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POSTER PRESENTATIONS

Audit into the Safe Mechanical Ventilation of Critically Ill Patients

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Background: The use of large plateau pressures and tidal volumes in the ventilation of critically ill patients has been shown to cause further damage through excessive pulmonary stretching and barotrauma. The ARDSnet protocol1 set out guidance to decrease the incidence of ventilation induced lung injury. AIM: To ascertain whether ventilation pressures set by Intensive Care Unit (ICU) staff were in accordance with the ARDSnet protocol. METHOD: This was a pilot observational study in which 7 patients admitted to the ICU in February 2011 were monitored over a period of 2 weeks. Their Peak Pressures, Tidal Volumes, Positive End -Expiratory Pressure (PEEP) , Fraction of Inspired Oxygen (FiO2) and Respiratory Rate were recorded whilst the patient was on Bilevel Positive Airway Pressure (BIPAP) and Continuous Positive Airway Pressure (CPAP). Any pathology as a result of high pressures was recorded. RESULTS: In 5 out of 7 patients on BIPAP and 4 out of 7 patients on CPAP, mean tidal volumes exceeded the recommended 6 mL/kg. PEEP and FiO2 values were matched adequately in 5 out of 7 patients on BIPAP and only 1 patient on CPAP. Peak pressures of more than 30cm H2O were recorded in 12.5% of readings in total. CONCLUSION: Ventilatory pressures in excess of the set guidelines were used but there was no evidence that any harm was caused. ICU staff should be educated as to the risk of using high ventilatory pressures and the importance of compliance with the standards set by ARDSnet protocol.

Discrepancy Between Estimated Fetal Weight and Actual Birth Weight

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Extremes of birth weight (<2500g, >4000g) are associated with fetal and maternal complications. Accurate prediction of growth abnormalities can reduce morbidity and mortality by up to 15%. In the UK, ultrasonography is the most widely used method of birth weight estimation.

Maternal diabetes is commonly associated with macrosomia (birthweight >4000g). Accordingly, diabetic patients have serial growth scans from 28 weeks to aid prediction of this abnormality. Thus, this cohort provides data in determining the accuracy of ultrasonographic weight estimation.

This study aims to quantify the discrepancy between ultrasonographically estimated fetal weight and actual birth weight, and compare results against accepted error (±10%). It is a retrospective case note review of 41 diabetic antenatal patients identified from November 2011- March 2012 at Sunderland Royal Hospital. Data collected was analysed by $\chi 2$ test. A $p<0.05$ was deemed statistically significant.

Mean study age was 30.8 years. Of the 41 patients, 60.6% had gestational diabetes, 30.3% type 1 DM and 6.06% type 2 DM. Mean BMI was 29.3. Mean birth weight was 3507g. Mean percentage error was 8.5%. However, 12 birth weight estimations (36.4%) had a percentage error >10%. The average birth weight of these 12 babies was 3538.9g. On closer analysis, birth weight above 3500g was found to be associated with significant error ($p = 0.048$). On average, estimations were 20% less than actual birth weight in this group.

It can be concluded that ultrasonography is a generally accurate tool in estimation of fetal weight, but is inaccurate in the prediction of macrosomia.

Audit of all open cases of Emerge looking at previous involvement with core CAMHS

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Background: There is growing evidence to demonstrate the fact that adolescence is a time of significant stressors. UK surveys illustrate the fact that developmental disorders of childhood are super ceded by mood and anxiety disorders. Adolescence is also a common time for previous and continuing mental health difficulties to be exacerbated, which during this volatile time can lead to poorer clinical and social outcomes. In addition to this it is a difficult time with regards to staying engaged with mental health services as it is the transition between childhood and adulthood. It would therefore be useful to know whether these problems are occurring within CAMHS (Children and Adolescent Mental Health Services) by looking at levels of disengagement by children and adolescents.

Method: This is an audit of all 267 case notes open to Emerge, a CAMHS service specifically for 16-17 year olds in Manchester. The aim is to find out how many adolescents had previous engagement with CAMHS.

Results: Notably, 44.6% of all patients open to Emerge were found to have had previous involvement with CAMHS, this figure rising to 61% in the least affluent areas of Manchester.

Conclusion: This audit showed a significant proportion of adolescents had disengaged from CAMHS despite continuing mental health problems showing issues regarding continuity of care are a significant difficulty. It illustrated disparities between affluences, showing that the less affluent areas of Manchester were less likely to engage with services perhaps implying there is poorer access to care for the more vulnerable adolescents.

Audit in general practice: uptake of the seasonal influenza vaccination (2011) among pregnant women registered at an inner city GP practice

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Pregnant women are at an increased risk of serious complications due to the influenza virus, and therefore are eligible to receive the free seasonal flu vaccination in the UK. Evidence of the safety and efficacy of the vaccine is strong, but despite this, uptake rates among this patient group were only 38.0% in the winter 2010-2011.

This audit analysed the records of 93 patients at an inner city GP practice who were identified as pregnant between 1/10/11 and 31/12/11. Results showed that 38.7% were vaccinated against influenza, a figure which is very similar to national rates.
On investigation into the strategies used by the practice for recruiting pregnant women to have the vaccine, letters were shown to have no positive influence over the likelihood of vaccination. Meanwhile, face-to-face encounters were shown to be very effective.

Therefore, in the action plan for improving the uptake rates next year, the main recommendations are: re-writing of the invitation letters; improving rates of opportunistic vaccinations by midwives (by re-education, re-training and policy-making); and introducing a text/phone invitation service at the beginning of the 2012-2013 flu season.

The Diagnosis of Pancreatitis in Paediatric Patients with Immune disorders at a Tertiary Centre

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Background: Paediatric pancreatitis is rare with an incidence of 10/100,000 per year. Higher incidences exist in children with immune disorders who are predisposed to pancreatitis due to immunosuppressant use and autoimmunity. The disease is enigmatic, differing in aetiology and presentation to that in the adult population. Diagnostic difficulty is perpetuated by the current lack of national diagnostic paediatric guidelines.

Standards:Great Ormond Street Hospital modified adult British Society of Gastroenterology and American Gastroenterological Association guidelines state a diagnosis of pancreatitis is made by: amylase/lipase >3 times upper normal limit, abdominal pain, blood tests (albumin, calcium, bilirubin, and CRP), and radiological findings of pancreatitis.

Aim: To determine whether the above diagnostic criteria are being adhered to at this tertiary centre and to assess suitability of the modified adult guidelines in paediatrics.

Method: Retrospective review of clinical and laboratory records of 50 patients with immune disorders presenting with amylase/ lipase >3 times upper normal limit from 2004-2011.

Results: 38% of patients presented with abdominal pain. 100% of patients' bloods were tested for amylase/lipase, and albumin levels. Not all patients had calcium (94%), bilirubin (88%), and CRP(82%) tested. 83% of patients had radiological investigations. Aetiology was determined in 58% of patients, with the major cause being drug-induced (50%).

Conclusions: This centre follows the modified adult guidelines in most cases, but paediatricians must maintain a high index of suspicion for pancreatitis as children present atypically. 100% of patients with raised pancreatic enzymes should receive blood tests and ultrasound scans. Closer drug monitoring is required in patients with immune disorders to reduce incidence of drug-induced pancreatitis.

MINERVA: A Patient Safety Tool

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Background: MINERVA is a patient safety tool used to cover 11 domains of patient care. The acronym represents MEWS (modified early warning system) score, mobility, invasive devices, nutrition/fluid status, estimated date of discharge (EDD), results, resus status/level of care, venous thromboembolism (VTE) prophylaxis, antibiotics, analgesia and appropriate handover. MINERVA is intended to make it easy for junior doctors to produce a structured ward round review which addresses the common management issues and highlights potential risks for each patient.

Methodology: An audit was completed analysing documentation of the MINERVA criteria for 60 patients on 6 medical wards at Aintree University Hospital. MINERVA stickers were then used twice weekly by the junior doctors for a period of 2 weeks on the day before a consultant ward round and prior to a weekend. The documentation was then re-audited.

Results: The stickers were able to increase documentation within the last 5 days for mobility from 49% to 97%, nutritional state from 44% to 96%, resus status from 5 to 96% and EDD from 21% to 70%. MINERVA was unable to affect documentation of daily ward round entries.

Conclusion: The stickers were able to markedly raise documentation of the 11 MINERVA domains. In doing so issues of patient care were identified early and could then be highlighted to the senior team in a timely fashion. This improvement in record keeping is able to highlight the need for a multi-disciplinary team approach and could relate to increased patient safety and reduced length of stay.

Screening for hearing defects in children with Cystic Fibrosis receiving frequent IV aminoglycoside treatment: A Service Evaluation

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Background: Patients with CF are frequently treated with aminoglycosides because of their effectiveness at fighting off bacterial infections. They do have important side effects which includes ototoxicity. The literature notes that children with cystic fibrosis who receive systemic or inhaled aminoglycosides have a higher risk of sensorineural hearing loss. Consequently in the consensus guidelines for antibiotic treatment in CF, it is recommended that "an annual pure tone audiogram should be considered for patients receiving frequent courses of an intravenous aminoglycoside

Methods: The medical records of all Cystic Fibrosis patients registered to paediatricians were reviewed between October 2010 and December 2010.

Results: Only 7 (35%) of the 20 children that had received frequent IV aminoglycoside treatment had received hearing tests whilst 4 children had been referred for hearing assessments. Of these 11 children: 8 (73%) had normal hearing (two children had Eustachian tube defects); 1 needed reassessment; 2 children had hearing loss (18%). Both children with hearing loss had received IV aminoglycoside treatment. Only 2 from the group of 11 children were scheduled for an annual reassessment.

Conclusion: CF patients are not receiving annual hearing evaluations despite being at a higher risk of aminoglycoside induced hearing loss. 2 of the 11 patients who had received a hearing evaluation were found to have hearing loss, and this could be linked to the frequent aminoglycoside treatment they received. The department now intends to rectify this situation by arranging hearing assessments at annual review for those children who failed to receive one.

Community Acquired Pneumonia- Are we prescribing correctly?

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Introduction: Community Acquired Pneumonia is a serious illness which causes both significant mortality and morbidity amongst patients. It is also an illness which junior doctors often find themselves managing. The CURB-65 Score is an important tool which allows clinicians to decide on antibiotic treatment and the need for community or hospital management of patients based on different parameters.

Aims: To audit documentation of the CURB score. (2) When a patient was documented as confused, to audit if this was measured objectively by Abbreviated Mental Test (AMT). (3) To audit the prescribing of antibiotics and whether this was in keeping with current trust and British Thoracic Society (BTS) guidelines.

Methods: In this audit I looked at patients that were being admitted through the acute admissions unit at North Staffordshire Hospital over a two month period. After the patients had been diagnosed with Community Acquired Pneumonia by consultant review, I analysed whether the CURB-65 score was documented, and how confusion was measured, as well as if the patients had been placed on appropriate antibiotic therapy. For patients who did not have the CURB score documented I calculated it. Insufficient prescribing was when patient were started on oral antibiotics when the CURB score indicated they should be placed on intravenous antibiotics, excessive prescribing was when intravenous antibiotics were incorrectly prescribed when oral antibiotics were sufficient, or when two oral antibiotics were used, when one was sufficient. Incorrect prescribing was the omission of macrolide (clarithromycin) cover, when it was required.

Results: Of twenty four patients in total; seven (29%) were female and seventeen (71%) were male. The average age of female patients was 73 years (range 68-77years), whilst the average age of male patients was 67 years (range 38-86 years). Four patients (17%) had significant co-morbidities. Three patients (12.5%) died.

CURB Score was documented in two of the patients (8.3%) and only one patient was documented as confused (4.6%) although there was no documentation of how this confusion was measured. Thirteen patients (54%) had correct antibiotic prescribing according to BTS and local trust guidelines, whilst eleven patients (46%) did not. Of these eleven patients; seven (64%) had excessive prescribing of intravenous and in one case oral antibiotics. One patient (9%) had insufficient prescribing, and three patients (27%)had incorrect prescribing

Systematic Improvement of Outcomes in Critical Care: Small Changes in Daily Review Sheet Design Improves Best Practice Standards in Dynamic Environments.

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Background: Daily review sheets in intensive care are simple but powerful tools in delivering safe standards of patient-centred care. Intensive Care Units (ICUs) are dynamic environments where patient needs are diverse; staff and clinical situations change frequently. Checklists and bundles are now commonplace and associated with improved patient outcomes and reduced length of stay. To reduce human error, patient review sheets should be reliably completed with no variability amongst staff. Evidence suggests that bundles work optimally with 95% completion rates; this was our 'gold-standard' target for best practice. This audit measured 'Daily Review' sheet completion among doctors working in North Bristol ICU.

Methodology: The audit had two phases. Phase one audited 138 sheets. Each week, over eight weeks, patient sheets were retrospectively audited. In phase two, a re-designed sheet was then re-audited over six weeks to measure quality improvement.

Discussion: Phase one had an average completion of 92%, with considerable weekly variability (86-97%). Of greatest concern was the lack of doctor's signature and accountability; only 65% were signed. The sheet was improved to engage doctors in a shared responsibility for quality of care. To date, re-auditing the new sheet in phase two has demonstrated an improvement towards 97%.

Conclusion: Delivery of ICU care requires effective communication between staff, daily patient goals and use of evidence-based care bundles. Accurate record keeping and accountability is a Good Medical Practice requirement for delivering high quality patient care. Making small modifications to documentation can make a big impact towards improving systems of patient care.

Audit of High-Dose Antipsychotic Drug Monitoring at Arrol Park Resource Centre In-Patient Unit

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Background: In 2006 the Royal College of Psychiatrists released a Consensus Statement[1] on high-dose antipsychotic medication and in it detailed how cardiac side-effects, in particular, are dose related and recommend repeated audits to ensure that patients are being monitored correctly.

Method:
Five standards were formed from the guidelines[2] –
1. 100% patients on high-dose anti-psychotics should be identified
2. 70% of patients should have an ECG done on admission
3. 70% of these patients should being having their FBC, U&Es, LFTs, blood lipid levels, weight, fasting BM and BP measured, and an Electrocardiogram done before starting on a high dose
4. 70% should have these measurements repeated after three months of treatment
5. 70% should have them repeated every 6-12 months.

The audit was carried out by first identifying which of the current in-patients were being prescribed high doses of anti-psychotics, then looking at the patients' notes to find evidence that monitoring had been carried out, finally comparing the data to the standards set.

Results: Standard 1 was the only one met to 100%, while the rest all failed at 0%. Of the two patients found to be on a high dose neither had all measurements done at the correct time or continued on, though some measurements were done sporadically.

Conclusion: The small sample size of only two patients makes it hard to tell if the standards are truly not being met or if these patients have both just missed out on the introduction of the recommendations of the early 2000s. However, recommendations can be made about the continuation of yearly checks. When normal results were collected several years in a row then tests were stopped. A system needs to be put in place to ensure that if this is the case that monitoring continues at set intervals thought appropriate by the consultant psychiatrists.

Combined Pacreaticoduodenectomy with Venous Resection and Reconstruction using Non-autologous Vein.

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Pancreatic cancer is difficult to diagnose and often presents too late for surgical resection. However, in selected patients, radical surgery including resection of adjacent structures may make cure possible.

A 36-year-old male presented with epigastric pain. Investigations revealed a neuroendocrine tumour of the pancreatic head with portal vein (PV), superior mesenteric vein (SMV), and transverse mesocolon involvement. A decision was made to proceed with a Whipple's procedure, incorporating portal venous resection. This venous resection involved excision of the tumour and a significant length of the extrahepatic PV. A donor iliac vein graft was utilized for reconstruction. Intraoperatively, the extent of the tumour necessitated an additional right hemicolectomy. Postoperatively, apart from a period of ileus, the patient made excellent recovery. The pathology report confirmed an R0 resection.

Pancreatic head resection combined with venous resection remains controversial. It offers the possibility to achieve complete oncological resection of the extended malignancy and thus improve long term survival. The already high rates of morbidity and accompanying mortality following a conventional Whipples resection and the poor prognosis associated with pancreatic cancer, has led many centres considering venous involvement a contra-indication to resection.However, in selected cases, aggressive surgery involving an extension to the customary Whipples resection is warranted and can offer these patients satisfactory long-term outcomes, especially when performed by experienced surgeons in high-volume centers.

Portal vein involvement should not be a contra-indication to pancreatic resection. This case demonstrates this notion and provides an opportunity for change in the surgical practice for pancreatic cancer treatment.

Secondary angiosarcoma of the breast after radiotherapy to the contralateral breast

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Introduction: The shift towards breast-conserving surgery (partial mastectomy) followed by radiotherapy for primary breast carcinomas has unforeseen implications. We present a rare and unusual case of secondary angiosarcoma in the contralateral breast.

Case report: An 87-year-old woman with a history of right invasive ductal carcinoma was treated with a partial mastectomy, axillary clearance, radiotherapy and tamoxifen in 2001. In 2009 she underwent a completion mastectomy following angiosarcoma caused by the radiotherapy.
She now presents with a suspicious left breast lump. Mammography revealed a 40mm mass in the upper outer quadrant of the breast. Our initial assumption was a primary left breast carcinoma. However, despite no skin changes on the left breast, a biopsy of the lesion revealed a low-to-intermediate grade angiosarcoma. The patient will undergo a left-sided mastectomy.

Discussion: Angiosarcoma can be a rare consequence of radiotherapy, normally occurring where the radiotherapy was administered, as seen in the patient's right breast. This is the first time anyone in our specialist breast team has encountered contralateral angiosarcoma post radiotherapy. We believe this unusual occurrence has been caused by scattered radiotherapy.

Conclusion: Due tothe increase in breast-conserving surgery, early recognition and understanding of long-term effects of subsequent radiotherapy are essential.

Is hospital an accessible environment for visually impaired patients?

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Background: In the UK, 370,000 people are registered as blind or partially sighted. Blindness is conventionally defined as best corrected visual acuity less than 3/60 and partial sight as 6/60 or less. This project aims to experience how low vision affects navigation in a hospital and recommend ways to support patients' independence.

Methodology: The vertical width (cm) of first letter on the signposts in Ninewells Hospital was measured. To simulate visual acuity of 6/60, 3/60 and 1/60, a convex +2, +4 and +8 lens was employed respectively. The distance (m) required for accurate interpretation of the signposts was measured.

Discussion: The majority have letters that measure around 4cm. They can be read correctly with a distance up to 3m in patients with 6/60 vision. This is reduced by half in 3/60 and further halved in 1/60 vision. This becomes problematic if the signs are way above the eye level. This makes navigation like attending clinics for appointments difficult. Practicality of having big letters across hospitals needs to be assessed but signs should be located at least at a height that patients could reach to read.

Conclusion: Loss of visual acuity contributes to deficits in hospital navigation and orientation. Improvements should be made by understanding the relationship between signpost design and visual disability. Furthermore, reinforcements can be achieved through raising awareness and recognising the access implications of Equality Act. Further work is mandatory so that recommendations can be formulated to transform hospitals into a more accessible environment for the visually impaired community.

An E-Learning Package for Medical Students on Genocide & Public Health

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Internationally, genocide is a major health problem being the leading cause of preventable death. It has long-term health consequences for survivors. Although the role of health professionals in preventing genocide has been acknowledged, there is little coverage of this topic in undergraduate health courses. The aim of this project was to develop an e-learning package providing an overview of the topic to undergraduate medical students and evaluate its pedagogical value as a learning tool as measured by usability, learner engagement, knowledge and attitude outcomes.

An e-learning package was designed and evaluated by a sample of 96 self-selected second-year medical students. Questionnaires integrated within the package were used to compare pre- and post-intervention knowledge and attitudes. A control group of 89 first-year medical students was used to compare baseline knowledge/attitudes.

Among the respondents in the intervention group 45% gave a 9/10 score for the e-learning package design and 97% preferred it as a learning mode over traditional lecture based. Post-intervention 93.7% of second-years agreed that genocide is a public health issue as opposed to 23.5% at baseline. The intervention group showed statistically significant positive changes in knowledge and attitudes post-intervention ($p<0.001$) when compared to the control group.

The e-learning package was found to be an effective learning tool in terms of usability, learner engagement, influencing positive change in knowledge and attitudes relating to genocide prevention. Due to the multi-disciplinary nature of genocide prevention, it has the potential to be useful in other courses.

Pulmonary embolism is associated with a high rate of idiopathic recurrence

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Background: Pulmonary embolism (PE) is a common and potentially fatal event with a tendency to recur. Following PE, decisions regarding risk of recurrent venous thromboembolism (VTE) and anti-coagulation duration are guided by whether the event was idiopathic or precipitated. We tested this assumption on a large cohort of patients managed under a single protocol.

Methods: Patients were identified from a prospectively-assembled database collecting 262 cases of a first PE presenting to the acute admissions unit at a single university teaching hospital. PE was classed as idiopathic or precipitated. Precipitating factors were defined as: surgery, active malignancy, long-haul travel and pregnancy.

Results: The first PE was idiopathic in 127 patients (45%) and precipitated in 135 (55%). Rate of recurrence following idiopathic PE was 27%. Of these cases of recurrence, 91% were idiopathic. Rate of recurrence following precipitated PE was 20%. Of these recurrences, only 60% were precipitated
Recurrent VTE was PE in 87% and isolated deep vein thrombosis in 13%.

Conclusions: Despite a PE precipitated by a transient risk factor, these patients remain at significant risk of recurrence. Following idiopathic PE recurrent VTE was also idiopathic in the majority of cases, as expected. However following precipitated PE, recurrence was equally likely to be precipitated or idiopathic. The recurrent thrombotic event is highly likely to be a further PE, irrespective of the risk factors of the first event. More clinical information is required over and above the risk factors of the thrombotic event when deciding anti-coagulation duration.

Complement Activation by Metabolic Acidosis: A Mechanism for Progressive Tubulo-interstitial Damage During Proteinuria in Chronic Kidney Disease (CKD)

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In addition to being a marker for chronic kidney disease (CKD), proteinuria is recognised as a cause of tubulo-interstitial damage and CKD progression. Activation of complement leaking into tubular lumen during proteinuria is a possible mechanism. Complement activation products have been demonstrated in urine of CKD patients and are reduced by bicarbonate therapy.

Complement activation products (C5a and C3c) were measured by enzyme-linked immunosorbent assays (ELISA) and immuno-blotting in human and mouse plasma incubated in vitro at pH 7.45 or acidic pH 6.8 (to mimic pH in proximal tubular lumen).

Acidic incubation generated significant C5a even in human plasma diluted 1/200. C3 activation was also detected by immuno-blotting, and confirmed by demonstrating C3c deposition on zymosan-coated plates. A mean 38% increase in C3c deposition occurred at plasma dilutions from 100% to 3% when conditions favoured Alternative Pathway (AP), but not when Classical (CP) and Lectin (LP) Pathways were selectively favoured. However, even when all pathways were blocked, a 17% acid-induced increase still occurred.
Incubation of Wild-type and knock-out mouse sera lacking AP (properdin deficient), LP (MASP-2 deficient) or CP (C1q deficient) all showed a marked acid-induced increase in C5a.

Incubation with immortalised proximal tubular cells (HK-2) demonstrated that acidic pH significantly enhanced cytotoxicity of human plasma (assessed using MTT).

It is concluded that at low plasma protein concentrations and low pH that occur in tubular lumen during proteinuria, significant complement activation occurs, potentially inducing tubular injury, and is therefore a potentially important site for therapeutic intervention to slow CKD progression.

Perinatal depression in Bangladesh: a qualitative study to explore the knowledge and practice of healthcare workers from different sectors in both an urban and rural area.

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Background: Perinatal depression is a significant and treatable cause of ill-health in Bangladesh, with a prevalence estimated between 9-30%. It is associated with poverty, marital violence and lack of social support. Perinatal depression profoundly effects on both maternal and child health. Evidence is scarce regarding this disease in Bangladesh.

Aim: Through qualitative research to explore the knowledge and practice of healthcare workers who work with pregnant and newly delivered mothers in Bangladesh.

Methodoloy: 15 semi-structured interviews were undertaken in May 2012. Participants were identified through purposive sampling of maternal healthcare facilities. Private, government and non-governmental organisation staff from urban and rural areas were included. Data was analysed using thematic content analysis.

Results: Results show low understanding of the term perinatal depression but some awareness of symptoms and causes. Nurses and community health-workers have limited knowledge regarding the complications of perinatal depression, whereas doctors have a better understanding. Most participants regard perinatal depression as a problem, but feel they lack awareness of the disease. Practice is mostly limited to counselling and referral.

Conclusion: Perinatal depression is a significant problem in Bangladesh. This research has shown low awareness and lack of screening and treatment. Further training is needed across all healthcare workers, as is the development of national guidelines emphasising screening.

Research into the Development of a Universal Cell Vaccine for Acute Myeloid Leukaemia

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This research is part of the development of a universal cell vaccine for acute myeloid leukaemia (AML). Trials with CD80 (B7.1)/IL-2 immune gene therapy, using the patient's own leukaemic cells, are underway and K562 cells expressing GM-CSF have been investigated as a leukaemia cell vaccine. This indicates that a leukaemic cell line could provide a universal vaccine, avoiding the difficult and expensive strategy of creating patient specific AML cell vaccines.

Three new cell lines were produced in this experiment from the transduction of K562, K562-A2 and U937 with a lentivirus containing an IL-2/B7.1 fusagene. These new cell lines, K562 (IL-2/B7.1), K562-A2(IL-2/B7.1) and U937(IL-2/B7.1), were then analysed with the original three cell lines for HLA, B7.1 and IL-2 expression using FACS and ELISA. B7.1 and IL-2 expression were measured to calculate the effectiveness of transduction of the IL-2/B7.1 fusagene, and to compare this to B7.1 and IL-2 expression in the original cell lines. Expression of HLA-A*201 was also measured, since its expression would circumvent HLA mismatch stimulation in HLA-A*201 positive patients.

K562(IL-2/B7.1), K562-A2(IL-2/B7.1) and U937(IL-2/B7.1) all expressed large quantities of both B7.1 and IL-2, and K562 and K562-A2 also expressed small quantities of B7.1. K562 and K562 (IL-2/B7.1) lacked HLA expression, while K562-A2, K562-A2(IL-2/B7.1) U937 and U937(IL-2/B7.1) all expressed HLA-ABC.

The cell lines produced and analysed in this experiment can now be used in experiments to provoke an immune response against unmodified AML blasts. If these experiments are successful, these cells could provide the basis of a universal cell vaccine for AML.

K-Ras mutation in colorectal cancer sensitises cells towards cell death, through inhibition of autophagy

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Background: A critical problem in the amelioration of colorectal cancer (CRC) is the occurrence of K-Ras mutations. Patients with K-Ras mutations have bleak clinical outcomes, with tumours being more proliferative, aggressive and often treatment resistant. Understanding the mechanisms behind this will lead to improved patient outcomes. One method cancer cells use to potentiate proliferation and survival is to uncouple autophagy, a cell survival pathway, from activating cell death. In this study, the potential link between K-Ras mutations and autophagy was investigated.

Experimental Design: Extracts from nutrient deprived and/or inhibitor treated cells were analysed by Western immunoblotting for markers of autophagy, cell growth, proliferation and death in isogenic CRC cell lines that harbour either wildtype or mutant K-Ras. Alterations in cell morphology were monitored using phase-contrast microscopy.

Results: K-Ras mutant cells showed upregulation of the Ras/MEK/ERK pro-growth pathway, uncoupled from receptor control. Inhibition of this pathway led to cell death and provided evidence of novel cross-talk with the PI3K/AKT/mTORC1 pro-growth pathway. K-Ras mutant cells also had greater autophagic activity in response to nutrient stress and were sensitised towards cell death following inhibition of autophagy with chloroquine.

Conclusion: Upregulation of the Ras/MEK/ERK pathway independent of receptor activation explains the increased proliferation and resistance to therapies, which often target receptors. Targeting the Ras/MEK/ERK pathway above the level of cross-talk but below receptor level could be of potential therapeutic benefit. Furthermore, the increased autophagic activity observed and potent pro-death response following autophagy inhibition suggests targeting autophagy may be effective in treating K-Ras mutant CRC.

The Assessment of Bone Micro-Architecture and Composition using Micro-MRI and MRS in Individuals with Growth Hormone Deficiency and Hypogonadism

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Although bone health is usually assessed by measuring bone mineral density (BMD) by dual X-ray energy absorptiometry, BMD is not a very sensitive or specific predictor of fractures, especially in those with chronic disease. There is a need to explore alternative bone health indicators that provide information on bone micro-architecture and lipid content. This study assessed the feasibility of using micro-MRI and MR spectroscopy (MRS) to compare bone micro-architecture and lipid content in young adults with suspected mild bone disease compared to healthy controls.

The study sample comprised of 10 cases with growth hormone deficiency (GHD) and/or hypogonadism and 10 age and sex matched healthy controls. A 3T MRI scanner performed a MRI scan of the right tibia and obtained 0.2mm and 0.3mm resolution images. Four parameters of micro-architecture were calculated; apparent trabecular number (appTbN), spacing (appTbSp) and thickness (appTbTh), and apparent ratio of bone volume:total volume (appBV/TV). MRS was performed in the lumbar vertebrae; lipid and water peaks from the bone marrow were acquired and used to calculate %-fat fraction (% FF).

The 0.3mm resolution images reported a lower median appTbN (10.3%, p=0.03), and a higher median appTbSp (14.0%, p=0.02) in cases compared to controls, but there was no significant difference in appTbTh or appBV/TV. MRS reported a 17.3% higher median %FF (p=0.006) in cases compared to controls.

Race, bullying and self-esteem at the transition between primary and secondary school

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Background: Studies from the US have suggested that children who experience racial discrimination have higher rates of depression, anxiety, behavioural disorders, and lower self-esteem. Children are particularly vulnerable at the transition from one school to another.

Design: Children from the Avon Longitudinal Study of Parents and Children (ALSPAC) were asked to define themselves by skin colour aged 12 years (n=7017). Logistic regression analyses, adjusting for gender and maternal education, investigated associations with bullying and racial discrimination, behavioural difficulties, friendships, mood and self-esteem.

Results: 94.2% defined themselves as white (n=6607), 3.6% as mixed race (n=255), and 2.2% (n=155) identified with a specific ethnic minority group. There was no association between race and bullying at 8 years. At 12.5 years the prevalence of racially motivated violence was 10-13%, and was 31-33% for name-calling. Ethnic minority but not mixed race children were more likely to experience overt bullying (OR 2.98; 95% CI 1.38 to 6.42). Mixed race children were more likely to retain friends of different races after the transition to secondary school (OR 1.89; 1.32 to 2.71). At 13.8 years, mixed race and ethnic minority children were more likely to feel unhappy (OR for mixed race 1.87, 1.31 to 2.68; OR for ethnic minority 1.76, 1.09 to 2.86).

Conclusions: Ethnic minority children were more likely than white children to experience bullying at the transition to secondary school. Ethnic minority and mixed race 13 year olds were less happy. Strategies for bullying prevention should be targeted at this vulnerable group.

Investigating the direct and indirect effects of VEGF-188 on pericyte differentiation

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Pericytes provide stability to developing vasculature and are linked with resistance to vascular disrupting treatments in targeting tumours. Our group has found that mouse fibrosarcoma cells expressing only a single isoform of VEGF-A i.e. matrix-bound VEGF-188, are associated with pericyte-rich blood vessels, when grown *in vivo*. Here, we hypothesise that VEGF-188/9 impact upon pericyte differentiation directly or indirectly via endothelial cell stimulation.

Using the mesenchymal cell line C3H/10T1/2 (10T1/2) to model pericyte precursors, cells were co-cultured with mouse fibrosarcoma cell lines expressing VEGF-188 or VEGF-164 isoforms, or alternatively with human umbilical endothelial vein cells (HUVECs). Pericyte markers of differentiation including PDGFR-b, NG2 and a-SMA were investigated in the 10T1/2 cell line using western blotting and immunocytochemistry, with transforming growth factor- b1 (TGF-b1) used as a positive control for pericyte differentiation.

TGF-β treated cells displayed an upregulation of PDGFR-β and NG2 proteins through western blotting. Additionally, a clear increase in the expression of NG2 in TGF-β treated 10T1/2 cells was found through immunofluorescence staining. Furthermore, immunofluorescent staining of cells detected clear changes in distribution of a-SMA after TGF-β treatment. VEGFR-2 expression was also found to be markedly upregulated by TGF-β.

Upregulation of VEGFR-2 in this cell line is a novel find and thus can potentially be used as an additional positive marker of pericyte differentiation in future investigations. However, no similar changes in marker expression were detected in 10T1/2 cells co-cultured with fibrosarcomas or HUVECs, suggesting that VEGF-188 does not directly stimulate pericyte differentiation.

"How the Bangladeshi community in West London, uses and understands their Traditional medicine/ services and how this relates to their use of conventional Western medicine/ services"

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Background: Our objective was to explore the indigenous health beliefs and traditional practices of Bangladeshis resident in the U.K. When and why they are practiced and how they integrate these beliefs and practices with mainstream services.

Design: An exploratory qualitative study that used semi-structured interviews to explore the participant's personal medical history and how traditions and beliefs influence their choices between Traditional Indian (TM) and conventional Western medicine (CWM). Inductive thematic analysis was the chosen data analysis method.

Participants: Purposive sampling was used to recruit 11 Bangladeshi individuals from the community in West London.

Results: Data analysis revealed the importance of religion, culture and family in healthcare beliefs and practices of Bangladeshis in the U.K. The majority of participants viewed illness and well-being to be predominantly determined by God, and the use of prayer, talismans and herbal food-therapy were pervasive themes in the data. In some cases, participants reported a desire to use TM for chronic or psychological problems and conventional care (GP) for acute illness. Concomitant TM and CWM use was also common, though participants reported a reluctance to discuss this with their GPs.

Conclusion: Analysis suggests TM is used by most participants. Though its use is related to socio-cultural factors, it appears not to detract from CWM use, except in some cases of chronic or psychological illness, when TM (when including prayer) seems to take precedence. The findings highlight the importance of providing culturally appropriate care for this group and provide a useful starting point for further research.

Urinary Metabolomic Profile as a Predictor of Minor Cerebrovascular Incidents

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Minor ischaemic stroke and transient ischaemic attacks (TIAs) can be difficult to diagnose. Brain imaging often supports the diagnosis but even magnetic resonance imaging (the most sensitive technique) only has a sensitivity of 83% for detecting acute ischaemia and less for TIA. Through quantifying the small molecule components of metabolic pathways, metabolomics may help with diagnosis, even when brain imaging is negative.

In a retrospective study we used liquid chromatography-mass spectrometry to compare the urinary metabolite profile of cases (patients with recent ischaemic stroke or TIA) to high cardiovascular risk controls.

Sixty-four cases (mean age 69 years, 20 TIA, 44 minor stroke) and 42 control subjects (mean age 67 years) were studied. The urine of cases was characterised by increased levels of 2-deoxy-2,3-dehydro-N-acetylneuraminic acid (DANA); [FA dioxo(8:0)] 4,7-dioxo-octanoic acid; suberic acid; 2-keto-4-hydroxybutyrate; 2-dehydro-3-deoxy-L-rhamnonate and 3-ethylmalate and by decreased levels of allantoin; p-benzenediol; dihydroneopterin; hippurate; threonine-alanine-alanine; methanesulfonic acid; alanine-asparagine-aspartic acid and 4,6-dihydroxyquinoline.

Using K-Nearest Neighbour analysis we developed a multi-marker classifier to predict patient diagnosis. It contained the metabolites: allantoin; suberic acid; p-benzenediol; hippurate; DANA and dihydroneopterin and differentiated ischaemic stroke from control with 84.1% (76.4%, 91.8%) sensitivity, 85.7% (78.3%, 93.1%) specificity (AUC of 0.80 (0.72, 0.91) on ROC analysis).

This study demonstrates the potential of a metabolomic classifier to assist with the diagnosis of minor cerebrovascular events. As the metabolites studied have putative roles in neuronal damage, neurotransmission, oxidative damage and folate biosynthesis, future work with this technique may enhance our understanding of the pathophysiology of acute ischaemic stroke.

The efficacy of metformin in children with metabolic syndrome and insulin resistance

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Background: The prevalence of obesity in childhood is increasing, including its complications such as metabolic syndrome. There is a high incidence of insulin resistance in obese children. As well as adopting a healthy lifestyle, drugs including metformin, have shown some benefit in improving metabolic syndrome.

Methods: Thirty-two children with metabolic syndrome were randomly selected from clinics. These children underwent BMI assessment before and after treatment, assessment of diet and physical activity, blood-tests to analyse insulin resistance (HOMA), cholesterol, vitamin-D levels, USS-liver, questionnaires to assess energy levels, concentration after treatment with metformin.

Results: Thirty-two children were assessed, 13 were male and 19 female with a mean age of 12.41yrs. BMI was assessed in 21 patients (66%) after treatment with metformin; 13 patients (62%) had a reduction in BMI and 8 patients (38%) an increased BMI after 1-year. HOMA scores improved in 10 patients (50%), worsened in 8 (40%) and remained the same in 2 (10%). 21 patients (84%) reported improvements in energy levels only 1 felt tired whilst on metformin. There was a reduction in cholesterol levels in 11 patients (69%) on metformin. 23 patients had USS-liver at diagnosis of which 10 patients (43%) had fatty infiltration of the liver. 11 patients (55%) were found to have low vitamin-D levels.

Conclusion: Metformin therapy causes a reduction in BMI and insulin levels in children with insulin resistance. Hence metformin can be used for the prevention of type-II diabetes in children with insulin resistance. It should be started at earliest possible obesity stage.

Identifying Biomarkers of Osteolysis After Total Hip Arthroplasty

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Background: Aseptic loosening after THA is the most common cause of implant failure. Positive but weak associations have been identified between some biomarkers and osteolysis, but their predictive value in individual subjects has been poor. The aims of this study were to determine whether the bone markers DKK-1, sclerostin and TRAP5b are elevated in periprosthetic osteolysis.

Method: Fifty subjects that had undergone total hip arthroplasty were separated into two cohorts – 26 with stable hip prostheses and 24 with loose hip prostheses. Serum taken from each patient was tested for each of the three markers using ELISA assay.

Results: Although each marker showed a mean higher in the group with loose prostheses, none of these differences were shown to be significant when set against a grade of significance of $p < 0.05$. The closest result to showing a suitable degree of significance was that of Dkk-1, and the result furthest from showing a suitable degree of significance was that of Sclerostin.

Conclusion: Although this study has failed to prove a significant difference between the cohorts in the 3 serum markers measured, it has succeeded in providing direction towards further research. The different methods of assaying TRAP5b seem to produce different results, and comparison of assay techniques should be undertaken to try to explain this. Of the markers Dkk-1 and Sclerostin it appears that Dkk-1 may hold more hope for application towards the diagnosis of aseptic loosening after total hip arthroplasty.

Survey of sunbed use, attitudes and knowledge in school children aged 15-17 after the under-18s ban

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Sunbed use in childhood is a major risk factor for melanoma. An under-18s sunbed ban was introduced in England in 2011. Impact on use and associated attitudes/knowledge has not been investigated since the introduction of the ban. This cross sectional study aims to estimate the prevalence of under-18s' sunbed use after the ban and identify predictors of use/future use.

All schools in Sandwell, West Midlands were approached. Inclusion criteria were children aged 15-17 available on the day of survey. Anonymous questionnaires were self-completed in class under exam conditions. Data collected include demographics, sunbed use, tanning attitudes, knowledge of sunbed health risks and ban awareness.

Five out of 22 schools participated (22.7%).Of the 437 available students, 390 responded (89.2%). 5.3% (95% CI 3.4% - 8.0%) reported use after the ban, the age standardised prevalence was 7.9% (5.6%-11.0%). 20.5% (16.7% - 24.8%) indicated potential future use. 70.0% (48.1% - 85.5%) used sunbeds in salons, 25.0% (11.2% - 46.9%) used at home. Less than half [48.2% (43.2% - 53.3%)] were aware of the ban. Knowledge of risks was poorer amongst users/future users compared to non-users. Being female, family and friends' sunbed use were independent predictors, these children were 3 to 4 times more likely to have used/intention to use sunbeds.

There is a need for other strategies to reduce underage sunbed use alongside the ban. Campaigns to raise awareness of the associated risks and the ban should target both children and parents to reduce underage use in commercial and domestic settings.

The effect of HSPC1 inhibitors on protein homeostasis and chemoresistance in colorectal cancer cells.

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Worldwide, one million new cases of colorectal cancer (CRC) are reported every year with 500,000 cases of mortality attributed to it. Heat shock proteins (HSPs), in particular HSPA1A, HSPB1 and HSPC1, are major contributors to chemo-resistance, a frequent complication in CRC patients. HSPC1 chaperones client proteins such as HER2 and NF-κB that control cell proliferation, migration and have anti-apoptotic effects. As a result HSPC1 inhibitors are attracting growing attention as novel therapies. This study aimed to explore the effects of HSPC1 inhibitors on client protein expression and HSPA1A/HSPB1 induction and looked at the relationship between HSPA1A/HSPB1 levels and the sensitivity to HSPC1 inhibitors and other CRC drugs.

HSPC1 inhibitor was applied to the CRC cell line HT29 and the level of HSPB1, HSPA1A, HER2, phosphorylated-NF-κB and active-caspase-3 were measured at different time intervals. Gene silencing techniques were also employed to silence HSPA1A and HSPB1 prior to addition of HSPC1 inhibitors or 5-fluorouracil (5-FU).

HSPC1 inhibitor was effective in decreasing the level of HER2 and phosphorylated NF-κB and inducing the levels of HSPB1 and HSPA1A after short-term treatment. Inhibition of HSPA1A or HSPB1 induction had no effect on the response to HSPC1 inhibitor, but did sensitise cells to 5-FU treatment.

In conclusion, HSPC1 client protein degradation begins rapidly following HSPC1 inhibitor treatment and causes apoptosis of CRC cells at nanomolar concentrations. Both HSPA1A and HSPB1 are induced following inhibitor treatment but this induction has no influence on the cellular response to HSPC1 inhibitors. HSPB1 is more important than HSPA1A in the resistance of CRC cells to 5-FU.

Induction of Heme oxygenase-1 Expression Protects Aged Mice from Acute Kidney Injury

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Elderly individuals are more prone to acute kidney injury (AKI). Our previous work demonstrated that pretreatment of 12-month old mice with hemearginate (HA, licensed for human use) strongly upregulated the anti-inflammatory enzyme hemeoxygenase-1 (HO-1) and protected the mice from acute kidney injury (AKI) (Ferenbach *et al.* 2010 *Kidney International*). We now extend this work to 20-month old mice that are more analogous to elderly humans.

Female FVB/nj mice (mean age 20.7 months) received IV HA (30mg/kg) or PBS 24 hours before undergoing a right nephrectomy and renal ischaemia reperfusion injury (IRI) induced by clamping the left renal pedicle (20 minutes). The left kidney was removed at 24hrs. Serum creatinine was measured at baseline and at sacrifice. Fibrillar collagen deposition (picrosirius red staining) and HO -1 immunostaining were quantified by computer image analysis whilst tissue injury was quantified by determining the acute tubular necrosis (ATN) score on H&E stained sections.

Picrosirius red staining demonstrated marked baseline scarring (cortex 13.0%, medulla 6.8%). Administration of HA induced significant expression of HO-1 at baseline (0.2±0.1 vs 15.7±1.5% HO-1 +ve staining; PBS vs HA; $p<0.001$) and after IRI (2.5±1.7 vs 9.5±0.5% HO-1 +ve staining; PBS vs HA; $p<0.01$). HA treated mice exhibited reduced acute renal failure (serum creatinine 65±18.3 vs 38.7±11.4***µmol***/L; PBS vs HA; $p<0.05$) and a reduced ATN score (54.1±1.8 vs 32±3.1% ATN; PBS vs HA; $p<0.001$).

Subchondral Bone Quality in Human Femoral Head Osteoarthritis

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The pathogenesis of osteoarthritis is now understood to involve subchondral bone. Raman spectroscopy has the potential to detect early osteoarthritic changes in subchondral bone. The objective was to investigate the quality of subchondral bone in osteoarthritic femoral heads. In this study, subchondral bone was limited to within 3mm of articular cartilage. It was compared to a site previously considered as subchondral bone (10mm distal to articular cartilage) and the head-neck junction. Several parameters were used as markers for bone quality: mineral-to-matrix ratio, carbonate-to-phosphate ratio, carbonate-to-amide I ratio, mineral crystallinity and volumetric bone mineral density.

Five osteoarthritic femoral heads were compared to five normal cadaveric femoral heads. They were scanned using peripheral quantitative computed tomography and then sectioned coronally. A novel technique, inverse spatially offset Raman spectroscopy, was used to scan across the length of the femoral heads. Cores were subsequently extracted from specific regions and electrophoresis performed to investigate the presence of homotrimeric type I collagen.

Mineralisation in osteoarthritic subchondral bone was 2.4 times greater than controls ($p=0.023$). Within osteoarthritic specimens, the levels of mineralisation increased proximally. The density in osteoarthritic subchondral bone was 89mg/cm3 higher than controls ($p=0.022$) and 494mg/cm3 higher than the osteoarthritic proximal compartment ($p<0.001$). Moreover, the carbonate: amide I ratio was highest in osteoarthritic subchondral bone which may reflect increased turnover. Furthermore, homotrimeric type I collagen was only found in one osteoarthritic specimen.

Raman spectroscopy accurately detects differences between osteoarthritic specimens and controls, further supporting its potential use as a tool for diagnosing bone disorders.

The Role of CD36 in Mediating Podocyte Cell Damage in Proteinuric Renal Disease

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Proteinuria is a potential risk factor for, and mediator of, chronic kidney disease progression. Although the aetiology of proteinuria is multifaceted, podocyte dysfunction has been identified as an important trigger. It has previously been demonstrated that proximal tubular cells endocytose albumin via a receptor-mediated process causing cell injury. Podocytes have also been shown to endocytose albumin using kinetics consistent with a receptor-mediated process. However, the receptor is yet to be identified. The aim of the study was to determine whether the scavenger receptor CD36 plays a role in albumin uptake by podocytes.

Binding and uptake studies were carried out on podocytes exposed to FITC-labelled human serum albumin (FITC-HSA).

Podocyte CD36 expression increased dose dependently on exposure to HSA. No change in CD36 expression was seen in response to fatty acid-free HSA. Endocytosis of FITC-HSA was partially reduced in the presence of a combination of monoclonal and polyclonal anti CD36 antibodies. Immunofluorescence microscopy exhibited partial co-localisation of CD36 and FITC-HSA staining. Western blotting demonstrated that exposure to albumin induced the expression of podocyte injury marker desmin and activated the apoptosis execution enzyme caspase-3, but only if the albumin was fatty acid replete. Nephrin expression was up-regulated dose dependently by albumin, regardless of the presence of fatty acids.

Taken together these data suggest that the endocytic function in podocytes is, at least partially mediated via the CD36 receptor. In addition the adverse consequences of exposure of podocytes to HSA appear to be both dependent and independent of the presence of fatty acids.

Redirecting Viral Immunity to Cancer Using a Novel Immunotherapeutic Agent - Optimisation of the Current Protocol

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Antibody peptide-epitope complex (APEC) is a novel immunotherapy, redirecting viral immunity to cancer, which utilises a monoclonal antibody conjugated to a viral peptide and incorporates a cancer-associated protease-specific cleavage sequence. The monoclonal antibody is a site-specific delivery mechanism for the viral peptide. Cancer-associated proteases are found in abundance at the tumour site and the integrated protease-specific cleavage sequence facilitates release of viral peptide allowing MHC presentation and stimulation of virus-specific T-cells. This acts as a 'safety switch' to prevent non-specific release of highly immunogenic viral peptide and systemic immune activation, making this therapy cancer specific.

Current APEC is conjugated using an unoptimised protocol, which generates functional but unstable APEC. Objectives were to refine this protocol by determining optimum peptide concentration for conjugation and storage of APEC and investigating plasma kinetics with use of peptidomimetics to generate more stable APEC.

Different biotinylated peptide concentrations (0.004mg/ml – 10mg/ml) were assessed using biotin ELISA and flow cytometry. APEC was stored at various temperatures/in the presence of protease inhibitors and biotin loss was measured. APEC and peptidomimetics were incubated in human plasma to determine plasma stability and measured by cytometric bead array or T-cell cytokine response.

Optimal peptide concentration was determined to be 0.5mg/ml. APEC storage at -20°C showed a t½ of 22 days compared to 3 days at +4°C. APEC plasma t½ was ~4 minutes and the use of a N-methylated peptidomimetic extended plasma t½ to 280 minutes from 30 minutes when unmodified.

APEC optimisation in this study moves APEC closer to in vivo studies and becoming a viable cancer immunotherapy.

The association between Gout and Nephrolithiasis: a Systematic Review and Meta-analysis

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Background: Gout is the most common inflammatory arthritis in males in the UK. Nephrolithiasis is also common and can have serious complications. An association between gout and nephrolithiasis has long been recognised. This systematic review aimed to identify and summarise the existing evidence regarding the epidemiologic association between gout and nephrolithiasis in the general population.

Methods: Eligibility criteria for included studies were: participants with gout, outcomes of nephrolithiasis, observational study design and recruitment from the general population/primary care. MEDLINE, EMBASE and CINAHL were searched from inception to present. Reference and citation checking was performed. Two independent reviewers screened the title and abstract of all studies, assessed full-text articles, extracted data and appraised study quality. Meta-analysis was performed on appropriate data.

Results: From 1475 records retrieved, 73 full-text articles were assessed. 12 studies met the eligibility criteria. Lifetime prevalence of nephrolithiasis in gout ranged from 6.1% to 22.7%. Unadjusted odds ratios for the association of nephrolithiasis with gout ranged from 1.36 (95%CI 1.22, 2.04) to 10.16 (2.88, 29.23). Pooling of data from 6 cross-sectional studies produced a lifetime prevalence of nephrolithiasis in gout of 13% (9%, 17%). The pooled odds ratio for the association of nephrolithiasis with gout was 2.81 (2.00, 3.94).

Conclusion: Gout is associated with nephrolithiasis. Individuals with gout have more than twice the odds of experiencing nephrolithiasis compared to individuals without gout. This association deserves wider recognition by clinicians in primary and secondary care and also provides insight into the pathophysiology of nephrolithiasis.

Impact of increased use of pre- operative imaging and laparoscopy on outcomes of Appendicectomy.

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The aim of the study was to analyse the clinical outcomes of appendicectomy in our hospital over a 5 year period, and to assess the utility of radiological investigations and laparoscopy in the management of appendicitis.

A retrospective audit of appendectomies in our hospital over the last five years (01/01/2007 – 31/12/2011) was conducted. Histopathological confirmation of appendicitis was used as the gold standard for diagnosis. Patients undergoing an appendicectomy were stratified by age, gender, and surgical approach (open or laparoscopic) for measuring the association between the use of ultrasound, CT and laparoscopy and the outcome of appendicectomy. The negative appendicectomy rate, perforation rate, and complication rate were used as outcome endpoints.

1055 appendectomies were performed in our hospital over the five year period (965 open and 90 laparoscopic). The negative appendectomy rate was 24.5% (21% for open and 28% for laparoscopic appendectomy) and perforation rate was 14%. The negative appendectomy rate was significantly higher in women of child bearing age (32.8%, p- 0.0028), and lower in patients undergoing CT (12.4%, p- 0.0012) Intra-abdominal abscess (2.3%) and wound infection (1.4%) were the most common complications with the former higher with laparoscopy and the latter in open appendicectomy.

The impact of diagnostic imaging and laparoscopy on negative appendectomy rate varies with age and gender. The rate did not vary significantly with the surgical approach but was significantly reduced in patients undergoing CT scanning.

Intraobserver and interobserver reliability in MRI classification of interspinous ligament degeneration of the lumbar spine

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Background: Posterior spinal ligament pathology is becoming increasingly recognized as a significant cause of low back pain. Despite the growing clinical importance of interspinous ligament degeneration in low back pain patients, formal reliability studies for the magnetic resonance imaging (MRI) evaluation of interspinous ligaments have not been well studied. We seek to test the reliability of the recently proposed MRI classification system by Keorochana *et al* for interspinous ligament degeneration and conducted a comprehensive reliability and reproducibility assessment.

Methodology: Fifty patients who had low back pain with or without leg discomfort (25 males and 25 females) with a mean age of 58.8 years (range 46–80 years) were studied. Intraobserver and interobserver reliability were assessed by kappa statistics. The frequency of disagreement was also identified.

Discussion: The intraobserver agreement was excellent in all readers (kappa range 0.800–0.911). The interobserver agreement was lower as expected, and was substantial to excellent (kappa range 0.701–0.801). Overall complete agreement was obtained in 86.7% of all interspinous ligament levels.

Conclusion: This proposed MRI classification of interspinous ligament degeneration was simple, reliable, and reproducible. Its use as a standardized nomenclature in clinical and radiographic research may be recommended.

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