



WJMER

World Journal of Medical Education and Research

An Official Publication of the Education and Research Division of Doctors Academy



In this edition, these topics and more....

Stroke Prevention in Patients with
Atrial Fibrillation

Should Society Take Precedence Over Individuals and Do
Scientists Need More Autonomy In Our Modern NHS?

Abstracts from the International Academic & Research Conference

Follow-up Chest X-ray Following
Regression of Community Acquired Pneumonia

An Introduction to Cardiothoracic Surgery

Elective Opportunities in Lebanon

POSTER PRESENTATIONS

The Junior Doctor Safety Board

*Dearman J; Jones M; Mistry A; McCabe P; Moulton C; Perry J
Northampton General Hospital, UK

Background: At Northampton General Hospital a Junior Doctor Safety Board was established with the aim of engaging junior doctors in improving care and safety of patients within the Trust. Based around the theme of improving care and safety of the 'sick' patient, each member carried out an audit. These included audits based on patient handover, anti-microbial therapy, treatment of sepsis and improving interprofessional communication and communication with primary care.

Results: The results of the audits included:

Medication Audit: 863 drug charts were reviewed. Twenty-one percent of these had a reconciliation discrepancy. In 18% of charts, prescriptions were inadequately documented or contained an error.

Allergy Audit: 126 drug charts were audited. Fifty-seven percent of charts with a recorded drug allergy failed to record correctly the specific reaction. Four percent of charts contained no allergy information together.

Discharge Summary Audit: 52% of discharge prescriptions contained an error. These errors ranged from basic prescription errors to failures in highlighting or explaining changes in patient medication.

Conclusion: This project is a junior doctor-led initiative, and highlights how junior doctors can be 'agents of change'. The board has implemented many changes, which include tools to improve interprofessional communication and redesigning the drug chart, electronic discharge notification and electronic handover.

Learning Points

- A self-managed junior doctor team promotes junior doctor engagement and leads to improved patient safety.
- Multiple projects with a common theme can accomplish more than a single large project.
- Well managed audits have a greater chance of achieving completion.

Double Trouble : Bilateral Maxillary Mucocoeles and Cystic Fibrosis

Qureishi A *; Lennox P; Bottrill I
John Radcliffe Hospital, Oxford

Cystic fibrosis is one of the UK's commonest inherited life-threatening diseases, it is an autosomal recessive genetic disorder resulting in exocrine gland dysfunction with various clinical manifestations. Whilst targeted newborn screening is effective in identifying those with the condition children are often also diagnosed following the development of respiratory or digestive tract symptoms. Sinonasal symptoms are almost universal resulting in chronic sinusitis or polyposis, these symptoms themselves are rarely the primary disorder resulting in diagnosis. Presented here is the case of a five month old child diagnosed with cystic fibrosis following presentation with bilateral maxillary mucocoeles.

A 5 month old child presented with symptoms of nasal congestion. Initial examination and investigation with CT scan identified the cause to be bilateral maxillary mucocoeles. Following a clinical suspicion the child was investigated for cystic fibrosis and found to be positive. Initially surgical treatment was undertaken for the maxillary mucocoeles by endoscopic bilateral uncapping of the maxillary mucocoele, uncinectomy and middle meatal antrostomy. The child was then followed up with appropriate treatment for cystic fibrosis. At follow up there was no recurrence of symptoms.

Although maxillary mucocoeles are extremely rare they do present in patients with chronic sinusitis or a known diagnosis of cystic fibrosis. To our knowledge there are no reports of this condition being the primary indicator of underlying disease. Following this it is our recommendation that all young children presenting with sinus mucocoeles be investigated for cystic fibrosis to avoid delayed diagnosis and initiation of treatment.

The Impact of Information about Cervical Spine Surgery on Patient Anxiety Levels and the Development of a Multimedia Information Resource to Reduce Anxiety and Enhance the Patient Experience

*Ashraf A; Golash A; Ford K; Shamsuddin T; Karmaker S; Briggs M

Northampton General Hospital, Northampton, UK

Amongst a population of patients due to undergo cervical spine surgery, the levels of information that patients felt they had about their upcoming surgical procedure was evaluated. The correlation between patient knowledge and anxiety levels was explored. Furthermore, patients were asked to evaluate the usefulness of different methods that can be used to deliver information.

The Beck Anxiety Inventory was used to measure anxiety levels. A further questionnaire was used to investigate how informed patients felt and how useful they would find various methods of information delivery.

All patients expressed anxiety related to the upcoming operation. There was a variation in the levels of knowledge that patients felt they had, with 50% stating they had researched this themselves. There was a unanimous resolution that a multimedia resource would be useful to patients in aiding their understanding of the surgical procedure and their stay in hospital. This would also increase the efficiency of the pre-operative clinic by decreasing the repetition of questions asked.

In response to the feedback from patients, a multimedia resource was developed, containing an animation of an Anterior Cervical Discectomy and Fusion (ACDF) procedure. It also contains an introduction to the trust and staff in the department, the role of pre-operative clinic, what to expect post-operatively, a hospital map, anaesthetic information and points of contact. The use of this resource will be audited to evaluate its effectiveness.

Morganella Morganii Infection Following Primary Total Hip Arthroplasty: A Case Report

*Davenport D; Tsitskaris, K; Li PLS

King's College Hospital, London, UK

Morganella morganii is a gram negative rod from the *Proteeae* tribe of *Enterobacteria*¹. There are only four case reports of *Morganella morganii* septic arthritis²⁻⁵, but none in association with primary total hip arthroplasty. In a recent analysis of 55 total hip arthroplasties requiring re-operation for infection *Morganella morganii* was not reported.⁶

Our case describes *Morganella morganii* infection in a patient with type 2 diabetes, hypertension and end-stage renal failure requiring dialysis, who underwent primary total hip arthroplasty for severe osteoarthritis. Post-operatively the patient made slow progression. Forty-six days following arthroplasty there was purulent discharge from the wound but absence of pain or systemic signs of infection. This suspected deep wound infection was managed with excision arthroplasty and extended debridement. Cultured soft tissue and pus confirmed *Morganella morganii*. The patient received targeted antibiotics, but their mobility failed to improve and there was no clinical or laboratory evidence of response to treatment. The patient requested withdrawal from haemodialysis and passed away seventy-three days following the index procedure.

In summary we highlight the risk of *Morganella morganii* infection following arthroplasty, which has not previously been reported. Current literature suggests *Morganella morganii* infection is often resistant to beta-lactam antibiotics^{3,7} and has an indolent clinical picture which may delay diagnosis²⁻⁵. In our case both of these factors contributed to a poor outcome. To improve clinical practice we therefore suggest early diagnosis of *Morganella morganii* infection followed by aggressive management including targeted antibiotic therapy.

Standardisation of Clinical Equipment

Spencer R; Muir J; Williams P; Ward J; Cowie R; Kamali H; Khan Y; Parkinson N.*
North Bristol NHS Trust, Bristol, UK

We are all familiar with the scenario: turning up to an unfamiliar ward on-call to perform a simple procedure such as venepuncture and being delayed, usually for several minutes, finding all the various pieces of equipment. Our aim was to develop a standardized system across the Trust to minimize the time taken to find clinical equipment on the wards.

To quantify the problem, the time taken to collect certain equipment was recorded on several wards. Eighty data sets were collected and showed the average time taken to find equipment for cannulation, venepuncture, ABG and blood culture was between two and three minutes.

Our proposed solution was to standardise basic clinical equipment in a trolley. The equipment was dictated by a survey of equipment preferences distributed to doctors at North Bristol Trust.

The project was divided into two PDSA cycles (plan-do-study-act). A prototype trolley was developed and data collected over several weeks. This data was analysed and the organisation/equipment revised. A second cycle was performed and further improvements made.

By standardising basic clinical equipment considerable time can be saved. The average time taken to collect equipment necessary for venepuncture was reduced to 32 seconds, for cannulation 53 seconds, arterial blood gas 16 seconds and blood cultures 27 seconds. The main challenge to the success of the project is ensuring that equipment is adequately and correctly stocked. Measures to achieve this include clear and obvious instructions. The team is currently reviewing the success of adding stock levels to the weekend handover list.

Complications of Transcutaneous Metal Devices: Time for Plastic Surgeons to act

Kofman KE*; Buckley T; McGrouther DA
South Manchester University Hospital Foundation Trust, Wythenshawe Hospital, Southmoor Road, Manchester

Background: The use of transcutaneous metal devices is common practice on a short or long term basis to stabilise fractures, or to correct deformity. A high incidence of associated infection has been widely reported and there are numerous protocols for prevention and management in Orthopaedic literature.

The aims of this study were: 1) To record the incidence of pin site infection in a Plastic Surgery department. 2) To compare the infection rate in our department with published literature 3) To identify factors that contribute to infection.

Methods: A prospective cohort study was performed auditing all patients presenting to the plastic surgery unit, with any type of transcutaneous metal in situ over a 3 month period. Patients and staff were questioned on wound hygiene, and whether they had been provided with specific protocols. An extensive literature review was undertaken

Findings: Our study revealed an infection rate of 24%. Patients and staff were not aware of preventive protocols. Current literature reports a pin-site infection rate of between 4.5 % and 71%.

Conclusions: 1) Pin site infection is a major problem and no consensus has been reached on the best way to manage pin sites 2) There is variable knowledge of pin-site care amongst the nursing staff 3) There is need for a clearer definition of pin-site infection and a standardised system of assessment, classification and treatment. 4) There is need for more innovative technology in pin-site manufacture as study reveal that the type of material used in the pins does affect infection rates.

Time-lapse Imaging Analysis of Anticancer Pharmacodynamics

Au-Yeung K.*; Smith PJ; Errington RJ; Wiltshire M
University of Cardiff, UK

The Structure-Activity Relationship (SAR) is a means by which effect of a drug or toxic agent on cells in culture can be related to its molecular structure. This type of relationship may be assessed by considering a series of molecules and making gradual changes to them, noting the effect upon their biological activity of each change.

We have paired compounds of novel anthraquinones: KP71 and its analogue KP75; KP166 and its inactive form KP167; alchemix and its analogue ZP275. We added these compounds to osteosarcoma cell line U-2OS and carried out some timelapse and flow cytometry experiments.

Cells were placed in a 6 well plate (density~15-20%). Paired drug treatment at varying doses was added and the plate was placed in a sealed environment. Images were taken every 15 minutes over 3 days and were then analyzed.

The same cell lines were treated with the compounds, incubated and analyzed using flow cytometry.

Over 72 hours, the addition of 10nM of KP71 and KP75 showed moderate linear increase in cell number (increase by 180 – 300%) whilst the 100nM of the same substance showed no increase in cell number. The addition of KP167 in both high and low dose concentrations showed minimal difference in cell number compared to the control. Flow cytometry showed the pattern of treated cells at varying stages of growth/division in the cell cycle.

We found that KP71 and KP75 have a dose-dependent effect, KP167 is indeed an inactive drug and Alchemix and ZP275 worked by different mechanisms of action.

The role of Wnt4 signalling pathways in vascular smooth muscle cell (VSMC) proliferation

Connolly GM
British Heart Institute funded at the Bristol Heart Institution, UK

VSMC proliferation is a major factor in atherosclerosis and restenosis. It has recently been shown that proliferation stimulation by platelet-derived growth factor (PDGF) induces Wnt4, which promotes VSMC proliferation via b-catenin signalling.

Within this project, Wnt4s role in VSMC proliferation was investigated.

A dose response experiment revealed that a dose of 500ng/ml recombinant Wnt4 protein induced the highest VSMC proliferation rate (46.33±2.98%).

Wnt4 mRNA was successfully silenced by 63±10.42%, resulting in a decrease of basal proliferation rates and also PDGF stimulated proliferation. It also decreased Wnt4 protein within the cell.

Wnt signaling is mediated by three pathways. The role of these pathways in Wnt4-induced VSMC proliferation was determined.

The Wnt/Ca⁺⁺ pathway was successfully inhibited using CamKII, NFAT and PKC inhibitors. These significantly decreased proliferation in response to 500ng/ml Wnt4, but only the PKC inhibitor significantly reduced proliferation when these inhibitors were used without recombinant Wnt4 protein. The planar cell polarity pathway was inhibited using a JNK inhibitor. This decreased proliferation rates significantly with and without Wnt4.

Canonical pathway signaling was reduced by silencing LRP5 mRNA by 97.3±0.20% and LRP6 mRNA by 91.9±3.79%. This resulted in a decrease of LRP5 protein by 47% and LRP6 by 30%. This translated into a significant decrease in proliferation rates of VSMC in serum free medium, and after addition of PDGF and Wnt4.

This project clearly demonstrates that Wnt4 promotes VSMC proliferation via the involvement of three signaling pathways: the canonical, the Wnt/Ca⁺⁺ and the planar cell polarity pathways. This research has implications for a future novel treatment of atherosclerosis and restenosis

TRAPS: Exploring the effects of mutant TNFR-1 expression on cytokine/chemokine induction by THP-1 cells

Iacovou C

University of Nottingham, UK

Tumour necrosis factor receptor-associated periodic syndrome (TRAPS) is the second most common autoinflammatory disease and is associated with a range of complications. Monocytes are related to the myalgia and dermal rashes and produce IL-6. The aims of this project is to transfect the THP-1 human monocytic leukaemia cell line, with both the wild type (WT) and mutant C33Y tumour necrosis factor receptor-1 (TNFR1) and compare the range of cytokines/chemokines produced.

Transient plasmid DNA lipofectamine transfections were carried out for both WT and C33Y TNFR1. Human flow cytometry multi-plex kits were used to detect IL-1 α , IL-1 β , TNF- α , granulocyte-colony stimulating factor (G-CSF), IL-6, IL-8, CCL5 and CCL2. The cytokine/chemokine data was acquired using the FC500 flow cytometer and quantified using the Bender MedSystems FlowCytomix™ Pro software. Following WT and C33Y TNFR1 expression, an increase was seen in IL-6, IL-8 and CCL5 production. With IL-6 levels being statistically significant followed by a border line statistical significance and biological significance for IL-8 and CCL5 respectively. Elevated IL-6 levels demonstrate the importance of monocytes in TRAPS. Furthermore novel chemokine antagonists could be considered the next milestone for treating TRAPS patients. However, a lot more replicates using transfected THP-1 cells are required to refine these results.

Transmission of Alzheimer's Disease via a Prion-Like Mechanism

*Chua G; Zhiteneva A; Jahn T

Oxford University Medical School, UK

Alzheimer's disease, the most common neurodegenerative disease in the elderly, results from aggregation of the A β peptide into toxic forms that block long-term potentiation and cause neuronal dysfunction. Injection of brain extracts from Alzheimer's patients into brains of mice expressing the amyloid precursor protein accelerates formation of A β aggregates, indicating that A β may be transmitted via a prion-like mechanism. We carried out a set of experiments in *Drosophila* models, using motor control and survival assays to represent Alzheimer's disease progression. Our results showed that feeding *Drosophila* expressing A β 42 with brain extracts from flies of the same strain resulted in a significant decrease in motor control and survival. Experimental trends showed that feeding extracts from younger flies had greater detrimental effects. This supports literature research suggesting that A β oligomers formed in early stages of aggregation, rather than mature A β fibrils found in older brains, are more effective at seeding the formation of toxic aggregates. Most conclusively, confocal microscopy work on dissected fly brains showed that feeding flies with A β 42 brain extracts increased the number of toxic aggregates compared to flies fed control extracts, supporting the prion propagation hypothesis. Confirmation of this hypothesis has important implications for medical treatment; for instance in shifting the focus from current therapies which aim to prevent cellular death, or promote neuronal survival, to treatments targeted at immuno-neutralisation of A β oligomers. As more is understood about cell-cell transmission of pathology through brains, it is hoped that new pharmacological targets can be identified to combat Alzheimer's disease progression.

Genetic Polymorphisms associated with side effects of antibiotics in children

Wong S C

University of Nottingham/ Queens Medical Hospital, UK

Background: Aminoglycoside (AG) antibiotics are widely used in cystic fibrosis (CF) patients to combat *Pseudomonas aeruginosa* infections. However, they can result in significant nephrotoxic and ototoxic effects. Approximately 17% of CF patients suffer from hearing impairment. Several maternally inherited mitochondrial mutations may predispose patients to AG- induced hearing loss. The 1555A>G mutation is the most well-known mutation, with a prevalence of approximately 0.2% in the European population. Previous studies have not sequenced the entire MT-RNR1 gene in CF patients.

Methods: Sequencing of saliva samples in a cohort of 15 CF patients with the MT-RNR1 gene was done. The resultant sequence data were compared against the revised Cambridge Reference Sequence (rCRS) to check for mutations. Results were correlated with AG exposure and hearing impairment.

Results: Two polymorphisms in three patients were found in this study. 709G>A, with a prevalence of 7.14% (0.18, 33.9) was found in one patient with normal hearing. 1189T>C, with a prevalence of 14.3% (1.78, 42.8) was found in two patients with mild to moderate hearing impairment. These three patients were all previously exposed to AGs treatment. The literatures suggested that these were not significantly associated with hearing impairment. However, in the present study, 1189T>C was found in two hearing impaired patients.

Conclusions: This study suggests that the methods used here to screen for mutations are feasible and can be used for a large scale research in the future. Further studies are needed to clarify the role of 1189T>C given that both the patients in this study have hearing impairment.

Effects of Natural Honey on Blood Glucose and Lipid Profile in Young Healthy Pakistani Males

* Majid M; Younis MA; Naveed AK; Shah U; Azeem A; Tirmizi SH

National University of Sciences and Technology, Department of Biochemistry and Molecular Biology, Army Medical College, Rawalpindi, Pakistan.

Background: The objective of this study was to investigate the effects of natural honey on blood glucose and lipid profile in healthy Pakistani individuals with same age, sex, place of living, daily routine and same diet (except honey).

Methods: This study was randomized controlled trials (RCT) conducted in the Army Medical College, Rawalpindi, Pakistan. Duration of study was 4 weeks (from 15th Feb 2009 to 15th March 2009). 70 health subjects were included in the study and randomly divided into two groups of 35 each using random number table. 70g of honey was given to each individual in the experimental group every day for a period of 4 weeks while control group was kept on the same diet as that of experimental group except honey. The fasting glucose, total cholesterol, Low density lipoprotein (LDL), High density lipoprotein (HDL) and triglycerol (TG) levels were measured before and after the experiment.

Results: The glucose levels in both groups were raised. However, the increase in the fasting glucose levels of the experimental group was significantly less than those in the control group ($p < 0.05$). On the other hand, levels of total cholesterol, LDL and triglycerides in the control group increased while those in the experiment group decreased significantly ($p < 0.05$). HDL level was increased in experimental group where as it decreased slightly in control group ($p < 0.05$).

Conclusion: Natural honey significantly limits the rise in blood glucose along with a significant decrease in the levels of total cholesterol, LDL and triglycerides, and increase HDL in young healthy adults. It is suggestive of the fact that honey is one of the best foods for improving blood glucose and lipid profile in young healthy individuals and can be beneficial in the prevention of diseases like diabetes, cardiovascular diseases, hyperlipidemias and obesity.

The type 1 interferon response induced by different lineages of *Mycobacterium tuberculosis*

Jurangpathy R; Krishnan N
Imperial College, London, UK

Type 1 interferons are renowned for their anti-viral properties, but they are also induced by a variety of bacterial pathogens, including *Mycobacterium tuberculosis*. The role of type 1 interferons in the immune response to *M. tuberculosis* is still debated and the method of such induction still unclear, with the ESX-1 secretory system and the cytosolic NOD 2-Rip2 receptor pathway hypothesised as important for initiating such a response. Additionally, a previous study based on the hypervirulent strain, HN878 (a member of the East Asian lineage), has suggested that the virulence of a strain of *M. tuberculosis* may be associated with the level of type 1 interferon induced. In this study, we infected murine bone marrow derived macrophages with heat-killed *M. tuberculosis* strains of three different lineages: the Indo-Oceanic, East Asian/Beijing and Euro-American lineages. We found that macrophages have the ability to recognise heat-killed *M. tuberculosis* due to the levels of TNF- α and IL-12p40 produced in response. Furthermore, we identified that out of the three lineages tested, only the heat-killed strains of the Euro-American lineage induced the expression of type 1 interferon genes, with peak induction of IFN- γ mRNA at 6 hours. Two possible mechanisms could explain these findings. Firstly, the Euro-American strains may have more heat-stable components of their ESX-1 secretory system than the other lineages. Secondly, due to expected denaturing of the proteins of the ESX-1 system, the Euro-American strains may have a novel, as yet unrecognised, ESX-1 independent pathway of type 1 interferon induction.

Neutrophil responses to Diesel Exhaust Particles are dependant on host-mediated factors

*Piddock K; Chaudhuri N; Sabroe I; Prince L; Parker L
University of Sheffield, UK

Diesel exhaust particles (DEP) are a major component of air pollution and have been shown to provoke inflammation. Peripheral blood neutrophils (PBN) have a major role in the innate immune system and have been shown to be involved in this inflammatory response. We investigated how DEP induce neutrophilic inflammation.

Preliminary experiments demonstrated that DEP (50mg/ml) caused an increase in Interleukin 8 (IL-8) production in BEAS-2B/monocyte cocultures. Light microscopy analysis of cytopins showed that supernatant from these cocultures increased PBN survival at 20 hrs, suggesting that DEP may be pro-inflammatory to PBN. We hypothesised that DEP would directly effect PBN in key activation assays. Light microscopy analysis of cytopins revealed that DEP 50 mg/ml did not significantly alter PBN survival alone or in the presence of 5% peripheral blood mononuclear cells, 2%, 1% or 0.5% purified monocytes. Preliminary experiments indicated that DEP 50 mg/ml primed PBN to release increased IL-8 in response to LPS 1 and 0.1 ng/ml. PBN treated with DEP 50 or 200 mg/ml did not significantly increase reactive oxygen species (ROS) generation measured by flow cytometry using dichlorofluorescein. However, phagocytosis of fluorescent latex beads was increased by co-incubation with DEP 50 mg/ml, measured by flow cytometry. Timelapse microscopy and cytospin analysis indicated that while monocytes efficiently phagocytosed DEP, neutrophils did not.

We conclude that DEP 50 mg/ml modulates neutrophil function both directly (priming phagocytosis) and indirectly (modulating survival through actions of other cells), but that neutrophils do not respond to DEP in the same manner as monocytes.

The effect of isolated adipocytes on the human placenta and subsequent changes in the obese state

*Tan JJ; Loubiere LS; Vasilopoulou E; Tomlinson JW; Kilby MD; Chan SY

University of Birmingham, UK

Background: Numerous epidemiological studies implicate obesity as an independent risk factor in the development of adverse outcomes in pregnancy.

Aim: To explore the effect of whole adipocyte secretome on placental explants.

Methods: Mature adipocytes were isolated from subcutaneous and omental adipose tissue taken from normal BMI (20 to 25; n=4) and obese (over 30; n=4) patients at the time of Caesarean Delivery using a modified Rodbell method. Stromal cells from corresponding adipose tissue were isolated as controls. Conditioned media was collected after 24h of cell culture in serum-free media. Placental explants were cultured in conditioned media for 24, 48 and 72 hours before collection of the supernatant and explants for analysis.

Results: Normal and obese adipocyte-conditioned media significantly up-regulated mRNA encoding the inflammatory cytokines IL-6 and TNF- α in placental explants as compared with stromal-conditioned controls ($p < 0.05$). Adipocyte-conditioned media also significantly reduced levels of hCG secretion by placental explants compared with controls by at least 2 fold at every time point ($p < 0.0001$), despite no differences in cell viability. This effect was most significant in placental explants treated with adipocyte-conditioned media from obese omental adipose tissue compared with media from normal BMI omental adipose tissue (74.5% reduction over 72h; $p < 0.05$).

Conclusion: Adipocyte secretome could impair placental function and induce inflammatory changes through the regulation of gene expression. Both a quantitative and qualitative change in secretome from omental adipose tissue in the obese state may be implicated in altered placental function leading to adverse pregnancy outcomes.

Obtaining stem cells from adipose tissue. Experimental studies

*Nowak W; Michalski D; Kościński J; Skóra M

Poznan University of Medical Sciences, Poland

Background: The frequency of back pain symptoms is comparable with the prevalence of upper respiratory tract infections. It is postulated that degenerative changes might be prevented by using stem cells to regenerate the intervertebral discs.

Objective: The aim of this study was to obtain mesenchymal stem cells from subcutaneous fat tissue from rat.

Methods: Adipose tissue was collected from subcutaneous area of Wistar rats. Isolated tissue was mechanically fragmented and digested by collagenase. During culturing, cells proliferation progress was monitored using microscope. Immunohistochemical staining was used to identify mesenchymal stem cells. Specific antibodies directed against rabbit beta-1 integrin - CD29 and CD45 were used followed by detection with secondary antibodies (anti-rabbit) labeled with fluorescein (microscopic examination) or horseradish peroxidase (western blot).

Results: We observed significant growth potential of adipose derived cells. Immunohistochemical labeling and western blot confirmed the presence of CD29 antigen expression and the lack of CD45 antigen. In the early stage of culturing the most intense growth of cells and the highest expression level of CD 29 antigen was observed. In subsequent passages both, cell growth intensity and expression level of CD29 antigen decreased.

Conclusion: Our studies demonstrated the possibility of obtaining mesenchymal stem cells from adipose tissue which gives hope for a quick and easy way of these cells isolation. However, the effectiveness of the procedure requires further studies. It is necessary to determine the capability of adipose derived mesenchymal stem cells to differentiate toward chondrocytes and other cell lines.

Can mutations in the receptor moiety of a Growth Hormone Ligand-Receptor Fusion modulate bioactivity?

Mounstephen PE*; Freeman H; Wilkinson I; Sayers J; Artymiuk P; Ross R

University of Sheffield, UK

Hypothesis: We are investigating development of long-acting growth hormone analogues for states of growth hormone (GH) deficiency. GH circulates bound to the cleaved, extracellular portion of its receptor which acts as a binding protein (GHRe). A ligand-receptor fusion of GH with GHRe acts as a potent, long-acting GH agonist (Wilkinson et al., Nat Med 2007). These ligand receptor molecules form head-tail dimers which effectively increase molecular weight and reduce clearance. However dimerisation may also reduce the bioactivity of these molecules by reducing bioavailability of GH. We hypothesise that a mutation in the GHRe portion (Tryptophan 104 > alanine) which has been shown to prevent GH binding would also prevent dimerisation. It is anticipated that this mutation will increase the bioavailability of GH in the GH-GHRe molecule by preventing dimerisation.

Method: The W104A mutation has been produced by PCR and cloned into a vector allowing expression of histidine-tagged GH-GHRe. Recombinant DNA was expressed in CHO cells. ELISA and Western Blot analysis was used to determine levels of production and examine dimer formation.

Results: Wild type and mutant (W104A) GH-GHRe fusion molecules were successfully cloned and transiently and stably expressed in CHO FlpIn cells. The constructs containing the W104A mutation were expressed at comparable levels to wild type molecule. Native PAGE demonstrates the lack of dimer formation in W104A mutants and GH Bioassays confirm superior bioactivity in W104A mutant.

Conclusions: The W104A mutation does not affect expression of GH-GHRe fusions, prevents dimer formation and increases bioactivity.

The effect of insulin on oxidant-induced inhibition of the PMCA and cell death

Damji, D*; Mankad P; Bruce J

University of Manchester Medical School, UK

Acute pancreatitis involves inflammation of pancreatic acinar cells characterised by aberrant intracellular calcium $[Ca^{2+}]_{ic}$ signalling and premature activation of enzymes leading to its autodigestion. Previous studies have shown that hydrogen peroxide (H_2O_2) causes inhibition of the plasma membrane Ca^{2+} -ATPase (PMCA) and a Ca^{2+} -overload response characteristic of acute pancreatitis suggesting oxidative stress plays a key role in the pathophysiology of pancreatitis. The exocrine pancreas and endocrine pancreas are anatomically and functionally linked. In certain models of pancreatitis, the majority of the acini showed signs of acute pancreatic inflammation, while the periinsular acini remained intact suggesting that insulin secreted by the Langerhans islets protect the surrounding acini. The aim of the present study was to investigate the role of insulin in protecting against oxidant-induced PMCA inhibition and cell death. This was achieved using collagenase digested rat pancreatic acinar cells. PMCA activity was measured using an in situ $[Ca^{2+}]_{ic}$ clearance assay. $[Ca^{2+}]_{ic}$ clearance was measured using fura-2 imaging. Cell death was measured using a trypan blue exclusion assay. H_2O_2 caused a concentration-dependent inhibition of the PMCA activity. Moreover, pretreatment with 100nM insulin significantly attenuated this H_2O_2 -induced PMCA inhibition. These data suggest that insulin protects against oxidant-induced inhibition of the PMCA. We also investigated the protective potential of insulin against oxidative stress-induced cell death. These results were inconclusive. Further studies may help elucidate the mechanisms by which insulin attenuates H_2O_2 -induced PMCA inhibition. This may then help in the future development of drugs that can attenuate the pathological course of acute pancreatitis.

Characterisation of the Urinary Metabolic Profile of Liver-Fluke Associated Cholangiocarcinoma using Magnetic Resonance Spectroscopy in a Thai Population; A Pilot Study

*Chetwood JD; Khan SA; Taylor-Robinson SD; McPhail MJ; Limpaiboon T; Wadsworth CA

Khon Kaen University Hospital & Imperial College London, UK

Cholangiocarcinoma (CCA) incidence is increasing worldwide whilst mortality rates and detection efficacy remain very poor, with no current adequate diagnostic biomarkers or other suitable diagnostic modalities with an adequate sensitivity and specificity. We present a ^1H NMR spectroscopy urinalysis on Thai CCA patients that accurately separated cancer patients and healthy controls in small cohorts. Urine samples from 3 well-matched cohorts were collected from a Thai population in Khon Kaen, Thailand. In this area CCA is nearly wholly attributable to liver-fluke infestation giving a uniform aetiology for analysis. Using an 11.7T nuclear magnetic resonance system the urine was analysed from 3 separate cohorts consisting of: 5 pre-resection CCA patients; 3 post-resection CCA patients; and 20 healthy Thai controls. Multivariate statistical analysis was used to compare pre-resection CCA and healthy controls in the form of principal components analysis (PCA) and partial least squared discriminant analysis (PLS-DA) with a sensitivity and specificity of 100%. Metabolites that contributed most strongly to the multivariate models were creatinine, citrate, hippurate, glycine, phenylalanine, alanine and trimethylamine N-oxide, with urinary levels of hippurate and citrate showing significant differences ($P < 0.05$). These key metabolites were also considerably different in pre- and post-resection CCA. The findings validate further research into this area, especially with the significance of previous urinalysis findings on diseases such as hepatocellular carcinoma. These urinary CCA biomarkers are indicative of tumour effects on physiology, energy production, and aberrant chromosomal methylation, and furthermore if validated in larger studies have the potential to be developed as simple urinary screening tests.

Influence of a Self Assembled Monolayer on the Sensor Response of a Protease Sensor

Hothi JK

School of Engineering and Materials Science, Queen Mary University of London, UK

Self assembled monolayers used in the formation of stable films to create sensor devices for proteases to detect biomarkers of periodontal disease were explored. Alkanethiol monolayers with the head functional groups OH and NH₂ were assembled onto gold metal substrates separately. Hydrogels were formed via cross links between aldehyde groups in oxidised dextran and the peptide sequence (AAPVAAK) Ala-Ala-Pro-Val-Ala-Ala-Lys and then spread on to the self assembled monolayers. The aim of the experiment was to see whether degradation of the hydrogel films would occur as a result of action of HNE (Human Neutrophil Elastase Enzyme) on the AAPVAAK cross links and to find out which functional group monolayer provided the most stable sensor device. Degradation was monitored using simultaneous QCM and Electrochemical Impedance techniques using the Frequency Response Analyzer and Network Analyzers respectively. Initially the stability of the films using the two different monolayers was determined by the effect of pH 7.5 charge transfer buffer (which contains no enzymes) on the polymer films. Impedance and QCM Impedance values changed in the presence of charge transfer buffer only suggesting instability of both sensor structures. Addition of HNE did show further changes in readings suggesting that HNE does have an effect on AAPVAAK and hence can cause degradation of the hydrogel. In conclusion the study shows a potential relationship between AAPVAAK and HNE which can be utilized in the development of a biosensor for the detection of periodontal disease, provided that a method of creating a more stable monolayer can be found.

The Effect of Zinc on Fenestrae Formation in Endothelial Cells

Wilwaraarachchi A; Cahyadi S; Lengyel I

UCL Institute of Ophthalmology, London, UK

Age-related macular degeneration (AMD) is the commonest cause of irreversible blindness in people over 50 in the developed world and accounts for 50% of those registered blind or partially sighted in the UK. A key feature is reduced permeability of Bruch's membrane associated with deposition of extracellular material called drusen. This interrupts nutrient and waste diffusion between fenestrated choriocapillaris of the eye and outer retina, causing photoreceptor degeneration and blindness.

Zinc deficiency is linked to AMD and zinc supplementation is one of few treatments available, however its mechanism of action remains unknown. Preliminary experiments in our laboratory suggest zinc plays a role in fenestrae formation in endothelial cells. We hypothesise zinc increases permeability of the choriocapillaris, thus improving debris clearance from Bruch's membrane and zinc deficiency in AMD reduces fenestrations which exacerbates deposition.

We aim to confirm effects of zinc on fenestrae formation by immunolabelling fenestral diaphragm component PV-1 to observe sieve-plates in bEND-5 endothelial cells incubated with zinc at different concentrations and durations. Actin cytoskeleton, zinc and intracellular organelle distribution patterns were also studied.

Results confirmed fenestration with zinc treatment from 90 minutes and sieve-plate proportions appeared to increase as incubation time increased. Above the optimal concentration of 125uM, cells showed evidence of toxicity. Cytoskeletal structure was maintained throughout. Zinc and lysosomal studies demonstrated similar distributions, but zinc was also present in sieve-plates. These observations advocate future studies into how zinc may slow the progression of AMD by improving permeability of choriocapillaris.

Raman Imaging for Cancer Diagnosis using Clustering Analysis based on the Pearson Correlation Coefficient

*Chotai AA; Downey F; Cook R; Gillett C; Richards D; Festy F

Guy's Hospital, London, UK

Recent advances in Raman spectroscopy, an optical-based technique which analyses photons scattered by a sample surface, have generated new interests in the field of optical diagnosis and characterisation of biological tissue. In few cases, differentiation between cancerous and benign tumours from human patients was shown to be possible using principal component analysis on the collected Raman spectra. However, this simple approach has been limited by a number of factors such as the lack of images, namely the ones found in conventional histology. Thus, in this study, using the rapid Streamline Raman imaging capabilities of a Renishaw's inVia Reflex spectrometer, we have mapped with high resolution, the Raman signature of a number of different samples. To extract meaningful chemical information from these large datasets, we have developed an automated clustering approach based on the Pearson correlation coefficient. Using this Raman analysis, we have successfully differentiated the various components from samples containing a mixture of 1 to 6 μm fluorescent beads of different emission wavelengths: 460 nm (blue), 515 nm (green) and 620 nm (carmin). Subsequently, we have clustered the different biochemicals of both stained and unstained human breast tissue sections.

This study demonstrates a novel non-invasive method to differentiate different biochemicals of human tissue, which could have a substantial future clinical impact, as it may become a useful adjunct to the pathological diagnosis of cancer.

Oestrogen Receptor-negative Progesterone Receptor-positive Breast Cancer: A Re-evaluation Study

Ahmed Z*; Green A; Rakha E
University of Nottingham, UK

The occurrence of oestrogen and/or progesterone receptors in breast carcinomas plays a crucial role in the prognosis and treatment of disease. Consequently breast cancer can be subdivided into phenotypes on the basis of combined receptor status to provide a more explicit prediction of outcome. However, the validity of one such subtype, the oestrogen receptor-negative, progesterone receptor-positive tumour, is greatly disputed as to whether it is inherent in nature or a product of artefactual error.

The study utilised contemporary methods of immunohistochemical analysis for both steroid receptors to attempt to verify the expression of this dubious phenotype. This was performed on cases classified as such by prior assays (n=32) using an array of antibodies with a focus on the oestrogen receptor due to the frequency of false negatives reported in literature. Additionally, real time-polymerase chain reaction investigating the presence of oestrogen receptor mRNA was used as a complementary tool in determining receptor expression.

Although the latter method was not successful, immunohistochemistry revealed a substantial decline in the presentation of such carcinomas whereby most cases exhibited alternative phenotypes. Furthermore cases determined "oestrogen receptor-negative progesterone receptor-positive" (n=5) under clinical thresholds for positivity (<1% staining) demonstrated weak estrogen receptor expression.

Such evidence suggests that incidence of the oestrogen receptor-negative progesterone receptor-positive breast carcinomas may well be a product of assay insensitivity. Concurrently, this elicits how the issue of technical error and subsequent inter-variation of results has hindered the process of reaching a universal definition of this phenotype for the clinical setting.

The Role of 99m-Tc Sestamibi Scanning in the Pre-operative Localization of Abnormal Parathyroid Glands in Patients with Primary Hyperparathyroidism

Brady C. *; Smith D
Ninewells Hospital, Dundee, UK

Background Primary hyperparathyroidism is one of the most common endocrine conditions. Surgical management is often necessary, yet the methods used to localize the abnormal gland pre-operatively are controversial. The aim of this study was to establish whether one of the most commonly used methods, 99M-Tc sestamibi scanning, is accurate enough to be useful in the pre-operative localization of parathyroid pathology in patients with primary hyperparathyroidism.

Methods A retrospective case-note review of 258 patients (199 female; mean age 61.1 ± 13.1 years) with primary hyperparathyroidism who underwent parathyroidectomy between February 2003 and July 2010 was conducted. Patients who presented with hyperparathyroidism as part of Multiple Endocrine Neoplasia type 1 (n=4) were included.

Results Post-operatively, mean serum corrected calcium and parathyroid hormone (PTH) levels fell significantly ($p < 0.0001$). A cure rate of 57.9% was achieved based on PTH levels taken 24 hours post-operatively. 87.2% of patients had a pre-operative 99M-Tc sestamibi scan. The technique had an overall sensitivity of 94.4% and a Positive Predictive Value of 95.8%. The rate of localization to the correct side was 81.8% and in 49.3% of patients, the scan could correctly localize the precise abnormal gland.

Conclusion 99m-Tc sestamibi scanning is useful in the pre-operative planning of parathyroidectomy for primary hyperparathyroidism. This has implications for the surgical procedure carried out, making unilateral neck exploration possible. This reduces the postoperative complications associated with bilateral neck exploration and results in shorter hospital stays. Clearly, surgical experience is also important in improving the accuracy of parathyroidectomy, as is combining imaging techniques.

Audit to assess how well investigations are handed over from the medical take to the wards at the Bristol Royal Infirmary

Cooper L; Birchenall K; Reed EK

Bristol Royal Infirmary, UK

Background: At the BRI, medical patients are admitted under the take-team before subsequently being transferred to the ward-teams. GMC guidance highlights the importance of effective handover for safe and efficient patient care¹. This audit was designed to assess, and subsequently improve, the clarity of written investigation handover from the take team, in order to improve patient safety and satisfaction.

Method: Thirty-eight patients admitted via the medical take to two medical BRI wards during March 2011 were retrospectively audited. Information recorded in admission pro formas regarding the planning, request status and results of investigations, was compared with equivalent data available at the time of the post-take ward round on the ICE computer database used for investigation request and reporting at the BRI. The standard was 100% recorded handover.

Results

- Whether or not a planned investigation was requested was not documented for 62% of investigations.
- Of those investigations planned and requested, only 53% were handed over as requested.
- 14% of investigations requested on ICE were not recorded as planned.
- 5% of investigations not requested were documented as requested.
- 13% of investigation results available on ICE by the post-take ward round were not documented.
- 11% of planned investigations were neither requested nor handed over as needing to be.

Conclusion: Handover of investigations from take- to ward- teams was found to be poor overall. This is likely to increase patient stay and impede quality of care, as well as creating extra work for ward doctors. A more efficient and reliable method of handover is therefore required. It is proposed that an investigations handover grid will be added to the medical pro forma prior to re-auditing.

¹GMC: Good Medical Practice 2006

HIV testing in all children of HIV positive women

*Koh AL; Jones R

Wexham Park Hospital, Slough, UK

Background: Undiagnosed HIV infection leads to a significant risk of increased morbidity and mortality in children. The testing of children of HIV-positive adults should be taken as a matter of urgency. The aim of this study is to establish the HIV status of children of HIV-positive women attending HIV outpatient follow up clinic.

Method: This is a retrospective cohort study of HIV-positive women who were pregnant between 2006 and 2010. We reviewed if any children of these women were tested for HIV.

Result: There were 50 HIV-positive women with a total of 54 pregnancies. 3 newborns were tested HIV-positive. A total of 46 live siblings were eligible for HIV testing. Of 46 siblings, 16 children (35%) were not tested. Of these 16 children, one child had no valid reason for being untested.

Conclusion: One child was identified untested for HIV status as his mother failed to bring him to the HIV follow up outpatient clinic. The adult HIV team had been reminded to contact the mother and encourage her to bring the child for HIV testing. In the future, any children <2 years old or symptomatic should be offered HIV testing as soon as possible as this group of children carries higher risk of morbidity and mortality associated with delayed diagnosis. As for older children, we should respect mother's wish to wait for the result of HIV testing of her newborn and then only arrange blood test for older siblings on same day of the newborn's deferred BCG.

Audit of early medical terminations of pregnancy (EMTOP) in an area of high ethnic diversity and socio-economic deprivation

Stevens J; Alam A; Naftalin A; Nursimuloo S
Newham University Hospital, UK

Women in Newham are at high risk for abortion, given the majority immigrant population, multiparity and high prevalence of sexually transmitted infections. Abortion is an expensive, time consuming and emotionally stressful approach to managing fertility. Nationally, whereas overall rates are decreasing, early medical terminations (EMTOP) are increasing. This audit set out to determine local trends and demographics with regard to EMTOP demand, and conformity to national guidelines.

The initial audit prospectively studied 100 cases in 2008; re-audit was performed retrospectively in 2010 (357 cases). Among the data audited were demographics, contraception, previous abortions, timescale and complications.

Initial audit highlighted waiting times in excess of RCOG requirements, high termination failure rate, incomplete documentation and unreliable contraceptive choices. Therefore, clinic capacity was increased, documentation discussed and EMTOP protocol modified. Re-audit revealed 97% EMTOPs within approved time periods, failure rates meeting national standards and a 25% increase in correct documentation. However, also found was a twofold increase in EMTOPs performed in <20 year olds (contrary to national trends), and a threefold increase in those requesting repeat abortion. Contraceptive choices were still suboptimal, with 1/3 of patients 'undecided' about future contraception, and only 1/3 considering the use of long acting reversible contraceptives.

This audit illustrates improvements that modest service alterations can achieve. It also raises a new question: is there an increasing tendency in the teenage population to use EMTOP as an alternative family planning method? Concerted efforts should focus on educating women at termination to ensure adequate contraception throughout their remaining reproductive years.

Abdominal x-rays in the acute setting: How are we using them?

*Farooq S; Richardson N
Broomfield Hospital, Chelmsford, Essex

Background: The National Radiation Protection Board estimated that a single abdominal x-ray would expose a patient to thirty-five times more radiation than a chest x-ray. In 1976 the Royal College of Radiologists working party was established to promote effective use of radiology. The Royal College of Radiologists first published guidelines in 1988 to ensure safe use of radiology. The guidelines of 2003 provide specific clinical situations for the acceptable use of abdominal x-rays. The aim of this audit is to establish how we are using abdominal x-rays in the acute setting and whether we are requesting them appropriately.

Design: A total of 110 patient records were included over a two-week surgical on-call period.

The parameters recorded were as follows: Diagnosis (provisional and definitive); Investigations (initial radiological investigations and further); grade and specialty of the requester.

Results: The results showed that 40 patients out of 110 had no radiological investigations on admission, 45 had abdominal x-rays, 7 had a CT KUB, 5 had an abdominal USS and the remainder had other radiological investigations. 73% of the requests made were acceptable, 27% were not. Obstruction was the most common provisional diagnosis made (18 cases). Of these cases, only 7 cases were true obstruction. 21 patients had further radiological investigation following an abdominal x-ray.

Conclusion: Recommendations made included wider distribution of the RCR guidelines within the hospital. Education of junior staff as to when it is appropriate to request an abdominal film and whether an abdominal film is necessary if further imaging is required.

Audit Report reveals lack of follow-up for HBsAg-positive pregnant women and their contacts in Thames Valley

*Monkhouse A; Maduma-BA; Ejide S; Saldana L; Abid M; O'Moore E

Thames Valley Health Protection Agency, UK

Chronic hepatitis B is an important public health issue due to its high infectivity and ability to cause significant morbidity. In this cohort study 201 HBsAg-positive pregnant women were identified between January 1st 2008 and December 31st 2009 in the Thames Valley area. They were investigated regarding follow-up of their sexual and household contacts and the referral of the index case to a gastroenterology specialist.

Methods included identifying HBsAg-positive pregnancies by laboratory results and requesting information from GPs regarding case referral to gastroenterologists, sexual and household contact screening and vaccination and evidence that TVHPU advice letters were received by GPs. Letters, telephone calls and faxes were implemented to request the information

Among the 201 women only 107(64%) were referred to a gastroenterologist. 323 contacts were identified of which 146(45%) completed vaccination, 11(3%) had incomplete vaccination, 119(34%) were registered with the cases' GP but had not been immunised and 57(18%) sexual contacts were not registered with the practice and thus their follow-up was unknown. Of those registered at the same GP but not immunised, 67% were children and 31% were sexual contacts. The study prompted immediate positive reactions in which many of these contacts were subsequently screened and vaccinated and previously un-referred cases were referred to a Gastroenterologist.

The study highlighted that there is incomplete follow-up of chronic hepatitis B carrier mothers and their contacts indicating a need to improve collaboration between the TVHPU and local GPs in a proactive approach to appropriate follow-up.

Ward based troponin

Jones, R (Dr); Cannon, C (Dr)

Great Western Hospital, UK

At GWH a ward based troponin test is used in the Acute Assessment Unit (AAU) to expedite discharge. It is a simple blood test performed on the ward that gives a troponin, CKMB and myoglobin result in 20 minutes compared to over two hours for a laboratory based troponin. This test costs nearly ten times that of a lab based. Each week the AAU spends up to £500 on this test. Concerns were raised whether usage is always appropriate so the use of this test been audited and re-audited after a period of education.

Two retrospective audits were conducted of 50 consecutive patients from July – August 2010 and in April 2011. Limited guidance already existed however only 72% of patients achieved same day discharge. New guidance was drawn up stating that a ward troponin was only performed if it facilitated rapid same day discharge.

The guidelines were re-audited 6 months later showing a large improvement; with 94% of tests now compliant with new guidelines.

This audit has benefitted the trust by improving the usage of an expensive but useful ward based test. Twenty percent fewer ward tests are being ordered using the new guidelines. Tests are now only used when the added speed can directly benefit hospital discharges. We should all strive in these times of increasing austerity to evaluate our practice and look for cost savings while maintaining patient best interests and safety.

Dendritic cell and Regulatory T cell interactions in chronically inflamed liver

*van Hasselt TJ; Curbishley SM; Hoolihan DD; Blahova M; Adams DH
University of Birmingham, UK

Background: Interactions between CD4+CD25+ regulatory T cells (Tregs) and dendritic cells (DC) are important in regulation of immune tolerance. Liver DCs display a unique tolerogenic phenotype, and in chronically inflamed liver parenchyma are found in close proximity to Tregs, but the effect of their interactions is unknown

Aims: This in vitro study examines effects of interactions between Tregs and DCs derived from blood or isolated from liver tissue.

Methods: Tregs were isolated from peripheral blood. DCs were generated from peripheral blood monocytes, and matured with lipopolysaccharide; or isolated from liver provided by the University Hospitals Birmingham liver transplant service. Tregs were co-cultured with DCs, and phenotype was assessed by flow cytometry. After transwell culture allowing only diffusion of soluble factors, Tregs were titrated in to suppression assays.

Results: Co-culture with immature blood-derived DCs led to a significant decrease in the proportion of cells with Treg phenotype. However mature blood-derived DCs maintained Treg phenotype, and significantly increased suppressive function after transwell culture. Livers from which DCs were isolated were grouped into non-autoimmune (healthy donor liver, alcoholic liver disease) and autoimmune (primary biliary cirrhosis, primary sclerosing cholangitis). Non-autoimmune DCs failed to maintain Treg phenotype, whereas autoimmune DCs significantly better maintained Tregs, and also maintained Treg function after transwell culture.

Conclusions: Mature DCs seem to maintain tolerance via Tregs while also driving inflammation. In the liver, Tregs are only maintained by DCs when there is chronic autoimmune pathology, suggesting that there is a tolerogenic network operating, perhaps to prevent further damage.

A Quality Improvement Project- Improving the Quality of Weekend Handover in Surgical Firms at Frenchay Hospital, North Bristol NHS Trust

*Mark I; *George A; Hooker J; Peacock V; Kellam P; Wardle R; Kirkbridge R
North Bristol NHS Trust, UK

Objectives: It was noted that handover at the weekends among general surgical firms at Frenchay Hospital needed improvement as anecdotally there had been occurrences where important tasks were not performed or recorded by the on-call weekend staff. Our aim was to improve the quality of weekend handover, thus ensuring better patient safety.

Methods: The existing weekend handover system involved an unpopular weekend sticker and an electronic handover sheet of variable format (Excel/Word). Through the course of four PDSA (plan-do-study-act) cycles we changed the format of the sticker. We then converted all patient and handover lists to a unified Excel format in a further PDSA cycle. After each cycle, we conducted a questionnaire of junior doctors and then modified the handover format accordingly. We collected data on the percentage of jobs done during the weekend as requested by the handover system over a 14 week period

Results: The baseline score (the percentage of jobs done during the weekend as requested) before effecting the changes was 65% and through the course of 5 PDSA cycles, this rose to 89%. A questionnaire given to all surgical junior doctors demonstrated that the new system was universally more popular and effective than the previous system.

Conclusion: Through relatively small and simple changes in practice, junior doctors were able to demonstrate a large change in clinical outcomes, thus improving the standard of weekend patient care and its safety.

Delirium- The Assessment of at Risk Patients

Pamplung J; Varsani D

Queens Hospital/ Newham General Hospital, UK

Delirium is characterised by disturbed consciousness, cognitive function or perception, which has an acute onset and fluctuating course. It affects up to 30% of all elderly patients and is associated with significant burden and poor outcomes including an increase in length of stay and mortality. Fortunately it can be prevented and treated if dealt with urgently.

AMTS (abbreviated mental-test score) is a 10-point test used to rapidly assess elderly patients' cognitive function, where <8 is significant for confusion.

The aim of the audit was to aid recognition of delirium and to provide guidance on the importance of assessing cognition in elderly patients.

In 2010, 500 in-patients over 65 years from a UK hospital were retrospectively analysed to identify if cognition was documented and whether this was based on their AMTS, and if other investigations were performed including urine dipstick, rectal examination (if faecal impaction was suspected) and CT head if clinically indicated.

Of the 500 patients, 155 had developed delirium and this was identified in the notes. However, only 77% of these had a documented AMTS. 55% of delirium patients had a documented dipstick result. Of the total patients, only 215 (43%) had an AMTS completed.

The audit led to AMTS and investigation documentation to be introduced onto the clerking pro-forma to screen patients over 65 years. AMTS score will also provide a baseline to patients' cognition. Simple investigations such as urine dipstick should be obtained to aid a management plan. Healthcare staff were reminded of the importance of documentation.

Caring for adolescents with HIV

Ellis J (Dr); Norrish G (Dr); Elgalib A (Dr)

Croydon University Hospital, UK

Background: In 2009, 13, 861 16-24 year olds were living with HIV in the UK. The unique psychosocial development during adolescence demands a multi-faceted approach to healthcare. Limited studies are available to inform practice.

Aims: 1.Characterise the population of adolescent HIV+ patients accessing CUH GUM services. 2. Identify unique treatment challenges. 3. Identify differences between patients with vertically vs. horizontally-acquired HIV.

Method: Retrospective case note review of all HIV positive patients aged 16-24 years using the CUH GUM services.

Results: 46 patients met our inclusion criteria. The median age was 23, 70% were female and 52% were Black African. The commonest mode of transmission was unprotected heterosexual intercourse (57%). 57% of patients were on HAART therapy, for 70% this was their second regimen. Overall adherence was good: 14% of the total cohort had 'poor' adherence. However in the 'transitioners', 72% had poor adherence. There was a high incidence of alcohol, recreational drug use and mental health problems. 46% of adolescents had lost one or both parents. 42% of patients were sexually active, of whom only 30% had a regular partner

Conclusions: This group has a high incidence of psychosocial problems and complex medical needs, which would be best addressed by specialist adolescent services. Sexual and reproductive health promotion should be integral to this. Transitioners (24%) are more likely to be: symptomatic, with advanced disease at diagnosis, and exposed to multiple HAART regimens with poor adherence. These key differences could be best addressed in a tailored 'transitioner' clinic.

A near gastro-catastro phe

Kimpton J; Patel D

University of Manchester, UK

A previously well 10 year-old girl presented with sudden, severe, persistent rectal bleeding and syncope. Despite having numerous investigations which included an abdominal ultrasound, abdominal x-ray, chest x-ray and laparotomy, the cause of bleeding remained unknown and she became critically ill. A CT angiogram was performed once she was clinically stable, which showed multiple bleeding points in the mid-jejunum consistent with angiodysplasia. She was not a suitable candidate for vascular embolisation, as there were multiple bleeding points over a large area and the vessels supplying this area were too narrow, she was therefore managed surgically. Intraoperatively the small bowel was visualised by endoscope and areas of potential bleeding were isolated and tested. A 30cm length of abnormal bowel in the mid-jejunum was resected and a primary anastomosis was performed. She was transferred to PICU for postoperative management. She was discharged 5 days after admission.

This case raises a number of interesting discussion points due to its unusual nature. Firstly, it is extremely rare to find angiodysplasia in the jejunum, especially in children. Secondly, it is usual for angiodysplasia to present with major rectal bleeding that causes profound hypotension and loss of consciousness requiring massive fluid resuscitation (11870ml in total of colloid, crystalloid and blood products over 4 days).

This is a fascinating case study that highlights the importance of considering angiodysplasia as a differential diagnosis for an acute persistent rectal bleed in children and the management required to prevent a potentially fatal outcome.

Evaluating saccadic latency as a novel diagnostic tool for minimal hepatic encephalopathy in patients with liver cirrhosis

*Chan S; Cunniffe N; Munby H; Massey D; Carpenter R H.S.

University of Cambridge, Addenbrooke's Hospital, UK

Minimal hepatic encephalopathy (MHE) affects up to 80% of patients with liver cirrhosis. Although asymptomatic, MHE impairs daily living and is treatable. There is no definitive diagnostic test but psychometric tests are commonly used. These are resource-intensive, and MHE is not routinely screened for in relevant patient groups despite its clinical significance. We evaluated the usefulness of saccadic latency, the time between appearance and fixation of a visual target, as a novel diagnostic tool for MHE in patients with liver cirrhosis. Using a saccadometer, we measured saccadic latency in 17 patients with liver cirrhosis and in 15 age-matched controls. Participants also completed 4 psychometric tests (NCT-A, NCT-B, digit symbol test, block design test). MHE was diagnosed in 12 patients based on at least 2 abnormal psychometric results (as recommended by the Working Party, 1998). Analysing saccadic latency, we found no significant differences in promptness, μ , among the groups, but significantly greater variability, σ , in the MHE+ patients (1.3 ± 0.1) compared to MHE- patients (1.0 ± 0.1 ; $p=0.048$) and controls (1.0 ± 0.07 ; $p=0.01$). Based on ROC curve analysis, a cut-off of $\sigma > 1.09$ gave a diagnostic sensitivity of 75% and specificity of 80%. The aspects of cognitive impairment that manifest as changes in σ remain poorly understood but could be due to impairment of the neuronal attentional system as seen in patients with frontal lobe lesions. In conclusion, saccadometry is an easily-administered, quick and reliable tool which could potentially be used to screen patients with liver cirrhosis to identify candidates for further testing.



Future Excellence

**3rd International Academic and Research Conference**Date: 17th August 2013 (Saturday)

Venue: University Place, University of Manchester, United Kingdom

For further information and to submit an abstract, please visit:

www.doctorsacademy.org



**DOCTORS
ACADEMY**
Disseminating Medical Knowledge and Skills Globally

The World Journal of Medical Education and Research (WJMER) is the online publication of the Doctors Academy Group of Educational Establishments. It aims to promote academia and research amongst all members of the multi-disciplinary healthcare team including doctors, dentists, scientists, and students of these specialties from all parts of the world. The journal intends to promote the healthy transfer of knowledge, opinions and expertise between those who have the benefit of cutting edge technology and those who need to innovate within their resource constraints. It is our hope that this will help to develop medical knowledge and to provide optimal clinical care in different settings all over the world.

ISBN 978-938057322-9



9 789380 573229



WJMER

World Journal of Medical Education and Research
An Official Publication of the Education and Research Division of Doctors Academy