident report feedback experience and attitudes amongst staff.
Methods: An electronic and paper based survey was conducted among all consultant surgeons, all plastic surgical medical staff, selected outpatient nursing staff, phlebotomy staff and laboratory scientists.
Results: 102 individuals who completed the survey had submitted 191 incident reports in the previous 12 months and had received feedback on 38. Staff reported preferring electronic feedback 78/102. 84/102 reported feedback as very important for encouraging completion of incident reports. 57/102 reported a lack of previous feedback as discouraging future reporting. A lack of visible change or action was reported as the most significant other factor in discouraging reporting incident. Transparency of process and ease of report completion were also highlighted.
Conclusions: important. A transparent process with clear feedback mechanisms and overt demonstration of improvements made should be part of any revised incident reporting process. These findings are consistent with published principles of improving reporting and learning culture.

Patient Safety 0173

Surgical Safety Checklist? Not for me, Thanks

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Aims: The World Health Organisation Surgical Safety Checklist was conceived in an attempt to reduce post-operative complications, of which 50% are preventable. The pilot study showed a 36% decrease in complications and a 47% decrease in mortality in eight different hospitals worldwide. The Checklist formalises what surgical departments should already be doing, however adherence is rarely adequate. The aim was to investigate the proportion of checklists conducted inappropriately.
Methods: A random selection of surgical procedures was chosen over a two week period in a single medium-sized teaching hospital. The number of checks performed and length of the stop moment was secretly recorded.
Results: A total of 20 procedures were observed, conducted by different surgeons, anaesthetists and theatre staff. 65% of cases did not have the full 'core team' present for the stop moment - the anaesthetist being the most frequent absentee. The length of the stop moment ranged from 0–122 seconds with a mean time of 33·4 seconds. None of the cases completed all 17 checks, the worst offender having performed 7/17. One third of cases started skin preparation before the end of the stop moment. None had a full team present for the sign out. Only 10% actually conducted a sign out formally.
Conclusions: Our study demonstrates significant lack of proper use of the Checklist. Inappropriate use may lead to increased rates of post-operative complications and mortality. Performed correctly, it should take 2–3 minutes. Formal training on the importance of the Checklist should be administered to all staff overseeing its implementation. Further to this, an electronic edition of the checklist may potentially be instigated in all theatres to avoid non-compliance.

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Patient Safety 0225

Improving Medicine Reconciliation in General Surgery

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Aims: Prescription errors are a significant patient safety issue and contribute to increased length and cost of patient stay. Inadequate medicine reconciliation is a major source of prescription error and the Scottish Patient Safety Programme sets a standard for 95% compliance with medicine reconciliation within 24 hours of admission. This audit set out to assess and improve medicine reconciliation in the general surgical wards of a large teaching hospital.
Methods: A retrospective review was undertaken of 120 current surgical inpatient notes and assessed for whether medicine reconciliation was undertaken against the standards set out by the Scottish Patient Safety Programme. A questionnaire was sent out to junior and senior medical staff to assess knowledge and perception of medicine reconciliation. Medical staff were educated on medicine reconciliation by means of a presentation and posters displayed around the wards. The compliance rate was re-audited to assess improvement.
Results: Before intervention the compliance rate was 10%. However, juniors believed they completed medicine reconciliation 30% of the time. Common reasons for non-completion were belief the pharmacist would do it, time and workload pressures and lack of confidence to withhold or continue medications. All senior staff felt medicine reconciliation was very important and junior staff should complete it but ultimate responsibility was with the whole team. Following education via poster display and presentation the compliance rate increased from 10% to 40%
Conclusions: Medicine Reconciliation can be improved by increasing awareness and staff education but in order to achieve higher rates a departmental approach is required to change perceptions and tackle underlying issues. Emphasising medicine reconciliation at junior doctor changeovers and incorporating reconciliation forms into the clerk-in document may improve rates further.

Patient Safety 0260

Abdominal Compartment Syndrome due to Malposition of a Femoral Venous Catheter. A Case Report and Review of Literature

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Aims: Femoral venous catheter offers essential access when peripheral venous cannulation is impossible or contra-indicated. The most common complications include thrombophlebitis, infection and bleeding. We describe a rare complication after a femoral vein catheterization - malposition in the intra-peritoneal cavity presenting as abdominal compartment syndrome - and review the literature for similar cases.
Methods: A 39 year-old woman sustained severe cerebral injury in a road traffic accident. A femoral line was inserted during primary resuscitation. Excessive abdominal distension investigated with intravenous contrast showed extravasation of the contrast in the peritoneal space. Emergency laparotomy confirmed common iliac vein injury with misplacement of the catheter. Literature review describes such complications in infants and children, although rare in adults.
Results: Catheter misplacement after iatrogenic perforation during femoral venous catheter may lead to extravasation of intra-vascular contents in the retroperitoneal space or in the peritoneal cavity that rarely leads to ACS. Ultrasound offers safety for the insertion of femoral lines. It is important to check intravascular lines and tubes (including ETTs and NGTs) during hospital transfers.
Conclusions: This case attempts to emphasize the importance of systematic and periodical checks of intravascular lines and tubes prior to their use as these may have been improperly sited initially or might have been displaced during transfers.

Patient Safety 0274

Do Operations Performed at the End of the Week have Poorer Outcomes?

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Aims: Media attention has recently focussed on studies that have suggested operations performed at the end of the week have poorer outcomes than those performed earlier in the week. If this is true major elective theatre lists should be undertaken on earlier days in the week and will have significant implications for health service resources and working patterns for surgeons in many hospitals in the UK.
Methods: A retrospective analysis examining the outcomes of elective major colorectal procedures stratified by the day of the week the surgery was carried out on over a 3 year period. Study end points were length of hospital stay and 30 day mortality. Post operative complications were coded by the Clavien-Dindo classification
Results: 107 procedures were performed, across Tuesday, Wednesday, Thursday and Friday. There was no significant difference in patients' ASA across the week. Mortality was only experienced on a Tuesday procedure. Operations performed towards the end of the week were associated with a shorter stay, less mortality and no difference in likelihood of postoperative complication.
Conclusions: Our results demonstrate that post-operative outcomes are not unduly influenced by day of operation within a protocol driven enhanced recovery programme. Similar operative outcomes were found in each group and no statistically significant adverse outcomes were identified for operations performed on Fridays compared to earlier in the week.

Patient Safety 0354

Venous Thromboembolism: Patient Awareness in Pre-Operative Assessment Clinic

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Aims: Each year venous thromboembolism (VTE) causes 25,000 deaths in the UK; many result from hospital-acquired thromboses following elective surgery [1]. NICE guidelines state all surgical patients should receive verbal and written information regarding VTE [2]. This audit assesses how well a pre-operative assessment clinic provides appropriate patient education and increases awareness regarding VTE.
Methods: A questionnaire was designed to assess pre-operative patient's understanding of components of the NICE guidelines and was provided to every patient at the end of their pre-operative assessment over a two-week period.
Results: Provision of verbal and written information was poor (53% and 58% respectively). Despite this, 82% of patients were aware of the consequences of developing VTE. Many patients correctly identified surgery, immobility and being overweight as risk factors (71-80%), but not dehydration (53%). Lack of awareness regarding personal methods to reduce the risk of developing a VTE post-operatively (50%) and potential side-effects of medical prophylaxis (52%) were also identified.
Conclusions: Many patients do not receive relevant information regarding the risks of VTEs and lack awareness of important aspects regarding their prevention. Provision of targeted educational information to address identified gaps in awareness will empower patients in their post-operative recovery and enable them to make informed decisions regarding treatment options.

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Patient Safety 0392

The Introduction of a Simple 1-Page Booking Checklist can Reduce Length of Stay and Complications in Overnight Admissions for Complex Day Case Procedures

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Aims: To complete an audit cycle of all elective overnight admissions for complex day case procedures in a District General Hospital GI Unit; with an aim to identify causes for potentially avoidable complications and delayed length of stay, introduce a simple booking checklist to improve the quality of care, and re-audit the impact of change.
Methods: A prospective audit of 22 planned admissions was performed. Length of stay and complication rates were assessed and investigated for causation and impact. A simple 1-page booking checklist proforma was developed and introduced focusing on the identification of co-morbidities, concurrent anti-coagulation use, the need for anaesthetic review and a final administrative section. A prospective re-audit of 25 planned admissions was subsequently performed to assess the impact of change following the introduction of the checklist.
Results: The introduction of a simple 1-page booking checklist proforma reduced overall complications by 25%, reduced complications deemed avoidable from 55% to 14% of total, and reduced overall length of stay by 0·72 bed days. These quality improvements where achieved despite a 23% increase in complex multi-procedure admissions in the re-audit cohort of patients.
Conclusions: Simple checklists have been shown to improve patient safety and outcomes in a wide range of situations. This project demonstrates that a simple checklist which aims to identify and resolve common causes for complications and delayed discharge in patients being booked for elective procedures is a cheap, efficient, and effective way to improve patient safety and outcomes, and reduce costs in elective admissions. The 1-page checklist developed is focused, quick and easy to use, and has the potential for introduction across a range of surgical specialities and contexts.

Patient Safety 0442

The Surgical Safety Checklist (SSC) and Independent Factors Predicting its Use in Low-, Middle- and High-Income Countries: A Global Observational Study of Frontline Medical Professionals

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Aims: The SSC reduces perioperative errors and complications. However, it is unknown how widely this intervention is used. This was investigated in frontline medical professionals across the globe using social networks.
Methods: A survey was posted on Facebook and Twitter pages of the Schoolofsurgery.org; a not-for-profit surgical news channels for one month during March 2013. Respondents were grouped into four groups based on their country's Gross National Income: high, upper middle, lower middle and low income. Univariate and multivariate analyses were performed.
Results: 6,269 medical professionals from 69 countries responded: high (35·0%), upper middle (14·6%), lower middle (47·4%) and low (3·0%) income countries. In total, 57·5% reported that they used a SSC perioperatively. Fewer respondents used a SSC in upper middle, lower middle and low income countries (LMICs) compared to in high income countries (43·5% vs. 83·5%, $p < 0·001$). Female gender (61·3% vs. 56·4% males, $p = 0·001$), consultant surgeons (59·6% vs. 53·2% interns, $p < 0·001$) and University hospitals (61·4% vs. 53·7% non-University hospitals, $p < 0·001$) were more likely to use the SSC. Believing the SSC was useful, did not work or caused delays independently predicted whether respondents used it (OR 1·22, 95%CI 1·07-1·39, $p = 0·002$; OR 0·47, 95%CI 0·36-0·60, $p < 0·001$; OR 0·64, 95%CI 0·53, 0·77, $p < 0·001$, respectively).
Conclusions: This study demonstrates a wide but variable use of the SSC especially in LMICs where it has the most potential to improve patient safety. A major barrier is a lack of knowledge and negative perception among some medical professionals regarding the benefits of the SSC.

Patient Safety 0444

Patient Movement Project – Looking *After* Patients, Not Looking *For* Patients

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Aims: In a busy district general hospital, general surgical patients can be admitted to many different wards throughout the hospital. This can have an adverse effect on the care of patients, including being admitted to non surgical wards, being transferred to several different wards during one admission and being widely spread throughout the hospital making it difficult for doctors to effectively care for these patients. There is little evidence of prior research into how patients are distributed throughout a hospital.
Methods: This study retrospectively recorded the movement through a district general hospital of general surgical patients admitted from A&E until their discharge. A data system called Patient Manager was used to record this data. All patients who were admitted during a four day take ($n = 55$) were recorded in this study.
Results: The acute medical rather than the acute surgical ward was the primary destination for patients post A&E (49% versus 32·7%). 41·8% of patients were admitted to one ward only versus 58·2% of patients being transferred around at least two wards during their stay. Patients were distributed across 11 different wards.
Conclusions: Patients undergo many transfers throughout the hospital to different wards during one admission. Patients are widely spread out which means it is difficult for doctors to perform an efficient ward round and optimise care for the patients throughout the day. There is evidence that there is a need to increase the acute surgical admission ward capacity and increase the capacity of the general surgical only ward.

Patient Safety 0449

Automated Outcome Tracking Using Open Source Software

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Aims: Tracking surgical outcomes and variation in performance is an essential quality improvement tool. Morbidity and mortality meetings are an established mechanism of reviewing critical events, but to be effective must contribute to a broader data gathering strategy. We describe the introduction of an automated method of outcome tracking using freely available software.
Methods: "Shiny" is a server-based system used to generate interactive web applications. An innovative program was introduced where morbidity and mortality data was automatically converted into to accessible browser-based plots.
Results: Graphical representation of trends in performance over time can be automatically generated. The interactive nature of these plots allows relevant patient- and service-level subgroups to be examined. Run-charts, variable life-adjusted displays (VLAD) and cumulative sum control charts (CUSUM) provide a visual representation of whether systems are "in control" and an early-warning system of potential problems.
Conclusions: While outcome tracking is known to be important, it can be difficult to implement in day-to-day practice. An innovative automated browser-based system can be introduced at minimal cost and contribute to and enhance established risk management systems.

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Patient Safety 0464

Are we Providing Adequate Perioperative Information to Surgical Patients?

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Aims: Perioperative anxiety affects about 60–80% of patients. Adequate perioperative information allays this anxiety. To evaluate the adequacy of information provided to patients undergoing elective operations.
Methods: Questionnaire survey of adults who had operations at day surgery and 23 hour units over a week period at our institution. 80 eligible patients were surveyed capturing the types and adequacy of perioperative information provided. The study was voluntary and confidential.
Results: 78 patients completed the study while 2 declined giving a response rate of 97·5%. Male to female ratio was 1:1·3 with mean age of 50 (19–78) years. Surgical operations included 7 dental, 29 orthopaedics, 23 general surgery, 4 ENT, 6 urology and 9 gynaecological operations. 95% of the respondents had received preoperative information relating to their operations including 44 verbal, 8 leaflets and 22 combination of verbal and leaflets. 84·6% of the patients received wound care guidance but only 18%, 29%, 70% and 61% of them received guidance relating to when the stiches are to be removed, how often the dressings are to be changed, when to have shower and how long it will take for the wound to heal respectively. Only 70% of the participants received guidance as to when to seek urgent help if required. 75·6% of the respondents received instructions about the level of activities allowable after surgery with 59%, 81% and 69% were aware of time safe to return to work, commence driving and heavy lifting. Surprisingly, only 12% of the participants had researched their planned operation on the internet. 91% and 92% of the patients indicated that they had received adequate preoperative and postoperative information respectively. Only 46% of the participants would prefer a hospital supplied written information relating to their procedure prior to the day of surgery.
Conclusions: We're providing related and adequate perioperative information in a day case and 23 hour settings. Surprisingly, only a small proportion of our patients have researched the internet about their operation.

Patient Safety 0479

The Appropriateness of Intravenous Cannulae: A District General Hospital Experience

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Aims: Peripheral venous cannulation is a common invasive procedure utilised for the administration of fluids, blood products, drugs and limited parenteral nutrition. However, cannulae are often inappropriately inserted or left in situ when no longer necessary, potentially contributing to known cannula-related complications such as infection (including multiply-resistant organisms), phlebitis, embolic events, haematoma, extravasation injury and arterial/venous injury. We assessed the proportion of cannulae inappropriately inserted, or left in situ when no longer necessary, in several wards of a busy district general hospital.
Methods: Patients were assessed over two days on four surgical wards and four mixed surgical/medical acute wards. Data were collected using a standardised proforma assessing the indication for insertion (intravenous fluids/blood products/ drugs/antibiotics, limited parenteral nutrition, critically unwell etc.) and the frequency of idle episodes (cannula not in use for two or more consecutive days).
Results: Overall, 64 patients were assessed, of which 19 (30%) were inappropriately cannulated and 5 (8%) had at least one idle episode. 34 of the patients were under surgical care, of which 6 (18%) were inappropriately cannulated, and 2 (6%) experienced at least one idle episode. Of the 30 emergency admissions, 13 (43%) were inappropriately cannulated and 3 (10%) experienced idle episodes.
Conclusions: These data suggest that a significant proportion of intravenous cannulae are inappropriate, particularly on acute/emergency wards, thereby unnecessarily exposing patients to a risk of complications. Assessment of cannula requirements at admission, combined with daily review (on the ward round) and junior doctor/nursing education is recommended. We aim to reassess in three months time following implementation of such quality improvement strategies.

Patient Safety 0501

Use of Stroke and Bleeding Risks Assessment Tools in the Plastic Surgery Setting - Should Anticoagulants be Stopped Pre- and Post-Operatively?

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Aims: To determine whether the use of stroke and bleeding risks assessment tools improve patient safety and outcomes pre- and postoperatively. Can stroke be prevented?
Methods: 3 elderly (>65-year-old) plastic surgical inpatients (August-September 2013) were indentified to suffer from stroke/TIA during their current admission for urgent/emergency plastic surgical procedures. Root-cause analysis was carried out which highlighted the importance of formal stroke versus bleeding risks assessment before anticoagulants were stopped. Since then, simple risk assessment tools (CHAD2 and HAS-BLED scoring systems) on innovative yellow stickers were used on all acute admission for patients who suffered from AF (>65 years old). Re-audit was performed between October and November 2013 to assess patient outcomes with regards to prevention of stroke due to unnecessary stopping of anticoagulants pre-and post-operatively.
Results: Even though the sample size were small due to the demographic of acute plastic surgical patients, we managed to show that by using stroke versus bleeding risks assessment tools and simplifying documentation of risks assessment (innovative small yellow stickers), patient safety and long term outcomes could be improved. On re-audit, 3 acute plastic surgical inpatients who satisfied inclusion criteria (>65 years old and suffered from persistent/permanent AF) did not suffer from stroke during their admission (hospital stay period 3 – 10 days) and on follow-up with GP upon discharge.
Conclusions: The use of CHAD2 and HAS-BLED scoring system has long been used in the acute medical settings. We managed to show that by adapting this simple risks assessment tools in the plastic surgical setting, stroke could be prevented by minimising unnecessary withholding of anticoagulants pre-and post-operatively. This could be applied to other surgical specialties which often face with the dilemma of assessing anticoagulants need in the elderly patients pre- and post-operatively (i.e. Trauma and Orthopaedics, vascular, general surgery).

Patient Safety 0509

A Review of the Use of Surgical Safety Checklists in Developing Countries

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Aims: To review the existing literature on the use of surgical safety checklists (SSCs) in developing countries, describe the rationale behind their implementation, examples of their beneficial impact, and highlight potential future strategies to maximise the benefit of SSCs in this context.
Methods: The Pubmed and Google Scholar databases were searched using an appropriate search strategy. Emerging topics and ideas were brainstormed, and viability was explored by comparison with evidence existing in the literature and within other industries.
Results: The World Health Organization (WHO) SSC has demonstrated efficacy in developed and developing countries alike. Recent increases in awareness of surgical morbidity in developing countries has placed greater emphasis on strategies to improve surgical safety in resource-limited settings. The implementation of SSCs in low-income countries has specific barriers related to resources and culture. Adapting and amending existing SSCs, as well as considering factors unique to developing countries – including cultural variation – may allow the potential of this simple intervention to be fully harnessed in a wider

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setting. For example, in light of reduced staff numbers, variations or further criteria should be introduced to maximise benefits at the post-operative handover stage. Due to differences in staff roles, compliance may be improved through creating tailored regional definitions as to who is responsible for conduction of the SSC and ensuring staff assume the same role as far as possible, with minimal rotation between positions. Enforcement of 'sterile operating rules', where no irrelevant conversations are permitted at key points of surgical procedures, are recommended. Initiatives to support the global implementation of SSCs (e.g. Project Check and Lifebox) will help improve compliance in developing countries.

Conclusions: Adapting existing SSCs, as well as considering factors unique to developing countries, may allow the potential of this simple intervention to be fully harnessed in a wider setting.

Patient Safety 0567

Adherence to DVLA Guidelines: Informing Patients of Driving Restrictions after Ventriculoperitoneal (VP) Shunt or External Ventricular Drain (EVD) Insertion

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Aims: To audit adherence to DVLA guidelines regarding driving restrictions post EVD and VP shunt insertion. Specifically, the quality of patient education and supporting documentation will be analysed as will documentation pertaining to a patient's current driving status and occupation. Outcomes will be compared with General Medical Council (GMC) guidelines stipulating a clinician's role includes developing patient awareness. In this instance, appreciation that their treatment may affect their ability to drive and that they have a legal obligation to inform the DVLA, particularly if their occupation requires using a motor vehicle.

Methods: Retrospective analysis of 59 patient notes (28 = VP shunt, 31 = EVD) was performed to assess post-operative documentation regarding driving restrictions. Educational leaflets and an electronic proforma were created and incorporated into the NCCU Metavision system. The proforma determined whether a patient had been informed of DVLA restrictions associated with their treatment, had been provided with an information leaflet, and included information regarding co-morbidities and occupation. Only after completion of this electronic form could a patient be transferred from the unit. A prospective analysis was then performed for four weeks to determine whether these systems improved compliance.

Results: On retrospective analysis, only 2/28 VP shunt and 3/31 EVD patient notes included documentation relating to DVLA guidance. However, none of these displayed a definitive clinician entry regarding the implications of surgery and patient adherence to the required driving restrictions. Conversely, a generic DVLA survey was the only associated material observed. Occupation was not documented in 24/51 (20/28 = VP shunt, 4/31 EVD). Evidence of follow up was documented in 31/51 patients, however, no mention of driving status/guidance was included in associated clinic letters. On prospective analysis 17/17 patients (5 = VP shunt, 12 = EVD) received guidance on driving restrictions. In all cases, the electronic proforma was completed by the discharging clinician and as a result, information was obtained about co-morbidities, occupation and whether the patient had received the educational material.

Conclusions: A large failing in patient education and poor record keeping has been identified. After implementation of new systems, the quality of documentation has been significantly augmented. Within the four weeks of prospective analysis, 100% of patient records provided evidence of DVLA restrictions being discussed. Thus, it is recommended the proforma and patient leaflets adopted are to be used on a permanent basis. It is recommended that a further proforma is utilised in the outpatient setting ensuring the patient has informed the DVLA of their circumstances.

Patient Safety 0626

Adverse Events in Arterial Surgery are Caused by Individual, Team & Organizational Factors- Impetus for Multi-Disciplinary Team Training to Improve Patient Outcomes

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Aims: Minimally invasive treatment of arterial disease necessitates multi-disciplinary team collaboration and relies on advanced technology. In recent years, endovascular surgery has overtaken open repair as the primary treatment modality for aortic aneurysms and other vascular territories. This change in treatment preference may have an impact on the causal trajectories of adverse events (AEs) that occur. As part of a patient safety research agenda, this study aimed to evaluate vascular surgeons' perceptions of the factors leading to AEs in arterial interventions.

Methods: Using a validated framework to design the study survey, surgeons were asked to comment on a recent AE personally witnessed during or after an arterial procedure. Respondents scored 32 contributory factors on a 5-point Likert scale (1 highly unlikely - 5 highly likely to have contributed). Mann–Whitney U and Pearson's Chi-square were used to test for differences and associations between demographic groups (e.g. between procedure types).

Results: 77 separate adverse events were considered by consultants (37) and trainees (40). Multiple, separate factors were held responsible in 83% of cases, with a median of 5 factors per AE Most frequent contributory factors were related to the patient's condition (74%) and poor communication (42%). 'Technical' factors: e.g. lack of knowledge/skills ($p = .034$) or competence/experience ($p = .018$) were more frequently implicated in AEs in open surgical cases. On the other hand, 'systems' factors: e.g. technology failures ($p = .027$) and organisational structure ($p = .017$) were more frequently implicated in AEs occurring in endovascular procedures.

Conclusions: Similar to other branches of surgery, strategies to reduce AEs in arterial surgery should consider multiple factors, including improvements in team communication in addition to technical skills and careful patient selection. In minimally invasive procedures, communication, equipment set up and utilisation, as well as team organisation, are of primary importance. Multi-disciplinary team training may be able to target the individual, team and systems errors identified in this study, and ultimately lead to a reduction in adverse events in arterial surgery.

Patient Safety 0693

"TB or not TB that is the Question": Accurately Assessing Tuberculosis Rates in Patients Considered for Infliximab Treatment

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Aims: IBD is a group of autoimmune diseases affecting the digestive system. Medical treatment is the mainstay, with surgical intervention reserved for intractable cases.

Birmingham is a large conurbation. More than 40% of the population are from an ethnic minority and the city boasts some of the most deprived constituencies within the country. As a result, TB rates within Birmingham are amongst the highest in the country.

Infliximab is a TNF-α used in the treatment of IBD. It binds to TNF, inhibiting its role in the autoimmune reaction. It is contraindicated in patients with TB, due to the risk of reactivation. A robust screening tool is required to identify patients at high risk and low risk of TB so that positive cases are accurately identified prior to commencement of Infliximab treatment.

Methods: A retrospective review of all patients considered for treatment with Infliximab in a 12 month period was conducted. The rate of success in actual TB diagnosis, as determined by monospot testing, was compared with those predicted by the screening tool.

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Results: The screening tool demonstrated poor correlation between the predicted and actual TB rates. More patients with a low risk, at screening, were positive for TB than those deemed high risk.
Conclusions: The screening tool used to highlight patients at high risk TB appears inadequate. It is recommended all patients considered for Infliximab undergo monospot testing to rule out the presence of latent TB, regardless of their screening score.

Patient Safety 0718

The Use of a Standardised GMC Patient Satisfaction Survey (PSS) in an Out-Patient Setting – A Useful Tool for Revalidation

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Aims: All licensed doctors are required to revalidate from June 2012. The GMC states that patient feedback should form part of doctors provided evidence. A standardised GMC PSS has been shown to offer a reliable basis for the assessment of professionalism among UK doctors and has been suggested as a tool for revalidation. It was designed for use in the Primary care setting and there is no equivalent for use in Secondary care. We aim to show its use in the secondary care setting to be simple and effective, offering further evidence for doctors undergoing revalidation.
Methods: Having sought permission from the Trust, the GMC PSS was used in the manner directed for 3 doctors in a Trauma and Orthopaedic fracture clinic. The data was analysed using an automated system and the results made available to individual clinicians in a simple to present format.
Results: 3 clinicians used the survey across 13 clinic sessions. The mean number of clinics it took to generate sufficient responses was 3·25 (range 2 – 5). We found the survey easy to use, HCAs handed forms to patients before consultation. Survey results were collected as patients left clinic and analysed by the Patient Services Department.
Conclusions: The GMC PSS, although designed principally for use in Primary care appears to be a useful tool in secondary care. It is not only useful for personal development but also a vital and mandatory part of revalidation.

Patient Safety 0793

Anaphylaxis: The Empty Box Audit

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Aims: 50% of intravenous drug induced anaphylactic arrests occur by 4·6–9·9 minutes. Adrenaline is the mainstay of treatment for anaphylaxis and, therefore, clinical staff should be familiar with the equipment and drugs required in such emergencies and should check their availability regularly. Our aims were to reviewing the literature to identify 'best practice', audit clinical practice within our individual trust and improve current standards via re-audit and setting recommendations to achieve best practice.
Methods: Clinical areas audited were: acute surgical & medical wards, theatres, accident & emergency and radiology (total of 18 wards). Audit criteria included: the presence of anaphylaxis boxes on crash trolleys, supplementary anaphylaxis treatment present on crash trolleys, knowledge of where anaphylaxis boxes were located by the senior sister and if anaphylaxis treatment was available in drug cabinets - on each ward. Anaphylaxis boxes were supplied to all 18 wards, multidisciplinary education was stringently enforced and a re-audit completed 3 months later.
Results: Initially, none of the 18 wards was found to have an anaphylaxis box located on the crash trolley. Only 2 senior sisters on all wards knew where the anaphylaxis treatment box was located. There were 4 wards found to have anaphylaxis medications within drug cabinets, all of which did not stock epinephrine. Post-intervention, 17 wards stocked anaphylaxis treatment boxes, 17 senior sisters knew where to find such anaphylaxis boxes, 14 wards had fully stocked anaphylaxis treatment available in drug cabinets and all boxes present on wards were fully replenished.
Conclusions: Anaphylaxis is a life-threatening emergency and immediate treatment is critical. The introduction of anaphylaxis treatment boxes to wards and the education of staff provide a well-prepared clinical environment, paramount in ensuring safe clinical practice.

Patient Safety 0852

Fitness to Drive Advice after Elective Laparoscopic Cholecystectomy (LC) – Whose Responsibility is it? A Survey of Car Insurance Companies

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Aims: LC is a commonly performed day-case procedure. Following surgery patients should be advised regarding fitness to drive and advice given should be available in writing/documented both for patient reference, and as evidence of communication. Easily accessible online advice is inconsistent and there is no specific DVLA guidance available. Driving too soon post-operatively is unsafe and risks invalidating a patient's car insurance; hence patients are often advised to check their own insurance company's policy. This study aimed to review UK insurance companies' advice regarding return to driving following elective LC.
Methods: An online search identified 126 UK car insurers, all of whom provided private insurance policies. Each company was contacted via email asking when the holder can return to driving following LC (before which insurance would be invalid), and their instructions as to when the holder would know he/she was fit enough to drive. Companies not offering online communication were excluded.
Results: 26 companies were excluded as they were not contactable online. Of the remaining 100 companies, 62 responded: 38 (61%) stated their regulations, 24 (39%) would communicate without confirmation of a policy with them. Of the 38 companies offering information, all stated that a doctor (either GP or surgeon) must determine the policyholder's fitness to drive, or timescale in which they cannot drive. 1 company stated that the policyholder needed to be able to perform an emergency stop, the rest did not offer any specific advice.
Conclusions: This study shows that insurance companies place the responsibility of determining fitness to return to driving with the patient's doctors. It is, therefore, the doctor's duty to ensure that patients have access to this information, and that information is documented. Follow-up is rare following routine day-case surgery and so physical reassessment of individual patients is impractical, but, if patient information leaflets or publically available advice is to be used for this purpose, then there is a need for standardisation. If aftercare is to differ to the standard advice then the patient needs to be informed, and the change in information documented for the protection of both patient and clinician. The lessons learnt in this study are equally applicable for other elective, day-case procedures.

Patient Safety 0867

Complaints in General Surgery. A Tool for Learning and Reflection

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Aims: Between April 2012–2013 162,000 written complaints regarding NHS organisations in England were lodged. The aim of this study was to evaluate complaints made against our General Surgical department with the objective of identifying reasons for complaints and to reflect and learn from them.
Methods: All complaints involving general surgical consultants between January 2010 and June 2013 were requested from the hospital complaints department. The complaint letter as well as the response letter for each complaint was reviewed and reason(s) for the complaint were identified.
Results: Over the 42 month period 10 consultants were in post. One consultant retired and a subsequent consultant took up post, their complaints were grouped together. There were 171 complaints, the median number per consultant was 23 (range 5–41). 51·5% (n = 88) of complaints were regarding male patients. 57·3% (n = 98) of complaints were lodged by the patient, 33·9%

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(n = 58) were lodged by a relative and 8·8% (n = 15) were lodged by a solicitor or local MP on a patients' behalf. 58·4% (n = 100) of complaints arose from an emergency and 28·7% (n = 49) from an elective admission. Outpatient encounters generated 12·9% (n = 22) of complaints. 41·5% (n = 71) of the complaints stated a perceived delay in investigation or treatment, 38·6% (n = 66) stated a perceived complication or mismanagement and 24% (n = 41) stated a communication failure as a cause for concern. 22·2% (n = 38) and 19·9% (n = 34) of complaints arose from perceived poor doctors' and nurses' attitudes respectively. 13·4% (n = 23) complaints stated institutional problems (e.g. food, decoration, parking etc).

Conclusions: Patients admitted to hospital as an emergency are more likely to be unsatisfied with care. A perceived delay in investigation/treatment was the most common reason for complaint. Reviewing complaints has allowed us to reflect on practice within the department to help improve the patient pathway and experience. We recommend other General Surgical units review complaints as a department to obtain a greater understanding of their patients' views and experience whilst within the unit.

Patient Safety 1021

Sepsis 6: Does The Novelty Wear Off?

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Aims: Assessment of the sustainability of improvements in guideline adherence following the introduction of the Sepsis 6 protocol.

Methods: Two periods of clinical audit were performed, each for 2 weeks. These were carried out immediately after rollout of Sepsis 6 (T1) and 8 weeks later (T2). All case sheets for patients admitted to the surgical receiving unit were examined to identify patients who did / should have triggered the Sepsis 6 protocol on the basis of an elevated National Early Warning Score (NEWS). Compliance with Sepsis 6 was measured.

Results: Often elements of care were in place before an elevated NEWS was recorded. Where this was the case they were given negative times. If this was outwith a reasonable timescale or not initiated / repeated within the 1 hour Sepsis 6 window this was regarded as failure of that element. No complete Sepsis 6 bundle was delivered in either period.

	% Completion						
	Oxygen	IV fluids	Cultures	Antibiotics	Lactate	FBC	Catheter
T1	69·2	76·9	53·8	38·5	15·4	38·5	23·1
T2	58·3	75·0	33·3	41·7	33·3	58·3	25·0
	Median time from triggering NEWS (minutes)						
	Oxygen	IV fluids	Cultures	Antibiotics	Lactate	FBC	Catheter
T1	–200	–545	17·5	–485	57·5	–76	–395
T2	10	2·5	–82·5	–400	11	17·5	0

Element completion improved for lactate and FBC but worsened for blood cultures. Review of oxygen and IV fluid requirements improved when sepsis was identified.

Conclusions: Concept fatigue proved less problematic than expected, however, there is still significant room for improvement and novel approaches may be required.

Patient Safety 1025

Sepsis 6: Initial Experience of Introduction of a Smartphone App

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Aims: To assess whether the introduction of a smartphone app would improve completion of the Sepsis 6 bundle.

Methods: The Sepsis 6 protocol had been previously introduced and allowed to bed in. An app was developed locally for both IPhone and Android smartphones and given to all junior doctors working within the surgical receiving ward. This provided a clear and immediately accessible reminder of the Sepsis 6 protocol in addition to traditional methods. Completion rates for Sepsis 6 were audited pre and post app deployment. Where an element was in place prior to an elevated National Early Warning Score, this was regarded as valid if within a reasonable timescale.

Results: Improvement was seen in rates of completion for all elements with the exception of blood cultures and full blood count measurement. In the first audit period no patient had a complete bundle of care delivered. This was achieved in 1 of 18 patients in the post smartphone app audit. Compliance with blood culture requirements remained very poor although the proportion of patients having this performed *at all* rose from 33% to 56%.

	% Completion						
	Oxygen	IV fluids	Cultures	Antibiotics	Lactate	FBC	Catheter
Pre-app	58·3	75·0	33·3	41·7	33·3	58·3	25·0
Post-app	66·7	83·3	33·3	61·1	50·0	55·6	38·9

Conclusions: The use of smartphone apps may be of use in improving Sepsis 6 compliance. Barriers to full compliance with Sepsis 6 are still evident. Identification of these barriers will allow refinement of workflow and support mechanisms.

Patient Safety 1036

Reported Harm in Surgery: An Assessment of the Areas of Highest Risk in Theatre

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Aims: Surgery is a high-risk specialty that is receiving increasing scrutiny with respect to adverse outcomes. Healthcare professionals can anonymously report safety errors to the National Reporting and Learning System (NRLS), the national voluntary reporting system for England and Wales. This study aims to quantify and describe the burden of voluntary reported surgical harm in England and identify areas for intervention

Methods: All patient safety incident reports occurring in theatres from 2003 to March 2013 were extracted from the NRLS. Data from 148 Acute trusts were analysed longitudinally. A selected subset of 215 severe harm and death cases in one year were examined in detail to map trends in types of harm occurring in theatre. The free text description of the event was classified using a two-person clinical review process into themes with a third person arbitrating.

Results: 28,7808 surgical incidents occurring in theatres were reported between 2003 and 2013. 76309 events were described as causing patient harm and 746 were reported as leading to peri-operative death. Rates of reported harm and death in theatres increased exponentially over the decade. Of the selected subset 62 deaths and 108 severe harm cases were examined. 50·2% (108/215) were elective. The main causes for reported death or severe harm in theatre were: Intra-operative organ or vessel injuries and bleeding [26·0%(56/215)],
unexpected peri-operative cardiac events [20·0%(43/215)], equipment failure or unavailable equipment related events [11·1%(25/215)], return to theatre for bleeding or anastomotic leak [8·37%(18/215)], wrong site surgery [7·91%(17/215)], retained swab or instrument [4·19%(9/215)] and theatre delay [6·98%(15/215)]. Anaesthetic complications represented 4·65% (10/215) of reported events.

Conclusions: Patient safety in theatre is still a concern to healthcare professionals, reflected by increased reporting rates. Less than 8% of events reported were preventable by using the WHO checklist. This suggests that there is scope for further intra-operative interventions to ensure greater patient safety in theatre. The majority of cases reflected technical errors such as vessel or organ injury or return to theatre. This may indicate areas for training improvement.

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Patient Safety 1066

Elective Laparoscopic Cholecystectomy – How Long can you Really Wait?

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Aims: Complications of cholelithiasis is common and results in significant inhospital stay, morbidity and mortality. Laparoscopic cholecystectomy is an easy and safe intervention but due to bed pressures waiting list times are long. The aim was to examine the frequency of complications of cholelithiasis whilst awaiting surgery in a busy district general hospital.

Methods: This was a retrospective study of all patients who underwent elective laparoscopic cholecystectomy during 2012. Time of diagnosis and surgery and preoperative complications were recorded. Complications of cholelithiasis were defined as: *biliary colic* (abdominal pain + normal inflammatory markers (white cell count (WCC) and C-reactive protein (CRP)) + normal liver function tests (LFTs)), *acute cholecystitis* (abdominal pain + abnormal WCC/CRP, normal LFTs), *ascending cholangitis* (abdominal pain + abnormal WCC/CRP + obstructive LFTs) and *acute gallstone pancreatitis* (established cholelithiasis + raised amylase).

Results: 227 patients fulfilled inclusion criteria (86 male: 141 female). In total there were 75 presentations of biliary colic, 60 of acute cholecystitis, 78 of ascending cholangitis and 21 of acute gallstone pancreatitis.

37 patients presented more than once with complications. In 24 cases there was more than one type of complication. In total there were 142 hospital admissions; 23 patients were admitted more than once for cholelithiasis complications.

Overall time from diagnosis to surgery ranged from 1 to 2047 days (383d mean, 370d mode, 326d median). Median wait times were 308d for biliary colic, 297d acute cholecystitis, 172d ascending cholangitis and 125d pancreatitis. 15 patients underwent surgery within 2 weeks of their first diagnosis of acute gallstone pancreatitis. 3 patients had more than 1 episode of pancreatitis whilst awaiting surgery, 1 necessitating ITU admission with subsequent mortality.

Conclusions: Widespread adoption of policy to reduce waiting times is essential in reducing the complications of cholelithiasis which places significant burden on patient, hospital and resources. Arguably elective laparoscopic cholecystectomy cases need near, or as much, importance, as for example elective cancer cases. The latter being prioritised over laparoscopic cholecystectomy in most places.

Patient Safety 1094

Chlorhexidine-Induced Anaphylaxis During Surgery - Two Cases and Systematic Literature Review

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Aims: Chlorhexidine is a broad-spectrum antimicrobial agent widely found in medical products used to minimize surgical site infection and catheter related sepsis. In our institution, two patients developed life-threatening anaphylaxis during surgery caused by chlorhexidine exposure. This stimulated us to perform a systematic review to compare with and learn from previously reported cases.

Methods: Medline & EMBASE were searched with MeSH terms 'chlorhexidine' and 'anaphylaxis', to identify case studies of chlorhexidine-related anaphylaxis in surgical patients (1960–2013). Data was collected on the likely source of exposure, harbinger events, if postoperative testing occurred and patient outcome.

Results: 46 out of 171 articles were selected, describing anaphylaxis in 67 surgical patients. Chlorhexidine exposure was attributed to lignocaine gel intraurethal administration in 33 cases (49%), central-line catheters in 14 cases (21%), skin preparation in 16 cases (24%) and unknown in 4 cases (6%). In 8 patients anaphylaxis caused a cardiac arrest. In 18 cases no formal post-operative immunology testing was performed. In 15 patients there was a harbinger event, such as a previous atopic reaction to skin prep. No deaths were reported.

In our institution, two surgical patients were exposed to chlorhexidine during skin disinfection, during urinary catheterization with Instillagel®, and insertion of a central venous catheter impregnated with chlorhexidine. Both patients developed an urticarial rash and severe hypotension within 30–60 minutes of the start of surgery. One patient briefly required cardiopulmonary resuscitation. Early serum tryptase levels were elevated confirming anaphylaxis, and allergen specific IgE testing confirmed chlorhexidine as the causal agent. Both patients had their surgery abandoned, were given intravenous adrenaline, steroids and antihistamines and managed in intensive care. In retrospect, both patients had demonstrated a mild reaction to chlorhexidine skin cleaning prior to venepuncture.

Conclusions: Anaphylaxis during surgery is a rare, serious event. Patients exhibiting signs of even mild allergy in response to chlorhexidine should be referred for allergy testing prior to surgery. Surgeons should have a low threshold to consider chlorhexidine exposure as a cause of anaphylaxis during surgery.

Patient Safety 1178

Evaluation and Improvement of Surgical Mortality and Morbidity Meetings

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Aims: Mortality and morbidity meetings (MMM) are a fundamental part of modern surgical practice, allowing surgical teams to reflect and learn from the outcomes of their practice. No guidelines exist about their conduct. However, improving MMM offers an opportunity to improve surgical care. As part of a multi-faceted intervention project studying how human factors interventions can improve care of surgical patients, the aim was to improve the output and learning value of MMM.

Methods: An interrupted time series design was used to conduct the study in a department holding weekly MMM; with planning, pre-intervention, intervention and post-intervention phases. An observational data collection proforma was developed to compare pre- and post-intervention phases. The primary outcome measure was discussion and documentation of both 'learning point' and 'action plan' for each case. The implementation strategy for the improvement intervention was to employ lean quality improvement methodology concepts including plan-do-study-act (PDSA) cycles following a brief training period. The MMM was process mapped to identify areas for improvement work, and thus a 'plan' for PDSA cycles to be implemented during the intervention phase was created.

Results: Four MMM were observed in each phase. Pre-intervention, a learning point was discussed in 43% and recorded in 14% of cases; and an action plan was discussed in 25% and recorded in 7% of cases. Post-intervention, a learning point and an action plan was discussed and recorded in 100% of cases. Furthermore, following the intervention, there was a greater structure to the meeting; with email notification, attendance record and consultant chair. The method for ensuring particular cases were discussed became more robust; analysing and discussing cases became more structured and systematic; and the ability to develop and implement an intervention to reduce the risk of recurrence improved.

Conclusions: This work demonstrates that interventions performed following an introduction to quality improvement can significantly improve the output and learning value of MMM. There were limitations in the study design, however, the approach and resulting interventions are reproducible and applicable to other surgical specialties and units.

Patient Safety 1185

Introduction of a Novel Transplant-Specific WHO Checklist

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Aims: The WHO Safe Surgery Checklist was introduced to reinforce safety practices and foster better communication and teamwork between clinical disciplines. Transplantation presents specific challenges which are not covered by this checklist. An ABO blood group incompatible transplant, for example, is

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something the checklist is designed to prevent. These and also HLA antibody incompatible transplants are becoming increasingly common in modern transplant practice alongside advances in anti-rejection therapies. In order to improve patient safety, our centre introduced a transplant-specific WHO checklist to cover the particular requirements of modern organ transplantation. We looked at the uptake and compliance with this checklist following its introduction in September 2013.

Methods: All patients who received a transplant (including kidney and kidney-pancreas) at our centre following formal introduction of the new checklist were included. A retrospective analysis was made of patients' notes and the electronic patient record. The parameters were the presence of the new checklist in the notes and fullness of completion. For comparison, a similar analysis was made of the presence in the notes and completeness of documentation for the standard WHO safe surgery checklist.

Results: 53 patients were transplanted at our centre over 4 calendar months following introduction of the transplant-specific WHO checklist. The new checklist could be identified In 29 patients' records (55%). It was fully completed in 25 (47%) and partially completed in a further 4 (7·5%). Documentation for the standard WHO safe surgery checklist was present in 47 (91%) of patients' notes and 42 of these (79%) were fully completed.

Conclusions: Although these figures are likely to be lower than the reality due to loss of some documentation, we have found that the uptake of the new checklist has been sub-optimal, only being identified in 55% of notes examined. This was far lower then for the standard checklist. The challenge for our department will be to improve knowledge and availability of the checklist and stress its importance through education and training of the multi-disciplinary team. We believe it is an important step in improving patient safety in contemporary transplantation.

Patient Safety 1216

Acute GP Referrals to General Surgery and their Triage

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Aims: To identify if acute GP referrals to the on call general surgical team would be reduced or their management altered if the calls were triaged by the medical team.

Methods: GP admissions were initially triaged through a nurse led call centre central to every specialty in NHS Lanarkshire. From here the names of patients were filtered to the relevant location and specialty, with no other clinical information provided. A two week period (week days only) was reviewed to identify the number of GP referrals and their management in this system, prior to a trial period of the on call registrar / SHO taking the referrals.

Results: 59 patients were admitted for acute assessment via the call centre, with a mean length of stay of 3·6 days. 50% of these admissions stayed for less than 24 hours. Admissions could have been avoided in at least 8 cases if the calls had been triaged by medical staff. Number of admissions dropped to 44 when the on call team were taking calls, with 5 (10%) admissions avoided at the referral stage. Two of these were avoided by giving telephone advice and 3 were directed to a more appropriate specialty. On call team involvement at the referral stage also led to the identification of several "unwell" patients and therefore prompt treatment once in the department, a valuable step in patient care that was missing before.

Conclusions: Total number of admission was reduced by 15% when the medical team were taking referrals. A further 10% reduction was achieved with telephone advice and discussion about the patients with the primary care giver. From this snapshot, it is difficult to ascertain whether the reduction in admissions is simply the result of effective medical triage or whether the total number of calls from GP has reduced as a result of the pilot. However, the most pertinent conclusion is that care was expedited in relevant cases as the team had triaged patients accordingly during initial consultation. This is a valuable step in patient management which should improve the outcomes of surgical care.

Patient Safety 1222

Improving Safety for General Surgical Admissions: The Introduction of a System of Modified Early Warning Score (MEWS) for all Surgical Admissions in a Trust

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Aims: Improving the recognition of deterioration of general surgical admissions allowing early intervention by introduction of the Modified Early Warning Scores (MEWS). An Initial audit of Emergency general surgical patients highlighted difficulties with two separate observation systems in place, one using MEWS another with only vital signs being recorded.

Methods: On initial audit Medical notes, observation charts and blood results for 50 surgical admissions during a single month were examined. Following standardisation of MEWS for all patients, this was repeated for 30 admissions.

Results: Of the initial audit, 20 patients were started on MEWS, 30 with only vital signs recorded. System selection was based on provisional diagnosis. A total of 9 patients demonstrated SIRS throughout their admission who were not on MEWS. During hospital stay patients were observed with MEWS for average 3·36 days with no clinical reason for discontinuation and 2 patients were changed to MEWS.

On re-audit 30 patients were observed using MEWS. 8 showed signs of SIRS on admission with 1 developing SIRS later.

Conclusions: Initial audit demonstrated two conflicting observation systems, selection of which based on often-inaccurate provisional diagnosis. Introduction of a uniform observation system followed, eliminating disparity. Fewer patients developed SIRS following standardisation of MEWS.

Patient Safety 1229

Could not Reporting Dangerous Dog Attacks Come Back to Bite? A Call for Clearer Guidelines

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Aims: A 20 year old male presented to the emergency department having sustained multiple lacerations to his hands and arms during an unprovoked attack by a dog in a public place. Neither the victim nor the owner wished to report the attack for reasons unknown. We aimed to assess the knowledge of doctors with respect to the ethical and professional obligations to report such events.

Methods: An anonymous questionnaire was issued via an online email survey engine and in paper format to all members of the Orthopaedic and Emergency Departments of a UK teaching hospital. Medline as well as UK central and local government websites were searched for guidelines, advice and relevant literature.

Results: Eighty five doctors were included in the study with 60 responses received giving a response rate of 71%. 60% of doctors were willing to report a dog attack against patient wishes while 35% would not; 5% were unsure. 88% of respondents were unaware of guidelines which would explicitly support such disclosure. 57% of respondents thought there is a professional obligation to report such attacks; 30% believed there is not. 82% of respondents stated they would not know how to report such an incident; only 17% knew how to do so. 90% of doctors surveyed believe clearer guidelines and education regarding the reporting of dog attacks would be helpful. Dog bite injuries are a significant burden on surgical services; 6,447 people were admitted to hospital in the UK in 2011–12. GMC guidance states that confidentiality can be breached if in the public interest and explicitly deals with gun and knife crime but not dangerous dogs. Local councils have guidelines for public reporting but none for healthcare professionals. Doctors may in theory be found culpable for failure to report if injuries occur in a subsequent incident.

Conclusions: Human dog-bite injuries are a major public health problem with a large surgical burden. They sometimes result in fatalities, with a disproportionate impact in children. There are no firm guidelines regarding doctor's duty to report dog attacks and the level of knowledge in this respect is low. We

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therefore call for firm guidelines from the GMC or other professional bodies which would encourage and support doctors in reporting such cases; this would be in the public interest.

Patient Safety 1259

Can Good Non-Technical Skills During Surgery Improve Patient Outcomes? A Prospective Observational Study

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Aims: There is increasing evidence to suggest that enhancing surgical team's non-technical skills can improve patient safety in the operating theatres. There is little evidence however to relate these skills directly to patient related outcomes. In trauma and orthopaedics, the accuracy of limb alignment following total knee replacement (TKA) can affect post operative functional outcomes and revision surgery rates. Several factors have been associated with malalignment including procedural factors. Our aim was to investigate the relationship between the intra-operative surgical team's non-technical skills and limb alignment following total knee replacement.

Methods: A prospective cohort observational study was performed in a university teaching hospital. Intra-operative non-technical skills were collected by 2 observers (surgical trainee, Human factors specialist) using the Oxford NOTECHS II. Full limb CT was performed for the assessment of alignment following TKA. Data analysed using Spearman's rho, ($p < 0{\cdot}05$) were considered to be statistically significant.

Results: Ninety hours of intra-operative theatre observations were made for 39 patients. Mean Oxford NOTECHS II score was 77 (75–79; 95% CI). Mean alignment was 180·49° (178·9-181·9; 95% CI). Oxford NOTECHS II correlated with malalignment errors, $r = -.338$, ($p < .05$). Linear regression demonstrated a relationship between malalignment and Oxford NOTECHS II, ($17 + -0{\cdot}18$, $r2 = 0{\cdot}166$; $p = 0{\cdot}010$).

Conclusions: This study has demonstrated a significant correlation between malalignment following elective TKA and worse surgical team's non-technical skills. Therefore, if we are to provide optimal patient care we need to invest in improving non-technical skills in the theatre.

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Perioperative Care/Nutrition

Perioperative Care/Nutrition 0058

Post Thoracic Surgery Discharge Analgesia – Are we Giving our Patients the Best Chance of a Quick Recovery?

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Aims: Post thoracic surgery is aggravated by constant movement; pain relief is therefore essential to facilitate deep breathing and to promote early mobilisation.
The aim of this audit is to identify what level of analgesia and laxatives patients are currently being discharge on. Are we providing optimum coverage to give our patients the best chance of a quick recovery?
Methods: All patients who had undergone thoracic surgery between Jan- Aug 2013 by a single consultant were identified. Discharge letters provided data on analgesia and laxative at discharge.
Standard –100% of all patients are to be discharged with paracetamol, codeine phosphate and MST medication. 100% of patients who are prescribed an opioid base analgesia should receive a laxative.
Results: Total number of procedures performed 115, 10 excluded. Included in study105; 66 thoracotomy, 39 VATs.
Overall patients discharge with the following: 93% paracetamol, 41% with codeine, 51% home with MST, 11 % discharged on all three.
51% home with laxatives, 34% of patients on morphine had no laxative. 4% received no analgesia.
We are only providing 10·5% of our patients the recommended level of analgesia on discharge. We also under prescribe laxative by 34%.
Conclusions: Currently all medication are under prescribed which may result in discomfort and decreased mobility post discharge. This will slow recovery and create a negative experience for our patients. Although we assume that we provide adequate analgesic coverage on discharge better training and protocol provision will ensure optimum analgesia prescription on discharged.

Perioperative Care/Nutrition 0212

Does Node Positivity in Oesophago-Gastric Cancer Predict Peri-Operative Thomboembolic Events?

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Aims: Patients with oesophago-gastric cancer are at an increased risk of peri-operative thromboembolic events (TEE). This study aims to correlate the incidence of TEE in this group with histo-pathological staging.
Methods: All patients who underwent oesophagectomy or gastrectomy over a four year period (2008 to 2011) were retrospectively reviewed from local databases.
Results: 220 resections were performed, 86 for gastric and 134 for oesophageal cancer. 27 (12·3%) developed a TEE. 16 PEs, 5 DVTs and 6 arterial events were identified preoperatively. 7 (43·8%) of the PEs and 2 (40%) of the DVTs were symptomatic with the remainder diagnosed incidentally on CT imaging.
123 (91·8%) oesophageal resections were for adenocarcinoma and 11 (8·2%) for squamous cell cancer. All TEE occurred in patients with adenocarcinoma and this difference approached significance ($p = 0·07$). 5 (18·5%) and 22 (81·5%) patients were staged T1/T2 and T3/T4 respectively in the TEE group compared to 53 (27·5%) and 140 (72·5%) in the non-TEE group ($p = 0·274$).
21 patients (77·8%) in the TEE group had node positive disease compared to 109 (56·5%) in the non-TEE group ($p = 0·03$).
Conclusions: Based on histological staging, nodal disease is associated with a higher risk of TEE. Patients diagnosed with node positive disease on radiological staging should be considered for prophylaxis against TEE while awaiting resection.

Perioperative Care/Nutrition 0296

Improving Compliance and Outcomes of an Enhanced Recovery Program (ERP) within Colorectal Surgery

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Aims: ERP has revolutionised the post-operative care of patients undergoing elective colorectal surgery. However achieving targets within the confines of busy surgical units can prove challenging and can limit its effectiveness. Our trust employed a dedicated nurse specialist to improve outcomes following ERP within elective colorectal surgery.
Methods: A prospective database from January 2012-October 2013 (introduction of dedicated nurse specialist) was analysed which was maintained for all elective colorectal patients. End-points including Length of stay, %compliance with pre-operative care and complications and were analysed.
Results: Since the introduction of a nurse specialist there were 245 patients with a median age of 63 years (range 20–84 years). 52% were male. There was only a 16·7% day-of-surgery-arrival rate. 96% patients received Preload. There were 194 colorectal resections. 86% received enema prep. 5% Full bowel Prep and 8% did not receive prep in accordance with our guidelines. 74% were for malignant disease. 65% were completed laparoscopically and 4% lap-assisted. 20% patients underwent epidural analgesia and 72% underwent PCA analgesia which has become our standard. 55% of cases were for rectal pathology, 29% right, 5% left, 5% subtotal and 5% pan-colonic. The Median length of stay overall was 7 days, 6 days in those without stoma formation, compared to 11 days and 10 days for rectal surgery pre-introduction of a specialist nurse. Readmission rate was 3% (compared to 22% pre introduction). Overall anastomotic leak rate was 5% (7% return to theatre) – 6% for rectal cancer and 3% for other resections.
Conclusions: The introduction of dedicated nurse specialists to help with the care of all ERP patients can lead to high rates of compliance and aid in the correct management to improve outcomes including length of stay. This has financial and quality implications for busy hospital trusts. Help is required and regular interaction with the medical, nursing and social teams to improve the service further still.

Perioperative Care/Nutrition 0476

A Pilot Study to Determine Rates of Postoperative Troponin I Elevation in Patients Undergoing Major Abdominal Surgery

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Aims: In the UK, there is an aging general surgical population with increasing rates of comorbidity (RCS, 2011). Most studies evaluating postoperative elevation in troponin I have focussed on surgery in individuals known or suspected to be at high risk of atherosclerotic disease. We aimed to determine the rates of postoperative elevation of troponin I in patients following elective and emergency major abdominal surgery. Early identification of these patients is vital as this may allow cardiac risk modification and improved long-term survival.
Methods: Twenty-five patients have been recruited. Demographic data was collected. Troponin I was measured on day one and two postoperatively. If a raised troponin-I level (greater than 40 ng/l) was detected on either blood

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sample, an electrocardiogram was performed, the patient questioned about the presence of any symptoms and a prompt cardiology consultation was obtained.
Results: Fourteen men and eleven women were recruited (mean age 65·6, range 45–90). All patients had surgery during the daytime, 72% were elective cases and 28% had urgent surgery. Two of the twenty-five patients (8%) showed elevated troponin I levels greater than 40 ng/L (mean 50 ng/L). Both patients underwent elective operations, and had an ASA grade of 2.
Conclusions: Elevated post operative troponin I levels were identified in 8% of general surgical patients undergoing major abdominal surgery. These were asymptomatic and not associated with any cardiological symptoms or abnormal ECG findings.

Perioperative Care/Nutrition 0540

Utility of Growth Factors in Wound Healing – A Systemic Review and Meta-analysis

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Aims: With the global pandemic of obesity and a sharp incline in the incidence of diabetes, chronic wounds present as a perennial problem and burden to healthcare worldwide. The aims of the present study are to determine if growth factors (GFs) significantly improve wound healing rates and the types of GFs possessing the most efficacious and best cost-benefit profiles.
Methods: We conducted a meta-analysis according to the Cochrane and PRISMA guidelines. Three independent authors identified relevant trials from the Cochrane Central Register of Controlled Trials (CENTRAL), *Ovid* MEDLINE, EMBASE and PubMed. Inclusion criteria for the study were clinical randomised controlled trials involving humans only against a placebo, results of which were reported in English. Treatment outcome measures include pooled risk ratio (RR) of percentage of wounds completely healed at endpoint and mean difference (MD) in days to complete wound healing, calculated using a random-effects model with forest plots. Publication bias was assessed by Begg's funnel plot and Egger's test.
Results: A total of 237 studies were surveyed of which 28 studies involving 5 GFs: Platelet derived Growth factor (PDGF), Platelet Releasate/gel (PR), Fibroblast Growth factor (FGF), Epidermal Growth Factor (EGF) and Granulocyte Colony Stimulating Factor (GCSF) were eligible. PDGF was shown to improve wound healing rates compared to its control (RR = 1·32; 95% CI: 1·11-1·58; p = 0·002) in diabetic ulcers. FGF promoted better healing in neuropathic ulcers (RR = 1·79; 95% CI: 1·25-2·59; p = 0·002) and patients with second degree burns (RR = 1·32; 95% CI: 1·04-1·67; p = 0·02) compared to their respective controls. There was a lack of evidence in comparing inter-GF efficacy and combination GFs versus single modality GF failed to achieve statistical significance (p = 0·20). Only retrospective clinical reviews exist in addressing the question on cost-benefit ratios, where GCSF and PDGF were shown to provide cost savings by reducing ulcer days compared to standard therapy. No trials exist in comparing wound quality or scar profiles of GF treated patients.
Conclusions: Taken together, GFs show a statistically significant advantage in improving wound healing, but further trials are necessary to assess its feasibility.

Perioperative Care/Nutrition 0603

Pharmacological Approaches and Anaesthetic Techniques to Decrease Blood Loss in Liver Surgery: A Systematic Review

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Aims: There is increasing evidence to suggest that peri-operative blood loss and blood transfusions are associated with poorer short- and long-term outcomes in patients undergoing hepatectomy. The roles of surgical technique, vascular clamping, low central venous pressure (CVP) and use of sealants intra-operatively have been well described previously. The aim of this report was to systematically review the literature for anaesthetic or pharmacological measures to decrease intra- and post-operative blood loss.
Methods: The literature search was performed using PubMed, Embase, Cochrane Library, CINAHL and Google scholar databases to identify all studies on the effect of anaesthetic or pharmacological methods to decrease blood loss in liver surgery. The primary outcome measure was peri-operative blood loss. Secondary outcome measures were transfusion requirements and the development of ischaemia-reperfusion injury.
Results: Sixteen studies met the inclusion criteria and included a total of 1523 patients. All were randomised control studies. In 8 studies (n = 894) pharmacological methods and in another 8 studies (n = 629) anaesthetic methods to decrease blood loss were investigated. In 2 trials potential benefits of anti-fibrinolytics were demonstrated. In four trials anaesthetic techniques including acute normovolaemic haemodilution and autologous blood donation reducing transfusion requirements were investigated. Inhalation anaesthetic agents employed may also affect outcomes, particularly with regard to post-operative hepatic function.
Conclusions: The systematic review demonstrates that there is potential for use of non-surgical techniques to decrease peri-operative bleeding in liver surgery. However, on the basis of this review alone, due to a heterogeneity of randomised trials no particular strategy can be validated. Future studies should be conducted looking at pathways to decrease bleeding in liver surgery.

Perioperative Care/Nutrition 0614

Liver Biopsy and Non-alcoholic Fatty Liver Disease (NAFLD) in Bariatric Patients

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Background: Steatosis in bariatric patients is present in 70 -80% cases, of these 10 -30% will progress to NASH. Biochemical and novel imaging tests have so far not supplanted Liver biopsy as the gold standard for diagnosis. We evaluated the incidence of Steatosis, steatohepatosis and fibrosis in our operative bariatric patients.
Methods: A pilot prospective study from December 2012 till November 2013 at single high volume bariatric centre performed about 500 bariatric procedures per year. All pre op patients received ten day liver reducing diet. Biochemical blood parameters including LFT are performed. Liver biopsy was performed in all patients intra-operatively who had visual evidence of NAFLD. Trucut 16 Fr needle was used to take biopsy from left lobe of the liver.
Results: Thirteen patients had visual impression of fat infiltration/NAFLD and underwent a liver biopsy. None of these patients had deranged liver function tests. Of the biopsied 13 patients, two had frank cirrhosis at the time of biopsy and did not proceed for bariatric procedure. In the remaining 11 patients, 8 had steatosis and 3 had steatohepatitis on histology. NAFLD score was not done on any of these cases due to lack of dedicated hepatic histopathologist.
Conclusion: Despite high prevalence of NAFLD in obese patients, we had three patients with steatohepatitis on liver biopsy. Majority of patients had steatosis only and in our opinion, these patients will be benefitted by preoperative liver diet to reduce the size of liver. To avoid sampling error and consistency in stetohepatitis and fibrosis scoring, it is crucial to have a dedicated liver histopathologist reporting these slides. Moreover, we suspect the liver reducing diet had drastically downstages simple steatosis but its effect on Non-alcoholic steatohepatitis (NASH) is unknown. Results from a larger cohort are awaited.

Perioperative Care/Nutrition 0843

The Effectiveness of Informed Consent in Patients Undergoing Breast Surgery

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Aims: We aimed to assess the efficacy of the information giving/consent process in patients undergoing breast cancer surgery. We aimed to ascertain how much information, presented both verbally and in brochures, patients retain and whether increased retention was associated with higher levels of post-operative satisfaction.

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Methods: 23 patients were interviewed pre and post-operatively to ascertain how much information (particularly potential complications), they had retained. In the post-operative interview, in patients who had developed complications, we assessed whether they recalled being counselled on these complications; as well as their level of satisfaction with the consenting/operative processes.
Results: Pre-operatively, of the 23 respondents, six did not know the name of procedure, three did not understand what it involved, one did not understand the indications, and 13 could not the recall the significant potential complications (56%).
Those with higher satisfaction (8-10/10) had an average "understanding-score" of 5 compared to those with lower satisfaction (4-7/10) who had an average score of 4.
Seventeen patients read the information-leaflet provided, this group had an increased level of satisfaction (9/10), compared to those who did not (4/10). Those who read the leaflets had a higher level of education compared to those who did not.
Of the seven patients who developed complications, five recalled being warned about these. These five had a higher level of satisfaction (10/10) compared to those who claimed they were not warned (6/10).
Conclusions: Those patients who retained more information had increased levels of satisfaction with their procedures, especially in those who develop complications.

Perioperative Care/Nutrition 1135

Reducing Blood Transfusion in Colorectal Cancer Surgery

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Aims: Post-operative blood transfusion (POBT) is associated with increased morbidity and mortality in colorectal cancer surgery. In recent years we used various methods to reduce POBT including pre-optimisation for surgery with IV iron (IVFe) introduced in 2010 and improved governance of blood products. The success of these interventions was assessed.
Methods: A sample of colorectal cancer patients treated in 2009–13 were identified using a coding search of the Galaxy theatre IT system. Patients were cross-referenced against a prospectively collected database of patients receiving IVFe (either venofer® or ferinject®). Where further data was required this was retrieved from the patient electronic record.
Results: The median age of patients in 2009 was not significantly different to that in 2013 (65–69 years, Kruskal-Wallis p = 0·701) and ASA of patients (χ^2 p = 0·236) and median length of stay (LOS)(Independent samples median test p = 0·159) was also statistically similar between years from 2009–13, as were median pre-op and post-op Hb (p = 0·865 & p = 0·285).
Blood transfusion records were not recorded (NR) in 2009. In patients that were transfused the mean number of units (U) given decreased year on year (Table 1).

Table 1	n=	median age	median LOS	% given POBT	U given per POBT	median Pre-op Hb	median post-op Hb
2009	37	65	6	NR	NR	NR	NR
2010	155	67	7	10·32	3·00	130	112
2011	73	69	7	21·92	2·88	126	109
2012	81	69	6	11·11	2·44	129	108
2013	45	69	4	8·89	1·25	129	120

Of 43 patients that received IVFe this was received a median of 14 days prior to surgery and average increase in Hb was 8·97 g/l.
Conclusions: POBT has decreased in recent years as a result of changing prescribing practice. Pre-operative IV Iron treatment reduces pre-operative anaemia by achieving an average Hb gain of 8·97 g/l .

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Randomised Clinical Trials

Randomised Clinical Trials 0132

Quality of Reporting on Patient and Public Involvement within Surgical Research: A Systematic Review

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Aims: To identify the extent to which PPI is utilised within surgical research.
Methods: Surgical literature was systematically reviewed using EMBASE, Medline, PsychInfo, the Cochrane Central Register of Controlled Trials and Pub Med. Search terms related to (i) patients (ii) involvement iii) peri-operative care and (iv) impact. Quality of PPI reporting was evaluated using the Guidance for Reporting Involvement of Patients and Public (GRIPP) checklist and Wright et al critical appraisal guidelines. A patient representative advised on the purpose and analysis of this systematic review.
Results: Eight articles described patients and public involvement in surgical trials to improve the identification of research topics, study design, recruitment, retention, and data collection. Quality of PPI reporting was suboptimal as none of the papers provided a clear account of how PPI was conceptualised. Training and support for patients, their involvement in dissemination, and a critique of the limitations of PPI were not reported. However, it was not clear whether this represents an under-utilisation of PPI or purely sub-optimal reporting in surgery.
Conclusions: There is a paucity of surgical research reporting upon PPI and the quality of reporting is low. Further research to define appropriate standards for reporting on PPI activities may facilitate broadening the utilization and impact of PPI in surgical research.

Randomised Clinical Trials 0223

Descriptions of Surgical Interventions in RCTs: is There Room for Improvement?

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Aims: It is increasingly recognised that surgical interventions are complex, made up of multiple components. Previous systematic reviews have highlighted the difficulties this complexity creates when describing such interventions in trials. To improve this, the CONSORT extension for non-pharmacological interventions has published reporting standards relating to the way in which such interventions should be described and standardised within trial reports. This systematic review aimed to establish whether reporting standards of surgical interventions have improved following publication of the CONSORT extension.
Methods: Articles published in the top six impact factor journals for each of general medicine and surgery, were included. The search was limited to two-arm surgical RCTs containing at least one surgical intervention, published between January 2010 and December 2011 and written in English. Reporting standards of the following CONSORT recommendations were assessed: i) provision of any descriptions of the interventions, ii) details of how the interventions were standardized, and iii) fidelity of care providers to the intervention.
Results: Of 4541 abstracts and 131 full text articles, 80 studies were included, reporting 160 interventions (133 surgical and 27 non-surgical). 117 (73·1%) interventions were described within the trial reports; however, descriptions varied in the amount and depth of information provided. Details regarding standardization were reported for 44 of 160 interventions (27·5%) although 26 (16·3%) provided no information about how this was achieved. Measurement of fidelity to any aspect of the intervention description was infrequently provided and difficult to ascertain as this issue was rarely explicitly discussed (n = 22, 27·5%).
Conclusions: Reporting standards of surgical interventions in RCTs remain poor despite publication of the CONSORT recommendations for non-pharmacological treatments. Moreover, the terms 'precise' and 'standardisation' were inconsistently applied and require further clarification within surgical contexts. A CONSORT extension specific to surgical interventions may improve this, enabling interventions deemed 'successful' to be accurately replicated in clinical practice.

Randomised Clinical Trials 1060

Promoting Transparency in Clinical Research: Systematic Review of Disclosure and Data-Sharing Policies in Surgical Journals

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Aims: Trial registration aims to protect the interests of study participants and serves to limit publication bias. Registration, complete publication and data-sharing promote best practice for transparency. They also encourage continued research, including secondary analyses and patient level meta-analyses. The primary aim of this study was to determine author compliance with surgical randomised controlled trial (RCT) registration. The secondary aim was to explore data sharing policies of surgical journals.
Methods: A systematic assessment of surgical RCT publishing and registration practices in surgical journals was performed. RCT manuscripts published in 10 high-impact surgical journals during 2009 and 2012 were reviewed. Data relating to trial registration, statements of disclosure and data sharing were extracted. Trials were systematically cross-matched to registration databases. Data are expressed descriptively (%) with longitudinal comparisons (2009 vs. 2012) using Chi-squared analyses. Predictors of non-registration are explored using logistic regression.
Results: 246 RCTs were identified (2009: n = 109 vs. 2012: n = 137), of which 76·4% (67·0% vs. 83·9% respectively; p = 0·062) were registered on a clinical trials database. Registration was retrospective in 24·9% (34·3% vs. 18·9%; p = 0·018). Statements of author disclosure and funding arrangements were present in 71·5% (49·5% vs. 89·1%; p < 0·01) and 60·01% (55·1% vs. 65·0%; p = 0·074) respectively. Data sharing statements were only included in two studies. Year of publication (p = 0·005) and year-specific journal impact factor (p < 0·001) were strong predictors of registration status. Only one journal held a policy of mandatory, open access data sharing in their instructions to authors.
Conclusions: The uptake of registration and transparency of reporting in surgical RCTs is increasing with time, but remains sub-optimal. However, the principle of open access data sharing is poorly endorsed in surgical research.

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Surgical Complications

Surgical Complications 0143

Surgical Emphysema: An Unusual Complication Following Colonoscopy. A Case Report and Literature Review

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Aims: The aim of this case report was to highlight a rare complication following routine colonoscopy and provide a reasonable treatment option for these patients. Additionally, we provide a brief review of the literature with respect to the complications following this invasive procedure.
Methods: A patient presented to our surgical unit with swelling and discomfort in her neck a few hours after having a colonoscopy. Her only complaint was swelling in her neck with no abdominal pain or shortness of breath. She was haemodynamically stable with no signs of peritonitis or respiratory compromise. She had an erect chest x-ray as well as a CT scan of her chest, abdomen and pelvis. A brief review of the literature concerning this unusual presentation was performed.
Results: The patient had biopsies taken during her colonoscopy for quiescent colitis. Her erect chest x-ray showed pneumoperitoneum, pneumomediastinum and surgical emphysema within the subcutaneous tissues in her neck. CT scan reported marked pneumo retroperitoneum, pneumoperitoneum, pneumomediastinum and no free fluid. She was managed conservatively with intravenous antibiotics and nil by mouth for the first 24 hrs and was discharged 72 hrs after presentation. A literature review showed that colonoscopic perforations are quite rare occurring in less than 1:1000. Additionally, they are few case reports of patients presenting with surgical emphysema without associated chest and abdominal symptoms. Various methods of managing these complications are feasible depending on age, co-morbidity, adequacy of bowel prep and mechanism of perforation.
Conclusions: Conservative management of perforation following colonoscopy is a safe and acceptable option in patients not exhibiting signs of peritonitis, adequate bowel preparation or silent perforations. Additionally perforations resulting from therapeutic procedures are usually small and are best managed conservatively. Perforation following colonoscopy is a known but fortunately rare complication. Being aware of the various presentations and management options will improve clinical care.

Surgical Complications 0178

Temporary Sacral Nerve Stimulator Lead Complicated by Abscess Formation and Systemic Sepsis: A Case Report and Review of the Literature

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Aims: Sacral nerve stimulation (SNS) is effective for faecal and urinary incontinence. It is safe and minimally invasive. Post-operative infection is uncommon. Infection is usually treated with antibiotics or device removal in extreme cases. This is an unusual case of severe sepsis following temporary SNS.
Methods: We report a 61 year old diabetic lady who presented with buttock pain and sepsis 13 days following temporary SNS lead placement.
Results: Blood tests showed raised inflammatory markers and poor renal function. Ultrasound scan and computerised tomography were normal. Magnetic resonance imaging revealed a collection in the right buttock, which was drained under ultrasound guidance. Pus and blood cultures grew *Escherichia coli*.
Despite the administration of broad spectrum antibiotics, the patient deteriorated rapidly and was admitted to the intensive care unit. She suffered from a myocardial infarction, acute lung injury and acute kidney injury secondary to sepsis. She was managed with antibiotics, haemofiltration and drainage of the abscess. The patient gradually improved and remained well at 4 week follow-up.
Conclusions: To the best of our knowledge, this is the first report of severe sepsis following temporary SNS. This case highlights the need to be aware of infection and abscess formation as a complication of SNS. Multimodal radiological investigations may be needed to aid diagnosis. Certain patient groups may be at greater risk of infection.

Surgical Complications 0190

Postoperative In-Hospital Morbidity Impairs Long-Term Patient Survival: A Systematic Review and Meta-Analysis

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Aims: Major surgery is routinely associated with high rates of postoperative complications, many of which are deemed preventable. It has been suggested that these complications present a risk to patients not only in the short term, but may also reduce long-term survival. The aim of this study is to examine the effects of postoperative complications on long-term survival.
Methods: MEDLINE, EMBASE, Web of Science, and reference lists of relevant articles were searched up to July 2013 according to a pre-defined strategy. Studies assessing only procedure-specific, or technical failure-related, complications were excluded. Methodological quality was measured using the Newcastle-Ottawa Scale. Meta-analysis was performed using a random-effects model. Risk of bias was assessed using funnel plots.
Results: 18 eligible studies were included, comprising results for 134,785 patients with an overall complication rate of 22·6% (range 10·6%-58·2%). These included operations for both benign and malignant disease. Median follow-up was 43 months (range 29–68·5). Meta-analysis of overall survival after any post-operative complication for 10 studies with eligible data (20,755 patients) found an increased hazard ratio (HR), 1·28 (95%CI 1·22,1·34). Similar results were found for overall survival following infectious complications, HR 1·92(95%CI 1·50,2·35) (4 studies, 2,994 patients). Analysis of disease-free survival demonstrated HR 1·26(95%CI 1·10,1·42) for all post-operative complications (6 studies, 4,294 patients), and HR 1·55(95%CI 1·12,1·99) for infectious complications (2 studies, 1,470 patients). Inclusion of poor-quality studies in a sensitivity analysis had no effect.
Conclusions: Postoperative complications have a negative effect on long-term survival. This relationship appears to be stronger for infectious complications. The preventable nature of these complications suggests more must be done to improve care and thus enhance survival rates following major surgery.

Surgical Complications 0269

Deadly Complications of Endoscopic Stenting for Intrathoracic Anastomotic Leaks Following Transhiatal Extended Gastrectomy - A Call for Caution

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Aims: Endoscopic stent insertion has gained wide acceptance as treatment for intrathoracic anastomotic leaks following transhiatal extended gastrectomy. However, the safety of the procedure can only be judged on the basis of long-term experience.
Methods: The outcomes of all patients, who underwent transhiatal extended gastrectomy for carcinoma of the oesophagogastric junction at a German centre for foregut surgery between 01/2004 and 06/2013, were retrospectively reviewed.

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Results: A total of 47 patients were identified (38 men; 9 women). The mean age was 69·6 years and the average ASA grade 2·32. Indication for extended gastrectomy with resection of the distal oesophagus were adenocarcinoma of the oesophagogastric junction type I (3), type II (32) and type III (13) according to the classification of Siewert and Stein. Anastomosis was always carried out as stapled intrathoracic oesophago-jejunostomy below the level of the tracheal carina. Seven anastomotic leaks were observed. Leak patients had significantly higher odds for developing postoperative pneumonia (OR: 5·10; 95%CI: 0·71-42·27; p = 0·060) and sepsis (OR: 8·67; 95%CI: 1·21-78·96; p = 0·018).
Endoscopic stenting was carried out in six cases and one patient underwent oesophagectomy in discontinuity because of ischemia of the jejunal loop. Mortality was 5/7 (OR: 12·99; 95%CI: 1·68-166·39; p = 0·005). Stent insertion was only successful in two patients whereas four cases of deadly stent-related complications were observed: stent-related aortic erosion (2), fatal bleeding from jejunal ulceration and fatal bronchial obstruction each caused by stent dislocation.
Conclusions: The results of endoscopic stent implantation for intrathoracic anastomotic leakage following transhiatal extended gastrectomy are marred by deadly stent-related complications. Alternative solutions as endoscopic vacuum assisted closure should be evaluated for endoluminal management of anastomotic leaks.

Surgical Complications 0431

Risk Stratification for Postoperative Pulmonary Complications in Elective Major Abdominal Surgery

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Aims: Postoperative Pulmonary Complications (PPCs) following elective major abdominal surgery are a major source of morbidity and mortality. This study aimed to risk-stratify patients undergoing elective major abdominal surgery for development of PPC's.
Methods: 100 patients from 2 centres undergoing elective major abdominal surgery in 2012 were evaluated for risk of developing PPCs classified as grade 1–4. Grade 1 (microatelectasis) was clinically non-significant. Grade 2 (atelectasis/productive cough), grade 3 (pneumonia) and grade 4 (ventilator dependency) were clinically significant. Patients were classified as high risk if they had >2 of the following preoperative risk factors: age > 70, cough, expectoration, diabetes mellitus, smoking, COPD, BMI >27. Patients with one or no risks were classified as low risk. PPC rates were assessed for both high and low risk patients.
Results: Overall 19 patients (19%) developed clinically significant PPCs (Grade 2–4). Of the 45 high risk patients, 15 had clinically significant PPCs (33%). Of the remaining 55 low risk patients, 4 had clinically significant PPCs (7%). There was no significant difference between the 2 centres in the rates of PPC or proportion of high vs. low risk patients.
Conclusions: It is possible to stratify patients before major abdominal surgery into high and low risk of developing PPCs. Patients stratified into a high risk category could be targeted preoperatively for risk modification by, for example, inspiratory muscle training to reduce the risk of PPCs.

Surgical Complications 0455

Use of Local Anaesthetic in Rubber Band Ligation of Haemorrhoids: A Systematic Review of Published Randomized, Controlled Trials

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Aims: Rubber band ligation along with other conservative measures is considered first line minimally invasive therapy for first degree and second degree haemorrhoids. Rubber band ligation of early haemorrhoids has been reported to be associated with anal pain, discomfort and other complications such as bleeding and loco-regional sepsis. The objective of this study is to systematically analyse the published randomized, controlled trials (RCTs) comparing the use of local anaesthetic (LA) versus no local anaesthetic (NLA) for the rubber band ligation of early symptomatic haemorrhoids.
Methods: Published RCTs comparing the use of LA versus NLA for the rubber band ligation of symptomatic haemorrhoids were analysed using RevMan®, and the combined outcomes were expressed as odds ratios (OR) and standardised mean difference (SMD). The trial selection was based upon the PRISMA guidelines and study quality assessment tool was derived from the published guidelines of Jaddad et al and Chalmers et al.
Results: Three RCTs evaluating 315 patients were retrieved from the standard electronic databases. The risk of treatment failure (OR, 0·65; 95% CI, 0·17, 2·50; z =0·64; p <0·53) and post procedure complications (OR, 0·71; 95% CI, 0·36, 1·38; z =1·02; p <0·31) was similar between two techniques. However, the post procedure pain score (SMD, −4·79; 95% CI, −5·34, −4·24; z =17·9; p <0·00001) was significantly lower in the group of patients undergoing rubber band ligation of haemorrhoids and local anaesthetic injection simultaneously.
Conclusion: The use of LA appears to have clinically measurable advantages over NLA in the rubber band ligation of symptomatic haemorrhoids in order to control post procedure pain. Due to paucity of trials on this subject and therefore this conclusion may be considered weaker. Larger trials with higher power and better methodology are required to validate the findings of this study.

Surgical Complications 0506

Acute Pancreatitis as a Complication of Minimally Invasive Treatment of Renal Calculi: A Review

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Aims: This review aims to evaluate the literature profile of acute pancreatitis as a postoperative complication following Percutaneous Nephrolithotomy (PCNL) and Extracorporeal Shock Wave Lithotripsy (ESWL). With many studies on the major and common complications of PCNL and ESWL, this study aims to fill a gap on a rare, unusual yet life-threatening outcome following a routine urological procedure.
Methods: A comprehensive systematic search of three medical databases was undertaken (PubMed, Cochrane Library and Embase) using keywords relating to PCNL, ESWL and pancreatitis.
Results: 10 studies (2 RCT, 8 case-studies) consisting of 10 patients met the inclusion criteria from a manual search of 917 papers retrieved, emphasising the low index of suspicion. Of these, 7 patients developed acute pancreatitis postoperatively due to ESWL and 3 as a result of PCNL.
The proposed pathophysiology ranges from mechanical adhesion, leakage of infected urine and specifically for PCNL; iatrogenic causes due to instrumental manipulation of the 18-gage needle despite the efficacy of imaging modality in percutaneous renal access. However no common consensus exists.
The presenting symptoms of acute pancreatitis: upper abdominal pain and excessive fluid in the peritoneum, 4–8 hours postoperative is consistent in all the studies irrespective of mode of treatment. Raised serum amylase in tandem with contrast-CT verified the diagnosis in all the studies. Prompt laparotomy was vital and successful in the treatment of the complication as opposed to conservative management. Notably, failure of symptom response to protease inhibitors was specifically mentioned in 2 studies.
Conclusions: The unusual postoperative presentation, coupled with the requirement for immediate interventional treatment (in contrast to the conservative treatment in typical acute pancreatitis) stresses the need for a greater depth of study and urological awareness of this critical complication.

Surgical Complications 0595

Ways to Reduce Small Bowel Volume in the Pelvis and its Attendant Complications Following Abdominoperineal Excision of Rectum

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Aims: To establish a simple and safe way to reduce small bowel volume in the pelvis, and its potential complications, following abdomino-perineal excision of rectum.

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Methods: Involved 2 patients, over 6 month period, undergoing open emergency laparotomy for acute small bowel obstruction due to pelvic adhesion a variable period after APER. Both patients received neoadjuvant radiotherapy. On both occasions, caecum was interposed at the pelvic inlet to prevent small bowel prolapsing into the pelvis. The procedure, caecopexy, required simple mobilization of the right colon without vascular pedicle division and stitching caecum to the peritoneum around the pelvic brim. Success of the procedures was judged by sustained symptom relief and substantiated by radiological evidence (included in the presentation).
Results: There were no further episodes of small bowel obstruction and both patients remain well 3 to 6 months post procedure. There have been no perineal wound issues either. Our unit previously published work in similar clinical situations using uterine interposition with excellent results.
Conclusion: This study describes simple technique/*concept* of preventing/minimising post-operative small bowel volume in the pelvis to prevent potential immediate, intermediate and delayed complications ie small bowel obstruction and perineal hernia. Although caepexy were performed as part of open emergency laparotomy, it can be carried out, with experience in intracorporeal suturing, at the time of the elective index laparoscopic operation. The technique is easy to learn and teach and without known side effects.

Surgical Complications 0596

Accidental Splenectomy During Coloic Resection for Left-Sided Colorectal Cancer

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Aims: Accidental splenectomy during colorectal cancer surgery should be <1%. A previous audit of 251 cancer resections (1998–2006) indicated the incidence was 2·5% (1·5% of resections performed by colorectal surgeons, 7·5%-general surgeons, 5·9%-upper GI surgeons, 9·1%-vascular surgeons and 13·3% where breast surgery was the declared sub-speciality interest. The audit was repeated to see if increasing subspecialisation led to a reduction in the incidence of accidental splenectomy.
Methods: Left sided cancer resections (retrospective review of prospectively collected data) were identified from the locally held colorectal cancer database (2007–2012) for the NHS Trust. Histopathology reports of splenectomies for the same time period were reviewed to identify splenectomies performed at the time of the resection for colorectal cancer (and/or reversal following Hartmann's procedure), as well as patient status-emergency vs elective and designated sub-speciality interest of operating surgeon. The results were compared with the earlier study.
Results: 722 patients underwent left-sided resections for colorectal cancer, either as an emergency or elective procedure. A total of 3 (0·4% of all procedures) underwent accidental splenectomy, compared to 10 (2·5%, n = 251) in the previous study. 2 splenectomies were performed by colorectal surgeons and 1 by a surgeon with an upper GI interest. No cases of splenectomy complicating emergency surgery were identified in the second audit. In the previous audit 6 of 10 splenectomies were performed following emergency resections for colorectal cancer.
Conclusions: Although the overall numbers are small in both series, the incidence of accidental splenectomy during left sided colorectal cancer surgery appears to have reduced in keeping with accepted guidelines. This may be a consequence of increased specialisation in both elective and emergency colorectal cancer surgery.

Surgical Complications 0725

Morbidity and Mortality after Repair of Giant Hiatus Hernia

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Aims: The management of giant hiatus hernia is surgically challenging. This study aims to review the mortality and morbidity after surgical repair of giant hiatus herniae in our tertiary centre.
Methods: We performed a retrospective review of patients who underwent repair of giant hiatus hernia over a 13-year period from October 2000 – October 2013. We collected data related to post – operative complications and mortality.
Results: Seventy patients underwent repair of giant hiatus hernia between 2000 until November 2013. Of whom, fourteen patients reported general post – operative complications and five patients reported surgery related complications and both types of complications were reported in one patient. General complications include acute urinary retention (1 case), poor analgesic control (1 case), chest infection and poor analgesic control (1 case), nausea (1 case), diarrhoea (1 case), chest infection (4 cases), post – operative anaemia of Hb77 (pre-operative Hb 144) requiring transfusion (1 case), post – operative pyrexia that responded to antibiotics (2 case), opiate toxicity (1 case) and hypotension (1 case). Five separate cases of surgery related complications include wound infection, bloating, dysphagia, left sided hydropneumothorax requiring surgical chest drain and gastrointestinal bleeding (this was managed endoscopically). Another patient had chest infection and persistent hiatus hernia (on post-operative barium swallow and CT). 2 patients died post-operatively, 1 had previous sigmoidopexy and colopexy died from faecal peritonitis due to perforation of the transverse colon that was consequently operated on; while the other patient (who was diagnosed post – operatively with metastatic myeloma) died from subdural haemorrhage. Following oral contrast study performed post – operatively, two patients had redo surgery during the same admission.
Conclusions: The risk of serious complications after giant hiatus hernia repair is low. Surgical management of giant hiatus hernia is still recommended.

Surgical Complications 0753

Postoperative Urinary Retention in Thoracic Surgery Patients

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Aims: A seemingly high number of thoracic surgery patients were noted to be suffering with post-operative urinary retention (POUR). In the absence of any hospital or departmental guidelines addressing the perioperative catheterisation, as well as a lack of literature relating to this specific patient group, the author designed this project to identify which patients were at risk and to develop a guideline accordingly.
Methods: Data were collected on all thoracic surgical patients over a three month period and then analysed according to specific data fields.
Results: 112 patients were included out of whom 16 (14·3%) developed POUR. Of these 50% had a previously documented urological history and of whom 60% described obstructive symptoms. Also of note, the average age of patients suffering with POUR was 72·4 years; almost 10 years greater than the average. Male patients were 15 times more likely to develop POUR than female.
Conclusions: Conclusive risk factors for developing POUR were clearly identified; namely increasing age, male gender and previous urological history. Based on these results the author has been able to make recommendations as to which patients would benefit from perioperative catheterisation. A simple flow chart which is completed as part of the admission clerking was designed, and the project and recommendations were presented locally at a thoracic department governance meeting. The recommendations are currently in the process of being implemented and repeat data will be collected to assess the efficacy of the implemented changes.

Surgical Complications 0832

Determining Preoperative Risk Factors for Intra-Abdominal Septic Complications Following Ileocolonic Resection for Crohn's Disease within a Tertiary Institution

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Aims: To identify preoperative risk factors for the development of intra-abdominal septic complications (IASC) following ileocolonic resection (ICR) for Crohn's Disease (CD) within a specialist institution.

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Methods: We retrospectively reviewed case notes of 147 patients who underwent ICR for CD over a 6 year period (January '05 - December '10) within our institution. All preoperative variables were extracted, including patient, disease, medication use and serological data. A postoperative IASC was defined as the presence of an anastomotic leak or enteric fistula formation within 60 days postoperatively. Univariate analyses were performed.
Results: 14 out of 147 patients developed a postoperative IASC (9·5%). These comprised of 2 anastomotic leaks not requiring postoperative re-intervention, 5 anastomotic leaks requiring re-intervention and 7 entero-cutaneous fistulae. 12/132 patients who underwent a primary anastomosis developed an IASC compared with 2/12 patients who underwent a two stage procedure (p =0·405). Univariate analysis demonstrated a 'penetrating' disease phenotype (p =0·037), concomitant upper gastrointestinal (UGI) CD (p =0·003), leucocytosis (p = 0·012) and antibiotic administration (p =0·028) were significantly associated with the presence of IASC. An association between IASC and male gender (P =0·098) was also identified.
Conclusions: Our study demonstrates the presence of a penetrating phenotype and concomitant upper GI Crohn's disease are significantly associated with the development of postoperative IASC. Though limited with its retrospective design and lacking statistical power our study does highlight the need for further trials to preoperatively determine risk of IASC to facilitate preoperative surgical planning.

Surgical Complications 0877

Assessing the Time of Onset and the Risk Factors Associated with the Development of Anastomotic Strictures Following Open Gastric Bypass Surgery (RYGB): A District General Hospital Experience

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Aims: Anastomotic strictures have been identified as a common post open gastric bypass (RYGB) complication, most commonly at the gastrojejunostomy. The mean incidence has been reported as approximately 10%. The time of presentation with strictures varies, and our aim was to identify the likelihood of developing a stricture following post-operative symptoms of dysphagia, vomiting and dyspepsia.
Methods: A retrospective study was conducted on 111 patients between 2008–2012, at a level 4 for bariatric centre. All 111 patients investigated via an oesophagogastroduodenoscopy (OGD) for a potential post open RYGB complication were included. Data including demographics and OGD reports were collated from patient electronic records, pathology and radiology results.
Results: 111 patients presented with a postoperative symptoms following an open RYGB and underwent ≥1 OGD. In total, 160 OGD were completed. Only (n = 40, 36%) patients were found to have a normal OGD. A large proportion (n = 57, 51%) of patients were found to have a stricture, of which (n = 20, 35%) were male and (n = 37, 65%) were female. Additional pathologies found included gastric ulcers, gastritis and hiatus hernia. The majority (n = 47, 82%) of patients found to have a stricture presented with dysphagia + − vomiting. Additional presenting complaints included vomiting and dyspepsia. The majority (n = 34, 60%) of patients presenting with a stricture had ≥2 co-morbidities associated with obesity. 89% of patients presenting with postoperative symptoms between the first 1–2 months were found to have a stricture. This figure reduced proportionally with time: 78% (2–4 months), 31% (4–6 months), 21% (6–12 months) and 12% after 1 year. The majority of patients (n = 55, 96%) had successful balloon dilation via an OGD, 1 had a laparotomy to undergo a stictureplasty and 1 had a redo of gastrojejunostomy.
Conclusion: The incidences of strictures are most prominent within the first 1–4 months after surgery and reduce proportionally with time. The main presenting symptom was dysphagia. Having 2 or co-morbidities was a significant risk factor. Balloon dilation via an OGD remains a successful treatment option. We recommend all patients presenting with symptoms of dysphagia within 4 months of surgery to undergo an urgent OGD.

Surgical Complications 0986

The Relationship Between Diabetes, Body Mass Index and Hepatic Steatosis: Only Insulin Dependent Diabetes is a Risk Factor for Major Complications after Liver Resection

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Aims: This study aimed to assess the relationship between the incidence of diabetes, obesity and hepatic steatosis in patients undergoing liver resection and to determine if these factors are independent predictors of major complications following liver resection.
Methods: A retrospective analysis of a prospectively maintained database of patients undergoing liver resection between July 2005 and September 2012 was undertaken. At histological examination the background liver was assessed for degree of steatosis and was divided into <33% (mild or none) and ≥33% (moderate or severe). Major complications were defined as Grade III-V complications using the Dindo-Clavien classification.
Results: 504 patients underwent liver resection of whom 56 patients had diabetes mellitus (11·1%) and 61 (12·1%) had hepatic steatosis of ≥33%. The median BMI was 26 kg/m^2 (16-54 kg/m^2). A total of 94 patients developed a Dindo-Clavien grade III-V complication (18·7%). Multivariate analysis revealed that although a raised BMI ≥25 kg/m^2 (P = 0·001) and the presence of diabetes (P = 0·018) were significantly associated with hepatic steatosis ≥33%, only diabetes requiring insulin therapy was an independent risk factor for major postoperative complication (P = 0·028). Age, male gender, hypoalbuminaemia, synchronous bowel procedures, extent of resection and requirement for blood transfusion were also independent risk factors for major complications.
Conclusions: Liver surgery in the presence of hepatic steatosis, elevated BMI and non-insulin dependent diabetes was not associated with increased risk of major complications. Although, diabetes requiring insulin therapy was a significant risk factor for postoperative complications the major risk factor in this series was the presence of a synchronous bowel procedure which exposed patients to the greatest risk.

Surgical Complications 1204

Paraplegia Following Oesophagectomy: Is Transthoracic Oesophagectomy (Ivor-Lewis Approach) To Blame?

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Aims: The aim of this clinical review is to establish whether the recent approach of transthoracic echocardiography, also known as the Ivor-Lewis oesophagectomy, proposed in 1946; is responsible for postoperative paraplegia following oesophagectomy.
Methods: A systematic review of current literature from MedLine, EMBASE and Google Scholar was performed. Key words used in the search included: "oesophagectomy paraplegia" and "oesophagectomy spinal injury" as well as cross-references between sources.
Results: Nine cases of post- oesophagectomy paraplegia were identified. The level of spinal injury in almost all cases were confined to the region of T6-L1. Many of the cases were associated with complex resection of the tumour in patients with various co-morbidities including arteriosclerosis, diabetes mellitus, hypertension, obesity and old age are risk factors here. The Ivor-Lewis oesophagectomy approach accounted for seven out of eight identifiable cases of postoperative paraplegia.
Conclusions: Despite the higher incidence of paraplegia after the Ivor-Lewis approach, it has been regarded as prognostic in reducing post-operative anastomotic tension for any leakage of gastrointestinal contents.

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Vascular and Transplant

Vascular and Transplant 0060

The Contemporary Management and Cost-Analysis of Symptomatic Aorto-Iliac Occlusive Disease (AIOD)

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Aims: To determine outcomes of intervention for symptomatic AIOD.
Methods: Six-year retrospective single-centre analysis. Average treatment cost per patient was calculated.
Results: 284 patients [203 men; median age 65 years(range 40–91)] with intermittent claudication (n = 227) and critical limb ischaemia (n = 115) underwent 344 procedures: 169 balloon angioplasty (PTA), 45 bare-stent, 22 stent-graft, 71 anatomical bypass (AB) and 37 extra-anatomical bypass (E-AB).
Median (range) follow-up was: 21 (0–60), 18 (0–74), 22 (0–82), 9 (0–75), and 29 (0–73) months, respectively.
No significant difference in mortality (chi2 = 2·4725,P = 0·48), numbers of amputations (chi2 = 0·035,P = 0·998), or re-interventions (chi2 = 3·29,P = 0·35) found according to TASC lesion.
No significant difference in mortality (chi2 = 5·75,P = 0·22) and number of amputations (chi2 = 5·06,P = 0·28) found according to procedure. PTA and E-AB were associated with significantly more re-interventions (chi2 = 9·28,P = 0·05).
Cox model of re-intervention free survival adjusted for age, sex, TASC lesion and procedure (relative to TASC A and PTA) showed TASC C and D lesions had significantly higher re-intervention rates (P = 0·053,P = 0·044 respectively) whilst AB procedures had significantly lower re-intervention rates (P = 0·007).
Average costs per patient for PTA, bare-stent, stent-graft, AB and E-AB were £3576, £4950, £5652, £7581 and £10898 respectively.
Conclusions: Extra-anatomical bypass is associated with higher re-intervention rates and is expensive compared with endovascular treatment. In patients unsuitable for anatomical bypass, endovascular treatment should be considered first even in those with complex (TASC C or D) lesions.

Vascular and Transplant 0120

Percutaneous Pharmacomechanical Thrombectomy for Acute Iliofemoral Deep Vein Thrombosis: A Suitability Study

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Aims: Deep vein thrombosis (DVT) represents a major health problem and current treatments do not address venous occlusion, with many patients going on to develop a post thrombotic syndrome (PTS). Percutaneous pharmacomechanical thrombectomy (PPMT) is an emerging therapy for acute proximal DVT and may lessen clot burden in the acute phase and reduce long-term incidence of PTS. This study aims to investigate the proportion of patients presenting with lower limb DVT who are potentially suitable for PPMT.
Methods: A retrospective review of all duplex ultrasound scans (DUS) for lower limb DVT over two-year period at a regional vascular unit was conducted. All patients with DUS positive for acute occlusive iliofemoral DVT were screened for PPMT suitability according to predefined criteria.
Results: There were 2513 DUS for suspected lower limb DVT in the two-year period of which 431 (17%) confirmed DVT. Of these, 250 cases (58%) were acute DVT, of which 208 (83%) were fully occlusive. There were 120 cases of acute occlusive iliofemoral DVT. After application of inclusion and exclusion criteria 48 out of 120 (40%) patients were identified as potential candidates for PPMT.
Conclusions: This study suggests that 40% of patients with acute iliofemoral DVT may be candidates for PPMT. Taken together with current rates of DVT in the UK, this indicates that a large randomised trial of PPMT is feasible given expected recruitment rates in a multicentre study. Such a trial would enable investigation of the risks and long-term benefits of PPMT and provide a much needed evidence base to potentially improve outcomes following DVT.

Vascular and Transplant 0136

Is Lower Limb Surgical Revascularisation Declining?

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Aims: To define the volume, pattern and outcome of surgical revascularization to the lower limb in our service.
Methods: Subjects undergoing revascularisation of the lower limb during 2007 – 2013 were identified. Details regarding patient demographics, indication, operative details and clinical outcomes are presented.
Results: A total of 471 patients (Male/Female = 302/169 Mean age 66·7 S.D = 1·09, Range 24–93 years) were identified. The procedures included: Aorto-femoral n = 107, infra-inguinal n = 364 (Above knee popliteal n = 83, below knee popliteal n = 181 and distal vessels n = 110).Vein grafts n = 214(Above knee n = 44, below knee n = 102, distal n = 68), prosthetic grafts n = 142 and composite grafts: n = 8. Autologous vein grafts n = 186 entered our surveillance programme. Surveillance identified n = 42 stenoses (Above knee: n = 9, below knee: n = 21, distal n = 12). Of these n = 33 underwent graft angioplasty. Mean blood loss =1·2 L, S.D = 1·18. Mean operative time: 3·8 hours, S.D =1·24. Mortality: 0·6%. Aortic surgery for aortoiliac occlusive disease was performed for disabling claudication n = 61, rest pain n = 25, tissue loss n = 21. Mean operative time: 3·6 hours S.D =1·12, mean blood loss: 2 L, S.D =1·42. Mortality: 3·7%. During the study period, there was an overall increase in number of revascularisation procedures per annum from 39 in 2007 to 113 in 2012. Of note, the endovascular procedures performed in the same period were n = 1577 increasing by 5 folds.
Conclusions: Despite advances in endovascular technology and medical therapeutics, surgical revascularization has almost increased three fold in six years.

Vascular and Transplant 0148

Cilostazol use for Severe Lower Limb Ischaemia in Patients Unsuitable for Endovascular or Operative Intervention: A Single Centre, Prospective, Observational Study

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Background & Aims To investigate the impact of Cilostazol usage in Rutherford Category ≥3 peripheral arterial disease (PAD) in subjects unsuitable for endovascular or open surgical intervention.
Methods: All subjects attending the department of vascular surgery between 01/01/2010 to 31/12/2012 meeting the inclusion criteria were included in this study. Subjects were commenced on Cilostazol for a minimum of one month and encouraged to use a pedal exerciser and their response to treatment was prospectively monitored in the outpatient department. Demographic details were recorded along with Rutherford category at the beginning and end of treatment with Cilostazol. Data was analysed using Minitab 16.
Results: 40 Patients were included (Male 23 (57·5%); female 17 (42·5%)) with a mean age of 80 (Standard deviation 10) years. The prevalence of cardiovascular risk factors was: hypertension 69·2%, current smoker 41% and diabetes 35·9%. All patients were on antiplatelet and cholesterol lowering medication. Cilostazol dosage was 100 mg BD for 32 subjects; the remainder were on 50 mg BD where body weight was <55 kg.
The median treatment duration was 3 [Interquartile range 3–8] months. After treatment, Rutherford grade improved for 18 subjects and remained the same

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for 14. Wilcoxon paired sample test for improvement in Rutherford category was statistically significant (p = 0·001). More people could walk > 50 m pain free (75 vs. 42·1%, p < 0·0001) and less people had ischaemic rest pain (7·9 vs. 71·1%, p < 0·0001) comparing post- and pre-treatment with Cilostazol.

Conclusions: Cilostazol has been found to improve ulcer healing, ischaemic rest pain, claudication distance and overall Rutherford category in PAD subjects unsuitable for endovascular or open intervention in this prospective observational study.

Vascular and Transplant 0152

Duplex Detected Carotid Near-Occlusion – The Long Term Natural History

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Aims: Carotid near-occlusion is uncommon and the management remains controversial. Although most would advocate non-operative management with best medical therapy, there is little follow-up data beyond three years. The aim of this study was to evaluate the longer-term natural history of patients with carotid near-occlusion.

Methods: All duplex scans in a single institution between 2002 and 2012 were reviewed for near-occlusion. A retrospective notes review of these cases was undertaken to assess the incidence of ipsilateral neurological events.

Results: 47 patients were identified with near-occlusion out of approximately 6000 scans. 46 were symptomatic. Four were managed with endarterectomy without immediate complication although one had an ipsilateral stroke 4 years later. Stenting was attempted, but abandoned for technical reasons, in two patients.

Of the 43 patients managed medically, the median follow up was 5·0 years (range 0·2-10·3). All received an antiplatlet agent or anticoagulation. All but two received a statin. Four (9%) subsequent ipsilateral neurological events occurred at 0·2, 3·2, 3·9 and 6·1 years. One was a disabling stroke, three were TIA's. 15 patients (34%) died after a median follow up of 3·8 years (range 0·2 – 6·0).

Conclusions: These data confirm a lower rate of neurological events in patients with pre-occlusive stenosis compared to high-grade non pre-occlusive stenosis, and demonstrates that the risk does not appear to increase in the longer term in a population with a high natural mortality rate. These findings support the argument for medical management of patients with carotid near-occlusion.

Vascular and Transplant 0179

A Systematic Review and Meta-Analysis of the Treatment of Popliteal Aneurysms: Endovascular vs. Open Repair

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Aims: Although open repair has been referred to as the 'gold standard' in the treatment of popliteal aneurysms, endovascular repair has had promising initial results. The aim of this study was to compare the outcomes of patients with popliteal aneurysms treated with either open (OR) or endovascular repair (ER).

Methods: Using standard PRISMA guidelines, a systematic literature review was performed to investigate the long term outcomes of popliteal aneurysms treated with OR or ER. Data were analysed with random-effect meta-analysis and pooled risk ratios (RRs) were calculated.

Results: From 344 reviewed articles, six published studies comparing ER and OR (1 RCT and 5 cohort studies) comprising 471 (80% asymptomatic) patients were analysed. There was no difference in the 30-day patency (RR = 1·00; 95% CI 0·96-1·05, P = 0·9). There were no significant differences in the 1 year primary patency (RR = 0·95; 95 % CI 0·86-1·06, P = 0·4) nor the 1 year secondary patency rates (RR = 0·93; 95% CI 0·79-1·09, P = 0·4). Similarly there were no differences in the 3 year primary (RR = 1·02; 95% CI 0·94-1·10, P = 0·7) and secondary patency rates (RR = 0·98; 95 % CI 0·75-1·28, P = 0·9).

There was a higher proportion of symptomatic patients undergoing OR (30% vs. 9%, P < 0·05) and heterogeneity with regard to the number of run-offs, type of endograft used and antiplatelet administered.

Conclusions: Endovascular repair of popliteal aneurysms offers comparable short and medium term outcomes as an open repair. A prospective multicentre randomised controlled trial is warranted to assess the efficacy of endovascular repair in the long term and to minimise bias.

Vascular and Transplant 0180

Surgical Research in Decline? Changes in Scientific Output of the Vascular Surgical Society of GB and Ireland Congress between 2001/2 and 2009/10

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Aims: To determine the scientific quality of research presented at the Vascular Society of Great Britain and Ireland Annual General Meeting (VSGBI) by assessing publication outcomes of abstracts presented in 2009 and 2010, and to compare our findings with previously reported outcomes of the 2001 & 2002 meetings.

Methods: Abstracts from the 2009 and 2010 VSGBI yearbooks were retrospectively identified. A detailed electronic database search was performed to determine publication rates. We collected data regarding study design, subject matter, publishing journal, institute affiliations and impact factors of publications.

Results: Of 121 presented abstracts, 54% (n = 65) were published. Median impact factor was 3·52 (IQR 2·91-4·07) and most publications were in the British Journal of Surgery (20%), the European Journal of Vascular and Endovascular surgery (18%) or the Journal of Vascular Surgery (14%). The most common study types were basic science research (27%) and prospective observational studies (26%). Aneurysmal and carotid disease accounted for 31% and 25% of publications respectively. Publication rate, impact factor, publishing journals and subject matters have not significantly changed since 2002 (ns). The proportion of publications comprising basic science research and prospective studies has increased from 35% to 53% (p < 0·001). Randomised controlled trials comprise 12% of publications in both 2002 and 2010 (ns).

Conclusions: Publication rates, impact factor and publishing journals have not significantly changed over the previous decade. Basic science research and prospective studies account for a greater proportion of publications than has been shown previously and may indicate that the standard of vascular research being presented is of greater quality than 10 years ago. As such, popular criticisms of the falling standards of research are unjustified.

Vascular and Transplant 0236

Is there a role for Intra-Operative Cell Salvage during Endovascular Repair of elective Abdominal Aortic Aneurysms?

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Aims: As blood products become an increasingly limited resource, the Department of Health recommends finding alternatives to allogenic transfusion. Intra-Operative Cell salvage (ICS) is well established in open abdominal aortic aneurysm (AAA) repair. We aim to clarify the role of routine ICS in elective endovascular aneurysm repair (EVAR).

Methods: A retrospective audit of patients undergoing primary EVAR between April2011-June2012 was undertaken. Use of ICS, allogenic blood transfusion, and pre and post-operative haemoglobin concentrations (Hb) were recorded. Data was analysed in SPSSv20 using Mann–Whitney U tests, p < 0·05 being statistically significant. Results are presented as median (IQR).

Results: Forty-two primary EVARs for isolated AAA were performed. Thirty-five (83·3%) were elective procedures. 94·3% of these were men, age 75years(69–78), AAA size 6·1 cm(5·6-6·8). ICS was available for all patients.

In only nine patients (26%) did ICS yield allow for autologous transfusion [volume returned 385mls (252·0-498·5)]. The remaining 26 patients form the non-ICS group. Age [77·0years (71·0-79·5) vs 72·5(66·8-78·0), p = 0·2], size of AAA [6·5 cm(6·1-7·1) vs 6·0(5·5-6·9), p = 0·1] and Hb pre [13·9 g/dl(12·6-14·8)

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vs 13·8(12·9-14·6), p = 0·9] and post-operatively [12·0 g/dl(10·8-12·4) vs 11·5 (10·3-13·0), p =0·9] did not show any significant differences between the ICS and non-ICS groups.
Fewer allogenic units were transfused in the ICS group overall (0units vs 6units), although unit/patient transfusion was not significantly different (0units vs 0·2units, p = 0·6).
Conclusions: In our experience, ICS rarely results in sufficient yields for autologous transfusion and even then volumes returned are low. It is difficult to justify the expense of routine ICS for elective EVAR, although it should be rapidly available if required. A larger study is needed to confirm these results.

Vascular and Transplant 0237

Vascular complications post-TAVI: A single centre experience

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Aims: Trans-aortic valve implantation (TAVI) is a safe and effective treatment for patients with severe calcific aortic stenosis in whom open surgery carries unacceptably high risk. TAVI is usually performed by a percutaneous trans-femoral route; however surgical access via a femoral, subclavian, or carotid approach may be required. Vascular complications may be life- or limb-threatening and require immediate assessment and management. We present our single-centre experience, highlighting the role of the vascular surgeon in the provision of a tertiary TAVI service.
Methods: All patients undergoing TAVI from June 2009-August 2013 were retrospectively identified from a prospectively maintained database. Demographic and procedural information was collected and analysed. Follow-up data, including mortality and complication rates was also collected and the notes of patients experiencing vascular complications were obtained for further interrogation.
Results: In total 354 patients (175(49%) men) underwent TAVI with a median age of 81years (IQR 76–86). The majority (85·3%) had a percutaneous femoral approach performed by the interventional cardiologist. Nine(2·6%) patients (m:f = 6:3) experienced a vascular complication requiring emergency intervention. Three patients required emergency surgery with vein-patch repair for bleeding, 3 had pseudoaneurysm repair, 1 patient required pig-tail catheter retrieval and 1 patient underwent endarterectomy and patch angioplasty for limb ischaemia secondary to atheroembolism. In those patients who had subclavian-access TAVI (n = 35) only 1 had a significant complication with vessel dissection requiring stenting. There was no mortality attributable to a vascular complication post-TAVI.
Conclusions: Although rare, post-TAVI vascular complications require emergent management in a tertiary centre. Aside from the provision of vascular access for patients unsuitable for a percutaneous approach, the workload implications of these serious vascular complications (and the assessment and conservative management of more minor complaints) should be considered when planning vascular services.

Vascular and Transplant 0264

Varicose Vein Information-Seeking Using the Internet is Seasonal and Increasing

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Aims: It is often assumed that patients and the general public use internet resources to research information about symptoms and diseases. We aim to investigate the trend of using the internet to search for information about "Varicose Veins".
Methods: Between January 2006 and December 2013, analysis of the UK Google Trends was performed, measuring the frequency of the use of the search term "varicose veins" entered into the Google search engine. An index measurement was produced which shows how frequent the search term was used per month, relative to the maximum search volume over a specified time period.
Results: Internet searching for information about "varicose veins" has increased by 35% from a monthly average of 48·8 in 2006 to 65·7 in 2013 ($r^2 = 0·26$ P = <0·001). There is also significant seasonal variation, with greater search frequency being performed during the summer months rather than winter (Kruskal-Wallis P < 0·001).
The largest search month (100) occurred in July 2013, coinciding with the publication of the NICE Guidelines GC168 "Varicose Veins in the legs".
The cities with the largest number of searches for Varicose veins during 2012–13 are as follows; Saint Albans (100), Thames Ditton (90), London (65), Glasgow (56), Belfast (51), Edinburgh (50), Norwich (47), Nazeing (46), Sheffield (46) and Leeds (46)
Conclusion: It appears that the internet is becoming more important as an information seeking and delivery resource. The information seeking behaviour we have observed may help in service planning and delivery.

Vascular and Transplant 0271

Superficial Femoral Artery Stenting Offers Good 3-year Amputation-Free Survival in Patients with Critical Limb Ischaemia

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Aims: Endovascular stent insertion following angioplasty is a well-established treatment in patients with lower limb occlusive disease. We aimed to analyse the outcomes of femoropopliteal stenting with particular reference to its role in critical limb ischaemia.
Methods: A retrospective case note review was conducted of consecutive patients undergoing femoropopliteal stenting in a single unit from January 2009 to August 2010. Information on patient demographics, indications, primary patency and amputation rates was analysed.
Results: Data for 41 patients was available. The average age was 70. All-cause mortality was 29% during 3 year follow-up. Thirty-five per cent (35%) were performed for critical limb ischaemia. Primary patency rates at 6, 12, 24 and 36 months was 68%, 63%, 61% and 46%, respectively with endovascular re-intervention required in 17%. Two patients required below knee amputation during the same admission. Twenty-two percent (22%) of patient's ultimately required surgical by-pass with an overall 3-year amputation-free survival of 93%. For patients presenting with critical limb ischaemia, 3-year amputation-free survival was 65%.
Conclusions: Femoropopliteal stenting is a viable treatment option for short femoropopliteal occlusive disease. In the setting of critical limb ischaemia it offers good 3-year amputation free survival and may delay the need for bypass surgery.

Vascular and Transplant 0351

Routine Pelvic Magnetic Resonance Venography in Duplex-Confirmed Lower Limb Venous Reflux of a Suspected Pelvic Origin does not Change Clinical Management

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Aims: To investigate whether the diagnosis and management of symptomatic lower limb varicose veins is influenced by MR venography (MRV) when a pelvic source of incompetence is suspected on lower limb duplex ultrasound.
Methods: 51 consecutive patients with symptomatic lower limb varicose veins, and the suspicion of a pelvic source of venous insufficiency identified on duplex ultrasound in the absence of clinical symptoms of pelvic congestion syndrome underwent direct contrast material enhanced 3D pelvic MRV.
Results: 51 patients (94·1% female, mean age 43·8, 31·2% recurrent vs. 68·8% primary varicose veins) were studied. 78 legs were imaged with duplex ultrasound of which 7 were normal with no abnormalities identified. Of the 71 leg duplexes with positive findings, 18 suggested an isolated supra-inguinal source of varicosities; 14 superficial leg vein incompetence with additional contribution of pelvic reflux, and 39 mixed incompetence with a total of 152 positive findings (25 sapheno-femoral junction; 40 long saphenous vein; 11 sapheno-popliteal junction; 19 short saphenous vein; 57 proximal veins).

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36(70·6%) of subsequent pelvic MRV's were normal; 11(21·6%) equivocal and 4(7·8%) were positive with a pelvic source of incompetence identified. 82·6% of patients who underwent a surgical intervention for their varicose veins had their surgery delayed by MRV imaging.

Conclusions: Only a small proportion of patients with a suspected pelvic source of venous incompetence had a positive pelvic MRV. 82·6% of patients had their surgical intervention delayed by their pelvic MRV. This data shows that unlike in published series of patients with pelvic congestion symptoms, MRV imaging in lower limb varicose vein patients with duplex suspicion of pelvic venous incompetence rarely changes management, and may be of little diagnostic value in either primary or recurrent venous reflux. It is not recommended in this cohort; acting to reduce cost and resource utilisation, and speed up the time to definitive treatment. In those with clinical suspicion direct venography should be considered instead. Alternatively a wait and see approach post-endovenous ablation may be used as is currently practiced in local anaesthetic cases where phlebectomies are not routinely employed simultaneously with endovenous ablation.

Vascular and Transplant 0352

Is a Gap Between Perceived and Actual Practice in Informed Consent for Elective AAA Repair: An Example of a Wider Problem in Surgical Practice?

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Aims: Informed consent involves a fluid on-going preoperative discussion of the risks, benefits, and alternatives to intervention and is a fundamental part of good clinical practice. This study compares self-reported perceived, versus actual practice in consent for elective AAA repair against the national standard, to identify the role of inexperience in consenting omissions.

Methods: A retrospective audit of 36 randomly selected consent forms for elective AAA repair (21 EVAR, 15 open repair) was performed, together with a prospective questionnaire of the 17 clinicians involved in consenting patients for AAA repair in a single centre comparing reported and actual practice against the 2012 VSGBI Guidelines. Chi-squared analysis was performed to assess the significance of observed differences.

Results: No consent form included all complications specified (mean 7·4/16, range 4-13/16). However, self-reported perceived practice encompassed more of them than what was actually documented. There was a statistically significant difference between reported and actual performance in consent for elective AAA repair when compared to the standard ($p = <0·0001$). Statistically significant differences were also seen for specific domains of consent: risk of doing nothing ($p = <0·0001$), myocardial infarction ($p = <0·0001$), stroke ($p = <0·0001$), chest infection ($p = <0·0001$), paraplegia ($p = 0·0032$), death ($p = 0·0076$).

Conclusions: Although every recommended point is not currently documented as being discussed during consent for AAA repair, there are widespread differences between actual practice and reported consenting practice. Significant differences are observed in 6 out of 16 specific domains listed in the 2012 VSGBI Guidelines. This suggests that the reason for omissions is not simply an issue of awareness or experience. Potential explanations for this difference include a failure to document all discussions held with the patient, e.g. the risk of doing nothing; reluctance to confront difficult issues with the patient in actual practice, e.g. death or myocardial infarction; forgetting to document all the issues discussed in a process which takes place over a number of discussions. This observed difference in consenting practice should be highlighted as relevant and important to all surgical specialties.

Vascular and Transplant 0382

The Low Incidence of Major Lower Limb Amputation in a Population Characterised by High South Asian/High Diabetic Prevalence

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Aims: To investigate the incidence of major lower limb amputation(MLLA) in a population characterised by very high diabetes prevalence and South Asian origin.

Methods: Data was prospectively collected for consecutive MLLA at a tertiary vascular centre over 2 years, and their clinical pathways examined via retrospective case notes analysis.

Results: 100 MLLA were performed over the 2 years. Our catchment area has a high South Asian population(34%) with very high diabetes prevalence within this group(52·8%), yet only 11% of amputations were performed in this ethnic group. The MLLA rate for diabetics alone was 0·55/1000 compared to the national average for all patients of 1·0. This is significantly lower than the expected incidence in our area of 1·0-1·2 per 1000 once adjusted for diabetes prevalence.

Conclusions: Although our catchment area has high levels of diabetes, especially in the large South Asian population, the MLLA incidence is low. In comparison, our area has significantly higher than national average mortality related to smoking and heart disease. However the South Asian cohort within our population is significantly younger than the Caucasian group. This may account for the difference and may indicate a higher future burden of peripheral vascular disease in this population to come.

Vascular and Transplant 0423

Ultrasound Guided Foam Sclerotherapy for Active Chronic Venous Leg Ulcers in Patients with Superficial Venous Reflux

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Aim: To examine the initial results of Ultrasound-Guided Foam Sclerotherapy (UGFS) for treatment of superficial venous reflux (SVR) in patients with active chronic venous ulceration.

Methods: Between 2007 and 2012, 54 patients (57 legs) underwent UGFS for CEAP 6 active ulcers. Patients with concurrent peripheral vascular disease were excluded. All patients were followed up clinically and venous duplex was performed on all legs before and after treatment. A prospectively maintained database was analysed to determine venous truncal occlusion rates, 24 week and 12-month healing and recurrence rates.

Results: 57 ulcerated legs, 39 primary and 18 with recurrent SVR were analysed. Median time of active ulceration at presentation was 15 months (range 5 months – 17 years). At a median follow-up 2·7 months, 93% (53 legs) achieved full truncal occlusion, 3·7% (2) short segment occlusion and 3·7% (2) failed to occlude. 86% (49/57) ulcers healed at a median of 4·7 months (IQR 2·9-9·5 months). The 24-week and 12 month healing rates were 47% (27) and 65% (37) respectively. The Kaplan-Meier estimated 12-month recurrence rate was 7·5% (Fig 2). There was no incidence of DVT

Conclusions: UGFS appears to be a safe and effective adjunct to multilayer compression bandaging for definitive treatment of SVR in the presence of active venous ulceration. This was an observational study, which reports positive healing rates and low recurrence rates for CEAP 6 ulcers in a cohort with multiple co-morbidities and a multi-factorial element to the disease.

Vascular and Transplant 0534

Endovascular versus Surgical Revascularisation for the Management of Chronic Mesenteric Ischaemia

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Aims: Chronic Mesenteric Ischaemia (CMI) can be treated with surgical (SR) or endovascular (ER) revascularisation.

Methods: Systematic review of 12 studies comparing ER and SR in CMI. Primary endpoint was perioperative (30-day) survival. A secondary composite endpoint consisted of: perioperative mortality, non-fatal cardiac events, non-fatal stroke, non-fatal bowel ischaemia. Further endpoints included late survival and primary patency.

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Results: The cumulative Odds Ratio (OR) for perioperative mortality was 0·78 (95% Confidence Interval (CI): 0·40; 1·50, p = 0·45) and 0·56 (95% CI: 0·28; 1·11, p = 0·10) for the composite endpoint. The cumulative OR for survival after the 30th day was 0·83 (95% CI: 0·47; 1·46), p = 0·51. Late primary patency was reported in 8 studies, with a cumulative OR of 3·57 (95% CI: 1·83; 6·97, p = 0·0002) – favouring SR.
Conclusions: In the first meta-analysis to compare ER and SR in CMI, there were no differences in mortality and morbidity. Patency rates were better following SR.

Vascular and Transplant 0579

Survival, Readmission and Healthcare Costs of Frail Vascular Surgical Patients

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Aims: To assess the effects of frailty, a multi-dimensional vulnerability due to age-associated decline, on outcomes in vascular surgical patients.
Methods: All patients aged over 65 years with length of stay (LOS) >2 days admitted to a tertiary vascular unit over a single calendar year were included. Demographics, mode of admission, diagnosis, management, mortality, LOS and discharge destination were recorded, as well as a variety of frailty-specific characteristics. Multivariate Cox regression was used to develop a frailty score, with 12 month survival as the primary outcome measure. The ability of this score to predict survival, readmission rate, length of stay, healthcare costs and discharge destination was then assessed using non-parametric statistics and receiver operating characteristic (ROC) curve analysis.
Results: A total of 413 patients met the inclusion criteria and were followed up for a median of 17 months (range 10–22). The mean age of the cohort was 77 years. In-hospital mortality was 3·6%. Mortality at 3 and 12 months was 8·8%, and 15·4% respectively. Cox regression modeling revealed that anaemia on admission, lack of independent mobility, polypharmacy, raised Waterlow score, history of depression and emergency admission were independently associated with increased mortality. Patients with 0–5 of these characteristics had 12 month mortality of 0%, 1·9%, 11·8%, 21·6%, 38·9% and 54·2% respectively. Using these features to create an additive 'frailty score', we found that frailty is not only an excellent predictor of 12 month mortality (area under ROC curve (AUC) =0·82), but also of prolonged LOS (AUC = 0·74) and discharge destination (AUC = 0·78) as well as being strongly associated with readmission rates and increased healthcare cost (P < .001).
Conclusions: Frailty in vascular surgery patients predicts a multiplicity of poorer outcomes. Optimal treatment should include identification of "at risk" patients and management of modifiable risk factors.

Vascular and Transplant 0616

The Recognition of Diabetic Foot Ulceration as an Emergency in Accident and Emergency Departments in England

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Aims: Foot ulceration is a significant complication of diabetes mellitus and can lead to lower extremity amputation. Early recognition and treatment of foot ulceration can lead to a reduction in amputation rates. The 'Putting Feet First' campaign was launched in 2013 with the aim of increasing awareness of the risks of diabetic foot ulceration and improving patient care. A survey was conducted of Accident and Emergency departments in England to determine the number that were aware of this campaign, recognised diabetic foot ulcers as an emergency and had an internal policy to treat them.
Methods: The 146 National Health Service trusts in England with A&E departments were surveyed using a combination of telephone and email enquiries. Three questions were put to each trust:

1. Does your department recognise diabetic foot ulcers as an emergency?
2. Does your trust have an internal policy for the management of diabetic foot ulcers?
3. Has your department heard of the 'Putting Feet First' campaign?

The results were statistically analysed using Fisher's test to determine if trusts that were aware of this campaign were more likely to recognise diabetic foot ulcers as an emergency and have an internal policy to treat them.
Results: 131 trusts responded to the survey giving a response rate of 89·7%. 79 trusts (60·3%) recognised diabetic foot ulcers as an emergency. Only 26 trusts (19·8%) had an internal policy for the management of diabetic foot ulcers. 37 trusts (39·4%) were aware of the 'Putting Feet First' campaign. The trust that were aware of this campaign were statistically more likely to recognise diabetic foot ulcers as an emergency (p = 0·0001) and have an internal policy to manage them (p = 0·0051)
Conclusions: The results of this survey suggest more still needs to be done to increase the awareness and management of diabetic foot ulceration. The 'Putting Feet First' campaign appears to have had a positive impact but with less than 40% of trusts aware of it, further publicity of this devastating complication of diabetes mellitus is needed.

Vascular and Transplant 0621

'You Checking Me Out? Patients Knowledge and Views on Individual Consultant Reported Outcomes in Vascular Surgery

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Aims: The much publicised individual consultant surgical outcome data for vascular surgery was released to the general public in June 2013. This was brought about with an element of consultant concern and a vast volume of political noise.
Over 6 months down the line, we aim to investigate the patient's knowledge, perception and opinions on individual Consultant level reporting. We further aim to investigate if and how patients 'enquire' about their surgeons.
Methods: All patients attending a vascular outpatient clinic were asked to complete a written survey after their appointment. Patients from across the vascular network region at three different sites were included. All in patients admitted during a 1 month period to the vascular regional centre were also asked to complete the survey.
Results: 86% of patients were not aware that individual surgeon outcomes were published. No patients had accessed their surgeon's results and less than 15% agreed they would use an online healthcare rating system. 86% of patients thought that publishing individual's outcomes was useful and 50% agreed that hospital league tables would be better than individual surgeon's data.
71% of patients would ask their GP when trying to rate their surgeon. More than 50% of patients would be willing to travel further and wait longer for their operation to be performed by the surgeon of their choice.
Conclusions: Despite a public awareness campaign, patients within this region are not aware of and do not access individual surgeons data. Despite this, the majority of patients believe publishing outcomes is useful although hospital league tables may be considered more helpful than individual surgeon data.

Vascular and Transplant 0639

Defining the Relationship of Deprivation and Occlusive Arterial Disease of the Lower Limb

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Aims: Social deprivation (SD) may be defined as the range of problems resulting from lack of resource or opportunity. Associations between social deprivation and a variety of pathologies, processes and outcomes have been described. The primary aim of this study was to define the relationship between SD and intervention for occlusive arterial disease of the lower limb. Specific end points considered included in-hospital death and long-term survival.

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Methods: Databases for infra-inguinal revascularisation (angioplasty and bypass) and major amputation were scrutinised for July of 2010 to December 2012. The Scottish Index of Multiple Deprivation (SIMD) was used to evaluate deprivation; score assigned by post-code of residence. Patients were placed in five cohorts by national quintile.
Results: Scottish government data indicates a catchment population is 1,136,960, (in 1,395 SIMD datazones), with a skew to the more deprived quintiles (most deprived 33%, least deprived quintile 18·9%). Rates of intervention were higher in the most socially deprived group (angioplasty, bypass and amputation ranged from 12·9, 8·8 and 16·8 per 100,000 patients/year respectively in the most deprived quintile, compared with 4·2, 2·7 and 5·6 per 100,000 patients/year in the least deprived). The most socially deprived cohort were younger than the least deprived across each intervention. In hospital mortality for angioplasty, bypass and amputation were 2·1%, 1·5% and 5·8% respectively in the most deprived group compared with 12·5%, 9% and 5·5% in the least deprived. There was no significant difference in long-term survival between the deprivation quintiles across the index interventions.
Conclusions: Peripheral occlusive arterial disease of the lower limb is disproportionately a disease process of the most socially deprived. Studies comparing national amputation rates must take this into consideration. However it is reassuring that SD does not appear to adversely influence long-term outcome.

Vascular and Transplant 0643

Does the Timing of Arterial Reconstruction Influence Outcome Following Digital Amputation?

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Aims: Digital amputation is a common procedure. There is often a clinical dilemma over the potential need and timing of revascularisation, particularly in a cohort of patients with significant medical co-morbidity. The purpose of this review was to define whether the timing of revascularisation (either pre or post amputation) influenced outcome.
Methods: This was a retrospective review of a digital amputations performed over a 42 month study period. Index cases were identified from theatre registers and the data set completed by interrogation of electronic health records. Patients were excluded if no revascularisation was performed. Variables of interest included duration of admission, time to wound healing and subsequent major limb amputation.
Results: During the study period there were 391 minor amputations performed in 311 patients. The mean age of the cohort was 65·3 years (range 22–91 years), with a male preponderance (n = 230). A significant proportion had diabetes (n = 220%%). Revascularisation was performed prior to digital amputation in 155 patients (39·6%), with post-operative revascularisation performed in 53 patients (13·6%). The timing of revascularisation had no influence on the duration of admission (16 days versus 21 days) or the mean time to wound healing (115 days versus 110 days). Post-operative revascularisation was associated with an increase in subsequent limb loss limb loss (30·2% versus 20·6%).
Conclusions: The timing of arterial reconstruction would seem to have little effect on the duration of hospital admission and time to wound healing following digital amputation. However, there is a trend to increased rates of major limb amputation if post-operative digital amputation is performed. These data would support a strategy of revascularisation prior to digital amputation when practical.

Vascular and Transplant 0708

Evolution of the Peripheral Vascular Disease Population over 15 years: Trends in Patient Demographics and Disease Status

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Aims: To evaluate longitudinal changes in the peripheral vascular disease (PVD) population.
Methods: A proforma was completed prospectively for all new patients referred with claudication to a regional vascular clinic between 1st August 1997 and 1st August 2012.
Results were analysed by Spearman rank correlation.
Results: 4415 new referrals were received over 15 years: results complete for 3408 (77%).
Median age 66 (range 15–96) remained constant over the study period (P = 0·43). The proportion of male patients (58%, n = 1964) increased slightly but not significantly (P = 0·06). There was no change in proportions of smokers, ex and nonsmokers (P = 0·44), nor in the number with diabetes (range 13-25%, P = 0·36). The proportion taking a statin (range 18 to 62%) increased significantly (P < 0·001). There was no change in the number taking antiplatelet agents (aspirin, persantin, or clopidogrel) (P = 0·50). Median lower ankle:brachial blood pressure index (ABPI) of the two limbs (range 0·01-2·93) increased significantly over the study period (P < 0·001).
Conclusion: The number and demographics of patients with PVD has not changed over 15 years. This may indicate a failure of drugs and risk modification to affect natural disease progression. However, if considering ABPI a surrogate for disease severity, the significant increase in lowest value suggests patients may be referred at the same age but with less advanced disease. This may reflect to varying extent: modern cardiovascular drug regimes; better awareness of PVD in the patient population; or earlier referral from primary care.

Vascular and Transplant 0735

Informed Consent in Haemodialysis Access Graft Surgery – Poor Long-Term Survival Must be Discussed

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Aims: Current guidelines suggest patients with end-stage renal failure requiring dialysis should have surgically created access rather than using a central venous catheter (CVC). Although longitudinal studies have demonstrated survival disadvantages of CVC little is reported about the mortality of access surgery.
Methods: This was a retrospective review of all primary (first in that arm) brachio-basilic access grafts (BBAG) inserted over a three year period (Jan 2009 – Dec 2011) in a tertiary renal unit. Cox regression analysis was performed to assess for survival risk factors.
Results: 85 primary BBAG were inserted (38 male), median age 67 yrs (IQR52-76). Four patients (4·7%) died within 30 days of graft insertion. At 1 year survival was 80% (63 at risk at end of period), 2 year survival was 66% (46 at risk at end of period), 3 year survival 54% (20 at risk at end of period).
Male sex is associated with worse survival, Hazard Ratio 2·6 (95% CI 1·25-5·2, p = 0·01). Age, hypertension, smoking status and emergency access procedure do not affect survival risk.
Conclusions: Male sex is associated with worse survival after BBAG insertion. Access graft usage should be a last choice for surgical haemodialysis access but should still be considered before resorting to permanent CVC usage. BBAG insertion carries worse peri-operative mortality than recent reports on open AAA repair. The poor long-term survival may reflect the burden of vascular pathology in renal patients but this information on mortality should form part of the informed consent process.

Vascular and Transplant 0750

Is it Possible to Increase the Rate of Radiocephalic Fistulae Formed?

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Aims: Leading authorities in vascular access surgery advise that primary arteriovenous fistulae should be distal i.e. radio-cephalic AV fistulae, in 65%. Our unit's policy is to perform a radiocephalic AV fistula primarily, unless the wrist vessels are too small. Our aim was to assess the current practice in our DGH, document the size of the distal vasculature and to determine whether we could increase the rate of radiocephalic fistulae.

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Methods: A retrospective review of clinical practice between 1 January 2010 and 30 June 2013. A patient list was generated by reviewing elective theatre records. The most recent pre-operative duplex scan was reviewed, and post-operative patency rates were determined.
Results: 80 patients had a primary elective AV fistula formation during the study period, with a site ratio of 37 radiocephalic (46%):34 brachiocephalic (43%):9 brachiobasilic (11%).

Type of AV Fistula	Radiocephalic	Brachiocephalic	p-value
Mean size of cephalic vein at wrist (mm) [range]:	2·53 [1·3-3·6]	2·00 [0·9-3·2]	0·002
Primary patency at six months	15%	67%	<0·001
Primary assisted patency at six months	27%	79%	<0·001

Conclusions: Our study shows poor long term patency and a high chance of further surgery for radiocephalic fistulae. A 65% target of primary radiocephalic fistulae could potentially be achieved, but we wonder if the additional resources required, such as subsequent theatre time, and longer delay to use are justified.

Vascular and Transplant 0790

The Effect of Socioeconomic Status on Outcomes following Carotid Endarterectomy

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Aims: The association between socioeconomic deprivation and poor health has been well established, suggesting such patients have a higher operative risk and experience poorer surgical outcomes. The aim of this study is to determine the influence of socioeconomic status on complication and mortality rates following carotid endarterectomy.
Methods: A retrospective review was carried out of all patients undergoing a carotid endarterectomy in our trust between November 2007 and August 2013. The Index of Multiple Deprivation Score (IMDS) as supplied by the Office of National Statistics for each postcode area was used as a surrogate for the socioeconomic status (SES) of each patient. A lower IMDS indicates a higher SES. Electronic hospital records were reviewed to gather data relating to patient demographics, significant co-morbidities, degree of ipsilateral and contralateral carotid disease, post-operative complications and 30-day mortality. Statistical analysis was carried out to determine the significance of any associations.
Results: A total of 300 patients were identified, all of whom underwent a standard carotid endarterectomy. The cohort was arranged into ascending deprivation scores and divided into 3 equally sized groups of 100 patients. Group 1 comprised patients with the highest SES (median IMDS 15·05; range: 7·85 – 18·40) and group 3 comprised those with the lowest (median IMDS 30·93; range: 24·42 – 77·06). There was no difference in the prevalence of diabetes mellitus, ischaemic heart disease or peripheral vascular disease between groups 1 and 3. Furthermore, there was no difference in post-operative complication rate ($p = 0·301$) or 30-day mortality rate ($p = 0·683$). Although there was no difference in the NASCET grade of ipsilateral stenosis between groups 1 and 3 ($p = 0·257$), group 3 had significantly higher NASCET grade of contralateral disease compared with group 1 ($p = 0·027$).
Conclusions: Socioeconomic status has no influence on outcomes following carotid endarterectomy. However, socioeconomic deprivation is associated with a greater severity of contralateral carotid disease.

Vascular and Transplant 0872

Procurement Damage of DCD Pancreas Alone Grafts is it a Problem? A Single Centre Experience

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Aims: In order to minimise ischaemic damage to DCD (deceased cardiac donors) pancreatic grafts the donor surgery has to proceed as quickly as possible. Because of this previous studies have suggested that organs procured (liver and kidney) from DCD donors have higher discard rates. The aim of this study was to establish whether DCD pancreatic grafts were more likely to be damaged and discarded when compared to conventional DBD (deceased brainstem) pancreatic grafts.
Methods: Retrospective collection of data from pancreatic organ retrievals over a 12 month period from a single centre and The NHSBT database. Analysis of data from pancreas alone offers to a single centre, SPK grafts were excluded.
Results: Of 33 pancreas alone offers 15 were DCD's and 18 were DBD's. There was no difference in leading cause of death between DCD or DBD donations of which intracranial haemorrhage was the most frequent and Hypoxic brain injury (joint with CVA for DBD donations) the next most frequent cause. There was also no difference in BMI between the 2 groups. For DCD's the mean donor age was 45·5 years compared with 42·6 years for DBD organs. 6% of all organs were discarded ($n = 2$) because of procurement damage and all were from DBD donors. Of the remaining 31 organs only 6 were transplanted (DBD $n = 5$ to DCD $n = 1$). The leading cause of decline for the remaining 27 organs was donor history for both groups followed by prolonged cold ischaemia for DBD's and other logistical reasons for DCD's. Procurement damage was the third most common cause of decline for DBD pancreas alone grafts.
Conclusions: Although there did not appear to be a higher incidence of pancreatic graft damage when the organ was retrieved from a DCD donor there are still organs being discarded because of procurement damage. Enhanced training techniques/supervision during the retrieval process still need to be optimized to reduce organ discard rates even further so no organs are ever wasted because of procurement damage.

Vascular and Transplant 0874

The Role of Surgical Reconstruction in Ureteric Stricture Following Transplantation

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Aims: This study aims to review the outcomes of patients with ureteric strictures and reconstruction following renal transplantation in a single centre.
Methods: All patients who developed ureteric stricture and subsequently underwent ureteric reconstruction between December 2003 and November 2013 were included in this study.
Results: 1560 renal transplants were performed during the study period. 42 ureteric reconstructions were performed in this period. Two reconstructions were performed at the time of transplant for high ureteric injury, the remaining 40 for ureteric stricture, giving an incidence of 2·5%. There were 25 male and 15 female recipients with a median age of 48 (range 14–78). Of these, 18 (45%) received a DBD, 12 (30%) received a DCD (including one dual transplant) and 10 (25%) received a living donor (LD) graft. 5 were re-transplant (2nd or 3rd). The median time to stricture was 78 days (range 41–1016 days) from transplant. The median cold and warm ischaemic times were 14:38 hr (32 m–24:30 hr) and 33 minutes (20 m–42 m) respectively. 7 kidneys had multiple arteries, 3 with a lower polar artery that was anastomosed. The majority of patients underwent nephrostomy insertion and antegrade stenting prior to surgical repair. 19 patients were reconstructed by re-implantation to the bladder, 18 utilized a Boari flap, 2 used an ileal conduit and 1 an anastomosis to a native ureter. All ureteric anastomosis were stented. In one patient reconstruction was deemed impossible and was subsequently managed with an extra-anatomic stent. Two patients (5%) required re-operation for re-stricture and kinking. Median serum creatinine at 12 months following surgery was 148 (84–508) μmol/l.

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There was no 90 day mortality and 11 grafts were lost with a median time of 323 days (27–3103 days) after reconstruction.
Conclusions: The incidence of ureteric stricture following renal transplant in our centre is low. Reconstruction of the transplant ureter is successful in the majority of the patients with low risk of recurrence.

Vascular and Transplant 0910

Aortocaval Fistula – Current Management Strategies

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Aims: There has been a trend towards favouring endovascular repair for much acute aortic pathology. We undertook a review of the literature to determine if an
endovascular approach could complement the traditional treatment of aorto-caval fistulas (ACF), a rare complication of AAA.
Methods: A literature search was undertaken on PubMed. Case series and reviews reporting presentation, diagnosis and operative management (open and endovascular techniques) of ACF were selected and discussed.
Results: Open surgical treatment of ACF has an associated morbidity and mortality–mainly from excessive blood loss. Open repair mortality rates are reported around 30%, but some centres report far lower rates based on pre-operative diagnosis of the ACF. These rates appear to be reduced when using endovascular repair in selected cases, with success rates of up to 96%. Reiteration of the importance of diagnosis of ACF pre-operatively was the common denominator with both open and endovascular repair.
Conclusions: Endovascular exclusion appears to be an efficacious means of treating ACF& averting the significant blood loss commonly encountered in conventional repair of these lesions.However some reviews have suggested equal success with open repair.There is limited available literature on ACF management& outcome,and likely reporting bias attached to both open& endovascular results that are published.With a randomised controlled trial unlikely to occur,a prospective registry may provide better outcome data.

Vascular and Transplant 0913

What is the Value of Plain X-Ray in EVAR Surveillance?

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Aims: To assess the efficacy of plain abdominal X-ray films in post endovascular aneurysm repair (EVAR) surveillance.
Methods: A retrospective review of the data for all patients entered into the Heartlands EVAR database from July 1998 to April 2013. Follow up and secondary intervention data were scrutinised.
Results: 414 patients were under surveillance, 235 standard infra-renal, 106 complex (branched, fenestrated, physician modified and chimney stents) and 73 emergency cases. Patients were offered yearly follow up with duplex ultrasound (DUS) and plain film AP and lateral abdominal X-ray (AXR), mean follow up 2·92 years. 961 AXRs were performed, yielding 917 satisfactory images. 17 AXRs had no documented outcome. 13 AXRs (12%) in complex patients were abnormal, resulting in 3 re-interventions. 14 AXRs (5%) in standard cases were abnormal resulting in 1 re-intervention. No abnormal AXRs reported in emergency EVAR cases. Total re-intervention rate was 5·3%. 75% of re-interventions in complex EVAR were as a result of abnormal AXR findings compared to 7% in standard cases. where sac expansion rather than graft failure tended to trigger re-intervention.
Conclusions: AXR appears to be of little value in standard EVAR surveillance, however in complex cases its use may be of benefit. DUS only surveillance in standard cases may permit a one-stop follow up clinic.

Vascular and Transplant 0934

An 'Angioplasty First' Policy for Severe Infrapopliteal Disease in Critical Limb Ischaemia is Feasible and Effective: Outcomes from a Single Surgical Unit

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Aims: Critical limb ischaemia (CLI) is associated with high rates of major amputation and mortality. Revascularisation of infrapopliteal disease is particularly challenging. Distal bypass is usually not feasible due to patients' co-morbidities or lack of suitable conduit/ distal target. Technical advances have allowed infrapopliteal angioplasty (IPA) to be adopted for such patients but published outcomes for severe infrapopliteal disease are very limited. This study reviews an 'IPA first' policy for complex lesions (TASC-D) in patients with CLI in a surgical unit.
Methods: All cases of primary IPA for CLI between January 2010 and June 2013 were retrieved from a prospectively maintained vascular surgery database. Infrapopliteal disease was classified by TransAtlantic Inter-society Consensus class (TASC A-D) based on formal angiography. Disease severity was assessed independently by two surgeons. Primary outcome measures were technical success, freedom from re-intervention, major amputation and survival. Results were analysed on an intention to treat basis.
Results: IPA was performed in 61 limbs of 53 patients (41/53 male, 36/53 diabetic, median age 73). All patients had Rutherford class 4–6 CLI (rest pain or tissue loss). All limbs had absence of straight-line inflow to the foot and at least 2 cm occlusions in one or more infrapopliteal arteries (TASC D). Technical success rate was 81·3% (49/61 limbs). Mean follow up was 17 months (1–42). Twelve patients required re-intervention (8: repeat IPA, 4: distal bypass). Major amputation rate was 9·8% (6/61 limbs). Overall survival was 81% and 72% at one and three years. Amputation free survival was 64% at three years. On multivariate analysis chronic kidney disease stage 4–5 was an independent risk factor for survival ($p < 0{\cdot}05$).
Conclusions: An IPA first policy for CLI is technically feasible and achieves comparable limb salvage to published distal bypass outcomes. Long term survival remains limited by patients' co-morbidities.

Vascular and Transplant 1077

Expanding the Organ Donor Pool from Uncontrolled Donation after Circulatory Death: Towards a Two-Staged Consent Process

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Aims: Organ retrieval in an uncontrolled situation after Circulatory Death (UDCD) is a valuable source of donor organs. It is a time-critical process and requires consenting during an intensively sensitive period of acute shock, distress and grief in the donor family. These raw emotions are not conducive to seeking consent and may contribute towards high refusal rates. The Potential Donor Audit identifies that a further 7% of families refuse consent on the basis of *not wanting surgery to the body*. The aim of this study was to identify legislation and guidelines in the UK governing UDCD and the role of a holding strategy like Normothermic Regional Perfusion (NRP). We also aimed to establish a consent process existing within current ethico-legal frameworks and cultural sensitivities.
Methods: A search for current statutory legislation and donation guidelines was made from various sources: The Human Tissue Act 2004, Human Tissue (Scotland) Act 2006, Human Transplantation (Wales) Act (2013) British Transplantation Society Guidelines, Intensive Care Society and the College of Emergency Medicine guidelines.
Results: Scottish law recognises *self-authorisation* as satisfactory for NRP to proceed, but family agreement must be sought prior to retrieval. In Wales, presumed consent became law in 2013 (into force 2015) and facilitates the use of NRP and UDCD until an objection is demonstrated. In England, NRP requires full consent for donation, but cold In-Situ Perfusion may proceed

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prior to consenting for donation. Henceforth, a conceptual two staged consent process was devised for an NRP-UDCD programme in England. The first stage involves sensitively informing the family of unsuccessful resuscitation and consents only for organ preservation and assessment by minimally invasive NRP (insertion of wide-bore cannulas into the femoral vessels). Standard consent is then undertaken by a trained team, including a Specialist Nurse in Organ Donation, within 2 hours of commencing NRP. Meanwhile, the organ donor register is checked, organ functions assessed, and the family allowed time to be with the potential donor and grieve free from external pressures.

Discussion The two-staged consent process for UDCDs could ameliorate the distressing intensity of total consent for donation during acute shock and grief, whilst the less distressing nature of minimally invasive NRP helps alleviate family fears. Informed consent for NRP can be obtained quickly and requires less explanation. Consent for donation may be sought with less haste and in a more conducive manner as with DBDs. *Decoupling* the breaking of bad news from the consent process is believed to lead to higher consent rates and is part of current guidance for controlled DCDs and DBDs. When applied to NRP-UDCDs this process may increase rates of donation and lead to better quality organs.

-UDCDs this process may increase rates of donation and lead to better quality organs.

Vascular and Transplant 1104

Common Femoral Endarterectomy Infection: Does the Type of Patch Increase Infection Risk?

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Aims: Surgical site infection following common femoral endarterectomy (CFE) and patch angioplasty can lead to increase length of stay and other major complications. Our experience with a small cohort of patch infections led to a review of our CFE and patch angioplasty. The aim of this study was to review all post-operative wound infections following CFE using either vein or prosthetic patch angioplasty.

Methods: A retrospective analysis of all CFE performed over 20 months (January 2012 – September 2013) at one institution was performed. The Samson[1] classification system for prosthetic graft infections was used.

Results: 104 CFE procedures were recorded. 22 CFE as part of further vascular reconstructions (bypass, fem-fem crossover, etc) and 3 CFE primary closures were excluded. 8 patient's records were incomplete and also excluded leaving 71 CFE and patch angioplasties. 22 vein, 48 Dacron and 1 bovine patches were used for patch angioplasty. Of the 71 CFE, 39 (55%) hybrid endovascular procedures were performed. There were 5 (7%) wound infections all associated with simultaneous endovascular procedures. Based on the Samson criteria for graft infections there were 2 (3%) superficial (group 1–2) infections. Both had vein patches and were successfully treated with antibiotics alone. There were 3 (4%) deeper infections (Samson group 3–5). Of the 3 deeper infections, all 3 had prosthetic patches and presented with major infection and one with life threatening bleeding. This group required re-operation and removal of the infected patch. All 3 patients had extended length of stay in hospital but no limb loss or mortality.

Conclusions: Endovascular hybrid procedures at the time of CFE and patch angioplasty are associated with a higher rate of wound infection. The use of prosthetic patch angioplasty is more likely to lead to major re-interventions and longer length of stay when compared to vein patch angioplasty.

Samson RH, Veith FJ, Janko GS, Gupta SK, etal. *A modified classification system and approach to the management of infections involving peripheral arterial prosthetic grafts*. Journal of Vascular Surgery,1988. Vol 8 Issue 2.

Vascular and Transplant 1117

30-day Readmission Rates Following Abdominal Aortic Aneurysm Repair

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Aims: To establish the post discharge readmission rate in patients undergoing elective and emergency open or endovascular (EVAR) repair of abdominal aortic aneurysms (AAA).

Methods: The notes (electronic care records, A&E records) of all patients undergoing AAA repair between July 2008 and June 2013 were reviewed and 30-day readmissions identified. Only patients within the county were included to ensure accurate data capture. Readmissions were sub-categorised as surgical complications or non-surgical conditions. We excluded planned elective admissions for further procedures.

Results: 398 of 578 operations performed were on local patients.

In-hospital mortality for 315 elective patients was 2·5% (2·9% open, 1·8% EVAR). Of these patients 27 (8·8%) were readmitted within 30 days (6·6% open, 12·8% EVAR); 2 subsequently died.

In-hospital mortality for 83 emergency patients was 33·7% (35·2% open, 25·0% EVAR). 6 patients (10·9%) were readmitted within 30 days (13·0% open, 0·0% EVAR) with no further mortalities.

Surgical complications accounted for 36% of readmissions.

Conclusions: Readmission rates following open repair or EVAR for AAA are an important consideration, with a tendency for significantly higher readmissions in the EVAR group. Major vascular units must be prepared to receive these patients and have adequate resources in place to manage them.

Vascular and Transplant 1155

Late Dacron Patch Reaction after Carotid Endarterectomy

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Aims: The aim of this study is to report the prevalence, presentation, management and outcome of late Dacron patch reaction after carotid endarterectomy with no evidence of infection in a single centre series.

Methods: A prospective data record was maintained for all patients who underwent CEA in our institution between 2002 and 2012. A total of 482 patients had carotid endarterectomy, 428 of them were identified with Dacron patch closure. Only six patients (two males and four females) returned with late Dacron patch reaction. The median age was 71 years (range 49–84 years).

Results: Only six patients returned with late Dacron patch reaction after a period ranging from 2 to 7 years. Five of the six patients were deemed suitable for surgical re-intervention and one for palliative conservative management. After surgical exploration, one patient had vein bypass, three had vein patch repair and one had Internal carotid artery ligation. Four patients had satisfactory outcome while the patient with Internal carotid artery ligation developed massive stroke and died 5 days post intervention. All patients showed evidence of foreign body reaction in pathological examination including non-specific acute and chronic fibrosing inflammation and histocytic reaction to foreign body with giant cells surrounding fragments of Dacron fibers with no pathological organism infection.

Conclusions: Late wound complication after carotid endarterectomy is related to reaction from Dacron patch more than infection. Careful clinical surveillance should be carried out after carotid reconstruction. Infection should be excluded first. Reconstruction with vein is recommended. Ligation alone is associated with high incidence of stroke.

Vascular and Transplant 1288

Evaluation of Length of Stay in Patients Undergoing Elective Intra-Renal Abdominal Aortic Endovascular Aneurysm Repair (EVAR) and Establishing an Enhanced Recovery Protocol

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Aims: To evaluate the length of stay of elective abdominal aortic Endovascular Aneurysm Repair (EVAR) patients and the factors contributing to a longer stay. To then develop an enhanced recovery program to safely reduce length of stay.

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Methods: Audit of patients undergoing elective infra renal abdominal aortic EVAR between January 2012 and June 2013. Discussion of outcomes with Anaesthetic and Vascular departments, and development of a joint protocol.
Results: 37 patients included in audit. Mean age 73·6 and median ASA grade 3. Median length of stay 5 days, mean 5·56 days, range 1 – 14 days, standard deviation 3·13, with 2 re-admissions. 13·5% to ITU post-operative, 86·5% to HDU post-operative, with average ITU/HDU stay of 1·7 days. 37·8% developed a complication, and 32·4% required post-operative transfusion. 40·5% required physiotherapy and 16·2% required post-operative occupational therapy input.
Conclusions: Factors affecting length of admission are numerous and inter-related. This provides multiple opportunities for an enhanced recovery protocol to be effective in reducing length of admission.
Any protocol should be designed in conjunction and agreement with the full range of multi-disciplinary team members, to encourage a well-coordinated pathway that results in smooth transition from one stage of the protocol to the next.
It is important that the all levels of clinical staff involved in these patients' care are aware and understand the protocol. This should reduce unnecessary delays caused by prolonged line/drain/catheter insertion, delay in mobilisation etc.
Not all patients may be suitable for enhanced recovery due to complex pre-existing medical conditions. However this should not impede the drive to discharge patients at the earliest clinically safe point to help reduce the incidence of hospital acquired/associated infections contributing to a longer length of stay in this cohort.
Early identification and treatment of common complications should be a priority to reduce both length of stay and morbidity associated with this patient cohort.

Vascular and Transplant 1294

Analysis of 22 Months Experience in a Single Vascular Department after Implementation of Inadvertent Returns to Theatre within 30 Days (IRT30) - A New Objective Method for Categorising Surgical Complications

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Aim: Inadvertent returns to theatre within 30 days leads to increased morbidity and prolonged hospital stay. IRT30 is a categorisation system which can be used in conjunction with discussion in audit meetings to assess the complex factors which lead to returns to theatre. Each case is assigned a "type" denoting the severity of the complication: Type-1 unavoidable, Type-2 understandable, Type-3 major complication, Type-4 serious complication, Type-5 never event. This has proven a useful tool in summating causative factors for returns to theatre, and can be used as feedback to individual surgeons and monitor performances of trusts. Here, we present our data of 22 months after the implementation of IRT30.
Methods: IRT30 was implemented in November 2011. A search was performed for returns to theatre within 30 days between January 2010-October 2011 and January 2012 - October 2013 within our local Vascular Database (Microsoft Access - contemporaneously updated, established in 2007). This was compared with the overall work load of the department: the total number of cases done. Data analysis performed using SPSS 20·0.
Results:

	Before	*After*	*p value*
Age	72 (±12·4)	65 (±14·2)	0·075
Male	11/20	20/31	0·56
Female	9/20	11/31	
No. of major co-morbidities (mean)	**2·7**	**3**	0·89
Total returns	5·3%	4·2%	0·24
IRT30			
Type-1	23·1%	41·2%	0·04
Type-2	46·9%	44·1%	0·82
Type-3	28·1%	11·8%	0·09
Type-4	**6·4%**	**3%**	0·42

Conclusions: During our first 22 months, we have seen a a proportionate decrease in cases returns to theatre and the rates of Type-3 and –4 returns have halved, though this is not significant. We have also seen a significant increase in planned Type-1 cases. IRT30 is currently still in its infancy, however with methodical implementation and feedback to individual surgeons, this system appears to help reduce the number of inadvertent returning to theatre.

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