



WJMER

World Journal of Medical Education and Research

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

Highlight: Abstracts from the **4th International Academic and Research Conference 2014, Manchester, UK**



The Anatomy and Pathogenesis of Tendinous Interconnection between Flexor Tendons in the Musician's Hand

The First National Undergraduate Conference for Clinical Anatomy (NUCCA)

Use of Mixed Teaching Modality: Pakistani Medical Students Perspective

Wireless Sensor Networks in Health Care Applications

Integrated Academic and Clinical Training Programmes in the United Kingdom

Management of Paediatric Trauma in Siblings with Pyknodysostosis: A Case Report

Synchronous Colorectal Cancers: A Case Report and Review of Literature.

Introduction

The World Journal of Medical Education and Research (WJMER) (ISSN 2052-1715) is an online publication of the Doctors Academy Group of Educational Establishments. Published on a quarterly basis, the aim of the journal is to promote academia and research amongst members of the multi-disciplinary healthcare team including doctors, dentists, scientists, and students of these specialties from around the world. The principal objective of this journal is to encourage the aforementioned, from developing countries in particular, to publish their work. 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. We envisage an incessant stream of information flowing along the channels that WJMER will create and that a surfeit of ideas will be gleaned from this process. We look forward to sharing these experiences with our readers in our editions. We are honoured to welcome you to WJMER.

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Abstracts from the 4th International Academic and Research Conference 2nd August 2014, University of Manchester

Prize Winning Abstracts

**Doctors Academy Award in Academia and Research 2014
Winner of Grand Prize**

THE MAGNETICALLY-INDUCED MIGRATION OF ADIPOSE-DERIVED STROMAL CELLS AND ITS APPLICABILITY IN TENDON TISSUE ENGINEERING

Kwan TD*, El Haj AJ
Keele University, United Kingdom

The localised targeting of therapeutic agents using magnetic particles has been studied since the 1970s and more recently explored in the field of tissue engineering as a means of localising cells. We explored the use of superparamagnetic iron oxide nanoparticles (SPIONs) to promote migration of adipose-derived stromal cells (ADSCs) in response to a magnetic field. ADSCs were isolated from rabbits and observed to internalise 1 µm SPIONs when added to the media. We demonstrated this internalisation, along with the concurrent application of two different strength magnetic fields, had no effect on viability, nor on the multi-lineage differentiation potential. Further to this a magnetotactic response through collagen gel could be induced in cells in response to an applied magnetic field. This response could be modified depending on the strength of the applied field. To explore this concept *in vivo* we implanted permanent magnets into the Achilles tendons of rabbits and percutaneously injected autologous SPION-labelled or unlabelled cells around the tendon within a collagen gel. After a period of 48 hours we observed cell populations migrating into the tendon sheath in all groups with SPION-labelled cells, but in only one of those with unlabelled cells. In conclusion the combination of ADSCs with nanomagnetics appears to have no effect on cell potency and may present a new way of targeting cell populations to regions of tendon injury and damage.

Doctors Academy Grand Prize for Best Five Abstracts**Abstract I**
Clinical and Patient Related Work Category**KNOCK OUT OF THE EXTRACELLULAR CALCIUM-SENSING RECEPTOR FROM VASCULAR SMOOTH MUSCLE CELLS RESULTS IN REDUCED BLOOD PRESSURE AND SECONDARY CARDIAC OUTCOMES.**

Edwards PJ*, Schepelmann M, Davies T, Yarova P, Brennan S, Chang W, Krssak M, Kemp P, Riccardi D
School of Biosciences, Cardiff University, Cardiff, United Kingdom

The extracellular calcium-sensing receptor (CaSR) is expressed in all three layers of arterial blood vessels, where its primary function remains unclear. By knocking out CaSR in vascular smooth muscle cells (VSMCs) using LoxP-Cre recombination (SM22a-Cre x LoxP-CaSR) we aim to further investigate the roles of the CaSR in VSMCs. Even though lifespan and reproductive capabilities were unchanged between wild-type (WT) and knock-out (KO) mice, strong differences were found in the cardiovascular phenotype of the animals. At 3 months of age, KO mice showed a significantly reduced diastolic blood pressure ($p<0.01$) and mean arterial blood pressure ($p<0.01$) compared to WT controls, measured using radiotelemetry. Histological analysis of WT and KO aortas revealed no difference in aortic wall thickness or tunica-media collagen content. At 14 months of age, cardiac magnetic resonance imaging revealed no difference in end-diastolic (ED) left ventricular (LV) wall thickness but a significant increase in end-systolic (ES) LV wall thickness ($p<0.05$) and LV wall thickening (DES-ED $p<0.05$). Histological analysis of WT and KO hearts demonstrated a marked reduction in variance of cardiac fibrosis, but no difference in cardiomyocyte cross-sectional area. At 6 months of age, there was no difference between the wet heart weights of KO animals compared to WT controls, but by 18 months of age, KO hearts were significantly heavier than WT controls ($p<0.05$), suggesting a late onset of cardiac hypertrophy. In conclusion, the CaSR in VSMCs appears to play a key role in regulating blood pressure and its loss may result in multiple secondary cardiac outcomes. the most effective prompt for regular BMI assessment. Calculation of BMI should be a core part of COC prescription.

Doctors Academy Grand Prize for Best Five Abstracts**Abstract 2****Clinical and Basic Science Research****THE ROLE OF ROUTINE FOETAL ANOMALY ULTRASOUND SCANS IN DETECTING AUTISM IN UTERO.**

Salter L*, Stanfield A, Walker J, O'Hare A
University of Edinburgh, United Kingdom

Background: The routine Foetal Anomaly Scans (FAS) conducted in the Lothians since December 2008 offer a window into the foetal development of children who later developed autism compared to controls. Head circumference (HC), cerebellar diameter (CD), ventricular atrial width (VAW), femur length (FL) and abdominal circumference (AC) are all identifiable on 20 week gestation FAS.

Methods: we used retrospective FAS of children identified as later developing autism and extracted the above measurements from the scans. We compared 36 autistic children's scans with 108 controls. Growth rates between 18 and 24 weeks gestation between the two groups were compared.

Results: HC, CD, FL and AC all showed a significant effect of group and gestational age with factorial ANOVA analysis. There was also a significant effect of interaction, suggesting that the autistic children were growing at a faster rate during this period of foetal development. No significant VAW effects were found.

Conclusions: These results suggest that children with autism grow at a different rate to controls in the beginning of the 2nd trimester; notably, both their brains and bodies appear to grow faster at this stage. Autism may thus be detectable much earlier in development, allowing for targeted early treatment of the condition.

Doctors Academy Grand Prize for Best Five Abstracts**Abstract 3****Clinical and Basic Science Research****ROLE OF HYPOXIA IN PROMOTING NEUTROPHIL-MEDIATED TISSUE INJURY.**

Chen C*, Hoenderdos K, Condliffe AM, Chilvers ER
Addenbrooke's Hospital, United Kingdom

Background: Neutrophils are key effector cells of the innate immune system and play a major role in microbial defence. They are critical for microbial killing at sites of infection or inflammation through phagocytosis and release of cytotoxic granules. Many lung diseases are characterised by significant neutrophil infiltration into a hypoxic environment. Neutrophil function is modulated by hypoxia through hypoxia-inducible transcription factor, causing delayed apoptosis, impaired killing of bacteria and increased degranulation. Investigation into the pathological neutrophil phenotype is instrumental in gaining further insight into the pathophysiology of these lung diseases.

Methods: A neutrophil granule staining protocol, supported by a neutrophil elastase activity assay, was developed to examine the changes in the actin cytoskeleton and granule distribution after cell activation in a hypoxic environment. A549 cells were incubated in neutrophil supernatants and stained for cleaved caspase-3. Images were captured on a Leica TCS SP5 confocal microscope and analysed using ImageJ.

Results: Hypoxia caused polarised granule redistribution in neutrophils after N-formyl-methionyl-leucyl-phenylalanine activation. Hypoxia alone did not induce neutrophil granule redistribution. Hypoxic granulocyte macrophage colony-stimulating factor-activated neutrophil supernatants caused a clear enhancement in cleaved caspase-3 signal from the A549 cells as well as significantly increased cell-detachment ($p < 0.05$). Alpha-1-antitrypsin inhibited cell-detachment in a dose-dependent manner.

Discussion: Hypoxia primes neutrophil degranulation by stimulating signalling pathways for redistribution of the actin cytoskeleton, resulting in increased release of active neutrophil elastase. Hypoxia also induces a pro-apoptotic phenotype in neutrophils, mediated by a serine protease, most likely to be neutrophil elastase.

Conclusions: The hypoxia-modulated neutrophil phenotype shows characteristics that may be implicated in the pathophysiology of many lung diseases. Further elucidation would improve current understanding of disease pathology as well as development of future treatments.

Doctors Academy Grand Prize for Best Five Abstracts**Abstract 4****Clinical and Patient related work****BEDBOUND WITH BACK PAIN IN LATE PREGNANCY - A LOGISTICAL MANAGEMENT DILEMMA.**

Chutter L*, Jones E, Conner C

Department of Obstetrics, University Hospital Wales, Cardiff

Back pain is common in pregnancy affecting approximately 56% of women. This can be attributed to physiological changes during pregnancy but can also be due to pathological causes. Approximately 1 in 10,000 women will have symptomatic lumbar disc herniation during pregnancy. Of these women, less than 2% will develop cauda equina. This report describes a 26-year-old primigravida presenting with worsening back pain. Neurological examination revealed reduced tone, sensation, power, co-ordination and reflexes in the right leg with up-going plantar reflex. Reduction in anal tone and saddle anaesthesia was also noted. MRI revealed a large L5/S1 disc herniation. An emergency caesarean section was performed under general anaesthetic but the following day the patient developed fulminant cauda equina requiring emergency discectomy. There is symptom overlap between cauda equina and pregnancy, for example urinary incontinence and back pain. Due to a high prevalence of back pain among pregnant women, red flag symptoms can be overlooked if a practitioner does not have a high level of suspicion. Logistically, management can be very difficult; weight gain, gestational age and gravid uterus impacts on surgical options and recovery, with minimal case publications for reference and help. It is vital to involve all of the multidisciplinary team in the care of these patients. Unfortunately, this patient continues to suffer from disability secondary to cauda equina. We hope that this case emphasises the need for detailed history and examination, with involvement of the multi-disciplinary team to enable quicker diagnoses, appropriate treatment and hopefully better functional outcomes.

Doctors Academy Grand Prize for Best Five Abstracts**Abstract 5
Clinical and Patient related work****ELLAONE IN PRACTICE.**

Rimmer M*, Sephton V
University of Liverpool

Aims/Objectives: To audit the day-to-day use of emergency contraception and compare the failure rates of levonorgestrel (previously the first line choice for emergency contraception) and ulipristal acetate (the new first line choice of emergency contraception) since the implementation of new guidelines from the faculty of sexual and reproductive health.

Background: Unplanned pregnancy is a multifactorial problem affecting up to 7% of women each year. Despite emergency contraception, many women still become pregnant and require termination of pregnancy (TOP). Increased effectiveness of emergency contraception and less reliance on TOP has positive benefits on a women's social mental and physical wellbeing. Studies looking at follicles close to ovulation have shown that levonorgestrel inhibits 14.6 % of follicles where as ulipristal acetate inhibits 58.8%.¹ This suggests that ulipristal acetate works closer to ovulation, when risk of pregnancy is highest. This resulted in a change in guidance from the faculty of sexual and reproductive health to offer ulipristal acetate (trade name - ellaOne) as first line of emergency contraception over levonorgestrel.

Methods: An audit of women, receiving ulipristal acetate as 1st line emergency contraception was compared to a retrospective audit of women who received levonorgestrel as 1st line.

Results & Conclusions: 662 women received ulipristal acetate of which 1 required a TOP (failure rate of 0.0015106); 1397 received levonorgestrel of which 5 required a TOP (failure rate 0.0030157).

The odds ratio (of the failure rates) between ulipristal acetate compared to levonorgestrel is 0.50. (Calculation: Odds Ratio = 0.0015106 / 0.0030157 = 0.50091189)

This demonstrates that the change in faculty guidance is justified and that data from studies suggesting that ulipristal acetate is more effective than levonorgestrel is reflected in clinical practice.

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Winners in Individual Categories
Oral presentations**First Prize**
Category: Clinical and Basic Science Research**KNOCK OUT OF THE EXTRACELLULAR CALCIUM-SENSING RECEPTOR FROM VASCULAR SMOOTH MUSCLE CELLS RESULTS IN REDUCED BLOOD PRESSURE AND SECONDARY CARDIAC OUTCOMES.**

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**Winners in Individual Categories
Oral presentations**

Second Prize (Joint)
Category: Clinical and Basic Science Research

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Methods: we used retrospective FAS of children identified as later developing autism and extracted the above measurements from the scans. We compared 36 autistic children's scans with 108 controls. Growth rates between 18 and 24 weeks gestation between the two groups were compared.

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Conclusions: These results suggest that children with autism grow at a different rate to controls in the beginning of the 2nd trimester; notably, both their brains and bodies appear to grow faster at this stage. Autism may thus be detectable much earlier in development, allowing for targeted early treatment of the condition.

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Oral presentations**Second Prize (Joint)**
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Background: Neutrophils are key effector cells of the innate immune system and play a major role in microbial defence. They are critical for microbial killing at sites of infection or inflammation through phagocytosis and release of cytotoxic granules. Many lung diseases are characterised by significant neutrophil infiltration into a hypoxic environment. Neutrophil function is modulated by hypoxia through hypoxia-inducible transcription factor, causing delayed apoptosis, impaired killing of bacteria and increased degranulation. Investigation into the pathological neutrophil phenotype is instrumental in gaining further insight into the pathophysiology of these lung diseases.

Methods: A neutrophil granule staining protocol, supported by a neutrophil elastase activity assay, was developed to examine the changes in the actin cytoskeleton and granule distribution after cell activation in a hypoxic environment. A549 cells were incubated in neutrophil supernatants and stained for cleaved caspase-3. Images were captured on a Leica TCS SP5 confocal microscope and analysed using ImageJ.

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Conclusions: The hypoxia-modulated neutrophil phenotype shows characteristics that may be implicated in the pathophysiology of many lung diseases. Further elucidation would improve current understanding of disease pathology as well as development of future treatments.

**Winners in Individual Categories
Oral presentations****Third Prize
Category: Clinical and Basic Science Research****IN VITRO INDUCTION OF REGULATORY T CELLS AND THEIR POTENTIAL IN TRANSPLANTATION.**

Lee J*, Pettigrew G, Ali J
Addenbrooke's Hospital, University of Cambridge, United Kingdom

Introduction: Transplantation is now the treatment of choice for end-stage organ failure. Its success though is limited by the inevitable development of chronic rejection, despite current immunosuppressive therapy. Regulatory T-cells (Tregs) are well characterised as immunoregulatory cells of the adaptive immune system and have become an attractive treatment option. Here we investigate the potential of in-vitro induced Tregs as an immunomodulatory therapy to prevent the development of chronic rejection.

Methods: A heterotopic model of murine cardiac transplantation was investigated, utilising wild-type C57BL/6 recipients and bm12.Kd.IE donors (mismatched at both MHC class I and II loci). Naïve C57BL/6 CD4 T-cells were isolated and subjected to a 5-day period of in-vitro culture under various conditions to generate both polyclonal and donor antigen-specific Tregs. Treg induction was confirmed by demonstrating expression of CD25 and FOXP3 using flow cytometry. The regulatory phenotype was also assessed by performing in-vitro suppression assays.

Results: Both polyclonal and antigen-specific induced Tregs were successfully generated. Polyclonal, but not antigen-specific, Tregs suppressed in-vitro proliferation of polyclonally stimulated T-cells, likely reflecting the antigen specificity of their regulatory activity. Transfer of both antigen-specific and, to a lesser extent, polyclonal Tregs to transplanted mice resulted in a significant reduction in the progression of chronic rejection as evidenced by a reduction in antibody production and the development of allograft vasculopathy.

Conclusion: Early results in a murine model suggest that antigen-specific induced Tregs may be a particularly effective immunomodulatory therapy in transplantation, with the potential to attenuate or prevent the development of chronic rejection.

Winners in Individual Categories
Oral presentations

First Prize

Category: Clinical and Patient related work

BEDBOUND WITH BACK PAIN IN LATE PREGNANCY - A LOGISTICAL MANAGEMENT DILEMMA.

Chutter L*, Jones E, Conner C

Department of Obstetrics, University Hospital Wales, Cardiff

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Winners in Individual Categories
Oral presentations**Second Prize**
Category: Clinical and Patient related work**PERILS IN A PROGRESSIVE NECK SWELLING: WHEN IS A HOOF PRINT NOT A HORSE?**

Kanzara T*, Hall A, Namnyack S, Owa T
Lister Hospital, Stevenage

Introduction: Neck swellings due to rapidly growing Mycobacterium, are uncommon in immunocompetent people. Diagnosis relies on accurate microbiology analysis and a high index of suspicion. Misidentification of offending organisms can create problems in management resulting in patients receiving inappropriate treatment.

Case Report: An immunocompetent 31-year-old black African man presented with a 6-month history of progressive neck swelling originating from the occiput and tracking along the anterior border of the sternocleidomastoid muscle terminating next to the thyroid cartilage. Magnetic Resonance Imaging showed abnormal signalling in the subcutaneous fat overlying the posterior spinal muscles in the midline and the left sternocleidomastoid muscle with no muscular infiltration. Analysis of samples from fine needle aspiration using Analytic Profile Index performed locally identified Rhodococcus equi on 2 separate occasions. Antibiotics were commenced based on sensitivities. However, the swelling increased in size despite treatment with a variety of antibiotic combinations thereby necessitating surgical management. Partial sequencing of 16s rDNA gene sequencing analysis of debrided tissue surprisingly identified Mycobacterium Fortuitum; not Rhodococcus Equi. Surgery and molecular analysis of tissue proved crucial in managing the patient providing valuable lessons in management of cases that fail to respond to 'correct' treatment.

Winners in Individual Categories
Oral presentations

Third Prize
Category: Clinical and Patient related work

ASE REPORT: A RARE CASE OF CANNABINOID HYPEREMESIS SYNDROME.

Samee T*

Colchester General Hospital, United Kingdom

Background: The association between cannabis use and hyperemesis was first proposed 10 years ago following the observation of cyclical vomiting patterns amongst 19 patients in southern Australia. Coinciding with the rising popularity of cannabis use, Cannabinoid Hyperemesis Syndrome (CHS) has gained some recognition but the medical community remains largely unaware of it.

Case: A 23-year-old lady was admitted during a surgical take for the 5th time in 6 months and 3rd time in 5 days with severe colicky abdominal pain, nausea, bouts of retching and vomiting. In hospital she displayed compulsive showering habits (8-9 per day) which provided her with temporary symptomatic relief as well as admitted being a heavy cannabis user. Her abdomen was SNT with regular and normal bowel openings. Her routine bloods and recent and past radiological exams (XR/USS/CT) failed to reveal a source of her symptoms. CHS was suspected and a urine tox-screen was performed, revealing cannabis+++. She was managed conservatively for 4 days with IV fluids and analgesia until her symptoms settled.

Discussion: Six months prior to admission, our patient started experiencing cyclical vomiting which lasted for 4-5 days and was accompanied by intense colicky abdominal pain and severe nausea. She also reported unintentional weight loss of 12 kgs over the last 6 months. The patient's multiple admissions prior to diagnosis is typical of CHS. The lack of awareness of the syndrome leads to extensive investigations of unexplained symptoms and can remain undiagnosed for several years causing much frustration to doctors and its sufferers.

Conclusion: Following the diagnosis in August 2013, the patient has remained asymptomatic and has not had any further admissions. Accurate recognition of the cause of her symptoms has helped the patient make the right choices to return to a normal life and prevented further hospital admissions.

**Winners in Individual Categories
Oral presentations****First Prize**
Category: Clinical Audit**ELLAONE IN PRACTICE.**

Rimmer M*, Sephton V
University of Liverpool

Aims/Objectives: To audit the day-to-day use of emergency contraception and compare the failure rates of levonorgestrel (previously the first line choice for emergency contraception) and ulipristal acetate (the new first line choice of emergency contraception) since the implementation of new guidelines from the faculty of sexual and reproductive health.

Background: Unplanned pregnancy is a multifactorial problem affecting up to 7% of women each year. Despite emergency contraception, many women still become pregnant and require termination of pregnancy (TOP). Increased effectiveness of emergency contraception and less reliance on TOP has positive benefits on a woman's social mental and physical wellbeing. Studies looking at follicles close to ovulation have shown that levonorgestrel inhibits 14.6 % of follicles whereas ulipristal acetate inhibits 58.8%.¹ This suggests that ulipristal acetate works closer to ovulation, when risk of pregnancy is highest. This resulted in a change in guidance from the faculty of sexual and reproductive health to offer ulipristal acetate (trade name - ellaOne) as first line of emergency contraception over levonorgestrel.

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Results & Conclusions: 662 women received ulipristal acetate of which 1 required a TOP (failure rate of 0.0015106); 1397 received levonorgestrel of which 5 required a TOP (failure rate 0.0030157).

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Winners in Individual Categories
Oral presentations**Second Prize**
Category: Clinical Audit**COULD ATTENDANCE AT LECTURES AND TEACHING SESSIONS BE IMPROVED BY BETTER TIMETABLE PLANNING, COMMUNICATION BETWEEN EDUCATIONAL SITES AND TAILORING LEARNING OBJECTIVES TO STUDENT'S REQUESTS? A PROSPECTIVE STUDY OF THIRD YEAR MEDICAL EDUCATION.**

Moori P, Alexander L, Richards B, Blessed R, Bleasdale V, Nevins E*

University of Liverpool, United Kingdom

Undergraduate medical students require exposure to varied educational opportunities to supplement learning. This prospective study presents quantitative data concerning attendance throughout clinical rotations during third year at Liverpool University Medical School. Records of attendees at lectures, ward teaching and problem based learning sessions were collated through head counting. Compulsory lectures were better attended than non-compulsory lectures (90% vs 79% p=0.0005). When PowerPoint slides were accessible prior to the lecture or long timetable gaps were present, attendance was lower (74% vs 89%, p=0.0012). Attendance was higher for lectures not on the university campus, likely due to lectures being given at the placement hospital for which they were already scheduled to attend (91% vs 79%, p=0.0066). Whereas on campus, students are not motivated to travel in. The University of Liverpool embraces self-directed learning, which includes some unsupervised PBL sessions that showed excellent attendance where students were expected to sign in and poor attendance where no monitoring was present (100% vs 0%, p<0.00001). The same trend was observed for lecture attendance. This was possibly due to fear of repercussion at sites where attendance is scrutinised. Improved attendance could result if lectures and tutorials coincided with hospital placements. The use of sign-in sheets, fewer gaps between lectures and multiple sessions within a day would see a marked increase in attendees. Smaller ward based training sessions are better attended and fulfil the teaching requests of students. In future, medical schools should take these factors into consideration to enhance student motivation to attend these learning opportunities.

**Winners in Individual Categories
Oral presentations****Third Prize
Category: Clinical Audit****IMPLEMENTATION OF A COMBINED CARDIOPULMONARY RESUSCITATION AND TREATMENT ESCALATION PLAN DOCUMENT IN A DISTRICT GENERAL HOSPITAL.**

Stockdale C*, Trivedi B, Jerome E, Salih S, Huntley C, Cooke E
Musgrove Park Hospital, Taunton

Documentation of appropriate escalation of treatment was identified as a problem for junior doctors and Critical Care Outreach Nurses at Musgrove Park Hospital. An audit of resuscitation and escalation documentation of all wards found that of the patients who were not for Cardiopulmonary resuscitation (and therefore not for full escalation of care), 78.4% had no documentation of the appropriate level of escalation of treatment should they deteriorate. The majority of junior doctors had experienced cases where they felt that inappropriate treatment had been given, where no escalation plan was documented. Using several Plan, Do, Study, Act (PDSA) cycles, we developed a treatment escalation plan (TEP) tool to be included in the resuscitation form to prompt the responsible clinician to consider and document appropriate escalation of treatment. The CPR-TEP form was trialed using a quasi-experiment design allowing the aim to be tested using two groups – intervention and control. All patients in the intervention group were not for CPR and therefore had their TEP-CPR form filled in fully (n= 68). The control group consisted of patients who were not for CPR but who did not have a TEP form filled in (n=36). The appropriateness of OOH (out of hours) treatment in those patients who experienced clinical deterioration was judged by questionnaire-based feedback from the in-hours team the following morning and indicated that 11.1% of patients in the group with the new CPR-TEP document had received inappropriate OOH care compared to 44.4% of patients in the group without the document. Using the TEP alongside resuscitation documentation prompts the responsible clinician to consistently consider and document the appropriate escalation of care for their patient, improving communication with the out-of-hours team and appropriate escalation of care in the event of patient deterioration.

Winners in Individual Categories
Poster presentations**First Prize****UNDERSTANDING TYROSINE KINASE INHIBITOR RESISTANCE IN ENDOMETRIAL CANCER CELLS.**

Liu JKH*, Fearon AE, Grose RP

Bart's and The London School of Medicine and Dentistry, United Kingdom

Introduction: Several oncogenic mutations in the fibroblast growth factor receptor 2 (FGFR2) have been identified in approximately 10% of cases of endometrial cancer. PD173074 is a novel FGFR2 inhibitor that targets the ATP-binding pocket and blocks FGFR2 signalling. However, these endometrial cancer cells eventually develop resistance to PD173074.

Aims and Objectives: We aim to assess the effects of PD173074-resistant endometrial cancer cells grown in the absence of PD173074 by employing a strategy of discontinuous inhibitor treatment for 7 days and then exploring its impact on cell survival and some of the mechanisms the tumour cells use to maintain drug resistance. **Hypothesis:** We hypothesise that PD173074-resistant endometrial cancer cells cannot survive and proliferate as efficiently in the absence of PD173074.

Methods: A PD173074-resistant AN3CA cell line was grown in PD173074-free medium for 7 days. Its effects on cell survival were measured by cell counting and possible mechanisms of drug resistance were detected using Western blotting.

Results: There was no significant difference in cell survival when the PD173074-resistant cells were grown in PD173074-free medium compared to the control after 7 days. However, these cells showed upregulation of p-ERK compared to the control.

Conclusion: Growth of PD173074-resistant endometrial cancer cells is not inhibited in the absence of PD173074 and these cells demonstrate upregulation of specific compensatory signalling pathways that have been implicated in drug resistance.

Winners in Individual Categories
Poster presentations**Second Prize****AUSTERITY BRITAIN: CAN WE AFFORD SURGICAL MANAGEMENT OF MALIGNANT SPINAL CORD COMPRESSION**

To WKL*, Sian P, Vazquez B, Killingworth A, Grainger M, Stirling A
The Royal Orthopaedic Hospital, Birmingham, United Kingdom

The cost of health care is increasing both directly through more sophisticated treatment and indirectly through longer survival. However, it is currently an age of austerity and health care spending is facing increasing scrutiny. Therefore, it is imperative that the predicted and actual cost of service provision is accurately audited. It is not clear what the financial implications of managing spinal oncology are. This study aimed to look at the financial cost of managing patients with malignant spinal cord compression at a UK tertiary orthopaedic centre over a period of 6 months. Human Resource Group codes were generated from following all referrals taken in the defined period. Services included in the analysis were vertebroplasty, CT guided biopsy, stabilisation and decompression, curative excision, outpatient clinic, and multi-disciplinary team meeting. This actual cost of the services provided were compared to the income received by the Hospital Trust. The costs and incomes from different aspects of service provision were stratified. Over the study period, the total cost of providing a specialist service to spinal oncology patients is £545,266, compared to an income of £365,155. The area of significant shortfalls were providing surgical intervention, vertebroplasty, and obtaining biopsy under radiological guidance. The results will be discussed in the context of alternative treatment modalities such as radiotherapy and conservative management. Suggestions of ways to improve current organisation of spinal oncology will be made.

Winners in Individual Categories
Poster presentations**Third Prize****IMPROVING LUMBAR PUNCTURE (LP) PRACTICE WITHIN ACUTE MEDICINE.**

E.Bunting*, R.Wood*, A Mahdi, W.Munro, B.Ridha

Royal Sussex County Hospital (RSCH), Brighton and Sussex University Hospitals NHS Trust (BSUH)

Background: Within BSUH a number of LP related 'near-misses' were highlighted. Additionally there were concerns over the variable experience in those performing LPs, the receipt of inadequate CSF volumes in the laboratory and a lack of documentation. Through an audit process we aimed to identify current issues and develop local guidelines to promote best practice.

Methods: We retrospectively audited all LPs performed at the RSCH in November 2012. Cases were identified from laboratory records; we excluded LPs performed in ITU, paediatric and HIV patients, and outpatients. 29 cases were identified; information was obtained from computer databases and 21 casefiles. We reviewed the indication for LP, the procedure itself, any adverse outcomes and the clinical significance of the results.

Results: LPs were performed on average once per day. 50% were performed by junior doctors and 14% did not have a coagulation screen prior to the procedure. Documentation was limited; 81% had inadequate documentation of consent, needle size and type were only documented in 71% and 62% respectively, and no opening pressure was recorded in 24%. Samples received by the laboratory were frequently inadequate (a paired serum sample was received in only 52%). One third of cases were discussed with a neurologist; following discussion 2 LPs needed to be repeated. 9% of patients had post-LP headache, in keeping with published rates.

Discussion: Three areas for improvement were identified; the need to standardise documentation, ensure correct, sufficient samples reach the laboratory and promote appropriate and timely neurology input. To this end we developed a guideline, proforma, LP pack (with appropriate needles) and a patient information leaflet.

Conclusion: The results of the audit were disseminated to local medical teams and the guidelines and proforma introduced. A re-audit will be performed in July 2014 to evaluate the interventions and continue the cycle of development of best practise.

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