



INSPIRE National Intercalators' Conference

Saturday 17th November,
2018

10:00 – 18:00

VENUE

Wills Memorial
Building

REGISTRATION

Mezzanine

LECTURE THEATRES

Reception Room
Lecture Theatre 3.31

POSTER SESSION & LUNCH

The Great Hall





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Introduction

It is with great pleasure that we welcome Medical, Veterinary and Dental students from around the United Kingdom to the 4th **National Intercalators Conference**, hosted by the University of Bristol. This is part of our highly successful INSPIRE scheme that we run jointly with Cardiff, Exeter and Plymouth Universities.

We hope you will find today highly stimulating and will enthuse you to undertake further research during your careers. This may include undertaking an intercalated degree as an undergraduate or extending your current and new research interests into your post graduate years.

Today you will hear from four highly successful Senior academics from Medicine, Dentistry and Veterinary Science who will describe why they decided to pursue academic careers and what they wish they had known when they were undergraduates! They have all had very different pathways but all greatly enjoy their lives now. We also have Dr Holly Roy who will tell you about the joys and challenges of being an Academic Clinical Fellow in neurosurgery.

You will also have the opportunity to listen and communicate to your peers presenting their excellent research projects as oral or moderated poster sessions. We have 120 presentations today so there will definitely be something that interests you. Please ask lots of questions and interact with the presenters as much as you can as you, and they, will get much more out of this approach.

Finally, we would like to thank the Association of Physicians, the Wellcome Trust and the University of Bristol who are jointly funding this day and everything associated with it. Your £5 fee for registration will be donated to the Above and Beyond Bristol Children's Hospital fund at the request of our student ambassadors.

Enjoy the day...

Professor Richard Coward
Dr Liz Coulthard
Professor Linda Wooldridge
Dr Tom Dudding

Bristol INSPIRE team.

Our guest speakers are:

Professor Sadaf Farooqi PhD, FRCP, FMedSci



Sadaf Farooqi qualified with Honours in Medicine from the University of Birmingham, UK being awarded the gold medal. After hospital posts in Birmingham and Oxford she moved to Cambridge to undertake a PhD during which time, with colleagues she identified the first single gene defect to cause human obesity in patients with a mutation in the leptin gene (Nature 1997) and described their dramatic response to leptin therapy, establishing leptin’s role in the regulation of eating behavior (NEJM 1999; SCIENCE 2007). As a Wellcome Trust Principal Research

Fellow at the Institute of Metabolic Science in Cambridge, Sadaf co-ordinates an internationally recognised programme of research into the genetic, molecular and physiological basis of obesity and thinness. She has been the recipient of a number of awards in recognition of her work including the RD Lawrence Award (Diabetes UK 2007), Andre Mayer Award (International Association for the Study of Obesity 2006), the Society for Endocrinology Medal 2012, European Society for Endocrinology Prize 2012, Royal College of Physicians Graham Bull Prize in Clinical Science 2012 and the Berthold Medal of the German Endocrine Society 2015.

Dr Holly Roy



Holly did her preclinical medical studies in Cambridge and intercalated in Natural Sciences third year. She moved to Oxford for clinical school and undertook a Wellcome Trust funded elective at the National Institutes of Health, Bethesda. Following this she did an academic foundation job. Her research during this period was based in the Oxford Functional Neurosurgery department and her project was to investigate the effect of deep brain stimulation on bladder control. She followed this with a PhD to develop the project further. She is currently an NIHR Academic Clinical Fellow in Neurosurgery in Plymouth and is doing her neurosurgery

training in the South West region.

Professor Jonathan Sandy



Jonathan Sandy is a Professor in Orthodontics and Dean of the Faculty of Health Sciences, Bristol University. He was previously Head of Oral and Dental Sciences for seven years before taking on the Faculty leadership role. His dental training was in London (Kings College Hospital, The London Hospital and the Eastman). He was awarded an MRC Training Fellowship and after his PhD was MRC funded as a postdoctoral scientist in the Biochemistry Department, University of Cambridge. He was appointed to Bristol University as a Consultant Senior Lecturer in 1991, promoted to a Reader in 1997 and awarded a

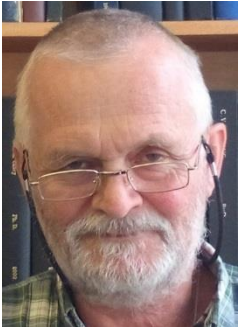
Personal Chair in 1999. His main research interests are in cleft lip and palate and the delivery of cleft care by health care workers. He has co-authored three books and has over 200 peer reviewed publications. His career total grant funding exceeds £5 million.

Professor Linda Wooldridge



I qualified as a veterinary surgeon in 1996 and following several years in clinical practice developed a keen interest in T-cell immunology. In particular, I am interested in understanding the role that T-cells play in response to infection/vaccination and also the mechanisms that underlie T-cell-mediated disease in humans and animals. I was a Wellcome Trust Intermediate Clinical Fellow at Cardiff University from 2006 - 2013; after which I moved to the University of Bristol to take up a chair in Translational Immunology in the Veterinary School. I am currently examining the role that the TCR and CD8 co-receptor play in providing effective immunity and diseases such as leukaemia, autoimmunity and transplant rejection. Findings from these studies are being used to develop novel therapeutic strategies in these diseases.

Professor Mick Bailey



I began the BVSc at Bristol in 1974 with the intention of becoming a large animal vet but got interested in immunology and parasitology during the course. When a PhD place came up during my final year to work on immunity to parasites at Cambridge, I had to make a tricky decision and deal with well-meaning peer and parental pressure. I did a year in practice after the PhD, to make sure I wouldn't regret not being a practising vet, and then went up through the conventional science graduate route as an immunologist - first postdoc, second postdoc, Wellcome Trust fellow, lecturer, reader, professor. I stayed in one place (Bristol), which funders and employers sometimes see as predisposing to fossilisation, but I've always tried to embrace new technology. I spent two years in Biochemistry in Bristol at the beginning of the '90s learning molecular biology and now I work on the effect of early-life colonisation with microbiomes on development of immune and metabolic systems using genomics, transcriptomics, fluorescence imaging and metabolomics. I occasionally see my contemporaries at reunions and the key difference between what I do and what they do seems to be the pace of change - practice has evolved since the '80s but slowly, whereas I couldn't then have imagined half of what is possible now in research.

Programme Overview

Time	Item	Venue
09.00	Registration and Coffee	Mezzanine
10.00	Welcome from Richard Coward and Liz Coulthard, Inspire Bristol co-leads	Reception Room
10.15	Keynote Speaker Prof Sadaf Farooqi Is there a recipe for success in research?	Reception Room
11.00	Intercalators' Research Presentations Theme 1: Dental and Surgery Theme 2: Neurology, Infection and Immunity	Theme 1: Reception Room Theme 2: Lecture Room 3.31
12.40	Poster Sessions and Lunch 12.40 – 13.20 Posters categories A,B,C,D. 13.20 – 14.00 Posters categories E, F, G.	Great Hall
14.00	Dr Holly Roy	Reception Room
14.15	Professor Linda Wooldridge and Professor Mick Bailey	Reception Room
14.45	Professor Jonathan Sandy	Reception Room
15.00	Tea and Coffee	Great Hall
15.15	Intercalators' Research Presentations Theme 3: Cancer, Cardiology and Diabetes Theme 4: Paediatrics, Medicine, Obstetrics and Population Health	Theme 3: Reception Room Theme 4: Lecture room 3.31
16.45	Prize Giving, Refreshments and Networking	Great Hall



Detailed Schedule

- 09:00** Registration and Coffee
- 10:00** Welcome to Conference
Professor Richard Coward and Dr Liz Coulthard, Co-leads of Inspire Bristol
- 10:15** Keynote Lecture : Professor Sadaf Farooqi

11:00 – 12:40 Intercalators' Research Presentations

Theme 1: Dental and Surgery (Reception Room)
Chair: Dr Tom Dudding and Miss Sanchita Bhatia
Oral Presentations by:

- 11:10 1.1 Serena Dodhia
Is Vitamin D a Modifiable Risk Factor for Dental Caries?
- 11:20 1.2 Ben Turner
Modelling the skeletal abnormalities in CCMS
- 11:30 1.3 Rossa Inglis
Characterisation of the Anti-inflammatory Modulation of Wound Healing Phenotypes by 12/15- Lipoxygenase
- 11:40 1.4 Aisling Power
Targeting HOX/PBX Interactions in Head and Neck Cancer – Potential for Therapy?
- 11:50 1.5 Shriyam Patel
Understanding the angiogenic potential of Self Assembly Peptides
- 12:00 1.6 Henry Mills
De-threaded screw fixation of slipped capital femoral epiphysis: comparison with standard screw fixation at skeletal maturity.
- 12.10 1.7 Luke Tanner
The use of transdifferentiated dental pulp stem cells in the re-epithelisation of the cornea post chemical burn
- 12.20 1.8 Imogen John
Stakeholders' Views of Surgeon-Specific Mortality Data



Theme 2: Neurology, Infection and Immunity (Lecture Room 3.31)

Chair: Dr Christian Gray and Mr Jamil Dowling

Oral Presentations by:

- 11:10 2.1 William Jakobek
Factors Contributing to Embolization During Mechanical Thrombectomy - An Exploratory In Vitro Study
- 11:20 2.2 Lauren Jackson
Identifying Peptides Recognised by Alloreactive CD8+ T-cells
- 11:30 2.3 Berenice Aguirrezabala Armbruster
Association between respiratory viral infection and meningococcal carriage in healthy 16-18 years-old school students
- 11:40 2.4 Edward Wigmore
The Contribution of T-Type Calcium Channel Mediated Currents to the Generation of Interictal-Like Events Within the Area CA3 of the Mouse Hippocampus
- 11:50 2.5 Anishka Pabari
Evaluating the potential of soluble Toll-like receptor 2 as a biomarker for sepsis in critically ill patients with organ dysfunction
- 12:00 2.6 Umar Rehman
Investigating the Acute Impact of Traumatic Haemorrhagic Injury on the Brain
- 12.10 2.7 Connie Tse
The study of cerebral microvasculature in adult rats with mild closed head injury
- 12.20 2.8 Florence Caslake Holding
The distribution of noradrenergic innervation within the hippocampus



12:40 – 14.00 Poster Sessions and lunch in The Great Hall

To avoid delays at lunch we have split the poster sessions. The sessions will be moderated as follows:

12.40 – 13.20 Posters categories A,B,C,D.

13.20 – 14.00 Posters categories E, F, G.

14.00 Dr Holly Roy

14.15 Professor Linda Wooldridge and Professor Mick Bailey

14.45 Professor Jonathan Sandy

15.00 Tea and coffee break



Intercalators' Research Presentations

Theme 3: Cancer, Cardiology and Diabetes (Reception Room)

Chair: Professor David Parkinson and Miss Angelica Sharma

Oral Presentations by:

- | | | | |
|-------|-----|-----------------|--|
| 15.15 | 3.1 | Harry Smith | Characterising the role of Claudin-5 in Non-Small Cell Lung Cancer |
| 15.25 | 3.2 | Alec Saunders | Electrophysiological consequences of potassium current modulation in neonatal rat ventricular myocytes |
| 15.35 | 3.3 | Henry Oldershaw | Diet and diet plus physical activity improves treatment satisfaction with no adverse effect on quality of life in early Type 2 Diabetes: Data from the Early ACTID trial |
| 15:45 | 3.4 | Krushal Arjan | A Systematic Review and Meta-Analysis on the Optimum Glycaemic Control in Poly-trauma Patients |
| 15.55 | 3.5 | Anna Broadbent | The Mechanism of Epithelial-Mesenchymal Transition Modulation by L type Calcium Channel Blockers in Prostate Cancer |
| 16.05 | 3.6 | Robert Maybin | Prehospital ultrasound during out-of-hospital cardiac arrest: a service evaluation |
| 16.15 | 3.7 | Shannon Marren | Clinical implications of persistent beta cell function in long duration type 1 diabetes |
| 16.25 | 3.8 | Ruairi Conway | Oral hypoglycaemic drugs versus insulin in gestational diabetes mellitus: a systematic review and meta-analysis |



Theme 4: Paediatrics, Medicine, Obstetrics and Population Health (Lecture Room 3.31)
Chairs: Professor Sarah Purdy and Mr Jonathan Chan
Oral Presentations by:

- | | |
|-------|---|
| 15.15 | 4.1 Niamh McCarville
Evaluating the 'purple pen' prescribing scheme at Keele University: a mixed methods study |
| 15.25 | 4.2 Lydia Newman
Investigating the role of oxidative stress in a mouse model of advanced maternal age |
| 15.35 | 4.3 Connor McKee
The role of average rib-vertebral angle difference in predicting pulmonary dysfunction in adolescent idiopathic scoliosis |
| 15.45 | 4.4 Harriet Perrington
Can urinary microRNA profiles predict acute kidney injury outcomes in obese patients? |
| 15.55 | 4.5 Amy Prideaux
Longitudinal Subcortical Brain Changes in Young Adults at Risk of Mental Disorders |
| 16.05 | 4.6 Kate Brennan
Evaluation of the initial healthcare needs and management of unaccompanied asylum seeking children |
| 16.15 | 4.7 Tamaridn Russell-Webster
Maternal Obesity in Pregnancy and Determinants of Neonatal Cardiovascular Dysfunction at Birth |
| 16.25 | 4.8 Thomas Grother
Altruism in medical students |
| 16.35 | 4.9 Dana Sobhanpanah
Will Increasing night shelters reduce A&E attendance? |

16.45 – 18.00 Prize Giving, Refreshments and Networking



Abstracts for Oral Presentations

Theme 1: Dental and Surgery

1.1 Serena Dodhia, Year 3, University of Bristol

Is Vitamin D a Modifiable Risk Factor for Dental Caries?

OBJECTIVE

Prior observational studies have reported that higher levels of vitamin D are associated with decreased dental caries risk in children. However- these studies do not provide causal inference as they are prone to bias and confounding. The objective of this study was to use genetic variants associated with 25-hydroxyvitamin D(25(OH)D)- the commonly measured vitamin D metabolite in blood- as proxies- in a Mendelian randomisation (MR) analysis- to test for causal association with caries in children and adults.

METHODS

Seven genetic variants were identified as proxies for 25(OH)D from two published genome-wide association studies. The three outcome measures were: caries in primary teeth (n=17-035-aged 3-12years)- caries in permanent teeth (n=13-386-aged 6-18years)- and decayed missing filled surfaces (DMFS) (n=26-792-aged 18-93years). The relationship between 25(OH)D and these traits was calculated separately for each variant- then combined using inverse variance weighted meta-analyses. –

RESULTS

In the MR analyses- the odds ratio per one standard deviation increase in natural log-transformed 25(OH)D was 0.95 (95% confidence interval(CI):0.76-1.14) for caries in primary teeth- and 0.97(95%CI:0.77-1.17) for caries in permanent teeth. A one standard deviation increase in natural log-transformed 25(OH)D was associated with -0.69 DMFS (95%CI:-2.45-1.06). –

CONCLUSIONS

The MR-derived effect estimates are directionally consistent with observational associations. Whilst this suggests 25(OH)D may be causally protective against caries with a clinically relevant effect size- the imprecise estimates indicate a possibility that 25(OH)D has no effect. Larger sample sizes are required to resolve this scientific and public health question.



1.2 Ben Turner. Year 4, University of Bristol

Modelling the skeletal abnormalities in CCMS

BACKGROUND

Cerebro-costo-mandibular syndrome (CCMS) is a rare congenital disease characterised by rib dysplasias- scoliosis- cerebral impairment and micrognathia[1]. The rib dysplasias refer to large posterior rib gaps and missing ribs- which lead to collapse of the thoracic cage and respiratory failure in the first years of life[1]. Recently- a mutation in a component of the major spliceosome was identified as the cause of CCMS[2]. However- why a splicing defect specifically causes rib dysplasias is unknown. In vitro experiments using siRNA to knock down SNRPB revealed that the activities of two pathways important for bone development- the Wnt and BMP pathways- were affected. In these knock-down cells- there was decreased Wnt and increased BMP activity- hence forming the test hypothesis that modulating these pathways locally in the axial skeleton would recreate the CCMS phenotype in chicken embryos. - - Objectives - To investigate the effect of BMP and Wnt pathway activity modulation on axial skeleton development- as well as one additional pathway known for its role in bone development- sonic hedgehog (Shh) pathway. - To recreate the rib dysplasias observed in CCMS- in the model animal. - To observe other phenotypes caused by modulating these pathways. - To ascertain the causative mechanism of rib gap manifestation. - -

METHODS

Chick embryos were incubated for 48 hours- then beads infused with chemical activators and inhibitors of the Wnt- BMP and Shh pathways were implanted in vivo. The embryos were incubated for a further five days to allow the axial skeleton to develop- at which point the embryos were processed and stained for cartilage and bone differentiation. Alcian blue was used to highlight cartilage and Alizarin red to stain bone- after which the embryos were photographed and analysed for phenotypic traits.

RESULTS

Phenotypes caused by the various pathway modulators were categorised to a total of 12 different rib and vertebral abnormalities. In order to prevent spurious positive results- the data were grouped and analysed using a one-tailed Fishers exact test- against their propensity to cause rib gaps and missing ribs. Wnt inhibition was highly significant for rib gap formation ($P=0.001$)- very significant for missing ribs ($P<0.01$)- and significant for abnormal costotransverse articulations- vertebral malformations and vertebral fusions ($P<0.05$) as compared to control beads.



Wnt activation caused malformed ribs- rib fusions and abnormal articulation formation ($P < 0.05$). BMP activation was most significant in causing vertebral phenotypes such as fusions and malformations ($P < 0.001$)- but also caused a broad array of other phenotypes including missing ribs ($P < 0.01$)- malformed ribs- truncated ribs- rib fusions and ectopic cartilage production ($P < 0.05$). Interestingly- BMP inhibition also caused vertebral fusions ($P < 0.001$) as well as rib fusions- vertebral malformations ($P < 0.01$) and missing ribs ($P < 0.05$). Shh inhibition was not significant in causing any phenotypes though it did show a marked association with vertebral fusions ($P = 0.051$).

CONCLUSIONS

Wnt inhibition readily manifested rib gaps as well as missing ribs- supporting the results of the aforementioned in vitro reporter assay. However- the Wnt and BMP pathways have multiple roles in skeletal development depending on the embryonic stage. Firstly- these signals are responsible for the dorsoventral patterning of the somite- the embryological structure from which the rib develops. The balance of Wnt and BMP signals during somite formation are critical in determining the number of progenitors available to develop into ribs and vertebrae. Secondly- these signals control the differentiation of progenitor cells into chondrocytes and osteocytes- respectively. Both somite patterning and subsequent cell differentiation require different balances of pathway activities at different points during embryonic development. From the range of results and phenotypes generated- it is likely that many of the chemicals and proteins had a mixed effect on somite patterning and on differentiation of the progenitor cells. However- from results of this experiment and in-situ hybridisation with somatic markers- we suggest that Wnt inhibition specifically causes rib gaps and missing ribs due to reduced differentiation and that this would be the same as the mechanism in CCMS. - This study has addressed the question of how rib gaps may be yielded in this disease- but does not answer why the phenotype is localised to vertebrae and proximal ribs- not affecting other aspects of skeletal development. In order to ascertain this- further research is now underway using immunohistochemical staining to describe the expression of SNRPB in mouse embryos.

REFERENCES

1. Tooley M et al. Am J Med Genet A. 2016;170:1115-1126. - 2. Lynch D et al. Nat Commun. 2014;5. -



1.3 Rossa Inglis, Year 5, Cardiff University

Characterisation of the Anti-inflammatory Modulation of Wound Healing Phenotypes by 12/15-Lipoxygenase

OBJECTIVES

The aim of this study was to determine whether the mechanism by which the 12/15-lipoxygenase (LOX) enzyme mediates wound repair- is through the modulation of anti-inflammatory signalling.

METHODS

Four anti-inflammatory targets related to the 12/15-LOX pathway were identified: mannose (M2 macrophage marker)- interleukin-13- ChemR23 (resolvin E1 receptor)- and peroxisome proliferator-activating receptor- α (PPAR α). Wounds were created on the backs of 8-10-week-old 12/15-LOX knockout (KO) mice and wildtype (WT) controls- and histological sections created of the wound bed following euthanasia of the mice at one or four days post-wounding. Targets were stained using immunohistochemistry and analysed and quantified using ImageJ.

RESULTS

A significant decrease of 30% in mannose staining was observed in the KO (KO 302.7 ± 39.08 ; WT 446.7 ± 62.79 ; $p < 0.05$) in combined data of the day 1 and day 4 mice ($n=8$)- indicating a reduced anti-inflammatory M2 macrophage presence. Trends were observed in the other anti-inflammatory targets tested with increased PPAR α staining in KO wound middles (KO 968.4 ± 102.9 ; WT 744 ± 107.6 ; $p=0.161$)- and reduced ChemR23 positive cells in day 1 KO mice total wounds.

CONCLUSIONS

The mannose staining in particular suggests that mice lacking 12/15-LOX experience greater pro-inflammatory signalling in the wound. This may imply that 12/15-LOX products dampen pro-inflammatory mechanisms in wound repair- however further testing must be done. Overall these results provide greater insight into the role that 12/15-LOX plays in wound healing.



1.4 Aisling Power, Year 3 BDS, University of Sheffield

Targeting HOX/PBX Interactions in Head and Neck Cancer -Potential for Therapy?

HYPOTHESIS

HNC cell lines are sensitive to a novel small molecule inhibitor of HOX/PBX interactions (ICT9119)- resulting in the cells undergoing apoptosis. We tested this by: - 1. Assessing the effects of ICT9119 on HNC- dysplastic and normal oral epithelial cells. - 2. Determining PBX1 and PBX2 expression in these cells- and the relationship between this and the effects of ICT9119. - ICT9119 was tested at varying doses in a panel of normal- dysplastic and HNC keratinocytes using MTS assays (to measure proliferation and viability) and Annexin V-FITC Apoptosis assays. PBX expression was analysed using qPCR and Western Blotting. - The MTS assays showed that ICT9119 killed the keratinocytes independent of cell type. This was supported by microscopic images of treated and un-treated cells from all six cell lines- and the Annexin V-FITC assay- which showed cells in both early and late stages of apoptosis. PBX1 and PBX2 expression was assessed by qPCR- and analysis of this data compared to the EC50 values of the six cell lines showed no correlation between PBX2 expression and sensitivity to ICT9119. However- there was a negative correlation between PBX1 expression and resistance to ICT9119. - We concluded that small molecule inhibitors could be effective in the treatment of HNC. However- as they do not distinguish between normal and cancerous cells- further research is needed for these molecules to be clinically safe.



1.5 Shriyam Patel, Year 5, Kings College London

Understanding the angiogenic potential of Self Assembly Peptides

OBJECTIVES

Vascularisation of scaffolds is a significant parameter for tissue engineering success. Lack of scaffold vasculature leads to oxygen deprivation of cells- and implant failure. Many vascularisation strategies have been explored- however drawbacks exist and thus autologous transplantation remains the gold standard treatment for defects. Self-assembly peptides have gathered attention as suitable candidates for scaffold functionalisation- due to assembly into hydrogels that mimic the extracellular matrix- stability- low cytotoxicity and resistance to enzymes.

METHODS

Five different ionic self assembly peptides were screened to determine angiogenic potential in vitro- using human umbilical vein endothelial cells. Immunomorphology- proliferation and mechanotransduction studies were used to assess cell adhesion- proliferation and morphogenesis.

RESULTS

There was a statistically significant ($p=0.001$) increase in tubule length and number of nodes for all self assembly peptides against the control. Upregulation of YAP1+ was statistically significant in cells cultured on DAR- EAbuk and EAOrn. Elongated migratory cells were most prominent on DAR with a statistically significant reduction in proliferation for all peptides.

CONCLUSIONS

Self assembly peptides- in particular DAR- induced differentiation to angiogenic phenotypes- and formed longer- more complex structures- resembling pre vascular tubules. Reduced proliferation and increased YAP1+ expression suggest enhanced ability of DAR to modulate endothelial cell morphogenesis- which holds promise for tissue engineering strategies



1.6 Henry Mills, Year 4, University of Sheffield

De-threaded screw fixation of slipped capital femoral epiphysis: comparison with standard screw fixation at skeletal maturity. A prospective- case-controlled cohort study comparing outcomes after treatment.

OBJECTIVES

To compare the de-threaded (DT) screw with the standard threaded (T) screw in the treatment of slipped capital femoral epiphysis for growth- remodelling and long-term outcomes.

METHODS

6 patients (9 hips) treated with DT screws were compared with 16 patients (21 hips) treated with T screws. The groups were matched for skeletal maturity- age- gender and Southwick angle. Growth was assessed with 7 variables and the number of screw revision operations. Time to growth completion was recorded and growth velocity calculated. Absence of a CAM deformity on final x-ray signified complete remodelling. Clinical assessment was graded from excellent to poor and patient-reported outcomes were recorded.

RESULTS

The DT group grew more in femoral neck length ($p=0.003$)- articular-lesser trochanter distance ($p=0.028$)- pin-joint ratio ($p=0.006$) and pin-physis ratio ($p=0.001$) after adjusting for covariates. 1 hip (4.8%) in the T group and 6 hips (66.7%) in the DT group required at least 1 revision operation due to growth. There was no difference between the two groups in time to growth completion- but a significantly higher growth velocity in the DT group. The lower probability of CAM deformity in the DT group was not significant. Functional and clinical results were not significantly different at 11.2 years' follow-up.

CONCLUSIONS

DT screws allow for significantly more growth than T screws. Despite this- there was no improvement in remodelling or the clinical and functional outcome scores at long-term follow-up.



1.7 Luke Tanner, Year 5, University of Manchester

The use of transdifferentiated dental pulp stem cells in the re-epithelisation of the cornea post chemical burn.

OBJECTIVES

The transdifferentiation of dental pulp stem cells with two limbal proteins- keratocyte growth factor (KGF) and collagen type IV (Col4) into a corneal-like phenotype. Following this- the study will evaluate the transdifferentiated cell's ability to re-epithelialize a limbal stem cell deficiency ex-vivo model of an acid burned human cornea.

METHODS

The LSCD model was established in human corneas (n=12) using 5M HCL acid. Sorted dental pulp stem cells were cultured with KGF and Col4 for 5 days. Cells were analysed with immunocytochemistry to evaluate whether the cells had transdifferentiated by fluorescent staining with cytokeratin 3 and 12- markers of corneal epithelium. These cells were seeded- labelled and cultured on soft and scleral contact lenses. The samples were analysed for cytokeratin 3/12- cytokeratin 13/19 conjunctival markers and CD90- a stem cell marker. Polymerase chain reaction of cells was also conducted evaluating the gene profile of cells.

RESULTS

Corneal samples showed evidence of dental pulp stem cells on the anterior surface- expressing corneal epithelial markers with conjunctival markers



1.8 Imogen John, Final Year, Cardiff University/ Imperial College London

Stakeholders' Views of Surgeon-Specific Mortality Data

INTRODUCTION

Public release of Surgeon-Specific Mortality Data (SSMD) was mandated by the National Health Service in 2013- with the aim of enhancing transparency- driving quality improvement and facilitating patient choice. Literature evaluating the impact of SSMD publication is conflicting and there is a current paucity of research elucidating its importance to patients

OBJECTIVES

To evaluate the views of vascular patients regarding current public outcome reporting at both the surgeon- and hospital-level and to investigate patients' priorities for future outcome reporting.

METHODS

A novel questionnaire was designed and trialled with patients to ensure content and construct validity. This was then distributed to patients with suspected or confirmed arterial disease in vascular-outpatient clinics across three sites at Imperial College Healthcare Trust over a six-week period. Eligible patients with suspected or confirmed arterial disease were recruited. Statistical analyses were conducted to evaluate relationships between responses and demographic variables and to ascertain patients' preference for surgeon- or hospital-level reporting.

RESULTS

Overall- 165 patients participated in the survey (response rate 63%- n=261). Most were unaware of SSMD (80%)- with only 10% accessing it pre-operatively. Factors influencing patient awareness of SSMD included education level ($p=0.047$) and salary ($p=0.049$). Patients recognised SSMD's usefulness in choice of treatment (60%) or surgeon (53%)- however most prioritised the patient-surgeon relationship (90%) and past surgical experiences (71%) when making pre-operative decisions. In line with views expressed by healthcare professionals in the literature- respondents favoured hospital mortality data (66%) over surgeon-level reporting (49%) ($p=0.000006$)- with 63% expressing that patients were likely to misinterpret SSMD.

CONCLUSIONS

The aims of public-outcome reporting in informing patient choice are not being met by current methods. Patients express preference for data at the hospital-level and prioritise previous experiences and metrics other than mortality in their pre-operative decision-making. Therefore- policy makers should expand SSMD to include hospital-specific mortality data and consider publishing other accessible and contextualised patient-directed outcomes at the hospital-level. -



Theme 2: Neurology, Infection and Immunity

2.1 William Jakobek Year 5, Keele University Medical School

Factors Contributing to Embolization During Mechanical Thrombectomy- An Exploratory In Vitro Study

OBJECTIVES

To determine the high-risk aspects of mechanical thrombectomy procedures for embolization and identify the factors contributing to this.

METHODS

A retrospective analysis of footage from mechanical thrombectomy procedures performed within an in vitro high flow model (HFM- n = 19) and physiological flow model (PFM- n = 10) of the cerebral circulation using a Solitaire 2 (20x4 mm) Stentriever. - The point of embolization was defined as; the point at which the connection between the thrombus. The position of the stentriever during embolization and description of the manner of embolization were coded and subsequently categorised into distinct groups for analysis.

RESULTS

The modal points of embolization were the internal carotid artery widening (HFM: 48%)- and the bifurcation of the middle and anterior cerebral arteries (PFM: 45%; $p < 0.05$ - Chi Squared Test for Independence). Loosing of the thrombus at bifurcations was observed in 100% (HFM) and 90.9% (PFM) of embolization cases ($p > 0.05$ - Mann Whitney U Test). Folding of the thrombus at the bifurcation was observed in 78% (HFM) and 63.6% (PFM) of embolization cases ($p > 0.05$ - Mann Whitney U Test). Thrombus fragmentation prior to retrieval was associated with embolization in 71% (HFM) and 81% (PFM) of cases ($p > 0.05$ - Mann Whitney U Test).

CONCLUSIONS

Our findings suggest that turbulent flow at vessel bifurcations may loosen the connection between the thrombus and stentriever increasing the risk of embolization both at this site and more proximally. - Though the results of the present study remain in vitro evidence and thus require further validation in vivo- they nevertheless may be of importance in the design of future thrombectomy devices and techniques.



2.2 Lauren Jackson, Year 5, University of Bristol

Identifying Peptides Recognised by Alloreactive CD8+ T-cells.

OBJECTIVES

Haploidentical stem cell transplants are often life-saving- although they increase the risk of donor-derived alloreactive CD8+ T-cells recognising peptide complexed with mismatched-HLA molecules expressed on recipient cells. Alloreactive CD8+ T-cells play a central role in the pathogenesis of acute Graft-versus-host-disease (aGvHD). To better understand the mechanism of CD8+ T-cell mediated alloreactivity in aGvHD- there is a need to identify these peptides. This project aimed to identify peptides recognised by a well characterised alloreactive CD8+ T-cell named LC13

METHODS

Raw data generated by combinatorial peptide library (CPL) scans were used to conduct CPL-driven database searches. The entire peptide universe was probed in the context of allogeneic-HLA class I molecules for LC13. Results were validated using high concentration functional agonist activity assays- and the supernatant was assayed using ELISA

RESULTS

The results of this project have identified five peptides of interest. One peptide displayed agonist activity higher than that of the known allotope of LC13. We have hypothesised that this peptide may act as a competitive antagonist.

CONCLUSIONS

The results of this project have provided evidence to support the validation of CPL-driven database searching as an effective means of identifying peptides recognised by the alloreactive CD8+ LC13 T-cell.



2.3 Berenice Aguirrezabala Armbruster, Year 4, University of Bristol

Association between respiratory viral infection and meningococcal carriage in healthy 16-18 years-old school students

BACKGROUND AND AIMS

Neisseria meningitidis (Nm) transmission may occur from carriers to susceptible individuals. Respiratory viral infection has been suggested as a meningococcal disease risk factor by multiple studies and shown to be a carriage risk factor in small studies. The main aim was to determine the association between Nm carriage and viral infection. Our secondary aim was to determine the association between Nm carriage density and viral infection.

METHODS

Samples from healthy 16-18 years-old students were collected in Bristol between 2014-2015. Nm presence/absence and Nm high/low density was determined. Real-time PCR for viral detection was carried out in each of the Nm subgroups. Statistical analysis was used for results assessment.

RESULTS

($p=0.020$) with an odds ratio of 2.5. The association between Nm density and viral infection was not statistically significant.

CONCLUSIONS

There is a small but statistically significant association between Nm carriage and viral infection which coincides with previous research. Further studies involving more samples should be carried out to assess the impact of our findings on meningococcal vaccine design- herd immunity and flu vaccine administration.



2.4 Edward Wigmore, Year 6- University of Exeter Medical School

The Contribution of T-Type Calcium Channel Mediated Currents to the Generation of Interictal-Like Events Within the Area CA3 of the Mouse Hippocampus

OBJECTIVES

The currents mediated by the activity of T-type calcium channels (TTCC) have been shown to contribute significantly to the high frequency burst firing recorded from a number of neuronal cell types in animal models of absence and temporal lobe epilepsy. This study aimed to investigate whether inhibition of the TTCC-mediated currents present in hippocampal CA3 pyramidal neurons would significantly reduce the generation of interictal-like events recorded extracellularly from the area CA3 of the mouse hippocampus.

METHODS

Extracellular recordings were performed in vitro within the area CA3 of hippocampal-entorhinal cortex slices obtained from male C57-BI/6J mice. Epileptiform-like activity was induced using either 100 μ M 4-aminopyridine (4-AP) or 5 μ M gabazine. The currents mediated by TTCC were then inhibited using 3 μ M ML-218- a novel highly selective TTCC blocker.

RESULTS

ML-218 did not significantly reduce the frequency or duration of either 4-AP or gabazine induced interictal-like events. However- ML- 218 was found to significantly reduce the number of secondary discharges per 4-AP induced interictal-like event.

CONCLUSIONS

The results of this study suggest that inhibition of TTCC-mediated currents does not significantly reduce the generation of interictal-like events in the area CA3 of the mouse hippocampus. Interestingly- the number of secondary discharges present in 4-AP induced interictal-like events was significantly reduced by ML-218. Whilst these data suggest that TTCC may contribute subtly to epileptiform-like activity in the mouse hippocampus- it will be important in the future to determine the extent to which ML-218 is capable of directly inhibiting TTCC-mediated currents in CA3 pyramidal neurons.

AUTHORS

Edward Wigmore- Dr Jonathan Brown (Supervisor)



2.5 Anishka Pabari- 2018- Cardiff University

Evaluating the potential of soluble Toll-like receptor 2 as a biomarker for sepsis in critically ill patients with organ dysfunction

BACKGROUND

Sepsis and the systemic inflammatory response syndrome (SIRS) are pathologies- which have identical clinical signs and symptoms. The challenging problem for clinicians is the misdiagnosis between the two. The current and conclusive diagnosis of sepsis is based on microbiology cultures- however these take several days and are negative in two-third of cases. C-reactive protein (CRP) and procalcitonin are the most widely used biomarkers in the diagnosis of sepsis- however issues about their diagnostic accuracy still remain unresolved. A number of novel sepsis biomarkers have been described- and these offer some promise- however further research will be needed to address questions about their diagnostic performance. Hence- there is a need for more biomarkers. This study evaluated the potential of a novel biomarker- soluble Toll-like receptor 2 (sTLR2) to accurately diagnose sepsis in a clinical setting. We hypothesised that cell activation and inflammation resulting from serious infections (sepsis) may lead to the release of higher levels of sTLR2 than those resulting from cell activation due to cellular stress and tissue damage (SIRS). The levels of sTLR2 may therefore help to discriminate between these two pathological conditions.

METHODS

Sandwich enzyme-linked immunosorbent assay (ELISA) was used to quantify the levels of sTLR2 in blood samples of 276 patients presenting to intensive care unit (ICU). The blood samples were drawn from patients within 12 h of their admission into ICU. Of the 276 patients- 138 had a diagnosis of severe sepsis or septic shock. The remaining 138 had out-of-hospital cardiac arrest- with dysregulated host response of non-infective origin (SIRS group). The sTLR2 data was analysed using Microsoft Excel 2011 and the Statistical program for Social Sciences (SPSS).

RESULTS

Median plasma sTLR2 levels were 2.7 ng/ml (interquartile range- 1.5-5.2) in patients with sepsis and 0.7 ng/ml (0.3-1.2) in patients with SIRS- ($p < 0.05$ by Mann-Whitney U test). With a cut-off value of 1.0 ng/ml- sTLR2 showed good diagnostic value for sepsis- with a sensitivity of 86%- a specificity of 70% and an AUC of 0.853; 95% CI 0.806-0.899.

CONCLUSION

The results from this study show that sTLR2 has the ability to discriminate between sepsis and SIRS- hence has the potential to be used alongside a panel of biomarkers in clinical practice. The development of a faster method than ELISA for sTLR2 determinations will help to obtain an early and conclusive diagnosis of sepsis- enabling appropriate selection and duration of antibiotic therapy and therefore improve clinical outcomes.



2.6 Umar Rehman, Year 5, Plymouth University

Investigating the Acute Impact of Traumatic Haemorrhagic Injury on the Brain

OBJECTIVES

Determine whether Mice sustaining a traumatic haemorrhagic shock (THS) injury demonstrate a marked neuroinflammatory response compared to uninjured mice. - Analyse whether treatment with either adenosine or regadenoson will reduce the neuroinflammatory response seen following THS. - Determine whether a selective A2a receptor agonist (regadenoson)- will bring about a more significant reduction in the neuroinflammatory response compared to adenosine.

METHODS

An established mouse model of THS was used; animals were randomised to receive adenosine or regadenoson 60 minutes post THS injury. Naïve- surgical sham and crystalloid control animals were also included (n=3- per group). Neuroinflammation was analysed using Iba-1 staining across the hippocampus and cortex.

RESULTS

THS injury was seen to generate a significant increase in Iba-1 expression across the brain. Treatment with both regadenoson and adenosine significantly dampened Iba-1 expression post THS. Regadenoson tended towards having a more significant reduction in the neuroinflammatory response when compared to adenosine.

CONCLUSIONS

Treatment with either regadenoson or adenosine post THS was seen to provide cerebroprotective effect by dampening the neuroinflammatory response. The results are of great significance- as currently there are no licenced drugs for cerebroprotection following THS.



2.7 Connie Tse, Year 4: Medicine University of Birmingham- BSc Neuroscience Barts and The London School of Medicine and Dentistry- Queen Mary University of London

The study of cerebral microvasculature in adult rats with mild closed head injury

OBJECTIVES

Cerebral microvasculature plays a fundamental role in providing an adequate blood supply to the brain; hence any disruption to cerebral vessels following traumatic brain injury (TBI) may have detrimental effects. Although traumatic microvascular injury during the acute phase of TBI is relatively well-established- whether there is any ongoing microvascular damage that persists in the chronic phase is yet to be fully elucidated. Our study aimed to identify the cerebral microvasculature changes at the acute and chronic phases in rats subjected to a unilateral mild closed head injury.

METHODS

Adult Sprague-Dawley rats underwent mild controlled cortical impact- and their brains were immunohistochemically stained to assess cerebral microvasculature at 1 day and 12 weeks following injury. The immunoexpression of rat endothelial cell antigen-1 (RECA-1) was analysed in the cerebral cortex ipsilateral and contralateral to the site of traumatic impact.

RESULTS

At 1 day post-TBI- a significant decrease in RECA-1 expression was observed in the ipsilateral cortex- whereas the contralateral cortex showed no significant difference when compared to controls. By 12 weeks- there was a reduction in RECA-1 expression in the ipsilateral and contralateral cortices- which was significant when compared to controls and 1 day post-TBI.

CONCLUSION

These results demonstrate that a mild closed TBI induces microvasculature damage in the cerebral cortex that persists beyond the acute phase of injury and extends to involve the contralateral hemisphere at the chronic phase. Enhancement of our understanding of the cerebral vascular response to TBI may aid the development of novel therapeutic strategies for TBI.



2.8 Florence Caslake Holding, 2018 Neuroscience BSc, University of Bristol

The distribution of noradrenergic innervation within the hippocampus

OBJECTIVES

Noradrenaline plays a neuromodulatory role in synaptic plasticity within the hippocampus- and has been linked to the formation of memory. Along its longitudinal axis- the hippocampus can be split into dorsal and ventral poles which have different structures and functions. This project aimed to determine whether there was a difference in the distribution of noradrenergic fibres to the ventral and dorsal poles of the hippocampus- which could partially explain the difference in function.

METHODS

To explore this theory- viral tracing was used to identify noradrenergic fibres travelling to the hippocampus- using the specific CAV2-PRS-ChR2-mCherry virus. Slices of mouse hippocampi were immunohistochemically processed and fluorescence was recorded with epifluorescent microscopy. Image analysis was performed in ImageJ to create profile plots of fibre intensity and comparisons were made.

RESULTS

A Paired Samples T test found no significant difference in the distribution of noradrenergic fibres in the dorsal or ventral poles of hippocampi ($T(15) = 27 - p = 0.061$).

CONCLUSIONS

The results suggest that noradrenergic fibre density in the hippocampus is reasonably consistent across the dorsal and ventral poles.



Theme 3: Cancer, Cardiology and Diabetes

3.1 Harry James Smith , Year 4, Cardiff University

Characterising the role of Claudin-5 in Non-Small Cell Lung Cancer

OBJECTIVES

To correlate the expression of Claudin-5 to different stages of Non-Small Cell Lung Cancer and to supplement these findings with lab studies to explain how Claudin-5 expression impacts on the aggressiveness and motility of Non-Small Cell Lung cancer.

INTRODUCTION

Lung cancer frequently presents with metastasis because of its invasive nature. In our study we attempted to correlate the growth- invasiveness and the propensity to metastasis of a subtype of lung cancer- non-small cell lung cancer (NSCLC)- to a cell adhesion tight junction (TJ) molecule known as claudin-5. TJs- particularly the claudin family- have been shown to be lost in metastasis- but it has become increasingly recognised that they have a signalling function that may impact on cancer aggressiveness and propensity to metastasis.

METHODS

In order to correlate claudin-5 to metastasis and invasion we used qualitative- real time- polymerase chain reaction (Q-RT-PCR) to measure mean claudin-5 expression in a clinical cohort of 56 patients with a total of 3 different subtypes of NSCLC- adenocarcinoma- large cell cancer (LCC) of the lung and squamous cell cancer (SCC) of the lung. We then correlated the expression to the tumour-nodal- metastasis (TNM) method of staging of NSCLC determining its prognostic value. To supplement this further we performed growth assays on A549 and Corl23 lung cancer lines transfected with pEF6 and claudin-5 overexpression plasmid to test the effect of claudin-5 on cancer growth. We then used electric cell-substrate impedance sensing (ECIS) to study the transfected cell lines capacity for invasion.

RESULTS

The clinical cohort showed that a high claudin-5 expression was correlated to a higher T stage of NSCLC- with a statistically significant difference in expression between T1 and T3 ($P = 0.03$). Our cohort results also showed that a loss of claudin-5 was correlated to increased nodal invasion. Our growth studies show that claudin-5 overexpression inhibited tumour growth in both Corl23 and A549 ($n=3$) ($P < 0.05$). The results from our ECIS showed that overexpression of claudin-5 increased invasiveness and migration capacity of Corl23 ($n=1$).



CONCLUSION

These results indicate a complex role of claudin-5 in NSCLC. High claudin-5 expression was shown to correlate to higher T staging- poorer growth in vitro and higher invasive potential indicating a possible signalling role in the metastatic cascade or a prognostic value. A lower claudin-5 was correlated to greater nodal invasion suggesting their loss allows greater distal metastasis via mechanical separation. Ultimately the role of claudin in metastasis is stage specific.



3.2 Alec Saunders, Year 4, Brighton and Sussex Medical School

Electrophysiological consequences of potassium current modulation in neonatal rat ventricular myocytes

INTRODUCTION

Intracardiac contact electrograms (EGMs) are used to investigate the electrical function of the myocardium. The morphology of an EGM signal could potentially be used to identify pro-arrhythmic changes to specific currents in the cardiac action potential (AP). However- we must first understand how changes to individual currents influence the EGM morphology.

OBJECTIVE

To characterise the effects of potassium current modulation on EGM morphology.

METHODS

EGMs were recorded from neonatal rat ventricular myocytes using multi-electrode arrays. Recordings were taken under baseline conditions and following pharmacological potassium current modulation. Signals were analysed manually- and using a set of algorithms to extract 26 different features of the EGM morphology.

RESULTS

Field potential duration (a marker of AP duration) was reduced by potassium current enhancement with pinacidil ($p < 0.05$)- and was increased by potassium current blockade with 4-aminopyridine ($p < 0.05$) but not HMR-1556 ($p > 0.99$). Seven other EGM features were changed in a different manner by enhancement or blockade of potassium currents. Potassium current blockers acting on separate currents in the AP also affected EGM morphology differently.

CONCLUSIONS

We identified several features of the EGM morphology which could be used to discriminate between potassium current enhancement or blockade- and to distinguish between current blockade at different sites in the AP. These findings support the suggested role of EGM morphology for the identification of electrophysiological changes.



3.3 Henry Oldershaw, Year 5, Exeter University

Diet and diet plus physical activity improves treatment satisfaction with no adverse effect on quality of life in early Type 2 Diabetes: Data from the Early ACTID trial

AIMS

Diet and exercise are key to the management of Type 2 diabetes- but 20-50% of people are non-adherent- maybe due to a reduction in wellbeing. The Early ACTID trial randomised patients to diet- diet and activity- or usual care in a 5:5:2 ratio. Patients in both intervention arms experienced improved glycaemia. We assessed the effect on patient-reported measures recorded during the trial.

METHODS

Five patient reported measures were recorded: Diabetes Treatment Satisfaction Questionnaire (DTSQ)(n=512)- EQ-5D(n=521)- Brief Illness Perception Questionnaire(n=503)- Rosenberg self-esteem scale(n=501) and Satisfaction with Life Scale(n=523). Analysis was performed on participants with complete data at baseline and 12 months for each questionnaire. T-tests compared mean change from baseline score between study arms.

RESULTS

Baseline characteristics were similar; 64%vs66%vs68% male- median age 60.1vs60.4vs60.9 years- median days since diagnosis 184vs187vs190- mean HbA1c 48.4 vs 48.9 vs 50.3 mmol/mol- mean BMI 32 vs 31 vs 31 kg/m². - At 12 months- there was a marked improvement in DTSQ Satisfaction in those receiving a diet or diet and activity compared to usual care (2.8 vs 0.5- p=0.0008 and 2.5 vs 0.5- p=0.001) There were no differences between arms in quality of life or wellbeing.

CONCLUSIONS

Diet and diet plus activity in newly-diagnosed Type 2 DM improve treatment satisfaction with no adverse effect on quality of life or wellbeing. The addition of exercise to a diet program did not affect these measures.



3.4 Khushal Arjan, Year 4, Queen Mary University

A Systematic Review and Meta-Analysis on the Optimum Glycaemic Control in Poly-trauma Patients.

OBJECTIVES

This paper conducted a systematic review and meta-analysis of evidence investigating the optimum glycaemic control in the polytrauma patient.

METHODS

A systematic literature search was carried out of three electronic databases: Medline- EmBase- and Web of Science. The primary outcome was risk of mortality with the secondary outcome risk of hypoglycaemia (<3.33mol/L). Tertiary outcomes were average hospital days and ventilator days. Data was analysed using the random-effects model of DerSimonian and Laird- and a pooled estimate of risk was then calculated.

RESULTS

Six quasi-experimental before-and-after studies were identified and one nested cohort study within an RCT was identified. Strict glycaemic control did not significantly reduce mortality (RR 0.95 [0.84-1.09])- however it demonstrated an increased risk of hypoglycaemic events (RR 2.68 [1.12-6.41]). Strict glycaemic control was associated with a trend of fewer days on a ventilator (-3.19 [-6.64-0.27]) and a trend of fewer days in hospital (-2.20 [-6.30-1.90]).

CONCLUSION

This meta-analysis does not demonstrate improved mortality with strict glycaemic control in the polytrauma patient. There was a significant increase in risk of hypoglycaemia. Lastly- there were borderline significant improvements in the average days in hospital and days on a ventilator. These findings call for quality randomised controlled trials investigating strict glycaemic control in the polytrauma patient.



3.5 Anna Broadbent, Year 5, University of Exeter

The Mechanism of Epithelial-Mesenchymal Transition Modulation by L-type Calcium Channel Blockers in Prostate Cancer

OBJECTIVES

To determine the signalling pathway(s) which involve the L-type calcium channel inhibitor (LLSO2)

METHODS

Cell culture: components of known calcium signalling pathways were inhibited in PC3 cells using calmodulin (W-7)- calcineurin (FK506) and NFAT (INCA-6) inhibitors. Proteins were extracted after 48 hours of incubation. EMT markers (E-cadherin- vimentin and EpCAM) were subsequently screened for with Western blotting.

RESULTS

LLSO2 increases expression of EpCAM and reduces expression of E-cadherin and vimentin in PC3 cells. Calmodulin inhibition by W-7 may induce mesenchymal-epithelial transitions (MET)- resulting in increased EpCAM expression and reduced vimentin expression. FK506 inhibition of calcineurin results in reduced expression of E-cadherin and increased expression of EpCAM and vimentin. Inhibition of NFAT by INCA-6 results in increased expression of both epithelial and mesenchymal cell markers.

CONCLUSIONS

The signalling pathway involves calmodulin- and possibly calcineurin and NFAT. LLSO2 may induce MET in mesenchymal prostate cancer cells. These results provide new insight into the signalling pathway of LLSO2 and suggest the potential of LLSO2 and the other inhibitors as influencers of EMT/MET in prostate cancer- possibly through modulation of ESRP activity.



3.6 Robert Maybin, Year 4, University of Bristol

Prehospital ultrasound during out-of-hospital cardiac arrest: a service evaluation

OBJECTIVE

To assess point of care ultrasound (POCUS) usage by clinicians at out of hospital cardiac arrests (OHCA)- what is recorded when it's used and what discrepancies are present in training.

METHOD

We undertook prospective data collection over 6 months following the introduction of POCUS at GWAAC. All adult non-traumatic OHCA attended by GWAAC were reviewed. Variables recorded were: Patient demographics and presenting rhythm; POCUS use- findings- and impact on clinical management. After completion of data collection- an electronic survey was conducted on clinicians regarding their usage of POCUS during OHCA- a self-assessment of competency and whether there is need for future training.

RESULTS

From July to December 2017- GWAAC attended 165 non-traumatic OHCA . POCUS use was recorded in 52 (32%) cases. 70 (43% of patients survived to hospital arrival with sustained return of spontaneous circulation (ROSC). The cardiac rhythm at the time of POCUS use was shockable- pulseless electrical activity- asystole or ROSC in 7- 9- 26 and 10 OHCA- respectively. The survey identified specific training needs in regards to POCUS equipment and documentation. It also identified some variation in practitioners' understanding of indications and potential benefits of POCUS during OHCA.

CONCLUSIONS

POCUS usage is clinician dependent and reported usage is greater than actual usage indicating potential recording discrepancies on the GWAAC database. The variety of clinician responses about POCUS usage indicates further training is needed.



3.7 Shannon Marren, Year 5, University of Exeter

Clinical implications of persistent beta cell function in long duration type 1 diabetes

OBJECTIVES

Recent evidence shows that most people with long duration type 1 diabetes (T1D) have low levels of persistent endogenous insulin production- as measured by C-peptide. The Diabetes Control and Complications Trial showed that close to diagnosis preserved endogenous insulin was associated with lower HbA1c- hypoglycaemia and complications- when intensively treated. Little is known about the impact of preserved endogenous insulin in long duration T1D. We aimed to assess the clinical impact of persistent C-peptide in long duration (>5yrs) T1D.

METHODS

We conducted a cross-sectional case-control study of 221 people with T1D. We confirmed endogenous insulin secretion by measuring C-peptide after a mixed-meal tolerance-test. We compared self-reported hypoglycaemia- HbA1c and insulin dose in those with preserved and low C-peptide.

RESULTS

Stimulated median (IQR) C-peptide was 114pmol/l (43- 273) and <3pmol/l (<3- <3) in those with preserved and low C-peptide respectively. Those with preserved C-peptide had lower reported monthly rates of hypoglycaemia- with 21% fewer symptomatic episodes- 5.9 vs 7.5 (incidence rate ratio (IRR) 0.79- $p=0.001$); and 65% fewer asymptomatic episodes- 1.0 vs 2.9 (IRR 0.35- $p<0.001$). Those with preserved C-peptide had a lower insulin dose (0.68 vs 0.81 units/kg/day- $p=0.01$) but similar HbA1c (preserved 69 vs low 67mmol/mol- $p=0.06$).

CONCLUSIONS

Patients with T1D and preserved endogenous insulin production receiving usual care in the UK have lower insulin doses and fewer hypoglycaemic episodes- but no difference in HbA1c. This is consistent with non-intensive treatment in previous studies- and suggests a need for therapy intensification to gain full benefit of preserved endogenous insulin.



3.8 Ruairi Conway, 2018, Brighton and Sussex Medical School

Oral hypoglycaemic drugs versus insulin in gestational diabetes mellitus: a systematic review and meta-analysis

OBJECTIVES

Effective treatment in gestational diabetes mellitus (GDM) prevents maternal-obstetric and neonatal complications. No consensus exists regarding the most effective first-line drug treatment—whether insulin or oral hypoglycaemic agents (OHA). Aim: to compare the efficacy of OHAs directly with insulin. Objectives: (1) compare the efficacy of OHAs to insulin at treating maternal hyperglycaemia; (2) compare the risk of neonatal complications and (3) obstetric complications between OHAs and insulin.

METHODS

Three online databases were searched for GDM randomized controlled trials comparing insulin to an OHA- two OHAs or two insulins.

RESULTS

Across 18 identified trials- all drugs were equally efficacious at reducing hyperglycaemia (quantified using HbA1c- fasting blood glucose- 2-hour post prandial glucose levels). All drugs carry equivalent risk of obstetric complications. Glibenclamide results in a higher birth weight than insulin ($P=0.04$): weighted mean difference=80.72g [95% confidence interval (CI): 5.27-156.17]. Metformin has a lower risk of neonatal macrosomia ($P=0.001$)- hypoglycaemia ($P=0.02$) and hyperbilirubinaemia-related events ($P=0.01$) than insulin: weighted risk ratio (RR)=0.59 [CI: 0.43-0.81]; RR=0.70 [CI: 0.51-0.95]; RR=0.84 [CI: 0.73-0.96]- respectively.

CONCLUSION

The drugs only differ in their risk of neonatal complications: glibenclamide is inferior to insulin; metformin is superior to insulin. OHAs are cheaper and more convenient than insulin. Metformin should be offered as first-line drug treatment in GDM.



Theme 4: Paediatrics, Medicine, Obstetrics and Population Health

4.1 Niamh McCarville. Year 5, University of Keele

Evaluating the 'purple pen' prescribing scheme at Keele University: a mixed methods study

OBJECTIVES

Safe and effective prescribing is a skill which is essential for clinicians to master. At Keele- we introduced a supervised prescribing scheme in 2013. Students transcribe on prescription charts in easily identifiable purple pens- with a countersignature from the overseeing doctor. This study set out to evaluate its safety and perceived effectiveness.

METHODS

An online student questionnaire- an audit and focus groups were undertaken to examine: 1) student perceptions of the scheme and perception of error and correction 2) actual student error and correction rate and 3) a more in-depth qualitative approach to examine factors influencing engagement with the prescribing scheme.

RESULTS

68% of students reported using their purple pens at least daily. Students reported that up to 10% of their prescriptions required correction. In our audit- 25% of student prescriptions required correction. Out of 247 student prescriptions- there were 3 overall errors – all of which were minor and caused no risk to patient safety. Students felt that they were driven by internal drivers to practice prescribing. Strong influences such as hierarchy and powerful prescribing norms could influence student prescribing norms negatively- such as in picking up bad habits.

CONCLUSIONS

Overall- prescribing as part of a whole task approach makes students feel more prepared to prescribe as foundation doctors. In our enquiry- student prescriptions presented a low risk to patient safety.



4.2 Lydia Newman, Year 5, University of Exeter

Investigating the role of oxidative stress in a mouse model of advanced maternal age

Advanced maternal age (AMA- ≥ 35 years) increases the risk of fetal growth restriction (FGR) and stillbirth. Placental dysfunction- a major cause of FGR and stillbirth- is evident in AMA but the underlying mechanisms are poorly understood.

OBJECTIVES

To determine if placental dysfunction in AMA mice is associated with increased oxidative stress and apoptosis.

METHODS

Placentas were harvested at day 17.5 of pregnancy from control (8-16 weeks) and AMA (36-42 weeks) C57BL/6J mice. Total antioxidant capacity (TAC) and oxidative damage to lipids (8-isoprostane) was measured in placental homogenates using ELISA. Immunohistochemistry (IHC) was used to detect oxidative damage to DNA (8-hydroxyguanosine). Semi-quantitative assessment of staining was performed by a blinded observer. Apoptotic cells were determined using IHC for caspase cleaved cytokeratin 18 and analysed using Qupath software. Statistical analysis was by Mann-Whitney U test (n=6-13/group).

RESULTS

There was increased TAC ($p=0.01$) and oxidative damage to DNA ($p<0.05$) in placentas from AMA mice compared to controls- whereas lipid damage was unaffected by maternal age. Apoptosis was significantly increased in placentas from AMA mice compared to young controls ($p<0.01$). –

CONCLUSION

Placentas from AMA mice demonstrate increased oxidative damage to DNA despite increased TAC. Increased placental apoptosis in AMA mice suggests antioxidant defences and cellular repair mechanisms are insufficient to protect against oxidative stress. These findings indicate that oxidative stress is an important mechanism in placental dysfunction in AMA.



4.3 Connor McKee, year 4, Queen's University Belfast

The role of average rib-vertebral angle difference in predicting pulmonary dysfunction in adolescent idiopathic scoliosis

OBJECTIVES

Adolescent idiopathic scoliosis is associated with lateral spinal curvature-vertebral rotation and rib cage distortion that disrupts normal- symmetrical thoracic movement leading to restriction of lung expansion and impaired pulmonary function. The effect of scoliosis on lung growth- airway function and exercise capacity is well documented but there is less information on rib movement. The study was in two parts. An initial cadaveric study explored the effects of mechanical distortion of the rib cage during simulated scoliosis. The main aim of the study was to retrospectively review the radiological and clinical data of a cohort of patients with adolescent idiopathic scoliosis and determine the use of average rib-vertebral angle difference (RVAD) in predicting pulmonary dysfunction.

METHODS

In the cadaveric study a section of thoracic cage was dissected containing five vertebrae- associated rib pairs and sternum. After fixing the specimen to a manufactured jig- a lateral force was applied to bend the vertebrae from 0° to 50° in the coronal plane- in order to mimic scoliosis. Rib range of movement was then quantitatively measured on both the concave and convex sides of the curve. The radiological study compared two measures of deformity: Cobb angle and average RVAD with pulmonary functioning. Existing literature describes Cobb angle as a useful indicator of pulmonary dysfunction. However- there are few reports on the use of RVAD and these are limited to a single measurement at the apical vertebrae. This study of 53 patients took an average RVAD over five vertebral levels at the apex of the curve to give a more representative account of the scoliotic deformity. It correlated average RVAD with the patient's Cobb angle and pulmonary function tests retrospectively.

RESULTS

The cadaveric model demonstrated that increased scoliotic curvature was associated with decreased movement of the rib cage on the convex side. On the concave side increased range of movement of each rib was observed- until crowding of the ribs obstructed and restricted movement. In the radiological study- through the use of Spearman's rank correlation coefficient- average RVAD correlated strongly with Cobb angle (0.83)- forced vital capacity (-0.81)- forced expiratory volume in 1 second (-0.76)- and with peak expiratory flow (-0.60).



CONCLUSIONS

The study found that average RVAD across five vertebral levels is a more accurate predictor of pulmonary dysfunction than RVAD at the apical vertebrae alone. Average RVAD could be used to quantify of post-operative outcomes after corrective surgery for adolescent idiopathic scoliosis.



4.4 Harriet Perrington, Year 5, Cardiff University

Can urinary microRNA profiles predict acute kidney injury outcomes in obese patients?

BACKGROUND

Acute kidney injury (AKI) is characterised by a rapid decline in renal function leading to the failure of acid-base- electrolyte and fluid balance. Emerging evidence suggests that obesity is a novel AKI risk factor and increases its severity. Despite the fact that AKI affects 18% of all UK hospital admissions- a need for accurate diagnostic and prognostic tests persists. Altered expression of microRNAs (miRNAs)- non-coding RNA transcripts that regulate gene expression- has been described in several diseases. The host laboratory for this study recently identified a urinary miRNA expression profile associated with diabetic nephropathy¹.

OBJECTIVES

This study aimed to: i) quantify candidate miRNA biomarkers in urine samples from an obese AKI patient cohort and corresponding control group- and ii) use these RT-qPCR miRNA data to predict AKI status and recovery/non-recovery outcomes.

METHODS

As part of Dr Helen McLaughlin's OBI-AKI prospective cohort study at King's College Hospital- London- urine samples were collected from 91 stage I-III AKI patients of varying body mass index (BMI<25- n = 31; BMI 25-29.9- n = 31; BMI>30- n = 32). Control samples were collected from 16 unaffected individuals via the Wales Kidney Research Tissue Bank. Urinary miRNA extraction and RT-qPCR analysis were carried out using established in-house techniques².

KEY RESULTS

A statistically significant increase in detection of urinary miRNA-155 was observed in AKI patients compared to controls ($p=0.0293$)- while miRNA-192 detection decreased significantly ($p<0.0001$). No changes in candidate miRNA detection were seen when AKI severity and BMI values were analysed.



CONCLUSION

Our data showed promising AKI biomarker potential for urinary miRNA-155 and miRNA-192. Since miRNA quantification did not vary significantly with BMI- body mass was not a confounding factor for this analysis. Further work using larger sample sets and clinical data collected over longer periods will be required to validate the effectiveness of urinary miRNAs as biomarkers for AKI related patient outcomes.

Authors: Harriet Perrington- Lucy Newbury- Donald Fraser- Helen MacLaughlin- Timothy Bowen - - References: - 1. Beltrami C- Simpson K- Jesky M- Wonnacott A- Carrington C- Holmans P- Newbury L- Jenkins R- Ashdown T- Dayan C- Corish P- Satchell S- Cockwell P- Fraser D- Bowen T (2018). Association of elevated urinary miR-126- miR-155 and miR-29b with diabetic kidney disease. American Journal of Pathology 188- 1982-1992. - 2. Beltrami C- Clayton A- Newbury LJ- Corish P- Jenkins RH- - Phillips AO- Fraser DJ- Bowen T (2015). Stabilization of urinary microRNAs by association with exosomes and argonaute 2 protein. Non-Coding RNA 1- 151-165.



4.5 Amy Prideaux , Year 4, Cardiff University

Longitudinal Subcortical Brain Changes in Young Adults at Risk of Mental Disorders

OBJECTIVES

Bipolar disorder (BD) is a recurrent- chronic mental illness with a 1% prevalence in the general population. It is highly heritable (60-85%)- and offspring of individuals with BD are at an increased risk of mental disorders including Schizophrenia- major depression and BD. Previous neuroimaging studies show strong evidence for reductions in subcortical volumes in patients with longstanding BD. Research into individuals at high-risk is limited- and results are inconclusive. This project aims to help close this gap in the literature by longitudinally examining subcortical volumes in healthy individuals at high-risk of mental disorders.

METHODS

Healthy individuals aged 16-25 years- at high genetic risk of psychiatric illness (n=140)- and age and sex-matched controls (n=115)- underwent three structural MRI brain scans. The final sample was categorised into a) control participants who stayed healthy during the study- and b) high-risk individuals; the latter group were divided into either those that remained healthy or those that developed a psychiatric condition during follow-up. Specialised software (FreeSurfer) was used to obtain subcortical brain volumes- which were subsequently analysed.

RESULTS

Reduced right caudate grey matter at baseline was significant in high-risk individuals who developed a psychiatric condition- in comparison to individuals at high-risk who remained well ($t(91)=2.73$; $p=0.008$). No significant changes in brain structure were found between controls and high-risk groups.

CONCLUSIONS

Development of a psychiatric disorder in a high familial risk sample corresponds to reduced caudate grey matter before symptom onset. This provides the possibility of a biomarker of risk- capturing information which is unable to be ascertained clinically. Nonsignificant group effects prompt further follow up with large multi-site samples.



4.6 Kate Brennan, Year 4, Imperial College London.

Evaluation of the initial healthcare needs and management of unaccompanied asylum seeking children.

OBJECTIVES

With increasing numbers of unaccompanied asylum seeking children (UASC) entering Europe- improved understanding of their healthcare needs is warranted. In the UK- UASC should undergo initial health assessments (IHAs) within 20 working days of being registered as a looked after child (LAC). This study reviewed healthcare needs and management of a North London UASC cohort.

METHODS

Retrospective service evaluation of 102 UASC IHAs at the Camden LAC clinic- January 2015–March 2018; data were collected using a predefined proforma and were entered into a Research Electronic Data Capture (RedCap) system.

RESULTS

The sample included 81 males (79%)- with a median age of 16 years (range 12-17). 60 children originated from Africa- 17 from Asia- 17 from Albania- and 8 from the Middle East. 80% (n=64) left their countries for political reasons. There was a median period of 98 days (IQR 120 days- n=49) between arrival and IHA. - 80 children (93%) had BMIs between 2nd and 91st centile for age. 82% (n=84) had at least one physical problem- most commonly dental issues (53%) and sleep difficulties (44%). 59 children (61%) described mental health symptoms. 83% (n=71) reported some form of abuse: 81% physical- 32% emotional- 18% sexual; 88% of abused were referred to mental health services.

CONCLUSIONS

Most UASC in this UK cohort have complex physical and mental healthcare needs. Healthcare delivery systems should focus on both individual needs and public health considerations- and clinical guidance should be available. Our data also suggest difficulty in providing IHAs within the recommended period.



4.7 Tamarind Russell-Webster, Year 3, King's College London/University of Bristol

Maternal Obesity in Pregnancy and Determinants of Neonatal Cardiovascular Dysfunction at Birth

OBJECTIVES

There is now widespread concern about the long-term effects of maternal obesity on offspring health- particularly in terms of the developmental programming of cardio-metabolic disease in later life. Here we investigated the influence of maternal obesity in pregnancy on neonatal heart rate variability (HRV) within 48 hours of birth.

METHODS

This trial was a nested case control study performed at Guy's and St Thomas' NHS foundation trust hospitals. We recruited pregnant women who were either obese (n=45- BMI=30kgm²) or lean (n=60- BMI 20-25 kgm²). HRV (ECG- 20 mins)- routine clinic blood pressure measurements- and anthropometric measurements were made within 48 hours of birth. The primary outcome of the study was the cardiovascular function of the neonates.

RESULTS

The mean BMI of women in the obese cohort was 35.9 and the mean BMI of women in the lean category was 22.4. HRV analysis during sleep state revealed significant increases in the minimum HR (Mean difference: -13.74- 95% CI - 26.79 to 0.69; p=0.012) and mean heart rate (Mean difference -10.55- 95% CI - 20.57 to -0.53; p=0.015) of the neonates born to obese mothers in comparison to those born to lean mothers. Furthermore- the obese cohort also had significantly reduced power in the high frequency (HF) band (54.89- 2.74 to 107.04; p=0.0016) and total power (637.84- 31.89 to 1243.79; p=0.039) compared to their lean counterparts.

CONCLUSIONS

Exposure to maternal obesity in utero significantly alters basal parameters of cardiovascular function in neonates independent of neonatal birthweight- neonatal gender- maternal education level and mode of delivery. HRV analysis was consistent with a decline in the global activity of the autonomic nervous system- reduced efferent parasympathetic activity and an increase in basal heart rate and which may present a risk for susceptibility to cardiovascular disease in later life.



4.8 Thomas W Grother, Year 4, Cardiff University

Altruism in medical students

OBJECTIVES

This project aimed to see if altruistic activities of medical students differ on successful application to medical school- and if so- how? The project also aimed to provide recommendations to faculty to foster altruistic attitudes in medical students.

METHODS AND RESULTS

A mixed methods approach was used. Three focus group discussions (n=15) with Year One students revealed they felt engagement in altruistic activities was 'a compulsory requirement' to be successful in their application to medical school. Students also highlighted the positive outcomes for society and personal skills gained whilst involved in altruistic activities. There were a number of reasons limiting the number of activities that students were able to engage in during medical school- these included a heavy workload- stress of independent living- and spending time meeting new peers. - Quantitative data from questionnaires (n=109)- suggested the majority of students have had opportunities to engage in altruistic activities in medical school. Students gave similar reasons to those in the focus groups for a lack of engagement. Volunteering in healthcare settings was seen by students as the most important type of altruistic activity to engage in. A majority of students indicated that they would re-engage in altruistic activities. Students felt that the most important reasons for being altruistic centred on helping others in society- compared to egoistic reasons.

CONCLUSIONS

This study helps medical educators gain an insight into student perceptions of altruistic activities. Faculty could support altruistic activities in students in a number of ways- including attempts to incorporate them into the curriculum.



4.9 Dana Sobhanpanah, Year 4, University of Bristol

Will increasing night shelters reduce A&E attendance?

OBJECTIVES

The continuing heavy use of acute health services by the homeless has significant cost implications for the NHS. In a recent survey by Homeless Link- 35% of homeless had been to A&E in the past 6 months and average A&E attendance by homeless was found to be 4 times higher than the general public. Extreme weather conditions can spark an increase in A&E admission. This year the homeless had to cope with one of the coldest winters- with 'the Beast from the East' blasting Britain- followed by one of the warmest summers on record. This audit looks at the impact of weather on A&E admissions for rough sleepers attending the Bristol Royal Infirmary (BRI)- and whether increasing night shelter capacity has a beneficial impact on A&E admissions.

METHODS

Compare weather reports for the Bristol area between November 2017 and July 2018 with the weekly A&E attendances at the BRI with the postcode ZZ99. This code indicates the attendee has no current address. If had the following words in their presenting complaint: cold- hyperther* - they were recorded as having cold hyperthermia. The data was analyzed to see if there were any correlation between weather conditions and attendance. - Furthermore- during the winter months- additional night shelters were opened during periods of low night time temperatures and during the Christmas period. Admissions during these periods were used as a comparison to see if there was any impact on A&E attendance if shelter capacity was increased.

RESULTS

The lowest level of A&E attendance occurred during the Christmas week. This was the 'Caring at Christmas week'. During this period- accommodation- food and social activities were provided for the homeless and vulnerable. During this week- there were only 6 A &E attendances by rough sleepers. - A scatter plots between the maximum night temperature drop during each week from 6th November to 31st March and A&E attendance highlighted an interesting correlation. - During weeks with a night time temperature drop of less than 5 degrees the number of rough sleepers at A&E was consistently 20 or less- and during the weeks with rapid night time temperature drops of 5 degrees or more- A&E attendances were consistently over 20. However- if additional night shelters were provided during periods of extreme weather and large night time temperature change- attendance levels were below 16 even during periods of sub-zero temperatures. - During summer months- the average A&E attendance was higher than during the winter months- with a general trend of increasing attendance with increasing temperature.



CONCLUSIONS

In the winter months- there is a link between increased rough sleepers' attendance at A&E and night time temperature drops of 5 degrees or more. This was ameliorated by the provision of night shelters. Evidence suggests additional night shelter provision during the winter period can substantially reduce attendance in A & E. This reduction is particularly significant when night shelters are combined with social support and food. This suggests combining shelters with support may be the best method to reduce the demands on A&E during the winter. - In the summer months- increasing temperatures was linked to in increasing numbers of rough sleepers attending A&E. Possible explanations could include an influx of homeless to Bristol during the summer combined with either insufficient provision of night shelters- or reluctance to use the current provision. This may result in increasing the numbers reporting the code ZZ99. Alternatively- attendance may be linked to longer daylight hours resulting in increased substance abuse- or greater exposure to abuse- violence and accidents. Additionally- high temperatures and heat waves can result in an increased risk of dehydration- overheating- heat exhaustion and heatstroke- particularly in the population who already have problems with heart or breathing. At this stage- it is unclear why more rough sleepers are attending and whether increasing shelter provision in the summer would have any impact.



Abstracts for Poster Presentations

Theme A: Cancer, Cardiovascular and Renal

Chairs: Professor Colin Dayan and Ms Eva Larkai

- A.1** **Emily McIlvanna** Year 4, Dentistry, Queen's University Belfast
The role of Fusobacterium nucleatum in oral carcinogenesis
- A.2** **Withdrawn**
- A.3** **Fatima Rashid** Year 4, , Barts and the London
Evaluation of the synergistic effect between gamma-radiation and
NPI-0052 in tumour organoids from the most aggressive
medulloblastoma subgroup
- A.4** **Elizabeth Wasson** Year 3 University of Bristol
Protection from Microvascular leak by Heparanase Inhibitors in a Type
2 Diabetic Mouse Model
- A.5** **Basma Salem** Year 4, Dental student, Queen's University,
Belfast
Effects of High LET radiation on patient-derived Glioblastoma stem
cells
- A.6** **U Bhalraam** Year 4 Medical Student, University of Dundee
Investigating the Effect of Salt Inducible Kinases on Inflammatory
Markers Implicated in
Atherogenesis and Endothelial Dysfunction
- A.7** **Withdrawn**
- A.8** **Nicola Melarkey** Year 4, Queen's University, Belfast
Effect of a Single Dose of Ethanol on Myocardial Thickness of the
Chamber Wall in an Avian Model
- A.9** **Constantin-Cristian Topriceanu** Year 4, University College London
Characterization of Nonlinear Damage in Biological Tissue Substitutes
Using the Exponential SineSweep



- A.10 Christian Grieco** 2017, King's College London
Utilising Polarised Macrophages to Modulate Endothelial Networks
Complexity in 2.5D and 3D Culture
- A.11 Hannah Poole** Year 5, Exeter Medical School
What is LLSO03's mechanism in modulating Epithelial-Mesenchymal
Transition in Prostate Cancer Cells?
- A.12 Jia Jun Huang** Intercalated Year, Bangor University
Differential activation of respiratory and accessory muscles in seated
and recumbent individuals



Theme B: Dental and Surgery Chairs –

Chairs: Dr Tom Dudding and Mr Dominic Clark-Robertson

- B.13 Alice Rigby** 3rd BDS- University of Sheffield
HPV+ and HPV- oropharyngeal cancer-derived extracellular vesicles induce macrophage polarization
- B.14 Charlotte Maden** Year 5, Medicine), Cardiff
Dynamic Simulation Modelling of Trauma in a Welsh Emergency Department: A novel quality improvement collaborative study
- B.15 Melissa Tan** Year 4, University of Bristol
Epidemiology of Major Trauma at a UK Major Trauma Centre
- B.16 Jing Teng Yong** Year 4, King’s College London
Physiological response of the acquired enamel pellicle to gastric acids and dietary acids
- B.17 Grace McCullough** 2018, Queen’s University Belfast
Multiple Vessel Renal Transplantation with Focus on Multiple Renal Arteries
- B.18 Alexander Collingwood** Year 5, Medical Student, Keele University
Service evaluation of the IOS mono-lateral external fixator as a primary treatment of unstable mid-shaft tibia fractures at Royal Stoke University Hospital
- B.19 Roisín Parahoo** Dental student, Queen’s University, Belfast
Treatment-related dental loss among patients with head and neck cancer: A qualitative study
- B.20 Vidhi Unadkat** Year 5, Cardiff University
A systematic review and meta-analysis of predictors for short-term mortality in peripheral vascular disease (PVD) related major lower limb amputations (MLLA).
- B.21 Omar Zibdeh** Year 6, Plymouth University (BMBS)/ Newcastle University (MRes) Von Willebrand Factor in the Fontan Population: A Pilot Study



- B.22** **Miss Rachael O'Halloran**, Medical Student Queen's University Belfast
Dr David Johnston; Consultant Anaesthetist Belfast Trust
Miss Samantha Taylor; Lecturer- Centre for Biomedical Sciences
The Effect of rib fractures of the spread of Serratus Plane Injectate. A Cadaveric Study. - Does the presence of rib fractures facilitate the spread of serratus plane injectate towards deeper structures?
- B.23** **Chanelle Smith** Year 3, University of Bristol
Toys- Trauma and Laser Pointer Maculopathy: It's all fun and games until someone crashes a plane
- B.24** **Rucira Xiu Xian Ooi** Year 5, Medical Student, University of Cardiff.
Poster presented by Siah Qi Zhuang.
Understanding organ donation (discourses of emotional attachment to bodies): A systematic review and visual discourse analysis



Theme C: Obstetrics and Surgery

Chairs: Professor Tony Pickering and Mr Alex Storrar

- C.25 Carys Gilbert** Year 4, Cardiff University
Exploring midwifery students' views on weight management during pregnancy: a qualitative interview study
- C.26 Charlotte Ralston** 2018, Queen's University Belfast
The use of Botulinum Toxin A as a tool for Abdominal Wall Reconstruction
- C.27 George Tyler** Year 5, University of Bristol
Prescribing piano lessons: Playing the piano in a therapeutic capacity post Dupuytren's contracture release
- C.28 Charlotte Williams** 2018, University of Exeter
To better define the clinical and biological characteristics of chronic histiocytic intervillitis (CHI)- and benefits treatment on subsequent pregnancies.
- C.29 Zeid Atiyah** Year 4, Cardiff University
Lessons Learnt from the Management of Chest Injuries in Gaza City
- C.30 Kayleigh Gibbs** Year 5, Exeter Medical School
A low opening pressure predicts good long-term TVT outcomes
- C.31 Kate Quirke** Year 5, University of Exeter
Development and Validation of the PCNL Assessment Score for Training and Assessment of Percutaneous Nephrolithotomy
- C.32 Eimer McGuckian** 2018, Queen's University, Belfast
Investigating engagement in the Supporting MumS (SMS) text-message based- post- partum- weight management study and its association with weight loss
- C.33 Simran Rai** Year 5, Cardiff university
Does post exercise hot water immersion reduce thermal strain more effectively than exercise heat acclimation?
- C.34 Amy Hough** Year 5, University of Exeter Medical School
Social media and advertising natural contraception to young women: the case for clarity and transparency with reference to the example of 'Natural Cycles'
- C.35 Libby Jones** 2018, University of Manchester
Building Bridges



Theme D: Genetics and Paediatrics

Chairs: Professor David Parkinson and Mr Jamil Dowling

- D.36 Sarah Meehan** Year 4, Cardiff University
The clinical phenotype of children and adults with 15q11.2 Breakpoint 1-Breakpoint 2 (BP1-BP2) Copy Number Variants (CNVs)
- D.37 Olivia Loy** Year 6, University of Bristol
Infant mortality in informal settlements (slums): exploring child care-feeding method- sleeping routine and opinion of a baby box scheme in Nairobi- Kenya
- D.38 Lauren Jane McEneaney** Year 4, Cardiff University
Investigating the Novel Drug Combination of Cepharanthine and Nelfinavir in Tsc2^{-/-} Mouse Embryonic Fibroblasts
- D.39 Victoria Roberts** Year 3, University of Bristol
Genome wide association study identifies novel genes and biological mechanisms which influence perceived facial age
- D.40 Lowri Edwards** Year 5, University: Cardiff
Title of project: Predictors of return to acceptable hearing in children with Otitis Media with Effusion
- D.41 Rebecca McCarthy** Year 4, Southampton/Imperial
Perinatal Events and Atopy in the Infant at One Year of Age
- D.42 Withdrawn**
- D.43 Megan McConnell** Year 4, Queen's University Belfast
Anterior Cranial Fossa Measurements in Children With Nasal Dermoids with comparison to Normal Populations
- D.44 Joe Ogden-Newton** Year 4, Brighton and Sussex Medical School
Eleanor Hennebry Year 3, University of Bristol
A weighty matter – does disruption to the gut microbiota in infancy prime for greater adiposity in later life?
- D.45 Hannah Moore** 2018, Queen's University Belfast
Safety of Oral Propranolol for Treating Infantile Haemangiomas: A Literature Review



Theme E: Neurology and Psychology

Chairs: Miss Anastasia Mirza-Davies and Dr Liz Coulthard

- E.46 Alice Watson** Year 3, University of Bristol
Use of ischaemic nerve block to assess the potential of transcranial magnetic stimulation to monitor spinal cord perfusion.
- E.47 Alice Cavenagh** Year 4, Cardiff University
Behavioural and Psychiatric Phenotypes in Female Carriers of Steroid Sulfatase Deficiency
- E.48 Grace Hosking** Year 4, Cardiff University
An analysis of de novo copy number variants in Attention Deficit Hyperactivity Disorder
- E.49 Robyn Anderson** Year 4, Cardiff University
Neuroticism and Exercise Participation: The mediating role of social physique anxiety
- E.50 John Baxter** Year 4, Queen’s University Belfast
Alice in Wonderland Syndrome – a neuroanatomical review and diagnostic proposal
- E.51 Anna Hoogkamer** 2018, Sheffield University
Prospective Study to Predict Psychological Morbidity in Young People with IBD Using IBD Risk Assessment Psychological morbidity (IBD-RAPID) Tool
- E.52 Rhidian Caradine** Year 4, Cardiff University
A fMRS Study to Determine the Role of Neurotransmitters (GABA and Glutamate) in the Activation and Deactivation of the DMN
- E.53 Olivia Bell** Year 3, University of Bristol
Low-frequency Transcranial Magnetic Stimulation; a Potential Therapeutic Tool in the Treatment of Autism Spectrum disorders
- E.54 Johanna Winder** Year 4, Cardiff University
Examining cell lines containing genetic variants thought to modulate age of onset of Huntington’s Disease
- E.55 William van Klaveren** Year 4, University of Bristol
How do Barrington's nucleus neurones project to the sympathetic preganglionic neurones in the thoracolumbar spinal cord- the parasympathetic preganglionic motoneurones and Onuf's nucleus in the sacral spinal cord in mice?



- E.56 Olivia Wharf** Year 5, University of Exeter
What is the contribution of the peripheral nervous system in the development of phantom limb pain and how does this guide future treatment strategies?
- E.57 Jodie Servante** Year 4, University of Bristol
Does insulin-like growth factor 1 (IGF-1) regulate 25-hydroxyvitamin D-1 α -hydroxylase in prostate epithelial cells?
- E.58 Magdalena Kowalska** Year 1, University of Exeter
Characterising Perineuronal Nets in brain regions associated with anxiety



Theme F: Ethics, Infection and Immunobiology

Chairs: Dr Christian Gray and Ms Khadija Meghrawi

- F.59 Shannon O' Doherty** Year 4, Queen's University Belfast
Investigation of novel therapies for Cardiovascular disease and Diabetes using patient specific induced pluripotent stem cells
- F.60 Emily Susan** University of Bristol
Attitudes Surrounding Body Donation to Medical Science
- F.61 Katy Plant** Year 4, Cardiff University
Modulating the effectiveness of therapeutic antibodies by modulating the complotype
- F.62 Joshua Wellington** University of Bristol
Designer Disability: Is it ethically permissible for disabled couples to positively select for children who will have the same disabilities as themselves?
- F.63 Ger Mullan** Year 4, Queen's University Belfast
Co-authors: Marie Dittmer- Daniel Crooks- Denise Fitzgerald- Yvonne Dombrowski
Inflammasome product IL-1 β increases oligodendroglial lineage cell number and promotes their differentiation
- F.64 Jessica Kennett** Year 5, University of Plymouth
Exploring which Widening Access and Participation activities students perceive to be the most helpful in their journey to medical school? And Why?
- F.65 Sacha Patston** 2018, University of Exeter
The discovery and evolution of Rhabdoviruses using public sequence databases
- F.66 Katherine Aiken** Year 4, Queen's University Belfast
Living with leprosy ulcers: a mixed method analysis
- F.67 Katie Macdonald** Year 3, University of Bristol
Does English law protect and respect the autonomy of adults without mental capacity?



Theme G: Primary Care and Population Health

Chairs: Dr Jo Tarr and Mr Jonathan Chan

- G.68 Josephine Harrison** Year 3, University of Bristol
Access to health care for people with disabilities in rural Malawi: what are the barriers?
- G.69 Paul Moore** Year 3, University of Bristol
(Ali Al-Hussaini- Autoin Chhabra- Alex Macaulay- Manpreet Nijjar- Asvirndra Ravindra- Tun Tha)
Blockchain: Its potential to add value to healthcare in relation to access- control- transparency and security of electronic health records from both the public and clinician perspective within the NHS.
- G.70 Priyesh Agravat** UCL-
Dr. Surinder Singh- UCL- Dr. Jamie Ross- UCL
You just know something's not right" – What Makes Primary Healthcare Professionals Suspect Child Abuse? A Qualitative Study
- G.71 Samuel Lloyd Thomas** 2018, Bangor University
Exploring the Relationship Between Cognitive Emotion Regulation and Depression
- G.72 Halima Okewole** Year 4, Queen Mary University
Tools of the trade': A qualitative study of African mental health researchers' experiences of a career-development training course
- G.73 Yasmin Wilson** Year 4, Queen's University Belfast
What is the Association of Physical Activity and Workplace Absenteeism and Presenteeism? A Regression Study
- G.74 Kirushthiga Naguleswaran** Year 6, University of Plymouth
To what extent are African institutions 'partners' in Global Health Partnerships? A critical analysis of the discourse- the practice and the location of power
- G.75 Rea-Danielle Christopher-Grant** Year 6, University of Exeter
Distraction and interruption: does general practitioner change of focus impact the patient experience?
- G.76 Ian Bugg** Year 6, Plymouth University
Factors affecting stress resilience in international development workers: A case study of Sierra Leone



- G.77** **Aneel Parmar** Year 6, Cardiff University
Is there a new kind of doctor - An interview-based study of former BBT trainees and their supervisors
- G.78** **Sophie Goodrum** Year 6, University of Exeter
How does a study of medical humanities and ethics positively influence scientific research and clinical practice?
- G.79** **Anju Sharma** Year 5, Cardiff University
Loneliness and alcohol consumption in the older adult: an international longitudinal study



Network and WiFi

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Information for Presenters

Oral presentations

You will have **8 Minutes** to present your work and then 2 minutes of questions. It is vital that you try and stay within this time limit or you may be asked to stop mid thought. We will need your presentation by Thursday the 15th of November in order to have it uploaded in your session. Please email it to inspire-uob@bristol.ac.uk

Poster presentations

You will have **3 MINUTES** to present your work and then 2 minutes of questions. It is vital you try and adhere to this timing or you may be asked to stop mid thought. You will need to prepare your poster in portrait AO format with text large enough to read from a distance of 2m. There will be adhesives for the posters available at the conference.



Travel Information

Train

Bristol has two mainline train stations. Visitors should travel to [Bristol Temple Meads](#) as it is about two miles from the University and is much closer than [Bristol Parkway](#).

To get to the University from Bristol Temple Meads:

- The [number 8 service](#) from Bristol Temple Meads train station runs at least every 10 minutes at peak times and stops by The Berkeley pub on Queen's Road opposite the Wills Memorial Building. The journey takes about 20-30 minutes.
- Taxis are available from the exit to the station. The journey should take about 15 minutes.
- [Walking directions and routes \(PDF, 498kB\)](#) to the University takes 30-40 minutes and will involve an uphill climb.

Car

The M32 allows direct access from the M4 to the heart of the city.

Directions to the University campus from the M32 ([also available as a Google Map](#))

- Exit the M4 at junction 19 marked for the M32
- Follow the M32 southwest into Bristol
- Continue onto the A4032
- Continue straight onto Bond Street / A4044
- At St. James Barton roundabout, take the 2nd exit onto Marlborough Street / B4051
- Continue to follow B4051 until you see the Wills Building on your right
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The Bristol Bus Station is in Marlborough Street in the centre of Bristol. See our map for [Walking directions and routes \(PDF, 498kB\)](#) from the bus station.

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The [Airport Flyer Express bus](#) (service A1) runs approximately every ten minutes at peak times between the airport and Bristol Bus and Coach Station near the University campus.

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