Back Row: Kilian Mellon, Cliff Shearman, Frank Smith, Daryll Baker, Rob Hinchliffe, Dion Morton, Sarah King

Front Row: Sarah Watts, Rob Sayers, Andrew Bradley, Dileep Lobo, Marilena Loizidou

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The Society of Academic and Research Surgery would like to thank the following companies for their generosity in sponsoring the Annual Meeting 2012:

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# THE CONSTITUTION OF THE SARS COUNCIL

## UP TO 6PM, JANUARY 5TH 2012

<table>
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<th><strong>Executive Committee</strong></th>
<th><strong>Name</strong></th>
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<tr>
<td>President</td>
<td>Professor J A Bradley</td>
<td>2013</td>
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<tr>
<td>President-Elect</td>
<td>Professor C Shearman</td>
<td>2013</td>
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<tr>
<td>Honorary Secretary</td>
<td>Mr F C T Smith</td>
<td>2012</td>
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<tr>
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<td>Professor D Morton</td>
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<td>Mr D M Baker</td>
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### Sub Committees and Chairmen

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<tr>
<td>Programme Chair</td>
<td>Professor D Lobo</td>
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<tr>
<td>Membership Chair</td>
<td>Dr M Loizidou</td>
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## FROM 6PM, JANUARY 5TH 2012

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## SARS SECRETARIAT

Society of Academic and Research Surgery
The Royal College of Surgeons of England
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London WC2A 3PE
Tel: 020 7869 6640
Fax: 020 7869 6644
Email: sars@rcseng.ac.uk
www.surgicalresearch.org.uk

Designed and Printed by CPL Associates, London
Compiled and edited by Sarah King and Frank Smith
I am delighted to welcome you to the 60th scientific meeting of SARS. One of the distinctive features of the society's annual meeting is that each year it is hosted by a different academic centre, allowing the local organisers to showcase the particular strengths and features of their institution. The University of Nottingham and its associated NHS hospitals have a long record of excellence in surgical research, innovation and teaching and it is very apt that SARS returns to Nottingham again after a gap of some fifteen years. Professor Dileep Lobo and his colleagues in the University Department of Surgery have worked tirelessly to prepare for what is undoubtedly going to be a very stimulating and successful meeting and the facilities made available by the University of Nottingham Medical School for the meeting are superb.

The most important aspect of any scientific meeting is, of course, the quality of the scientific programme and Dileep Lobo, Programme Chair, assisted by Rob Sayers, and Frank Smith, our Honorary Secretary deserve a great deal of credit for helping to organise an outstanding scientific programme. The scientific programme reflects SARS aim to promote the best surgically relevant research across the entire research spectrum, from basic laboratory research to clinical trials and health service research. A substantial number of high quality presentations across a range of surgical disciplines have been selected for presentation from the many submitted abstracts.

The David Patey Prize, the most prestigious award of SARS, will be given to the person judged to have given the best presentation to the Society and as always the quality of the abstracts selected for the two Patey Prize sessions is outstanding. SARS Council is keen to ensure that additional early career surgeons and scientists are recognised appropriately for the excellence of their research. This year, therefore, in addition to the President’s Prize for the best poster presentation, two additional named prizes will also be awarded to the best oral presentations given in any of the SARS sessions-the Norman Williams Prize for the best clinical and translational research presentation and the Kevin Burnand Prize for the best basic and experimental science presentation. In addition to the selected abstracts, the meeting programme includes a number of stimulating symposia as well as invited lectures from distinguished experts. Two particular highlights of the meeting are the John Farndon Memorial Lecture, which this year will be given by Professor Sir Keith Porter, and the British Journal of Surgery Lecture, which will be given by Dr Richard Reznick.

SARS greatly values the close links it has established with a number of specialist surgical societies and it is very pleasing that once again the BAUS Section of Academic Urology are holding a scientific meeting alongside SARS and have also selected two of their highest ranked papers for presentation in the Patey Prize session. ASiT and the British Burns Association are also holding Satellite Symposiums alongside SARS and we very much welcome their presence.

It is a particular pleasure to welcome to Nottingham our representatives from our three sister societies, namely Dr Dan Meldrum, President of the Society of University Surgeons in the USA, Dr Geoff Candy, Secretary/Treasurer of the Surgical Research Society of Southern Africa and Dr Mustasa Cikiricioglu, Secretary of the European Society of Surgical Research. We recognise the considerable distance they have travelled to be with us and look forward to their participation in the meeting.

These are challenging times for academic surgery and surgical research in the UK and Ireland given the financial constraints within both Universities and NHS hospitals. Nevertheless, surgical research is flourishing in a growing number of surgical departments, as evidenced by the many high quality presentations selected for this meeting and by the hugely successful 2011 meeting of SARS held at the Royal College of Surgeons in Ireland. Moreover, new opportunities for surgeons to engage in research are emerging, given the increasing recognition by policymakers of the importance of research and innovation in helping to maintain a sustainable and effective health service, the renewed emphasis on research in surgical training and the availability of substantial NIHR funding streams for support of academic training posts and translational research. This meeting of SARS provides an outstanding opportunity for delegates to share the latest findings in surgical research and also to socialise with like-minded surgeons and scientists while enjoying the wonderful hospitality provided by the local organisers.

Andrew Bradley
President
It is a great pleasure to welcome the delegates and guest speakers to Nottingham for the 2012 Annual Meeting of the Society of Academic and Research Surgery (SARS). Nottingham has hosted meetings of, what was then the Surgical Research Society, in 1980 and 1997 and I hope the 2012 meeting will be as good as, if not better than the previous two.

Traditionally, SARS meetings have been held at the parent institution of the local organizer and I am pleased that Nottingham is keeping up with that tradition. The meeting itself is being held in the University of Nottingham Medical School, with the Senate Chamber at University Park being the venue for the Gala Dinner. In addition, accommodation has also been made available on the University Campus. I would like to thank Professor Ian Hall, Dean of the Faculty of Health and Medical Sciences, University of Nottingham, in a special way for his help in facilitating this. The venues are excellent and I am sure the ambience will be conducive to an exceptional scientific meeting.

Once again a large number of high quality abstracts were submitted and the best 15 have been chosen for the Patey Prize Sessions, which will be held over two days. The other abstracts will be presented in themed sessions. This year, the SARS Council has introduced two new prizes for oral presentations outside the Patey Prize sessions. The Norman Williams Prize will be awarded for the best Clinical Paper and the Kevin Burnand Prize for the best Basic Science/Experimental Paper. It is hoped that these new prizes will provide recognition for high quality research and will encourage researchers to continue to submit their best work to SARS. The President’s Poster Prize will be presented for the best poster and presenters are encouraged to stand by their posters during the poster rounds.

I would like to welcome our sister organizations, the BAUS Section of Academic Urology and the British Burns Association, whose members will be attending on the second day of the meeting. Both these organizations have enriched the scientific content of the meeting and it is hoped that other organizations will join in the future.

A variety of very interesting symposia will be held during the course of the meeting. The Nottingham Symposium will provide a brief outline of the contribution of Nottingham to medical research, and in the Olympic Year, the Sports Medicine Symposium promises to be a big draw. The Comprehensive Local Research Network Symposium will highlight the role that the CLRNs play in facilitating clinical research in the National Health Service. The Association of Surgeons in Training Symposium will outline the ups and downs of research faced by surgical trainees and emphasise that the future is bright.

The two named lectures will be given by Dr Richard Reznick and Sir Keith Porter. Dr Reznick will be delivering the British Journal of Surgery Lecture on 4 Jan and Sir Keith will deliver the John Farndon Lecture on 5 Jan. There will be three other guest lectures on 5 Jan. Professor Sheila MacNeil will speak on “Tissue Engineering for the Pelvic Floor - Why and How Far Have We Got?” and Dr Michael Franz will deliver a lecture entitled “Repair of challenging abdominal wall defects with a biologic mesh: an evidence-based review as the basis of defining the clinical strategy”. Professor Gerard O’Donoghue will provide some food for thought in his lecture “Hearing without ears - combining science and surgery”.

I also welcome the Presidents of the Society of University Surgeons, the Surgical Research Society of South Africa and the European Society for Surgical Research, and the three prizewinners from the three societies who will be presenting their work at this meeting. A meeting of this scale cannot be organized single handed, and I would like to thank my colleagues in the Division of Gastrointestinal Surgery at the University of Nottingham for their help. Particular mention should me made of Professor John Scholefield, Mrs Val Heath, Miss Jan Smith, Mr Abeed Chowdhury and Mr David Humes. Gratitude is also owed to Mrs Sarah King at the SARS office for the huge amount of work she has put in to the organization of this meeting, and to the Members of the SARS Council, in particular, the President Professor Andrew Bradley and the outgoing Director of the Scientific Programme, Professor Rob Sayers.

I would like to express my gratitude to the chairpersons who have kindly agreed to chair the sessions and keep up the tradition of robust questioning and interrogation of the speakers. I would also like to thank Mr Jason Smith for the allowing us to use his excellent website for abstract submission.

Finally, I would like to thank our sponsors from industry for their generous support of this meeting in these times of financial austerity.

I hope that all of you will enjoy the meeting and enrich it with your active participation. I look forward to seeing you again at London in 2013 at the meeting organised by Professor Alun Davies.

Dileep N Lobo
Professor of Gastrointestinal Surgery, University of Nottingham
## PROGRAMME AT A GLANCE

### WEDNESDAY 4 JANUARY

**SARS Programme**  
*see full programme on page 14 for further details*

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### THURSDAY 5 JANUARY

**SARS Programme**  
*see full programme on page 24 for further details*

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### BAUS Programme

**see full programme on page 32 for further details**

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BBA Programme

**see full programme on page 36 for further details**

#### Location

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BBA delegates are able to join the main SARS programme for the afternoon

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PROFESSOR J ANDREW BRADLEY
PRESIDENT
Professor Andrew Bradley is Professor of Surgery and Head of the Department of Surgery at the University of Cambridge. He is a transplant surgeon at Addenbrooke’s Hospital Cambridge. After qualifying MB ChB in Leeds (1975), he undertook surgical training in Leeds and Glasgow where he completed a PhD before appointment as a NHS Consultant Surgeon at the Western Infirmary, Glasgow. In 1994 he was appointed Professor of Surgery and Immunology at the University of Glasgow, before moving to the Chair of Surgery in Cambridge in 1997. He is a Fellow and past Member of Council of the Academy of Medical Sciences, Past President of the British Transplantation Society and the British Society of Histocompatibility and Immunogenetics, and past secretary and treasurer of the International Transplantation Society. His research interests range from basic aspects of transplant immunology to the clinical evaluation of novel immunosuppressive agents and investigation of the donor and recipient factors that influence outcome after kidney transplantation. He is Editor of the journal Transplantation and Associate Editor of the American Journal of Transplantation and chairs the Kidney Transplantation Advisory Group at NHS Blood and Transplant.

PROFESSOR CLIFF SHEARMAN
PRESIDENT ELECT
Cliff Shearman is a Professor of Vascular Surgery at the University of Southampton and Consultant Vascular Surgeon, Southampton University Hospitals NHS Trust. He qualified from Guys Hospital Medical School London University and trained in vascular surgery in Birmingham. He was appointed as a senior lecturer/consultant vascular surgeon at the Queen Elizabeth Hospital, Birmingham in 1990. In 1994 he moved to Southampton as a NHS Consultant Vascular Surgeon and in 1999 was appointed to the Chair of Vascular Surgery at the University of Southampton.

He currently works in a busy vascular unit which undertakes most vascular and endovascular treatments of arterial and venous disease. The unit serves a local population of 1.2 million people. His research programme is largely directed at determining factors that promote the progression of vascular disease, both environmental and genetic, and how these might be modified particularly in diabetes.

He is currently Associate Medical Director for R and D. He was on the Council and Chairman of the Training and Education Committee of the Vascular Society of Great Britain and Ireland, and President of the Society (2009-10). He was appointed Head of the Wessex Post Graduate School of Surgery in 2007.
MR FRANK SMITH
HONORARY SECRETARY
Mr Frank CT Smith is Reader in Surgical Education and Honorary Consultant Vascular Surgeon at the University of Bristol and Bristol Royal Infirmary. After graduating from Birmingham University, he trained in Edinburgh, the West Midlands, Exeter and Bristol. He was awarded Peter Clifford and RCS Edinburgh Travelling Fellowships in 1996, undertaking further vascular training in Boston, Denver, Los Angeles and Seattle. Research interests have encompassed systemic effects of reperfusion injury in aortic aneurysm surgery, in distal bypass surgery and in intermittent claudication and the pathology and attenuation of myointimal hyperplasia. He has specific interests in medical education. He has been an elected member of Council and of the Education & Training Committee of the Vascular Society of GB & Ireland and is a past Intercollegiate Basic Surgical Skills Tutor at the Royal College of Surgeons of England. He is currently a member of the SAC for General Surgery, Programme Director of the Confidential Reporting System for Surgery (CORESS), assessor and examiner for the Intercollegiate MRCS and examiner for the European Boards of Vascular Surgery.

MR DION MORTON
HONORARY TREASURER
Professor Dion Morton is the Professor of Colorectal Surgery in the Academic Department of Surgery at the University of Birmingham. He is a Colorectal Surgeon and his main clinical interests are in colorectal cancer treatment and prevention and the surgical treatment of inflammatory bowel disease. His early research interests were in the field of inherited colorectal cancer. This more recent research interest has also encompassed chemo-prevention of sporadic colorectal cancer and the molecular biology of early colorectal tumourigenesis. He is leading a number of national and international trials in the field of colorectal cancer. He is a member of the NCRI colorectal clinical subgroup, and is the Chairman of the Surgical Subcommittee. He is currently a member of the Clinical Trials Advisory and Awards Committee (CTAAC) for Cancer Research UK and is Experimental Cancer Medicine Centre (ECMC) Network Lead for Birmingham.

MR DARYLL M BAKER
EDITORIAL SECRETARY
Mr Baker read medicine at Oriel College, Oxford and trained in surgery in Nottingham and London. He gained his PhD from the University of Wales. He is presently a Consultant Vascular Surgeon in the Department of Surgery at the Royal Free Hospital and Honorary Senior Lecturer at University College London Medical School. His research focuses on the effects of ischaemia on skeletal muscle.
PROFESSOR DILEEP LOBO  
PROGRAMME CHAIR

Dileep Lobo is Professor of Gastrointestinal Surgery and Consultant Hepatopancreatobiliary Surgeon at Queen’s Medical Centre, Nottingham, UK. He qualified from Bangalore University, India and has trained as a surgeon in Chandigarh, Nottingham and Leicester. He was awarded a DM degree with distinction by the University of Nottingham for his work on fluid and electrolytes and is a recipient of the Sir David Cuthbertson Medal for his contributions to the field of Nutrition and Metabolism. He has been awarded the prestigious James IV Society of Surgeons Traveller’s Award and the Moynihan Fellowship. His clinical interests focus surgery of the liver, pancreas and biliary tree and laparoscopic surgery. His research interests include surgical nutrition and metabolism, fluid and electrolyte balance and pancreatic cancer. Dileep is the local Special Interest Group Lead in Surgery for the UK Comprehensive Clinical Research Network. He is also the Surgical Lead for the Nottingham Digestive Diseases Centre NIHR Biomedical Research Unit. He is an Associate Editor of the European Journal of Clinical Nutrition and has over 120 publications in peer-reviewed journals. He has lectured both nationally and internationally. He has been awarded the Fellowship of the American College of Surgeons in 2010 and is a member of the Scientific committees of the European Society for Clinical Nutrition and Metabolism and the International Society for Surgical Metabolism and Nutrition.

DR MARILENA LOIZIDOU  
MEMBERSHIP CHAIR

Dr M Loizidou is a non-clinical Senior Lecturer in the Division of Surgery and Interventional Science, UCL Medical School, Royal Free Campus. Previously she worked in the Academic Department of Surgery, Southampton University. She trained as a biochemist and a pharmacologist first in Canada and later in the UK. She has been involved in academic surgical training throughout her career. She has supervised more than 30 postgraduate surgeons working towards higher research degrees. She is Tutor of the MSc in Surgical Sciences at UCL. Also, she designed and is director of the intercalated BSc in Surgical Science, UCL and the MSc in Nanotechnology and Regenerative Medicine, UCL. Her research programme focuses on using Nanotechnology in Cancer Targeting, specifically in therapeutics of colorectal cancer and liver metastases. Additional research areas include multidrug resistant solid cancers. She is assistant Editor for colorectal cancer for Oncology News and for ISRN Oncology.

PROFESSOR ROBERT D SAYERS  
COUNCIL MEMBER

Professor Robert D Sayers is a Professor in Vascular Surgery at the University of Leicester. He qualified with Honours from the University of Birmingham in 1984 but did most of his vascular training as a Lecturer in Surgery in Leicester and Adelaide, South Australia. His research interests include clinical studies into endovascular aneurysm repair and basic science research investigating the genetic factors that lead to pathogenesis and expansion of aneurysms.
PROFESSOR ALUN DAVIES
COUNCIL MEMBER AND HONORARY SECRETARY-ELECT

Professor Alun Davies is Professor of Vascular Surgery and Honorary Consultant Surgeon at Imperial College, Charing Cross Campus, London. He trained in Cambridge, Oxford, Plymouth, Boston (USA) and Bristol, prior to taking up a Senior Lecturer appointment in 1994. Professor Davies has been a Hunterian Professor and Arris & Gale Lecturer at the Royal College of Surgeons, Abdol Islami Scholar at the American College of Surgeons, and Fellow Emeritus of the Australasian College of Phlebology. He is the Editor in Chief of Phlebology and Venous Times. He is Past-President of the European Venous Forum, Past-President of UK Venous Forum, Past Council member of Vascular Society of Great Britain and Ireland, Member of the American Venous Forum, the American College of Phlebology, The Venous Forum at The Royal Society of Medicine, European Society of Vascular Surgery. His main research interests are clinical trials and basic science research related to venous disease and carotid artery disease. He has written/edited 22 books, 64 chapters and over 270 research papers on many aspects of vascular disease and has lectured in many parts of the world on a wide range of vascular topics. He examines for the Intercollegiate Board of RCS and the European Board of Vascular Surgery.

PROFESSOR JOHN REYNOLDS
COUNCIL MEMBER

Professor John V Reynolds is Professor of Surgery and Head of the Department of Clinical Surgery, Trinity College Dublin. He is also the Scientific Director of the Cancer Clinical Trials Office at St. James’s Hospital. He currently is the Regional Director of the Cancer Strategy Group for the HSE South Western Area and has managed Cancer Audit Systems and the development of clinical guidelines and promotional efforts for cancer care. He has previously held Fellowship positions with the University of Pennsylvania and Wistar Institute in Philadelphia and at the Memorial Sloan-Kettering Cancer Centre in New York. He was a Senior Lecturer at St. James’s University Hospital in Leeds and at St Mary’s Hospital and Imperial College, London. Professor Reynolds has obtained numerous research awards and has published widely in cancer research. His hospital base is at St.James’s Hospital, Dublin. His clinical interest is in cancers of the oesophagus, and stomach, and in Barrett’s oesophagus and GIST tumours. His research interest is in using modern molecular biology techniques to uncover pathways of cancer development in the oesophagus, in obesity and cancer, in the inflammatory and procoagulant response to major surgery, and in understanding why patients with oesophageal cancer respond or are resistant to chemotherapy and radiation therapy.

MR ROBERT HINCHLIFFE
COUNCIL MEMBER

Qualified from the University of Bristol and performed general surgical training in Nottingham and was awarded an MD thesis for work on endovascular repair of ruptured abdominal aortic aneurysms. Undertook an endovascular fellowship in Malmo, Sweden and became a NIHR Clinical Lecturer in Vascular Surgery at St George’s, London in 2008. I received a Clinical Senior Lectureship award from the Higher Education Funding Council for England (HEFCE) and took up post as a Honorary Consultant in Vascular Surgery at St George’s Vascular Institute in 2011. I have clinical interests in endovascular surgery and diabetes related complications of the lower limb. My research interests are focused on clinical trials and the introduction of new technology in to surgical practice, receiving grants from the British Heart Foundation and NIHR HTA.
PROFESSOR MICHAEL NICHOLSON
COUNCIL MEMBER
Professor Michael Nicholson has been an honorary consultant surgeon for 18 years and has held the Chair of Transplant Surgery at the University of Leicester for the last 14 years. He is the Director of the Transplant Unit in Leicester and has a particular interest in laparoscopic live donor nephrectomy. His clinical interests also include large endocrine surgical practice. His research interests are in the fields of renal ischaemia reperfusion injury, organ preservation and chronic kidney allograft damage.

MR BIJAN MODARAI
NIHR ACADEMIC SURGEON IN TRAINING AND ASIT REPRESENTATIVE
Mr Bijan Modarai is a Clinical Lecturer in Vascular Surgery at King’s College London and Guy’s and St Thomas’ NHS Foundation Trust. He completed his Basic Surgical Training in London before being awarded a British Heart Foundation Clinical PhD Studentship in 2002. He graduated with a PhD in Biochemistry in 2006 and won the Patey Prize for his research work in 2007. He began his Higher Surgical Training on the South East Thames rotation before taking up his current post, part of the integrated academic training initiative funded by The National Institute for Health Research. His research interests include angiogenesis in tissue remodelling, angiogenic cell therapy and novel imaging techniques applied to vascular disease.

PROFESSOR KILIAN MELLON
BAUS SECTION OF ACADEMIC UROLOGY REPRESENTATIVE
Kilian Mellon is Professor of Urology at the University of Leicester. He qualified from Queens University Belfast in 1983 and subsequently trained in Urology in Newcastle upon Tyne. He was appointed to the Foundation Chair in Urology at the University of Leicester in 2001. His principal research interests focus on the molecular mechanisms of tumour invasion and metastasis in bladder and prostate cancer. His main clinical interests are the surgical management of urological cancer. He is a former member of the SAC in Urology and the Editorial Board of the BJU International. He is currently Chairman of the BAUS Section of Academic Urology and Chairman of the Scientific and Education Committee of The Urology Foundation. He is a former elected member of the BAUS Section of Oncology. In 2004 he was awarded the Karl Storz - Harold Hopkins Golden Telescope award by the British Association of Urological Surgeons.

DR SARAH WATTS
NON-CLINICAL SCIENTIST
Dr Sarah Watts is a Principal Scientist in the Biomedical Sciences Department at Dstl, Porton Down. She graduated from the Royal Veterinary College, University of London in 1994 and is a member of the Royal College of Veterinary Surgeons. She spent 3 years working in a mixed veterinary practice before returning to RVC to undertake a PhD, which was awarded in 2001. She has worked at Dstl since 2000 and has been an academic lead for a research programme that addresses the current and emerging research requirements in combat casualty care for the Surgeon Generals Department since 2003. She also supervises and mentors military surgical trainees registered for higher research degrees.
SARS ANNUAL MEETING
WEDNESDAY 4 JANUARY

07.30-08.10  REGISTRATION

08.10-08.20  WELCOME - Lecture Theatre 1
Professor Dileep Lobo and Professor J Andrew Bradley

08.20-09.40  SYMPOSIUM 1 - Lecture Theatre 1
Research in Nottingham
Chairs: Professor Dileep Lobo and Professor Brian Rowlands

08.20-08.40  The role of surgical epidemiology in the 21st Century
Mr David Humes, Lecturer, Division of Gastrointestinal Surgery, University of Nottingham

08.40-09.00  Facilitating Translational Research in Digestive Diseases: Challenges and Rewards
Professor Robin Spiller, Lead, Nottingham Digestive Diseases Centre NIHR Biomedical Research Unit

09.00-09.30  Stratified medicine approaches for disease management: are they realistic?
Professor Ian Hall, Dean, University of Nottingham Medical School

09.30-09.40  Discussion

09.40-11.20  PARALLEL ORAL PRESENTATIONS 1A (14 Papers) (5 min + 2 min) - Lecture Theatre 1

BREAST

09.40-09.47 O16  SYSTEMIC INFLAMMATION AND EARLY BREAST CANCER
I McKevitt, H Shaker, N Bundred, C Kirwan
Department of Academic Surgery, University Hospital of South Manchester

09.47-09.54 O17  DOES HORMONE RECEPTOR STATUS INFLUENCE SURVIVAL IN HER2/NEU POSITIVE BREAST CANCER?
A Spellman¹, AM McDermott¹, D Wall², M Keane³, P Donnellan³, KJ Sweeney¹, MJ Kerin¹
¹: Department of Surgery, National University of Ireland, Galway ²: Department of Biostatistics, National University of Ireland, Galway ³: Consultant Oncologist, Galway University Hospital

09.54-10.01 O18  GENE SILENCING REVEALS A ROLE FOR OESTROGEN FINGER PROTEIN (EFP) IN TAMOXIFEN RESISTANCE
G Goodyear, J Seebaluck, A Bartnik, M Loizidou, H Welch
UCL Medical School, Royal Free Campus

10.01-10.08 O19  FOCAL ADHESION KINASE PLAYS A MAJOR ROLE IN THE REGULATION OF HUMAN DCIS STEM CELL ACTIVITY
K E Williams¹, G Farnie¹, NJ Bundred²
¹: The University of Manchester, Manchester ²: The University Hospital of South Manchester, Wythenshawe

10.08-10.15 O20  CARDIAC GLYCOSIDES AS POTENTIAL ANTI BREAST CANCER AGENTS
MB Owens, ADK Hill, AM Hopkins
Royal College of Surgeons in Ireland

10.15-10.22 O21  OESTROGEN RECEPTOR NEGATIVE/PROGESTERONE RECEPTOR POSITIVE (ER-/PR+) BREAST CANCER PHENOTYPE: INCIDENCE, MANAGEMENT AND OUTCOMES IN A SYMPTOMATIC UNIT
Department of Surgery, University Hospital Galway
10.22-10.29 O22  MRI VERSUS USS IN THE DETECTION OF AXILLARY LYMPH NODE DISEASE IN PATIENTS WITH PRIMARY BREAST CANCER
S Gupta, RK Balasubramanian, M Barkeji
West Middlesex University Hospital

10.29-10.36 O23  CIRCULATING MIR-497 AS A NOVEL MINIMALLY INVASIVE BIOMARKER FOR BREAST CANCER
JW Walsh, AM McDermott, N Miller, KJ Sweeney, MJ Kerin
Department of Surgery, National University of Ireland, Galway, Ireland

10.36-10.43 O24  OPTIMISING MAGNETIC SENTINEL LYMPH NODE BIOPSY IN BREAST CANCER
L Johnson1, QA Pankhurst2, A Purushotham1, M Douek1
1: Research Oncology, Kings College London, DFRL 2: The Royal Institution of Great Britain

10.43-10.50 O25  THE ROLE OF MIRNAS IN TAMOXIFEN RESISTANCE IN BREAST CANCER
NA Healy1,2, R Schiff2, N Miller1, CK Osborne2, MJ Kerin1
1: Department of Surgery, National University of Ireland, Galway, Ireland 2: Breast Center, Baylor College of Medicine, Houston, TX 77030, USA

10.50-10.57 O26  CXCR1/2 SIGNALLING REGULATES HUMAN BREAST CANCER STEM CELL ACTIVITY
J K Singh1, G Farnie2, RB Clarke3, NJ Bundred3
1: Breast Biology Group, School of Cancer and Enabling Sciences, University of Manchester, Paterson Institute for Cancer Research, Manchester 2: Cancer Stem Cell Research Group, School of Cancer and Enabling Sciences, University of Manchester, Paterson Institute for Cancer Research, Manchester 3: Department of Academic Surgery, University Hospital of South Manchester, Manchester

10.57-11.04 O27  DIGITAL MAMMOGRAPHY IN WOMEN AGED 35-40: IS THERE A ROLE FOR OPPORTUNISTIC SCREENING AT A SYMPTOMATIC BREAST CLINIC?
R Merchant1, R Ennis2, MJ Kerin1, KJ Sweeney3
1: Surgery & 2: Radiology, School of Medicine, NUI Galway

11.04-11.11 O28  BIOLUMINESCENCE MEDIATED PHOTODYNAMIC THERAPY IN BREAST CANCER CELL LINE
DK Adigbli, J Seebaluk, AJ Macrobert, M Loizidou
UCL Medical School

11.11-11.18 O29  CUMULATIVE EFFECT OF MULTIPLE LOW PENETRANCE VARIANTS ON BREAST CANCER RISK
K Tong, JJ Dorairaj, KJ Sweeney, MJ Kerin
Discipline of Surgery, NUI Galway

09.40-11.20 PARALLEL ORAL PRESENTATIONS 1B (14 Papers) (5 min + 2 min) - Lecture Theatre 3
GENERAL SURGERY
Chairs: Mr Mike Wyatt and Mr Austin G Acheson

09.40-09.47 O30  RE-OPERATIONS FOLLOWING LAPAROSCOPIC ADJUSTABLE GASTRIC BANDING
J Richardson, P Super
Birmingham Heartlands Hospital, Birmingham, UK

09.47-09.54 O31  ADENOVIRAL MEDIATED TRANSCRIPTIONAL TARGETING OF COLORECTAL ANCE AND EFFECTS ON TREATMENT RESISTANT HYPOXIC CELLS
S Rajendran, D O’Hanlon, M Tangney, GC O’Sullivan
Cork Cancer Research Centre, UCC, Cork, Ireland
DETECTION OF UPPER GASTROINTESTINAL PATHOLOGIES WITH OPTICAL FIBRE PROBE FLUORESCENCE SPECTROSCOPY
S Solanki, V Sauvage, I Amygdalos, H Selmi, H Dhanapala, J Hoare, RD Goldin, GB Hanna, D Elson
1: Imperial College London, South Kensington, London, 2: St Mary's Hospital, Paddington, London, 3: Hamlyn Centre for Robotic Surgery, Institute of Global Health Innovation and Department of Surgery and Cancer, Imperial College London

AEROSOLISED INTRAPERITONEAL LOCAL ANAESTHETIC (AILA) FOR LAPAROSCOPIC SURGERY
AM McDermott, K Mieske, KH Chang, A Abeidi, BH Harte, MJ Kerin, OJ McAnena
1: Department of Surgery, National University of Ireland, Galway, Ireland 2: Department of Anaesthesia, Galway Clinic, Doughiska, Galway, Ireland 3: Department of Anaesthesia, National University of Ireland, Galway, Ireland

IS THE PSYCHOLOGICAL IMPACT OF AXILLARY HYPERHIDROSIS ALTERED BY BOTOX TREATMENT?
DM Baker, E Baker
Department of Surgery, Royal Free Hospital, London

FREE-LIVING PHYSICAL ACTIVITY AS AN OUTCOME MEASURE IN PATIENTS WITH INTERMITTENT CLAUDICATION
CL Clarke, CG Ryan, M Granat, RJ Holdsworth
1: The School of Health and Life Sciences, Glasgow Caledonian University, Cowcaddens Road, Glasgow G4 OBA 2: The School of Health and Social Care, Teeside University, Middlesbrough, Tees Valley, TS1 3BA 3: Vascular Department, Forth Valley Royal Hospital, Stirling Road, Larbert, FK5 4WR

ROLE OF VEGF/DR3 INTERACTIONS IN KERATINOCYTE GROWTH AND MIGRATION: IMPLICATIONS TO WOUND HEALING
A Annakesavan, AJ Sanders, DG Jiang, KG Harding, WG Jiang
Wound Healing and Department of Surgery, Cardiff University

THE EFFECTS OF CANCER ON OUTCOMES FOLLOWING ENDOVASCULAR ANEURYSM REPAIR
N Dattani, E Choke, M Bown, R Sayers
Vascular Surgery Group, University of Leicester

A META-ANALYSIS OF OUTCOMES FOLLOWING USE OF SOMATOSTATIN AND ITS ANALOGUES FOR THE MANAGEMENT OF ENTEROCUTANEOUS FISTULAS
G Rahbour, MR Siddiqui, MR Ullah, SM Gabe, J Warusavitarne, CJ Vaizey
Colorectal Surgery and Lennard-Jones Intestinal Failure Unit, St. Mark’s Hospital and Academic Institute, London

HUMAN GASTRIC LIPASE AUGMENTATION OF NASOGASTRIC TUBE ASPIRATE PH TESTS
O Anderson, R Carr, M Briggs, M Hamady, P Buckle, C Vincent, G Hanna
1: Imperial College London, 2: Ingenza Limited

THE PRESENCE OF UNDERLYING MALIGNANCY IS ASSOCIATED WITH IMPROVED OUTCOME FOLLOWING Faecal Peritonitis: 7 YEAR RETROSPECTIVE STUDY
GS Simpson, I McCrossan, J Walker, I Weiters
Royal Liverpool University Hospital

INFLAMMATION IS ASSOCIATED WITH EPITHELIAL APOPTOSIS AND DECREASED SULPHATION IN THE MUCOUS GEL LAYER OF PATIENTS WITH ULCERATIVE COLITIS
N Bambury, G Lennon, A Lavelle, A Maguire, NG Docherty, JC Coffey, PR O’Connell
1: UCD School of Medicine and Medical Sciences 2: Department of Surgery, St. Vincent’s University Hospital, Dublin 3: Department of Physiology, Trinity College Dublin 4: Graduate Entry Medical School, University of Limerick.
11.04-11.11 O42  STRATEGIES FOR INHIBITION OF CHEMOKINE (CCL2) MEDIATED MONOCYTE MIGRATION IN LETHAL REPERFUSION INJURY
M Saleki, S Ali, JH Dark, J Kirby
University of Newcastle - upon - Tyne (Institute of Cellular Medicine)

11.11-11.18 O43  IS ANTIBIOTIC THERAPY AS EFFECTIVE AS APPENDEXCTOMY IN THE TREATMENT OF UNCOMPLICATED ACUTE APPENDICITIS? - AN UPDATED METAANALYSIS
K K Varadhan1, KR Neal2, DN Lobo3
1: Nottingham Digestive Diseases Centre, NIHR Biomedical Research Unit, Nottingham University Hospitals Queen’s Medical Centre, Nottingham, UK 2: Department of Epidemiology and Public Health, Nottingham University Hospitals Queen’s Medical Centre, University of Nottingham, Nottingham, UK

09.40-11.20 PARALLEL ORAL PRESENTATIONS 1C (14 Papers) (5 min + 2 min) - Lecture Theatre 4
VASCULAR SURGERY
Chairs: Professor D Julian Scott and Professor Ian Chetter

09.40-09.47 O44  EXTERNAL VALIDATION OF THE BASIL SURVIVAL PREDICTION MODEL IN PATIENTS WITH PERIPHERAL ARTERIAL DISEASE UNDERGOING REVASCULARISATION AND COMPARISON WITH THE FINNVASC AND MODIFIED PREVENT SCORES
J Brownrigg, P Moxey, S Kumar, G Crate, K Jones, P Holt, M Thompson, R Hincliffe
St George’s Vascular Institute, 4th Floor, St James Wing, St George’s Healthcare NHS Trust, London

09.47-09.54 O45  CRITICAL LIMB ISCHAEMIA PROMOTES AN ANGIOGENIC DRIVE THAT IS MEDIATED BY THE ANGIOPOIETIN/TIE2 AXIS
AS Patel1, A Smith1, P Saha1, N Killough1, K Mattock1, J Humphries1, M Watham1, R Siow2, A Ivetic3, S Egginton4, B Modarai1
1: King’s College London BHF Centre of Excellence, Academic Department of Surgery, Cardiovascular Division. The NIHR Biomedical Research Centre at Guy’s and St Thomas’ NHS Foundation Trust and King’s College London 2: Vascular Biology Group, Cardiovascular Division, King’s College London 3: Membrane/Cytoskeleton Signalling Group, Cardiovascular Division, King’s College London (4) Centre for Cardiovascular Sciences, University of Birmingham Medical School

09.54-10.01 O46  SKELETAL MUSCLE DAMAGE IN CRITICAL LIMB ISCHAEMIA (CLI) IS MEDIATED BY TOLL-LIKE RECEPTORS 2 AND 6 ACTIVATION
H Patel1, C Yong1, X Shi-wen2, D Abraham2, D Baker1, S Shaw3, J Tsui1
1: Division of Surgery & Interventional Science, UCL, Royal Free Campus, UK 2: Centre for Rheumatology & Connective Tissue Disease 3: Department of Clinical Research, University of Bern, Switzerland

10.01-10.08 O47  MAGNETIC RESONANCE SIGNAL ATTENUATION AND IMAGE ARTEFACT TESTING OF A NANOCOMPOSITE POLYMER NITINOL THORACIC STENT-GRAFT
M Desai1,2, R Clough3, N Gaddum1, K Rhode2, X Zhou2, Z You4, AM Seifalian2, G Hamilton1,2

10.08-10.15 O48  STATIN THERAPY IS ASSOCIATED WITH REDUCED RISK OF ABDOMINAL AORTIC ANEURYSM RUPTURE
E Choke, M Bown, R Sayers
University of Leicester
PULSATILE ANTE-GRADE GREAT SAPHENOUS FLOW IS ASSOCIATED WITH SEVERE CHRONIC SUPERFICIAL VENOUS INSUFFICIENCY
CR Lattimer, M Azzam, GC Makris, E Kalodiki, S Somiayayulu, G Geroulakos
Ealing Hospital & Imperial College, London

A ROLE FOR STATINS IN PROMOTING VENOUS THROMBUS RESOLUTION
S Premaratne, A Abbas, A Ahmad, P Saha, A Patel, B Modarai, A Smith, M Waltham
Academic Department of Surgery, King’s College London, BHF Centre of Research Excellence & NIHR Biomedical Research Centre at Kings Health Partners, London, United Kingdom

CONTRAST ENHANCED AORTIC ULTRASONOGRAPHY - A LABORATORY PHANTOM TO DETERMINE THE LIMITATIONS OF ENHANCED AND UNENHANCED ULTRASONOGRAPHY SCANNING FOR POST-OPERATIVE EVAR SURVEILLANCE
S Dindyal, M Brewin, A Thrush, M Birch, C Kyriakides
Barts and The London NHS Trust

A NANOCOMPOSITE POLYMER BASED THORACIC ENDOPROSTHESIS TO IMPROVE AORTIC COMPLIANCE MISMATCH FOLLOWING ENDOVASCULAR REPAIR
M Desai\(^1,2\), M Ahmed\(^3\), X Zhou\(^3\), Z You\(^3\), AM Seifalian\(^2\), G Hamilton\(^1,2\)

APPLICATION OF MASS SPECTROMETRIC (MS) BASED PROTEOMICS COUPLED WITH ARTIFICIAL NEURAL NETWORKS ANALYSIS FOR BIOMARKER DISCOVERY OF ABDOMINAL AORTIC ANEURYSM (AAA)
S Ehsan\(^1\), D Boocock\(^2\), G Ball\(^2\), KE Herbert\(^1\), RD Sayers\(^1\), MJ Bown\(^1\)
1: University of Leicester 2:Nottingham Trent University

TISSUE ENGINEERING SMALL DIAMETER BYPASS GRAFTS: DECELLULARIZATION AND BIOCOMPATIBILITY OF PORCINE INTERNAL CAROTID ARTERIES
M Tatterton\(^1\), SP Wilshaw\(^2\), S Korrosis\(^2\), E Ingham\(^2\), S Homer-Vanniasinkam\(^1\)
1: Leeds Vascular Institute, Leeds General Infirmary, Leeds, UK 2: Institute of Medical and Biological Engineering, University of Leeds, Leeds, UK.

5-YEAR OUTCOMES FROM A RANDOMISED CLINICAL TRIAL COMPARING 12W VS. 14W ENDOVENOUS LASER ABLATION IN THE TREATMENT OF GREAT SAPHENOUS VARICOSE VEINS
N Samuel, T Wallace, D Carradice, J Hatfield, I Chetter
Academic Vascular Surgical Unit, Hull York Medical School/ University of Hull

AORTIC STIFFNESS AS A PREDICTOR OF ABDOMINAL AORTIC ANEURYSM (AAA) FORMATION
A Abbas\(^1\), A Smith\(^1\), M Cecelja\(^2\), T Hussain\(^3\), G Greil\(^3\), P Chowienczyk\(^2\), M Waltham\(^1\)
1: Academic Department of Surgery, Kings College London, Cardiovascular Division, British Heart Foundation Centre of Excellence, NIHR Biomedical Research Centre at Guy and St Thomas NHS Foundation Trust, St Thomas Hospital, London, 2: Clinical Pharmacology Department, Kings College London, 3: Division of Imaging Sciences, Kings College London

TRENDS IN STATIN THERAPY IN VASCULAR SURGERY PATIENTS AND ITS EFFECTS ON PERI-OEATIVE AND LONG TERM MORTALITY
M Ali\(^1\), J Newman\(^2\), N Dattani\(^1,2\), A Cheah\(^1\), M Bown\(^1,2\), R Sayers\(^1,2\), E Choke\(^1,2\)
1: Leicester Royal Infirmary, 2: University of Leicester

COFFEE AND TRADE EXHIBITION - Foyer/Clinical Skills Centre
PLENARY SESSION 1 FOR THE PATEY PRIZE (7 papers) (7min + 3 min) - Lecture Theatre 1
Chairs: Professor J Andrew Bradley and Professor Cliff Shearman

THE IN-VIVO BIOCOMPATIBILITY OF A NOVEL BIODEGRADABLE FRACTURE FIXATION DEVICE
A Qureshi1, I Ahmed2, N Han2, A Parsons3, R Pearson1, C Scotchford2, C Rudd2, BE Scammell1
1: Division of Orthopaedic and Accident Surgery, 2: Division of Material, Mechanics and Structures, University of Nottingham

COLORECTAL CANCER STEM CELLS AND INTESTINAL STEM CELLS: THE TWO FACES OF JANUS
TM Yeung1,2, CJ Kuo2, WF Bodmer1
1: Weatherall Institute of Molecular Medicine, University of Oxford, UK, 2: Stanford University School of Medicine, USA

TRENDS IN MORTALITY AND INCIDENCE OF ABDOMINAL AORTIC ANEURYSMS IN ENGLAND AND WALES
B Vijaynagar, M Bown, R Sayers, E Choke
University of Leicester

GLOBAL CHARACTERISATION OF THE SRC-1 TRANCRIPTOME IDENTIFIES DISINTEGRIN C AS AN ER-INDEPENDENT MEDIATOR OF ENDOCRINE RESISTANT BREAST CANCER
JC Bolger1, DP McCartan1, M McIvor1, C Byrne1, A Fagan1, J Xu3, P O’Gaora2, ADK Hill1, LS Young1
1: Endocrine Oncology Research, Royal College of Surgeons in Ireland, Dublin 2: UCDSchool of Medicine and Medical Science, Conway Institute, University College Dublin, Dublin, Ireland 3: Department of Molecular and Cellular Biology, Dan L. Duncan Cancer Center, Baylor College of Medicine, Houston, Texas, United States

VISCERAL OBESITY ALTERS EXPRESSION OF INFLAMMATORY MEDIATORS IN PATIENTS UNDERGOING GASTROINTESTINAL RESECTION
SL Doyle, CL Donohoe, JV Reynolds, GP Pidgeon, J Lysaght
Trinity College Dublin

HOW DO ABDOMINAL AORTIC ANEURYSMS (AAA) GROW?
AM Charnell1,2, MA Bailey1,2, KJ Griffin1,3, S Sohrabi1, J Barnes2, AB Johnson1, PD Baxter2, DJA Scott1,3

REGULATORY B CELLS INDUCE LONG-TERM ALLOGRAFT SURVIVAL IN A MOUSE MODEL OF CHRONIC REJECTION
M Mallik, CJ Callaghan, M Negus, JA Bradley, GJ Pettigrew
University Department of Surgery, Addenbrooke’s Hospital, Cambridge Biomedical Research Centre, Cambridge, United Kingdom

LUNCH AND TRADE EXHIBITION - Foyer
POSTER JUDGING - Clinical Skills Centre

PARALLEL ORAL PRESENTATIONS 2A (8 Papers) (5 min + 2 min) - Lecture Theatre 3
GENERAL SURGERY
Chairs: Mr Ashley Dennison and Professor Mike Larvin
14.00-14.07  O58  PLACEBO CONTROLLED DOUBLE BLIND RANDOMISED CLINICAL TRIAL OF TRANSVERSUS ABDOMINIS PLANE BLOCK IN LIVE DONOR NEPHRECTOMY
SA Hosgood, U Thiyagarajan, JP Hunter, A Bagul, ML Nicholson
University of Leicester, Department of 3Is, Transplant Group

14.07-14.14  O59  COMPARISON OF FRESH FROZEN CADEVER; HIGH FIDELITY VIRTUAL REALITY SIMULATOR (LAP MENTOR, SIMBIONIX) AND BOX TRAINER AS METHODS OF TRAINING IN LAPAROSCOPIC INCISIONAL HERNIA REPAIR
M Sharma, AF Horgan
Newcastle Surgical Training Centre, Freeman Hospital NHS Trust

14.14-14.21  O60  EMERGENCY ADMISSION DUE TO FEMORAL HERNIA: A POPULATION BASED STUDY USING LINKED UNITED KINGDOM PRIMARY AND SECONDARY CARE DATA
RS Radcliffe¹, J West², DJ Humes³
1: Nottingham Digestive Disease Centre and Biomedical Research Unit, QMC Campus, E Floor, West Block, Nottingham University Hospital NHS Trust 2: Division of Epidemiology and Public Health, Clinical Sciences Building, Nottingham City Hospital

14.21-14.28  O61  THE VALIDITY AND RELIABILITY OF PROCEDURE BASED ASSESSMENT IN SIMULATED VASCULAR PROCEDURES
LA Green, IC Chetter
Academic Vascular Surgical Unit, Hull York Medical School, University of Hull, Hull and East Yorkshire NHS Trust

14.28-14.35  O62  WHAT IS LEARNT BY GENERAL SURGICAL TRAINEES IN THE OPERATING THEATRE?
AC Cope¹, S Mavroveli¹, J Bezemer², R Kneebone¹
1: Imperial College London 2: Institute of Education, London

14.35-14.42  O63  OPTICAL FIBRE PROBE REFLECTANCE SPECTROSCOPY AS A TECHNIQUE TO DIAGNOSE LESIONS IN THE LOWER GASTROINTESTINAL TRACT
H Selmi¹, V Sauvage², I Amygdalos¹, S Solanki¹, H Dhanapala³, J Hoare¹, RD Goldin¹, GB Hanna¹, D Elson³
1: Imperial College London, South Kensington, London, 2: St Mary's Hospital, Paddington, London, 3: Hamlyn Centre for Robotic Surgery, Institute of Global Health Innovation and Department of Surgery and Cancer, Imperial College London

14.42-14.49  O64  E-ASSESSMENTS - CURRENT PERCEPTIONS IN CLINICAL PRACTICE
S Parvizi, I Basu, K Chin
Milton Keynes General Hospital

14.49-14.56  O65  COMPARISON OF FRESH FROZEN CADEVERS AND HIGH FIDELITY VIRTUAL REALITY SIMULATOR AS METHODS OF LAPAROSCOPIC TRAINING
M Sharma, AF Horgan
Newcastle Surgical Training Centre, Freeman Hospital NHS Trust

14.00-15.00  PARALLEL ORAL PRESENTATIONS 2B (8 Papers) (5 min + 2 min) - Lecture Theatre 4
UPPER GI SURGERY
Chairs: Professor Derek Alderson and Mr James A Catton

14.00-14.07  O66  SNAIL1: A MARKER OF EPITHELIAL MESENCHYMAL TRANSITION IN GASTRO- OESOPHAGEAL JUNCTION TUMOURS
A Mirza, L Foster, S Pritchard, C West, I Welch
The University Hospital of South Manchester

14.07-14.14  O67  RELEVANCE OF TUMOUR REGRESSION GRADE TO OESOPHAGEAL CANCER STAGING POST NEOADJUVANT CHEMORADIOThERAPY
CL Donohoe, S King, JV Reynolds
Dept of Surgery, Trinity College Dublin/St James's Hospital, Dublin, Ireland
14.14-14.21 O68  **TISSUE METABOLICOS AND OESOPHAGEAL CARCINOGENESIS**  
R Singhal, J Carrigan, C Ludwig, D Ward, R Hejmadi, W Wei, J Arrand, O Tucker, U Gunther, D Alderson  
University Hospitals Birmingham

14.21-14.28 O69  **MAGIC REGIMEN CHEMOTHERAPY HAS A SURVIVAL ADVANTAGE COMPARED TO PREVIOUS COMBINATIONS TREATING GASTRO-OESOPHAGEAL ADENOCARCINOMA**  
AM Reece-Smith, JP Duffy, S Madhusudan, SL Parsons  
Nottingham City Hospital, Nottingham University Hospitals NHS Trust

14.28-14.35 O70  **THE RELIABILITY OF EUS IN DIFFERENTIATING TUMOUR STAGE IN OESOPHAGEAL CARCINOMA**  
NJ O’Farrell¹, V Malik¹, C Johnston², C Muldoon ³, D O’Toole⁴, JV Reynolds¹  
1: Department of Surgery, Trinity Centre, St. James’s Hospital, Dublin 8, Ireland. 2: Department of Radiology, St. James’s Hospital, Dublin 8, Ireland. 3: Department of Pathology, St. James’s Hospital, Dublin 8, Ireland. 4: Department of Gastroenterology, Trinity Centre, St. James’s Hospital, Dublin 8, Ireland.

14.35-14.42 O71  **DETECTION OF UPPER GASTROINTESTINAL PATHOLOGIES THROUGH QUANTIFICATION OF OPTICAL COHERENCE TOMOGRAPHY SIGNAL ATTENUATION USING A LINEAR MODEL**  
S Solanki¹, I Amygdalos¹, H Selmi¹, P Garcia-Allende³⁴, H Dhanapala², J Hoare³, G Enyi³, DS Elson³, RD Goldin¹, GB Hanna¹  
1: Imperial College London, South Kensington, London, 2: St Mary’s Hospital, Paddington, London, 3: Institute for Biological and Medical Imaging, Helmholtz Zentrum München, Neuherberg, Germany, 4: Hamlyn Centre for Robotic Surgery, Institute of Global Health Innovation and Department of Surgery and Cancer, Imperial College London, 5: National Physical Laboratory, Teddington, Middlesex

14.42-14.49 O72  **TUMOUR REGRESSION GRADING CORRELATES TO SURVIVAL IN OESOPHAGO-GASTRIC CANCER. A REPORT OF CURRENT SURVIVAL OUTCOMES FOLLOWING NEO-ADJUVANT CHEMOTHERAPY**  
AM Reece-Smith, I Soomro, S Madhusudan, SL Parsons.  
Nottingham City Hospital, Nottingham University Hospitals NHS Trust

14.49-15.06 O73  **CAN NEOADJUVANT CHEMORADIOTherapy DOWNSTAGE NODE POSITIVE OESOPHAGEAL CANCER?**  
CL Donohoe, S King, JV Reynolds  
Dept of Surgery, Trinity College Dublin/St James’ Hospital, Dublin, Ireland

15.00-15.30  **SUS, SRS (SA) AND ESSR PRIZE WINNERS’ PRESENTATION**  
(7 min + 3 min) - Lecture  
Theatre 3  
Chairs: Professor Rob Sayers and Professor Alun Davies

15.00-15.10  **SRS (SA) 2011**  
Eradication of H. Pylori in Tygerberg and Karl Bremer Hospitals, South Africa  
Dr Bernie Maree

15.10-15.20  **SUS Travelling Fellowship Award Winner**  
Novel Regulation of Human Adipose Derived Stromal Cell Osteogenesis Through Noggin Knockdown and a BMP-2 Slow Releasing Scaffold  
Dr Benjamin Levi

15.20-15.30  **ESSR Walter Brendel Award**  
Biological Properties & Regenerative Potential, In Vitro & In Vivo, of Human Cardiac Stem Cells Isolated from the Adult Human Heart  
Dr Thomas Theologou
16.00-17.00 PARALLEL ORAL PRESENTATIONS 3A (8 Papers) (5 min + 2 min) - Lecture Theatre 3
SURGICAL ONCOLOGY
Chairs: Professor Dion Morton and Miss Rachel Hargest

16.00-16.07 O74 WAVE 3 EXPRESSION IN HUMAN COLORECTAL CANCER
AMH Toms, AJ Sanders, R Hargest, WG Jiang
Cardiff University School of Medicine, University Hospital of Wales

16.07-16.14 O75 DEVELOPMENT OF A GEMCITABINE DOUBLE EMULSION FOR INTRATUMORAL THERAPY OF PANCREATIC CANCER
DP Ivanov1, S Stolnik1, B Wolff2, K Varadhan3, DN Lobo3, MC Garnett4
1: School of Pharmacy, University Park, University of Nottingham, 2: School of Biosciences, Sutton Bonington
3: School of Clinical Sciences, Nottingham University Hospitals Queen’s Medical Centre, Nottingham

16.14-16.21 O76 HIF-ISOFORMS HAVE DIVERGENT ROLES IN THE ANGIOGENESIS OF COLORECTAL CANCER
N Thairu1,2, S Kiriakidis2, P Dawson1, E Paleolog3
1: Imperial College London, 2: Kennedy Institute of Rheumatology, Oxford University

16.21-16.28 O77 RNASEQ TRANSCRIPTOME ANALYSIS POINTS TO LINE1 CHIMERIC TRANSCRIPTS AS NOVEL BIOMARKERS FOR CRC
MJ Blythe, R Wilson, O Peacock, A Lee, N Vafadar-Isfahani, A Aboobaker, J Lund, C Tufarelli
University of Nottingham

16.28-16.35 O78 MTSS1 A NEGATIVE REGULATOR OF MIGRATION AND INVASION OF COLORECTAL CANCER CELLS
AM Siddiqui, L Ye, W Jiang, R Hargest, M Al-Rawi
Metastasis and Angiogenesis Group, University Hospital of Wales, Cardiff

16.35-16.42 O79 INVESTIGATING THE POTENTIAL USE OF LINE-1 CHIMERIC TRANSCRIPTS AS CANCER BIOMARKERS
N Vafadar-Isfahani1, O Peacock1, H Cruickshanks2, A Lee3, J Lund1, C Tufarelli1
1: Division of Surgery, School of Graduate Entry Medicine & Health Sciences, University of Nottingham 2: CR-UK Beatson Laboratories, University of Glasgow

16.42-16.49 O80 NEUROPILIN-1: A PREDICTOR OF EARLY CARCINOGENESIS IN THE COLONIC EPITHELIUM
JRL Wild, AQ Khan, N Xui Li, C Staton, K Chapple, BM Corfe
Academic Unit of Surgical Oncology, University of Sheffield

16.49-16.56 O81 THE ROLE OF MIR-21 AND PDCD4 IN COLORECTAL CANCER
O Peacock, A Lee, F Cameron, C Tufarelli, J Lund
School of Graduate Entry Medicine and Health, University of Nottingham, Royal Derby Hospital, Uttoxeter Road, Derby

16.00-17.00 PARALLEL ORAL PRESENTATIONS 3B (8 Papers) (5 min + 2 min) - Lecture Theatre 4
TRANSPLANTATION
Chairs: Professor Michael Nicholson and Professor Derek Manas

16.00-16.07 O82 SUCCESSFUL REANIMATION OF DONATION AFTER CARDIAC DEATH (DCD) HEARTS
MKhurram1, OMowannah1, CRay1, AKanwar1, DRees1, JBrassil2, Stamp2, NCarter2, JDark1, DTalbot1
1: Freeman Hospital, Newcastle Upon Tyne, UK, 2: Newcastle University, Newcastle Upon Tyne, UK, 3: University of Sunderland, Sunderland, UK
16.07-16.14 O83  **ISLET TRANSPLANT IN AN EX VIVO PORCINE LIVER-KIDNEY PERFUSION MODEL**  
WY Chung, D Al-Leswas, S Illouz, A Arshad, MA Webb, A Alzaraa, C Pollard, MS Metcalfe, AR Dennison  
Department of Hepatobiliary and Pancreatic Surgery, Leicester General Hospital, University of Leicester, Leicester, United Kingdom

16.14-16.21 O84  **NORMOTHERMIC KIDNEY PERFUSION. THE FIRST CLINICAL SERIES**  
SA Hosgood, ML Nicholson  
University of Leicester, Department of Infection, Immunity and Inflammation, Transplant Group

16.21-16.28 O85  **NAKED SMALL INTERFERING RNA (SIRNA) OF CASPASE-3 WAS EFFECTIVE IN PRESERVING ISOLATED PORCINE KIDNEYS, BUT DID NOT PROTECT AUTO-TRANSPLANTED KIDNEYS**  
C Yang²,³, Y Jia²,³, T Zhao²,³, Y Xue²,³, Z Zhao²,³, J Zhang⁴, J Wang²,³, X Wang²,³, Y Qiu²,³, M Lin²,³, D Zhu²,³, G Qi²,³, Y Qiu²,³, Q Tang²,³, R Rong²,³, M Xu²,³, M Nicholson¹, T Zhu²,³, B Yang¹,⁴  
¹: Transplant Group, Department of Infection, Immunity and Inflammation, University of Leicester  
²: Department of Urology, Zhongshan Hospital, University of Fudan, China  
³: Shanghai Key Laboratory of Organ Transplantation, China  
⁴: Department of Nephrology, Affiliated Hospital of Nantong University, University of Nantong, China

16.28-16.35 O87  **THE MITOCHONDRIA-TARGETED ANTIOXIDANT MITOQ AMELIORATES RENAL ISCHEMIA REPERFUSION INJURY IN A MURINE MODEL**  
AJ Dare¹, TA Prime¹, A Logan¹, EA Bolton², JA Bradley³, K Saeb-Parsy², MP Murphy¹  
¹: MRC Mitochondrial Biology Unit, University of Cambridge  
²: Department of Surgery, Addenbrooke’s Hospital, University of Cambridge

16.35-16.42 O88  **COMPARABLE OUTCOMES FOR SIMULTANEOUS PANCREAS KIDNEY TRANSPLANTATION FROM CONTROLLED CARDIAC-DEATH AND BRAIN-DEAD DONORS**  
MS Qureshi, CJ Callaghan, JA Bradley, CJ E Watson, GJ Pettigrew  
Cambridge Transplant Unit, Addenbrooke’s Hospital, Cambridge

16.42-16.49 O89  **EARLY URINARY BIOMARKERS OF WARM AND COLD ISCHAEMIC INJURY IN AN EXPERIMENTAL KIDNEY MODEL**  
SA Hosgood, JP Hunter, ML Nicholson  
University of Leicester, Department of 3Is, Transplant Group

16.49-16.56 O90  **PROLONGED COLD ISCHAEMIA POTENTIATES THE MITOCHONDRIAL DAMAGE THAT OCCURS DURING WARM ISCHAEMIA IN RAT KIDNEYS**  
AJ Dare¹, TA Prime¹, A Logan¹, K Saeb-Parsy², MP Murphy¹  
¹: MRC Mitochondrial Biology Unit, University of Cambridge  
²: Department of Surgery, Addenbrooke’s Hospital, University of Cambridge

17.00-17.30  **BRITISH JOURNAL OF SURGERY LECTURE - Lecture Theatre 1**  
LEARNING TO FLY IN 250 HOURS: AN APPENDECTOMY, EIGHT YEARS?  
Dr Richard Reznick  
Dean, Faculty of Health Sciences, Queen’s University  
CEO, Southeastern Ontario Academic Medical Organization  
Introduced by Professor J Andrew Bradley  
We gratefully acknowledge the support of The BJS for this lecture

17.30-18.00  **ANNUAL GENERAL MEETING - Lecture Theatre 1**  
ALL MEMBERS AND NON-MEMBERS ARE ENCOURAGED TO ATTEND

1900  **GALA DINNER - Senate Chamber, University of Nottingham**
## THURSDAY 5 JANUARY

### SYMPOSIUM 2 - Lecture Theatre 3  
**Sports Medicine in the Olympic Year**  
Chairs: Professor Fares Hadad and Professor Mark Batt

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| 08.00-08.15 | **Preparing athletes for competition**  
Dr Nick Peirce, Chief Medical Officer England and Wales Cricket Board |
| 08.15-08.30 | **Exercise Medicine and its current role**  
Professor Mark Batt, Consultant Sport & Exercise Medicine, Centre for Sports Medicine, Nottingham University Hospitals |
| 08.30-08.45 | **The evolution of surgery for sports injuries of the hip and knee**  
Professor Fares Haddad, Director - Institute of Sport, Exercise & Health, Division of Surgery & Interventional Science, University College London |
| 08.45-09.00 | Discussion                                                                                     |

### SYMPOSIUM 3 - Lecture Theatre 4  
**Comprehensive Local Research Networks: An Impetus for Clinical Research**  
Chairs: Professor Oleg Eremin and Professor John Scholefield

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| 08.00-08.20 | **The NIHR Clinical Research Network: Opportunities and support for surgical research**  
Dr Jonathan Gower, Assistant Director (Comprehensive Clinical Research Network) National Institute for Health Research |
| 08.20-08.40 | **Growing Your Own - Trainee led initiatives in clinical trials - The West Midlands experience**  
Mr Paul Marriott, Secretary, West Midlands Research Collaborative |
| 08.40-09.00 | **Growing Recruitment to Intervention and Surgical Trials - GRIST**  
Professor Dion Morton, Clinical Director to the Research Department, Royal College of Surgeons of England |

### GUEST LECTURE - Lecture Theatre 1  
‘Tissue Engineering for the Pelvic Floor - Why and How Far Have We Got?’  
Professor Sheila MacNeil  
Professor of Tissue Engineering, Department of Materials Science and Engineering, University of Sheffield  
Introduced by Mr James Catto

### SYMPOSIUM 4 - Room B128  
**ASiT**  
Chairs: Mr Bijan Modarai and Mr David Humes

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| 09.30-10.00 | **Dedicated academic training pathways: Do they work?**  
Mr Robert Hinchliffe, Senior Lecturer/Honorary Consultant Vascular Surgeon, St George’s Vascular Institute |
| 10.00-10.30 | **Embarking on research and obtaining a higher degree as a non-academic trainee.**  
Mr Reza Mirnezami, Clinical Research Fellow, Imperial College London |
| 10.30-11.00 | **Research: What can The Royal College of Surgeons offer you?**  
Professor Dion Morton, Clinical Director to the Research Department, Royal College of Surgeons of England |

### PARALLEL ORAL PRESENTATIONS 4A (12 Papers) (5 min + 2 min) - Lecture Theatre 3  
**COLORECTAL SURGERY**  
Chairs: Professor Marc Winslet and Mr Jon Lund
A CLINICAL AUDIT & COST ANALYSIS OF BOTULINUM TOXIN THERAPY FOR CHRONIC FISSURE-IN-ANO AT A REGIONAL SURGICAL UNIT  
M Rana, P Ziprin, P Paraskeva, P Tekkis, AW Darzi, S Purkayastha  
Imperial College Healthcare NHS Foundation Trust

TOLL-LIKE RECEPTOR-4 SIGNALLING CONFLICTS TUMOUR SURVIVAL VIA NOX GENERATED Reactive OXYGEN SPECIES IN COLON CANCER  
DP O’Leary1, L Bhatt1, JH Wang1, TG Cotter2, HP Redmond1  
1: Department of Academic Surgery, Cork University Hospital 2: Tumour Biology Laboratory, University College Cork

ANAL ACOUSTIC REFLECTOMETRY - A NOVEL TECHNIQUE IN THE EVALUATION OF MALE PATIENTS WITH FECAL LEAKAGE  
B Hornung1, P Mitchell1, N Klarskov2, G Lose2, G Carlson3, E Kiff1  
1: University Hospital South Manchester, UK, 2: Herlev Hospital, Denmark 3: Salford Royal University Hospital, UK

HYPOXIA AND LINEAGE SPECIFICATION OF COLORECTAL CANCER STEM CELLS  
TM Yeung1,2 and W F Bodmer1  
1: Weatherall Institute of Molecular Medicine, University of Oxford, UK 2: Stanford University School of Medicine, USA

IMPACT OF HOSPITAL VOLUME ON OUTCOMES OF RECTAL CANCER SURGERY: A SYSTEMATIC REVIEW AND META-ANALYSIS  
D Archampong1, DW Borowski2  
University Hospital Wales1, University Hospital of North Tees 2:

MOLECULAR INSIGHTS INTO THE IMPACT OF ANTIBIOTIC AND VSL#3® PROBIOTIC THERAPY ON THE MICROBIOTA OF PATIENTS WITH POUCHITIS  
S Gonsalves1, M Lin1, M Wilcox2, P Sagar1, D Burke1, P Finan1  
1: The John Goligher Colorectal Unit, The General Infirmary at Leeds 2: Department of Microbiology, The General Infirmary at Leeds

THE EFFECT OF PARATHYROID HORMONE ON GENE EXPRESSION IN AN IN-VITRO MODEL OF THE COLORECTAL EPITHELIUM  
M Walker1, W Wei2, G Matthews1, DG Morton1  
1: Department of Surgery, University of Birmingham 2: School of Cancer Sciences, University of Birmingham

DETECTION OF LOWER GASTROINTESTINAL PATHOLOGIES THROUGH QUANTIFICATION OF OPTICAL COHERENCE TOMOGRAPHY SIGNAL ATTENUATION USING A LINEAR MODEL  
H Selimi1, I Amygdalos1, S Solanki1, PB Garcia-Allende3,4, H Dhanapala2, J Hoare1, G Eny5, DS. Eison6, RD Goldin7, GB Hanna1  
1: Imperial College London, South Kensington, London 2: St Mary’s Hospital,Paddington, London 3: Institute for Biological and Medical Imaging, Helmholtz Zentrum München, Neuherberg, Germany 4: Hamlyn Centre for Robotic Surgery, Institute of Global Health Innovation and Department of Surgery and Cancer, Imperial College London 5: National Physical Laboratory, Teddington, Middlesex
FAecal Butyrate Levels Have Different Effect on Cancer and Adenoma Tissues: Suggestion of Early Beneficial Role of Butyrate during Carcinogenesis
AQ Khan, J Wild, X Nai, S Brown, C Staton, S Brown, B Corfe
The University of Sheffield

Identification of Novel Micrornas in Development and Progression of Dysplasia and Carcinoma in UC Affected Colon
M Patel¹, MI Aslam¹,2, JS Jameson¹, JH Pringle², B Singh¹
1: University Hospitals of Leicester NHS Trust 2: University of Leicester

Short Chain Fatty Acids Regulate the Structure and Function of K8, a Major Cytoskeleton Protein in Colonocytes
AQ Khan, JS Waby, S Brown, B Corfe
The University of Sheffield

Parallel Oral Presentations 4B (12 Papers) (5 min + 2 min) - Lecture Theatre 4
HPB Surgery
Chairs: Miss Paula Ghaneh and Mr David P Berry

Does a Pro-Thrombotic Environment Contribute to the Development of Chemotherapy Associated Liver Injury in Patients with Colorectal Liver Metastases?
SM Robinson¹,2, J Mann¹, AD Burt¹, DM Manas², DA Mann¹, SA White¹,2
1: Institute of Cellular Medicine, Newcastle University, Newcastle upon Tyne 2: HPB and Transplant Surgery, Freeman

The Use of Non-Invasive MRI to Quantify the Effect of Secretin on Pancreatic Blood Flow and Perfusion in Healthy Volunteers
JK Smith, ST Francis, E Cox, AC Chowdhury, DN Lobo, J Simpson
Nottingham Digestive Diseases Centre NIHR Biomedical Research Unit, Nottingham

Novel Simple Method for the Isolation of Pancreatic Stellate Cells
Q Nunes¹, D Latawiec¹, W Huang¹, M Awais¹, D Fernig², R Sutton¹
1: Liverpool NIHR Pancreas Biomedical Research Unit, Liverpool, 2: Institute of Integrative Biology, University of Liverpool

The Protective Effects of Autophagy During Hepatic Ischaemia and Reperfusion Injury
RH Bhogal, DH Adams, SC Afford
University of Birmingham

Expression of the Copper Export Transporter ATPase 7B Correlates with Tissue Specific Injury in a Murine Model of Colorectal Liver Metastases
SM Robinson¹,2, J Mann¹, DM Manas², DA Mann¹, SA White¹,2
1: Institute of Cellular Medicine, Newcastle University, Newcastle upon Tyne 2: HPB and Transplant Surgery, Freeman

Comparison of Liver Parenchymal Ablation, Tissue Necrosis and Lateral Thermal Spread Using the Harmonic Scalpel™, the Ligasure™, the Cavitrone Ultrasonic Surgical Aspirator and the Tissuelink™ Dissector
JS Hammond³, W Muirhead¹, I Cameron¹, AC Perkins², A Zaitoun³, DN Lobo¹
1: Division of Gastrointestinal Surgery, 2: Department of Medical Physics, 3: Department of Pathology, Nottingham Digestive Diseases Centre NIHR Biomedical Research Unit, Nottingham University Hospitals, Queen’s Medical Centre, Nottingham, UK
10.12-10.19 O109  WEST MIDLANDS REGIONAL AUDIT ON THE MANAGEMENT OF GALLSTONE PANCREATITIS - LOW ADHERENCE TO THE GUIDELINES, BUT ARE THEY JUSTIFIED?  
M. Johnstone, PJ Marriott, TJ Royle, CE Richardson, E Hepburn, A Torrance, A Patel, E Hamilton, K Futaba, L Whisker, N Carter, J Barnes, F Rafati, L Raing, A Jones, T Austin, A Ismail, K Bechman, TD Pinkney on behalf of the West Midlands Research Collaborative
West Midlands Research Collaborative

10.19-10.26 O110  OUTCOMES AFTER SPLIT AND DCD LIVER TRANSPLANTATION: A COMPARISON OF MARGINAL GRAFT TYPES  
M Mallik, CJ Callaghan, S Mir, M Hope, JA Bradley, GJ Pettigrew
University Department of Surgery, Addenbrooke's Hospital, Cambridge Biomedical Research Centre, Cambridge, United Kingdom

10.26-10.33 O111  POST-OPERATIVE COMPUTED TOMOGRAPHY IN PANCREAS TRANSPLANTATION  
FE Powell, CJ Callaghan, SJ Harper, A Shaw, E Godfrey, CJ Watson, GJ Pettigrew
University Department of Surgery, Addenbrooke's Hospital, Cambridge University Hospitals NHS Foundation Trust, Cambridge

10.33-10.40 O112  BILIARY DYSFUNCTION IN PATIENTS WITH SINUSOIDAL OBSTRUCTION SYNDROME  
SM Robinson¹,², A Koshy¹, A Krisely³, DM Manas³, AD Burt¹, SA White¹,²
1: Institute of Cellular Medicine, Newcastle University, Newcastle upon Tyne 2: HPB and Transplant Surgery, Freeman Hospital, Newcastle upon Tyne 3: Kings College Hospital, London, UK

10.40-10.47 O113  AN IN-SILICO STUDY OF THE HEPARIN INTERACTOME IN PANCREATIC DISEASE  
Q Nunes¹, B Lane¹, R Sutton¹, D Fernig², O Vasieva²
1: Liverpool NIHR Pancreas Biomedical Research Unit, 2: Institute of Integrative Biology, University of Liverpool

10.47-11.00 O114  NOTCH AS A TARGET FOR DIAGNOSIS AND TREATMENT OF PANCREATIC CANCER  
C Bastianpillai, M Manson, D Berry, M Cheng
University of Leicester

11.00-11.30  COFFEE AND TRADE EXHIBITION - Foyer/Clinical Skills Centre

11.30-11.37 O115  RELATIONSHIP BETWEEN LEAN MUSCLE MASS AND AEROBIC PERFORMANCE IN COLORECTAL CANCER  
Division of Surgery, School of Graduate Entry Medicine and Health, University of Nottingham Medical School at Derby, Royal Derby Hospital, Uttoxeter Road, Derby

11.37-11.44 O116  SURGICAL RESECTION RELINQUISHES SUPPRESSION OF SKELETAL MUSCLE TURNOVER IN CANCER PATIENTS  
NA Stephens¹, IJ Gallagher¹, AJ MacDonald¹, RJE Skipworth¹, H Husi¹, CA Greig¹, JA Ross¹, JA Timmons², KCH Fearon¹
1: Department of Clinical and Surgical Sciences, University of Edinburgh, Edinburgh 2: Lifestyle Research Group, Veterinary Basic Sciences, Royal Veterinary College, University of London
A RANDOMISED CONTROLLED DOUBLE-BLIND STUDY ON THE EFFECTS OF 1-LITER INTRAOPERATIVE INFUSIONS OVER 1 HOUR OF 4% SUCCINYLATED GELATINE (GELOFUSINE®) AND 6% HYDROXYETHYL STARCH (VOLUVEN®) ON BLOOD VOLUME (NCT00868062)
S Awad¹, S Dharamvaram², C Wearn², M Dubb³, DN Lobo¹
1: Division of Gastrointestinal Surgery, Nottingham Digestive Diseases Centre NIHR Biomedical Research Unit, Nottingham University Hospitals, Queen’s Medical Centre, Nottingham, 2: Department of Surgery, Sherwood Forest Hospitals NHS Trust, Kings Mill Hospital, Sutton-in-Ashfield, UK

THE EFFECT OF DIETARY CALCIUM SUPPLEMENTATION AND PARATHYROIDHORMONE ON GENE EXPRESSION IN THE RECTAL MUCOSA
M Walker¹, W Wei², G Matthews¹, DG Morton¹
1: Department of Surgery, University of Birmingham, 2: School of Cancer Sciences, University of Birmingham

THE INFLUENCE OF ISCHAEMIA ON THE REGENERATIVE POTENTIAL OF SKELETAL MUSCLE
M Fincher¹, R Yu¹, K Khar², S Kolvekar³, D Lawrence³, D Abraham², D Baker¹, J Tsul¹
1: Division of Surgery & Interventional Science, UCL, Royal Free Campus, London, UK 2: Centre for Rheumatology & Connective Tissue Disease, UCL, Royal Free Campus, London, UK 3: The Heart Hospital, London, UK

PHYSICAL ACTIVITY AS AN OBJECTIVE MEASURE OF FUNCTIONAL RECOVERY AND QUALITY OF LIFE FOLLOWING UPPER GASTROINTESTINAL CANCER RESECTION
RJE Skipworth, PO Hendry, S Paterson-Brown, KCH Fearon
Clinical and Surgical Sciences (Surgery), University of Edinburgh, Royal Infirmary of Edinburgh, 51 Little France Crescent, Edinburgh

CARDIOPULMONARY EXERCISE TESTING PREDICTS SURVIVAL FOLLOWING ELECTIVE AAA REPAIR
SW Grant¹, N Wisely², D Atkinson³, P Lancaster³, A Picha³, F Serracino-Inglott 3.; V Smyth³, CN McCollum¹, on behalf of the Manchester CPET Research Group
1: The University of Manchester, Manchester Academic Health Science Centre 2: University Hospital of South Manchester 3: Central Manchester Foundation Trust

A RANDOMISED CONTROLLED TRIAL COMPARING STANDARD POSTOPERATIVE DIET WITH LOW VOLUME HIGH CALORIE ORAL SUPPLEMENTS IN COLORECTAL PATIENTS
M Sharma, S Wahed, G O’Dair, L Gemmel, B Davidson, P Hainsworth, AF Horgan
Newcastle Surgical Training Centre, Freeman Hospital NHS Trust

THE ROLE OF THROMBOXANE SYNTHASE, PROSTACYCLIN SYNTHASE AND THE THROMBOXANE RECEPTOR IN THE PROGRESSION OF OESOPHAGEAL AND THEIR RELATIONSHIP TO SURVIVAL
S Lynch, MC Catcath, S Mc Garrigle, JV Reynolds, G Pidgeon
Department of Surgery, Trinity College Health Sciences Building, St James Hospital, Dublin

CARNITINE, PRE-OPERATIVE CARBOHYDRATE LOADING AND POST-OPERATIVE INSULIN RESISTANCE: A POTENTIAL MECHANISM
S Awad¹, F Stephens², C Shannon², DN Lobo¹
1: Division of Gastrointestinal Surgery, Nottingham Digestive Diseases Centre NIHR Biomedical Research Unit, Nottingham University Hospitals, Queen’s Medical Centre, Nottingham and 2: School of Biomedical Sciences, University of Nottingham, Nottingham, UK

DEOXYCHOLIC ACID DRIVES MITOCHONDRIAL INSTABILITY DURING PROGRESSION OF BARRETT’S OESOPHAGUS TO OESOPHAGEAL ADENOCARCINOMA
NJ O’Farrell¹, EJ Fox², R Feighery¹, SL Picardo¹, R Casey¹, N Lynam-Lennon¹, M Biniecka¹, JN O’Sullivan¹, JV Reynolds¹
1: Department of Surgery, Trinity Centre, St. James’s Hospital, Dublin 8, Ireland 2: Department of Pathology, University of Washington, Seattle, WA, USA
12.47-12.54  O126  SKELETAL MUSCLE AKT IN UPPER GASTROINTESTINAL CANCER PATIENTS AND ITS POTENTIAL AS A BIOMARKER OF CACHEXIA
NA Stephens, IJ Gallagher, JA Ross, KCH Fearon
Department of Clinical and Surgical Sciences, University of Edinburgh, Edinburgh

11.30-13.00  PARALLEL ORAL PRESENTATIONS 5B  (12 Papers) (5 min + 2 min) - Lecture Theatre 4
MISCELLANEOUS

Chairs: Professor Gordon L Carlson and Mr John Simpson

11.30-11.37  O127  ENCAPSULATION OF ANGIGENIC MONOCYTES: A NOVEL TOOL FOR CELL THERAPY
AS Patel¹, A Smith¹, R Attia¹, P Saha¹, S Jayasinghe², B Modarai¹
1: King's College London BHF Centre of Excellence, Academic Department of Surgery, Cardiovascular Division. The NIHR Biomedical Research Centre at Guy’s and St Thomas’ NHS Foundation Trust and King’s College London 2: BioPhysics Group, Department of Mechanical Engineering, University College London

11.37-11.44  O128  A STUDY OF THE TEST-RETEST RELIABILITY OF PRESSURE PAIN THRESHOLD IN KNEE OSTEOARTHRITIS
AI Simpson¹, M Wheeler², B Moreton², R Pearson¹, B Scammell¹, DA Walsh²
1: Division of Orthopaedic and Accident Surgery, Queen's Medical Centre, Nottingham, UK
2: Division of Academic Rheumatology, City Hospital, Nottingham, UK.

11.44-11.51  O129  PAKS IN UROTHELIAL CANCER
AF Ismail, P Dasgupta, CM Wells
King’s Health Partnership

11.51-11.58  O130  EARLY REMOVAL OF URETERIC STENTS AND ITS IMPACT ON REDUCING URINARY INFECTION IN RENAL TRANSPLANTATION
UM Thiyagarajan, A Bagul, P Thiyagarajan, J Frost, ML Nicholson

11.58-12.05  O131  GENE EXPRESSION PROFILING AND PROTEOMIC ANALYSIS OF CARTILAGE DEGRADATION IN A MOUSE MODEL OF OSTEOARTHRITIS
MD Gardiner, A Chanalaris, H Nagase, J Nanchahal
Kennedy Institute of Rheumatology, University of Oxford

12.05-12.12  O132  TISSUE-PROTECTIVE EFFECTS OF EPO AND EPO-DERIVATIVE IN ISOLATED HUMAN MYOBLASTS
R Yu¹, K Khan³, D Abraham², S Kolvekar³, D Lawrence³, D Baker¹, J Tsui¹
1: Division of Surgery & Interventional Science, UCL, Royal Free Campus, UK
2: Centre for Rheumatology & Connective Tissue Disease, Division of Medicine, UCL, Royal Free Campus, UK
3: The Heart Hospital, University College London Hospitals NHS Trust, London, UK

12.12-12.19  O133  CHARACTERISATION OF QUIESCENT INTESTINAL STEM AND CANCER STEMCELLS
S Buczacki¹, R Kemp¹, A Klein², RJ Davies³, D Winton¹
1: Cancer Research UK, Cambridge Research Institute, Cambridge, UK
2: Harvard Medical School, Boston, USA
3: Cambridge Colorectal Unit, Addenbrooke's Hospital, UK

12.19-12.26  O134  HUMAN ANEURYSMAL VASCULAR SMOOTH MUSCLE CELL ACTIVATION BY OXIDIZED PHOSPHOLIPID AND INHIBITION BY PYRAZOLE-2
BL Green, KL Brodie, R Bon, Y Majeed, K Riches, DJA Scott, KE Porter, DJ Beech
University of Leeds

12.26-12.33  O135  THE HALLUCAL METATARSOSESAMOID ARTICULATION - A THREE DIMENSIONAL QUANTITATIVE ANALYSIS
B Jamal, A Pillai, S Kumar, Q Fogg
University of Glasgow
12.33-12.40 O136  EXPERTISE RELATED DISPARITY IN PREFRONTAL CORtical EXCITATION ASSOCIATED WITH INTRA-OPERATIVE DECISION MAKING
G Yongue1, DR Leff1, DRC James1, I Vlaev2, F Orihuela-Espina1, B Seymour2, R Dolan2, GZ Yang1, AW Darzi1
1: Hamlyn Centre for Robotic Surgery, Imperial College London, ASU 10th floor QEQM Building, St Mary's Hospital, London W2 1NY 2: Wellcome Trust Centre of Neuroimaging, 12 Queen's Square, London, UK

12.40-12.47 O137  ENDOThELIN-1 (ET-1) CONTRIBUTES TO ISCHAEMIC SKELETAL MUSCLE DAMAGE
H Patel1, X Shi-wen2, M Dashwood1, D Baker1, J Taull1
1: Division of Surgery & Interventional Science, UCL, Royal Free Campus, UK 2: Centre for Rheumatology & Connective Tissue Disease

12.47-12.54 O138  ONCOLOGICAL & COSMETIC RE-INTERVENTION IN IMMEDIATE AND DELAYED BREAST RECONSTRUCTION
ES McGrath, PS Waters, CA Malone, R McLoughlin, AJ Hussey, KJ Sweeney, MJ Kerin
Department of Surgery, University College Hospital Galway, Galway, Ireland

13.00-14.00 LUNCH AND TRADE EXHIBITION - Foyer
POSTER JUDGING - Clinical Skills Centre

13.15-14.00 LUNCHTIME GUEST LECTURE - Lecture Theatre 3
REPAIR OF CHALLENGING ABDOMINAL WALL DEFECTS WITH A BIOLOGIC MESH: AN EVIDENCE-BASED REVIEW AS THE BASIS OF DEFINING THE CLINICAL STRATEGY
Dr Michael Franz
VP Global Clinical & Medical Affairs, LifeCell
Chair: Professor Gordon Carlson

14.00-15.20 PLENARY SESSION 2 FOR THE PATEY PRIZE (7 papers) (7min + 3 min) - Lecture Theatre 1
Chairs: Professor J Andrew Bradley and Professor Cliff Shearmun

14.00-14.10 O8  INTERLEUKIN-15 POTENTIATES CD8 AND NK EFFECTOR CELL EXPANSION AND TUMOUR KILLING IN PROSTATE CANCER-PERIPHERAL BLOOD MONONUCLEAR CO-CULTURES
OE Elhage, C Galustian, O Ukimura, I Gill, RA Smith, P Dasgupta
King's College London

14.10-14.20 O9  BLOOD BASED ASSAY FOR EARLY DETECTION OF COLORECTAL ADENOMA AND CARCINOMA
Mi Aslam1,2, M Patel1,2, B Singh1,2, JH Pringle2, JS Jameson1
1: Department of Colorectal Surgery, Leicester General Hospital, University Hospitals of Leicester NHS Trust 2: Department of Cancer Studies and Molecular Medicine, University of Leicester

14.20-14.30 O10  DISRUPTION OF EATING PATTERNS AND INTESTINAL GLUCOSE SENSING IN OBESITY-INDUCED DIABETES
H Y Bhutta1,3, T Deelman1,3, DB Rhoads2,3, A Tavakkolizadeh1,3
1: Brigham and Women's Hospital, 2: Massachusetts General Hospital, 3: Harvard Medical School

14.30-14.40 O11  SURGICAL STRESS INCREASES MUSCLE PYRUVATE DEHYDROGENASE KINASE-4 MRNA EXPRESSION AND IMPAIRS MUSCLE PYRUVATE DEHYDROGENASE COMPLEX ACTIVITY, AND MAY UNDERLIE POSTOPERATIVE MUSCLE INSULIN RESISTANCE
KK Varadhan1, D Constantin-Teodosiu2, D Constantin2, R Atkins2, *PL Greenhaff1, *DN Lobo1
*Joint senior authors
1: Nottingham Digestive Diseases Centre, NIHR Biomedical Research Unit, Nottingham University Hospitals Queen's Medical Centre, Nottingham, UK 2: Centre for Integrated Systems Biology and Medicine School of Biomedical Sciences, University of Nottingham, Nottingham, UK.
THE TUMOUR SUPPRESSOR GENE, AIMP3 SENSITISES BLADDER CANCER TO CHEMO/RADIOThERAPY IN VITRO AND IS A PROGNOSTIC MARKER FOR OVERALL SURVIVAL IN PATIENTS TREATED WITH RADIOThERAPY FOR MUSCLE INVASIVE DISEASE
PMS Gurung, M Williamson, C West, N Counsell, A Feber, P deWinter, T Powles, A Freeman, P Hoskins, JRW Masters, JD Kelly
University College London

OESOPHAGEAL ADENOCARCINOMA TARGETED THERAPY: VEGF AS A CO-TARGET WITH IGFR INHIBITION
Cl Donohoe, EP Stok, E Daly, J Lysaght, J O’Sullivan, GP Pidgeon, JV Reynolds
1: Dept of Surgery, Trinity College Dublin, St James’ Hospital, Dublin, Ireland 2: Dept of Pathology, Beaumont Hospital. Royal College of Surgeons, Dublin, Ireland

NORMALIZATION OF THE PRO-THROMBOTIC DIATHESIS IN PATIENTS WITH ABDOMINAL AORTIC ANEURYSM (AAA) FOLLOWING ENDOVASCULAR (EVAR) AND OPEN ANEURYSM REPAIR (OAR)
MF Abdelhamid1,2, RSM Davies1,2, DJ Adam1, RK Vohra2, AW Bradbury1
1: University Department of Vascular Surgery, Heart of England NHS Foundation Trust, Birmingham, UK 2: Department of Vascular Surgery, University Hospital Birmingham NHS Foundation Trust, Birmingham, UK

REPIGMENTATION OF CUTANEOUS SCARS IN BLACK AND WHITE SKIN: AN OBSERVATIONAL STUDY
S Chadwick, MWJ Ferguson, M Shah
Central Manchester University Hospitals and University of Manchester

COFFEE AND TRADE EXHIBITION - Foyer/Clinical Skills Centre

HEARING WITHOUT EARS - COMBINING SCIENCE AND SURGERY
Professor Gerard O’Donoghue
Professor of Otology and Neurotology at the University of Nottingham
Chairs: Professor J Andrew Bradley and Mr Frank Smith

JOHN FARNDON MEMORIAL LECTURE - Lecture Theatre 1
SCIENCE AND SURVIVAL IN MILITARY CASUALTIES
Professor Sir Keith Porter
Professor of Clinical Traumatology, University of Birmingham
Chairs: Professor J Andrew Bradley and Mr Frank Smith

PRESENTATION OF PRIZES - Lecture Theatre 1
Professor J Andrew Bradley
The BAUS Section of Academic Urology was formed in June 2007 joining the existing BAUS Sections of Oncology, Endourology, Andrology & Genito Urethral Surgery and Female, Neurological & Urodynamic Urology. The Section of Academic Urology aims to promote the development and expansion of high quality academic urology in the UK and Ireland. It also aims to act as a forum for discussion of practical issues relating to clinical research. The Section is responsible for:

* Working in conjunction with the BAUS Sections in order to foster an environment where clinical research can flourish;
* Encouraging improved interaction between academic urologists and consultant urologists (in the NHS);
* Acting as a reference point for fostering and facilitating high quality research;
* Advising on potential sources of funding for research projects;
* Encouraging the participation of younger urologists in research and academic urology;
* Developing effective working relationships with allied groups and organisations. The Section has a key link to the Scientific and Education Committee of The Urological Foundation and works to ensure that research interests across the specialty are supported.

The Section joined with the SARS meeting in Bristol in 2009, in London in 2010 and Dublin last year and is happy to be part of the 2012 meeting. The Section also organises a one day meeting immediately preceding the BAUS annual meeting in June each year.

THURSDAY 5 JANUARY 2012

08.30 REGISTRATION

09.00-09.30 GUEST LECTURE - Lecture Theatre 1
TISSUE ENGINEERING FOR THE PELVIC FLOOR - WHY AND HOW FAR HAVE WE GOT?
Professor Sheila MacNeil
Professor of Tissue Engineering, Department of Materials Science and Engineering, University of Sheffield
Introduced by Mr James Catto

09.30-09.35 INTRODUCTION AND WELCOME - D96
Professor Kilian Mellon, Chairman BAUS Section of Academic Urology

09.35-11.00 PAPER SESSION 1 - (12 Papers) (5 min + 2 min) - D96
PROSTATE CANCER
Chairmen: Professor Hing Leung and Mr William Watson

09.35-09.42 U1 LINEAGE TRACKING IN SITU: WHERE ARE THE PROSTATE STEM CELLS? WHAT ARE THEY DOING?
C Williamson, JK Blackwood, L Greaves, L Wilson, RS Pickard, M Lako, CN Robson, DM Turnbull, RW Taylor, R Heer
Northern Institute for Cancer Research, Newcastle

09.42-09.49 U2 THE PROTEIN PS20 INCREASES TUMOURIGENIC POTENTIAL IN PROSTATE CANCER EPITHELIAL CELLS
C Galustian, OH Hickman, C A Vyakarnam, RA Smith, P Dasgupta
King's College Hospital, London

09.49-09.56 U3 WFDC1/PS20 INHIBITS EXPANSION OF CD8-T CELLS AND NK CELLS AND EFFECTOR CELL MEDIATED KILLING OF PROSTATE CANCER CELLS IN THE PROSTATE CANCER MICROENVIRONMENT
C Galustian, OH Hickman, A Vyakarnam, RA Smith, P Dasgupta
King's College Hospital, London
09.56-10.03 U4  CIRCULATING MICRONRNA SIGNATURES: A NOVEL MINIMALLY INVASIVE BIOMARKER FOR PROSTATE CANCER
BD Kelly, N Miller, GC Durkan, KJ Sweeney, E Rogers, K Walsh, MJ Kerin
National University of Ireland, Galway

10.03-10.10 U5  EMT BIOMARKERS IN PROSTATE CANCER PROGRESSION
H Whiteland¹, S Spencer-Harty², H Thomas², C Davies², P Bose³, N Fenn³, CMorgan¹, S Doak¹, H Kynaston¹, S Jenkins⁴
1: School of Medicine, Swansea University, Swansea, Wales 2: Department of Urology and Pathology, Singleton Hospital, Swansea Bro Morgannwg University Hospital Trust, 3: Department of Urology and Pathology, Morriston Hospital, Swansea, Bro Morgannwg University Hospital Trust 4: Departments of Urology and Pathology, University Hospital, Wales, Cardiff, Swansea

10.10-10.17 U6  INDUCED PLURIPOTENT STEM CELL (iPSC) RE-PROGRAMMING IN THE HUMAN PROSTATE
D Pal, AC Rigas, SC Williamson, M Moad, J Carr-Wilkinson, L Lako, CN Robson, R Heer
Northern Institute for Cancer Management, Newcastle

10.17-10.24 U7  URINARY ERG IMMUNOCYTOCHEMISTRY CAN IDENTIFY PROSTATE CANCER PATIENTS PRIOR TO PROSTATE BIOPSY
University Hospitals of Leicester NHS Trust

10.24-10.31 U8  A NOVEL APPROACH TO TARGETING THE ANDROGEN RECEPTOR IN ANDROGEN INDEPENDENT PROSTATE CANCER, RESULTING IN CELL CYCLE ARREST AND HIGHLY EFFECTIVE APOPTOSIS
IR Logan, FS Shaheen, L Gaughan, D O’Neill, CN Robson
Northern Institute for Cancer Management, Newcastle

10.31-10.38 U9  THE ROLE OF EPITHELIAL TO MESENCHYMAL TRANSITION (EMT) IN iPS INDUCTION OF HUMAN PROSTATE
D Pal, AC Rigas, SC Williamson, M Moad, CN Robson, R Heer
Northern Institute for Cancer Management, Newcastle

10.38-10.45 U10  RETINOIC ACID RECEPTOR RESPONDER PROTEIN 2 (RARRES2) CAUSES INCREASED CELL PROLIFERATION AND MIGRATION IN PROSTATE CANCER CELLS
KG Williams, KM Desai, HS Randeva, K Jefferson, M Ramanjaneya
University Hospitals Coventry & Warwickshire NHS Trust

10.45-10.51 U11  ASSESSING THE VALIDITY OF THE PROSTATE CANCER PREVENTION TRIAL PROSTATE CANCER RISK CALCULATOR (PCPT-PCRC) IN AN IRISH COHORT
DJ Lundon, BD Kelly, S Boyce, F Kheradmand, N Nusrat, S Jaffry, M Corcoran, G Durkan, E Rogers, K Walsh
University College Hospital, Galway and University College Dublin

10.51-10.58 U12  EPHB3 AND EPHB4 RECEPTOR EXPRESSION IN PROSTATE CANCER - A FUTURE DIAGNOSTIC AND PROGNOSTIC MARKER?
JW Wall, TS Stonier, CDN Nobes
University of Bristol

11.00-11.30  COFFEE AND TRADE EXHIBITION - Foyer/Clinical Skills Centre

11.30-12.15  PAPER SESSION 2 (6 Papers) (5 min + 2 min) - D96
INFECTION AND BENIGN DISEASE
Chairman: Professor Robert Pickard
UROPATHOGEN PATTERN AND ANTIBIOTIC RESISTANCE OF CATHETER ASSOCIATED URINARY TRACT INFECTIONS IN A UK UNIVERSITY HOSPITAL
AL Lam, H Salem, N Kadi, H Ratan
Nottingham Medical School

THE ANTI-MICROBIAL PEPTIDE BETA-DEFENSIN-2 PROTECTS THE BLADDER AGAINST FLAGELLATED ESCHERICHIA COLI
ASM Ali, M Lanz, CL Townes, C Varley, BS M-Falero, T Stanly, WA Robson, J Southgate, J Hall, RS Pickard
Newcastle University

ASSESSMENT OF A VARIABLE STRESS RIG TO IMPROVE THE PROPERTIES OF A TISSUE ENGINEERED PROSTHESIS FOR USE IN STRESS URINARY INCONTINENCE AND PELVIC ORGAN PROLAPSE
A Mangera, S Roman, A Bullock, CR Chapple, S MacNeil
University of Sheffield

ASSESSMENT OF URINARY LACTOFERRIN AS A SURROGATE MARKER FOR URINARY TRACT INFECTION IN PATIENTS WITH LOWER URINARY TRACT SYMPTOMS
TG Brenton, K Gill, JG Malone-Lee
University College London Medical School

AN INNATE IMMUNE RESPONSE TO MOTILE E. COLI IS EXHIBITED BY BOTH BLADDER AND VAGINAL CELLS
BS M-Falero, ASM Ali, M Lanz, CL Townes, RS Pickard, J Hall
Newcastle University

ROLE OF INTERSTITIAL CELLS OF CAJAL LIKE CELLS IN HUMAN NEUROGENIC DETRUSOR OVERACTIVITY
JH Seth, A Sahai, T Lashley, J Panicker, MS Khan, P Dasgupta, C Fowler
National Hospital for Neurology and Neurosurgery

GUEST LECTURE - D96
Academic Health Sciences Centres
Professor Robert Lechler
Vice-Principal and Executive Director of King’s Health Partners Academic Health Sciences Centre, King’s College Hospital, London
Introduced by Professor Prokar Dasgupta

LUNCH AND TRADE EXHIBITION - Foyer

PLENARY SESSION 2 FOR THE PATEY PRIZE - Lecture Theatre 1
See page 30 for full details

COFFEE AND TRADE EXHIBITION - Foyer/Clinical Skills Centre

PAPER SESSION 3 - (4 Papers) (5 min + 2 min) - D96
BLADDER AND RENAL
Chairman: Professor Howard Kynaston

RENAL DIFFERENTIATION FROM ADULT SPERMATOGONIAL STEM CELLS
AC Rigas, SC Williamson, A Kennedy, A El-Sherif, NA Soomro, CDA Brown, CN Robson, R Heer
Newcastle University

P21-ACTIVATED KINASES (PAKS) IN UROTHELIAL CANCER
AF Ismail, CM Wells, P Dasgupta
King’s College Hospital, London
16.04-16.11 U21  PATIENT SATISFACTION WITH LASER ABLATION OF RECURRENT SUPERFICIAL TUMOURS OF THE BLADDER VIA A FLEXIBLE CYSTOSCOPE UNDER LOCAL ANAESTHESIA
NK Kadi, H Salem, A Perahca
Royal Derby Hospital

16.11-16.18 U22  A PILOT STUDY OF COMPLEMENT CASCADE ACTIVATION AS A MARKER FOR RECOVERY FOLLOWING MAJOR ABDOMINAL SURGERY
AM Shaw¹, B van Vuuren¹, JS McGrath², I Daniels²
1: College of Life and Environmental Science, University of Exeter 2: Exeter Surgical Health Services Research Unit, Department of Surgery, Royal Devon and Exeter NHS Trust

16.20-16.50  JOHN FARNDON MEMORIAL LECTURE - Lecture Theatre 1
SCIENCE AND SURVIVAL IN MILITARY CASUALTIES
Professor Sir Keith Porter
Professor of Clinical Traumatology, University of Birmingham
Chairs: Professor J Andrew Bradley and Mr Frank Smith

16.50-17.20  PRESENTATION OF PRIZES - Lecture Theatre 1
Professor J Andrew Bradley
This is the third year for the Burns and Plastic surgery section of the Academic meeting. This section, which is supported by the British Burns Association has grown in strength over the last 3 years. This is reflected in the wide variety of abstracts this year.

It is a great privilege this year that the BBA section has a nominated abstract for inclusion in the prestigious Patey Prize session. The abstract selected is “Re-pigmentation of cutaneous scars in black and white skin, an observational study, presented by Sarah Chadwick from Manchester.”

Naiem Moiemen
on behalf of the British Burn Association

THURSDAY 5 JANUARY 2012

08.00-09.30 REGISTRATION

09.00-09.30 OPTION TO JOIN SARS & BAUS FOR THE GUEST LECTURE - Lecture Theatre 1
TISSUE ENGINEERING FOR THE PELVIC FLOOR - WHY AND HOW FAR HAVE WE GOT?
Professor Sheila MacNeil,
Professor of Tissue Engineering, Department of Materials Science and Engineering, University of Sheffield
Chairs: Professor Kilian Mellon

09.30-09.45 WELCOME - B129
Mr Naiem Moiemen

09.45-11.00 BURNS AND PLASTIC SURGERY GIBSON PRIZE SECTION - B129
Chair: Peter Dziewulski Stuart Watson

09.45-09.52 BP1 THE USE OF THE INTERNET AND SOCIAL SOFTWARE BY PLASTIC SURGEONS
RJG Stevens1,2, JM O’Donoghue3, MP Davies1, NM Hamilton2
1: Department of Plastic and Reconstructive Surgery, Aberdeen Royal Infirmary, Aberdeen, Scotland, 2: Medical Unit, College of Life Sciences and Medicine, University of Aberdeen, Aberdeen, Scotland, 3: Department of Plastic and Reconstructive Surgery, Royal Victoria Infirmary, Newcastle upon Tyne, England

09.52-09.59 BP2 PRE-TIBIAL INJURIES IN THE OLDER POPULATION: THE IMPACT ON A PLASTIC SURGERY DEPARTMENT. WORKING TOWARDS DAY CASE MANAGEMENT.
A Rosich-Medina, A Woodham, L Chumas, S Norton
Addenbrooke’s Hospital, Cambridge University Hospitals NHS Foundation Trust, Cambridge, UK

09.59-10.06 BP3 CAN DELAYED MICROVASCULAR BREAST RECONSTRUCTION ACTIVATE DORMANT BREAST CANCER?
A Rosich-Medina, S Wang, M Di Candia, CM Malata
Addenbrooke’s Hospital, Cambridge University Hospitals NHS Foundation Trust, Cambridge, UK

10.06-10.13 BP4 BOTULINUM TOXIN IMPROVES SYMPTOMS AND HAND FUNCTION IN RAYNAUD’S SYNDROME SECONDARY TO SCLERODERMA
K Dhaliwal, L Ovens, PE Butler
Royal Free Hospital, London

10.13-10.20 BP5 SKIN MALIGNANCES ON THE HEAD AND NECK - WHOSE SPECIALTY IS IT ANYWAY?
Z Ahmad, W Jaffe, S Rayatt
Department of Plastic Surgery, University of North Staffordshire NHS Trust
<table>
<thead>
<tr>
<th>Time</th>
<th>BP</th>
<th>Title</th>
<th>Authors</th>
<th>Institution</th>
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<tbody>
<tr>
<td>10.20-10.27</td>
<td>BP6</td>
<td><strong>DOES PATIENT HEIGHT PREDICT THE INTERCOSTAL SPACE DISTANCE IN WOMEN UNDERGOING RIB PRESERVING INTERNAL MAMMARY VESSEL EXPOSURE FOR FREE FLAP BREAST RECONSTRUCTION?</strong></td>
<td>AA Khoo, A Rosich-Medina, AV Woodham, Z Mickute, CM Malata</td>
<td>Addenbrooke’s Hospital, Cambridge University Hospitals NHS Foundation Trust, Cambridge, UK</td>
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<tr>
<td>10.27-10.34</td>
<td>BP7</td>
<td><strong>A PHOTOGRAHAMETRIC METHOD FOR QUANTIFYING THE EFFECTS OF BOTULINUM THERAPY FOR ORAL-OCULAR SYNKINESIS: VALIDATION OF A NEW TECHNIQUE</strong></td>
<td>MJ Hallam, NT Mabvuure, V Venables, C Nduka</td>
<td>Queen Victoria Hospital, East Grinstead, UK</td>
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<tr>
<td>10.34-10.41</td>
<td>BP8</td>
<td><strong>LONGEVITY OF BECKER-35 EXPANDABLE IMPLANTS IN BREAST RECONSTRUCTION: A 5 YEAR REVIEW</strong></td>
<td>C Goh, CM Malata</td>
<td>Department of Plastic and Reconstructive Surgery, Addenbrooke’s Hospital, Cambridge University Hospitals NHS Trust</td>
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<tr>
<td>10.41-10.48</td>
<td>BP9</td>
<td><strong>SIMULTANEOUS ENDOSCOPIC BROW LIFT WITH UPPER LID BLEPHAROPLASTY: RESULTS FROM A SINGLE SURGEONS EXPERIENCE</strong></td>
<td>M Bloebaum, E Erel, N Rabey, A Abood, CM Malata</td>
<td>Department of Plastic and Reconstructive Surgery, Addenbrooke’s Hospital, Cambridge University Hospitals NHS Trust</td>
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<tr>
<td>10.48-10.55</td>
<td>BP10</td>
<td><strong>QUANTITATIVE MODELLING OF HUMAN EPITHELIUM IN HOMEOSTASIS AND SQUAMOUS CELL CARCINOMA</strong></td>
<td>A Roshan1,2,3, P Jones2,3</td>
<td>1: Department of Plastic Surgery, 2: Department of Oncology, Cambridge University Hospitals NHS Trust, 3: Hutchison-MRC Research Laboratories, Cambridge</td>
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### 11.00-11.30 Coffee and Trade Exhibition - Foyer/Clinical Skills Centre

### 11.30-12.40 Burns and Plastic Surgery Jackson Prize Section - B128

**Chair:** Remo Papini Mamta Shah

### 11.30-11.37 BP11

**ATTITUDES OF MEDICAL STUDENTS TOWARDS A CAREER IN PLASTIC SURGERY**

R Chawla, J Toplis, Z Ahmad, Z Galvao, W Jaffe

Department of Plastic Surgery, University of North Staffordshire NHS Trust

### 11.37-11.44 BP12

**A PROSPECTIVE ANALYSIS OF THE ROLE OF INCISION BIOPSY IN THE MANAGEMENT OF CUTANEOUS MALIGNANCY**

J Mennie1, G Orfaniotis1, Z Shariff2, S Al-Ghazal2

1: St John’s Hospital at Howden, Livingston, Edinburgh 2: Bradford Royal Infirmary, Bradford

### 11.44-11.51 BP13

**THE OBSERVER RESPONSE TO DISFIGUREMENT: DESIGNING FACIAL EYE TRACKING EXPERIMENTS**

J Ruston, R Modi, L Ovens, A Clarke, P Butler

Royal Free Hospital and University College London

### 11.51-11.58 BP14

**PATEY PRIZE NOMINATION**

**REPIGMENTATION OF CUTANEOUS SCARS IN BLACK AND WHITE SKIN: AN OBSERVATIONAL STUDY**

S Chadwick, MWJ Ferguson, M Shah

Central Manchester University Hospitals and University of Manchester
PERCEPTION AND KNOWLEDGE OF APPROPRIATE FIRST AID CARE IN BURN RELATED INJURIES: SURVEY OF ENGLISH UNIVERSITY STUDENTS
SG Coulson¹, PH Tay², RM Pinder², J Rawlins²
1: Department of Vascular Surgery, Northern General Hospital Sheffield, 2: Regional Burns Centre, Pinderfields General Hospital, Wakefield

EVALUATION OF HIGH RESOLUTION DIGITAL THERMAL IMAGING IN THE ASSESSMENT OF BURN DEPTH
J Hardwicke, R Thomson, A Riddle, A Barnford, N Moiemen
West Midlands Regional Burns Centre, Queen Elizabeth Hospital, University Hospitals of Birmingham NHS Foundation Trust

THE EFFECT OF LOCALISED BURN INJURY ON SKELETAL MUSCLE IN A MOUSE MODEL
TB O’Neill¹,², T Bakker², G Pinniger², S Rea¹, F Wood¹, M Fear¹
1: Burn Injury Research Unit, School of Surgery, University of Western Australia, 2: Department of Physiology, School of Biomedical, Biomolecular and Chemical Sciences, University of Western Australia, 3: Department of Surgery, University College Galway, Ireland

RADIO-CONTROLLED MODEL VEHICLE FUEL BURNS
S Murphy, J Pleat, B Philp
St Andrews Burns Centre, Broomfield Hospital, Chelmsford, Essex

CHANGING PRACTICE FOLLOWING DEVELOPMENT OF GUIDELINES FOR TRACE ELEMENT SUPPLEMENTATION IN SEVERE BURNS
N Muirhead, I Jones
Chelsea and Westminster Hospital

FUTURE OF SARS PB SECTION - B128
Naïem Moiemen

LUNCH AND TRADE EXHIBITION Foyer
POSTER JUDGING Clinical Skills Centre

OPTIONAL LUNCHTIME GUEST LECTURE - Lecture Theatre 3
Repair of challenging abdominal wall defects with a biologic mesh: an evidence-based review as the basis of defining the clinical strategy
Dr Michael Franz
VP Global Clinical & Medical Affairs, LifeCell
Chair: Professor Gordon Carlson

BBA DELEGATES ARE WELCOME TO JOIN THE MAIN SARS MEETING
Please see page 30 for programme details
GUEST SPEAKER PROFILES

BJS LECTURE

DR RICHARD REZNICK

Richard Reznick is married to Cheryl, and they have three children – Joanna, Josh and Gabe. Born in Montreal, he received his undergraduate university education and medical degree from McGill University, followed by a general surgical residency at the University of Toronto. He spent two years in fellowship training, first obtaining a Masters’ degree in medical education from Southern Illinois University, followed by a fellowship in colorectal surgery at the University of Texas in Houston, Texas.

Since his first faculty appointment at the University of Toronto in 1987, Dr Reznick has been active in both colorectal surgery and research in medical education. He was instrumental in developing a performance-based examination, which is now used for medical licensure in Canada. He ran a research program on assessment of technical competence for surgeons and supervised a fellowship program in surgical education.

At the University of Toronto Faculty of Medicine, he was the inaugural Director of the Faculty’s Centre for Research in Education at University Health Network (The Wilson Centre) from 1997 to 2002. In 1999 he was appointed Vice President of Education at University Health Network. He served eight years as the R S McLaughlin Professor and Chairman of the Department of Surgery at the University of Toronto from 2002-2010.

In July 2010, Dr Reznick assumed the position of Dean, Faculty of Health Sciences at Queen’s University and Chief Executive Officer of the Southeastern Ontario Academic Medical Organization (SEAMO).

Dr Reznick has received numerous awards for his work in education, including the Royal College of Physicians and Surgeons of Canada Medal in Surgery, The Association for Surgical Education Distinguished Educator Award, the National Board of Medical Examiners John P Hubbard Award, the Daniel C Tosteson Award for Leadership in Medical Education, the 2006 Inaugural University of Toronto President’s Teaching Award and the Karolinska Institute Prize for Research in Medical Education. In July 2011 Dr Reznick was awarded an honorary fellowship from the Royal College of Surgeons in Scotland, and in November 2011, an honorary fellowship from the Royal College of Surgeons in Ireland.

Dr Reznick is the author of over 120 peer-reviewed publications and has given over 200 lectures to hospitals, universities and scientific organizations around the world.
JOHN FARNDON MEMORIAL LECTURE
PROFESSOR SIR KEITH PORTER

Professor Sir Keith Porter MB BS FRCS(Ed) FRCS(Eng) FIMC RCS(Ed) FFSEM(UK) FCEM is Honorary Professor of Clinical Traumatology at the University of Birmingham and Consultant Trauma Surgeon at Queen Elizabeth Hospital, Birmingham. Qualifying originally in London and doing much of his higher surgical training in the West Midlands, he was originally appointed Consultant Trauma Surgeon at the Birmingham Accident Hospital in 1986. With changes in hospital practice he is now Senior Trauma Surgeon at University Hospital Birmingham and the Royal Centre for Defence Medicine where he is the civilian lead co-ordinating the care of injured military personnel returning from Afghanistan. He is also an active immediate care practitioner working both in urban practice in Birmingham and the rural surrounding Shire counties.

He is the Medical Director of the West Midlands Central Accident Resuscitation (CARE) team and actively involved in both the delivery of pre-hospital care and education within the region. He is the regional representative of both BASICS and the Faculty of Pre-hospital Care and is actively involved in the College of Surgeons of Edinburgh, as the Chairman of the Faculty of Pre-hospital Care and an examiner. He is the Chairman of the Intercollegiate Board for training in Prehospital Emergency Medicine and recently Co-Chaired the DOH review on Major Trauma in relation to its prehospital care and transport sub-group.

He has published numerous books on pre-hospital care and contributed chapters to both pre-hospital and hospital publications. He is Chairman of the Trauma Care Council, Medical Adviser to the County Air Ambulance and is a member of the Resuscitation Council and Defence Scientific Advisory Committee. He is a member of the Surgeon General Research Strategy Group.

He was made a Knight of the British Empire in the 2010 New Years Honour List.

GUEST LECTURE
PROFESSOR GERARD O’DONOGHUE

Gerard O’Donoghue graduated from University College, Cork and undertook his otolaryngology training in London and Oxford, undertaking Fellowships at University Hospital, Boston and at the University of California in San Francisco. He is Professor of Otology and Neurotology at the University of Nottingham, Consultant Neuro-Otologist at Queen’s Medical Centre, Nottingham and Vice President of The Ear Foundation, an educational charity he established supporting deaf children, their families and professionals. He currently co-directs the National Biomedical Research Unit in Hearing of the National Institute of Health Research.
GUEST LECTURE
PROFESSOR SHEILA MACNEIL

Sheila MacNeil is Professor of Tissue Engineering in the University of Sheffield. She leads a large multidisciplinary group focused on biomaterials and tissue engineering. Her group focus on the development of tissue engineered skin and other epithelial tissues (oral mucosa, oesophagus, bladder, pelvic floor and cornea) and they have successfully developed tissue engineered skin products through to commercialisation (MySkin and Cryoskin) to benefit patients with severe burns and chronic wounds. She works extensively with clinical colleagues in Burns, Dermatology and Urology and her research benefits from a strongly interdisciplinary approach with excellent biomaterials support from academic colleagues in Engineering Materials and Chemistry. Recent tissue engineering challenges include development of scaffolds for repair of the female pelvic floor, development of biomaterials to deliver corneal cells to patients and development of hybrid biomaterials for cleft palate repair.

LUNCHTIME SYMPOSIUM
DR MICHAEL FRANZ

Michael G. Franz, M.D., F.A.C.S. is the Global Vice President of Clinical and Medical Affairs for LifeCell. Prior to that, he was Associate Professor of Surgery and Chief of the Division of Minimally Invasive Surgery at the University of Michigan. Dr. Franz’s main interests are surgical wound healing and tissue engineering. His research was funded by the United States National Institutes of Health (NIH) and Department of Defense (DoD). The focus was how fibroblasts and other wound repair cells respond to biomechanical signals and growth factors. Clinically, his surgical practice was dedicated to complex abdominal wall reconstruction, including component separation, and the in vivo mechanism of action of soft tissue prostheses.
ANNUAL GENERAL MEETING

OF THE SOCIETY OF ACADEMIC AND RESEARCH SURGERY

ALL MEMBERS AND NON-MEMBERS ARE ENCOURAGED TO ATTEND

Wednesday, 04 January 2012, 17.30-18.00

1. Apologies
2. Minutes of the last AGM held on 5 January 2011
3. Matters arising
4. President’s Report
5. Honorary Secretary’s Report
6. Treasurer’s Report
7. Future SARS meetings
8. Any other business
9. Date of next meeting
HONORARY SECRETARY’S REPORT

Welcome to the 2012 Annual Meeting of SARS. This meeting is held under the auspices of the University of Nottingham and the Society owes its gratitude to both the University and to Professor Dileep Lobo for his hard work and attention to detail as local organiser.

Despite the current economic climate there is still cause for optimism for academic surgery in the UK and Ireland, in amongst the more evident effects of austerity measures. Amidst financial uncertainties are welcome indications that research funding will be preserved for the biomedical sector and that NIHR funding will be maintained. SARS members, NHS and University surgeons interested in research and collaboration, are uniquely placed to develop these opportunities and to respond to the challenges they offer. Furthermore, the development of research networks and for instance, the involvement of trainees in acting as Primary Investigators and bringing clinical trials to fruition, illustrate areas of seed change in innovative approaches to surgical research.

The past year has seen SARS involved in various areas of academic endeavour. An excellent Annual Meeting at the Royal College of Surgeons of Ireland in 2011, hosted by Professor Arnie Hill, reaffirmed our links with Ireland and the research strengths of the Irish surgical community. This was followed by excellent SARS sessions at annual meetings of the ASGBI and Vascular Society. In addition to free paper sessions, the format of seminars, in which experts summarise important clinical trials in the surgical specialties, has been popular with both trainees revising for FRCS Part III and consultants looking for concise updates. This format will be maintained. SARS will also contribute an academic session to the ASGBI Annual Meeting in Liverpool in 2012, to which all members (and non-members) are warmly welcomed.

The future of SARS depends on encouraging a culture of pan-specialty research and communication. We value the Society’s relationship with the academic arms of urology, BAUS and with the British Burns Association, each body having designated sessions within the meeting. Over the forthcoming year we hope to develop links with other surgical specialty research groups, so that SARS becomes the primary forum for presentation of surgical research across all specialty groups. Our links with ASiT are well-established and it is recognised that trainee membership of SARS must be fostered, since these members will carry the mantle of SARS into the future.

The winner of the Patey Prize in 2011, Gijsbert Hotte, with his paper on THE CONTRIBUTION OF THE RNA-BINDING PROTEIN RNPC1 TO P21-MEDIATED CELL CYCLE ARREST AND RADIATION SENSITIVITY IN OESOPHAGEAL CANCER, set new standards by becoming the first medical student ever to have been awarded this prestigious surgical prize. This should encourage all medical students who are looking towards a career in surgery and they will find a warm welcome within the Society as potential SARS members.

The relationship with our sister societies in Europe, South Africa and the USA is also important. We welcome the representatives of these societies and their prize winners to our annual meeting.

Our thanks are due to Professor Andrew Bradley for his staunch leadership over the last year. He has worked hard on behalf of the Society and his efforts to bring the Society up to date in many areas are reflected in the revised and amended constitution which will be put to the membership at the AGM. Our gratitude also goes to Council members demitting office who have served the Society so well over the last 3 years: Professor Rob Sayers; Professor Dion Morton; Mr Darryl Baker and Professor John Reynolds.

I too, finish my term as Honorary Secretary at the Nottingham meeting. I have thoroughly enjoyed my time in this role and the privilege of working for this engaging and “young at heart” Society. I leave you in the capable hands of Professor Alun Davies, who will continue to work hard on your behalf for SARS.

Finally we are immensely grateful for the efforts of Sarah King who has worked tirelessly in coordinating Society activities, administering meetings, collating abstracts, updating the web site and in putting together this yearbook.

The support of the membership and the quality and quantity of abstracts submitted to the annual meeting remains exceptional. Please continue your support for the Society.

Frank CT Smith
Honorary Secretary
HONORARY TREASURER’S REPORT

SARS has enjoyed another 12 months of financial stability. Once again we have avoided accessing our reserve funds which have however necessarily shrunk during the recession. The meeting in Dublin was a great success and our affiliation with BAUS and BBA remains strong, as do our close ties with ASiT. Increasing our ties to other surgical sub-speciality organisations remains a priority.

I am pleased to report that the membership of SARS has remained stable over the last 12 months but as ever we are looking for opportunities to expand this. Suggestions from members would be welcome.

The sponsorship for the Dublin meeting was especially strong and has allowed us to develop a bursary award scheme for delegates attending the SARS meeting.

This is my last year as the society treasurer. It has been a pleasure to work with the Council during a period of growth and development, and I will watch the continued progress with great interest.

Dion Morton
Honorary Treasurer
## ANNUAL SARS ACCOUNT – YEAR END 2010

Statement of financial activities for the year ended 31 December 2010

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<th>Income &amp; Expenditure</th>
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<td>Sundry</td>
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<td><strong>Total resources expended</strong></td>
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**Net income / (expenditure) for the year** | 7,569 |

**Other recognised gains and losses** | |
| (Losses)/gains on investments | 10,382 |
| Net movement in funds | 17,951 |

**Balance brought forward at 1 January 2010** | 77,938 |
**Balance carried forward at 31 December 2010** | 95,889 |
PRIZE RECIPIENTS 2011

PATEY PRIZE

THE CONTRIBUTION OF THE RNA-BINDING PROTEIN RNPC1 TO P21-MEDIATED CELL CYCLE ARREST AND RADIATION SENSITIVITY IN OESOPHAGEAL CANCER.

Gijsbert Hotte1,2, Stephen G. Maher1, John V. Reynolds1
1: Department of Surgery, Institute of Molecular Medicine, Trinity Centre for Health Sciences, Trinity College Dublin, St. James’s Hospital, Dublin 8, Ireland and 2: Department of Surgery, Erasmus Medical Centre, Erasmus University, Rotterdam, The Netherlands.

PRESIDENT’S POSTER PRIZE

Reperfusion as a marker of success of distal revascularisation (Ramsor Study)

Glen L, Bayston R, Scammell B, Ashraf W
Biomaterials and related infections group, School of Clinical Sciences, University of Nottingham

The next SARS Annual Meeting is a joint meeting with the Section of Surgery of the Royal Society of Medicine.

To be held at the Royal Society of Medicine, London.

9th & 10th January 2013

We look forward to seeing you there!

Local organisers:
Professor Alun Davies and Mr Frank Smith

Sponsorship and other enquiries to:
SARS Secretariat
Tel: 020 7869 6640
Email: sars@rcseng.ac.uk

Keep an eye on the website for up-to-date details:
www.surgicalresearch.org.uk
## Past Presidents and Honorary Secretaries

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<tr>
<th>Year</th>
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<td>Sir J Patterson-Ross</td>
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CONSTITUTION OF THE SOCIETY OF ACADEMIC AND RESEARCH SURGERY

OBJECTIVES OF THE SOCIETY

1. To provide for the interchange of information about research related to surgery and surgical disease.
2. To foster interchange between surgical science and clinical practice.
3. To promote humanity and high ethical standards in clinical and experimental research.
4. To comment on the standard, place and educational value of surgical research in the training of surgeons.
5. To maintain high standards of scientific evaluation of surgical research by ensuring that the format, quality of slides and illustrations, clarity of presentation and ability to respond to questioning of presentations to the Society are of the highest quality.
6. To promote surgical research by providing travelling scholarships and/or research grants.
7. To promote the interchange of information internationally through collaboration with other national surgical societies.
8. To maintain low subscriptions and registration fees to encourage young research workers in surgery to participate in the activity of the Society.

MEMBERSHIP

9. The Society shall be composed of Ordinary, honorary Members, Senior Members and Corresponding members.
10. Members shall be under the age of 55. In general they shall be practicing surgeons, but others occupied in surgical research are eligible for election.
11. As far as possible Members shall be representative of the medical schools and surgical research centres of the country.
12. On attaining the age of 55, a Member shall automatically be elected as a Senior member. Senior members may attend all Scientific Meetings. They shall receive all minutes and agenda.
13. They shall not, however, take part in the running of the Society, nor hold office except that of President.
14. Corresponding membership shall be reserved for surgeons or research workers who are unable, because of distance or circumstances, to fulfill the conditions of Ordinary membership. They shall receive all minutes and agenda. They may attend Scientific Meetings and introduce visitors, but shall not take part in the running of the Society or hold office.
15. Members of the European Society for Surgical Research shall have the privilege of submitting papers and of attending meetings, but shall not take part in the running of the Society nor hold any office.
16. On attaining the age of 65, Senior Members shall automatically be elected as Honorary Members. Exceptionally, surgeons of distinction who have not previously been Members of the Society may be elected to Honorary Membership. Honorary Members shall receive all minutes and agenda. They may attend Scientific Meetings and introduce visitors, but shall not take part in the running of the Society nor hold office.

OFFICERS

17. The Officers of the Society will be the President, Secretary, Treasurer and a number of other members who shall together constitute the Committee. With the exception of the President the members of the Committee shall be elected by a postal ballot of the ordinary membership.
18. The Editorial Secretary of the BJS shall be a Member of the Committee.
19. The Committee will consider candidates for the President-Elect and submit their nominations to the Annual General Meeting of the Society for approval. The President shall hold office for a period of two years and shall not be eligible for re-election. He shall preside at all meetings of the Society and the Committee.
20. The Secretary and Treasurer shall be elected annually for up to three years, and shall not normally be eligible for re-election after this period.
21. The other Members of the Committee shall be elected annually for up to three years, subject to the provision that one shall demit office each year. A Member of the Committee who has completed a full three years tenure of office shall not be eligible for re-election until after an interval of three years.
22. The Committee of the Society shall act as the Executive Committee, arranging the meetings and conducting the affairs of the Society, subject to the views of the Society. Proposals for election or re-election for membership shall first be considered by the Committee.
23. The President and Secretary shall be elected 1 year in advance of taking office. Both the President Elect and the Secretary Elect shall attend Committee Meetings as observers.

MEETINGS

24. The Society shall meet twice a year and at such other times as shall be decided. The Scientific business shall be principally short papers followed by discussion.
25. A Business Meeting of Members shall be held at some time during each meeting of the Society to consider arrangements for the following meeting and matters of business raised by the Committee or by members.

26. The Business Meeting at the summer meeting of the Society shall be the Annual General meeting at which the election of Officers and Committee shall take place and the Annual Report of the Treasurer shall be received.

27. The Committee shall have the power on behalf of the Society to enter into guarantees and indemnities, limited or unlimited. Such guarantees and indemnities may be signed on behalf of the Committee by officials nominated in the appropriate resolution.

28. Communications to the Society should not normally exceed 10 minutes. Time shall be allowed for discussion.

29. Papers delivered to the Society must not be read from a complete manuscript. Notes only are permitted at the dais but speakers are reminded that the best and most spontaneously given papers are usually those that have been rehearsed to the point that no written assistance is needed.

30. Titles of demonstrations or communications must be accompanied by an abstract or not more than 200 words. The abstract must be submitted on the prescribed form in accordance with the regulations currently determined by the Society. Abstracts must be sent to the Honorary Secretary by the notified date before the meeting at which they are to be presented.

31. Communications for presentation at meetings shall be selected by the Committee.

32. The annual subscription for Members, Senior Members and Corresponding members will be affixed at the Annual General meeting. Members elected after the 1st July 1990 will normally be required to pay their subscription by Direct Debit Mandate. Honorary members will not pay any subscription.

33. Any member who does not pay his subscription within one year, in spite of due notice, shall cease to be a Member.

34. The Treasurer shall present a detailed financial statement at each Annual General Meeting.

VISITORS

35. Senior members, Members, Honorary Members and Corresponding members may introduce visitors, who may attend the Scientific Meeting and take part in the discussion.

36. Any Member wishing to introduce visitors under Rule 37 should write to the local organiser at least one week before the meeting giving the name of the visitor and the reason why he should be invited. Ordinarily, this will be because of his interest in surgical research.

ELECTION OF MEMBERS

37. Candidates for election to all forms of membership must be proposed and seconded in writing by two Members or Senior members of the Society at least one month before the meeting at which the Society intends to make an election. Proposers must indicate that the candidate wishes to become a Member. Those who are already Members of the Society may be elected to Senior membership, Honorary Membership or Corresponding membership without further proposition. A two-thirds majority of members present shall be necessary for the election of all Members.

AMENDMENTS OF RULES OF THE SOCIETY

38. No change in the constitution or Rules of the Society shall be made except, after due notice, by a two-thirds majority of the Members present at the Annual General Meeting.

THE DAVID PATEY PRIZE

39. In 1962 the Society instituted this Prize in honour of its founder, Mr David Patey. The conditions are as follows:
   - The Patey Prize will be awarded to the person who in the opinion of the Committee has given the best paper to the Society at the meeting.
   - The Committee will meet immediately after the general meeting and select the prize winner.
   - Candidates should be a trainee when the paper is given.
   - The Prize will take the form of a certificate and a sum of money.

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40. The Society of Academic and Research Surgery regards the copyright of abstracts that are under consideration for presentation at the forthcoming meeting of the Society as vested with the Society (unless the author or authors specifically indicate otherwise) until either
   - the abstract has been rejected
   - as a consequence of acceptance the copyright is transferred to the British Journal of Surgery. Authors are advised that copyright should be vested in Journals such as the British Journal of Surgery for first publication only and that they should reserve the right to negotiate terms for subsequent use in whatever forms.
SARS STRATEGY DOCUMENT

Aim

SARS is the principal society concerned with academic surgery in the UK and Ireland. Its mission is to promote excellence in surgical research, education and clinical innovation and it does so through the exchange of information and ideas related to surgery, surgical disease, and surgical education. To this end it enables younger surgeons and scientists, particularly those in training, to present their research findings at its scientific meetings, the main one of which is the SARS Annual Meeting.

Scope

The Society was founded as the Surgical Research Society (SRS) in 1954 and subsequently changed its name to SARS in 2001 to better reflect its goal of supporting not only surgical research, but also other aspects of academic surgery, particularly teaching and training, and more specifically the role of research in surgical training. All types of research relevant to surgery are supported ranging from basic laboratory research through to clinical trials and health service research. In addition to the Annual Meeting, SARS also organises ad hoc meetings and hosts sessions at other major meetings, to support the development of young surgeons and surgical scientists. SARS in an inclusive society and encourages participation from surgeons, surgical trainees and scientists from all branches of surgery. It has close links with a number of other surgical societies in the UK including the Association of Surgeons of Great Britain and Ireland, Association of Surgeons in Training, the British Association of Urologic Surgeons, the Vascular Society of Great Britain and Ireland, and the Association of Upper Gastrointestinal Surgeons.

SARS Annual Meeting

The SARS Annual Meeting is held over a two-day period in January and typically attracts over 250 delegates comprising senior academics from different surgical disciplines, surgical trainees, medical students and surgical scientists. The meeting programme comprises high quality oral presentations, selected from submitted abstracts presented in plenary as well as parallel sessions. One of the highlights of the Annual Meeting is the award of the highly competitive David Patey Prize, named in honour of the founder of the society and awarded to the person (normally a trainee) judged to have given the best presentation to the Society. There are also other prizes for outstanding presentations in basic and clinical science. In addition to high quality oral and poster presentations, the SARS Annual Meeting incorporates invited presentations by internationally renowned leaders in their field, including the prestigious British Journal of Surgery Lecture and the John Farndon Memorial Lecture. The Annual Meeting is open to all members and their guests, including medical students and other health care professionals. The Annual Meeting attracts generous sponsorship from a range of companies and includes a trade display. A recent feature of the SARS Annual Meeting has been that it has been held in parallel with scientific meetings hosted by other specialist surgical societies, to allow their attendees to attend joint scientific sessions with SARS. The 2012 SARS Annual Meeting is scheduled for the 4th and 5th January at the University of Nottingham Medical School and the 2013 Annual Meeting will be held at the Royal Society of Medicine in London.

Membership and Relationships

The elected Officers of SARS comprise the President, Honorary Secretary, Honorary Treasurer and Council Members and the Annual General Meeting is held during the Annual SARS Congress. There are currently nearly 250 members of SARS including many of the senior academics and opinion leaders in UK surgery. Membership is open to all practicing surgeons and others occupied in surgical research and teaching and requires proposal by an existing member and election at the Annual General Meeting. The secretariat of SARS is based at the Royal College of Surgeons of England and SARS enjoys a close working relationship with the College and also with the Association of Surgeons of Great Britain and Ireland. The Society publishes a high quality SARS Yearbook that includes all of the abstracts selected for presentation at the Annual SARS meeting along with other relevant information. SARS also publishes a regular newsletter and has published influential contributions such as “The Place of Research-issues in Professional Practice” and “Surgery in the Undergraduate Curriculum, all of which can be downloaded from the SARS website (www.surgicalresearch.org.uk). SARS also seeks to promote interchange of information internationally through collaboration with other national surgical societies and has developed close links with the American Association for Academic Surgery and American Society of University Surgeons, the South African Surgical Research Society and the European Surgical Research Society.
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PATEY ABSTRACTS

O1 THE IN-VIVO BIOCOMPATIBILITY OF A NOVEL BIODEGRADABLE FRACTURE FIXATION DEVICE
A Qureshi1, I Ahmed2, N Han1, A Parsons2, R Pearson1, C Scotchford2, C Rudd2, BE Scammell1
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Introduction
Bioreorbable materials offer the potential of developing fracture fixation plates with similar characteristics to bone thereby minimizing the osteoporosis associated with metal plates and obviating the need for implant removal. Aim. To determine the in vivo degradation characteristics and effects on underlying bone of a novel phosphate glass fibre reinforced bioreorbable plate.

Methods
Twenty five NZW rabbits underwent application of the bioreorbable plate to the intact right tibia. They were divided into 5 groups corresponding to the time points from surgery to sacrifice - 2, 6, 12, 26 and 52 weeks. Outcomes included radiographs, nanoCT imaging, histological assessment and bending tests to determine the flexural strength properties of the plated bones.

Results
At sacrifice, radiographs revealed no osteolysis or change in the thickness of the cortex underlying the plate. New bone formation was seen around the plate periphery with an overlying capsule. Plate integrity was retained up to 12 weeks with no evidence of macroscopic inflammation. The mean load to failure of the plated bones expressed as a percentage of the opposite unplated bones was 179, 174 and 172% after implantation for 2, 6 and 12 weeks respectively. The flexural stiffness of the plated bones expressed as a percentage of the opposite bones revealed a mean increase of 245%, 317% and 205% at 2, 6 and 12 weeks respectively.

Conclusion
The resorbable plate augmented the bones’ mechanical characteristics without causing inflammation for a period sufficient for fracture healing thus enabling future study into application in a fracture model.

Take-home message
Bioreorbable fracture fixation plates are biocompatible, do not cause any mechanical effects on the underlying bone and have the potential for reducing complications associated with metal plates.

O2 COLORECTAL CANCER STEM CELLS AND INTESTINAL STEM CELLS: THE TWO FACES OF JANUS
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Introduction
Cancer stem cells (CSCs) are the subpopulation of cells that drive tumour growth, with the ability to self-renew and differentiate into multiple lineages. Recent studies on CSCs have been limited by the use of primary human tissue, where samples can generally only be used once. Up to now, the relationship between intestinal stem cells and CSCs has not been clearly defined.

Methods
We have devised a novel in vitro MatrigelTM-based assay that can easily and repeatedly enrich for colorectal CSCs from cancer cell lines, based on the expression of the stem cell markers CD44/CD24 and colony morphology. To investigate if normal intestinal stem cells could give rise to CSCs in vivo, we deleted APC specifically in Lgr5+ stem cells using the tamoxifen-induced Lgr5-EGFP-CreER;APCf/f murine model.

Results
A single CD44+CD24+ colorectal CSC can self-renew, differentiate to form all lineages within the tumour, and drive cancer growth in vitro and in vivo. As with normal intestinal stem cells, CSCs use CDX1 and Notch to regulate differentiation. Targeted deletion of APC in Lgr5+ stem cells gave rise to multiple highly proliferative intestinal adenomas, with an expansion of both the Lgr5+ and CD44+ stem cell subpopulations. Single Lgr5+APCf/f cells also developed into large intestinal organoids that self-renewed indefinitely in culture.
**Conclusion**

This novel in vitro CSC assay will help identify new drugs that are specific for CSCs. Our results demonstrate that CSCs and intestinal stem cells share a common origin, and use similar pathways to regulate self-renewal and differentiation.

**Take-home message**

The identification of colorectal CSCs has significant implications on the way we currently treat cancer, since CSCs drive the growth of tumour and need to be specifically targeted to prevent disease relapse. The use of this novel CSC assay and a greater understanding of the biology underlying CSCs will help identify new treatment options against them.

---

**O3 TRENDS IN MORTALITY AND INCIDENCE OF ABDOMINAL AORTIC ANEURYSMS IN ENGLAND AND WALES**

B Vijaynagar, M Bown, R Sayers, E Choke

University of Leicester

**Introduction**

Recent studies from Australia and New Zealand reported declines in both abdominal aortic aneurysm (AAA) mortality and incidence. This has important implications for screening policies. This study examined trends in AAA mortality and incidence England and Wales.

**Methods**

UK Office for National Statistics provided cause-specific death data for England and Wales; and Hospital Episode Statistics supplied hospital admissions and procedures data for England from 2001 to 2009. Poisson regression models were constructed to estimate the relative change over time.

**Results**

Age-standardized rates for AAA mortality in England and Wales fell significantly by 35.7% from 2001 to 2009. Ruptured AAAs was a major contributor of AAA mortality (84.6%) and the sharp decline in AAA mortality was largely due to a 35.3% drop in age-standardised ruptured AAA deaths. During the same period, ruptured AAA admissions in England significantly declined by 25.8% (6.1/100,000 to 4.5/100,000) and emergency AAA repairs similarly fell by 29.6% (3.1/100,000 to 2.2/100,000). In contrast, non-ruptured AAA admissions increased by 6.4% (14.4/100,000 to 15.4/100,000) and non-emergency AAA repairs increased by 19.6% (7.1/100,000 to 8.8/100,000). Total AAA admissions remained the same (20.5/100,000 to 19.9/100,000) and total AAA repairs increased by 7.3% (10.2/100,000 to 11.0/100,000).

**Conclusion**

Unlike Australia and New Zealand, the falling AAA mortality in England and Wales did not mirror a decline in disease incidence but appeared to be related to lower incidence of ruptured AAA. The overall AAA case-load has not decreased in England.

**Take-home message**

In England and Wales, AAA hospital case-load has remained the same between 2001 to 2009. Incidence of ruptured AAA has declined leading to reduced overall AAA mortality.

---

**O4 GLOBAL CHARACTERISATION OF THE SRC-1 TRANSCRIPTOME IDENTIFIES DISINTEGRIN C AS AN ER-INDEPENDENT MEDIATOR OF ENDOCRINE RESISTANT BREAST CANCER**

JC Bolger¹, DP McCartan¹, M McIlroy¹, C Byrne¹, A Fagan¹, J Xu³, P O’Gaora², ADK Hill¹, LS Young¹

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**Introduction**

The development of breast cancer resistance to endocrine therapy may result from an increase in cellular plasticity leading to the development of a steroid independent tumour. The p160 steroid coactivator protein SRC-1 drives this adaptability. Using discovery studies we identify Disintegrin C (DC), a multidomain transmembrane glycoprotein as a direct, ER-independent target of SRC-1.
Aims
i) Identification of novel SRC-1 target genes. ii) Determine the functional role of DC in endocrine resistant breast cancer.

Methods
Novel SRC-1 target genes were identified combining SCR-1 ChIP sequencing and microarray experiments. DC was selected for functional validation. Breast cancer cell lines were subjected to western blot and co-immunoprecipitation to measure protein expression. Motility assays and 3D cultures were performed following knockdown of DC, and treatment with JC1, an inhibitory ligand active against DC. Mouse xenograft models were used to examine DC expression in vivo. A TMA comprising 560 patients was stained for DC.

Results
SRC-1 acts on DC in an ER-independent manner. Knockdown of DC restored the ability of endocrine resistant cells to polarise and form acini. In xenografts, DC levels were significantly elevated in the tamoxifen treated endocrine resistant tumours. DC was absent in SRC-1 knockout mice. Knockdown of DC and treatment with JC1 significantly reduced cellular migration in endocrine resistant cells (p<0.001). DC is an independent prognostic indicator of reduced disease-free survival (p<0.001).

Conclusions
SRC-1 regulates DC via an ER-independent mechanism. DC predicts disease free-survival in breast cancer. DC offers a potential new drug target in endocrine resistant breast cancer.

Take-home message
We have identified a novel SRC-1 target in endocrine resistant breast cancer, which offers an exciting new drug target to treat metastases.

O5 VISCERAL OBESITY ALTERS EXPRESSION OF INFLAMMATORY MEDIATORS IN PATIENTS UNDERGOING GASTROINTESTINAL RESECTION
SL Doyle, CL Donohoe, JV Reynolds, GP Pidgeon, J Lysaght
Trinity College Dublin

Introduction
Visceral adipose tissue fuels a state of chronic inflammation and has been identified as a risk factor for postoperative complications. This study aimed to identify inflammatory mediators that are differentially regulated in viscerally obese patients postoperatively which may impact on patient recovery.

Methods
In a cohort of 201 gastrointestinal cancer patients visceral fat area (VFA) was calculated from diagnostic CT scans. CRP and albumin levels preoperatively and at days 1, 3, 7,14 and 21 postoperatively were obtained following routine testing. Peripheral blood mononuclear cells were isolated from oesophageal adenocarcinoma patients preoperatively and postoperatively on days 1 and 7 (n=3 obese, n=3 non-obese). Samples were analysed for expression of 370 genes known to play a role in the acute inflammatory response, generation and resolution of inflammation using a PCR based array.

Results
Following resection, increasing VFA was associated with significantly higher CRP levels and a higher CRP/albumin ratio on postoperative days 1, 3 and 7 (p<0.05). Postoperatively, an upregulation was seen in IL-6 (>7 fold) expression in obese compared to non-obese patients. In addition, members of the TNF super family, TNFSF14 and lymphotoxin-ß, which induce inflammatory cytokine production and NFkB activation, were upregulated in obese patients (>5 fold and >2 fold respectively) compared to non-obese. Conversely fibronectin-1, involved in wound healing, was downregulated (>4 fold) in obese patients postoperatively.

Conclusion
Excess visceral adiposity significantly alters inflammatory response postoperatively. Inflammatory mediators such as IL-6, TNFSF14, lymphotoxin-ß and fibronectin-1 may prove important targets for pharmacotherapy to aid postoperative outcomes in obese patients.

Take-home message
Excess visceral adiposity influences the inflammatory response postoperatively in obese patients with altered secretion of TNFSF14, lymphotoxin-ß, IL-6 and fibronectin-1
O6 HOW DO ABDOMINAL AORTIC ANEURYSMS (AAA) GROW?

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3: The Leeds Vascular Institute, The General Infirmary at Leeds, Great George Street, Leeds LS1 3EX.

Introduction
Recently, a meta-regression analysis estimated AAAs grow at 2mm/year. All analysed data was based on linear modelling. There is a significant body of evidence to suggest that AAA growth is non-linear. We set out to determine what model of growth best fits our AAA size data to help determine how AAAs grow.

Methods
All patients with AAA <5.5cm and at least two imaging studies (either USS or CT) at least three months apart who gave ethical approval were included in the study. We calculated AAA growth using four methods: (i) a simple growth/time calculation, (ii) linear regression model, (iii) linear multi-level model (MLM) and (iv) quadratic MLM. Results are presented as median (95% confidence intervals). The ‘goodness of fit’ of the data was assessed using the Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC) and compared between models.

Results
276 patients met inclusion criteria with 1,990 imagining studies (median 6(2-24)/patient) aged 74±7.2years, 81% male. Our data was not normally distributed. Overall AAA Growth in the models were: (i) 0.28(0.25-0.31)cm/yr, (ii) 0.057(0.045-0.07)cm/yr, (iii) 0.20(0.17-0.21)cm/yr and (iv) 0.21(0.18-0.24)cm/yr. Goodness of fit was: (i) n/a, (ii) AIC:4459, BIC4476, (iii) AIC1937, BIC1971, p vs.(ii)=<0.001, and (iv) AIC1926, BIC1982, p vs.(iii)=0.001.

Conclusion
Our data supports the notion that AAA growth is a non-linear process. MLM reflects our AAA growth data more accurately than linear regression with quadratic MLM demonstrates a closer fit than linear MLM. Data from the National AAA Screening Programme will provide a unique opportunity to optimise mathematical AAA growth models.

Take-home message
Abdominal Aortic Aneurysms appear to grow in a non-linear fashion which is most accurately depicted by quadratic multi-level modelling. This must be borne in mind when interpreting studies comparing aneurysm growth modelled using linear techniques.

O7 REGULATORY B CELLS INDUCE LONG-TERM ALLOGRAFT SURVIVAL IN A MOUSE MODEL OF CHRONIC REJECTION

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Introduction
A significant hurdle faced by clinical transplantation is the rejection of organs in the late post-transplant period. IL-10 secreting B regulatory cells (Bregs) have been shown in autoimmune models to halt disease progression. We studied the effects of Bregs in a well-characterised murine cardiac allograft model in order to investigate mechanisms by which chronic rejection may be abrogated.

Methods
The bm12 mouse strain differs from wild-type C57Bl/6 mice by just three amino acids on the MHC class II molecule (I-Abm12 and I-Ab, respectively). Donor bm12 hearts transplanted heterotopically into C57BL/6 recipients reject with a median survival time (MST) of 51.5 days (n=6), and develop chronic allograft vasculopathy (CAV). Additionally, recipients generate circulating auto-, but not allo-, antibody post-transplant. Bregs were generated in vitro by culturing naive C57Bl/6 B cells with anti-CD40 monoclonal antibody for 3 days. IL-10 secretion was assayed by ELISA and Breg cell markers were measured on flow cytometry. We transferred Bregs into C57BL/6 recipients of bm12 hearts and monitored for allograft rejection and the development of CAV and autoantibody.
Results
Cultured B cells were shown to produce IL-10 and express a Breg phenotype. Breg-treated C57BL/6 recipients (n=4) demonstrated indefinite bm12 heart graft survival (MST>150 days) and markedly reduced autoantibody and CAV when compared to untreated controls (n=4).

Conclusion
This is the first demonstration of Breg-mediated inhibition of chronic rejection in a vascularised solid organ allograft model. These findings may provide the basis of studies investigating the use of Bregs in humans.

Take-home message
Ex vivo-generated Bregs can be used to prevent the long-term rejection of cardiac allografts in a mouse model; this may provide the basis for studies investigating the use of Bregs in humans.

08 INTERLEUKIN-15 POTENTIATES CD8 AND NK EFFECTOR CELL EXPANSION AND TUMOUR KILLING IN PROSTATE CANCER-PERIPHERAL BLOOD MONONUCLEAR CO-CULTURES
OE Elhage, C Galustian, O Ukimura, I Gill, RA Smith, P Dasgupta
King's College London

Introduction
Prostate cancer lesions contain CD8 and NK cells. However these infiltrates are either anergic or are of a regulatory phenotype. The aim of this investigation was to identify cytokines that expand and activate CD8 and NK cells in the prostate cancer milieu to facilitate cancer cell death.

Methods
Irradiated prostate cancer (PCA) cell-lines LNCaP and PC3 were incubated with non-adherent PBMCs at effector:target ratios of 8:1. The cytokines IL-2, IFN-γ, IL-12, IL-15 and IL-21 were then added at ED50 concentrations. After 1 week, percentages of CD8-T cells and NK cells in the cocultures were determined by anti-CD8, CD3, and CD56 staining, followed by flow-cytometric analysis. Percentages of dead/apoptotic tumour cells were determined by propidium-iodide/annexin staining. NK and CD8 perforin levels were also determined.

Results
Without PCa cells, all cytokines tested expanded NK cells compared to PBS. However, with PCa cells, only IL-15 expanded NK(by 400%+/−21% with LNCaP and 205%+/−17.4% with PC3s), and CD8-T cells (by 40%+/−12% with LNCaP and 20%+/−4% with PC3s); p<0.01 by 1-way anova and post-hoc Newman-Keuls). IL-15 cocultures had greatest percentages of apoptotic/dead LNCaP and PC3s (175%+/−34% and 250%+/−45% compared to PBS) and perforin was increased by upto 1000%+/−200% by IL-15 in CD8-T cells and NK cells compared with PBS (p<0.001 by 1-way-anova and post-hoc Newman-Keuls).

Conclusion
IL-15 is more effective than IL-2, IFN-γ, IL-12 and IL-21 at expanding NK and CD8-T cells, and in facilitating killing of PCa cells by effector cells. Therefore IL-15 is recommended for immunotherapeutic modalities locally targeting the lesion in prostate cancer.

Take home message
IL-15 is the most effective cytokine to activate NK and T cells and kill tumour cells within the prostate cancer microenvironment. IL-15 should therefore be considered for prostate cancer immunotherapies particularly where the immunotherapeutic agents can be administered accurately into the tumour lesion through regioselective delivery.

09 BLOOD BASED ASSAY FOR EARLY DETECTION OF COLORECTAL ADENOMA AND CARCINOMA
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2: Department of Cancer Studies and Molecular Medicine, University of Leicester

Introduction
Current strategy for bowel cancer screening is based on utility of highly inaccurate Faecal Occult Blood Test (FOBT). Inaccuracy associated with FOBT has led to many misdiagnoses and unnecessary invasive investigations. The aim of this feasibility study was to investigate the potential use of circulating microRNAs (miRNAs) for early detection of colorectal cancer.
Methods
MiRNA expression profiling with the Applied TaqMan® MiRNA Array v2.0 was performed on the plasma RNA from age and gender matched patients with carcinoma (n=12), adenoma (n=10) and colonoscopy negative controls (n=12) with normal colonoscopic examination. To identify the CRC related miRNAs in the plasma, the expression profiles from cancerous (n=5) and adjacent non-cancerous tissue were established. Based on differential expressions (deltadeltaCt), hierarchical cluster analysis and principal component analysis a panel of tumour related circulating miRNAs was identified and validated on an independent cohort (n=200). Logistic Regression model and Receiver Operating Characteristic (ROC) was used to determine the diagnostic accuracy of selected panel.

Results
MiRNA expression profiling identified subset of 10 tumour related and diagnostic (p<0.001) miRNAs in plasma (including miR-16, miR-21, miR-431, miR-455-5p, miR-487b, miR-644, miR-566). Further validation and ROC analysis for this subset of miRNAs showed >90% specificity and >80% sensitivity of detection of adenoma and carcinoma at a likelihood ratio of 10.

Conclusion
MiRNA based blood assay offers a less invasive and more accurate detection modality for colorectal neoplasia. Further validation on a population attending National Bowel Cancer Screening Programme is required to validate its diagnostic accuracy for screening purpose.

Take-home message
MicroRNA based blood assay can potentially be used for colorectal cancer screening.

O10 DISRUPTION OF EATING PATTERNS AND INTESTINAL GLUCOSE SENSING IN OBESITY-INDUCED DIABETES
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Introduction
Shift work leads to misaligned circadian behaviours e.g. night eating, and is associated with diabetes mellitus (T2DM) and obesity. We hypothesized that disrupted food intake and its effect on gut glucose sensing (via taste receptors, T1R2) and transport (via transporter SGLT1) leads to metabolic disease.

Methods
Obese and lean ZDF rats were acclimatized (n=24/group), with high carbohydrate diet. Daily weights and day:night food intake were recorded. At harvest (circadian time-points ZT3, 9, 15; lights on 7am/ZT0), jejunal SGLT1 and T1R2 mRNA levels were assessed and functional glucose uptake assayed. Homeostasis Model of Assessment-Insulin Resistance (HOMA-IR) was calculated. Statistical analyses included Student t-test and Cosinor.

Results
Obese rats ate more than leans. In both groups however, diurnal feeding patterns were diminished compared to SD rats (data not shown). Resultantly, diurnal rhythmicity of SGLT1 expression and function was absent in both groups. HOMA-IR was higher in obese rats (43.7 vs 21.9, obese vs. lean respectively; p<0.05). Elevated serum glucose was associated with increased jejunal SGLT1 but decreased T1R2 mRNA in obese rats compared to leans (p<0.05).

Conclusion
In both obese and lean rats, diurnal feeding pattern was dampened with ablated rhythmicity of SGLT1 expression and activity. Since only ZDF rats developed obesity and T2DM, loss of rhythmicity per se does not appear aetiological. Elevated SGLT1 levels despite low T1R2 levels indicate inappropriate SGLT1 responses to glucose-sensing in the jejunum of obese rats. Isolating jejunum in gastric bypass may explain anti-diabetic effects of surgery, highlighting new therapeutic pathways.

Take-home message
A disrupted diurnal feeding pattern in rats is associated with a disrupted diurnal rhythm of the intestinal glucose transporter SGLT1. In the obese, diabetic rat, there appears to be inappropriate SGLT1 expression in response to glucose sensing by intestinal sweet taste receptors.
O11  SURGICAL STRESS INCREASES MUSCLE PYRUVATE DEHYDROGENASE KINASE-4 mRNA EXPRESSION AND IMPAIRS MUSCLE PYRUVATE DEHYDROGENASE COMPLEX ACTIVITY, AND MAY UNDERLIE POSTOPERATIVE MUSCLE INSULIN RESISTANCE

KK Varadhan1, D Constantin-Teodosiu2, D Constantin2, R Atkins2, *PL. Greenhaff, *DN Lobo1

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Introduction

Cytokine linked inhibition of the pyruvate dehydrogenase complex (PDC), via FOXO mediated pyruvate dehydrogenase kinase-4 (PDK4) upregulation, controls the rate of skeletal muscle carbohydrate (CHO) oxidation (Crossland et al, J Physiol, 2008). We hypothesized therefore that starvation and surgical stress would be causative factors in post-operative skeletal muscle insulin resistance via up-regulation of PDK-4 and concurrent inhibition of the PDC.

Methods

Fifteen patients [mean age 49 (range 22-70) yrs, mean BMI 28 (range 18-37) kg/m2] undergoing major elective open abdominal surgery were included. Muscle biopsies were obtained from the vastus lateralis, before and after surgery. Total mRNA and protein levels of PDK4 were determined using RT-PCR and Western blotting, respectively. Muscle PDC activity was determined using a radio-isotope technique (Constantin-Teodosiu, D et al, Analytical Biochemistry, 1991). Statistical differences were detected using Student’s paired t-test and the Wilcoxon signed-rank test where appropriate. Values represent mean±S.E.M.

Results

Surgery increased muscle PDK4 mRNA expression markedly from baseline (fold increase 4.1±1.4; P<0.048). There was also a trend for fold increase in PDK4 protein expression post surgery [Pre versus post surgery, 1.00±0.00 versus 1.35±0.35; P<0.14]. These changes were associated with a reduction in muscle PDC activity post surgery [Pre versus post surgery, 0.58±0.64 versus 0.26±0.16 mmol/min/kg weight muscle; P<0.05].

Conclusion

Surgical stress increases muscle PDK4 mRNA expression and decreases muscle PDC activity. We propose this is at least partly responsible for the postoperative impairment of muscle carbohydrate oxidation and insulin resistance.

Take-home message

Surgical stress increases muscle PDK4 mRNA expression and decreases muscle PDC activity, and may underlie postoperative impairment of muscle insulin resistance.

O12  THE TUMOUR SUPPRESSOR GENE, AIMP3 SENSITISES BLADDER CANCER TO CHEMO/RADIOThERAPY IN VITRO AND IS A PROGNOSTIC MARKER FOR OVERALL SURVIVAL IN PATIENTS TREATED WITH RADIOTHERAPY FOR MUSCLE INVASIVE DISEASE

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Aim

To determine if AIMP3, a novel tumour suppressor gene sensitises bladder cancer cells to chemo/radiotherapy in vitro and is a predictive marker in a prospective randomised trial of radiotherapy plus carbogen in muscle-invasive bladder cancer.

Background

AIMP3 (p18/EEF1E1) interacts with ATM-p53 and causes spontaneous cancers in haploinsufficent mice. We identified loss of AIMP3 in bladder cancer following a promoter methylation screen for low-level expressing genes and confirmed reduced expression in high-grade bladder cancers relative to low-grade and benign urothelium.

Methods

Protein expression and nuclear localisation was assessed in T24, 253J, RT112 and RT4 bladder cancer cell lines (HeLa as positive control). AIMP3 was targeted using siRNA and cytotoxicity assessed using colony forming assay (CFA) (including RT112CP, a cisplatin-resistant variant of RT112). The predictive marker was tested on a tissue microarray comprising 217 patients with muscle-invasive bladder cancer treated in the BCON trial (ISRCTN45938399).
Results
AIMP3 was constitutively expressed in the cell lines and was lower for T24 (high-grade) cells compared to RT4 (p=0.009; two-tailed T-test). AIMP3 localised to the nuclear compartment 1 hour following irradiation and total expression increased after 72 hrs. siRNA downregulation of AIMP3 increased clonogenic survival following irradiation (p<0.04 in T24, RT112 and RT4). Targeting AIMP3 did not alter cisplatin sensitivity in RT112 but had a significant effect in RT112CP (p=0.01). In the BCON trial TMA, loss of AIMP3 was an adverse prognostic factor for survival in patients treated with radiotherapy HR 0.57 (95% CI: 0.36 to 0.87; p=0.01; Cox proportional hazards model).

Take home message
AIMP3 is predictive of resistance to chemo/radiotherapy in vitro and is a prognostic marker for survival in patients with muscle-invasive bladder cancer undergoing radiotherapy.

O13 OESOPHAGEAL ADENOCARCINOMA TARGETED THERAPY: VEGF AS A CO-TARGET WITH IGF1R INHIBITION
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Introduction
Long-term outcomes in treatment of oesophageal adenocarcinoma remain poor with an overall 5 year survival rate of less than 40%. Therapies specific to highly expressed receptors may hold promise for increasing treatment responses.

Methods
OAC cells were treated with picropodophyllin, a tyrosine kinase inhibitor specific to insulin-like growth factor receptor (IGF1R) and viability, proliferation and apoptosis were assessed with MTT, BrdU, Annexin/PI assays and High Content Screening. Protein levels of IGF1R, pAKT and STMN1 were measured by Western blotting. Vascular endothelial growth factor (VEGF) was measured by ELISA. Protein expression of IGF1R and VEGF were measured by immunohistochemistry in resected tumour specimens (n=102).

Results
IGF1R inhibition in vitro reduced viability and proliferation with increasing apoptosis. Despite inhibition of IGFIR, there was no decrease in signalling via PI3K pathway. IGF1R inhibition led to a significant increase in VEGF production by treated cells. Of a total cohort of 102 OAC patients, 16 had negative IGF1R expression and low VEGF expression, This cohort had fewer advanced T stage (T3/4) tumours (50% vs 76.7%, p=0.036); fewer node positive tumours (43.8% vs 75.6%, p=0.016) and fewer poorly or undifferentiated tumours (18.8% vs 45.3%, p=0.056) than the rest of the cohort. Neither IGF1R expression nor VEGF expression alone were associated with tumour status. Patients with high VEGF expression and IGF1R positive tumours have poorer prognosis than those with no IGF1R and Low VEGF (median survival: 65.1 vs 22.4 months, p=0.089).

Conclusion
Inhibition of IGFIR is a promising target for OAC. Co-targeting with VEGF may prevent resistance developing.

Take-home message
Inhibition of IGFIR is a promising target for treatment in OAC. Co-targeting of IGFIR and VEGF may prevent resistance developing.

O14 NORMALIZATION OF THE PRO-THROMBOTIC DIATHESIS IN PATIENTS WITH ABDOMINAL AORTIC ANEURYSM (AAA) FOLLOWING ENDOVASCULAR (EVAR) AND OPEN ANEURYSM REPAIR (OAR)
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Introduction
AAA is associated with a prothrombotic diathesis that may increase the risk of cardiovascular events. The effect of EVAR and OAR on this prothrombotic diathesis is not fully understood in the medium and long terms. The aim of this study is to investigate the long term effects of EVAR and OAR on this prothrombotic diatheses.
Methods
Markers of coagulation (Prothrombin fragment (PF) 1+2 and thrombin anti-thrombin (TAT) complex) and markers of fibrinolysis (plasminogen activator inhibitor (PAI) activity and tissue plasminogen activator (t-PA) antigen) were measured in eight age-matched controls (AMC), 29 patients with AAA preoperatively and at 24 hours, 1, 6 and 12 months after EVAR. Comparison was made between AMC, preoperative and 12 months postoperative results with 11 patients at 12 months following OAR.

Results
Preoperatively, PF1+2 was significantly higher in AAA compared to AMC. PF1+2 did not change at 24 hours and one month but decreased significantly at six months. At 12 months post-EVAR, PF1+2 was significantly lower than preoperative values and similar to AMC. There was no significant difference in TAT, PAI and t-PA between AMC and AAA preoperatively. They increased significantly at 24 hours after EVAR and returned to pre-operative levels at one month and remained unchanged over 12 months. Twelve months following OAR, PF1+2 was significantly lower than pre-operative values and similar to AMC. PAI activity was significantly higher than preoperative levels.

Conclusion
Patients with AAA have prothrombotic status. Both EVAR and OAR normalize this prothrombotic, hypofibrinolytic diatheses although there is tendency of increased fibrinolysis with OAR.

Take-home message
Normalization of thrombin generation and fibrinolysis one year after EVAR and OAR. This may be protective against cardiovascular and thrombo-embolic events in this group of patients.

O15 REPIGMENTATION OF CUTANEOUS SCARS IN BLACK AND WHITE SKIN: AN OBSERVATIONAL STUDY
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Introduction
Clinical observation suggests variance in the re-pigmentation of healed wounds in people with different skin types. Previous work from our laboratory has demonstrated that the re-pigmentation process varies according to the depth of the injury. This study investigated the repigmentation of different depth scars over a 98 day observational period, using a black and white porcine model.

Methods
Superficial (SPT), deep partial thickness (DPT) and full thickness (FT) excisional wounds were created on the flanks of black and white striped Hampshire pigs. Wounds were allowed to heal by secondary intention and were macroscopically assessed at weekly intervals until repigmentation had ceased and remained static for one month. Visual analogue scores for pigmentation were done at each assessment and photographic images obtained to create a visual record of repigmentation. At 98 days post-wounding all scars were collected and subjected to analysis using qualitative RTPCR for pigment genes (TYR, TRP1 and MITF) and immunohistochemistry of the translated proteins.

Results
Within all wound depths white skin reepithelialised at the same time as adjacent black skin and returned to the same colour as it was pre-wounding. Within black skin, SPT wounds were fully re-epithelialised at day 11 post-wounding when pigment deposits were also visible at the scar edges and around hair follicles in the scar centre. The whole scar repigmented by day 21 but underwent late hyperpigmentation at day 35 post-wounding, before returning to be indistinct from the surrounding unwounded skin by day 56.

The deep partial thickness wounds reepithelialised by day 14 when pigment was also first noted, but only at the scar margins. Over time, this rim of pigment became darker than the surrounding unwounded skin and persisted until day 50 when it faded to become homogeneous with the surrounding skin. Repigmentation became static at day 70 when the majority of the scar was repigmented but small central islands of hypopigmentation persisted. The full thickness wounds reepithelialised completely between day 21-28 post-injury. At this time, the pigment was present at the scar periphery. The pigment appeared centripetally in the healed wound. Full thickness scars remained centrally hypopigmented until 98 days post-wounding.

Qualitative RTPCR revealed an absence of the TYR, TRP1 and MITF mRNA in white skin, compared with the black. This correlated with the immunohistochemical studies in which white porcine skin was devoid of the related protein expression. However, pigment genes were present in both unwounded black skin and hypo and hyperpigmented scars.
Conclusion
This study demonstrates the usefulness of the black and white porcine model as a good experimental model to study the process of re-pigmentation post injury. The observational study confirms differences in re-pigmentation of healed wounds to be dependent on the depth of the wound. Furthermore, this study has demonstrated that differences between varying levels of scar pigmentation are not dependent on the three genes and related proteins studied, but need further investigation which is on-going.
ORAL PRESENTATIONS
1A BREAST

O16 SYSTEMIC INFLAMMATION AND EARLY BREAST CANCER
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Introduction
Cancer-associated inflammation supports the proliferation, metastatic spread and survival of cancer cells. Markers of inflammation correlate with reduced survival in metastatic breast and colorectal cancer. Our aim was to determine if systemic inflammatory markers correlate with established prognostic markers in early breast cancer.

Methods
Blood c-reactive protein (CRP), neutrophil count and monocyte count (systemic inflammatory markers) were measured pre-operatively in 84 early breast cancers (EBC) prior to curative surgery and correlated with established prognostic factors.

Results
Lymph node positive (LN+ve) patients had higher (p=0.042) monocyte levels (mean 0.58*10⁹/L, standard deviation, - remove SD, 0.21) than LN-ve ones (0.49*10⁹/L, SD 0.14). Neutrophils were non-significantly higher in LN+ve patients vs LN -ve (4.45*10⁹/L SD 1.65 vs 3.99*10⁹/L SD 1.32, p=0.2). Furthermore, the presence of an elevated CRP(>5mg/L) was predictive of lymph node spread (odds ratio 3.0, 95%CI 1.1 to 8.9 p=0.04)). Oestrogen receptor negative (ER-ve) and progesterone receptor negative (PR-ve) patients had higher neutrophil and monocyte counts than ER and PR positive patients respectively. ER: monocytes 0.59*10⁹/L, SD 0.18 vs 0.50*10⁹/L SD 0.15, p=0.06; neutrophils 5.26*10⁹/L, SD1.71 vs 3.91, SD 1.26*10⁹/L, p<0.01 PR: monocytes 0.57*10⁹/L, SD 0.15 vs 0.49*10⁹/L SD 0.17, p=0.039; neutrophils 4.64*10⁹/L SD 1.7 vs 3.9*10⁹/L SD 1.2, p=0.025 No association was found between inflammatory markers and tumour size, grade or HER2 receptor status.

Conclusion
Raised inflammatory markers in LN positive, ER-ve and PR-ve cancers may reflect the role of the inflammatory system in underlying tumour biology and may identify patients who benefit from novel therapy targeting the inflammatory system.

Take-home message
Markers of systemic inflammation are raised in poor prognosis breast cancers. This may reflect underlying tumour biology.

O17 DOES HORMONE RECEPTOR STATUS INFLUENCE SURVIVAL IN HER2/NEU POSITIVE BREAST CANCER?
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Introduction
Almost one-quarter of breast cancers demonstrate over-expression of the HER2/neu proto-oncogene. However, even within this group, tumours display marked molecular heterogeneity, explained by differing hormone receptor status which is confirmed by immunohistochemistry. Most tumours are either HER2/neu-overexpressing (ER-PR-HER2+) or Luminal B (ER+PR+HER2+), with a small proportion being ER-PR-HER2 or ER-PR+HER2. We aimed to establish the proportion of each subtype within HER2/neu-positive breast tumours, and to compare the disease free (DFS) and overall survival (OS) of the different subtypes.

Method
HER2/neu-positive patients were identified from our prospectively maintained Breast Cancer Database over a ten-year period, from 2000 to 2010. Patient charts were reviewed and correlated with clinicopathological details. The results were analysed using SPSS V18.0.

Results
There were 242 cases of HER2/neu over-expressing breast cancers identified. One hundred and five cases (43%) were of Luminal B subtype, seventy-seven (32%) were HER2 Subtype, while thirty (12.4%) were ER+PR-HER2+ and nineteen (7.9%) were ER-PR+HER2+. Those with ER+PR-HER2+ tumours had improved ten-year DFS and OS compared to other groups, 85.9% and 96.7% respectively. The DFS for the HER2, Luminal B and ER-PR+HER2+ groups were 71.1%, 68.5% and 65.5%. The OS for the same groups were 73.9%, 86.4% and 96.7% respectively.
Conclusion
ER+PR-HER2+ breast tumours had improved ten-year DFS and OS compared to other HER2/neu positive subtypes. These results suggest that we need to continue to determine the progesterone receptor status in those with HER2/neu-positive breast cancer. Abbreviations HER2—Human Epidermal Growth Factor Receptor 2 DFS—Disease Free Survival OS—Overall Survival ER—Oestrogen receptor PR—Progesterone receptor

Take-home message
The HER2/neu proto-oncogene is expressed by almost a quarter of breast tumours, and renders these tumours sensitive to treatment with Trastuzumab. However, it is important to continue to determine the progesterone receptor status in those with HER2/neu positive breast cancer.

O18 GENE SILENCING REVEALS A ROLE FOR OESTROGEN FINGER PROTEIN (EFP) IN TAMOXIFEN RESISTANCE
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Introduction
Oestrogen-regulated EFP (oestrogen finger protein), an E3-ligase, is over-expressed in ~30% breast carcinomas and associated with poor prognosis. In vivo modelling showed that high levels of expression resulted in hormone-independent growth of breast cancer cells, presumably through targeting the tumour suppressor 14-3-3sigma for proteolysis. Transient gene silencing of EFP and its target 14-3-3sigma was undertaken to investigate proliferation in response to oestrogen (E2) and Tamoxifen (Tx).

Methods
Specific Anti-sense oligonucleotides (ASO) and corresponding Sense Oligonucleotides (SO) for EFP and 14-3-3sigma were transfected at 250nM into oestrogen-responsive breast cancer MCF-7 cell, in the presence of Oligofectamine. Treatments were: Control (0.1% ethanol); 10nM E2; or 1mM Tx (in 0.5% Dextran-coated charcoal stripped serum, DMEM/F12). Cells were assayed for proliferation, protein and mRNA analyses on day 5.

Results
EFP and 14-3-3sigma knockdowns were confirmed 48hrs post-treatment. (A) In the presence of reduced EFP levels, proliferation was inhibited by 23%, even in the presence of E2 (19%); however, treatment with Tx stimulated proliferation by 24% (p<0.05). (B) In the presence of reduced 14-3-3sigma levels, proliferation increased by 48% (control) and further enhanced by E2 (19%), but not significantly affected by Tx.

Conclusion
The E2 > ER > EFP > 14-3-3sigma pathway is important in breast cancer cell proliferation and deregulation a potential route for hormone-independent growth. Furthermore, the finding that Tx stimulated proliferation when expression levels of EFP were reduced identified a potential route for Tx-resistance and warrants further investigation.

Take-home message
EFP and 14-3-3sigma are potential diagnostic markers and targets for interventional therapy.

O19 FOCAL ADHESION KINASE PLAYS A MAJOR ROLE IN THE REGULATION OF HUMAN DCIS STEM CELL ACTIVITY
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Introduction
Focal Adhesion Kinase (FAK) is a non-receptor tyrosine kinase that is overexpressed in breast cancers and implicated in resistance to radiotherapy and stem cell survival. We investigated the role of FAK in human ductal carcinoma in situ cancer stem cells (DCIS CSCs).

Methods
SUM225 (HER2-overexpressing) and MCF10DCIS.com (HER2-normal) DCIS cell lines or primary DCIS cells from patients undergoing mastectomy (n=5) (LREC#01/012) were grown in vitro using the mammosphere colony assay. CSC activity was measured through the number of mammospheres grown. Mammosphere-forming efficiency (%MFE) was calculated as percentage colony formation in the presence or absence of a FAK inhibitor PF573228(0-5μM). Secondary generation cultures of mammospheres were performed with no additional PF573228 within the media. Mammosphere regeneration ratio (MRR) measured CSC self-renewal and was determined as the proportion of secondary mammospheres relative to the number of primary.
Results
PF573228 decreased %MFE in SUM225 cells from 2.26±0.11% in controls to 0.98±0.05% in 5µM in a dose-dependent manner (p<0.001). A 69.2% reduction in MFE was observed in MCF10DCIS.com cells from 1.23±0.09% to 0.38±0.03% (p<0.001). In primary DCIS cells, a 53% fold decrease in MFE occurred with 5µM PF573228 (p<0.01). MRR was reduced in the SUM225 and MCF10DCIS.com cell lines with ≥0.5µM (p<0.01) or ≥1.0µM (p<0.001) PF573228 respectively. Primary DCIS cells also showed a reduction in MRR, from 0.56 to 0.14 with 0.5µM PF573228.

Conclusion
This is the first evidence demonstrating that FAK inhibition decreases human breast CSC activity and self-renewal. FAK inhibition may provide a novel therapeutic strategy to reduce patient morbidity by preventing DCIS recurrence.

Take-home message
Evidence suggests that Ductal Carcinoma in Situ (DCIS) cancer stem cells (CSC) are responsible for tumour initiation, recurrence and progression. The activity and self-renewal of DCIS CSCs is decreased through the inhibition of focal adhesion kinase (FAK) suggesting that targeting FAK in DCIS may ultimately reduce patient morbidity by preventing disease recurrence.

O20 CARDIAC GLYCOSIDES AS POTENTIAL ANTI BREAST CANCER AGENTS

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Introduction
Cardiac glycosides (CGs), compounds used to treat cardiac failure, have been shown to have anti proliferative effects in malignancies including breast cancer. The Na K ATPase pump, the cellular target of CGs, interacts with the protein caveolin-1 in cell membrane lipid rafts. Low doses of CGs activate numerous downstream signalling pathways. The aim of this study is to evaluate whether the anti-neoplastic effects of CGs are modulated via their interaction with caveolin-1.

Methods
Breast cancer cell lines MCF-7 (weakly invasive) and MDA-MB231 (highly invasive) and primary cell cultures were treated with the CGs digoxin, ouabain and oleandrin and subjected to proliferation and migration assays. Flow cytometry lipid raft extraction was performed on treated and untreated cells.

Results
Both cell lines and primary cell cultures treated with CGs showed reduced proliferation and migration. Lipid raft extraction and western blot revealed co-localisation of Na K ATPase and caveolin-1. This was disrupted in MDA-MB 231 cells treated with CGs. Flow cytometry showed cell cycle arrest in CG treated MCF -7 cells.

Conclusions
Cardiac glycosides show anti-cancer effects, which are modulated via the interaction of Na K ATPase and caveolin-1. Targeting of the caveolin-1 - Na K ATPase interaction may yield potential future therapeutic targets.

Take-home message
Cardiac glycosides inhibit breast cancer cell proliferation and migration and cause cells cycle arrest by altering the interaction between Na K ATPase and caveolin. This Na K ATPase-caveolin interaction may be a potential target for anti cancer agents.

O21 OESTROGEN RECEPTOR NEGATIVE/PROGESTERONE RECEPTOR POSITIVE (ER-/PR+) BREAST CANCER PHENOTYPE: INCIDENCE, MANAGEMENT AND OUTCOMES IN A SYMPTOMATIC UNIT

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Introduction
The true incidence of the ER-/PR+ phenotypic invasive breast cancer is unknown. Although this phenotype been shown to be clinically distinct from ER-/PR-, ER+/PR- and ER+/PR+ phenotypes there is increasing evidence that most ER-/PR+ cancers are due to a technical anomaly related to immunohistochemistry. The aim of this study was to re-evaluate ER-/PR+ cancers diagnosed at a symptomatic breast unit.

Methods
Retrospective data collected on 1124 invasive breast cancers diagnosed between 1995 and 2005 identified 67 ER-/PR+ cancers. Repeat immunohistochemistry of 60 paraffin embedded blocks was carried out using current gold standard techniques and these were reviewed by two independent pathologists. Clinical and pathological data were collected and survival data was obtained by chart review and GP follow up.
Results
Histological samples were unavailable for 8 patients and 10 patients were excluded from the analysis on pathological grounds. Of those analysed, 22 were false negatives with respect to ER status (ER+/PR+); 21 were ER-/PR-; and 3 were ER+/PR-. We could not confirm the presence of any ER-/PR+ tumours for the period outlined. For those who were found to be ER+, clinical review elucidated that most of these patients were treated with hormone therapy. For those who were found to be both ER and PR negative only a small number were treated with endocrine therapy.

Conclusion
The ER-/PR+ phenotypic breast cancer is rare if it even exists. Prompt reassessment of patients originally assigned to this subtype who re-present with symptoms should be considered to ensure appropriate clinical management. ER - Oestrogen receptor PR - Progesterone receptor.

Take-home message
Re-evaluation of ER-/PR+ tumours in invasive breast cancers diagnosed over a ten year period have shown this tumour phenotype to be rare, if it even does exist. Reassessment of patients designated ER-/PR+ should be considered for optimal clinical management.

O22 MRI VERSUS USS IN THE DETECTION OF AXILLARY LYMPH NODE DISEASE IN PATIENTS WITH PRIMARY BREAST CANCER
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Introduction
Axillary lymph node status is a crucial prognostic factor for breast cancer. Currently the axillae are independently imaged for suspicious nodes prior to invasive histological analysis. MRI* is used in the assessment of primary breast cancer and permits concurrent bilateral axillae imaging in one scan. In this study we compared the accuracy of MRI to USS** in detecting diseased nodes versus the histological gold standard to determine whether MRI is a more accurate alternative to USS that can reduce the number of patients having to undergo unnecessary invasive sentinel lymph node biopsy and its associated morbidities.

Methods
A retrospective database of patients with breast cancer presenting to a district general hospital between 2008-2010 was compiled containing patient demographics, histology and grade of cancer types, staging of cancer on MRI and USS, and lymph node biopsy results. The two imaging modalities were compared to each other against the gold standard histology.

Results
88 clinical episodes were identified of which 12 were excluded due to incomplete histology. The remaining 76 episodes were analysed. The USS detected 53 normal axillae and 23 suspicious axillae (including 10 indeterminate); sensitivity was 50%, specificity 89%; positive predictive value 82.6%, negative predictive value of 64%. The MRI detected 46 normal axillae and 30 suspicious axillae (including 11 indeterminate). MRI sensitivity was 65%, specificity 86%; positive predictive value 83%, negative predictive value of 71.7%.

Conclusion
MRI provides no additional specificity and sensitivity compared to USS in the detection of axillary metastatic disease.

*Magnetic Resonance Imaging **Ultrasound Scan

Take-home message
MRI is increasingly being used in the detection of primary breast cancer with the benefit of allowing concurrent axillary assessment. However this imaging modality does not confer any additional accuracy in detecting diseased axillary nodes compared to current USS methods. Therefore USS and subsequent biopsy is still the most accurate and cost efficient method for assessment of axillary metastases.

O23 CIRCULATING MIR-497 AS A NOVEL MINIMALLY INVASIVE BIOMARKER FOR BREAST CANCER
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Introduction
The focus of attention in breast cancer diagnostics and therapeutics is now on the identification of a sensitive and specific circulating biomarker. Mi(cro)RNAs are non-coding RNA molecules approximately 18-25 nucleotides long, notable for their stability and aberrant expression in cancer, highlighting their potential as minimally invasive biomarkers and potential
therapeutic targets. A recent study showed decreased expression of miR-497 in breast tumours compared to normal breast tissue, alluding to a potential role as a tumour suppressor gene. The aims of this study were to determine if miR-497 was detectable in the peripheral circulation, and to evaluate its expression levels in the breast cancer state.

Methods
Whole blood samples were obtained from 101 individuals comprising of breast cancer patients, disease-free controls and those with benign breast disease. RNA was extracted, cDNA was synthesised and RQ-PCR was performed to determine the expression levels of miR-497. Results were analysed using Q-Base Plus and Minitab V15.0.

Results
The mean age of the cancer, control and benign breast disease groups were 58, 51 and 46 years respectively. Using the 2-sample T-test, miR-497 was significantly lower in breast cancer patients compared to healthy controls (p=0.008). Under-expression of miR-497 was observed across all molecular subtypes.

Conclusion
MiR-497 is detectable in the circulation and may act as a tumour suppressor in the carcinogenesis pathway. Furthermore, these findings imply that miR-497 may have a useful role as a circulating biomarker in breast cancer.

Take-home message
This is the first demonstration, to our knowledge, of miR-497 detection in the peripheral circulation. This study highlights the potential role of miR-497 as a tumour suppressor gene in breast cancer.

O24 OPTIMISING MAGNETIC SENTINEL LYMPH NODE BIOPSY IN BREAST CANCER
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Introduction
The combined technique for sentinel lymph node biopsy (SLNB) during breast cancer surgery has several drawbacks including poor pre-operative imaging, radiation exposure, blue skin tattooing and the risk of anaphylaxis.

Method
We evaluated the detection of superparamagnetic iron oxide nanoparticles (SPIOs) within sentinel nodes, after a subcutaneous injection of SPIO into the affected breast using a hand-held magnetometer. Patients undergoing SLNB with the combined technique were recruited for additional SPIO injection into the upper outer quadrant of the affect breast pre-operatively. An SPIO (2 or 4ml of Endorem, Guerbet, Paris) was injected at varying times to the other tracers (Patent Blue and Technetium-99m) and at varying times prior to surgery.

Results
All 51 patients (100%), had successful SLN identification using the combined technique. In 43 patients who receive 2ml of SPIO, 35/43 of patients (81%) had at least 1 node containing SPIO compared to 8/8 (100%) of patients who received 4ml of SPIO. When SPIO was the first tracer to be administered, more nodal uptake was seen compared to when it was administered as the 2nd or 3rd tracer, irrespective of dose or delay (1 patient vs. 7 patients). Overall success for detecting the SLN improved to 90% (18/20 patients) when the delay from the time of injection to excision of the node exceeded 60 minutes. Doubling the dose of SPIO improves the SLN detection rate. Competition exists between the 3 dyes and definitive comparison between the 2 techniques is likely to require a randomised controlled trial.

Take-home message
Superparamagnetic iron-oxide nanoparticles, when subcutaneously injected, can accurately predict axillary SLN status in breast cancer when combined with MRI. SLNs of questionable significance can additionally be identified intra-operatively for excision using a hand-held magnetometer, the SentiMag.

O25 THE ROLE OF MIRNAS IN TAMOXIFEN RESISTANCE IN BREAST CANCER
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Introduction
Despite recent advances in the treatment of breast cancer, resistance to targeted therapy is increasingly becoming a diagnostic challenge. MiRNAs are a class of endogenous, single stranded RNA molecules that have been shown to be dysregulated in a number of malignancies, including breast cancer. The aim of this study was to identify and evaluate miRNAs that are dysregulated in tamoxifen resistance.
Methods
A microarray analysis was performed on lysates obtained from the MCF7L cell line (ER+/PR+/HER2-). Parental MCF7L cells were cultured under estrogen deprivation (ED) conditions for 48 hours prior to short or long-term treatment with tamoxifen, estrogen or ED. After 6 months of treatment, resistance to both of these treatments had developed. All samples were performed in triplicate. Validation of microarray data was performed using RQ-PCR. Functional analysis of cell growth and apoptosis was performed following knockdown of miRNAs using insitu cell cytometry (Celigo).

Results
58 out of 999 miRNAs were identified to be significantly altered across the various treatment and resistant groups (p<0.001). 23 miRNAs were observed to be upregulated and 41 downregulated in tamoxifen resistance. Microarray results were confirmed by RQ-PCR. A reduction in cell growth was observed in tamoxifen resistant cells but not in parental cells upon miR-a knockdown. Apoptosis was induced upon knockdown of miR-b. Evaluation of predicted targets of miR-a was performed using RQ-PCR.

Conclusion
This study has identified miRNAs that are dysregulated in association with tamoxifen resistance in breast cancer. Modulation of such miRNAs offer novel therapeutic strategies in overcoming such resistance.

Take-home message
A number of miRNAs are dysregulated in association with tamoxifen resistance and some of these play a role in apoptosis and cell growth. Modulating the expression levels of miRNAs could offer a potential strategy of overcoming therapeutic resistance.

Introduction
Increasing evidence suggests breast cancers are sustained by breast cancer stem cells (BCSCs) which are relatively resistant to current therapies. Recent studies suggest that interleukin-8 (IL-8) via its receptors, CXCR1 and CXCR2, may regulate BCSC activity. We measured the effect of CXCR1/2 activation/inhibition on BCSC activity using breast cancer cell lines and primary culture of breast cancer cells grown from patient samples.

Methods
Breast cancer cell lines: HER2-18, SKBR3, BT474, MCF7 and MDA-MB-231. Human breast cancer cells were isolated from 10 metastatic samples and 1 invasive breast cancer (research ethics number: 05/Q1402/25). BCSC activity was investigated in-vitro using the mammosphere colony assay. Mammosphere-forming efficiency (MFE) was determined by dividing the number of mammospheres >60µm in diameter divided by the number of cells seeded expressed as a percentage. Data is represented as mean MFE ± standard error of mean normalised to control. SCH563705 (Merck) was used to inhibit CXCR1/CXCR2.

Results
IL-8 (100ng/ml) increased HER2-18 MFE from 1±0.05% to 1.20±0.04%; 19.5% increase; P=0.01. SCH563705 (100nM) decreased MFE of SKBR3 (from 1±0.04% to 0.55±0.07%; 45.4% decrease; P<0.01), BT474 (from 1±0.05 % to 0.63±0.04%; 37.3% decrease; P<0.01), MCF7 (from 1±0.04% to 0.65±0.05%; 34.7% decrease; P<0.01) and MDA-MB-231 (from 1±0.06% to 0.64±0.04%; 36.2% decrease; P<0.01). IL-8 increased MFE of primary breast cancer cells (n=11 patient samples) from 1±0.03% to 1.43±0.06%; 42.9% increase; P<0.01. SCH563705 decreased MFE from 1.43±0.06% to 0.96±0.04%; 32.9% reduction; P<0.01.

Conclusions
CXCR1/2 regulates human BCSC activity. Inhibition of CXCR1/2 could form a novel therapeutic strategy to target BCSCs and improve the efficacy of current treatments.

Take-home message
CXCR1/2 regulates the activity of breast cancer stem cells. Inhibition of CXCR1/2 could form a novel therapeutic strategy to target breast cancer stem cells and improve the efficacy of current treatments.
O27 DIGITAL MAMMOGRAPHY IN WOMEN AGED 35-40: IS THERE A ROLE FOR OPPORTUNISTIC SCREENING AT A SYMPTOMATIC BREAST CLINIC?
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Introduction
The role of digital mammography in women aged 35-40, with a normal breast examination, is controversial. We routinely offer digital mammography to all women over the age of 34 years. The aim of this study was to measure the cancer incidence in a consecutive series of women aged 35-40 according to clinical risk stratification.

Methods
All women aged 35-40 years attending the symptomatic breast unit between July 2009 and December 2010 were identified and categorised as per the Irish National Cancer Control Program (NCCP) referral criteria. Patients were classified asymptomatic/non-suspicious (on the basis of benign symptoms), increased risk (on the basis of family history or a previous diagnosis of atypia) or high risk for cancer (on the basis of symptoms and/or clinical findings). All women underwent clinical examination and digital mammography. Clinical, radiological and pathological data was obtained. Data was analysed using PASW 18 and Fisher’s Exact test was used for statistical analysis.

Results
1129 women were identified. Complete data was available on 1082 patients (96%). There were 376 Asymptomatic/non-suspicious of which 4 (1.1%) were biopsied and 2 malignancies detected. 203 at Increased Risk of which 6 (3%) were biopsied and 3 malignancies detected. 503 at High Risk of which 39 (8%) were biopsied and 10 malignancies detected. No statistical correlation was found between NCCP referral guidelines and cancer detection. There were 9 invasive ductal carcinoma, 5 cases of ductal carcinoma in Situ and 1 case of Hodgkins lymphoma. Cancer detection rate was 1.3%.

Take-home message
Opportunistic screening of women aged 35-40 may detect breast cancers at a rate equivalent to and higher than population screening of postmenopausal women. Routine digital mammography should be offered to all women over 34 years attending a symptomatic breast clinic.

O28 BIOLUMINESCENCE MEDIATED PHOTODYNAMIC THERAPY IN BREAST CANCER CELL LINE
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Introduction
Photodynamic Therapy (PDT) is a recognized therapeutic modality for the treatment of superficial lesions, including cancers. However, poor accessibility of deep lesions and tumour micrometastases has proved to be a limiting factor. The advent of high intensity bioluminescence may help circumvent the limitation of accessibility. Aim: As proof of principle, we investigated whether murine breast cancer cells (4T1), transduced with the firefly luciferase gene (Luc) could emit sufficient intracellular light to yield the phototoxic potential of tetrabromorhodamine (TBR), in vitro.

Methods
4T1 (Luc) breast cancer cells were exposed to TBR; with Luciferin (substrate for Luciferase to produce bioluminescence) or illuminated with blue light. Bioluminescent light production was monitored using spectral analysis. Viability was determined using the MTT assay.

Results
4T1 cells demonstrated an emission peak at 530-535nm. TBR has an absorption peak at 524nm and is therefore a suitable photosensitizer. TBR alone (5µM, dark) killed 4% of 4T1 cells. Luciferin alone (20µM) killed <1% of cells. TBR plus Luciferin killed 29.1% compared to controls (p<0.01). Killing was comparable to that induced by blue light illumination.

Conclusion
Bioluminescence mediated Photodynamic therapy can induce cytotoxic killing in murine breast cancer cells; comparable to that produced by external illumination. This is a promising technique that may help improve the efficacy of PDT drugs in deep lesions; and also prove effective in reducing the persistence of local invasion and micro metastases following conventional surgical and medical cancer therapeutics.

Take-home message
Bioluminescence, in principle, may unlock the potential of PDT as an adjunct in the treatment of local tumour invasion and micro metastases.
O29 CUMULATIVE EFFECT OF MULTIPLE LOW PENETRANCE VARIANTS ON BREAST CANCER RISK
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Introduction
The polygenic model suggests that residual breast cancer susceptibility is a consequence of a combined effect of variants, which individually confer a modest risk of cancer but in combination have a significant effect. This study aims to evaluate the cumulative effect of several low penetrance variants on breast cancer risk in a west of Ireland cohort.

Methods
Variant genotyping for rs13281615, rs2981582 and rs61764370 was performed on DNA extracted from peripheral whole blood of 838 breast cancer cases and 330 controls. Statistical analysis was performed using Minitab.

Results
Based on results from previous case-control analyses, the dominant pattern of inheritance was used for rs13281615 and rs61764370 while the recessive model was used for rs2981582. Using these models however, only rs2981582 was significantly associated with breast cancer (p=0.0095, OR 1.58, 95% CI 1.2-2.2). Variant positivity in all three SNPs was not associated with an increased risk of breast cancer (p= 0.8929, OR 1.071, 95% CI 0.4-2.9). The combination of two of three positive variants however was associated with an increased breast cancer risk (p<0.0001, OR 2.25 95% CI 1.5-3.3). Interestingly however, a combination of one of three positive variants was associated with a reduced breast cancer risk (p=0.054, OR 0.74, 95%CI 0.6-1.0).

Conclusion
While there is some evidence suggesting a combination of variants does indeed affect breast cancer risk, the lack of consistency in the cumulative risk of breast cancer is probably a consequence of failure to demonstrate an association of cancer risk within individual variants.

Take-home message
The cumulative effect of multiple positive low penetrance variants warrants further evaluation in a larger cohort.
ORAL PRESENTATIONS

1B GENERAL SURGERY

O30 RE-OPERATIONS FOLLOWING LAPAROSCOPIC ADJUSTABLE GASTRIC BANDING
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Introduction
Laparoscopic adjustable gastric banding (LAGB) is considered a safe weight loss procedure. When complications occur they require re-operation. Re-operations after LAGB are associated with the band, the tubing or the access port.

Methods
Between July 2003 and July 2011, 1,502 morbidly obese patients were treated with LAGB using the pars flaccida technique and the ‘Birmingham’ stitch. A retrospective analysis of 1,502 consecutive patients who underwent LAGB was conducted. Symptoms, diagnostics, operations and follow-up were analysed.

Results
Of 1,502 patients, 85 (5.7%) patients underwent re-operation after 19.9 (0-59) months. A further 14 patients underwent re-operation where their original surgery was performed at another NHS Trust or in the private sector. Of the total 99 re-operations, 7 underwent re-operation in the early post-operative period. 75 re-operations were related to the band, 8 to the tubing and 15 to the access port. Of the 75 band-related complications the band was re-positioned in 35; partial slippage(25), mal-position(7) and pouch dilatation(3), replaced in 17; system-leak(17) and removed in 17; infection(9), erosion(2), system-leak(1), intolerance(1), slippage(1), perforation at gastro-oesophageal junction(1) and other intra-abdominal sepsis(2). One patient underwent re-operation for port site bleeding. The median length of hospital stay following re-operation was 0 (0-49) days. Permanent band loss was 17 out of 1,502 giving a percentage band preservation of 98.9%. There have been no reported deaths.

Conclusion
In a large volume bariatric centre complications associated with LAGB are rare. Re-operations can be performed safely with a short hospital stay. Band preservation of 98.9% can be achieved.

Take-home message:
Between July 2003 and July 2011, 1,502 morbidly obese patients were treated with LAGB. A retrospective analysis was conducted. We identified that complications associated with LAGB are rare. Re-operations can be performed safely with a short hospital stay and a band preservation of 98.9% can be achieved.

O31 ADENOVIRAL MEDIATED TRANSCRIPTIONAL TARGETING OF COLORECTAL CANCER AND EFFECTS ON TREATMENT RESISTANT HYPOXIC CELLS
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Introduction
Colorectal cancer is the leading cause of cancer-related mortality and frequently presents with extensive local or metastatic disease. Current chemo-radiotherapy strategies for down-staging disease to improve resectability are associated with significant morbidity due to their relatively non-specific effects.

Methods
We investigated the use of Adenoviral vectors as a bridge to surgical resection. Adenoviral vectors are important gene delivery agents as they offer efficient and broad tissue transfectability. They have been shown to be effective gene delivery vectors in a number of cancer types; however their ability in colorectal is unknown.

Results
Adenoviral gene expression was significantly higher in colon tumours when analysed with a range of cancer tissue, and most effective when compared with other methods with transfection efficiency >30%. Transcriptional targeting using CXCR4 demonstrated low expression compared to CMV in normal colon and liver tissue while maintaining high tumour expression, demonstrating the ‘tumour-on’ and ‘normal-off’ status in colorectal tissue. The effects of changing hypoxia on Adenoviral gene delivery using cobalt, the hypoxia mimicker were explored. Gene expression was maintained in cycling hypoxic conditions, the dominant hypoxic state in solid tumours. Transfection efficiency varied depending on the level of hypoxia, with significantly reduced levels with prolonged hypoxia.
Conclusion
Reoxygenation of chronically hypoxic tissue allowed the delivery of genes to the level seen in normoxic conditions. This study demonstrates application of Adenoviral vectors for treating colorectal tumours and analyses the effects of changing hypoxic conditions. The transcriptional targeting in hypoxic conditions will reduce effects on normal tissue and abridge time to surgical resection.

Take-home message
The adenovirus vector we present is a promising candidate for gene therapy in colorectal cancers. The Ad5CXCR4 vector demonstrates tumour selective expression with low normal and liver levels indicating that the CXCR4 promoter may allow tumour treatment with a low potential toxicity in normal tissue. The effective targeting in hypoxic conditions suggests that adenovirus may offer a better strategy against the hypoxic component of human tumours than current therapeutics. A greater therapeutic index and enhanced hypoxic targeting may potentially result in better down-staging outcomes leading to improved surgical and hence treatment outcomes.

O32 DETECTION OF UPPER GASTROINTESTINAL PATHOLOGIES WITH OPTICAL FIBRE PROBE FLUORESCENCE SPECTROSCOPY
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Introduction
Upper gastrointestinal (GI) disease is a considerable cause of morbidity and mortality. Improved survival depends on early detection. The diagnostic gold standard is white-light endoscopy with biopsy. However this technique has limitations, leading to missed cancer diagnoses. New optical technologies, such as fluorescence spectroscopy have the potential to improve the diagnostic efficacy of endoscopy. Here, we investigate a novel method of detecting UGI pathologies from the differences in their fluorescence spectra.

Methods
Patients undergoing upper GI endoscopy at St Mary’s Hospital (London) were consented. Forty-five freshly excised biopsies were obtained and imaged. 15 biopsies had no pathology, 16 had inflammation, 11 had Barrett’s and 3 had cancer. The images were converted to spectra (distribution of light intensity against wavelength) and an algorithm compared the spectra of healthy and diseased tissue via a score corresponding to the ratio of the intensities at the two wavelengths maximising the area under the receiver operating characteristic. Each pathological group was represented as a boxplot and compared to the healthy group using a t-test.

Results
Statistically significant results were obtained between the fluorophore distributions of healthy versus inflammation (p=0.011) and healthy versus Barrett’s oesophagus (p<0.01).

Conclusion
Fluorescence spectroscopy appears to be a promising approach for pathological tissue detection in the oesophagus. Near real time technology has the potential to be incorporated into endoscopes to guide biopsies, increase earlier detection of lesions and aid future diagnoses. Future work involves a blind study to test the protocol as well as extending this work into other fields.

Take-home message:
Fluorescence spectroscopy could potentially be that missing link between endoscopy and diagnoses; reducing the risk of missed diagnoses and increasing the ability for earlier lesion detection.
033 AEROSOLISED INTRAPERITONEAL LOCAL ANAESTHETIC (AILA) FOR LAPAROSCOPIC SURGERY

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Introduction
Whilst laparoscopic surgery has shortened hospital stay for many conditions and reduced postoperative pain, it is not pain free. Pain management, particularly shoulder tip pain, prolongs post-operative stay. Amelioration of postoperative pain is a key end-point in novel minimally invasive approaches, such as single port surgery. We aim to evaluate the use and safety profile of a novel device (Aerosurgical®) that delivers aerosolised local anaesthetic (ropivacaine) at initial abdominal insufflation with CO₂. We wished to evaluate the safety of the technique by monitoring systemic ropivacaine levels intraoperatively, and compare postoperative opiate analgesic requirements between the Intervention Group (IG) and those undergoing standard laparoscopic surgery (Control Group, CG).

Methods
Twenty-eight patients who underwent laparoscopic nissens fundoplication (n=14) or cholecystectomy (n=14) were evaluated. Five patients underwent serial blood sampling, from 0 to 90 minutes, to measure serum ropivacaine levels. Postoperative analgesia requirements were recorded and compared.

Results
Patient demographics were similar. The IG required less opioid analgesia than CG at each measured time point, especially from 2 to 24 hours (49 mg vs. 72.3 mg) This showed a trend towards significance. Total systemic ropivacaine levels were well below the toxic level (4300ng/ml). A peak systemic ropivacaine concentration was reached between 10 and 20 minutes, with levels tapering off following this as expected.

Conclusion
There was a reduction of postoperative opiate requirements in the IG group. Systemic ropivacaine levels achieved with this device are below toxic levels. This preliminary study confirms AILA is feasible and safe.

Take-home message
This is the first human application of the Aerosurgical device. It delivers aerosolized intraperitoneal local anaesthetic safely and reduces post-laparoscopic pain. It has major potential in the practical application of ‘true’ day case surgery.

034 IS THE PSYCHOLOGICAL IMPACT OF AXILLARY HYPERHIDROSIS ALTERED BY BOTOX TREATMENT?

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Introduction
Axillary hyperhidrosis affects 2% of people. Treatment focuses on physically reducing sweating, however the precipitating cause is often emotional and psychological therapy may be beneficial. Before considering this, it is necessary to determine the psychological impact of hyperhidrosis and its physical treatment.

Methods
54 axillary hyperhidrosis patients answered questionnaires before and one month after Botox treatment (8:46 M:F; median age 30, range16-56 years) The questionnaire consisting of a general quality of life assessment (SF36) and specific assessment of social anxiety using the ‘Brief Fear of Negative Evaluation Scale’ (BFNES), ‘Social Phobia Scale’ (SPS) and ‘Social Interaction Anxiety Scale’ (SIAS). The former assesses the dread of being evaluated unfavourably and the latter two, the affective reactions to the feared situation. The ‘Hyperhidrosis Disease Severity Scale’ (HDSS) assessed the physical impact of sweating. Results were compared with 44 controls without hyperhidrosis.

Results
Prior to treatment, the SF36 physical component scores were similar to controls (PCS 52.9 v 52.1), but mental component score was lower (MCS 43.0v52.9; p<0.01). All scores assessing social anxiety were higher than controls [BFNES 35.6v30.0 SPS 16.0v6.0 SIAS 21v9.7 p<0.01]. Following Botox treatment there was a fall in HDSS (pre 3.2 post 1.7; p<0.01), but no alteration in assessments of general well being or social anxiety.

Conclusion
Axillary hyperhidrosis is associated with a reduced overall mental quality of life, and in particular higher levels of social anxiety. Although Botox treatment reduces sweating, anxiety is unaffected, suggesting psychological adjunctive therapy may be of value.
**Take-home message**
Axillary hyperhidrosis is associated with a reduced overall mental quality of life, and in particular higher levels of social anxiety. Although Botox treatment reduces sweating, anxiety is unaffected, suggesting psychological adjunctive therapy may be of value.

### 035  FREE-LIVING PHYSICAL ACTIVITY AS AN OUTCOME MEASURE IN PATIENTS WITH INTERMITTENT CLAUDICATION

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**Introduction**
Conventional methods of assessing activity levels in patients with IC usually involve studying patients over short durations in clinical settings. These methods can be criticised because they fail to evaluate patients over longer periods in their normal environment. This study attempts to characterise activity behaviour in patients with IC using continuous 7-day monitoring.

**Methods**
Thirty patients (mean age 67 ± 9 years) with varying degrees of IC and 30 age and sex matched controls had continuous 7-day activity monitoring using an ActivPalTM accelerometer activity monitor.

**Results**
Patients with IC demonstrated a higher mean number of both standing (3299 ± 1801 vs. 2586 ± 955, p=0.015) and walking events (2984 ± 1617 vs. 2210 ± 852, p=0.013 Mann-Whitney U test) over the 7-day period. The claudicant group also had more walking events per upright event than the controls (7.71±3.07 vs. 5.76±2.00, p=0.008 Mann-Whitney U test). The mean number of walking events per upright events over 5 minute’s duration was also significantly higher in patients with intermittent claudication (7.88 ± 4.7 vs. 5.27 ± 3.3, p=0.000 Mann-Whitney U test). Overall, claudicants spent more hours standing (33.74 ± 19.32 vs. 25.79 ± 8.49, p=0.033 Mann-Whitney U test); and less hours walking (9.5 ± 5.87 vs. 12.97 ± 6.27, p=0.003 Mann-Whitney U test) than the controls.

**Conclusion**
Seven-day continuous ambulatory monitoring in patients with IC is able to objectively quantify activity and reveal subtle changes in activity behaviour. This method of measurement allows a simple method of potentially analysing the effects of management interventions. IC = intermittent claudication

**Take-home message**
The surprising finding was that, particularly in the control group, the majority of day-to-day activity occurred in relatively short bursts. This emphasises the need for patient re-education and motivational interventions that aim to improve upon the amount of daily physical activity undertaken.

### 036  ROLE OF VEGI/DR3 INTERACTIONS IN KERATINOCYTE GROWTH AND MIGRATION: IMPLICATIONS TO WOUND HEALING

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**Introduction**
Vascular Endothelial Growth Inhibitor (VEGI) plays important roles in processes such as angiogenesis, apoptosis and cell proliferation. Death Receptor 3 (DR3) is a receptor of VEGI. The current study examines the relationship between VEGI and the DR3 receptor in regulating the growth and motility of human keratinocyte cells.

**Methods**
Differential expression of VEGI and DR3 in HaCaT keratinocyte cells was achieved through transfection of HaCaT cells with plasmids containing either a ribozyme transgene specifically targeted to DR3 transcript (HaCaT DR3KO), the full coding sequence of VEGI (HaCaT VEGIexp) or a combination of both plasmids (HaCaT DR3KO/VEGIexp). Successful manipulation of VEGI and DR3 expression levels was confirmed using RT-PCR. Following generation of these lines, cell growth and migration rates were assessed using an in vitro cell growth assay and Electric Cell Impedance Sensing (ECIS) systems respectively.

**Results and Conclusions**
Over-expression of VEGI in HaCaT cells substantially reduced migratory rates in comparison to control cells. In contrast to this, knockdown of DR3 had the opposite effect enhancing cell migration. Current data suggests that DR3/VEGI
interactions are key in governing migratory rates of HaCaT keratinocytes. This relationship may not play such a vital role in regulating HaCaT cell growth, where it may be that VEGI can signal through additional receptors. Interactions between VEGI and receptors, such as DR3, and their impact on the key processes of cell growth and migration will be of importance to the wound healing process.

Take-home message
Interactions between VEGI and receptors, such as DR3, and their impact on the key processes of cell growth and migration will be of importance to the wound healing process.

037 THE EFFECTS OF CANCER ON OUTCOMES FOLLOWING ENDOVASCULAR ANEURYSM REPAIR
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Introduction
Both cancer and abdominal aortic aneurysms (AAA) have angiogenesis as a common feature in their pathophysiology. This study investigated if cancer influences outcomes after endovascular aneurysm repair (EVAR).

Methods
The electronic medical, operative and radiological records of 239 consecutive patients who underwent EVAR between May 2007 and July 2010 were retrospectively reviewed for diagnoses of cancer. Patients with a diagnosis of unresolved cancer at the time of EVAR or those given a diagnosis of cancer subsequently during follow-up (n=24) were compared to patients with resolved or no previous diagnoses of cancer (n=215).

Results
There were 219 men with mean follow up of 2.6 years (range 0.04 to 4.2). Cancers included renal tract cancers (n=8), gastrointestinal cancers (n=6), haematological malignancies (n=4), prostate cancers (n=3), adrenal cancer (n=1), parotid cancer (n=1) and lung cancer (n=1, with concurrent prostate and throat cancer). Presence of cancer was not associated with 30-day mortality (p=0.99) or late mortality (hazard ratio 1.59; 95% confidence interval 0.44-5.17; p=0.51); after adjusting for age, patient comorbidities (cardiovascular, respiratory, cerebrovascular, diabetes, renal failure, obesity), female gender and statin therapy. After adjusting for adverse morphological AAA features (neck diameter, neck angulation, neck length and iliac diameters), diagnosis of cancer was not associated with reintervention, limb occlusions, type 1 or 3 endoleaks, sac expansion or aneurysm-related mortality.

Take-home message
Patients with a diagnosis of cancer do not experience increased mortality or morbidity following EVAR.

038 A META-ANALYSIS OF OUTCOMES FOLLOWING USE OF SOMATOSTATIN AND ITS ANALOGUES FOR THE MANAGEMENT OF ENTEROCUTANEOUS FISTULAS
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Introduction
Several randomised control trials have compared somatostatin and its analogues versus a control in patients with enterocutaneous fistulas (ECF). This study meta-analyses the literature to establish if they have a beneficial effect.

Methods
MEDLINE, EMBASE, CINAHL, Cochrane and PubMed searched according to PRISMA guidelines. 79 articles were screened. 9 met the inclusion criteria. Analyses performed using Review Manager 5.1.

Results
Somatostatin analogues Vs. Control Number closed: No significant heterogeneity. Significant number closed in control group (n = 77/155). Analogue (n = 100/152). Fixed effects model (FEM): RR = 1.36, 95% CI(1.12, 1.63), p = 0.002. Time to closure: No significant heterogeneity. ECF closed faster with analogues (n = 141). Controls (n = 147). FEM: SMD = - 0.51, 95% CI(-0.75, -0.28), p < 0.0001. Mortality: No significant heterogeneity. No significant difference. Analogues (n = 17/141). Controls (n = 21/147). FEM: RR = 0.89, 95% CI(0.50, 1.56), p = 0.68. Somatostatin Vs. Control Number closed: Significant heterogeneity. Significant number closed with somatostatin (n = 61/82). Control (n = 30/85). Random effects model: RR = 2.79, 95% CI(1.03, 7.56), p = 0.04. Time to closure: No significant heterogeneity. ECF closed significantly faster with somatostatin (n = 82). Controls (n = 85). FEM: SMD = - 0.79, 95% CI(-1.11, -0.47), p < 0.00001. Mortality: No significant heterogeneity. No significant difference. Somatostatin (n = 4/82). Controls (n = 6/85). FEM: RR = 0.73, 95% CI(0.21, 2.59), p = 0.63
Conclusion
Somatostatin but not octreotide increases likelihood of closure. However both are beneficial in reducing the time to ECF closure. Neither has an effect on mortality.

Take-home message
Somatostatin but not octreotide increases likelihood of closure. However both are beneficial in reducing the time to ECF closure. Neither has an effect on mortality.

039 HUMAN GASTRIC LIPASE AUGMENTATION OF NASOGASTRIC TUBE ASPIRATE PH TESTS
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Introduction
Nasogastric tube feeding into the lungs is a never event that still occurs. pH aspirate tests cannot verify the position of many nasogastric tubes, because patients are on proton pump inhibitors. These patients may receive an x-ray on initial placement, however guidelines recommend nasogastric tube position is checked daily. Currently, there is no viable way of doing this.

Methods
In the first phase, 10 patients had samples of gastric and lung secretions collected during elective upper gastrointestinal cancer surgery. The pH and human gastric lipase activity was measured. In the second phase, a prototype human gastric lipase augmented pH test was trialled on aspirates taken from 12 patients with nasogastric feeding tubes.

Results
In phase one, 6 of 10 patients were on a proton pump inhibitor and pH indicated correct gastric placement in only 5. Human gastric lipase activity was present in the gastric secretions of 7 and was only absent at low pH, therefore a combined test could correctly identify placement in all 10 patients. In phase two, 8 of the 12 patients were on a proton pump inhibitor. pH aspirate tests identified 8 of the nasogastric tubes were correctly positioned, whilst the prototype augmented pH test identified all 12 as correctly positioned.

Conclusions
The prototype human gastric lipase augmented pH test may benefit 33% of patients with nasogastric feeding tubes, because they do not have acidic gastric contents due to proton pump inhibitors. This will reduce reliance on x-rays on insertion and provide a viable daily verification check.

Take-home message
Currently, it may be impossible to check the position of nasogastric tubes as often as is recommended, because patients do not have acidic stomach contents due to proton pump inhibitors. The prototype human gastric lipase augmented pH test effectively addresses this problem and may help prevent the never event of nasogastric tube feeding into the lungs.

040 THE PRESENCE OF UNDERLYING MALIGNANCY IS ASSOCIATED WITH IMPROVED OUTCOME FOLLOWING FAECAL PERITONITIS: 7 YEAR RETROSPECTIVE STUDY
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Introduction
Faecal peritonitis is associated with a high mortality and extended ITU stay. At RLUH- ICU mortality appeared to be improved in patients with underlying malignancy. This observation was investigated and a mechanism for this trend sought.

Methods
A retrospective analysis of all patients admitted to the Royal Liverpool University Hospital ICU with sepsis secondary to faecal peritonitis. Patients were grouped according to the presence of a malignancy of any sort, and outcome of patients with or without underlying malignancy compared. Mortality, inflammatory markers, ITU length of stay and APACHE-II score were compared between groups using chi-squared and student-tests.

Results
135 patients were admitted to ITU with faecal peritonitis over 7 years, 36 of which had an underlying malignancy. Predicted mortality, indicated by APACHE-II was similar in both groups (APACHE-II:Malignancy:17.1,non-malignancy:16.2). Hospital mortality was significantly lower in patients with underlying malignancy (mortality:21.6%) than
those without (mortality:38.1%) (p<0.10). Similarly, ITU stay was significantly lower in the malignancy group (mean 6.7 days) when compared to the non-malignancy group (mean 12.7 days) (p<0.01). Inflammatory markers were lower in those patients with malignancy, with a significantly lower maximum neutrophil count in the malignancy group (malignancy:21.2, non-malignancy:24.9) (p<0.05).

Conclusion
Mortality in patients with underlying malignancy was significantly lower than those patients without despite similar predicted mortality. Inflammatory markers were observed to be lower in patients with malignancy. Despite differing pathological mechanisms causing faecal peritonitis in the two groups, with non-malignant perforation often the product of inflammation, these findings may suggest that the presence of underlying malignancy causes patients to have a less aggressive systemic response to sepsis which yields an improved outcome.

Take-home message
In this study patients with underlying malignancy have improved outcome compared to patients without malignancy despite similar age and predicted mortality. Inflammatory markers are seen to be reduced in patients with underlying malignancy and may suggest the presence of malignancy dampens the response to sepsis which leads to improved outcome.

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O41 INFLAMMATION IS ASSOCIATED WITH EPITHELIAL APOPTOSIS AND DECREASED SULPHATION IN THE MUCOUS GEL LAYER OF PATIENTS WITH ULCERATIVE COLITIS
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Introduction
Ulcerative colitis (UC) is characterized by changes in the colonic mucous gel layer (MGL) and mucosa. The aim of this study was to determine whether mucosal inflammation is correlated with epithelial apoptosis and altered sulphation in the MGL of patients with acute or chronic UC.

Methods
Following ethical approval and informed consent, mucosal biopsies were harvested at 4 levels throughout the colon from patients with acute UC (n=10), chronic UC (n=10) and healthy controls (n=20). Degree of sulphation was evaluated by staining with 1% alcian blue, 3% acetic acid (pH 2.5) and high iron diamine and was independently scored. Mucosal inflammation was assessed using standard H&E staining. Apoptosis was measured using DeadEnd™ Colorimetric TUNEL System. Statistical analysis was performed using SPSS®.

Results
In healthy controls there was a predominance of sulphated mucins throughout the colon. In acute and chronic UC a high inflammatory score was associated with loss of MGL sulphation (35% in acute, 14% chronic UC, p<0.05). 12% of chronic UC specimens with no or mild inflammation also had reduced sulphomucin expression. The rate of apoptosis inversely correlated with the degree of sulphation (rho=-0.360, rho=-0.345, in acute and chronic UC respectively).

Conclusion
Mucosal inflammation is associated with increased apoptosis and altered mucin expression in both acute and chronic UC.

Take-home message
Ulcerative colitis is a disease process that directly affects the mucin content of the mucous gel layer. This change can be correlated to higher inflammatory scores and rate of apoptosis.

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O42 STRATEGIES FOR INHIBITION OF CHEMOKINE (CCL2) MEDIATED MONOCYTE MIGRATION IN LETHAL REPERFUSION INJURY
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Introduction
CCL2 mediated monocyte migration has been shown to play an integral role in the pathogenesis of lethal reperfusion injury (LRI) following cardiopulmonary bypass operations, which is associated with 10% post-operative mortality and 25% morbidity.

Aims
In vitro analysis of synthetic CCL2 inhibitors (C1-C5) and GAG binding peptides (P1-5) in inhibiting CCL2 mediated monocyte migration, as potential therapeutics for the treatment of LRI.
Methods and Results
Chemotaxis assays were used to screen the potency of all compounds and peptides on CCL2 mediated monocyte migration, the most potent were further analysed using activated trans-endothelial chemotaxis (in vitro model of inflamed capillary wall). P1-5, C1 and C5 showed the most inhibition. The inhibitory effects of 50µM of C5 on monocyte adhesion to VCAM-1 under flow and shear stress conditions was analysed using the Cellix system, showing statistically significant reductions (p<0.05) in adhesion. Western blotting showed no inhibitory effects of C1 or C5 on CCL2 mediated intracellular expression of p-ERK1/2.

Conclusion
In vitro analysis of synthetic CCL2 inhibitors and GAG binding peptides has shown these strategies to be effective in blocking CCL2 mediated monocyte migration. Further studies to define the mechanism of action of these compounds will aid their development as anti-LRI therapies.

Take-home message
Pharmacological inhibition of CCL2 mediated monocyte migration is a potential strategy for the prevention of lethal reperfusion injury following cardiopulmonary bypass. However further in vivo testing of the compounds and peptides tested in this study are required to establish their therapeutic efficacy.

O43 IS ANTIBIOTIC THERAPY AS EFFECTIVE AS APPENDICECTOMY IN THE TREATMENT OF UNCOMPLICATED ACUTE APPENDICITIS? - AN UPDATED METAANALYSIS
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Introduction
Appendicectomy is the ‘gold standard’ treatment for acute appendicitis. Antibiotic therapy (AT) is emerging as an alternative and recent randomised controlled trials (RCTs) favour AT in uncomplicated acute appendicitis (AA) with claims of less morbidity. The aim of this meta-analysis was to compare AT with appendicectomy for primary treatment of uncomplicated appendicitis.

Methods
RCTs comparing AT with appendicectomy for suspected uncomplicated AA in adult patients were included. RCTs were assessed for methodological quality using standard methods recommended by the Cochrane Collaboration. The primary outcome measure was complications. The secondary outcome measures were treatment efficacy, length of stay, readmissions and incidence of complicated appendicitis.

Results
Five RCTs of moderate to high quality, with a total of 980 patients [AT (n=510); appendicectomy (n=470)] were included. Meta-analysis of complications showed a relative risk reduction (RRR) of 64% for AT compared with appendicectomy [Risk Ratio, Mantel- Haenszel, Random, 95%CI: 0.36, (0.16, 0.82); I² = 56%; p<0.02]. A sub-group analysis, excluding the study with cross-over of patients between the two interventions following randomisation, showed a highly significant RRR of 77% for AT [0.23, (0.11, 0.48); I² = 0; p<0.0001]. Of the 69 patients (18%) who were readmitted, nine had perforated appendicitis. However, no significant differences were observed for treatment efficacy, length of stay or risk of complicated appendicitis.

Conclusion
Antibiotic therapy is both effective and safe as primary treatment for patients with uncomplicated acute appendicitis. Initial trial of antibiotic therapy needs serious consideration as a primary treatment option for early uncomplicated appendicitis.

Take-home message
Antibiotic therapy is both effective and safe as primary treatment for patients with uncomplicated acute appendicitis.
ORAL PRESENTATIONS

1C VASCULAR SURGERY

O44 EXTERNAL VALIDATION OF THE BASIL SURVIVAL PREDICTION MODEL IN PATIENTS WITH PERIPHERAL ARTERIAL DISEASE UNDERGOING REVASCULARISATION AND COMPARISON WITH THE FINNVASC AND MODIFIED PREVENT SCORES

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Introduction
Critical limb ischaemia carries a significant risk of morbidity and mortality. The Bypass versus Angioplasty in Severe Ischaemia of the Leg (BASIL) trial investigators developed a model to predict mortality, which has not been previously validated.

Method
Data were collected on all patients who underwent angioplasty or arterial bypass in a University Hospital between January 2008 and June 2010. The main outcome measures were all-cause mortality and amputation-free survival. The BASIL survival predictor, FINNVASC and PREVENT models were applied and receiver operator characteristic (ROC) curve analysis was used to evaluate their predictive power.

Results
Data on 342 patients were collected. The 6, 12 and 24 month all-cause mortality rates were 9.6%, 15.2% and 23.8% respectively. The area under the ROC curve (AUC) using the BASIL score to predict 6, 12 and 24 month mortality was 0.697, 0.669 and 0.681 respectively. ROC curve analysis indicated that the performance of the BASIL score was superior to other published predictive scores. Conclusions
The Basil survival prediction model predicts short and medium term mortality in patients with limb ischaemia and is suitable for aiding decision making in everyday clinical practice.

Take-home message
The performance of the BASIL survival predictor model was superior to the FINNVASC and PREVENT scores.

O45 CRITICAL LIMB ISCHAEMIA PROMOTES AN ANGIGENIC DRIVE THAT IS MEDIATED BY THE ANGIPOIETIN/TIE2 AXIS

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Introduction
Studies have shown that monocytes expressing the proangiogenic receptor, Tie2, promote neovascularisation in growing tumours. This process is mediated by angiopoietins (Ang) 1 and 2, both ligands of the Tie2 receptor. We have previously shown that critical limb ischaemia (CLI) mobilises Tie2 expressing monocytes (TEMs) into the circulation. The present study aimed to investigate factors that regulate TEM function in the circulation of patients with CLI.

Methods
A panel of 18 angiogenic and inflammatory cytokines were measured in serum from CLI patients and age/sex-matched controls (n=10/group) using ELISA. An in-vitro endothelial tubule formation (Matrigel) assay was also used to compare the angiogenic potential of serum from the two groups. Intracellular pro-angiogenic signalling pathways (Tie2, Erk 1/2 and Akt) were measured in Ang stimulated Tie2+ve and Tie2-ve monocytes using flow cytometry.

Results
Circulating levels of VEGF (297±117pg/ml vs 63±21pg/ml), Ang2 (435±661pg/ml vs 1973±247pg/ml) and sTie (25.9±1.99g/ml vs 19.5±1.4ng/ml) were significantly higher in CLI patients compared with controls (P<0.05). CLI serum was more angiogenic than serum from controls (tubule area and length: P<0.01). Angiopoietin stimulation induced phosphorylation of Tie2 in TEMs, resulting in downstream activation of Erk1/2 and Akt. This did not occur in Tie2-ve monocytes from the same subjects.
Conclusion
This study further supports a role for TEMs in the proangiogenic drive present in the circulation of patients with CLI and is the first to report Tie2-mediated downstream signalling in these cells. Manipulation of the Angiopoietin/Tie2 axis in CLI patients may promote neovascularisation in the ischaemic limb.

Take-home message
The angiogenic drive in the circulation of patients with critical limb ischaemia is associated with changes in the Angiopoietin/Tie2 axis. This may represent a novel cellular and molecular therapeutic target for the treatment of the critically ischaemic limb.

046 SKELETAL MUSCLE DAMAGE IN CRITICAL LIMB ISCHAEMIA (CLI) IS MEDIATED BY TOLL-LIKE RECEPTORS 2 AND 6 ACTIVATION
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Introduction
The pathophysiology of skeletal muscle damage in CLI is poorly understood. Toll-like receptors (TLRs), in particular TLR 2, have been implicated in ischaemia-induced muscle damage. TLR 2 signals via heterodimerisation with TLR 6 under certain stimuli and we hypothesize that this specific signalling pathway is activated in ischaemic skeletal muscle resulting in cytokine-mediated muscle damage.

Methods
TLR 2 and 6 expression and distribution were determined in human skeletal muscle biopsies from patients with CLI and from non-ischaemic biopsies using Western blot and immunohistochemistry. The expression, co-localisation and interaction of these receptors in C2C12 myotubes cultured in ischaemic conditions were also studied using Western blot, immunocytoplogy and co-immunoprecipitation. Functional effects of TLR 2 and 6 on ischaemia-induced IL-6 release and apoptosis were studied using neutralising antibodies. IL-6 release was assayed by ELISA. Apoptosis was assessed using cleaved caspase-3 and bax/bcl-2 ratio measurements.

Results
TLR 2 and 6 expression was significantly upregulated in ischaemic human muscle and ischaemic C2C12 myotubes (p<0.05). TLR 2 and 6 co-localise and co-immunoprecipitate under ischaemic conditions, suggesting heterodimerisation of these receptors. Both TLR 2 and 6 antagonism reduced ischaemia-induced IL-6 production and apoptosis.

Conclusion
Upregulation of TLR 2 and 6 expression occurs in ischaemic muscle. Heterodimerisation of these receptors and the subsequent activation of the signaling pathway result in IL-6 release and apoptosis which contributes to inflammation and muscle damage in CLI and underscores the potential benefit of TLR 2 and 6 antagonists in reducing skeletal muscle damage in CLI.

Take-home message
Toll-like receptors 2 and 6 heterodimerise under ischaemic conditions with consequent activation of the signalling pathway. This results in IL-6 release and apoptosis which plays a role in the pathophysiology of skeletal muscle damage in critical limb ischaemia.

047 MAGNETIC RESONANCE SIGNAL ATTENUATION AND IMAGE ARTEFACT TESTING OF A NANOCOMPOSITE POLYMER NITINOL THORACIC STENT-GRAFT
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Introduction
To assess MRI suitability of a sutureless stent-graft made from Nitinol bonded to NP.

Methods
1. Using MRI and Magnevist contrast, isotropic 3D T1-weighted FFE images of NP stent-graft were acquired to observe artefacts and stationary signal attenuation. Average signal magnitude was calculated. Medtronic Valiant was used as control. 2. In second stage, steady flow phantom was setup for flow-encoded MRI signal assessment of both stent-grafts. Baseline values were obtained by velocity measurements without stent-graft using identical settings. 2D through-plane phase contrast images were acquired. By integration of voxels within contour over all time phases, average velocity and amount of flow (flux) were calculated.
Results
On static assessment of NP and Medtronic stent-grafts no image artefacts and no difference in stationary signal were seen. In MRI velocity attenuation study, steady flow phantom was set at mean stroke volume of 105.3 ml and mean velocity of 79.5 cm/sec. Flux measured in Medtronic stent-graft was 102±2.27 ml/sec with no significant difference to baseline (104±1.98 ml/sec; P=0.892). Similarly flux for NP stent-graft at mean stroke volume 104.4 ml and mean velocity of 92.3 cm/sec showed no difference to baseline (99.8±2.4 vs. 104±0.96 ml/sec; P=0.176). There was no significant difference in flux between Medtronic and NP stent-grafts (102±2.27 vs. 99.8±2.4 ml/sec; P=0.328).

Conclusion
NP stent-graft does not display any material-induced artefacts on MRI. On flow assessment, signal attenuation is comparable with commercial device. These properties are important in developing this stent-graft, sutureless, compliant, durable and made from biocompatible and antithrombogenic polymer, for future clinical use. Abbreviations MRI magnetic resonance imaging NP nanocomposite polymer 3D three dimensional FFE fast field echo.

Take-home message
The POSS PCU is a novel nanocomposite polymer that can be used a graft material for endovascular stents with its superior antithrombogenicity and compliance and potential for spontaneous endothelialisation. This study confirms it’s compatibility with MRI which is a critical factor for stent-graft development.

048 STATIN THERAPY IS ASSOCIATED WITH REDUCED RISK OF ABDOMINAL AORTIC ANEURYSM RUPTURE
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Introduction
The incidence of AAA rupture is declining and increased prescription of statins may play a role in this. This study investigated the association between statin therapy and rupture in patients with AAAs.

Methods
We retrospectively analysed a prospectively maintained database of 1098 consecutive AAA patients. These patients were either admitted with ruptured AAAs or for repair of intact large AAAs in a single tertiary unit (2004-2010). Patients were assessed as to whether they were taking statins prior to diagnosis of ruptured or intact AAAs. Patients that have been on surveillance programme (n=109) were excluded.

Results
There were 315 ruptured (134 unoperated) and 674 intact large AAAs with no prior surveillance. Patients who received statin therapy prior to AAA diagnosis were significantly less likely to present with ruptured AAA (odds ratio 0.33, 95% CI 0.23-0.48, p=0.0001). Adjustment for risk factors for rupture (size, female gender, smoking, age, hypertension) and comorbidities (ischaemic heart disease, diabetes mellitus, chronic renal failure and cerebrovascular disease) produced similar results (0.56, 0.35-0.90, p=0.016). With the exception of smokers (0.79, 0.30-2.0, p=0.62), statins consistently conferred protection in analyses of subgroups at risk of rupture; older patients >75 years (0.45, 0.29-0.71, p=0.001), females (0.32, 0.14-0.72, p=0.006) and hypertensive patients (0.44, 0.23-0.83, p=0.011). Uptake of statin therapy amongst patients on surveillance programme was only 36.7%.

Conclusions
Statin therapy is associated with reduced risk of AAA rupture in addition to its other known beneficial effects in AAAs. Measures to improve the uptake of statins in AAA patients should be instituted.

Take-home message
Statin therapy is associated with reduced risk of AAA rupture.

049 PULSATILE ANTE-GRADE GREAT SAPHENOUS FLOW IS ASSOCIATED WITH SEVERE CHRONIC SUPERFICIAL VENOUS INSUFFICIENCY
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Introduction
Pulsatile flow in the deep and perforating veins (in contrast to spontaneous flow with respiratory phasicity) has been demonstrated in 11% of patients with perforator incompetence and was associated with an 80% failure rate of radio-frequency stylet ablation. This is an observational study to investigate the prevalence of spontaneous pulsation within the Great Saphenous Vein (GSV) in patients with significant reflux compared to non-refluxing controls.
Methods
Twenty-three consecutive patients (30 legs, median VCSS=8(0-8)) attending the varicose vein clinic and 21 consecutive
volunteers (39 legs) had their GSV assessed in the mid-thigh using colour duplex. The median GSV diameter (mm) in
refluxing legs (n=24, C0=2,C1=1,C2=4,C3=7,C4=9,C5=1) compared to controls (n=45, C0=30,C1=11,C2=2,C4=2) was
6.9 (2.7-9.4) and 3.5 (1.5-7.2), respectively. The saphenous pulse rate was counted from video records.

Results
The resting saphenous pulse was discrete, monophasic and irregular with intermittend breakthrough reflux coinciding
with respiration. Pulsation was detected in 17/19 (89.5%) of legs with C3-5 and in only 4/50 (8%) of legs with C0-2. The median
saphenous pulse rate was 56 (22-96) beats per minute. Reflux occurred in 6/24 (25%) legs without saphenous pulsation
(C0=2,C1=1,C2=2,C3=1). Only 3/45 (6.7%) non-refluxing legs had a saphenous pulse. The median refluxing GSV diameter
in GSV pulsators compared to non-pulsators was 7 (4-9.4) versus 5.1 (2.7-8.1) respectively (P=.023).

Conclusion
The high prevalence of pulsatile ante-grade saphenous flow is a novel observation in patients with severe superficial venous
insufficiency. It was detectable in 75% of patients with GSV reflux and may be a marker of significant venous disease.

Take-home message
The presence of saphenous pulsation could be recorded to complement the duplex examination in patients with chronic
superficial venous insufficiency.

050 A ROLE FOR STATINS IN PROMOTING VENOUS THROMBUS RESOLUTION
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Introduction
Clinical studies have suggested that statins (3-hydroxy-3-methylglutaryl co-enzyme-A reductase inhibitors) might have an
effect in venous thrombosis. Pleiotropic properties of statins include promotion of neovascularisation and fibrinolysis
which may accelerate venous thrombus resolution. A preclinical randomised animal study was designed to evaluate the
effects of commonly used statin, Atorvastatin on venous thrombus resolution.

Methods
A reduced flow model of murine vena cava venous thrombosis was used. One day after induction of the thrombus mice
were randomly allocated to three groups (n=7/gp). Groups received either Atorvastatin (3mg/kg or 30mg/kg) or vehicle
control (methyl-cellulose) by daily gavage for 7 days. On day 7 thrombi were harvested, formalin fixed and paraffin
sections were made 500µm apart. Thrombus recanalisation and volume was determined by image analysis of H&E stained
sections. The investigator was blinded to treatment. Results
Thrombus recanalisation was greater following statin treatment (0.27±0.13mm3, 0.29±0.11mm3 and 0.50±0.13mm3 for
vehicle, 3 and 30mg/kg statin respectively, P=0.002 ANOVA). post-hoc Bonferroni testing revealed a significantly greater
effect on recanalisation following 30mg/kg statin treatment compared with control (P=0.004). There was no significant
difference in thrombus volume of the three treatment groups (4.88±1.57mm3, 5.01±2.34mm3 and 5.56±1.28mm3 for
vehicle, 3 and 30mg/kg statin respectively).

Conclusion
Atorvastatin at a dose of 30mg/kg enhanced thrombus recanalisation at day 7 compared with the vehicle control. Statin
treatment had no effect, however, on thrombus volume at this time point. Further in-vivo imaging studies using MicroCT
that will allow longitudinal analysis of the effect of statins in thrombus formation and resolution are planned.

Take-home message
In an animal model of venous thrombosis, Atorvastatin at a dose of 30mg/kg had a small but significant effect on thrombus
recanalisation at day 7. However it had no effect on thrombus volume at this time point.

051 CONTRAST ENHANCED AORTIC ULTRASONOGRAPHY - A LABORATORY PHANTOM
TO DETERMINE THE LIMITATIONS OF ENHANCED AND UNENHANCED
ULTRASONOGRAPHY SCANNING FOR POST-OPERATIVE EVAR SURVEILLANCE
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Introduction
The long-term durability of EVAR is still being assessed so all patients currently enter surveillance programme, usually with
regular CT follow-up. This contributes a large financial burden for the NHS and diagnostic provisions, so a solution to
lighten the load is required. Unenhanced ultrasound has been demonstrated to have a mixed sensitivity and specificity for endoleak detection but the addition of contrast has been shown to detect the majority of the endoleaks seen with CT. Contrast ultrasound is safe, cheap and involves the use of no radiation or nephrotoxic contrast compared to CT. We propose ultrasound as a suitable surveillance modality and aimed to determine its limitations in detecting with and without contrast.

Methods
An EVAR-simulation-phantom was constructed with a simulated endoleak with variable flow alongside the stent-graft. Distances between the two vessels were varied by viewing from set positions and flows were viewed from anterior, posterior or lateral to the stent. Six subjects examined the phantom over 36 geometric parameters, flow rates and positions using colour Doppler and contrast enhanced imaging.

Results
Anterior endoleaks were detected more frequently than posterior endoleaks, which were the most difficult to detect. The addition of contrast improved anterior leak detection 76.4%-to-98.6%(P<0.001) and lateral endoleaks 59.7%-to-77.8%(P<0.05). The proportion of uncertainty was reduced in all subjects when using contrast.

Conclusion
Endoleak detection and user variability with detection is improved significantly with microbubble contrast. Ultrasound surveillance is more accurate and reliable when using contrast and our results suggest it should be considered for routine surveillance.

Take-home message
Endoleak detection and user variability with detection is improved significantly with microbubble contrast. Ultrasound surveillance is more accurate and reliable when using contrast and our results suggest it should be considered for routine surveillance.

052 A NANOCOMPOSITE POLYMER BASED THORACIC ENDOPROSTHESIS TO IMPROVE AORTIC COMPLIANCE MISMATCH FOLLOWING ENDOVASCULAR REPAIR
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Introduction
To develop new thoracic stent-graft from POSS-PCU NP to reduce aorta-prosthesis compliance mismatch and haemodynamic changes induced by endovascular repair.

Methods
A constructed model of curved thoracic aorta from MRI patient data was developed and anatomically accurate stent-graft was moulded using surface-modified Nitinol stents bonded to POSS-PCU NP. An in vitro pulsatile flow phantom perfused NP stent-graft deployed in a compliant aortic model at physiological pulse pressure and flow. Diometrical compliance and stiffness index were calculated and comparison was made with ePTFE based FDA-approved thoracic stent-graft.

Results
NP stent-graft had uniform thickness of 150.7±6.6 μg and in fully expanded shape, with diameter of 30 mm, matched curvature of aortic arch and descending thoracic aorta. Over temperatures of 37±1°C, mean pressure range of 30-100 mm Hg and pulse pressure of 49±6 mm Hg, overall compliance of NP stent-graft was 3.3 ± 0.61%/mm Hg x 10^{-2} which was significantly better compared with ePTFE stent-graft (2.3±0.95 %/mm Hg x 10^{-2}; P=0.0003). The ePTFE stent-graft was significantly more stiff with stiffness index β 92.7±46.1 compared to NP stent-graft (β 39.1±5.91; P<0.0001). The ePTFE stent-graft failed to exhibit anisotropic behaviour demonstrated by NP stent-graft similar to natural vascular tissue.

Conclusion
An innovative, curved, self-expanding and sutureless stent-graft is proposed for endovascular repair of thoracic aorta and aortic arch. The study confirmed superior compliance and reduced elastic stiffness of POSS-PCU NP which can help in improving device longevity by offering superior physiological and haemodynamic environment in vivo. Abbreviations POSS polyhedral oligomeric silsesquioxane PCU poly (carbonate-urea) urethane NP nanocomposite polymer ePTFE expanded polytetrafluoroethylene FDA food and drug administration

Take-home message
The POSS PCU is a novel nanocomposite polymer that can be used a graft material for endovascular stents with improved compliance and haemodynamic properties in addition to its superior antithrombogenicity and potential for spontaneous endothelialisation.
053 APPLICATION OF MASS SPECTROMETRIC (MS) BASED PROTEOMICS COUPLED WITH ARTIFICIAL NEURAL NETWORKS ANALYSIS FOR BIOMARKER DISCOVERY OF ABDOMINAL AORTIC ANEURYSM (AAA)

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Introduction
Discovery of new candidate biomarkers of AAA is required to reduce dependency on imaging technology for the management of AAA and drive down the cost of care. This is a case-control study to discover plasma protein biomarkers of AAA with the potential of clinical translation.

Methods
This is a prospective case-control study. Venous plasma was collected from patients with AAA (n=13) and ultrasound screened matched controls (n=13) with clean phenotypes using standardized sample collection protocols. The workflow comprised of highly abundant plasma protein depletion (Seppro® IgY 14 Spin Columns, Sigma-Aldrich Co), sample clean-up using C18 reverse phase chromatography (ZipTip® Pipette Tips, Millipore MA USA) and tryptic digestion followed by mass spectrometric analysis. MS data thus obtained was analysed using ANN to build a classifier to discriminate patients with AAA from controls. Once a statistically strong classifier was discovered tandem MS was carried out to discover protein identities of the classifier ions.

Results
A classifier of AAA comprising of a combination of 4 ions achieved sensitivity and specificity of 93% and validation performance of 87% for discriminating patients with AAA from controls. One of the component ions was identified as a secreted glycoprotein: Inter-alpha-trypsin inhibitor heavy chain H4. Other components may represent novel species and work is in progress to study their sequence information.

Conclusion
Mass spectrometric based proteomics coupled with ANN analysis was able to build a statistically strong classifier to discriminate patients with AAA from controls and generate an ion panel suitable for protein identification (biomarker) studies.

Take-home message
This study demonstrates that plasma protein biomarkers of AAA with the potential of clinical translation exist. MS based proteomics coupled with ANN analysis is a useful tool for protein identification in the context of biomarker discovery of AAA.

054 TISSUE ENGINEERING SMALL DIAMETER BYPASS GRAFTS: DECELLULARIZATION AND BIOCOMPATIBILITY OF PORCINE INTERNAL CAROTID ARTERIES

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Introduction
Despite over three decades of use, the patency rate of small diameter synthetic bypass grafts remains poor. The aim of this study was to develop a biocompatible, acellular, arterial scaffold that can be used to tissue engineer small diameter bypass grafts for peripheral and coronary arterial bypass.

Methods
Porcine internal carotid (PIC) arteries were decellularized using a protocol developed by the Institute of Medical and Biological Engineering at the University of Leeds. Arteries were incubated sequentially in hypotonic solution, SDS [0.1% w/v], DNAse and RNAse and then hypertonic solution. Finally, arteries were sterilized with 0.1% paracetic acid. To ensure total decellularization, histologically representative arterial sections were stained using H&E and DAPI to confirm removal of cells and cell nuclei. Total DNA content of arterial samples was quantified and PCR performed to determine the coding potential of any residual DNA. Biocompatibility of the acellular scaffolds was assessed using contact and extract cytotoxicity assays using both primary cells (porcine and ovine endothelial and smooth muscle cells) and two distinct cell lines (murine 3T3 and baby hamster kidney cells).

Results
The decellularization protocol resulted in PIC arteries that were free from cells with >95% of the total DNA being removed. PCR analysis of residual DNA confirmed it to be non-coding. The acellular PIC was not cytotoxic to any of the test cells.
Conclusion
The decellularization protocol developed created biocompatible, acellular PIC arteries that are suitable for the tissue engineering of small diameter vascular grafts. PIC - Porcine internal carotid (artery) SDS - Sodium dodecyl sulphate H&E - Haematoxylin and eosin DAPI - 4'-6-Diamidino-2-phenylindole

Take-home message
The feasibility of creating a biological scaffold from porcine carotid artery for use in the tissue engineering of small diameter blood vessels.

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055 5-YEAR OUTCOMES FROM A RANDOMISED CLINICAL TRIAL COMPARING 12W VS. 14W ENDOVENOUS LASER ABLATION IN THE TREATMENT OF GREAT SAPHENOUS VARICOSE VEINS

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Introduction
Endovenous laser ablation (EVLA) has been demonstrated to be an effective treatment for lower limb varicose veins in the short and midterm results. This study reports the 5-year outcomes of EVLA technique at different power settings.

Methods
Patients with primary symptomatic, unilateral varicose veins secondary to saphenofemoral junction (SFJ) incompetence and great saphenous vein (GSV) reflux were recruited and randomised to either 12W (intermittent laser withdrawal) or 14W (continuous laser withdrawal). They were assessed at baseline, 1, 6, 12, 52 weeks, 2 and 5 years. Outcome measures included: Venous Clinical Severity Score (VCSS), pain scores, time taken to return to normal functions, complications, recurrence, quality of life (QoL), and duplex ultrasound findings.

Results
76 consecutive patients, M: F 30:46, median age 54 (IQR: 37.3-59) years were randomised. Intragroup analysis: Significant improvement was seen in both groups in VCSS, pain scores, Aberdeen varicose vein questionnaire (AVVQ) scores, Shortform-36 (SF-36) and Euroqol (EQ-5D) domains over the follow-up period (P<0.05). Intergroup analysis: At 5 years, clinically recurrent varicosities and duplex detected SFJ incompetence was less frequent and patient satisfaction with cosmetic outcome significantly higher in the 14W group (P<0.05). There was no significant difference between the groups in VCSS scores, duration of procedure, postoperative pain scores, return to normal activities, complications, generic (SF36, EQ-5D) and disease specific (AVVQ) QoL measures (P>0.05). Conclusion Late outcomes following EVLA were superior using the 14W continuous power settings, which should be widely adopted as the optimal energy delivery mode when using the 810 nm diode laser.

Take-home message
Correlation between amount of energy delivery during EVLA of GSV and effectiveness of the procedure is known to exist. With the commonly used 810nm diode laser, this RCT has shown durable long term results with 14 W continuous power settings.

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056 AORTIC STIFFNESS AS A PREDICTOR OF ABDOMINAL AORTIC ANEURYSM (AAA) FORMATION

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Introduction
Arterial stiffness is an independent predictor of cardiovascular (CV) risk and mortality and may reflect local changes that precede aneurysm formation. Aortic stiffness is often measured with carotid-femoral pulse wave velocity (cfPWV) using ultrasonic tonometry. Phase contrast cardiovascular magnetic resonance (CMR) can measure PWV along aortic segments. Our objective was to assess PWV in the presence of AAA and relate this to aortic calcification.

Methods
cfPWV (mean±SEM m/s) was measured in 50 AAA patients and 56 matched controls using tonometry. CT was used to score aortic calcium. CMR was performed in 57 (28 AAA and 29 control) subjects to measure segmental PWV.
Results
Median AAA diameter was 3.9 cm (range 3.0-5.6 cm). cfPWV and CMR-PWV was significantly increased in subjects with AAA (13.2±0.45; 9.5±0.28) vs controls (10.8±0.29; 8.4±0.29; P=0.0001; P=0.009). CMR showed that PWV was significantly greater in abdominal segments vs thoracic segments in controls (P=0.002) but not in AAA patients (P=0.122). Aortic calcium scoring in controls correlated with CMR-PWV (r=0.77, P=0.01) but this was not found in the AAA group (r=-0.27, P=0.5). Multivariate regression showed cfPWV was independently correlated with AAA disease (P ≤ 0.0001). Logistic regression showed an association between AAA and cfPWV, mean arterial pressure and age (P=0.036, 0.031 and 0.032 respectively)

Conclusion
This is the first study to measure segmental biomechanical properties of the aorta in patients with small AAA. The risk of developing AAA increases over 2.5-fold for every 1 m/s increase in cfPWV and 1.5-fold with each 1 mmHg rise in mean arterial pressure. We hypothesise that AAA formation is an adaptive remodeling response to hypertension and increased arterial stiffness.

Take-home message
Aortic stiffness and increase in mean arterial pressure increases the risk of AAA disease.

057 TRENDS IN STATIN THERAPY IN VASCULAR SURGERY PATIENTS AND ITS EFFECTS ON PERI-OPERATIVE AND LONG TERM MORTALITIES
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Introduction
Previous studies have shown that statin therapy was associated with reduced perioperative cardiovascular deaths and an improved long-term survival in patients undergoing major vascular surgery. This study investigated trends in statin therapy amongst vascular patients and its effects on mortality in a tertiary vascular unit.

Methods
Between 2000-2010, 3309 patients underwent elective major vascular surgery; 1314 (39.7%) carotid endarterectomies, 1113 (33.6%) AAA repairs, 494 (14.9%) major amputations and 388 (11.7%) lower limb revascularisations. Patients were divided into pre- and post-2004 groups for analysis of trends of statin therapy. Multivariate logistic and Cox regression analyses were applied for outcome measures of 30-day and long-term all-cause mortalities respectively.

Results
The mean follow-up was 4.8 years. Comparing pre-2004 and post-2004 patients, there was an increase in proportion of patients on statin therapy at time of surgery (12.0% versus 36.9%); 30-day mortality declined (4.7% versus 2.9%); and 1-year and 3 year-survivals improved (91.4% versus 93.7%; and 80.8% versus 84.6% respectively). After adjusting for comorbidities (including age, history of myocardial infarct, angina, hypertension, diabetes, cerebrovascular disease, smoking and chronic renal impairment) and type of surgery, statin therapy was associated with significantly reduced 30-day mortality (HR 0.23, 95% CI 0.11-0.46, P<0.0001) and improved long term mortality (HR 0.66, 95% CI 0.56-0.79, P<0.0001).

Conclusions
This study demonstrated that uptake of statins in a contemporary series of vascular patients has increased, and this is associated with reduced perioperative and long term mortalities. In our cohort of vascular patients, there is still scope for improvement in statin uptake.

Take-home message
Statin therapy is associated with reduced 30-day and long term mortality in patients undergoing major elective vascular surgery.
O58  PLACEBO CONTROLLED DOUBLE BLIND RANDOMISED CLINICAL TRIAL OF TRANSVERSUS ABDOMINIS PLANE BLOCK IN LIVE DONOR NEPHRECTOMY

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Introduction
Post operative pain may be reduced after laparoscopic live donor nephrectomy (LLDN) by using a technique which introduces a local anaesthetic into the transversus abdominis plane (TAP) at the suprapubic retrieval incision site. This study assessed the safety and efficacy of using a TAP block in a placebo controlled double blinded randomised controlled trial.

Methods
46 patients participated in the trial and were randomised to undergo the TAP block procedure with either Bupivacaine 0.375% (TAP block n=24) or saline (Control n =22) injected into the transversus abdominis plane. Pre-filled syringes were dispensed with the group allocation concealed to maintain blinding. Post-operative pain relief was administered using a patient controlled analgesia system (PCAS).

Results
The amount of PCAS morphine used 6 hours after surgery was significantly lower in the TAP block group compared to the control (12.4 ± 8.4 vs 21.2±14.0mg; P=0.016). However, the total amount used was similar in both groups (40.4 ± 29.8 vs 44.7 ± 27.8mg; P=0.527). Patients in the TAP block group experienced significantly lower levels of pain with a lower visual analogue score on post operative days 1 and 2 (P <0.05) and less intermittent pain at rest on day 1 compared to the control (P=0.045). There were no complications associated with the procedure.

Conclusion
The TAP block procedure is a safe method of pain relief that reduces the amount of morphine required in the early phase after LLDN. Although, the requirement was similar thereafter, patients experienced less pain up to 2 days after surgery.

Take-home message
The TAP block is a safe procedure that can reduce the amount of morphine required after surgery.

O59  COMPARISON OF FRESH FROZEN CADAVER; HIGH FIDELITY VIRTUAL REALITY SIMULATOR (LAP MENTOR, SIMBIONIX) AND BOX TRAINER AS METHODS OF TRAINING IN LAPAROSCOPIC INCISIONAL HERNIA REPAIR

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Introduction
A number of modalities are available to train surgeons in laparoscopic surgery. The aim of this study was to compare Fresh Frozen cadaver (FFC); Virtual Reality simulation (VR) and Box Trainer (BT) as tools to train in laparoscopic incisional hernia.

Methods
This was a prospective comparative face validity study. Middle grade registrars and consultant surgeons performed laparoscopic incisional hernia on FFC, BT and VR. Following completion of the tasks, each subject completed a 5-point Likert-type questionnaire rating their perception of different aspects of the training modalities, on nine domains such as tactile force feedback and tissue handling. Data were analysed using non-parametric testing.

Results
36 surgeons were recruited to the study. Multiple comparisons of median scores across three training models revealed participants evaluated FFC significantly higher in all nine domains as compared to VR and BT (p<0.05). No difference was found between VR and BT in the use of instrument (p=0.06), tactile feedback (p=0.78), replication of operative steps (p=0.23), performance feedback (p=0.33) and overall value as a learning aid (p=0.52). VR was found to be superior than BT in tissue handling (p<0.01), demonstration of anatomy (p<0.01) and tissue plane (p<0.01).

Conclusion
Fresh frozen cadaver is perceived as a significantly better model than virtual reality simulator and box trainer for training in procedures of intermediate complexity like laparoscopic incisional hernia. Conventional box trainer is still an acceptable model of training in such procedures when compared to virtual reality simulation. Abbreviations- FFC: Fresh Frozen Cadaver VR: Virtual Reality simulation BT: Box Trainer
Take-home message
A range of useful training models are available for laparoscopic skills training in the present age. The most realistic however is fresh human cadaver.

O60 EMERGENCY ADMISSION DUE TO FEMORAL HERNIA: A POPULATION BASED STUDY USING LINKED UNITED KINGDOM PRIMARY AND SECONDARY CARE DATA
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Introduction
Emergency admission with femoral hernia is a recognised surgical emergency. There are few population based studies documenting the risk factors for admission and subsequent outcome.

Methods
Population-based cohort study using linked General Practice Research Database and Hospital Episode Statistics data from 1997-2009. Patients with an International Classification of Diseases-10 code for a primary hospital admission for a femoral hernia were identified. Prior comorbidity was accounted for using the Charlson index. Proportions were compared using Chi Squared tests and means by Students t tests. Survival analysis was used to calculate one year mortality.

Results
We identified 919 cases of hospital admission for femoral hernia with 78.5% female. The mean age was greater in those admitted as an emergency (75.4 vs. 60.35 years, p<0.001). Emergency patients were more likely to have a body mass index >30 (5.2% vs. 2.3%, Chi squared p<0.05). The emergency patients had substantially more comorbidity compared to the elective patients (Charlson Score >2 30.7% vs. 23.7%). The emergency patients were more likely to present with obstruction (63.9%) and require small bowel resection (14.8%). One year survival for elective admissions was 99.0% (95% Confidence Interval [CI]: 98.4%-99.9%) and 90.6% (95% CI: 87.0% - 93.3%) for those admitted as an emergency.

Conclusion
Patients presenting with emergency femoral hernia are a distinct patient group who are elderly, and have significant comorbidity. They often present with obstruction needing bowel resection and suffer significant rates of mortality.

Take-home message
Patients presenting as an emergency with femoral hernia are a distinct patient group who are elderly with significant comorbidity. They often require small bowel resection and have a significant mortality.

O61 THE VALIDITY AND RELIABILITY OF PROCEDURE BASED ASSESSMENT IN SIMULATED VASCULAR PROCEDURES
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Introduction
All surgical training should include an element of assessment, to facilitate learning and monitor trainee’s progress. The aim of this study is to demonstrate whether PBA in its current format is valid and reliable in assessing simulated procedures and compares well to previously validated tools.

Methods
Trainees from general, vascular and orthopaedic specialties, on 3 different vascular skills courses were assessed. Assessment tools included: appropriate index specific PBA tool (Which consists of a checklist converted to a Total Competency Score, TCS and PBA level score (0-4)) and OSATS (Objective Structured Assessment of Technical Skills) tool. Construct validity was determined by correlation of scores with level of training and previous operative experience. Fourteen trainees were assessed by 2 different assessors to estimate inter-rater reliability; all scores were also correlated with assessor level. Results were analysed using Spearman’s Rho for non-parametric data and Cronbach’s α to estimate reliability.

Results
In total 117 assessments were performed, 60 PBA and 57 OSATS, in 46 trainees (87% male) with a median training level of ST4 (range ST1- Consultants). Validity: The PBA level score demonstrated best construct validity for level of trainee (r=.518 p=<.001) and previous operative experience (r=.464 p<.001). Reliability: The PBA level score had an inter-rater reliability of r=.744 p=.002 (Cronbach’s α .850), level of assessor was non-significant for this assessment method.
Conclusion
The PBA level score was the most promising method to assess trainees during simulation. It is valid, reliable and unaffected by assessor level. Further work is required to assess PBA regarding responsiveness and acceptability.

Take-home message
The single PBA judgement score is more valid and reliable than checklists or more complicated assessment scoring methods when assessing trainees performing simulated procedures. This effect may translate into the workplace and suggests PBA checklist scales are less reliable methods of assessment than a single assessor judgement.

O62 WHAT IS LEARNT BY GENERAL SURGICAL TRAINEES IN THE OPERATING THEATRE?
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Introduction
Despite the advances of simulation, learning in theatre will continue to be the mainstay of postgraduate surgical training. Training time in theatre is threatened due to working time restrictions and increasing economic concerns of hospitals. It is therefore essential to illuminate what post graduate surgical trainees actually learn in the operating theatre including exploring the hidden curriculum.

Method
Semi-structured in depth interviews were carried out with 12 trainees and 10 trainers at a University affiliated teaching hospital and a District General Hospital. Interviews were transcribed and thematic analysis performed by researchers from different backgrounds using nVIVO 9 analytic software.

Results
Coding categories were diverse and not limited to motor skill acquisition. Trainers and trainers perceived that identification of structures and adaptive competence (contingency, dealing with patient variability and different ways of doing the same thing) were important aspects of theatre learning. Simulation based training was not perceived to address learning within these domains.

Conclusion
Learning in theatre is much more complex than motor skills acquisition, it is perceived to be about acquisition of visuo-cognitive skill. Much of the curriculum explored in this study has been largely neglected by current simulation training. Suggestions are provided for alternative training solutions.

Take-home message
Identification of structures and adaptive competence are key aspects of post graduate surgical learning in theatre which to date have been largely neglected by simulation based learning.

O63 OPTICAL FIBRE PROBE REFLECTANCE SPECTROSCOPY AS A TECHNIQUE TO DIAGNOSE LESIONS IN THE LOWER GASTROINTESTINAL TRACT
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Introduction
Diffuse reflectance spectroscopy is a fast non destructive approach to sense changes in tissue scattering and absorption properties. These have been shown to vary along the neoplastic process due to changes in vasculature, cell size and density. The primary goal of this study is to assess Reflectance Spectroscopy as a tool to diagnose dysplastic tissue within the lower gastrointestinal (LGI) tract.

Methods
A total of 37 biopsies from 16 patients were collected as part of their routine endoscopic procedures at St. Mary's Hospital (London) and measured using Reflectance Spectroscopy. Samples were grouped based on histological assessment with healthy (n=16), dysplastic (n=8) and inflamed (n=13). The images were then converted to spectra (distribution of light intensity against wavelength). Using software able to select the pair of wavelengths whose ratio optimises the area under the receiver operating characteristic, a reflectance score was generated for each sample. A comparison was then made between healthy and pathological samples based on their reflectance scores. Statistical significance was assessed using an unpaired two sample t-test.
Results
A statistically significant difference in reflectance score was observed when comparing healthy tissue versus dysplasia (p=0.03) and when comparing healthy tissue versus inflammation (p=0.04).

Conclusion
We have shown Reflectance Spectroscopy can differentiate between healthy and dysplastic tissue within the LGI tract. In future this can be combined with endoscopy to provide real time in vivo diagnostic information to guide biopsies and identify tumour margins. This will be particularly beneficial in managing subclinical pathologies such as dysplasia and early cancer.

Take-home message
Reflectance Spectroscopy will complement and refine the current clinical practice by improving the diagnostic efficacy of endoscopy. This novel technique will provide real time in vivo diagnostic information to improve the overall management of lower gastrointestinal pathologies, especially dysplasia and early cancer.

E-ASSESSMENTS - CURRENT PERCEPTIONS IN CLINICAL PRACTICE
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Introduction
Work based assessments are a crucial part of clinical training. Although informally practiced for many years there is a current trend towards formalized web based assessments. These follow a prescribed format and can be time consuming and confusing. In addition there is little evidence to suggest they have a positive impact on learning or performance. This study aims to investigate whether trainers and trainees understand these systems and find them useful in the clinical domain.

Methods
Structured questionnaires were given to 50 trainees and 10 consultants to assess the perceived usefulness and educational value of E-assessments. Answers were either yes/no or measured on a visual analogue scale (VAS).

Results
Although 60% of Consultants received training, general consultant opinion suggested they were moderately intuitive (VAS-5/10), were an average reflection of the trainees’ true ability (VAS-4.5/10) but of minimal overall benefit (VAS-3.4). Most felt that time spent completing assessments was poorly spent (VAS-3.3). Trainees found it more difficult to obtain assessments from consultants than from other grades. In addition consultant based assessments were thought to be taken less seriously (4.4/10vs5/10) and to be of less academic value (4/10vs4.8/10) when compared to those conducted by other grades. Overall e-assessments were thought by trainees to be a poor reflection of clinical acumen (VAS-2.9/10).

Conclusion
These results suggest the current use of e-assessments is not conducive to effective training. Of particular interest is the poor regard of consultant based assessments. To be effective a significant culture change is required with more targeted education as to their intended use.

Take-home message
E-Assessments are not being used effectively. Consultant assessments are thought to be particularly poor a discrepancy that is not conducive to effective training.

COMPARISON OF FRESH FROZEN CADAVERS AND HIGH FIDELITY VIRTUAL REALITY SIMULATOR AS METHODS OF LAPAROSCOPIC TRAINING
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Introduction
To compare Fresh Frozen Cadavers (FFC) with high fidelity Virtual Reality Simulator (VR) as tools to train minimal access surgery

Methods
A prospective comparative face validity study was performed between FFC and VR (LAP Menor™, Simbionics). Surgeons with varying surgical experience performed appropriate paired tasks on both FFC and VR. Group A (> ST 5) performed an advanced task (laparoscopic sigmoid colectomy), Group B (ST3 to ST5) performed an intermediate task (laparoscopic incisional hernia repair). Group C (CT1 & CT2) performed basic laparoscopic tasks (camera manipulation, hand eye
coordination etc.). Following completion of allocated tasks, each subject completed a 5-point Likert-type questionnaire rating their perception of different aspects of the training modalities, on 9 selected domains such as tactile force feedback and tissue handling. Data was analysed using paired non-parametric testing.

**Results**

45 surgeons were recruited (15 per skill group). Median scores for subjects in Group A were significantly higher for evaluation of FFC in all nine domains as compared to VR (p<0.01). Group B scored FFC significantly better (p<0.05) in all domains except task replication (p=0.06). Group C scored FFC significantly better (p<0.01) in 8 domains but not on performance feedback (p=0.08).

**Conclusion**

Fresh frozen cadaver is perceived as a significantly overall better model for laparoscopic training than high fidelity virtual reality simulators by all training grades, irrespective of complexity of operative procedure. Abbreviations- Fresh Frozen Cadavers: FFC Virtual Reality Simulator: VR

**Take-home message**

Fresh Human Cadaver is a realistic model to train in laparoscopic surgery.
ORAL PRESENTATIONS
2B UPPER GI SURGERY

O66 SNAIL1: A MARKER OF EPITHELIAL MESENCHYMAAL TRANSITION IN GASTRO- OESOPHAGEAL JUNCTION TUMOURS
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Introduction
Epithelial-mesenchymal transition (EMT) is a process of conversion of epithelial cells to mesenchymal phenotype and acquisition of proteins which promote tumour invasion and metastases. Increased expression of Snail1, an EMT protein has been identified to be associated with poor prognosis in solid tumours. We aimed to assess the expression of Snail1 in gastro-oesophageal junction tumours (GOJ) and its prognostic significance.

Methods
Formalin fixed resection specimens from 104 patients were collected. Three core tissue biopsies were obtained from luminal surface (LS), tumour body (TB) and invasive edge (IE), using trephine biopsy apparatus to construct tissue microarrays. These were subjected to immunohistochemical staining. Snail1 expression was assessed by two independent scorers and compared to clinical and histological factors.

Results
The median patient age was 66 years (95%CI, 64 to 69). Sanil1 expression was detected in the cytoplasm of tumour cells. The staining for Snail1 was positive in LS 78 (75%), TB 83 (80%) and IE 51 (49%). There was significant expression of Snail1 at the IE of the (p=0.01). There was no significant correlation between overall and cancer specific survival and Snail1 expression.

Conclusion
Snail1, a marker of EMT has poor expression in GOJ tumours indicating a subdued role in the process of epithelial mesenchymal transition.

Take-home message
Epithelial-mesenchymal transition is a complex histo-morphological phenomenon in solid tumours.

O67 RELEVANCE OF TUMOUR REGRESSION GRADE TO OESOPHAGEAL CANCER STAGING POST NEOADJUVANT CHEMORADIOThERAPY
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Introduction
Measures of histomorphological primary tumour regression grade (TRG) are not incorporated into 7th edition AJCC staging systems following neoadjuvant chemoradiotherapy (neoCRT) for oesophageal cancer. This study aims to investigate whether inclusion of TRG into staging improves its efficacy.

Methods
297 patients treated with neoCRT followed by curative surgery from a prospectively maintained database were analysed. Cox regression analysis was used to identify predictors of survival within the multimodal group. Efficacy of staging was assessed by Akaike information criterion (AIC) to determine fit; likelihood ratio χ² to determine homogeneity and linear trend χ² for monotonicity.

Results
Mandard TRG may be effectively reduced to a three point grading system (1 versus 2/3 versus 4/5). This TRG system is an independent predictor of disease-specific survival along with nodal status, pathological T stage and gender. Backward stepwise cox regression analysis demonstrated both TRG 1 v2/3 v4/5 and pathological stage (7th edition) to be independent predictors of disease-specific survival. The residual value χ² was 8.518 (p=0.014) if TRG is not in the equation. TRG was discriminatory for Stage 2a patients only and incorporation of TRG into staging for this group provides equivalent homogeneity and fit.

Conclusion
Mandard TRG may be effectively reduced to a three point grading system (1 versus 2/3 versus 4/5) and TRG is an independent factor in survival. Inclusion of TRG into the staging of T2N0 patients may improve its efficacy.
Take-home message
Mandard TRG may be effectively reduced to a three point grading system (1 versus 2/3 versus 4/5) and TRG is an independent factor in survival. Inclusion of TRG into the staging of T2N0 patients may improve its efficacy.

O68 TISSUE METABOLOMICS AND OESOPHAGEAL CARCINOGENESIS
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Introduction
A metaplasia/dysplasia/carcinoma sequence occurs in 0.5-1% of patients with Barrett’s oesophagus/annum. Tissue metabolomics might disclose new information about prognosis or offer new therapeutic approaches, but has not been previously attempted in this condition. This study aimed to identify metabolic markers that might be used for such purposes.

Methods
Fresh tissue samples were obtained from 58 patients with oesophageal adenocarcinoma (type 1,2) and 9 patients non dysplastic Barrett’s undergoing endoscopic surveillance including normal squamous mucosa, adenocarcinoma and any associated Barrett’s.100 control patients provided normal oesophageal tissues. Samples were extracted using methanol/chloroform and subjected to Nuclear Magnetic Resonance and Mass Spectrometry metabolomics. Immunohistochemical and gene expression analyses were subsequently performed. Statistical analyses used PLS Toolbox for MATLAB. Comparisons between groups were made by partial PLS-DA confirmed by direct observation of spectra.

Results
Elevated levels of hypoxanthine were found in oesophageal adenocarcinoma compared to adjacent normal mucosa (0.189±0.35 mM vs. 0.002±0.001 mM; p<0.0001). Patients with Barrett’s in the presence of an adjacent carcinoma had levels of hypoxanthine in Barrett’s mucosa that fell in between normal and neoplastic mucosa and were significantly different from both(p=0.01; ANOVA). Gene expression analysis revealed an elevated level of hypoxanthine-guanine phosphoribosyltransferase in neoplastic compared to normal mucosa.

Conclusion
Elevated levels of hypoxanthine in pre-neoplastic tissue represents the first evidence of biochemical change before histological malignant change in the oesophagus. Higher levels in cancers and confirmatory gene expression suggest that this upregulated purine salvage pathway merits further examination.

Take-home message
This research provides the first evidence of a biochemical change with elevated levels of hypoxanthine in pre-neoplastic Barrett’s tissue compared to normal oesophagus. Higher levels of hypoxanthine with confirmatory gene expression in established carcinoma suggests a role for the purine salvage pathway in malignant progression.

O69 MAGIC REGIMEN CHEMOTHERAPY HAS A SURVIVAL ADVANTAGE COMPARED TO PREVIOUS COMBINATIONS TREATING GASTRO-OESOPHAGEAL ADENOCARCINOMA
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Introduction
Three cycles of ECF (MAGIC style) has replaced 2 cycles of CF (OEO2 style) chemotherapy as the neo-adjuvant treatment of choice in gastro-oesophageal adenocarcinoma (GOA), although the MAGIC trial included mainly gastro-oesophageal junctional (GOJ) and gastric cancer patients with few of oesophageal origin. We aimed to determine if survival was different between patients that received either regime in practice.

Methods
A database of resections for GOA at a single institution was maintained from prior to the introduction of neo-adjuvant regimens. Patients were assessed to determine the chemotherapy they received and their overall survival. Patients who started a MAGIC style regimen were compared to those who received any other regimen using Kaplan-Meier analysis (log-rank comparison).
Results
Median follow-up was 43.6 months in the MAGIC group and 96.7 months in the non-MAGIC group and median ages were 65yrs and 63.5yrs. However, the MAGIC group contained a larger proportion of gastric cancers (21.6% compared to 2.7%) and so to remove this bias only oesophageal and gastro-oesophageal junction (GOJ) cancers were compared. Subsequently, the MAGIC group contained 40.3% oesophageal cancers, and 24.3% in the non-MAGIC group. MAGIC: 132 patients had median survival of 34.0 months. Non-MAGIC: 106 patients had median survival of 23.6 months (p=0.012) Individually, oesophageal cancers had improved survival with MAGIC (p=0.028) although GOJ lost statistical power (p=0.094).

Conclusion
We believe this to be the first time that the MAGIC regimen has been shown to provide survival benefit over other regimes in oesophageal cancer.

Take-home message
Patients that had received MAGIC style chemotherapy were compared to those that had received alternative regimens. Survival benefit was shown with MAGIC including in sub-group analysis of oesophageal cancers.

O70 THE RELIABILITY OF EUS IN DIFFERENTIATING TUMOUR STAGE IN OESOPHAGEAL CARCINOMA
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Introduction
Accurate pre-treatment staging of oesophageal cancer is essential given today’s wide spectrum of treatments. Decision processes determining patient treatment pathways are dependent on precise clinical staging.

Methods
The efficacy of endoscopic ultrasound (EUS) in staging oesophageal cancer was evaluated in this prospective study. Data was collected from August 2007-May 2011, on all patients undergoing EUS for biopsy proven oesophageal carcinoma. Comparative analysis between EUS and surgical pathological stages was performed. Survival analysis was also performed on EUS predicted T and N stages.

Results
222 patients [median age 65 years (20-88), male:female ratio 2.8:1] underwent EUS for either oesophageal adenocarcinoma (n=165) or squamous cell carcinoma (n=57). Seventy-eight patients had surgical resection with no neoadjuvant treatment. In this patient cohort, comparative analysis between the pathological and pre-operative EUS stages showed sensitivity and specificity was greatest for T1 tumours, at 94% and 89% respectively. EUS was 34% sensitive and 85% specific in identifying nodal metastases. Survival was statistically better in the EUS T1 tumour group [mean 3 years (95% confidence interval 2.5-3.4 years)] compared with the T3 tumour group [mean 2.1 years (95% confidence interval 1.8-2.5 years)] (p=0.01). Nodal metastases diagnosed on EUS had a significantly worse prognosis compared with patients staged with node negative disease (p<0.0001).

Conclusion
EUS demonstrated a high sensitivity and specificity for detecting T1 tumours. A significant relationship between EUS T and N stages and overall survival was also revealed.

Take-home message
EUS demonstrated a high sensitivity and specificity for detecting T1 tumours. A significant relationship between EUS T and N stages and overall survival was also revealed.

O71 DETECTION OF UPPER GASTROINTESTINAL PATHOLOGIES THROUGH QUANTIFICATION OF OPTICAL COHERENCE TOMOGRAPHY SIGNAL ATTENUATION USING A LINEAR MODEL
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Introduction
Upper gastrointestinal (UGI) disease is a considerable cause of morbidity and mortality. Improved survival depends on early detection. The diagnostic gold standard is white-light endoscopy with biopsy. However, this technique has limitations, leading to missed cancer diagnoses. New imaging technologies, such as optical coherence tomography (OCT), have the potential to improve the diagnostic efficacy of endoscopy. Here, we investigate a novel method of detecting UGI pathologies by quantitatively processing OCT data.

Methods
Fifty-one patients undergoing UGI endoscopy at St. Mary's hospital (London) were included. Three-dimensional OCT images (c-scans) were obtained from 86 freshly excised biopsies. On histological examination, 27 had no pathology, 28 had inflammation, 24 had Barrett's/intestinal metaplasia, and 7 had high-grade dysplasia/cancer. The mean signal attenuation for each c-scan frame was determined using a linear model and the distribution of attenuation gradients for each diagnostic group was represented as a boxplot and compared to other groups using the Mann-Whitney test.

Results
Statistically significant results (p<0.01) were obtained in the following comparisons: no pathology versus inflammation, no pathology versus Barrett's/intestinal metaplasia and no pathology versus cancer/high grade dysplasia. Comparisons between different pathologies were also statistically significant (p<0.01).

Conclusion
The results show a difference in the attenuation gradients between healthy and diseased tissue. Near real time technology has the potential to be incorporated into endoscopes to guide biopsies, increase earlier detection of lesions and aid future diagnoses. Future work involves a blind study to test the protocol as well as extending this work into other fields of medicine.

Take-home message
Optical coherence tomography could potentially be that missing link between endoscopy and diagnoses; reducing the risk of missed diagnoses and increasing the ability for earlier lesion detection.

O72 TUMOUR REGRESSION GRADING CORRELATES TO SURVIVAL IN OESOPHAGO-GASTRIC CANCER. A REPORT OF CURRENT SURVIVAL OUTCOMES FOLLOWING NEO-ADJUVANT CHEMOTHERAPY
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Introduction
Patients who demonstrate a histological response to chemotherapy as determined by tumour regression grading (TRG) are known to have improved survival. We report current survival expectations for patients following neo-adjuvant chemotherapy and resection of gastro-oesophageal cancer.

Methods
TRG was determined by a specialist pathologist in 251 patients after chemotherapy, and survival outcomes were assessed by Kaplan-Meier analysis of patients divided into responder (Mandard TRG 1-3) and non-responder (TRG 4&5) groups, with log-rank comparisons.

Results
After a median follow-up of 48 months survival was found to be improved in both adenocarcinoma (p=0.017) and squamous carcinomas (p=0.006) with histological response to chemotherapy. Median survival was estimated to be 33.1 months and 21.2 months in oesophageal adenocarcinoma responders and non-responders. In gastric cancers the median was yet to be reached for responders and was 35.2 months for non-responders. Junctional cancers demonstrated the largest survival difference at 51.1 months compared to 27.5 months and this was statistically significant (p=0.01), although smaller numbers in the other groups led to loss of statistical power. We have previously reported MAGIC style chemotherapy to produce improved survival compared to other regimens (p=0.012). However, the proportion of responders in oesophageal and junctional cancers was the same with other regimens (30.6%) compared to MAGIC (33%), Pearson χ² p=0.725.

Conclusion
Tumour regression grading is a useful predictor of overall survival allowing clinicians greater ability to counsel their patients. However, MAGIC therapy appears to improve survival possibly through mechanisms other than simply increasing the proportion of patients that have histological response.

Take-home message
Patients with gastro-oesophageal cancers that have a histological response to chemotherapy can expect improved survival. Clinicians can advise patients that junctional cancers that have responded to chemotherapy can expect to live for more than 4 years from diagnosis.
CAN NEOADJUVANT CHEMORADIOThERAPy DOWNSTAGE NODE POSITIVE OESOPHAGEAL CANCER?
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Introduction
Nodal status is the single greatest predictor of disease-specific survival in oesophageal cancer. Neoadjuvant chemoradiotherapy (Neo-CRT) is increasingly the standard of care for patients with involved nodes. However, the inaccuracy of clinical staging in oesophageal cancer is well documented and this has lead to controversy regarding the ability of neo-CRT to affect nodal status.

Methods
315 patients from prospective database analysed from 1990-2010 who underwent neo-CRT. Current clinical staging accuracy was determined using a group of patient who underwent surgery only.

Results
Prediction of pathological nodal status using current clinical staging modalities in patients who had surgery only was highly specific 98% for nodal status positivity- providing a benchmark for neo-CRT patients and implying that few of those patients predicted to be node positive were likely to be node negative. 56 patients (17.5%) who were predicted to have nodal involvement on staging investigations were subsequently found to have pathological negative nodes following neoCRT and surgery. Proxy evidence of possible nodal status downgrading include a major primary site histomorphological tumour response (Mandard TRG 1/2) in 38 (67.9%) and evidence of nodal fibrosis at pathological analysis in 76% of those evaluated. Disease-specific survival in patients with predicted node positive disease prior to neo-CRT with negative nodes on pathological examination is equivalent to patients with predicted node negative disease initially (80.0 vs 96 months, p=0.86)

Conclusion
Neo-CRT appears to lead to nodal disease regression in 17.5% of patients with predicted positive nodesand this is associated with a 5 year survival rate of 64%.

Take-home message
Neoadjuvant chemoradiotherapy in oesophageal carcinoma can lead to nodal disease regression in a proportion of patients and this cohort have improved long-term survival (64% at 5 years)
ORAL PRESENTATIONS
3A SURGICAL ONCOLOGY

O74 WAVE 3 EXPRESSION IN HUMAN COLORECTAL CANCER
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Introduction
WAVE3 is a member of the Wiskott-Aldrich syndrome protein family, identified as cell motility facilitators. Dysregulation of WAVE proteins has been implicated in a number of cancers. Colorectal cancer is the second most common cause of cancer related deaths in the UK, fatality commonly associated with metastatic spread. This study investigated WAVE3 expression in normal and cancerous colorectal tissue, colorectal cell lines and the impact of targeting WAVE3 in vitro.

Methods
WAVE3 expression was examined in a colorectal cancer cohort using quantitative gene transcript analysis and immunohistochemical methods. WAVE3 expression was targeted through the transfection of human CACO-2 cells with a ribozyme transgene specifically targeted to WAVE3. The role of WAVE3 in cellular migration and invasion in vitro was examined.

Results
Transfection with the ribozyme transgene produced significant reductions in WAVE3 expression, assessed using RT-PCR analysis. Knockdown of WAVE3 significantly reduced migration rates, compared to CACO-2 cells transfected with a closed pEF6 plasmid only (CACO-2pEF6) (p= <0.001). Colorectal cancer tissues showed a general increase in WAVE3 levels compared with normal tissues (mean=46336 vs. 678) and a progressive increase in WAVE3 levels the less differentiated the tissue became (well mean=23.4, moderately mean=41965, poorly mean=142860). WAVE3 levels were increased in Dukes B and C tumour tissues compared with Dukes A (mean=65655 vs. mean=8.72).

Conclusion
Targeting WAVE3 in CACO-2 cells effects cell migration, an important trait involved in metastasis. Currently our data suggests WAVE3 may be one of the molecules involved in metastasis of colorectal cancer and potentially in disease severity.

Take-home message
WAVE 3 significantly affects the migration rates of colorectal cancer cells, one of the most critical cellular functions to the metastatic cascade process, and is implicated in disease severity. This research provides genetic insight into how colorectal cancer metastasises, will open future research avenues into therapies that inhibit it and could potentially function as a future biomarker.

O75 DEVELOPMENT OF A GEMCITABINE DOUBLE EMULSION FOR INTRATUMORAL THERAPY OF PANCREATIC CANCER
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Introduction
Over 80% of patients with pancreatic cancer have unresectable disease at presentation and downstaging of disease with neoadjuvant chemotherapy is rare. Local intratumoral chemotherapy may be a promising approach for treating inoperable tumors with a large dose of drug and reduced systemic side-effects. The aim of this study was to develop a simple method for extemporaneous preparation of a stable, and potentially sustained release double emulsion (water-in-oil-in-water) entrapping Gemcitabine for intratumoral delivery. Methods
The emulsions were made rapidly and reproducibly in aseptic conditions via a two-step pumping method using plastic syringes and a 3-way tap, first producing the water-in-oil and then the water-in-oil-in-water emulsion. A number of clinically approved surfactants were investigated, and emulsions were characterized using microscopy and dynamic light scattering methods.
Results
The stable emulsion developed used Span-80 as the lipophilic emulsifier, Tween-80 as the hydrophilic one and Lipiodol as the oil. The inner water phase was reconstituted Gemcitabine for injection solution and the outer water phase was saline. The emulsion had an initial Gemcitabine entrapment of 70-75%, droplet diameter of 15±9µm and was stable for 24h under refrigeration, with Gemcitabine encapsulation slowly decreasing to 45-50%. The ease of preparation eliminates physical stability issues associated with double emulsions because the product can be administered shortly after preparation and is produced aseptically to avoid sterilization problems. Since the oil used is radioopaque, tissue distribution can be monitored radiographically.

Conclusion
This novel delivery system merits further investigation for use in treatment of patients with locally advanced pancreatic cancer.

Take-home message
The sustained release double-emulsion Gemcitabine preparation, using this technique is both stable and reproducible. This novel delivery system merits further investigation for use in treatment of patients with locally advanced pancreatic cancer.

O76 HIF-ISOFORMS HAVE DIVERGENT ROLES IN THE ANGIOGENESIS OF COLORECTAL CANCER
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Introduction
The success of anti-angiogenic therapies such as the anti-VEGF antibody bevacizumab underlines the importance of angiogenesis in colorectal cancer (CRC). Hypoxia, a potent driver of angiogenesis, is associated with increased metastasis and poorer survival. The transcription factor Hypoxia Inducible Factor (HIF) is the master regulator of hypoxia. Mounting evidence suggests that two isoforms, HIF-1α and HIF-2α, previously thought to be functionally redundant, have divergent roles. In CRC their specific functions remain unclear. This study aims to elucidate their roles in CRC angiogenesis.

Methods
Using small interfering RNA (siRNA), HIF-1α and HIF-2α genes were knocked down in the CRC cell-line Caco-2. Hypoxia-induced (1% O₂) angiogenic gene expression (VEGF, EFNA3, TGF-β1 and ANGPTL4) was quantified by Q-PCR.

Results
mRNA knockdown (approximately 70%) markedly reduced the strong hypoxic induction of HIF-1α and HIF-2α protein. Hypoxia-induced VEGF and EFNA3 upregulation was reduced by both siHIF-1α and siHIF-2α, while ANGPTL4 and TGF-β1 upregulation was significantly reduced by siHIF-1α only.

Conclusion
Prognosis in late-stage CRC remains poor despite anti-angiogenic therapy. These drugs are known to reduce HIF-1α activity, but their effect on HIF-2α is poorly understood. The data presented indicate that HIF-1α and HIF-2α have different roles in CRC angiogenesis, suggesting that consideration of the HIF isoform selectivity of anti-angiogenic therapies is important.

Take-home message
Both isoforms of Hypoxia Inducible Factor, HIF-1α and HIF-2α, are involved in CRC angiogenesis, but their effect on angiogenic genes is different. This has implications for anti-angiogenic therapies, whose effects on HIF-2α are poorly understood.

O77 RNASEQ TRANSCRIPTOME ANALYSIS POINTS TO LINE1 CHIMERIC TRANSCRIPTS AS NOVEL BIOMARKERS FOR CRC
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Introduction
Protein coding sequences occupy only 3% of our genome, whilst repetitive sequences account for about 55% of it. Some of these repeats are of viral origin and carry their own promoters, like the ‘Long Interspersed Nuclear Elements 1’ (LINE1) class of retrotransposons. LINE1s are usually silenced in normal cells, but are often aberrantly activated in cancer producing RNAs that can contribute to tumourigenesis in various ways, including genomic instability, production of truncated oncogenic isoforms of cellular genes and transcription interference. Traditionally these transcripts have been filtered out as noise in transcriptomic studies through automated removal of repeat containing sequences. In this study
we have analysed the expression of transcripts that are part LINE1 and part genomic sequence (LINE1 chimeric transcripts or LCTs) in matched normal and tumour tissue from two patients with Duke's stage B Colorectal Cancer.

**Methods**
cDNA libraries compatible for paired-end RNAseq using the SOLiD v4 platform were produced from total RNA from each sample. Bioinformatic analysis was performed to identify SOLiD reads by comparison to known genes, human genome and LINE1 promoter sequences.

**Results**
Initial analysis defined the expression profile for all known genes. The pairing of SOLiD reads aligned to the human genome, and to LINE1 promoter sequences revealed expression of cancer-associated LCTs.

**Conclusions**
In addition to allowing definition of the expression profile of all known genes, the paired end RNA seq approach has provided a pool of cancer specific LCTs for future validation as biomarkers on our extended cohort of primary colorectal samples.

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### O78 MTSS1 A NEGATIVE REGULATOR OF MIGRATION AND INVASION OF COLORECTAL CANCER CELLS

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**Introduction**
MTSS1 is an actin-binding scaffold protein that has been implicated in carcinogenesis and metastasis. Its role in colon cancer remains unknown. In this study we assessed the expression of MTSS1 in colorectal cancer and influence of MTSS1 expression on functions of colon cancer cell.

**Methods**
The expression of MTSS1 was examined in colorectal cancer tissue samples and cell lines. Colorectal cancer cells (HRT18 and CACO2) were transfected with constructed transgenes for either forcing expression or knockdown of MTSS1. The expression of MTSS1 was then verified using both RT-PCR and Western blot. The influence of MTSS1 on cellular functions were examined using invitro assays namely growth, invasion, adhesion, wounding and apoptosis assay.

**Results**
A reduced expression level of MTSS1 was seen in colorectal cancer compared with normal colorectal tissues. MTSS1 was overexpressed in colorectal cancer cell line HRT18 which exhibited a very low expression of MTSS1, while knockdown was performed in other cell lines expressing higher levels of MTSS1. Overexpression of MTSS1 in HRT18 resulted in a decrease in cell growth, whereas knockdown of MTSS1 in CACO2 showed little effect. After MTSS1 knockdown, CACO2 cells had increased capacities for migration and invasion and reduced adhesiveness. However inverse effect on these functions by overexpression of MTSS1 in HRT18 was not evident. In addition, apoptosis analysis showed an increased apoptotic population in HTR18 MTSS1 overexpression cells.

**Conclusion**
Expression of MTSS1 appeared to be reduced in colorectal cancer. MTSS1 is a negative regulator of growth, adhesion, migration and invasion of colorectal cancer cells. The inhibition on cell growth is by induction of apoptosis.

**Take-home message**
MTSS1 expression alter biological function of colorectal cancer cells and expression of MTSS1 molecule can be used as a tumour marker in near future for diagnosis and prognosis of colorectal cancer patient.

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### O79 INVESTIGATING THE POTENTIAL USE OF LINE-1 CHIMERIC TRANSCRIPTS AS CANCER BIOMARKERS

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**Introduction**
The Long Interspersed Nuclear Element 1 (L1) class of retrotransposons occupies ~17% of our genome. L1s harbour a bidirectional promoter which is methylated and silenced in normal tissues. Hypomethylation and activation of L1s occur frequently in cancer. Whilst activity of the sense promoter can contribute to cancer by promoting genomic instability, that of the anti-sense promoter drives transcription into surrounding genomic sequences giving rise to L1 chimeric transcripts (LCTs) composed of part L1 and part genomic sequence. LCTs can contribute to cancer either by promoting expression of oncogenic isoforms of cellular genes or by transcriptional interference. The aim of this study is to investigate the clinical use of LCTs as biomarkers in the diagnosis and prognosis of Colorectal cancer (CRC).
Methods
Expression of cancer specific LCT13 was analysed by Real-Time PCR using TaqMan probes on total RNA from matched normal and tumour tissues from 28 CRC patients. Expression was correlated with patient age, sex and tumour stage. DNA methylation was analysed by bisulphite sequencing in matched normal and tumour samples from 4 of the patients. Ethical approval and patient consent was obtained prior to this work.

Results
Expression of the cancer specific LCT13 was observed in 57% of patients. The effect was more pronounced in females and in Dukes stage A and B. Expression inversely correlated with methylation.

Conclusion
L1 chimeric transcripts are valid biomarkers in CRC. Their functional role in colorectal cancer requires further investigation.

Take-home message
LINE-1 chimeric transcript are valid biomarkers in colorectal cancer.

080 NEUROPILIN-1: A PREDICTOR OF EARLY CARCINOGENESIS IN THE COLONIC EPITHELIUM
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Introduction
Although VEGF receptor neuropilin-1 (NRP-1) has been implicated as an anti-apoptotic protein in colon cancer there is little research into the role of NRP-1 in both normal tissue and in early carcinogenesis. Recent work has demonstrated a profoundly different NRP-1 staining pattern between normal and adenomatous tissue. We aim to define the NRP-1 expressing colonic epithelial cell population in normal tissue and investigate the use of NRP-1 as a predictor of disease state, when compared to other cellular markers of proliferation, cellularity and differentiation, in normal and neoplastic colonic epithelium.

Methods
Three diagnostic groups of patients (normal/adenoma/cancer) were identified at routine diagnostic colonoscopy and biopsies taken at the morphologically normal mid-sigmoid from all subjects in addition to biopsies of the lesion, if present. Samples were fixed and sectioned for IHC and stained for NRP-1, Ki67, keratin 8, mitosis and cellularity and enteroendocrine cells markers (chromogranin-A, GLP-1, somatostatin). Multinomial logistical regression analysis was performed to assess the association of cellular markers at the mid-sigmoid with diagnosis.

Results
87 patients (normal=41, adenoma=34, cancer=12) were included. Multinomial logistic regression analysis, adjusted for age and BMI, revealed NRP-1 expression to be an independent predictor of adenoma diagnosis (B= -5.074, SE=2.540, p=0.006). The distribution of NRP-1 in the normal colon resembles enteroendocrine cells, however only partially co-localises with chromogranin-A and GLP-1 (<10%).

Conclusion
Building on previous observations that NRP-1 is dysregulated early in adenomatogenesis, this study reveals that NRP-1 is a powerful predictor of disease state at the early stage of cancer progression. The role of NRP-1 in the normal colonic epithelium should be investigated.

Take-home message
VEGF receptor NRP-1 is dysregulated in early colonic carcinogenesis and its expression in morphological normal epithelium at the mid-sigmoid is a predictor of adenomatogenesis elsewhere in the colon.

O81 THE ROLE OF MIR-21 AND PDCD4 IN COLORECTAL CANCER
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Introduction
MicroRNAs (miRNAs) are short, non-coding RNA sequences that have a central role in the regulation of gene expression. MiR-21 was recently shown to be a genuine oncogene in pre-B-cell lymphoma. Programmed cell death 4 (Pdcdf4) is a tumour suppressor gene, which inhibits neoplastic transformation. The aim of this study was to assess the relationship of miR-21 expression to clinico-pathological features of colorectal cancer (CRC) and to analyse its interaction with Pdcdf4.
Methods
miR-21 expression profiling of tumour and paired normal mucosa tissues were performed in 45 patients with CRC using quantitative real time polymerase chain reaction. The expression levels of miR-21 were correlated with commonly used clinico-pathological features for CRC. Transfection of CRC cell lines with anti-miR-21 was also performed and Pdcd4 protein levels were measured.

Results
The CRC tissues demonstrated a significantly higher expression of miR-21 (p<0.0001) relative to the paired normal mucosa. Higher expression of miR-21 in the tumour tissue samples correlated with a worse Duke's stage (p<0.0001) and pathological T stage (p<0.0001). Up-regulation of miR-21 also correlated with lymph node metastasis (p<0.0001) and poorer differentiation of the cancer (p<0.0001). Knockdown of miR-21 significantly increased the Pdcd4 protein levels in the CRC cell lines (p=0.04).

Conclusion
miR-21 expression levels are significantly altered in CRC. Higher expression of miR-21 is associated with worse stage. Knockdown of miR-21 is associated with increased expression of Pdcd4. The miR-21 and Pdcd4 pathway is worthy of further investigation as a potential therapeutic target in the future management of CRC.

Take-home message
The miR-21 and Pdcd4 pathway is an important pathway in cancer development and may be a potential therapeutic target in the future management of colorectal cancer.
ORAL PRESENTATIONS
3B TRANSPLANTATION

O82 SUCCESSFUL REANIMATION OF DONATION AFTER CARDIAC DEATH (DCD) HEARTS
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Introduction
The success of organ donation after cardiac death (DCD) has yet to extend into cardiac transplantation. Rescuing hearts from donors after cardiac death would allow significant expansion of the donor pool. This study used an ex vivo circuit to reperfuse porcine hearts in a simulated DCD model with the aim of restoring myocardial activity, testing various combinations of both established and novel perfusion solutions.

Methods
Eleven cross-Yorkshire Landrace pigs were euthanased humanely by Schedule-1. The non-beating hearts were procured after 10 minutes of warm ischaemia. All hearts underwent initial antegrade flush with 250mls of AQIX® RS-I solution at ambient room temperature. Hearts 3 to 11 were flushed with a further 250mls of cold perfusion fluid. Reperfusion was performed after period of cold storage on a Langendorff circuit, using a mixture of heparinised, leukocyte-depleted blood and RS-I solution. Drugs and DC cardioversion were used to initiate left ventricular activity and was measured by ultrasonic probes.

Results
Of the 11 DCD hearts, 7 were successfully reanimated. Maximum outflow pressure reached was 90mmHg (range 40-90mmHg). Ventricular contractions were achieved with both RS-I and UW perfusion solutions.

Conclusion
Hearts sourced from DCD donors can be successfully reanimated. Factors influencing successful reanimation included adequate coronary flush, administration of adrenaline and DC cardioversion. Restoration of cardiac activity was achieved using both a conventional and novel perfusion solution. Further studies are needed before hearts procured from DCD donors can be incorporated into mainstream cardiac donation.

Take-home message
Reanimation of DCD hearts is possible, and such a source has a huge potential to increase the severely stretched organ donor pool for hearts.

O83 ISLET TRANSPLANT IN AN EX VIVO PORCINE LIVER-KIDNEY PERFUSION MODEL
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Introduction
Clinical islet transplantation is a recognised and important part of the armamentarium for the treatment of type I diabetes. Results continue to improve and as a consequence islet autotransplantation is increasingly used to prevent the onset of diabetes following pancreatectomy for the treatment of chronic disabling pancreatitis. The inevitable acute inflammatory response in the initial phase following islet transplantation causes significant loss of islets and inhibits implantation. In the current study we describe an ex-vivo perfused porcine liver-kidney experimental model designed to allow the study of the immediate changes following islet infusion.

Methods
Five livers and kidneys were harvested from pigs and perfused for 24 hours in an external extracorporeal circuit which included a centrifugal pump, heat exchanger and oxygenator. Islets were infused through the portal vein and contrast agent (microbubble) was mixed with the islets prior to infusion. Ultrasonography was used to detect the movement and final position of islets and the inclusion of microbubbles dramatically improved the ease of detection, which facilitated targeted biopsies.
Results
In the combined liver-kidney circuit, the organs survived and maintained an acceptable homeostasis for differing but protracted periods (19-23 hours). Glucose decreased significantly over time.

Conclusion
The combined liver-kidney extracorporeal circuit produces a physiological ex vivo environment, which allows us to study the early phase of islet transplant in great detail and obviates the use of live animals. This model will also enable us to examine pharmacological manipulation of the portal milieu to optimise islet survival and engraftment.

Take-home message
The combined liver-kidney extracorporeal circuit produces a physiological ex vivo environment, which allows us to study the early phase of islet transplant in great detail and obviates the use of live animals.

O84 NORMOTHERMIC KIDNEY PERFUSION. THE FIRST CLINICAL SERIES
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Introduction
Normothermic kidney perfusion is an alternative method of preservation that may reverse some of the detrimental effects of hypothermic storage and improve early graft function. Here we report the first clinical series of normothermic perfusion of extended criteria donor (ECD) kidneys.

Methods
A total of 11 kidneys from ECD donors underwent normothermic perfusion (NP) after a period of static cold storage (CS). Kidneys were perfused on an isolated kidney perfusion system with one unit of compatible cross matched packed red blood cells supplemented with a priming solution, nutrients, multivitamins and a vasodilator. After perfusion kidneys were flushed with preservation solution and transplanted.

Results
The mean donor age was 59 ± 10.5 years and cold ischaemic time 12.2 ± 4.5 hours. Kidneys were perfused for an average of 68.1 ± 16.3 minutes at 34.1 ± 1.1°C and produced a total of 214 ± 102ml of urine. The mean recipient age was 57 ± 10.3 years. There were no complications during NP and all kidneys were transplanted successfully. The delayed graft function rate was 9.1% (1 patient) and slow graft function rate 18.1% (2 patients). Three patients were treated for acute rejection with the first month. The mean serum creatinine levels at day 7 and 3 month post transplant were 247±193µmol/L and 139±29µmol/L respectively. Graft and patient survival at 3 month was 100%.

Conclusion
Normothermic perfusion appears to be a safe and feasible method of kidney preservation. Furthermore, these preliminary results give some indication that this technique may improve early graft function.

Take-home message
Normothermic Perfusion is a novel approach to kidney preservation that may improve graft outcome.

O85 NAKED SMALL INTERFERING RNA (SIRNA) OF CASPASE-3 WAS EFFECTIVE IN PRESERVING ISOLATED PORCINE KIDNEYS, BUT DID NOT PROTECT AUTO-TRANSPLANTED KIDNEYS
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Introduction
Caspase-3 is associated with apoptosis and inflammation and is up-regulated by ischemia reperfusion injury, which plays a key role in renal allograft survival. The efficacy of caspase-3 siRNA administered into the porcine kidney and hemoperfusate during cold preservation has been proved in an isolated organ perfusion system, but not in an auto-transplant model.

Methods
Left kidneys were retrieved from mini pigs with minimal ischemia and flushed with Ringer’s solution followed by University of Wisconsin (UW) solution. UW solution with or without 0.3 mg caspase-3 siRNA was infused into the renal artery with the renal vein clamped and the kidney was preserved by cold storage (CS) for 24 hours. After right nephrectomy, the left kidney was auto-transplanted into the right renal bed for 2 days.
Results
Caspase-3 mRNA was down-regulated in post-CS kidneys by siRNA, but up-regulated in post-transplant kidneys (both p<0.05). Caspase-3 precursor was down-regulated by 52% in post-CS kidneys preserved with siRNA (p<0.01), whereas 17 kD active caspase-3 was raised 1.5-fold in post-transplant kidneys (p<0.05) with further decreased precursor (p<0.01). In addition, active caspase-3+ cells, apoptotic cells, and myeloperoxidase+ cells were raised 1.3, 2 and 10 folds respectively in siRNA treated transplant kidneys. Moreover, serum creatinine and blood urea nitrogen were not significantly changed by siRNA, but renal tissue damage was significantly aggravated by 20%.

Conclusion
Naked caspase-3 siRNA infused into the kidney was effective in preservation, but not enough to improve post-transplant renal function. These findings may be due to systemic complementary responses overcoming the local effects of short-term siRNA.

Take-home message
Naked caspase-3 siRNA infused into the kidney was effective in preservation, but not enough to improve post-transplant renal function. These findings may be due to systemic complementary responses overcoming the local effects of short-term siRNA.

O87 THE MITOCHONDRIA-TARGETED ANTIOXIDANT MITOQ AMELIORATES RENAL ISCHEMIA REPERFUSION INJURY IN A MURINE MODEL
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Introduction
Renal ischaemia reperfusion injury (IRI) represents a major cause of acute renal failure and renal allograft dysfunction. Considerable evidence exists to support a key role for mitochondrial damage and mitochondrial-derived oxidative stress in the development of renal IRI. We have developed a novel mitochondria-targeted antioxidant MitoQ, with confirmed human safety and efficacy, which concentrates within the mitochondria, preventing mitochondrial oxidative damage. The aim of this study was to investigate the efficacy of MitoQ in protecting against mitochondrial and tissue damage during experimental renal IRI.

Methods
In a murine model of bilateral renal ischemia-reperfusion injury, animals were randomized to 4 groups; sham laparotomy control or 45 minutes renal ischemia, each with or without MitoQ (20mg/kg) i.v.15 minutes prior to laparotomy. All groups underwent a 24 hour reperfusion period. At sacrifice, renal tissue was taken for analysis of mitochondrial function (respirometry, ATP/ADP) and damage (mtDNA integrity), markers of oxidative stress (protein carbonyl content, F₂-isoprostanes) and histology. Serum creatinine levels were measured as a marker of renal function.

Results
Mitochondrial assays were optimized for this in vivo model. Administration of MitoQ prior to ischemia resulted in a marked reduction in kidney injury as measured by serum creatinine levels compared to the untreated group (88±14umol/L vs. 231±18umol/L; p<0.05). There was no significant difference in creatinine level between the treated and untreated control groups (32±6umol/L vs. 25±3umol/L).

Conclusion
MitoQ represents a promising novel approach to ameliorating renal IRI, with potential application in a variety of clinical settings including transplantation.

Take-home message
The novel mitochondrial-targeted antioxidant MitoQ significantly reduces renal IRI in the experimental setting. Given it has already been successfully used in Phase II clinical trials in chronic diseases associated with oxidative damage, its role as a therapeutic agent in the acute clinical setting of ischemia-reperfusion appears promising.
**O88** COMPARABLE OUTCOMES FOR SIMULTANEOUS PANCREAS KIDNEY TRANSPLANTATION FROM CONTROLLED CARDIAC-DEATH AND BRAIN-DEAD DONORS

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**Introduction**
Ongoing organ scarcity has prompted an expansion in utilization of organs from donation after cardiac death (DCD) donors. Unlike DCD liver or kidney grafts, reports on outcomes after DCD pancreas transplantation are limited. We describe our experience of simultaneous pancreas-kidney (SPK) transplantation from controlled DCD donors.

**Methods**
Outcomes of patients receiving SPK transplants at our unit from DCD and donation after brain death (DBD) donors between August 2008 and January 2011 were reviewed retrospectively.

**Results**
Sixty SPKs were implanted; 20 from DCD and 40 from DBD donors. Donor and recipient characteristics were very similar for both groups, though median (range) pancreas cold ischaemic times (CITs) were shorter in DCD recipients (8.2 (5.9-10.5) vs 9.5 (3.8-12.5) hours, p<0.01). Median (range) duration of time from treatment withdrawal to cardiorespiratory arrest (the agonal phase) and from arrest to cold perfusion was 12 (6-89) and 13 (7-15) minutes for DCD donors. There were no differences in pancreas or renal allograft survival, patient survival, delayed graft function, primary non-function, re-operation within 30 days, HbA1c, eGFR, or acute rejection between DCD or DBD recipients.

**Conclusion**
DCD SPK grafts have similar outcomes to DBD grafts, even when procured from select donors with a prolonged agonal phase. DCD donors are a potentially important source for expanding the pancreas donor pool.

**Take-home message**
DCD donors are a potentially important source for expanding the pancreas donor pool.

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**O89** EARLY URINARY BIOMARKERS OF WARM AND COLD ISCHAEMIC INJURY IN AN EXPERIMENTAL KIDNEY MODEL

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**Introduction**
Early urinary biomarkers may be useful in determining the severity of ischaemic injury in donation after circulatory death (DCD) kidneys. The aim of this study was to evaluate the efficacy of a collective series of urinary biomarkers in relation to the warm and cold ischaemic intervals.

**Methods**
Porcine kidneys were retrieved after 0, 10 and 25 minutes of warm ischaemia (WI) then preserved by static cold storage (CS) for period of 2 and 18 hours. After preservation, kidneys were reperfused on an isolated organ perfusion system to assess renal function and injury. Levels of IL-6, TNF$\alpha$, endothelin-1 (ET-1) and neutrophil gelatinase-associated lipocalin (NGAL) were measured in urine samples after 3 hours of reperfusion.

**Results**
There was no significant difference in renal functional parameters or urinary biomarkers between the WI times when kidneys were stored for 2 hours (P>0.05). After 18 hours CS, kidneys with 10 and 25 minutes of WI demonstrated a significant decline in renal function compared to kidneys without WI (P<0.05). Levels of ET-1 and NGAL were significantly higher in kidneys with 25 minutes WI (25m ET-1, 30.1 ± 21.2, vs 0m 2.25 ± 1.5pg/ml; P = 0.002: NGAL, 25m 77 ± 51 vs 0m 10 ± 0.1pg/ml; P = 0.005). Levels of IL-6 and TNF$\alpha$, were significantly higher in kidneys with 10 and 25 minutes of WI (P = 0.001, 0.001).

**Conclusion**
Early urinary biomarkers are a useful means to determine graft injury. ET-1 and NGAL are more accurate in predicting the severity of ischaemic injury compared to inflammatory markers.

**Take-home message**
Novel urinary biomarkers may be useful in determining early kidney graft injury in donation after circulatory death kidneys.
PROLONGED COLD ISCHAEMIA POTENTIATES THE MITOCHONDRIAL DAMAGE THAT OCCURS DURING WARM ISCHAEMIA IN RAT KIDNEYS

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Introduction

Kidneys donated after cardiac death (DCD) undergo a variable period of warm ischemia. They have reduced tolerance to prolonged cold storage and ischemia-reperfusion injury and have higher rates of delayed graft function (DGF). As mitochondria are responsible for both oxidative damage and cell survival during ischemia, we investigated mitochondrial damage after variable periods of warm and cold ischemia to elucidate their relative contributions to organ damage prior to transplantation.

Methods

Rat kidneys were exposed to 0, 30, 60 or 90 minutes of warm ischemic time (WIT) post-mortem followed by cold storage in University of Wisconsin solution for 6, 12 or 24 hours. Tissues were subsequently analysed for mitochondrial respiratory function, ATP/ADP, lactate, oxidative damage (protein carbonyls, F2-isoprostanes) and mitochondrial DNA (mtDNA) damage and histology.

Results

Increasing WIT significantly reduced mitochondrial respiration capacity, ATP/ADP, mtDNA integrity and increased markers of oxidative damage. Cold storage <6 hours did not potentiate the damage incurred during warm ischemia. 12 hours cold storage resulted in a significant increase in mtDNA and oxidative damage in kidneys exposed to 60'-90' WIT, but not in those exposed to 0' or 30' WIT. Prolonged cold storage (24 hours) resulted in significant mtDNA and oxidative damage in all kidneys exposed to warm ischemia (30’, 60’ or 90’).

Conclusion

Prolonged warm ischemia in the kidney results in significant functional impairment and damage to mitochondria. Furthermore, increasing cold ischemic time (>12 hours) potentiates the mitochondrial damage incurred during warm ischemia. This may contribute to the increased DGF rates in DCD kidneys.

Take-home message

Significant mitochondrial damage occurs with prolonged warm ischemia in the rat kidney, which may be further potentiated by cold ischemic times of >12 hours. Understanding the additive contributions of warm and cold ischemic time to cellular damage is important for defining acceptable ischemic time parameters in DCD kidneys.
ORAL PRESENTATIONS
4A COLORECTAL SURGERY

O91 A CLINICAL AUDIT & COST ANALYSIS OF BOTULINUM TOXIN THERAPY FOR CHRONIC FISSURE-IN-ANO AT A REGIONAL SURGICAL UNIT
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Introduction
Lateral sphincterotomy (LAS) for chronic anal fissure (CAF) gives good fissure healing results but may lead to sphincter dysfunction and incontinence. Patients are now offered botulinum neurotoxin (Botox) injection into the internal anal sphincter, causing a transient sphincterotomy with reduced risk of incontinence. This study aimed to evaluate the effectiveness of Botox therapy for treatment of CAF at a regional surgical unit.

Methods
Case-note review and questionnaire consultation was performed for all patients treated with Botox for CAF between January 2007 and 2009. Patients still symptomatic at the two month follow-up and those requiring further interventions were noted. The number of patients who underwent LAS during the study window was compared with that during the two years prior to Botox use. Decision tree analysis was performed to estimate the cost-effectiveness of Botox versus LAS.

Results
One hundred and one patients received Botox therapy for CAF between January 2007 and 2009. Seventy-eight patients (85%) had transient or full symptomatic relief. Four patients (4%) experienced transient incontinence to flatus or faeces. Nine patients (10%) required repeat Botox treatment; five (5%) had a subsequent LAS. Five patients underwent LAS during the two years of study compared with 40 patients in the two years preceding Botox use at the unit. Economic analysis demonstrated that the use of Botox for the treatment of CAF costs a mean £650 versus £746 for LAS.

Conclusion
Botox has proved to be an effective alternative to LAS for the management of CAF. It is associated with less morbidity than LAS, and there may additionally be cost benefits to its use.

Take-home message
Botulinum toxin injection for CAF is a safe, effective alternative to lateral sphincterotomy, which may be offered to patients who are persistently symptomatic despite a trial of either a topical nitrate or calcium-channel blocker cream. It has particular benefits in young multiparous patients, and in those who want to avoid the risk of lasting sphincter dysfunction and incontinence.

O92 TOLL-LIKE RECEPTOR-4 SIGNALLING CONFERS TUMOUR SURVIVAL VIA NOX GENERATED REACTIVE OXYGEN SPECIES IN COLON CANCER
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Introduction
Surgically-induced inflammation accelerates growth and survival patterns in residual tumour tissue. Components of this inflammatory response cause reactive oxygen species (ROS) release by activating the NADPH-oxidase (NOX) family. Nox-derived ROS signalling is known to promote cell survival.

Aims
Evaluate the effect of Lipopolysaccharide (LPS) on intracellular ROS production and localise the source of ROS. We then wished to examine the effect of Nox-derived ROS on tumour cell survival.

Methods
SW480 cell line was used for all experiments. ROS activity following LPS treatment was measured using DCF-DA by FACScan analysis. Intracellular co-localisation was determined using confocal microscopy. Western blots were used to examine the survival pathways. Effects of 5-FU were measured using annexin-v/propidium-iodide apoptosis assays.

Results
LPS(0.1, 1, 10 ug/ml) treatment induced an intracellular ROS burst at 40mins in a dose dependent manner (p<0.001). This ROS burst was abrogated by diphenylene iodonium (DPI), a Nox inhibitor and dihydrochloride, an IκB-kinase inhibitor. Rotenone (mitochondrial inhibitor) and diclofenac (COX inhibitor) had no effect on ROS production. Nox1,2,Duox1 were
expressed. LPS induced ROS activity co-localised to the endoplasmic reticulum. p-iKBα, pErk and pStat expression was increased in response to LPS treatment. pErk and pStat expression was inhibited with DPI. Treatment with 0.1 and 1ug/ml LPS resulted in a dose dependent decrease in 5-FU induced tumour apoptosis at 24hrs (p=0.02, p=0.007 respectively).

**Conclusion**

TLR-4 signalling induces a pro-survival signal from Nox-derived ROS in a NF-κB dependent manner. This potent redox signal is a key tumour cell signalling mechanism in response to inflammation.

**Take-home message**

Surgically induced inflammation induces redox signalling via Nox derived reactive oxygen species which confers a pro-survival signal in colon cancer cells.

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**O93 ANAL ACOUSTIC REFLECTOMETRY – A NOVEL TECHNIQUE IN THE EVALUATION OF MALE PATIENTS WITH FAECAL LEAKAGE**

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**Introduction**

A distinct clinical subgroup of incontinent males, in whom the pathophysiology remains unclear, will complain of faecal leakage particularly after defaecation. Ano-rectal physiology studies are frequently normal in this group. Anal acoustic reflectometry (AAR) is a novel technique providing a dynamic physiological assessment of anal sphincter function, allowing the following parameters to be determined: Opening Pressure, Opening Elastance, Closing Pressure, Closing Elastance, and Hysteresis. The aim was to compare assessment with AAR and conventional anal manometry in a group of male ‘leakers’ vs. a group of age-matched continent males. Ethical committee approval was given.

**Methods**

Male patients with faecal leakage (n=14) were compared with an age-matched group of continent males (n=14). Subjects underwent assessment with AAR followed by manometry in the left lateral position.

**Results**

The acoustic parameters of Opening and Closing Pressure were significantly lower in those patients with faecal leakage compared with continent males (42 vs 66 cmH2O, p<0.01 and 31 vs 64 cmH2O, p<0.01 respectively). No significant difference was seen with anal manometry.

**Conclusion**

The results suggest that, in male ‘leakers’ the ability of the anal sphincter to remain closed against an increasing pressure and to return to its closed form following defaecation are impaired, allowing seepage of stool. In contrast to manometry, AAR may be sensitive to discriminate ‘leakers’ from continent males. AAR – Anal acoustic reflectometry.

**Take-home message**

AAR is a novel technique allowing a dynamic physiological assessment of anal sphincter function. It has provided a basis to the pathophysiology of male faecal leakage and, in contrast to anal manometry, is sensitive to discriminate leakers from continent males.

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**O94 PROSPECTIVE COMPARISON OF BALLOON EXPULSION, ANORECTAL MANOMETRY AND EVACUATION PROCTOGRAPHY FOR THE DIAGNOSIS OF EVACUATORY DYSFUNCTION**

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**Introduction**

Evacuatory dysfunction (ED) is prevalent, and may be subclassified on the basis of specialist testing. The discriminatory abilities of contemporary tests were assessed: anorectal manometry (ARM); balloon expulsion, using water-filled balloons distended to 50ml (BE50) and to individualised urge volume (BEurge); and evacuation proctography (EP).

**Methods**

53 adults with ED (Rome III) underwent all tests. Diagnostic yields and levels of agreement were established.

**Results**

Positive diagnostic yields were: ARM 60%, EP 55%, BE50 28% and BEurge 15%. For the diagnosis of ED, agreement was good between balloon tests (Kappa = 0.6), fair between EP and BE50 (Kappa = 0.35), but discordant between ARM and BE50 (Kappa = -0.9) and between ARM and EP (Kappa = -0.007). There was very poor agreement between ARM and other tests for diagnosing subtypes of ED (e.g. for pelvic floor dyssynergia, Kappa = -0.02, between ARM and EP). Of 29 patients (55%) with abnormal EP, 26 had significant anatomical abnormalities (5 with coexistent functional abnormalities).
Conclusion
ARH has the highest diagnostic yield for ED, but poor levels of agreement with other tests. EP is the only test that can diagnose all subtypes of ED. Clinical utility of tests, and diagnostic criteria should be reappraised.

Take-home message
Clinical utility of current tests and diagnostic criteria for evacuatory dysfunction must be reassessed.

O95 HYPOXIA AND LINEAGE SPECIFICATION OF COLORECTAL CANCER STEM CELLS
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Introduction
Hypoxia is often present in colorectal tumours and is associated with an undifferentiated phenotype and poorer prognosis. This may be due to a hypoxia-dependent increase in the proportion of cancer stem cells (CSCs). In this study, we investigate the relationship between hypoxia and colorectal CSCs.

Methods
We have previously developed a novel in vitro MatrigelTM-based assay to isolate colorectal CSCs from a variety of cancer cell lines. We use this assay to examine the effects of 1% hypoxia on clonogenicity of CSCs and their ability to form multiple lineages.

Results
Colorectal CSCs from SW1222, LS180, and CCK81 are able to form functional 3D lumen-containing organoids in normoxia, whereas in hypoxia, they form undifferentiated structures with increased expression of the stem cell markers BMI1 and Notch1, and suppressed differentiation of enterocytes and goblet cells. Hypoxia increases the clonogenicity of CSCs and the effect is cumulative. Overexpression of CDX1, which controls enterocyte differentiation, induces lumen formation even in hypoxia and suppresses BMI1 expression. Knockdown of CDX1 reduces lumen formation but does not affect goblet cell formation. Notch inhibition by dibenzazepine allows CSCs to form goblet cells in both normoxia and hypoxia. Hif1α is an important mediator of the effects of hypoxia on the clonogenicity and differentiation of CSCs.

Conclusion
Hypoxia increases clonogenicity and maintains the stem-like phenotype of colorectal CSCs by preventing the differentiation of enterocytes and goblet cells through CDX1 and Notch1. An increase in the proportion of CSCs in hypoxic tumours can explain why these tumours are more resistant to chemoradiotherapy and have a poorer prognosis.

Take-home message
Hypoxia maintains the stem-like phenotype of colorectal CSCs and prevents their differentiation. This provides a mechanism to explain why hypoxic tumours are associated with a poorer prognosis and are more resistant to chemoradiotherapy.

O96 IMPACT OF HOSPITAL VOLUME ON OUTCOMES OF RECTAL CANCER SURGERY: A SYSTEMATIC REVIEW AND META-ANALYSIS
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Introduction
There is evidence for better outcomes in favour of high volume surgeons in rectal cancer surgery. We reviewed current evidence systematically to help clarify this relationship for hospital volume to inform the debate on organization of cancer services. Aim: To clarify the relationship between hospital caseload and patient outcomes for patients undergoing rectal cancer surgery in order to inform debate about organization of services.

Methods
We searched Medline and Embase for articles published up to September 2011, and included studies examining hospital caseload and outcomes in rectal cancer patients treated after 1990. Outcomes considered were five year overall, 30-day mortality, anastomotic leak rate, local recurrence, permanent stoma and abdominoperineal excision rates. We assessed the risk of bias in included studies and performed random effects meta-analyses based on casemix adjusted data only.

Results
Eleven included studies enrolled 39,333 rectal cancer patients undergoing resective surgery. Out of our considered outcomes, adjusted meta-analysis showed a statistically significant benefit in favour of high volume hospitals for five year overall survival (HR=0.85, 95% CI 0.77–0.93) in four studies, anastomotic leak rate (OR=0.77, 95%CI 0.61–0.97) in three studies, permanent stoma rate (OR=0.64, 95% CI 0.45–0.90) in four studies and abdominoperineal excision of the rectum rates (OR=0.55, 95%CI 0.42–0.72) in one study.
In contrast to our previous review on impact of surgeon volume on outcomes of rectal cancer surgery, this review gives evidence that the risk of death within five years is lower in high volume hospitals.

Take-home message
Hospital volume rather than surgeon volume appears to be associated with lower five year overall survival rates.

O97 MOLECULAR INSIGHTS INTO THE IMPACT OF ANTIBIOTIC AND VSL#3® PROBIOTIC THERAPY ON THE MICROBIOTA OF PATIENTS WITH POUCHITIS
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Introduction
Dysbiosis of the pouch is thought to play a major role in the development of pouchitis. The effect of antibiotic and probiotic therapy upon the microflora of the pouch is poorly understood and requires further study.

Methods
We studied a consecutive series of patients with pouchitis before, during and after antibiotic and probiotic treatment. Presence and resolution of pouchitis was determined using the Pouch Disease Activity Index (PDAI) and lactoferrin biomarker. Faecal samples were collected at 4 time-points: (A) Pre-treatment (B) After 2-weeks of ciprofloxacin (C) After two months of VSL#3® probiotic (D) 1-month after cessation of VSL#3®. Molecular analysis of the samples was performed using real-time polymerase chain reaction and terminal restriction fragment length polymorphism (TRFLP). Data from each of the four time-points (A-D) were analysed using principal component analysis (PCA) and variance of the bacterial microbiota was assessed.

Results
There were six patients (four were male). Median age was 37 (IQR 31-53) years. Median follow-up period was 6 (IQR 4-9) months. Five of six patients responded to antibiotic treatment with a corresponding fall in individual PDAI scores. Four of the six remained in remission on VSL#3® probiotic. TRFLP successfully discriminated putative organisms at all four time-points. Analysis revealed differences in the organism profiles at the individual time-points. Variance of the microbiota ranged from greatest to least as follows: A>B>D>C.

Conclusion
Significant alteration to the bacterial microbiota occurs after treatment. Variance of bacterial microbiota is least on VSL#3® probiotic. This may explain the efficacy of VSL#3® in the maintenance of clinical remission.

Take-home message
Molecular study of the microflora of the pouch during treatment with antibiotic and probiotic therapy gives us further insight into the pathological mechanisms of pouchitis.

O98 THE EFFECT OF PARATHYROID HORMONE ON GENE EXPRESSION IN AN IN-VITRO MODEL OF THE COLORECTAL EPITHELIUM
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Introduction
 Raised serum PTH is associated with an increased risk of colorectal cancer. It was hypothesised that this was due to a direct effect of PTH on the colon.

Methods
The effect of PTH on the Caco2 cell line was studied using Affymetrix micro-arrays. a. Differentially expressed genes were identified using rank product at four and twenty-four hours. b. Real-time PCR was used to validate selected findings. c. Functional annotation of the differentially expressed genes was performed d. GSEA was undertaken to identify differentially expressed gene sets.

Results
A. PTH resulted in the differential expression of 82 and 63 genes at 4 and 24 hours and the majority (77/82 and 61/63) were down-regulated.
B. Differential expression of seven genes was confirmed by real time PCR.
C. Several enriched annotation terms were identified. At four hours the Wnt signalling pathway was enriched, with down-regulation of negative regulators of the Wnt pathway.
D. Consistent with this was up-regulation of the Wnt target gene set at four hours. Enriched at twenty four hours were a set of genes known to be associated with a poor prognosis and those identified as PTH targets in-vivo.
Conclusion

PTH modulated gene expression in this in-vitro model of the colon. Activation of the Wnt signalling pathway by PTH is observed in bone and is consistent with a role in colorectal tumorigenesis as is the altered expression of genes associated with poor prognosis. PTH-Parathyroid Hormone GSEA-Gene Set Enrichment Analysis PCR-Polymerase Chain Reaction

Take-home message

Parathyroid hormone modulates gene expression in an in-vitro model of the colorectal epithelium. Parathyroid hormone induces changes in genes in the Wnt signalling pathway and those implicated in poor prognosis, indicating a role for PTH in colorectal tumorigenesis.

O99 DETECTION OF LOWER GASTROINTESTINAL PATHOLOGIES THROUGH QUANTIFICATION OF OPTICAL COHERENCE TOMOGRAPHY SIGNAL ATTENUATION USING A LINEAR MODEL

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Introduction

Lower gastrointestinal (LGI) cancer is the third most common malignancy in the UK. The diagnostic gold standard is endoscopy with biopsy. However this technique has limitations resulting in missed diagnoses. New technologies, such as Optical Coherence Tomography (OCT) have the capability to improve the diagnostic efficacy of endoscopy. This study investigates a novel way of detecting LGI pathology by quantitatively processing OCT data.

Methods

Fifty-three patients undergoing LGI endoscopy as part of their diagnostic procedure at St. Mary’s hospital (London) were included. Three dimensional OCT images were obtained from 85 freshly excised biopsies. Biopsies were grouped based on histological assessment with cancer (n=15), inflammation (n=18) dysplasia (n=20), and no reported pathology (n=32). Mean attenuation gradients from each c-scan frame were determined using a linear model. Box plots were used to represent the distribution of gradients in each diagnostic group and the groups were compared using the Mann-Whitney test.

Results

Statistically significant results (p<0.01) were obtained when comparing; no pathology versus dysplasia, no pathology versus inflammation, and no pathology versus cancer. Comparisons between different pathologies were also statistically significant (p<0.01).

Conclusion

We have shown that OCT can identify pathological tissue within the LGI tract. Combining OCT with endoscopy will provide real time diagnostic information to guide biopsies resulting in only pathological areas being sampled. Furthermore, in surgery it has the potential to distinguish sub-clinical lesions and detect tumour margins to ensure complete resection. Future work includes a blind study to assess the validity of OCT as a diagnostic technique.

Take-home message

Optical coherence tomography will complement and refine the current clinical practice by increasing the diagnostic efficacy of endoscopy. In the future this novel technique will provide real time in vivo diagnostic information to improve the overall the management of lower gastrointestinal pathology.

O100 FAecal BUTYRATE LEVELS HAVE DIFFERENT EFFECT ON CANCER AND ADENOMA TISSUES: SUGGESTION OF EARLY BENEFICIAL ROLE OF BUTYRATE DURING CARCINOGENESIS

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Introduction

Butyrate has been implicated in the mechanistic basis of the prevention of colorectal cancer by dietary fibre. Butyrate regulates various functions in colonocytes and in regulating the integrity of the intermediate filament (IF) cytoskeleton in vitro. K8 is the major IF protein in colonocytes and also regulates cell proliferation and apoptosis. The aim of this study was to study the in vivo effect of butyrate on K8 expression during colon carcinogenesis.
Methods
Patients with colon cancer and adenoma were recruited. Biopsies were obtained from the tumours, adjacent field, and distant landmark – mid-sigmoid. A pathology-free control group were sampled at mid-sigmoid. Faecal butyrate levels (FBL) were measured from stool samples. An immunohistochemical scoring for K8 was performed. Samples were also scored for NRP-1, Ki67, chromogranin-A mitosis and cellularity.

Results
Both immunohistochemistry and immunoblotting have shown that high FBL were associated with a low level of K8 expression in cancer subjects whereas FBL showed an inverse relationship in adenoma patients. Results were more pronounced in cancer and adenoma tissues but showed the similar trend in the field and landmark. Multinomial logistic regression indicated that K8 at mid-sigmoid was an independent predictor of pathological status (adenoma B=5.721, SE=2.509, p=0.023, cancer B=3.374, SE=1.708, p=0.048).

Conclusion
The data suggest that butyrate may associate with upregulation of K8 in early stages of carcinogenesis but down-regulates the expression of K8 in the cancerized colon. If further validated these findings may suggest the chemopreventive value of butyrate is limited to early stage carcinogenesis as low K8 expression is associated with a poor prognosis.

Take-home message
The chemopreventive value of butyrate is limited to early stage of colorectal carcinogenesis.

O101 IDENTIFICATION OF NOVEL MICRORNAS IN DEVELOPMENT AND PROGRESSION OF DYSPLASIA AND CARCINOMA IN UC AFFECTED COLON
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Introduction
Colitis Associated Cancer (CAC) is often multifocal, aggressive and its development follows an inflammation-dysplasia-carcinoma pathway differing from the development of sporadic colorectal cancer. Altered microRNA (miRNA) expression patterns in the colonic epithelial cells of patients with Ulcerative Colitis (UC) have been identified by recent miRNA expression profiling studies. The aim of this study was to identify miRNAs linked to development and progression of dysplasia and carcinoma in UC affected colon.

Methods
Total RNA was extracted from FFPET of surgically resected diseased and matched normal colonic tissue for acute severe UC (n=4), CAC (n=4), low grade (n=4) and high grade (n=4) dysplasia in the background of chronic UC. 100ng of RNA was reverse transcriptised to cDNA & pre-amplified with TaqMan® Megaplex RT primer and Pre-amplification pool A. MiRNA Expression Profiling was performed with the Applied TaqMan® MicroRNA Array v2.0 (quantification of 373 mature miRNAs and 11 endogenous controls) by using the Applied Biosystem 7900HT Fast Real-Time PCR System. SnRNA RNU6B, has-miR-191 & has-miR-484 were used to normalise the expression profiling data.

Results
Intergroup comparison, Z-Scores and linear regression showed progressive loss of let-7f and increase in expression levels of has-miR-10b, has-miR-18a, has-miR-31, has-miR-32, has-miR-95 & has-miR-192 for low grade to high grade dysplasia and CAC.

Conclusion
Development of dysplasia and carcinoma in UC affected colon is potentially driven by an alteration in expression of specific miRNAs. Further validation of these miRNA on larger cohort can help designing miRNA based diagnostic and therapeutic strategies.

Take-home message
Dysregulation of specific miRNAs potentially drive the progression of neoplasia in UC affected colon.
SHORT CHAIN FATTY ACIDS REGULATE THE STRUCTURE AND FUNCTION OF K8, A MAJOR CYTOSKELETON PROTEIN IN COLONOCYTES

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Introduction
Keratin 8 (K8) is a major cytoskeleton protein in colonocytes with many regulatory functions. Low expression of K8 in colorectal cancer has been shown to be associated with more aggressive tumours possibly due to increase epithelial mesenchymal transition. Fibre, through production of short chain fatty acids (SCFAs), has been shown to be chemoprotective. SCFAs can alter protein expressions through inhibition of histone deacetylase and can change functions of proteins through increased protein acetylation. The aim of this study was to investigate whether SCFAs change expression or acetylation of K8 in colon cancer cells in vitro.

Methods
HCT116 colon cancer cells were treated with four SCFAs (butyric acid, propionic acid, valeric acid and valproic acid) for 24 hours at 0 (control), 1, 5, 10 and 20 mM concentrations. Immunocytochemistry was performed using K8 antibody and antibodies specific for acetylated forms of K8 (lys10 and lys482). Staining intensity was assessed using high content analysis. Three repeats were performed.

Results
All SCFAs caused a significant (p<0.001) increase in K8 expression. All SCFAs produced a concentration-dependent increase in acetylation of K8 at lysine 10. Valproic acid and valeric acid induced a maximum response at 20 mM. Response at lysine 482 was less pronounced.

Conclusion
Our results suggest that SCFA can increase K8 expression in colon cancer. SCFAs also change acetylation of K8 and thus can alter the functions of K8 possibly stabilising the cytoskeleton. As downregulation of keratin is a marker of epithelial mesenchymal transition, this may be a mechanism whereby fibre protects against colorectal cancer.

Take-home message
Short chain fatty acids increase K8 expression in colonocytes which may be the mechanism by which short chain fatty acids act as chemopreventive agents in colorectal cancer.
ORAL PRESENTATIONS
4B HPB SURGERY

O103  DOES A PRO-THROMBOTIC ENVIRONMENT CONTRIBUTE TO THE DEVELOPMENT OF CHEMOTHERAPY ASSOCIATED LIVER INJURY IN PATIENTS WITH COLORECTAL LIVER METASTASES?
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Introduction
Neo-adjuvant oxaliplatin based chemotherapy prior to liver resection is associated with the development of sinusoidal obstruction syndrome (SOS) which is characterised by a pro-thrombotic injury to the sinusoidal endothelium and the development of peri-sinusoidal fibrosis. The aim of this study was to evaluate the potential mechanisms of this injury in a murine model of colorectal liver metastases (CRLM).

Methods
To establish experimental liver metastases C57Bl/6 mice were subject to laparotomy and implantation of 105 MCA-38 cells into the left lobe of the liver. Shams underwent laparotomy alone. On day 5 treatment was commenced with intraperitoneal FOLFOX, or vehicle control, weekly for 3 weeks. Animals were culled 24 hours after the final dose.

Results
In the presence of liver metastases there was increased hepatic expression of PAI-1 (146 fold; p<0.01) and vWF (2.4 fold; p<0.01) as compared to sham operated controls. In addition we detected large clusters of megakaryocytes in the spleen of FOLFOX treated tumour bearing animals which may release platelets directly into the portal circulation contributing to a pro-thrombotic environment in the hepatic sinusoid. The livers of FOLFOX treated animals also showed changes in matrix remodelling genes such as TGFß (p<0.01), MMP2 (p<0.001), TIMP1 (p<0.001) and Pro-Collagen I (p<0.05). These genes have been reported to play a key role in SOS development.

Conclusion
It appears that FOLFOX treatment in the presence of colorectal liver metastases may lead to a pro-thrombotic environment in the hepatic sinusoid. This may play an important role in the development of sinusoidal obstruction syndrome.

Take-home message
FOLFOX treatment of patients with colorectal liver metastases may lead to a prothrombotic environment which plays a role in the development of sinusoidal obstruction syndrome.

O104  THE USE OF NON-INVASIVE MRI TO QUANTIFY THE EFFECT OF SECRETIN ON PANCREATIC BLOOD FLOW AND PERFUSION IN HEALTHY VOLUNTEERS
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Nottingham Digestive Diseases Centre NIHR Biomedical Research Unit, Nottingham

Introduction
Alterations in pancreatic blood flow have been implicated in pancreatic inflammation and pain. Several modalities have been used to assess pancreatic blood flow. These methods are generally invasive, using ionising radiation or intravenous (IV) contrast media, and limit repeat measures. This is the first study to use non-invasive magnetic resonance imaging (MRI) to quantify flow within the arteries supplying the pancreas and assess pancreatic perfusion in response to secretin stimulation.

Methods
Twelve healthy volunteers underwent MRI to quantify baseline pancreatic perfusion (Arterial Spin Labelling MRI) and flow within the superior mesenteric (SMA), gastroduodenal (GDA), common hepatic (CHA) and splenic (SA) arteries (Phase Contrast MRI). Repeated measurements were made 5, 10, 20, 30 and 40 minutes following 1IU/kg secretin IV.

Results
Median (IQR) baseline pancreatic perfusion was 184(166.5-267) ml/100g pancreatic tissue/min and blood flow within the SMA, GDA, HA and SA was 6.4(4-10), 0.9(0.7-1.4), 4.4(2.6-5.4) and 7.0(5.3-10.5) ml/s respectively. In response to secretin, there was a sustained rise in perfusion (p=0.025) with a maximal rise (20.5%) seen at 5 min. A significant increase in arterial flow occurred immediately after injection for both the SMA (223%, p<0.0001) and GDA (166%, p=0.015). An overall reduction in CHA blood flow was observed (p=0.066) with no change in overall SA flow (p=0.533).
Conclusion
Using non-invasive MRI techniques we have demonstrated significant temporal changes in pancreatic perfusion and arterial blood flow in response to IV secretin. These methods have potential benefit in the study of pancreatic diseases with a putative vascular pathophysiology.

Take-home message
Non invasive MRI can be used to quantify pancreatic perfusion and arterial blood flow. This has potential benefit in the study of pancreatic diseases.

O105 NOVEL SIMPLE METHOD FOR THE ISOLATION OF PANCREATIC STELLATE CELLS
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Introduction
Pancreatic stellate cells (PSCs) are important players in the pancreatic microenvironment. Various techniques to isolate PSCs from normal and diseased pancreas have been described, the majority of which are complex. We have developed a simplified technique to isolate and purify activated PSCs.

Methods
Cerulein hyperstimulation-, bile acid injection- or alcohol-induced experimental acute pancreatitis was induced in CD1 mice then pancreata removed and digested with Collagenase NB 8 Broad Range (Serva Electrophoresis, Heidelberg, Germany). Digested pancreata were plated in tissue culture flasks containing DMEM: F12 medium (Dulbeco’s modified Eagle medium: Ham’s F12 nutrient mixture) containing 10% fetal calf serum, glutamine and antibiotics. Media were replaced every 48 h. After attaining significant confluence, the isolated cells were purified by density gradient centrifugation using Histodenz (Sigma Aldrich). Isolated PSCs were characterized by fluorescence (FM) and immunoelectron microscopy (IEM).

Results
Activated PSCs were successfully isolated (> 95% purity) using the same technique from all experimental models (hyperstimulation 3, bile acid 1, alcohol 1) as well as normal CD1 pancreas (n=3). PSCs stained positively for glial fibrillary acidic protein (GFAP), desmin and alpha-Smooth Muscle Actin on FM. GFAP staining was demonstrated on IEM using the post-embedding technique.

Conclusion
The isolation and purification techniques that we describe are easy to perform. IEM is useful for characterizing PSCs.

Take-home message
This is a novel and simple method to isolate pancreatic stellate cells. Electron microscopy is a useful tool for cell characterisation and future investigations.

O106 THE PROTECTIVE EFFECTS OF AUTOPHAGY DURING HEPATIC ISCHAEMIA AND REPERFUSION INJURY
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Introduction
The precise role of autophagy during hepatic ischaemia-reperfusion injury (IRI) remains controversial. Previous studies have reported that autophagy may be a separate and distinct form of cell death whilst other studies support the role of autophagy in promoting cell survival. Aim: To delineate the precise role of autophagy within the liver during IRI.

Methods
Human hepatocytes were isolated from human liver tissue and exposed to an in vitro model of IRI. Human hepatocyte reactive oxygen species (ROS) production, apoptosis, necrosis and autophagy was determined using a four-colour reporter assay and then subjecting cells to flow cytometry. C57B6 mice were used in an in vivo model of partial liver ischaemia and autophagy assessed by immunohistochemistry.

Results
In vitro IRI increased human hepatocyte ROS production which was associated with increased levels of autophagy. Specifically, ROS derived from the mitochondrion and NADPH Oxidase mediated autophagy during hypoxia and H2R. IRI also induced the activation of the specific autophagy protein Atg5, Atg12 and Beclin1 as assessed by Western blotting. Furthermore, Class III phosphatidylinositol 3-kinase (PI3-K) is integrally involved in the induction of autophagy. PI3-K
function can be inhibited with the specific PI3-K inhibitor 3-Methyladenine (3-MA). Inhibition of autophagy, with 3-MA, increased human hepatocyte apoptosis during H-R. Similar signalling pathways were induced within the liver in vivo.

Conclusion
These findings conclusively show that during hepatic IRI autophagy serves as a cell survival mechanism within the liver. The induction of autophagy during liver IRI may provide a potential therapeutic target for the future.

Take-home message
Autophagy is a cytoprotective mechanism during hepatic IRI.

O107 EXPRESSION OF THE COPPER EXPORT TRANSPORTER ATPASE 7B CORRELATES WITH TISSUE SPECIFIC INJURY IN A MURINE MODEL OF COLORECTAL LIVER METASTASES
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Introduction
When FOLFOX is administered to healthy mice the major site or organ toxicity appears to be the spleen rather than liver. Cellular platinum uptake is determined by the copper transporters CRT1 and CRT2 and its export by ATPases 7A and 7B. The aim of this study was to determine what effect tissue specific expression of these transporters has on FOLFOX related tissue injury.

Methods
RNA was extracted from the liver and spleen of healthy C57/Bl 6 mice and an experimental colorectal liver metastases (established with the syngeneic MCA38 cell line) and RT-PCR performed to determine expression of genes encoding the transport proteins. Tissue specific injury following FOLFOX treatment was determined by H&E. Immunohistochemistry was performed to assess the extent of drug induced DNA damage (γH2AX) and cell death (cleaved caspase 3).

Results
Copper uptake transporters were expressed in all tissues however there was reduced expression of the export transporter ATP7B in spleen and tumour tissue as compared to the liver. In keeping with high tissue platinum levels there was an increase in the number of γH2AX positive cells in both the spleen (20 vs 10 cells per HPF; p<0.05) and tumour tissue (58 vs 31 cells per HPF; p<0.01) of FOLFOX treated mice as compared to vehicle controls.

Conclusion
Expression levels of the transporter protein ATPase 7B may play a role in determining tissue specific toxicity of platinum based chemotherapy regimens. Variations in expression of this transporter may explain varying susceptibility to FOLFOX induced liver injury.

Take-home message
The copper transporter ATP7B may play a key role in the development of oxaliplatin related toxicity such as sinusoidal obstruction syndrome.

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Introduction
The amount of liver tissue that is ablated or necrosed at the time of parenchymal transection is of clinical significance when interpreting resection margin status following liver resection. The aim of this study was to define the extent of parenchymal ablation, tissue necrosis and lateral thermal spread in liver tissue using the Harmonic Scalpel™, Ligasure™, Cavitron ultrasonic surgical aspirator (CUSA) and Tissuelink™ dissector ex vivo.

Methods
Mounted 5cm x 5cm x 1cm blocks of fresh bovine liver (n=5/device) were transected using the Harmonic Scalpel™, Ligasure™, CUSA and Tissuelink™ dissector. Outcome measures included parenchymal ablation (transection band width/volume), tissue necrosis band width (post fixation/processing) and lateral thermal spread (after application for 15s) at 0 and 1cm from each device. Data are presented as mean ± standard deviation.
Results
All devices were associated with parenchymal ablation [Harmonic Scalpel™ (4.7 ± 1.6mm), Ligasure™ (4.5 ± 2.0mm), CUSA (7.2 ± 2.9mm) and Tissuelink™ (4.8 ± 1.4mm)] and tissue necrosis [Harmonic Scalpel™ (1.1 ± 0.5mm), Ligasure™ (1.4 ± 0.4mm), CUSA (0.8 ± 0.2mm) and Tissuelink™ (0.8 ± 0.4mm)]. Peak temperatures at 0cm were Harmonic Scalpel™ (27.0 ± 3.1∞C), Ligasure™ (26.0 ± 3.0∞C), CUSA (48.8 ± 4.6∞C) and Tissuelink™ (29.0 ± 1.0∞C). No lateral thermal spread was detected 1cm from the point of application.

Conclusion
Harmonic Scalpel™, Ligasure™, CUSA™ and Tissuelink™ are associated with bands of parenchymal ablation and necrosis at the resection margin. This must be taken into account when interpreting resection margin status following liver resection.

Take-home message
Harmonic Scalpel™, Ligasure™, CUSA™ and Tissuelink™ cause tissue loss at the resection margin during liver parenchymal transection. This must be taken into account when interpreting margin status following liver resection.

O109 WEST MIDLANDS REGIONAL AUDIT ON THE MANAGEMENT OF GALLSTONE PANCREATITIS- LOW ADHERENCE TO THE GUIDELINES, BUT ARE THEY JUSTIFIED?
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West Midlands Research Collaborative

Introduction
Current guidelines for the management of gallstone pancreatitis recommend definitive management during the index admission or within two weeks of discharge.

Methods
We assessed adherence to these guidelines and outcomes between hospitals in one region. A retrospective case note review was performed at seven West Midlands Hospitals assessing all index presentations of gallstone pancreatitis between 2006 and 2008. 523 patients were identified (36% male; median age 63yrs). Overall 81.4% underwent definitive treatment (11% ERCP, 69.5% cholecystectomy). A similar rate of cholecystectomy was observed between hospitals (65%-73%, p=0.89). 73(20.6%) patients underwent surgery during admission or within 2 weeks of discharge (early group).

Results
Across hospitals, the compliance with guidelines ranged significantly from 4.5% to 44.7%(p<0.001). Operative complications ranged between 3.9%-15.9%(p=0.22) and readmission rates between 6.7%-27.3%(p=0.012). Hospital volume did not correlate with readmission or complication rates. The early group had fewer readmissions (4.1%v20.6%;p=0.001) but a higher rate of operative complications (13.7%v6.4%;p=0.04). All hospitals fell short of the recommendations.

Conclusion
The data shows a difference in compliance with the guidelines between hospitals, but larger units were not superior. The optimum policy regarding timing of surgery remains unclear, as the benefits of an early operation on readmission rates are offset by an increased operative complication rate.

Take-home message
The timing of Cholecystectomy following gallstone pancreatitis remains unclear, as the benefits of early surgery are offset by an increased operative complication rate.

O110 OUTCOMES AFTER SPLIT AND DCD LIVER TRANSPLANTATION: A COMPARISON OF MARGINAL GRAFT TYPES
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Introduction
Split donation-after-brain-death (DBD) and donation-after-circulatory-death (DCD) livers are considered marginal because graft survival is inferior to conventional whole DBD livers. A comparison of the UK adult survival rates for whole DCD and split DBD liver transplantation may help rationalise the use of such marginal livers, but has not been performed. Here we report a single centre experience.
Methods
Between 1st January 2004 and 31st December 2010, 18 split livers and 32 whole DCD liver transplants were performed at our centre. The incidence of primary non-function, hepatic arterial and biliary complications, and patient and graft survival were compared.

Results
Whereas no patients in the DCD cohort suffered early graft failure, five (27.8%) grafts in the split-DBD cohort failed within 90 days of transplantation from hepatic artery thrombosis, primary non-function, and small for size syndrome (1) (p=0.006). Significant intrahepatic stricturing associated with deranged alkaline phosphatase was present in 6 (18.8%), necessitating re-transplantation in 1 patient at 6 months. One further patient in the DCD group was re-transplanted after 3 years following late hepatic artery thrombosis. Kaplan-Meier survival analysis confirmed superior graft survival in the DCD liver group (96.7% at 3 years vs. 66.7%, p = 0.007); patient survival was similar.

Conclusion
In our centre, DCD liver outcomes are substantially better than for split livers, and broadly comparable to published UK outcomes for whole DBD livers. Transplant numbers may be increased without further compromising outcome by placing greater emphasis on the use of DCD rather than split livers.

Take-home message
DCD liver transplants give superior outcomes to split livers; improving the utilisation of livers from DCD donors is therefore preferable to the splitting of more DBD grafts.

O111 POST-OPERATIVE COMPUTED TOMOGRAPHY IN PANCREAS TRANSPLANTATION
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Introduction
Imaging plays a vital role in the diagnostic investigation of graft dysfunction and surgical complications after pancreas transplantation. The aims of this study were to evaluate the usefulness of CT scanning in pancreas transplantation and assess how imaging influenced patient management.

Methods
At our centre, 98 patients underwent simultaneous pancreas-kidney transplantation between January 1st 2005 and August 1st 2010. Indications, CT findings and whether imaging altered management were determined by retrospective analysis.

Results
257 CT scans were performed on 91 patients during follow up. The median number of CT scans throughout follow up was 2 (range 0-15). The most common indications for scanning were suspected intra-abdominal collection or to investigate abnormal pancreatic biochemical indices. CT findings were varied but commonly detected abnormalities included: non-specific and mild intra-abdominal inflammation (27.6%); intra-abdominal fluid collections (16.3%), bowel abnormalities (11.7%) and vascular abnormalities (7%). The majority of CT scans did not alter patients management (58.4%). Only 15.6% resulted in a major change to management. To assess the value of repeat scanning, we compared how first and subsequent scans performed in the initial post-operative period influenced patient management. First scans led to a major change to management in 21.25% whereas repeat scanning only led to a major change in 9.5%. 

Conclusion
This review highlights that pancreas graft recipients often undergo multiple CT scans in the post-operative period, and, despite identifying a variety of abnormalities, relatively few significantly alter management. A more selective approach to CT scanning is warranted.

Take-home message
Pancreas transplant recipients often undergo multiple CT scans in the post-operative period, but few significantly alter patient management.
O112 BILIARY DYSFUNCTION IN PATIENTS WITH SINUSOIDAL OBSTRUCTION SYNDROME
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Introduction
Oxaliplatin based chemotherapy regimens prior to liver resection have been associated with the development of sinusoidal obstruction syndrome (SOS). Despite the well described effects on the hepatic sinusoid the effect of these regimens on the biliary canaliculi has not been well characterised. The aim of this study was to evaluate both functional and immunohistological changes of biliary canaliculi in livers subjected to oxaliplatin based chemotherapy prior to liver resection.

Methods
Liver tissue was available for 50 patients (mean age 64.2yrs; 37M:13F) who had undergone resection of CRLM. Sections were reviewed to identify those with features of SOS which graded according to the Brandt classification. Immunohistochemistry was performed for canalicular proteins CD10; CD66; MDR3; CD3; GGT and MRP2. Clinical outcome data was obtained from a prospectively maintained database.

Results
SOS was present in 34% (n=17) of patients in this series, 65% (n=11; p=0.004) of whom had received oxaliplatin based chemotherapy. SOS was associated with elevated post-operative bilirubin levels on days 3 (43.3 vs 25.6; p=0.007) and 5 (46.8 vs 21.5; p<0.001). The presence of SOS was associated with loss of expression of biliary canalicular proteins CD10 and CD66 which was most marked in areas of peri-venular hepatocyte atrophy. There was a correlation between the extent of loss and the severity of sinusoidal damage. Conclusion
SOS is associated with phenotypic changes in biliary canaliculi characterised by loss of expression of CD10 and CD66. Loss of expression may modulate the inflammatory response in these livers and contribute to post-operative biliary dysfunction.

Take-home message
Preoperative oxaliplatin based chemotherapy causes an injury to the biliary canaliculi which may contribute to post-operative hepatic dysfunction after liver resection.

O113 AN IN-SILECIO STUDY OF THE HEPARIN INTERACTOME IN PANCREATIC DISEASE
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Introduction
Heparin binding proteins (HBPs) abound in the extracellular space and influence fundamental biological processes via the heparin interactome network of HBPs. We have used an in-silico approach to investigate the role of HBPs in acute pancreatitis (AP), chronic pancreatitis (CP) and pancreatic ductal adenocarcinoma (PDAC).

Methods
HBPs associated with AP, CP and PDAC were identified using online databases and published data. HBP networks were compared by topological features, gene ontology terms and canonical pathway enrichment using Ingenuity Pathway Analysis and Cytoscape.

Results
HBPs uniquely associated with AP (n=17), CP (n=11) and PDAC (n=21) were identified. Hepatic fibrosis (HF)/Hepatic Stellate Cell Activation (HSCA) was the top canonical pathway for the AP (p=1.07E-30) and PDAC HBP datasets (p=1.09E-18) and was significant for the CP set (p=1.5E-13). ‘Cellular Growth and Proliferation’ was the top bio-function in the CP set (5.83E-30 to 3.60E-07). The clustering coefficient was 0.632, 0.431 and 0.378 and number of connected components 1, 1 and 2 for the AP, CP and PDAC heparin interactomes respectively.

Conclusion
HBPs in AP, CP and PDAC form highly connected networks, with subtle differences that may be responsible for significant differences in biological outcomes. ‘HF/HSCA’ is a significant canonical pathway, likely in part due to the role of pancreatic stellate cells (PSCs). HBPs unique to these pancreatic diseases may be explored in wet lab investigation as biomarkers.

Take-home message
This is an in-silico study of heparin-binding proteins in pancreatic disease using a ‘Systems Biology’ approach and network analysis to yield potential biomarkers and drug targets.
Introduction
Pancreatic cancer is an aggressive malignancy of insidious onset. The Notch pathway controls cell fate during development, but its dysregulation is associated with several malignancies. Given its role in cell differentiation, it may contribute to the development of tumourigenic cancer stem cells (CSCs), which tend to be drug-resistant. We hypothesised that a Notch3 fragment could be detected in pancreatic cancer patient plasma for earlier diagnosis, and that pathway inhibition would impair development of CSCs.

Methods
Samples from patients with pancreatic adenocarcinoma (11), primary colorectal carcinoma (14), colorectal carcinoma with liver metastases (15), and healthy volunteers (30) were collected. The Notch3 peptide was isolated using solid phase extraction and immunoprecipitation, and detected by mass spectrometry. Following Notch-targeted treatment of the ASPC-1 pancreatic cancer cell line with a gamma-secretase inhibitor (GSI-I), the effect on CSCs was analysed by FACS using the Aldefluor assay.

Results
The peptide was detected in plasma from all cohorts. Levels were higher in the metastasised colorectal carcinoma and pancreatic adenocarcinoma groups compared with age-matched controls (mean 19.0m/z vs 7.50m/z, p<0.03 and mean 17.4m/z vs 7.50m/z, p<0.05 respectively), but there was no significant difference between malignancies. Stem cells comprised 37.7% of the ASPC-1 population, and were sensitive to GSI-I treatment in a dose and time-dependent manner.

Conclusion
These data indicate that Notch 3 is elevated in pancreatic cancer, but due to lack of specificity it would be more appropriate as part of a biomarker panel. Targeting Notch for chemotherapy revealed significant CSC sensitivity to the gamma-secretase inhibitor, uncovering a promising avenue for further research.

Take-home message
The Notch3 peptide may be of use as part of a panel of biomarkers for earlier diagnosis of pancreatic cancer. Gamma-secretase inhibitors are promising agents for the chemotherapeutic treatment of pancreatic cancer, targeting cells which normally display chemoresistance.
O115 RELATIONSHIP BETWEEN LEAN MUSCLE MASS AND AEROBIC PERFORMANCE IN COLORECTAL CANCER

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Introduction
In 2008, 39,991 people in the UK were diagnosed with CRC, with CRC accounting for 16,259 deaths. Although in health LMM is closely linked to aerobic function, CRC patients commonly suffer from declines in LMM and aerobic function, with surgery believed to exacerbate declines.

Methods
We studied 30 CRC patients (Dukes A-C2) and 30 age, LMM and co-morbidity matched healthy controls, before and ~9 months after curative surgery. Body composition was analysed using dual energy X-ray absorptiometry and aerobic function measured via cardiopulmonary exercise testing with function determined by anaerobic threshold (AT). Blood samples were analysed for haemoglobin.

Results
There were no differences in LMM between healthy controls and pre-operative or post-operative CRC patients (4782±1503 vs. 5240±1934 and 5238±1924 g, respectively). In all groups LMM correlated with AT (controls r²=0.599; pre-operative r²=0.374, post-operative r² =0.625, all p<0.001). AT was lower in pre-operative CRC patients compared to controls (1.157±0.051 vs. 1.481±0.090 l/kg/min, p<0.005), but increased post-resection compared to pre-resection, rising to a level not dissimilar from controls (1.367±0.065 l/kg/min). Haemoglobin concentrations were not significantly different between controls and CRC patients (13.29±0.29 vs. 12.57±0.52 g/dl, p=0.26).

Conclusion
We found no significant differences in LMM between healthy controls and CRC patients pre and post-operatively. Coupled with the reduced AT displayed by CRC patients pre-operatively compared to controls and their restored AT post-operatively this data suggests that, unlike in health, LMM and aerobic performance are not inextricably linked in CRC.

Abbreviations: Colorectal cancer (CRC), Anaerobic threshold (AT), Lean muscle mass (LMM)

Take-home message
Although aerobic capacity is closely related to lean muscle mass in health, in colorectal cancer this relationship is not as marked

O116 SURGICAL RESECTION RELINQUISHES SUPPRESSION OF SKELETAL MUSCLE TURNOVER IN CANCER PATIENTS

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Introduction
Mechanisms underlying muscle wasting in cancer patients remain poorly understood, and consequently there remains an unmet clinical need for new biomarkers and treatment strategies.

Methods
Affymetrix U133+2 microarrays were used to examine the global transcriptome in paired biopsies [pre-resection baseline (weight-loss 7%) and 8 month post-resection follow-up (disease-free/weight-stable for previous 2 months)] from quadriceps muscle of patients with upper gastrointestinal cancer undergoing resection (n=12) and in single biopsies from healthy controls (n=6). Data was analysed using Significance Analysis of Microarrays. Quadriceps strength and physical activity (step count/day) were measured in cancer patients.

Results
Prior to surgery 1868 genes were regulated compared with follow-up (False Discovery Rate 6% and a fold change of at least 30%). Ontology analysis demonstrated regulated genes belonged to both anabolic and catabolic biological processes with overwhelming down-regulation. Comparison with healthy controls revealed that despite differences in the transcriptome at baseline (941 genes regulated), the muscle profiles of patients at follow-up was the same. qPCR
validated selected regulated genes from the microarray data. Physical activity and quadriceps strength did not differ between the baseline and follow-up periods (p = 0.9) indicating that transcriptome differences reflected removal of the cancer rather than altered physical activity levels. Comparative gene-expression analysis using physical activity signatures supported this interpretation.

**Conclusion**
Metabolic and protein-turnover related pathways are suppressed in weight-losing upper gastrointestinal cancer patients whilst removal of the cancer appears to facilitate a return to a healthy state independent of levels of physical activity.

**Take-home message**
This study suggests that relative hypoanabolism is a major driver of muscle wasting in cancer patients. This has implications for the development of potential biomarkers and therapeutic targets.

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**O117** **A RANDOMISED CONTROLLED DOUBLE-BLIND STUDY ON THE EFFECTS OF 1-LITER INTRAOPERATIVE INFUSIONS OVER 1 HOUR OF 4% SUCCINYLATED GELATINE (GELOFUSINE®) AND 6% HYDROXYETHYL STARCH (VOLUVEN®) ON BLOOD VOLUME (NCT00868062)**

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**Introduction**
Low weight-average-molecular-weight (MWw) colloids are thought to escape through capillary membrane pores faster than medium/high MWw colloids and are, therefore, considered less efficient blood volume (BV) expanders. We studied changes in BV after intraoperative infusions of Gelofusine® (4% succinylated-gelatin in 0.7% saline, MWw30kD) and Voluven® (6% hydroxyethyl-starch in 0.9% saline, MWw130kD).

**Methods**
Twenty-five adults undergoing laparoscopic cholecystectomy took part in this randomised, double-blind trial (NCT00868062). Participants received 1-Liter infusions of Gelofusine® or Voluven® intravenously over 1h at induction of anaesthesia with no other fluids administered. Haematocrit, serum electrolytes and osmolality were measured before infusion and for 4h thereafter. Urine output and electrolytes were measured, and urinary albumin:creatinine ratio (ACR) and changes in BV calculated.

**Results**
Baseline parameters were similar (p>0.05) for participants who received Gelofusine® (n=12) and those who received Voluven® (n=13). Urinary ACR increased postoperatively after Gelofusine® (p=0.011) and Voluven® (p=0.002) indicating increased capillary permeability. Voluven® produced a greater rise in serum chloride concentration (p=0.028) and larger fall in strong ion difference (p=0.009). There were no significant differences in changes in haematocrit (p=0.523) and BV (p=0.404) over the study period when the infusions were compared, nor were there differences in serum sodium, potassium, bicarbonate and albumin concentrations. Post-infusion urine output, sodium concentration and osmolality were similar (p>0.05).

**Conclusion**
The BV expanding effects of the two colloids were not significantly different despite increased postoperative urinary ACR and the 100kD difference in MWw. This experimental model permits study of the effects of fixed-volume fluid infusions in the presence of increased capillary permeability.

**Take-home message**
Low weight-average-molecular-weight (MWw) colloids are thought to escape through capillary membrane pores faster than medium/high MWw colloids and are, therefore, considered less efficient blood volume (BV) expanders. Contrary to the aforementioned, this study demonstrated that in patients with increased capillary permeability, the blood volume expanding effects were not different when a high MWw colloid [Voluven® (6% hydroxyethyl-starch in 0.9% saline, MWw130kD)] was compared to a low MWw colloid [Gelofusine® (4% succinylated-gelatin in 0.7% saline, MWw30kD)].
O118  THE EFFECT OF DIETARY CALCIUM SUPPLEMENTATION AND PARATHYROID HORMONE ON GENE EXPRESSION IN THE RECTAL MUCOSA

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Introduction
High dietary calcium is associated with lower incidence of colorectal cancer in epidemiological and RCT studies. The mechanism of action is unknown; it is hypothesised that calcium acts by reducing PTH decreasing its effect on colorectal mucosa.

Methods
With ethical approval, a study was undertaken of six subjects who took 1.5g of CaCO3 daily for six weeks; rectal biopsies and serum samples were taken before and after. a. Serum PTH, 25OH-Vitamin D and calcium were measured b. Gene expression in the rectal biopsies was determined using Affymetrix micro-arrays. Gene set enrichment analysis was carried out to identify sets of genes: i. Differentially expressed in response to calcium ii. For which expression correlated with serum PTH.

Results
A. Calcium supplementation resulted in a significant reduction in PTH level with no effect on 25OH-Vitamin D or calcium. b. i. The majority of gene sets differentially expressed in response to calcium showed increased expression, the most highly enriched sets represent genes; 1. Found in differentiated crypt top cells, 2. Genes down-regulated by PTH in-vitro 3. Negatively regulated by wnt signalling. ii. Of the gene sets for which expression correlated with PTH the majority were negatively correlated. There was significant overlap with those up-regulated in response to calcium and the most highly enriched gene set was that found in differentiated crypt top cells.

Conclusion
Calcium induces the expression of genetic markers of differentiation, consistent with its anti-cancer effect. The overlap between the genes regulated by calcium and those regulated by PTH in-vitro and in-vivo supports the hypothesis that calcium acts by suppressing PTH. PTH- Parathyroid Hormone

Take-home message
Dietary calcium induces the expression of genetic markers of differentiation, indicating modulation of the wnt pathway. The significant overlap with the genes correlated with PTH suggests that the chemo-preventive action of calcium is mediated by suppression of PTH.

O119  THE INFLUENCE OF ISCHAEMIA ON THE REGENERATIVE POTENTIAL OF SKELETAL MUSCLE

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Introduction
Therapeutic options for peripheral arterial disease (PAD) are limited and despite successful revascularisation there is often little functional improvement in patients with critical limb ischaemia. Skeletal muscle has an intrinsic ability to regenerate via activation of myogenic progenitor satellite cells (SCs) into myoblasts, which differentiate into new myotubes. There is evidence that increased number of SCs are found in ischaemic muscle, however their function is poorly understood.

Methods
Local ethics committee and patients’ informed consent were obtained. Gastrocnemius muscle biopsies were taken from patients undergoing peri-geneiculate amputation for PAD (ischaemia) and from patients without PAD (control). Immunohistochemistry and western blot were performed to study the number and distribution of SCs using PAX7 as a marker of SCs. The effect of ischaemia on the behaviour of myoblasts was studied in vitro using the C2C12 myoblast cell line. Myoblasts were exposed to simulated ischaemia for 24, 48 and 72hrs. An MTT assay was performed to assess proliferation rates. Myogenic differentiation and apoptosis were investigated using MYOD and cleaved caspase 3 western blotting respectively.

Results
Immunohistochemistry and western blot showed increased expression of SCs in ischaemic human skeletal muscle (p<0.05). Myoblasts cultured in ischaemic conditions demonstrated decreased cell proliferation, reduced myogenic differentiation and increased apoptosis.
Conclusion
Although there is upregulation of SCs in ischaemic tissue, their function is suppressed in ischaemic conditions. Enhancement of ischaemic muscle regeneration may be a useful therapeutic adjunct in the treatment of PAD. MTT- 3-(4, 5-Dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide MYOD- Myogenic determination

Take-home message
The ability of skeletal muscle to regenerate is dramatically reduced in ischaemia, as shown by this work. If regeneration can be stimulated in ischaemic muscle, then it may be possible to utilise this as a therapeutic adjunct for the treatment of patients with peripheral arterial disease.

O120 PHYSICAL ACTIVITY AS AN OBJECTIVE MEASURE OF FUNCTIONAL RECOVERY AND QUALITY OF LIFE FOLLOWING UPPER GASTROINTESTINAL CANCER RESECTION

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Introduction
Functional recovery following surgery is determined by the interaction between pre-operative performance, post-operative catabolism, nutritional status, and mood. Physical activity (PA) is an important domain of health-related quality-of-life (HRQL), and may be a useful objective index of recovery. We aimed to use an accelerometer-based activity meter (ActivPAL™) to monitor post-operative PA in oesophago-gastric (OG) cancer patients undergoing surgery with curative intent.

Methods
PA measures, including step count, time spent in various body positions, and energy expenditure of activity, were assessed over 7-day periods in patients undergoing oesophagectomy or gastrectomy (n=16). Nutritional status, HRQL (FAACT, FACIT-F and EORTC-QLQC30 questionnaires), and mood (HADS questionnaire) were also assessed. Time-points were pre-operatively and 1-2 weeks, 5-6 weeks, 3 months and 6 months post-operatively.

Results
Compared with pre-operative results, PA measures were decreased by 23-89% (p<0.05) 1-2 weeks post-operatively, and were still decreased by 15-57% (p<0.05) 5-6 weeks post-operatively. At 3 months, all PA measures except time spent upright (p=0.009) and time spent standing (p=0.013) had recovered. Measures of PA correlated positively with physical and functional domains of HRQL, including EORTC-QLQ30 Global Health Status, FAACT Trial Outcome Index (TOI) and FACIT-TOI (p<0.001), and inversely with HADS-Depression (p<0.001).

Conclusion
There is marked impairment of PA at the time of hospital discharge and a gradual recovery over 3-6 months. This carries significant implications in a disease where surgical patients may survive <2 years. PA measures are suitable outcomes for evaluating the impact of enhanced recovery programmes on functional recovery and HRQL.

Take-home message
Functional recovery following upper GI cancer resection may take up to 6 months and can be assessed by physical activity meters. Physical activity measures are suitable outcomes for evaluating the impact of enhanced recovery programmes on functional recovery and quality of life.

O121 CARDIOPULMONARY EXERCISE TESTING PREDICTS SURVIVAL FOLLOWING ELECTIVE AAA REPAIR

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Introduction
Elective abdominal aortic aneurysm (AAA) repair aims to improve survival by preventing AAA rupture. Our objective was to assess whether data obtained from pre-operative CPET can predict survival following elective AAA repair.

Methods
Data was collected prospectively on all patients who had CPET prior to elective AAA repair from two University Hospitals between September-2005 and June-2011. Mortality data was obtained from the NHS Demographic Batch Service. Abnormal CPET values were defined as anaerobic threshold <10.2 ml/kg/min, VE/VCO₂ ≥42, peakVO₂ <15 ml/Kg/minute and inducible cardiac ischaemia. Univariate and multivariate analyses were used to identify variables associated with survival.
Results
Data was available for 375 consecutive patients. The mean age was 74 (range 23-90) with 85.3% men. Endovascular aneurysm repair (EVAR) was performed in 247 (66%) patients and open repair in 128 patients. The 30-day mortality rates were 2.0% and 4.7% for EVAR and open repair respectively (2.9% overall). Over a median follow-up of 19-months (range 0-68 months), 58 (15.5%) patients died. For patients with ≥3 abnormal CPET values survival at 24-months was 62.0% compared to 69.0% for patients with <3 abnormal CPET values (p<0.001). On multivariate analysis, peakVO$_2$ <15 ml/Kg/minute (OR, 2.6; 95%CI 1.4-5.0, p=0.003), VE/VCO$_2$ ≥42 (OR, 2.8; 95%CI 1.7-4.9, p<0.001) and ≥3 abnormal CPET values (OR, 3.2; 95%CI 1.9-5.6, p<0.001) were associated with reduced survival.

Conclusion
Despite good 30-day mortality results following elective AAA repair, CPET identifies patients more likely to die over the following two years; elective AAA repair in such patients may need to be reconsidered.

Take-home message
Cardiopulmonary exercise testing predicts survival following elective AAA repair and should be used in pre-operative assessment.

O122 A RANDOMISED CONTROLLED TRIAL COMPARING STANDARD POSTOPERATIVE DIET WITH LOW VOLUME HIGH CALORIE ORAL SUPPLEMENTS IN COLORECTAL PATIENTS

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Introduction
Surgery can put patients at risk of malnutrition. This study was aimed to determine effects of low volume high calorie prescribed supplemental nutrition on patient outcome following elective colorectal surgery.

Methods
Patients undergoing elective colorectal resections were randomised to receive prescribed nutritional supplementation group (SG) - [standard diet + 6 x 60 mls/day of Pro-Cal*] or conventional postoperative diet/control group (CG) - [standard diet alone]. Pre-operative and daily post-operative handgrip strength were measured using a hand grip dynamometer. Daily food intake, return of bowel activity, nausea score and postoperative length of hospital stay (LOS) were prospectively recorded. Non-parametric tests were used to analyse the data.

Results
Fifty five patients were analysed (SG: 28; CG: 27). There was no difference in median preoperative and postoperative handgrip strengths at discharge within each group (SG: 31.7 v/s 31.7; p=0.932 & CG: 28 Kpa v/s 28.1 Kpa; p=0.374). The total median daily calorie intake was higher in SG than CG (SG: 818.5Kcal v/s CG: 528Kcal; p=0.002). The median LOS was shorter in SG than CG (6.5 v/s 9d; p=0.037). There was no difference in median number of days to first bowel movement (SG: 3d v/s CG: 4d; p=0.096).

Conclusion
Prescribed postoperative high calorie low volume oral supplements, in addition to the normal dietary intake, was associated with increased total daily oral calorie intake. Shortened postoperative length of hospital stay was also observed in this group. Abbreviations- Supplementation Group: SG Control Group: CG Postoperative length of hospital stay: LOS

Take-home message
Low volume high calorie oral supplements are well tolerated in postoperative period. It can improve the overall calorie intake following elective colorectal surgery and can be associated with decreased postoperative hospital stay.

O123 THE ROLE OF THROMBOXANE SYNTHASE, PROSTACYCLIN SYNTHASE AND THE THROMBOXANE RECEPTOR IN THE PROGRESSION OF OESOPHAGEAL AND THEIR RELATIONSHIP TO SURVIVAL

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Introduction
Thromboxane synthase metabolizes prostaglandin H2, a downstream product in the cyclooxygenase pathway, into thromboxanes active in both normal and tumour tissues. Over-expression of TXS has been seen in numerous cancers and is associated with poorer prognosis. In normal condition the actions of TXS are opposed by prostacyclin synthase (PGIS). We examined the expression patterns of TXS and PGIS in oesophageal cancer tissue and relate this to clinical outcomes.
Methods
TXB2 levels (a TXS metabolite) and VEGF levels were measures using EIA in 60 pre-treatment serum samples from oesophageal cancer patients and compared with 30 age and sex matched Barrets patients. Reverse transcription PCR was used to examine the cDNA expression of TXS, PGIS and the Thromboxane Receptor (TR) in 30 matched tumour/normal biopsy samples. A further 50 tumour samples were also examined. This data was related to various clinical outcomes collected prospectively.

Results
Serum TXB2 levels and VEGF levels were significantly increased in oesophageal serum samples relative to Barrets samples (P= 0.0307 and P=0.0172 respectively). TXB2 was significantly correlated with VEGF (P<0.0001). At the cDNA level TXS was significantly over expressed in tumour tissue relative to matched normal tissue( P=0.0009). There was no significant difference in expression levels of PGIS or TR. No correlation was found between survival and expression levels in any of the targets.

Conclusion
To conclude, TXS and its metabolites are over expressed at both the serum and cDNA level but this difference is not related to decreased survival

Take-home message
Thromboxane synthase and its metabolites are significantly increased at serum and cDNA level in oesophageal cancer patient samples. These levels are not related to survival.

O124 CARNITINE, PRE-OPERATIVE CARBOHYDRATE LOADING AND POST-OPERATIVE INSULIN RESISTANCE: A POTENTIAL MECHANISM
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Introduction
Pre-operative carbohydrate loading (PCL) attenuates post-operative insulin resistance (PIR) but cellular mechanisms underlying this remain largely unknown. Fasting increases entry of lipid into mitochondria causing excessive β-oxidation, carnitine acylation and impaired glucose uptake. This study examined whether PCL altered peri-operative carnitine metabolism.

Methods
This was a post-hoc analysis of peri-operative plasma and intra-operative rectus abdominis muscle mitochondrial samples obtained from non-diabetic patients undergoing laparoscopic cholecystectomy in a randomised double-blind study (NCT00662376). Patients received 600ml of a carbohydrate-based drink (ONS, Fresenius Kabi, N=15) or placebo (N=15, no nutrients) the evening pre-surgery, and 300ml 3-4h pre-anaesthesia. Three-hundred ml of ONS contained 50g carbohydrate, 15g glutamine and antioxidants. Pre-, intra- and post-operative (day 1) free (FC), acyl- (AC) and total (TC) carnitine concentrations were determined radioenzymatically.

Results
Mean±SD age and body mass index of participants were 49±14 years and 29.4±5.6 kg/m2, respectively. No intra- or inter-group differences occurred in pre- or intra-operative plasma FC, TC or AC concentrations. Post-operatively, plasma TC and FC concentrations increased in the placebo group (p=0.005 and p=0.013 vs pre-operative-placebo). In the ONS group, post-operative increases occurred in plasma TC (p=0.048 vs pre-operative-ONS). Increases in post-operative plasma TC and FC concentrations were, however, attenuated in ONS group (p=0.013 and p=0.044 respectively vs post-operative-placebo). No inter-group differences occurred in intra-operative muscle mitochondrial carnitine concentrations.

Conclusion
Preconditioning with carbohydrate-based drinks was associated with attenuated post-operative increases in plasma TC and FC concentrations. Prevention of excessive β-oxidation and maintenance of ‘carnitine-homeostasis’ may be mechanisms by which PCL attenuates PIR.

Take-home message
As carnitine is a key enzyme in cellular fat and muscle oxidative pathways, changes in carnitine metabolism lead to altered cellular insulin sensitivity. This study is the first to show that preoperative carbohydrate loading (PCL) attenuates perioperative perturbations in carnitine metabolism suggesting a mechanism by which PCL attenuates development of postoperative insulin resistance.
O125  DEOXYCHOLIC ACID DRIVES MITOCHONDRIAL INSTABILITY DURING PROGRESSION OF BARRETT’S OESOPHAGUS TO OESOPHAGEAL ADENOCARCINOMA

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**Introduction**

Barrett’s oesophagus (BO) patients are at risk of oesophageal adenocarcinoma (OAC). Deoxycholic acid (DCA) is a precursor, but its mechanism of action is unknown. Mitochondria are highly susceptible to mutations due to inefficient DNA repair mechanisms. The role of mitochondria in this clinical setting has not been explored.

**Methods**

Using a novel mutation assay we examined mitochondrial mutagenesis in BO extending to OAC; in tissue samples and cell lines representing BO progression. Mitochondrial dysfunction; reactive oxygen species (ROS), mitochondrial membrane potential (MMP) and mitochondrial mass were measured. The effects of DCA on mitochondria function and mutation frequency were determined. Using human BO and normal tissue explants, cytochrome c release was assessed.

**Results**

In tissue biopsies; the frequency of random mitochondrial mutations was significantly increased along the metaplasia-dysplasia-OAC sequence (p=0.03) with some metaplastic patients having mutations as high as those with OAC. Mitochondrial mutations were predominantly C to T transversions. In vitro; mutations were highest in the metaplasia cell line derived from a patient who subsequently progressed to OAC. DCA had a significant effect on ROS production, MMP and mitochondrial mass (all p<0.04) and induced mitochondrial mutagenesis. There was a significant increase in cytochrome c release from cultured Barrett's explants compared to matched controls (p=0.0006). Interestingly, DCA significantly decreased cytochrome c release (p=0.015).

**Conclusion**

Mitochondrial instability is an early event in BO. DCA significantly alters mitochondrial function and decreases cytochrome c release which may ultimately affect the activation of cell death processes in this clinical setting.

**Take-home message**

Mitochondrial instability is an early event in BO. DCA significantly alters mitochondrial function and decreases cytochrome c release which may ultimately affect the activation of cell death processes in this clinical setting.

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O126  SKELETAL MUSCLE AKT IN UPPER GASTROINTESTINAL CANCER PATIENTS AND ITS POTENTIAL AS A BIOMARKER OF CACHEXIA

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**Introduction**

The anabolic PI3-K/Akt pathway plays a key role in skeletal muscle hypertrophy and atrophy. However, the role of Akt in muscle wasting in cancer patients is poorly understood. This study investigated the potential of Akt as a biomarker of cancer cachexia.

**Methods**

52 patients (10 healthy controls and 42 upper gastrointestinal cancer patients undergoing potentially curative surgery) were recruited. Cancer patients had an average (SD) weight-loss of 7.5(9.5)%. Controls were weight-stable and undergoing surgery for benign disease. Rectus abdominis muscle and vastus lateralis muscle biopsies were taken at surgery (baseline). A repeat vastus lateralis biopsy was performed on 11 patients from the cancer cohort at a mean of 248 days post-surgery. Immunoblotting was performed on muscle biopsies probing for Akt and phosphorylated Akt. Cachexia was defined as weight-loss ≥5%.

**Results**

At baseline, Akt levels were lower in cancer patients than controls (0.49(0.31) vs 0.89(0.17), p<0.001). Phosphorylated Akt levels did not significantly differ between cancer patients and controls (0.47(0.34) vs 0.29(0.23), p=0.112). The ratio of phosphorylated/total Akt was higher in cancer patients than controls (1.32(1.04) vs 0.32(0.21), p=0.004). Following tumour resection, Akt levels were higher compared to baseline (p=0.046). Compared with non-cachectic patients, cachectic patients had similar levels of Akt (0.46(0.30) vs 0.51(0.32), p=0.605), phosphorylated Akt (0.46(0.33) vs 0.48(0.35), p=0.850) and the ratio of phosphorylated/total Akt (1.23(0.93) vs 1.44(1.15), p=0.517).
Conclusion
This study suggests that, whilst Akt is suppressed in the skeletal muscle of patients with upper gastrointestinal cancer, it does not appear to be a robust biomarker of cachexia.

Take-home message
Upper gastrointestinal cancer patients have reduced levels of Akt in skeletal muscle. However, Akt does not relate to weight-loss in these patients and is thus not useful as a biomarker of cachexia.
**O127 ENCAPSULATION OF ANGIOGENIC MONOCYTES: A NOVEL TOOL FOR CELL THERAPY**

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**Introduction**

Angiogenic cell therapy has been hampered by the poor retention of cells delivered to the target tissue. Encapsulation of cells in a polymeric, semi-permeable membrane prevents migration out of the tissue and also allows manipulation of the environment within the capsule to enhance cell function. We used a novel bio-electrospraying (BES) technique to encapsulate monocytes.

**Methods**

Primary human monocytes, isolated from blood using anti-CD14 magnetic-beads, were sprayed through a 21G needle across a 3kV/mm electric field. The viability, phenotype (CD14/CD16 expression) and intracellular pro-angiogenic signalling (Erk, Akt and MAPK) of sprayed and control cells was determined using flow cytometry (n=3 experiments/group). Monocytes (10^7/ml, suspended in alginate [FMC Biopolymer, UK] either with or without macrophage colony stimulating factor [MCSF], were sprayed into calcium chloride solution to form cell-containing capsules. Cell viability, VEGF concentration in conditioned media (ELISA) and angiogenic potential (Matrigel assay) was measured in encapsulated cells and controls (n=10/group).

**Results**

Monocyte viability (95.1±0.2% vs 95.2±0.5%, P>0.05) and phenotype was not affected by BES. Intracellular signalling was similar in sprayed and control cells (fold-changes MAPK:1.5 vs 1.6, Akt:1.2 vs 1.1, Erk1/2:9.6 vs 8.9, respectively, P>0.05).

Capsules, measuring 600µm in diameter, contained ≈400±60 monocytes (98.2 ± 0.2% viability). Conditioned media from monocytes encapsulated with MCSF contained higher concentrations of VEGF (405±27 vs 267±7 pg/ml, P<0.05) than non MCSF-containing capsules. Monocytes encapsulated with MCSF were also more angiogenic (tubule area and length, P<0.05).

**Conclusion**

We used a novel cell-handling technique to produce highly angiogenic, encapsulated monocytes. This strategy may increase the longevity and potency of therapeutic cells delivered to the hostile environment of ischaemic tissues.

**Take-home message**

Cell encapsulation is a novel technique that has not yet been applied to cells used for angiogenic therapy. In the present study this strategy was used to successfully enhance the angiogenic potential of monocytes in vitro. These promising results justify further investigation of cell encapsulation using in vivo models of angiogenesis.

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**O128 A STUDY OF THE TEST-RETEST RELIABILITY OF PRESSURE PAIN THRESHOLD IN KNEE OSTEOARTHRITIS**

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**Introduction**

Pressure pain threshold (PPT) is reported to be the least variable modality of quantitative sensory testing (QST). It offers promise as a research tool in understanding pain pathophysiology and in clinical assessments of pain in osteoarthritis. This study investigated the test-retest reliability of PPT, anatomical site variation, and provides pilot data for future trials.

**Methods**

Twenty people with knee osteoarthritis (10M:10F) underwent triplicate PPT measurements at five sites on two occasions one week apart using a pressure algometer (Somedic, Sweden). Mean age was 63.3 years (43-81; SD 8.9). The index finger was used for patient training, 2 other sites were remote (sternum, ipsilateral distal tibia) and 2 sites were over the affected knee (medial and lateral joint line).
Results
PPT results were non-parametric. At each site, no significant difference was demonstrated between replicate measurements (p>0.58). The index finger was the only site to differ significantly between test occasions (p=0.03). PPTs were highly reproducible over 2 weeks (ICCs 0.69 to 0.78, p<0.001, repeatability coefficients 135 to 194kPa). Joint line PPTs were higher than index finger, sternum and distal tibia (p<0.001).

Conclusion
Triplicate readings are feasible and acceptable to the patient. Repeat measures can be averaged to improve precision of individual thresholds. Index finger was only site to demonstrate significant variation between test occasions, suggesting that training is achieved by triplicate measurement at this site. PPT differences between test sites and between individuals remained stable over the study period. PPT is a reliable modality of QST encouraging its use in assessments of pain in future intervention studies.

Take-home message
Pressure pain threshold is a reliable modality of quantitative sensory testing encouraging its use in assessments of pain in future intervention studies.

O129 PAKS IN UROTHELIAL CANCER
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Introduction
Dynamic changes in the cytoskeleton are necessary for cancer cell motility leading to invasion and metastasis. The signalling pathways that regulate the cytoskeleton involve Ras-related small GTPases and their effectors, which include P21-activated serine /threonine kinases (PAKs). The PAK family comprises six isoforms, and we aim to characterise the expression and activity of PAKs in urothelial cancer.

Methods
Bladder cancer cell lines T24 and RT112 were used as the cellular model for bladder cancer. Western blots with isoform specific antibodies were used to detect the expression of PAKs 1-6 in these cell lines. To detect the activation of PAKs, cells were stimulated by Hepatocyte Growth Factor (HGF) and the levels of phosphorylated PAKs were monitored by western analysis at different time points. We have also characterised the morphological and migratory response of our cells to HGF.

Results
Both T24 and RT112 bladder cancer cell lines express PAKs 1,2,4,5 and 6. PAK1 and PAK5 expressions were noted to be higher in T24 compared to the RT112 cells. We have detected PAK1 activation downstream of HGF in both cell lines, and are currently investigating other family members. We have been able to detect HGF-induced changes in cell morphology in both cells lines and have evidence that HGF can induce a cell scattering response in RT112 cells.

Conclusion
Our results from tissue culture studies support the hypothesis that bladder cancer cells respond to HGF stimulation and that PAK family members may play a role in regulating cytoskeletal dynamics in these cells.

Take-home message
Further study of PAKs may yield a novel prognostic marker and therapeutic target for invasive bladder cancer.

O130 EARLY REMOVAL OF URETERIC STENTS AND ITS IMPACT ON REDUCING URINARY INFECTION IN RENAL TRANSPLANTATION
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Introduction
Urological complications, in particular urinary tract infection (UTI) are common, debilitating and affect graft survival, increases morbidity. The study was aimed to assess early removal of ureteric stent and its impact on the incidence of UTI, major urological complications (MUC), graft function and rejection episodes.

Methods
The study was carried retrospectively on 127 consecutive renal transplant recipients from 2007-2009 with 1year follow-up. The parameters used were positive urine culture, graft function by eGFR, and rejection episodes. All recipients had a ureteric stent (US) at transplantation, 48 of them had stent removal on day 5 while remaining 80 had them removed at 4-6 weeks after transplantation with flexible cystoscope.
Results
The 127 consecutive renal transplant recipients were grouped in two arms based on either early (ESR) or late US removal (LSR). The incidence of UTI at 3 months after stent removal transplant between ESR and LSR groups were 12/48 (25%) and 35/79 (44%) respectively; \( P=0.03 \). Graft function at 1 year (e GFR 53.3± 12 Vs 53.1± 16) showed no difference between ESR versus LSR group (\( P= 0.97 \) and similarly episodes of acute rejection were not different (\( P =1.0 \)). The incidence of MUC in ESR is 2/48 (4%), while in LSR groups is 6/79(7%); \( P= 1.0 \).

Conclusion
The early stent removal (ESR) significantly reduces the risk of UTIs in renal transplant patients with no associated increase in major urological complication (MUC) in addition to patient avoiding a further procedure for ureteric stent removal.

Take-home message
Early ureteric stent removal significantly reduces the risk of urinary infections in renal transplant patients with no associated increase in major urological complication in addition to patient avoiding a further procedure for ureteric stent removal.

O131 GENE EXPRESSION PROFILING AND PROTEOMIC ANALYSIS OF CARTILAGE DEGRADATION IN A MOUSE MODEL OF OSTEOARTHRITIS
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Introduction
Osteoarthritis (OA) is characterised by articular cartilage degradation and changes in associated joint tissues. It is a common condition, which causes significant pain and disability. Treatment options are limited to symptom control and joint replacement surgery for severe disease. The exact sequence of molecular events in disease initiation and progression remains unclear. This study performed global analysis of the gene expression and protein profile of cartilage during the early stages of OA.

Methods
The destabilisation of the medial meniscus (DMM) mouse model of OA was used to study changes in the cartilage of operated or unoperated knee joints at two, four, and eight weeks following surgery. A new method enabled retrieval of mouse knee articular cartilage. This allowed proteomic analysis of the cartilage using two-dimensional difference gel electrophoresis and tandem mass spectrometry. RNA was isolated from cartilage at the same time points, amplified and hybridised to Mouse WG-6 v2.0 Expression BeadChips. Validations were performed using real-time RT-PCR.

Results
Gene expression changes were most marked at two weeks with up regulation of metalloproteinases, small leucine rich repeat proteoglycans (SLRPs) and markedly altered expression of cytoskeletal elements. No significant changes in protein profile were seen at two or four weeks; at eight weeks both intracellular and extracellular proteins had altered abundance including SLRPs and proteins involved in energy production and the cytoskeleton.

Conclusion
These findings demonstrate the significant alteration of key biological processes related to cartilage degeneration early in the progression of OA and provide potential therapeutic targets.

Take-home message
This study identified key molecular processes occurring during the early progression of osteoarthritis. These represent potential therapeutic targets.

O132 TISSUE-PROTECTIVE EFFECTS OF EPO AND EPO-DERIVATIVE IN ISOLATED HUMAN MYOBLASTS
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Introduction
Erythropoietin and its derivatives exert tissue protective effects in the biological response to tissue injury acting through the EPOR-\(8cR\) heteroreceptor. We aim to demonstrate expression and heterodimerisation of EPOR and \(8cR\) in human skeletal muscle and investigate the potential cytoprotective effects of EPO and a non-haematopoetic EPO derivative (ARA-290) in isolated human myotubes.
Methods
Ethical approval and informed consent was obtained for Gastronemius biopsies. Immunohistochemistry and western blot were used to demonstrate the expression of EPOR and ßcR. Co-IP was performed to demonstrate heterodimerisation of the EPOR-ßcR receptor complex. To investigate the cytoprotective effects of EPO and ARA-290, myoblasts were isolated from human muscle, differentiated into myotubes and subjected to simulated ischaemia. Apoptosis was measured using cleaved caspase-3 Western blot.

Results
We found expression and co-localisation of EPOR and ßcR skeletal muscle biopsies. Heterodimerisation of the EPOR-ßcR complex was clearly demonstrated by Co-IP. Exogenous EPO and ARA-290 were able to ameliorate the apoptotic effect of simulated ischaemia on isolated human myotubes as shown by a significant reduction in cleaved caspase-3.

Conclusion
We report the first study demonstrating expression of EPOR and ßcR heterodimer in human skeletal muscle. We also show that EPO and ARA-290 are able to attenuate apoptosis in human myotubes undergoing ischaemic insult. Therefore ARA-290 may have a cytoprotective role in skeletal muscle injury such as ischaemia. Abbreviations: ßcR – beta common receptor Co-IP – co-immunoprecipitation EPO – erythropoietin EPOR – erythropoietin receptor

Take-home message
Demonstration of heterodimerisation of the EPOR and ßcR in human skeletal muscle and the ability of EPO-derivates to attenuate apoptosis in human myotubes undergoing ischaemic insult suggests a role of EPO derivatives in tissue protection in skeletal muscle injury.

O133 CHARACTERISATION OF QUIESCENT INTESTINAL STEM AND CANCER STEM CELLS
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Introduction
All populations of intestinal stem cells described to date are rapidly cycling. Quiescent intestinal stem cells (QISCs) and cancer stem cells (QICSCs) have been hypothesised but not isolated or characterised. Potentially quiescence offers cancer cells a major avenue for avoiding chemotherapy-induced cytotoxicity. Our aim was to use a novel transgenic strategy to identify, isolate and characterise QICSCs to confirm they are a biologically distinct population and are therefore likely to be clinically relevant in mediating chemotherapeutic resistance and disease recurrence in colorectal cancer.

Methods
Home office approval was obtained for animal work. Quiescent label-retaining cells were isolated from AhH2B-eYFP (Histone 2B-enhanced yellow fluorescent protein) mice using fluorescence activated cell sorting. Profiling was performed using an expression microarray and validated using a novel high throughput single cell profiling technique (SCRAP-HT-qRT-PCR) together with selective immunofluorescence. QICSCs expression was assessed using HT-qRT-PCR on isolated label-retaining populations from AhH2B-eYFP-ApcMin tumour predisposed mice. Clonogenic ‘stem’ potential of QISCs was assessed in vitro using a modified organoid growth assay. Results QISCs/QICSCs share an expression profile distinct from previously described stem cell signatures by co-expression of stem cell, secretory and multi-drug resistance genes (p<0.01). The SCRAP-HT-qRT-PCR provides a robust technique for assessing RNA expression at the single cell level and validates that QISCs are a distinct population. In vitro, single QISCs form complex intestinal organoids confirming stemness.

Conclusion
This study provides the first characterisation of QISCs and suggests that a comparable QICSC population also exists within tumours. These unique cell populations provide significant insights into colorectal carcinogenesis.

Take-home message
There exist quiescent populations of bona fide stem and cancer stem cells within the normal intestinal epithelium and intestinal tumours respectively.
O134  HUMAN ANEURYSMAL VASCULAR SMOOTH MUSCLE CELL ACTIVATION BY OXIDIZED PHOSPHOLIPID AND INHIBITION BY PYRAZOLE-2

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Introduction
AAAs are associated with degradation and inflammation of the extracellular matrix, as well as VSMC migration and apoptosis. The aim of this study was to investigate the activation and migration of AAA VSMCs and identify inhibitors of these processes.

Methods
AAA VSMCs were obtained with informed consent and ethical approval from patients undergoing open AAA surgery. Cells were studied by intracellular Ca2+ measurement. Cells were loaded with or without 1 mM cholesterol. The oxidized phospholipid PGPC was used to activate cells. Additionally, linear scratch wounds were made in cell monolayers and, following serum starvation, 3 µM PGPC with or without 10 µM pyrazole-2 was added. Images of cells were collected at 0 and 48 hour time points, and subsequent migration recorded.

Results
PGPC activated Ca2+ influx, which was potentiated by cholesterol loading (p=0.01). Pyrazole-2 pre-treatment inhibited the Ca2+ influx (p<0.01). PGPC promoted migration of cells from selected patients; however this was not significant in combined patient data (p=0.34). Pyrazole-2 inhibited PGPC-induced migration in cells from patients where it was active (p<0.01), and inhibited basal migration in all cases (p<0.01).

Conclusion
PGPC activates cholesterol-enhanced Ca2+ influx in AAA VSMCs, and appears to promote migration of cells from some patients. Pyrazole-2 is a novel inhibitor of Ca2+ influx and basal migration. We suggest that pyrazole-2 could potentially suppress VSMC migration, associated inflammation, and VSMC apoptosis, and should be further investigated as a potential modulator of aneurysm formation. Abbreviations- AAA: abdominal aortic aneurysm VSMC: vascular smooth muscle cell PGPC: 1-palmitoyl-2-glutaryl phosphatidylcholine.

Take-home message
Activation of aneurysmal smooth muscle cells can be stimulated the by oxidised phospholipid PGPC, and is enhanced by cholesterol. Pyrazole-2 is a novel inhibitor of both cellular activation and migration and as such, could potentially be used to help prevent migration, inflammation and remodelling in vivo.

O135  THE HALLUCAL METATARSOSESAMOID ARTICULATION - A THREE DIMENSIONAL QUANTITATIVE ANALYSIS

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Introduction
The anatomy of the first metatarsophalangeal (MTP) joint and, in particular, the metatarsosesamoid articulation remains poorly understood. Its effect on sesamoid function and the pathomechanics of this joint have not been described.

Methods
Fresh frozen cadaveric specimens without evidence of forefoot deformity were dissected to assess the articulating surfaces throughout a normal range of motion. The dissections were digitally reconstructed in various positions of dorsiflexion and plantarflexion using a MicroScribe, enabling quantitative analyses in a virtual 3D environment.

Results
The tibial sesamoid had an average excursion of 7.1 mm (range 4.3 - 11.5mm) in the sagittal plane when the 1st MTP joint was moved from 10 degrees of plantarflexion to 60 degrees of dorsiflexion; the average excursion of the fibular sesamoid was 6.4 mm (range 3.6 - 10.5mm). The sesamoids also move in a medial to lateral fashion when the joint was dorsiflexed. The excursion of the tibial sesamoid was 2.8 mm when the joint was maximally dorsiflexed (range 1.3 - 3.8mm) while that of the fibular sesamoid was 5.4 mm (range 3 - 8mm).

Conclusion
There appears to be differential tracking of the hallucal sesamoids. The tibial sesamoid has comparatively increased longitudinal excursion whilst the fibular sesamoid has comparatively greater lateral excursion. This greater excursion of the tibial sesamoid could explain the higher incidence of sesamoiditis in this bone. The differential excursion of the 2 metatarsosesamoid articulations is also a factor that should be considered in the design and mechanics of an effective hallux MTP joint arthroplasty.
Take-home message
The excursion of the hallux sesamoids is more complex than previously appreciated. The tracking of the hallux sesamoids has implications for the appreciation of forefoot pathology as well as the design of implants to effectively treat it.

O136 EXPERTISE RELATED DISPARITY IN PREFRONTAL CORTICAL EXCITATION ASSOCIATED WITH INTRA-OPERATIVE DECISION MAKING
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Introduction
Intraoperative decision-making (DM) is a non-technical skill that greatly influences patient safety, but has yet to be subject to systematic analyses. Neuroimaging provides a useful insight into the type of decision-system being employed (e.g. rule-based, recognition-primed) and help track expertise development in surgical DM. It is hypothesised that novices will require greater executive control (i.e. prefrontal activation) during intraoperative DM than experts.

Methods
Following standardised training, 22 subjects (10 novices, 7 trainees and 5 experts) watched simulated laparoscopic cholecystectomy videos and at set intervals were asked to decide the next most-appropriate operative manoeuvre (e.g. further dissection, clip, cut etc) and to rate their decision confidence (1-6). Functional Near Infrared Spectroscopy was used to determine the extent of prefrontal cortical activation (PFC) at 24 different brain loci (channels).

Results
Expert surgeons were more confident of their decisions than novices: median(range) = expert=6.0(3.0-6.0), novice=4.0(1.0-6.0) p<0.001. Trainees decisions more closely resembled those of experts, than did novices (script concordance: median(range): trainee=9.4(6.8-11.0), novice=6.4(5.1-8.2) p =0.003). Consistency in DM was poor regardless the grade of the observer (exp: r2=0.12, trainee: r2=0.05, novice= r2=0.01). Experts required less PFC activation than novice surgeons during intra-operative DM (number of active channels = expert=5/22, trainee=8/22, novice=18/22).

Conclusion
Experts employ DM systems that appear less dependent on the PFC, possibly indicating a recognition-primed approach to operative DM. Despite clear expertise related differences in brain behaviour there is limited consistency in intra-operative DM regardless the grade of the operator. This serves as a foundation for tracking expertise development in DM.

Take-home message
Intra-operative DM systems appear to be dependent on expertise. Novices require extensive prefrontal activation and are more likely to be ruminating on the appropriate decision (i.e. more analytical or rule-based DM), whereas intuitive intra-operative DM in experts appears to result in a relative medial prefrontal redundancy. This may form the basis for tracking expertise development in DM. The lack of within-group consistency in operator DM requires further investigation.

O137 ENDOTHELIN-1 (ET-1) CONTRIBUTES TO ISCHAEMIC SKELETAL MUSCLE DAMAGE
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Introduction
ET-1 is a vasoactive peptide that has been implicated in the development of atherosclerosis. Further, raised ET-1 plasma levels and increased expression of ET-1 have been demonstrated in diseased arteries and muscle biopsies from patients with peripheral arterial disease (PAD). However, whether ET-1 plays a significant role in ischaemic skeletal muscle damage is unknown.

Methods
The expression and distribution of ET-1 and its receptors were studied on ischaemic and non-ischaemic human muscle biopsies using immunohistochemistry. Their expression in C2C12 myotubes cultured in normoxic and simulated ischaemic conditions were studied using Western blot. The effect of the non-selective ET antagonist bosentan on ischaemia-induced apoptosis was investigated by cleaved caspase-3 Western blot. The ability of myotubes to contract collagen gels under ischaemic conditions and the effect of pretreatment with bosentan were investigated using a floating gel contraction assay.
Results
ET-1 and both receptor subtypes (ETAR and ETBR) were expressed in human skeletal muscle, associated with muscle fibres with upregulation of ETAR. Similarly, in myotubes exposed to 24 hours of ischaemia, ET-1 and ETAR protein expression was significantly upregulated (p<0.05) whilst no change in ETBR expression was demonstrated. ET antagonism attenuated ischaemia-induced apoptosis. Collagen contraction by myotubes was enhanced by ischaemia but this effect was significantly reduced by bosentan.

Conclusion
Ischaemic skeletal muscle is a source of ET-1 where it may have an autocrine effect on upregulated ETAR to modulate ischaemia-induced changes. ET antagonism may therefore be considered as an adjunctive therapeutic strategy to reduce ischaemic tissue damage in patients with PAD.

Take-home message
The role of ET-1 in inflammatory and fibrotic conditions is increasingly recognized and novel selective ET antagonists are becoming available. ET-1 may also be involved in ischaemic muscle damage where these agents may be potentially beneficial.

O138 ONCOLOGICAL & COSMETIC RE-INTERVENTION IN IMMEDIATE AND DELAYED BREAST RECONSTRUCTION
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Introduction
Breast reconstruction is offered to all women requiring mastectomy for breast cancer as part of their surgical management. Re-intervention for oncological and cosmetic reasons depends on tumour characteristics, type and timing of reconstruction and adjuvant radiotherapy. The aim of this study was to examine risk factors for re-intervention in patients that underwent breast reconstruction in our institution.

Methods
Data was collected from our prospectively updated patient database. Parameters such as tumour characteristics, type and timing of reconstruction, re-intervention and adjuvant radiotherapy use were recorded.

Results
Between January 2004 to April 2011 412 patients underwent breast reconstruction with average age of 48.6 years (27-83 years). 358 were immediate and 54 underwent delayed reconstruction. 187 latissimus dorsi flaps (LD) with implants, 50 LD alone, 23 TRAM, 21 extended LD, 33 mastopexies, 25 local flaps and 4 DIEP were performed. Cancer recurrence rates were 5.1% (n=18) in the immediate group versus 5.6% (N=3) in the delayed group. Lymph node positivity and ER negativity accounted for tumour characteristics which were significant risk factors for oncological re-intervention (p=0.019, 0.015) Time to cancer recurrence was 16.5 months(1-53 months). Implant reconstruction was found to be significant for cosmetic re-intervention. Timing of reconstruction was not significant. 227 patients had post-operative radiotherapy which 30% cosmetic re-intervention.

Conclusion
Re-intervention rates are comparable with international standards. Patients with ER negative and lymph node positive tumours must be monitored closely within the first 2 years for disease recurrence and the use of radiotherapy is a risk factor for cosmetic revision.

Take-home message
Patients with ER negative and lymph node positive tumours must be monitored closely within the first 2 years for disease recurrence and the use of radiotherapy is a risk factor for cosmetic revision.
**POSTER PRESENTATIONS**

**P01 GAINS IPHONE APP: BRINGING BREAST CANCER PROGNOSTICATION INTO THE 21ST CENTURY**

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**Introduction**
The Nottingham Prognostic Index (NPI), which incorporates tumour size, grade and lymph node stage has been described as a benchmark model for breast cancer prognosis. However, lymph node ratio (LNR) (ratio of positive lymph nodes to total nodes excised) is a superior prognostic indicator compared to absolute positive lymph node number, warranting re-evaluation of breast cancer prognostication.

**Methods**
A cohort of 1668 cases with histologically proven Stage 1, 2 and 3 primary operable breast cancer treated between 1990-2010 in a single institution was used to create the Galway Index of Survival (GAINS) which was then validated in an independent European cohort (ONCOPOOL) of 16,328 patients. This index, which incorporates LNR, stage, grade and ER status allowed stratification of patients into 5 prognostic groups with distinct survival patterns. Given its potential clinical utility, a GAINS iPhone App was created.

**Results**
A fully functional user-friendly iPhone App was created allowing estimation of 10-year breast cancer specific survivals based on individual tumour variables.

**Conclusion**
The GAINS iPhone App allows easy access to breast cancer prognostication utilising lymph node ratio which is useful in the outpatient setting.

**Take-home message**
Lymph node ratio has a role in breast cancer prognostication, and an iPhone App designed to display the 10-year breast cancer specific survival using GAINS has potential clinical utility.

**P02 BUILDING THE CLINICAL EVIDENCE FOR DAY CASE BREAST SURGERY**

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**Introduction**
The aim of this study is to determine patient satisfaction regarding the introduction of the 23 hour discharge enhanced recovery protocol in breast surgery.

**Methods**
Questionnaires were given to all patients undergoing WLE/mastectomy +/- axillary procedure (SNB/ANC) over a 4 month period (Nov 2010 – Feb 2011). Total inpatient stay was calculated for each patient. 23 hour stay was defined as a length of stay of one day (may include one overnight stay). Patient satisfaction measures were; involvement in care decisions, discharge planning, wound issues (seroma, breakdown, infection, use of antibiotics), discharge with drain in situ, pre & post operative analgesia provision was also recorded.

**Results**
Of 139 patients; 91% were admitted on day of surgery. Mean hospital stay was 38.9 hours (Range 4.5-195 hours). 24% stayed <24 hours, 75% met the 23 hour discharge target. Patient preference and co-morbidity were the commonest reasons for failure to meet the 23 hour target. NO increase in readmission rates was observed. 100/139 patients responded to the questionnaires; 98% felt involved in care decisions 96% felt involved in the discharge decision 92% felt they received the right amount of information Reduced length of stay for mastectomy from 4.7 days to 1.8 days was observed with no loss in patient satisfaction.

**Conclusion**
The 23 hour enhanced recovery protocol can be successfully applied to breast surgery, with reduction in inpatient stay without adversely affecting patient satisfaction. Abbreviations: WLE – wide local excision SNB – sentinel node biopsy ANC – axillary node clearance
P03 SELECTION OF PATIENTS FOR ISO TOPE DIRECTED ENHANCED AXILLARY SAMPLING (IDEAS) FOR SCREEN DETECTED EARLY BREAST CANCER

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Introduction
Current practice in breast cancer management is for all positive sentinel lymph node biopsies (SLNB) to proceed to axillary lymph node dissection (ALND). Recent evidence suggests that SLNB is non-inferior to ALND for some patients with limited nodal burden. Isotope Directed Enhanced Axillary Sampling (IDEAS) in selected patients may be preferable to SLNB to avoid ALND.

Aim
To preoperatively identify patients who have higher risk of nodal metastases that would benefit from IDEAS

Methods
All invasive breast cancers with clinically and radiologically negative axillae detected by Breastcheck Western Unit screening between September 2008 and May 2011 were included. All radiological and clinicopathological features were compiled. Data were analysed using SPSS 19.

Results
260 patients were identified with a mean age was 57.6 years. 197 (75.8%) patients had negative axillae confirmed following SLNB. Those with a positive SLNB (n=63) had a completion ALND. The majority of these patients with axillary metastases (n=60, 95.2%) had a limited nodal burden with only 1 or 2 nodes positive. Patients with nodal metastases had a higher clinical (p=0.007) and radiological (p=0.047) assessment score. The mean estimated radiological size of lesion was 16.0 +/- 13.9mm and increasing tumour size correlated significantly with nodal positivity (p=0.001). ER (p=0.02) and Her2/neu (p=0.049) receptor positivity also correlated with nodal disease.

Conclusion
Evaluation of preoperative tumour features may help identify patients with higher risk of nodal disease. IDEAS for these patients could be used to identify those with limited nodal burden that would not benefit from further ALND.

Take-home message
Evaluation of preoperative tumour features may help identify patients with higher risk of nodal disease. Isotope Directed Enhanced Axillary Sampling (IDEAS) in these selected patients may be preferable to sentinel lymph node biopsy to avoid axillary lymph node dissection.

P04 HOW ARE WE MANAGING MALIGNANT PLEURAL EFFUSIONS ASSOCIATED WITH BREAST CANCER?

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Introduction
Breast cancer is a common cause of malignant pleural effusions (MPE) and represents a progression of disease. The British Thoracic Society (BTS) has established guidelines on the management on this. Our aim was to assess our management of such patients.

Methods
We undertook a retrospective review of case notes of patients presenting to the acute trust over a 5 year period. Clinical coding was used to search for patients with a diagnosis of pleural effusion occurring within the 5 year period and a diagnosis of breast cancer at any point in time.

Results
We identified 24 patients accounting for 29 inpatient admissions. MPE was the presenting feature in 4 new cancer diagnoses. Complete pleural fluid studies were sent in two cases and cytology was sent in 7 cases. A therapeutic chest drain was inserted during 18 admissions and talc pleurodesis performed in 4. A referral to the breast multidisciplinary team or oncologist was made following 14 admissions. Five patients were admitted twice with MPE. Primary disease was typically grade 3 (12 cases) and axillary node positive (20 cases). Triple negative tumours occurred more frequently (25%) than in the general population. HER-2 positivity was equal to population levels (20%).

Conclusion
The investigation and management of malignant pleural effusions were not in-line with BTS guidance and a delay in diagnosis and repeated hospital admissions were seen. The absence of discussion in an appropriate MDM may have affected management. Triple negativity, grade 3 and node positivity appear risk factors for MPE.
Take-home message
Malignant pleural effusion associated with breast cancer represents progression of disease. Our current management is poor and could be improved by following BTS guidance and referral to an oncologist or breast MDM.

P05 EARLY AND DELAYED POST-MASTECTOMY BREAST RECONSTRUCTION: A SYSTEMATIC REVIEW AND META-ANALYSIS
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Introduction
Breast reconstruction following mastectomy for invasive breast cancer is an established method of improving the psychological and emotional sequelae of mastectomy (1). Although reconstruction is a routine procedure, there are no clear guidelines on the optimal timing of reconstruction. A number of factors must be considered, including type of reconstruction, patient preference and the need for post-mastectomy radiotherapy.

Aims
We conducted a systematic literature review and meta-analysis to establish the optimal timing of post-mastectomy breast reconstruction.

Methods
A comprehensive search for trials reporting outcomes following either immediate or delayed breast reconstruction was performed using pubmed and cross-referencing available data. 2,226 patients undergoing 2,647 reconstructions were identified. Pooled complication rates and odds ratios were calculated. Forest plots comparing early and delayed reconstruction, early and delayed autologous reconstruction and those having post-reconstruction radiotherapy with non-irradiated patients were constructed. Inter-study heterogeneity was accounted for.

Results
Delayed reconstruction provided favourable complication rates compared with immediate reconstruction (OR=1.60, 95% CI=1.04-2.46, P=0.03). Delayed autologous reconstruction showed a trend towards favourable complication rates (OR=1.87, 95% CI=0.95-3.69, P=0.07). Non-irradiated breast reconstructions showed favourable outcomes as compared with those undergoing post-reconstruction radiotherapy (OR=5.63, 95% CI=3.08-8.50, P=0.02).

Conclusion
There are numerous factors which affect the timing of breast reconstruction following mastectomy. When post-mastectomy radiotherapy is required, delayed autologous reconstruction may provide the optimal strategy for reconstruction.

Reference

P06 MANAGEMENT OF TRAUMA PATIENTS
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Introduction
Trauma patients should be managed according to ATLS and local protocol but are they?

Methods
Data from all trauma patients that were admitted to the Adult Intensive Care Unit (AICU) and Surgical High Dependency Unit (SHDU) at the hospital from 19/02/2011 to 19/05/2011 were collected. A total of 30 trauma patients were admitted during this period. The way these patients were managed from the time they were brought to A&E was looked at and data collected from trauma sheets and AICU/SHDU clerking and daily review sheets. Two aspects looked at were the initiation of the trauma call (meeting criteria) and the management of the patient thereafter which included primary, secondary and tertiary surveys, appropriate history (allergies, medication and medical history), pregnancy test and admission team consultant review within 24 hours.

Results
All patients had criteria for the activation of a trauma call. However, only 21 had calls put out for them. With regards to surveys; 28 patients had primary surveys done (2 not documented), 19 patients had secondary surveys and only 2 patients had tertiary surveys done. 10 had ample histories taken, Pregnancy tests were checked appropriately and only 13 had admitting team consultant review in 24 hours.
Conclusion
None of the patients were managed completely as per protocol. Most of it stems from lack of education on the management of trauma patients. This can be improved by holding teaching sessions and courses for all members of staff dealing with trauma patients.

Take-home message
All trauma patients need to be managed according to protocol and ATLS guidelines. This will ensure injuries are not missed and optimum treatment can be given.

P07 THE IMPACT OF USING DIFFERENT GAMING INTERFACES ON VIRTUAL REALITY SIMULATOR SCORES
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Introduction
It is believed that people who regularly play video games do better on surgical simulators; this is because the person develops better hand-eye coordination and learns how to navigate a three dimensional plane on a two dimensional screen. In this study we explored the relationship between different video gaming interfaces and simulator performance.

Methods
Participants were recruited via advertising through King’s College London surgical society. Those recruited were asked to perform two tasks; arrow manipulation and the application of clips onto the cystic duct and artery. Assessment was based on task time and broken arrows for the first task and tissue penetration for the second task. The participants were split into three groups. The first group consisted of Non gamers, the second group consisted of people who only played with pad controllers and the third group consisted of people who predominantly played with motion sensitive controllers. The groups were labelled A, B and C consecutively. Results
Thirty four suitable participants were recruited for this study. Group A had 17, group B had 8 and group C had 9 participants. On average both groups B and C completed tasks significantly faster than group A and demonstrated a smaller range. Only group C demonstrated a statistically significant reduction in errors.

Take-home message:
Only motion sensitive games controllers have a statistically significant decrease in surgical errors thus we can use motion sensitive gaming to improve surgical skills

P08 COST AND CLINICAL IMPLICATIONS OF INAPPROPRIATE PRE-OPERATIVE BLOOD TESTS IN ELECTIVE SURGERY
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Introduction
‘Routine’ pre-operative blood tests are performed in surgical patients to minimise the risk of peri-operative morbidity and mortality from complications undetected in the patient narrative. However, numerous studies have shown routine testing is of little clinical benefit, and is highly cost ineffective. Consequently, NICE published guidelines on the use of routine preoperative tests for elective surgery in 2003. Aim: The current practice of routine testing within the general surgery department of a district general hospital was assessed against NICE recommendations. Besides compliance, financial and clinical implications of performing ‘inappropriate’ blood tests was also examined.

Method
A retrospective, observational, study of patients aged 16 and over, that underwent elective colorectal, vascular or breast surgery was undertaken in a district hospital during October 2010. Based on NICE guidance, the ‘appropriateness’ of blood tests including FBC, U&Es, clotting and glucose were evaluated based on criteria including age, grade of surgery and ASA grade. Blood results, complications and management changes were also obtained from patient records.

Results
In total, 273 blood tests were performed in 111 patients. None of the inappropriate tests (n=85, 31.3%) were abnormal. Furthermore, patients that developed complications (n= 5, 4.5%) or a change in management (n=3, 2.7%) had only recommended tests. In financial terms, £249.94 was spent on inappropriate tests, extrapolated to £17 000 per annum.

Conclusion
Inappropriate blood tests did not correlate with adverse outcome, or impact management in our patient cohort, and represents a source of considerable financial saving for our trust and possibly others.
Take-home message
Performing blood tests prior to elective surgery, without clinical indication, is of little clinical or financial benefit. Adherence to national guidelines can prevent harm to patients and offer substantial financial savings for trusts.

P09 MENTORSHIP AND ROLE MODELS IN MODERN SURGERY: PREVALENCE AND IMPORTANCE
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Introduction
Role models and mentors play an important role in attracting medical students into various specialties upon graduation, as well as supporting the professional development of doctors. However, little is known about how these work in surgical practice. The aim of the study was to evaluate the prevalence of role models and mentors among senior medical students and surgical trainees and to determine how the process of mentoring works.

Methods
An online questionnaire was distributed to the 4th and 5th year medical students at NUI Galway and members of the Association of surgeons in training (ASIT), including questions regarding the presence of mentors and role models and questions relating to the mentorship process.

Results
A total of 163 medical students and 216 surgical trainees completed the questionnaire. While 80% (n=124) of medical students did not have a mentor, 51.7% (n=104) of trainees claim to having a surgical mentor. In both cases this was predominantly informal mentoring (89.9% vs 89.7%). 64% (n=88) of students but only 37.6% (n=61) of trainees would like to be involved in a formal mentoring programme. 64% (n=88) of students had identified a role model in medicine, while 52.8% (n=68) of students had identified a negative role model. Of the surgical trainees 70% had identified a role model but 77% (n=112) had identified a negative role model in surgery.

Conclusion
In conclusion this study highlights the importance of role models and mentors within the surgery and illustrates the need to promote mentorship of medical students.

Take-home message
Whilst role models and mentors are important in attracting medical students to pursue a career in surgery, mentoring is not very prevalent among medical students and occurs in an informal manner. This study highlights the need to promote mentorship and encourage positive role models in surgery.

P10 THE WHO SURGICAL SAFETY CHECKLIST, TEAMWORK AND WORKLOAD IN THE OPERATING THEATRE: A PROSPECTIVE, OBSERVATIONAL STUDY
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Introduction
Analyses of errors in surgery have identified teamwork as a key factor preventing patient harm. Although the WHO Surgical Safety Checklist has been introduced to enhance patient safety, there is uncertainty regarding its use and effect on teamwork and workload in the operating theatre (OT).

Methods
This was a prospective, observational study. Surgical teams (Surgeons, Nurses, Anaesthetists) in 50 General Surgical procedures were randomly selected for inclusion. Quality of teamwork/procedure was scored by two trained observers using the validated Observational-Teamwork-Assessment-for-Surgery (OTAS) scale. Use of WHO Checklist was assessed using a validated tool. Workload was self-reported by team-members using the validated NASA task-load-index.

Results
Intra-operative teamwork scores were: Surgeons 3.83[0.694], Anaesthetists 3.56[0.425], Nurses 3.53[0.557]. Sign-in was completed in 70% of cases, time-out 98% of cases and sign-out 22% of cases. However, checklists were poorly used: all team-members paused in only 20% cases, all checklist items were completed in 63% cases and introductions carried out in only 17% cases. Surgeons with higher leadership scores experienced reduced workload (Pearson = -0.444, p=0.003). When surgeons were involved in time-out, frustration levels for all team-members was lower (Pearson = -0.477, p=0.008). When all team-members paused for time-out, antibiotics were more likely to be requested and patient-specific concerns discussed (p<0.05).
Conclusions
Better use of the checklist is associated with improved teamwork, which reduces workload in the OT. This is likely to lead to enhanced quality and safety in surgical care.

Take-home message
Improved use of the checklist leads to better teamwork, which in turn, significantly reduces workload for all members of the operating team.

P11 PREOPERATIVE ORAL CARBOHYDRATE LOADING IN ELECTIVE SURGERY: A META-ANALYSIS
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Introduction
Whilst preoperative carbohydrate loading (PCL) results in beneficial physiological effects, the effect on clinical endpoints remains unclear. Therefore, the aim of this meta-analysis was to study the effects of PCL on postoperative outcomes using standard methods recommended by Cochrane Collaboration.

Methods
Prospective studies (RCTs) that randomised adult non-diabetic patients to either PCL (> 50g carbohydrate administered orally 2-3h pre-anaesthesia) or a control arm (fasted/placebo) were included. The primary outcome measure was length of stay (LOS) and secondary outcomes were postoperative complications (PC) and postoperative nausea and vomiting (PONV). Methodological quality was assessed using JADAD score and GRADEpro® software. I2-statistic was used to demonstrate statistical heterogeneity.

Results
Eleven RCTs of 1172 patients (495 PCL: 677 control) were included. Patients undergoing major abdominal surgery had significantly reduced LOS with PCL [Mean Difference, Random, 95% CI: 1.08 (-1.87,-0.29); I2=60%, P=0.007]. However, no differences in LOS were noted for analysis of all RCTs or subgroups of patients undergoing operations with an expected LOS<3d or orthopaedic surgery. There was no increased risk of complications with PCL over the control group (Risk Ratio, 95%CI, Mantel-Haenszel: 1.05 (0.80, 1.38), I2=0%; P=0.71). Whilst two RCTs reported increased risk of PONV in the fasted group, three other reported no differences. Confounders such as selection bias, different surgical populations or dose of PCL, contributed to significant heterogeneity and therefore, quality of evidence ranged from very low to moderate.

Conclusions
PCL is associated with a reduced LOS in patients undergoing major abdominal surgery, without an increased risk of complications or PONV.

Take-home message
PCL is associated with a reduced LOS in patients undergoing major abdominal surgery, without an increased risk of complications or PONV.

P12 THE ASSOCIATION INGUINAL HERNIA WITH A SINGLE STRENUOUS EVENT
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Introduction
The development of inguinal hernia has been associated with work related activities, which has lead to some debate regarding the role of a single strenuous event (SSE) in this process. We investigated the role SSE in hernia development and the role of published guidelines for surgeons assessing the validity of claims by employees seeking financial compensation for alleged work related inguinal hernia.

Method
All patients undergoing inguinal hernia repair at a single trust in a 1 year period between April 2010-April 2011 were included with no exclusion criteria. A telephone questionnaire was administered and clinical information was also collected from case notes.

Results
All 335 eligible patients were contacted and 292 (87%) consented to take part. 41 (14%) reported a SSE associated with the onset of their hernia. Of these, 33% were direct, 56% indirect and 11% were unknown hernial anatomy. Only 3/41
patients officially reported this event at work and the time to diagnosis by a doctor following this report were 5, 20 and 90 days. There were no significant differences in terms of age, gender, BMI, smoking status and hernial anatomy in the SSE group compared to the non-SSE group.

Conclusion
Inguinal hernia following SSE is an uncommon phenomenon. Only 2 patients (5%) reporting SSE associated hernias met guideline recommendations supporting the association of their hernia with SSE and there were no anatomical differences between patients reporting SSE and those not. This suggests there is no significant causal relationship between the development of inguinal hernia and SSE.

Take-home message:
Inguinal hernia could not be attributed to a single strenuous event. Guidelines for surgeons assessing such cases require further clarification.

P13 A TRAUMA MAJOR HEMORRHAGE PROTOCOL REDUCES WASTE AND IMPROVES THE DELIVERY OF BLOOD COMPONENT THERAPY
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Introduction
Major haemorrhage protocols (MHP) are required as part of damage control resuscitation regimens in modern trauma care. Patients requiring rapid correction of their acquired coagulopathy are often identified late and receive inadequate therapy. The study objective was to ascertain whether implementation of a MHP improved blood product administration and reduced waste compared to traditional transfusion protocols.

Methods
Datasets on trauma admissions 1 year prior and 1 year post implementation of a MHP at a Level 1 trauma centre were obtained from the trauma registry. Demographic and clinical data were collected prospectively. The volume of blood components issued, transfused, returned to stock and wasted within the first 24 hours was gathered prospectively.

Results
Over the study period 2986 patient records were analysed. 40 required a massive transfusion in the MTP group and 56 post MHP implementation. The MHP criteria had a 61% sensitivity and the Trauma Team Leaders correctly actioned the protocol in 81% of cases. Blood component therapy administration improved significantly post implementation. FFP:PRBC improved from 1:2.7 to 1:2 (p<0.01) and CRYO:PRBC improved from 1:10 to 1:6.5 (p<0.01). Platelet transfusion improved from 72% to 87% (p<0.01) and there was a significant reduction in the waste of platelets from 14% to 2% (p<0.001). Outcomes improved. The median hospital stay had been reduced from 54 days to 26 days (p<0.05).

Conclusion
Implementation of a MHP concept results in improvement of blood product administration and reduction in waste of blood products compared to older MTP. Introduction of the MHP can significantly reduce hospital admission time.

Take-home message
Major haemorrhage protocols improve blood product delivery and reduce waste of blood components compared to traditional massive transfusion protocols.

P14 ANGIOTENSIN CONVERTING ENZYME INHIBITORS EFFECT ON ARTERIAL STIFFNESS: A META-ANALYSIS OF RANDOMISED CONTROLLED TRIALS
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Introduction
We conducted a meta-analysis to investigate ACEIs effect on arterial stiffness in comparison to placebo and to other antihypertensive agents.

Methods
The medical literature was searched on RCTs which assessed the effect of ACEIs on arterial stiffness. Data from included RCTs were pooled with use of fixed and random effects meta-analysis. Heterogeneity across studies was assessed with the I² statistic.

Results
In 5 trials including 469 patients, treatment with ACEIs versus placebo significantly reduced PWV (pooled mean change difference -1.69, 95% C.I. -2.05, -1.33, p <0.00001). In 9 trials, treatment with ACEIs insignificantly reduced PWV when
compared with other antihypertensives (pooled mean change difference -0.34, 95% C.I. -0.76, 0.09, p=0.12, I≤=0%).  
ACEIs effect on radial AIX in comparison to placebo was assessed in 6 trials. ACEIs significantly reduced AIX (pooled mean change difference -3.79%, 95% C.I. -5.99, -1.60, p=0.0007, I≤= 88%, p for heterogeneity < 0.00001). In 6 trials, ACEIs significantly reduced AIX when compared with other antihypertensives (pooled mean change difference -3.81%, 95% C.I. -6.0, -1.61, p= 0.0007, I≤=25%, p for heterogeneity=0.19).

Conclusion
This study shows that ACEIs reduce PWV and AIX which are markers of arterial stiffness in patients with different pathological conditions.

Take-home message
ACEIs reduce arterial stiffness which is a surrogate marker of cardiovascular mortality and morbidity in different pathological conditions.

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P15 ENDOVENOUS TREATMENT FOR VENOUS LEG ULCERS: TIME FOR DEFINITIVE EVIDENCE OF CLINICAL AND COST-EFFECTIVENESS
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Introduction
In patients with venous leg ulcers, surgical correction of Superficial Venous Insufficiency (SVI) is associated with reduced recurrence rates. There is a paucity of evidence in relation to the minimally-invasive endovenous options for Superficial Venous Insufficiency in this context.

Aims
To explore current practices among UK vascular surgeons in the management of venous leg ulcers, especially in the context of endovenous ablative treatments.

Methods
An online questionnaire survey was sent to consultant members of the Vascular Society of Great Britain and Ireland. Test-retest reliability was ascertained in a pilot survey.

Results
156 complete responses were received (40%). There is consensus on the use of compression bandaging as first-line treatment (94.2%). The majority of respondents (14.6% always, 80.8% selectively) offer additional treatments to aid ulcer healing; failure of conservative management is the predominant guiding factor (82.6%). Overall, endovenous treatments have overtaken surgery as the additional treatment of choice; surgery is undertaken by 86.5% of respondents, followed by foam sclerotherapy (76.4%), radiofrequency ablation (73.3%) and endovenous laser ablation (67.5%). Endovenous interventions are routinely carried out under local-tumescent anaesthesia (80%). The majority of respondents (89.7%) routinely obtain a venous duplex prior to intervention. 80% undertake their own intra-operative duplex scanning, but only 18% hold formal ultrasound accreditation. Compression therapy was advocated immediately post intervention in 92.7%.

Conclusion
Minimally invasive endovenous techniques are being increasingly used as adjuncts to compression therapy in the management of venous leg ulcers. Definitive clinical trials are needed to further establish the clinical & cost effectiveness of such treatments.

Take-home message
Endovenous ablation of superficial venous insufficiency has overtaken surgery as the adjuvant treatment of choice in the context of venous leg ulcers. Definitive clinical trials are required to determine clinical and cost-effectiveness.

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P16 PATIENT INFLUENCES AND PREFERENCES FOR VARICOSE VEIN PROCEDURES
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Introduction
We sought to validate the recent Charing Cross Questionnaire on factors that influence patient choice for varicose vein treatment.

Methods
Consecutive patients undergoing primary varicose vein procedures completed the questionnaire at telephone interview.
Results
59 patients have been interviewed. Patient reported indications for treatment were pain/discomfort (76%), appearance (42%), skin changes (29%), and limitation to activity (18%). Symptom resolution was the main outcome sought by 76% of patients. Prior to outpatient clinic only 37% of patients were aware of any Endovenous alternative to surgery. 68% of patients agreed with a stated preference for their treatment to be carried out under local anaesthesia, and in a single visit. After clinic 71% reported that the recommendation of the vascular surgeon/team most strongly influenced their treatment choice, but anaesthetic type and likelihood of post-operative discomfort were other major factors. 99% of patients felt adequately informed about their chosen procedure and 89% would choose the same treatment again.

Conclusion
Although several factors appear to be important in tailoring treatment for an individual, patients view the recommendation of the surgeon to be most important overall when deciding their treatment choice.

Take-home message
The majority of patients presenting to clinic for the first time for treatment of varicose veins have very limited knowledge about the treatment options available and are heavily reliant on the recommendation of the surgical team as to which treatment to choose.

P17 AUTOMATED DETERMINATION OF THE ANKLE BRACHIAL PRESSURE INDEX (ABPI) USING THE VICORDER, VALIDATION VERSUS MANUAL MEASUREMENT USING HAND-HELD DOPPLER
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Introduction
The Ankle Brachial Pressure Index (ABPI) is a method used widely for assessment of Peripheral Arterial Disease (PAD) and cardiovascular risk prediction. This study validated automated ABPI measurement using the Vicorder machine versus manual measurement using Huntleigh Diagnostics Doppler.

Methods
Seventy patients were recruited from cardiovascular outpatient clinics. Thirty three had established Abdominal Aortic Aneurysm (AAA) (>3 cm) on ultrasound and 37 were subjects without AAA. For each patient ABPI was measured using both the Vicorder and Huntleigh manual Doppler machine. Vicorder measurements were calculated by positioning oscillometric cuffs around the ankle and arm and were recorded by two observers. Bland and Altman method and Intraclass correlation was used to assess the agreement between the methods. Results The median (IQR) ABPI was 0.993 (0.89-1.08) and 0.964 (0.855-1.056) with the Vicorder and manual device respectively. The mean (95% confidence interval) difference between automated and manual methods were 0.009 (-0.015 to -0.033). The Limits of Agreement (LoA) between the two methods were -0.197 to -0.215. Bland and Altman plot demonstrated that >95% of measurement sat within the LoA. Intraclass Correlation Coefficient (ICC) (95% confidence interval, p value) was 0.926 (0.881 – 0.954, <0.001).

Conclusion
Vicorder produces accurate ABPI measurements, which are in agreement with the manual method using hand-held Doppler. Further investigations are required in patients with a low (<0.8) and high >1.4 ABPI.

Take-home message
The Vicorder device is in agreement with ABPI measurements obtained by a manual hand-held Doppler and is therefore an accurate measure of ABPI.

P18 PEAK OXYGEN CONSUMPTION IS AN INDEPENDENT PREDICTOR OF MORTALITY FOLLOWING ABDOMINAL AORTIC ANEURYSM SURGERY
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Introduction
We have previously demonstrated that peak oxygen consumption (VO\textsubscript{2peak}) shows promise as a means of stratifying risk prior to abdominal aortic aneurysm (AAA) surgery. We examined whether VO\textsubscript{2} peak was an independent predictor of long-term outcome after AAA repair.
Methods
Between 02/2007 and 09/2009, 115 patients (98 men) underwent static echocardiography and cardiopulmonary exercise (CPX) testing prior to AAA surgery. Revised Cardiac Risk Index (Lee) scores were calculated for each patient. Mortality data were determined from our database; median follow-up was 932 days (range 1-1590 days). Cox-regression analysis was used to examine the associations between all-cause mortality and: (a) VO$_2$ peak, (b) anaerobic threshold (AT) and (c) left ventricular function.

Results
59 open and 56 endovascular AAA repairs were performed. The mean patient age was 74.8 years. 30-day mortality was 3.5% and 12-month mortality was 11.3%. 25 patients had died by 05/2011 giving a long-term series mortality of 21.7%. The unadjusted hazard ratio (HR) for all-cause mortality was 0.89 (95% confidence intervals (CI)=0.82-0.97) for every ml/kg/min reduction of VO$_2$ peak (p=0.009). This remained significant when adjusted for age, sex, Lee score and performance on static echocardiogram (HR=0.90 (CI=0.82-0.99), p=0.033). The association between AT and mortality was not statistically significant (HR=0.91 (CI=0.80 – 1.04), p=0.187). The association between left ventricular function and mortality was not significant in this series (HR=2.1 (CI=0.91 – 4.71), p= 0.080).

Conclusion
VO$_2$ peak is an independent predictor of all-cause mortality following AAA repair. AT was not significantly associated with long-term survival in this series. A dynamic exercise test to volitional exhaustion adds value in predicting long-term outcome after AAA surgery.

Take-home message
Peak oxygen consumption provides a means of identifying which patients may benefit from AAA surgery but a normal anaerobic threshold may be falsely reassuring for the clinician. Dynamic testing adds value to static echocardiography in risk stratification prior to AAA repair and we recommend a dynamic exercise test for all patients being considered for AAA surgery.

P19 HOW SHOULD INTERVENTION FOR SUPERFICIAL VENOUS INSUFFICIENCY BE COMMISSIONED?
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Introduction
The National Institute for Health and Clinical Excellence (NICE) uses the EuroQoL 5-Domain (EQ5D) Quality of Life (QoL) assessment to inform decisions on health resource provision; in the current climate of rationing, it is fundamental that the correct tool is used to inform commissioning decisions.

Aims
To assess the ability of current QoL tools to accurately assess the impact of Superficial Venous Insufficiency (SVI) on QoL.

Methods
Analyses of a prospectively maintained database of patients undergoing intervention for primary, symptomatic reflux in the Great Saphenous Vein. The clinical severity of patients SVI was recorded using the CEAP classification and the VCSS. Patients QoL was analysed using two generic (EQ5D, SF36) and disease specific (AVVQ) instruments.

Results
493 patients (64% female, mean age = 49years) completed the questionnaires prior to their planned intervention. Correlation between clinical severity and QoL was poor (Spearman’s rho: -0.018-0.289, p<0.05), but stronger with disease-specific than generic tools. There is a wide variation in QoL between individuals with the same level of clinical severity; some individuals with severe SVI report near full health.

Conclusion
This analysis provides further evidence to concerns that current QoL tools are inappropriate measures on which to base commissioning of treatment for SVI. Comparison with and analysis of the national PROMs data further underpins this notion. Further research will allow development of a more sensitive and accurate basis of commissioning in SVI to be developed. Until then, patients may lose out if the EQ5D continues to be used in this context.

Take-home message
Current plans for the commissioning of intervention in Superficial Venous Insufficiency are inappropriate.
P20  ATYPICAL SMOOTH MUSCLE CELL MORPHOLOGY AND FUNCTION IN ABDOMINAL AORTIC ANEURYSMS
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Introduction
Despite the key role of vascular smooth muscle cells (VSMC) in arterial function, little is known of their involvement in the progression of abdominal aortic aneurysm (AAA) disease. The aim of this study was to examine phenotype and function of VSMC cultured from aneurysmal and non-aneurysmal tissues.

Methods
VSMC were cultured from samples of AAA, internal mammary artery (IMA) and saphenous vein (SV) from patients undergoing elective surgery. VSMC were then compared morphologically (cell size) phenotypically (immunostaining) and functionally (cell proliferation by cell counting and matrix metalloproteinase (MMP) secretion by gelatin zymography).

Results
In contrast to the ‘spindle’ morphology of SV-SMC, AAA cells were highly heterogeneous and predominantly ‘rhomboid’ shaped. Immunocytochemistry confirmed the populations to be >95% VSMC (co-expression of smooth muscle actin and myosin heavy chain). Moreover 50% of AAA-SMC had cell area of < 15 000µm² compared with 75% of SV and IMA-SMC which had cell area of < 15 000µm² (P <0.001). Replication capacity of AAA-SMC was significantly impaired (4.4 fold increase versus 7.3 fold in SV-SMC over 7 days, (p < 0.001). In contrast MMP2 and MMP9 secretion were similar in both AAA and SV populations.

Conclusion
Clear phenotypical and functional differences exist between VSMC from end-stage AAA and those from non-aneurysmal tissue which may contribute to development and progression of AAA disease. Determining the underlying molecular mechanisms may provide clues for therapeutic targets. Abbreviations AAA – Abdominal aortic aneurysm IMA – Internal mammary artery SV – Saphenous vein VSMC – Vascular smooth muscle cell MMP – Matrix metalloproteinase

Take-home message
A greater understanding of the mechanisms involved in the development or predisposition of these aberrancies in smooth muscle cell function and morphology may help in the development of novel therapeutic ideas.

P21  PRESSURE-RELATED LATERAL DISPLACEMENT OF ANASTOMOSED ARTERIES AND PROSTHETIC GRAFTS IN AN IN VITRO MODEL: IMPLICATIONS FOR NEOINTIMAL HYPERPLASIA FORMATION
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Introduction
Compliance mismatch results in haemodynamic changes which contribute to the development of anastomotic neointimal hyperplasia. To determine whether, during the cardiac cycle, arteries exhibit pressure-related lateral displacement at anastomotic sites, which may also contribute to neointimal hyperplasia, we examined the effect of changes in pressure on porcine carotid arteries and polytetrafluoroethylene (PTFE) grafts in a pulsatile pressure-flow chamber.

Methods
We used 4 cm segments of porcine carotid arteries and PTFE. We divided each segment at its midpoint and used continuous 5-0 polypropylene suture to anastomose the divided segments. We then mounted the sutured segments inside the chamber. At a fixed rate of 60 pulses/ min, we acutely subjected the arteries and the PTFE to pressures of 100,150 and 200 mmHg. At each pressure, we recorded the lateral displacement of the arteries and the PTFE using video acquisition.

Results
PTFE exhibited significantly less lateral displacement than porcine carotid arteries at 100 (p<0.0001), 150 (p<0.0001) and 200 mmHg (p<0.0001) (figure 1). Lateral displacement was directly proportional to changes in pressure, and at 200 mmHg, arteries were displaced by a factor of > 1.5 while PTFE was displaced a by factor of < 1.02

Conclusions
In this in vitro model, lateral displacement of PTFE was significantly less than arterial segments. These results suggest that restricted lateral displacement of PTFE may contribute to neointimal hyperplasia formation at PTFE-arterial anastomotic sites. Further studies are warranted to determine whether decreased lateral displacement at these sites has a direct causative role in neointimal hyperplasia.
**Take-home message**

Restricted lateral displacement of PTFE grafts may be implicated in anastomotic neointimal hyperplasia formation.

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**P22  FENESTRATED ENDOVASCULAR GRAFTS LEAD TO DETERIORATION IN RENAL FUNCTION**

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**Introduction**

Fenestrated EVAR (F-EVAR) involves greater manipulation in the juxta-renal aorta, as well as cannulation and stenting of renal arteries in a majority of the patients raising concerns about long term harm to the kidneys. This study evaluated serum creatinine levels in patients undergoing F-EVAR to assess impact on renal function.

**Results**

There were 20 patients who underwent F-EVAR of which one patient was excluded from this analysis (on renal dialysis for end-stage renal failure). The remaining 19 patients were compared to a consecutive set of patients who underwent EVAR during the same period. Fifty-one vessels targeted using 34 fenestrations and 17 scallops. Complications included ruptured renal artery, renal stent migration, renal artery stenosis, renal stent fracture, renal artery occlusion, limb occlusion (1) and Type 1 endoleak (1). There were no deaths. Baseline creatinine (median) levels were comparable between the two groups (EVAR group 88; F-EVAR group 85). However, at 12 months, creatinine level was significantly higher in patients undergoing F-EVAR compared with patients who had EVAR (p=0.004).

**Conclusion**

F-EVAR is associated with deterioration in renal function and this complication should be taken into consideration in the decision making process before the procedure.

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**P23  DELAYS IN THE PATIENT PATHWAY TO URGENT CAROTID ENDARTERECTOMY FOR SYMPTOMATIC INTERNAL CAROTID ARTERY STENOSIS**

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**Introduction**

NICE guidelines recommend that patients presenting with symptomatic internal carotid artery stenosis undergo carotid endarterectomy within 2 weeks of onset of symptoms. The UK audit of Vascular Surgical Services (2010) demonstrates delays of 28 days from symptoms and 19 days from referral to surgery. Nationally only 33% of patients met this target.

**Methods**

We aim to identify pinch points which act as bars to treatment and thereby inform service restructuring and investment. A longitudinal observational patient pathway study of 50 patients consecutive patients referred with symptomatic ICA stenosis was carried out. All time points and reasons for delay for each patient were analysed.

**Results & Discussion**

Average time from symptoms to referral, clinic review and surgery was 18.9, 25.3 and 41.2 days respectively. Following referral, review occurred at a 6.4 days and surgery at 15.9 days. Patients underwent duplex scanning 8.3 days following referral. 36 of 50 patients (7%) underwent MR angiography which occurred 25.5 days following symptoms. In total 28% (n=14, range 2-47 days) underwent endarterectomy within the NICE timeframe. No patients had a stroke whilst awaiting surgery. Time from symptoms to referral and surgery was 18.9 and 41.2 days; 28% achieved the 2 week target, representing a significant delay to surgery similar to that of the national audit. Significant pinch points predominantly surrounded pre-operative imaging and urgent theatre slots. The use of a referral proforma and the request of appropriate investigations prior to review at a one-stop clinic would alleviate these pinch points.

**Take-home message**

Patients presenting with symptomatic ICA stenosis had a delay in patient pathway from symptoms to referral and surgery of 18.9 and 41.2 days; 28% achieved the 2 week NICE target. Significant pinch points surrounded pre-operative imaging and urgent theatre slots, which acted as bars to treatment. The use of a referral proforma and the request of appropriate investigations prior to review at a one-stop clinic would alleviate these pinch points.
P24  DIAGNOSING ACUTE DIVERTICULITIS – NO STANDARDISED APPROACH
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Introduction
Acute diverticulitis is a common diagnosis in patients admitted as an emergency. Although it may be a clinical diagnosis this can be supported by radiological investigations and occasionally endoscopy. After diagnosis patients are usually treated conservatively and intervention only occurs in those who develop complications (e.g. abscess formation). Following the acute admission patients can be investigated either to confirm diverticular disease or to rule out other pathologies.

Aim
To review the current pattern of management in a district general hospital.

Methods
The records of all patients admitted with a diagnosis of diverticulitis for the period of 2009-2010 were reviewed. The patient cohort was assessed for demographics, presenting symptoms, diagnostic studies, treatment outcome and follow up.

Results
A total of 275 patients were admitted of which 227 had an index diagnosis of diverticular disease. Forty eight patients (17%) previously diagnosed with diverticular disease were excluded. The median age was 73 (27-99) years, 46% were male and median hospital stay was 5 days (0-89) which included critical care admission for 8.4%. Early diagnosis was aided by computed tomography 39%, ultrasonography 15%, flexible sigmoidoscopy 15% and colonoscopy 9%. Follow up investigations included flexible sigmoidoscopy 37%, colonoscopy 35%, CT 5% and CT colonography 19%. 39.6% of patients were subsequently seen in a clinic. Conclusion

Our series revealed variable usage of imaging tests which was mainly consultant driven and no standard pattern for patient follow up. An algorithm to standardise practice would be helpful in reducing unnecessary investigations, clinic appointments and would have positive economic implications for the trust.

Take-home message
A standard guideline for management of acute diverticulitis would be ideal.

P25  AETIOLOGY AND OUTCOME OF SEVERE ACUTE INTESTINAL FAILURE
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Introduction
Acute severe intestinal failure (IF) is an uncommon, but devastating complication of abdominal surgery. This study aimed to identify the aetiology and outcome of IF.

Methods
Retrospective analysis of prospectively collected data related to consecutive new admissions with IF at a single national centre, from 1st April 1998 - 31st March 2011.

Results
587 patients [M: F = 252: 335, mean (range) age 51.5 [15 – 86] years were admitted. Complete data were available for 571 (97.3%). Aetiology: The primary causes of IF were short bowel syndrome (n= 186, 32.6%), open abdomen with intestinal fistula (125, 21.9%), & intestinal fistula (n= 100, 17.5%). Sepsis was present in 82 (14.4%) of patients on admission. The underlying clinical diagnoses were surgical complications (n=244, 42.7%), Crohn’s disease (n=109, 19.1%) and mesenteric ischaemia (n=80, 14%). Surgical outcome: 65 patients (11.4%) required urgent surgery to treat sepsis. 62 patients (10.9%) underwent reconstructive surgery on admission, following which 12 (26.7%) required long term home parenteral nutrition (HPN). 150 (26.3%) patients were discharged pending reconstructive surgery. TPN was required in 329 (57.6%) patients, whereas enteral tube feeding/fistuloclysis were required in 72 (12.6%). Artificial nutritional support was not required in 126 (22.1%). 44 patients (7.7%) died. The most common cause of death was abdominal sepsis (n=21, 48%).

Conclusion
The majority of IF is caused by complications of abdominal surgery, resulting in short bowel syndrome and/or intestinal fistulation. Most fistulas in IF occur in the open abdomen. Management of sepsis and ability to provide TPN without complications are vital.
P26  THE INTRODUCTION OF A LAPAROSCOPIC COLORECTAL SERVICE AND ENHANCED RECOVERY PROGRAM IS ASSOCIATED WITH REDUCED LENGTH OF STAY, POST-OPERATIVE PAIN AND COMPLICATIONS

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Introduction
To determine whether laparoscopic colorectal surgery and an enhanced recovery programme (ERP) has improved length of stay and outcome in a district general hospital.

Method
Between October 2009 and 2010, all elective colectomies performed in a district general hospital were recorded. The laparoscopic colorectal service and ERP was introduced for the final six months. Patient length of stay, post-operative pain and complications were analysed retrospectively. The data was dichotomised into open surgery (OS) or laparoscopic surgery (LS).

Results
Of 111 colectomies (85 open vs. 26 laparoscopic), there was no significant difference between age, sex and ASA grade between groups. OS patients used more PCA than LS patients for a longer duration (25h vs. 42h, p=0.003). In OS, ERP reduced length of stay from a median of 8 to 6 days (p=0.39). When ERP was combined with LS, length of stay was reduced to a median of 4 days (p=0.007). Respiratory complications and post-operative ileus were significantly higher in OS (p=0.000). 30 day mortality was similar (3.5% OS vs. 3.8% LS; p=0.847).

Conclusion
Laparoscopic colorectal surgery and enhanced recovery is associated with reduced post-operative pain, shorter hospital stays and a reduction in post-operative ileus and respiratory tract infection compared to open colorectal surgery.

P27  THE ROLE OF NEOADJUVANT CHEMORADIOThERAPY AND OTHER FACTORS IN DELAYED WOUND HEALING FOLLOWING ABDOMINOPERINEAL EXCISION OF THE RECTUM

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Introduction
Wound complications are a source of significant morbidity following Abdominoperineal Excision of Rectum (APER). Much is known about wound healing; however there is relatively little data on specific factors influencing wound healing after APER, particularly concerning the role of neoadjuvant chemoreadiotherapy (NCRT). The aim of this study was to assess the affect of long and short course NCRT on wound healing following APER for malignant disease.

Methods
The study included consecutive patients who underwent APER between January 2003 and January 2011 at a single district general hospital. Wound healing for abdominal and perineal wounds was determined at 6 weeks, 3 months and 6 months postoperatively. The association of impaired wound healing with long and short course NCRT was assessed in addition to a range of other factors including; age; gender; wound infection; diabetes mellitus and pre-operative albumin levels. Statistical analysis was conducted using the Chi-squared test. P values <0.05 were considered statistically significant.

Results
Data from 49 patients (30 males, 19 females) who underwent APER was analysed. Age, gender, pre-operative albumin levels, long and short course NRCT did not correlate significantly with impaired wound healing. Factors significantly associated with impaired wound healing were wound infection and diabetes mellitus. Wound infection was consistently associated with impaired healing of abdominal and perineal wounds at all time points studied. Diabetes mellitus was significantly associated with impaired perineal wound healing at 6 weeks (p = 0.037).

Conclusion
Neoadjuvant chemoradiotherapy does not appear to be related to impaired wound healing following APER.

Take-home message
This study highlights that factors other than neoadjuvant chemoradiotherapy impact upon wound healing. Two factors potentially under our influence have been identified; wound infection and diabetes mellitus. Suggesting that peri-operative optimisation of diabetes mellitus alongside early recognition and appropriate management of wound infection may result in reduced frequency of impaired wound healing postoperatively.
P28 DIFFUSION TENSOR IMAGING (DTI) OF DESMOID TUMOURS IN FAMILIAL ADENOMATOUS POLYPOSIS: INITIAL EXPERIENCE

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Introduction
To assess the feasibility of diffusion tensor imaging (DTI) of desmoid tumours in familial adenomatous polyposis (FAP).

Methods
Following ethical approval and informed consent, FAP patients with desmoids underwent DTI. Fractional anisotropy (FA), relative anisotropy (RA) and apparent diffusion coefficient (ADC) were compared to control muscle using Mann-Whitney test; and to tumour site and signal intensity using one way analysis of variance (ANOVA). Imaging was repeated after 1 year.

Results
15 desmoids (6 intra-abdominal; 6 abdominal wall, 3 extra-abdominal; size range: 1.6 to 22.9 cm) were evaluated in 9 patients. DTI was successful in 12/15 desmoid tumours. Median (range) of RA, FA and ADC were 0.23 (0.17 to 0.26); 0.27 (0.21 to 0.31); and 1.65 (1.39 to 1.91) X10^-3 mm^2/s for desmoids, significantly different from muscle: 0.27 (0.23 to 0.40), 0.32 (0.28 to 0.46), and 1.45 (0.92 to 1.63) X10^-3 mm^2/s (p=0.0001, p=0.0001, p=0.0016 respectively). There was no difference in RA, FA or ADC between tumour sites, or signal intensity (p>0.05). One year later, 2 patients had died. Tumour increased in size in 1 patient (+61%). DTI quantification was possible in only 8/13 tumours. FA, RA and ADC were not significantly different from baseline (p=0.77, 0.71 and 0.34 respectively).

Conclusions
Assessment of water diffusion has the potential to provide insight into tumour microstructure and is feasible in desmoids. Desmoid tumours demonstrate anisotropy but diffusion is less restricted and less directional than in muscle.

Take-home message
Modern functional MRI (DTI) is feasible in desmoid tumour in FAP and its potential role in understanding tumour behaviour needs exploring with further studies.

P29 CAN COMBINED FLUORINE - 18 FLURODEOXYGLUCOSE POSITRON EMISSION TOMOGRAPHY (18F-FDG PET) AND DYNAMIC CONTRAST ENHANCED MAGNETIC RESONANCE IMAGING (DCE-MRI) PREDICT BEHAVIOUR OF DESMOID TUMOURS IN FAMILIAL ADENOMATOUS POLYPOSIS (FAP) PATIENTS?

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Introduction
Desmoid tumours are rare myofibroblastic tumours, more common in familial adenomatous polyposis (FAP) patients. Their behaviour is variable, about 10% growing relentlessly and resulting in severe morbidity or mortality. Investigations which could identify the minority of desmoids which behave aggressively would allow these to be treated early, and spare the majority of patients with more benign disease from unnecessary intervention.

Methods
Nine FAP patients (four male, mean age 39) with desmoid tumour underwent 18F-FDG PET CT and DCE-MRI. Tumour location, size, T2 signal characteristics, DCE parameters and SUVmax were recorded. MRI was repeated a year later to assess tumor growth.

Results
Failed IV access precluded DCE-MRI in 1 female patient. Thirteen desmoid tumours (4 intra-abdominal, 2 extra-abdominal, 7 abdominal wall; mean area 68cm^2) were analysed in the remaining 8 patients. Five tumours decreased in size, 3 increased in size and 3 remained stable after a year. There was no significant correlation between SUVmax and vascular parameters (Spearmann Rank correlation, significance at 5%) (Ktrans (r=-0.47, p=0.09; Ve r=0.11, p=0.72; kep r=-0.56, p=0.04; IAUGC60 r=- 0.47, p= 0.10). There was no significant difference in the SUVmax or DCE parameters (Ktrans, Ve, Kep, IAUGC60) between the tumours that grew or decreased in size or between the tumour sites (One –way analysis of variance, ANOVA).

Conclusions
While SUVmax and DCE parameters were generally higher for growing than resolving tumours, the difference was not significant. FDG PET and DCE MRI parameters were not predictive of tumour behaviour in this study.
Take-home message
Dynamic Contrast Enhanced MRI (DCE-MRI) and 18F FDG PET are feasible in desmoid tumours, however, the roles of these molecular vascular imaging in identifying aggressive tumours need to be evaluated with further studies.

P30 PORCINE HEPATO-BILIARY AND PANCREAS RETRIEVAL TECHNIQUE: IMPLICATIONS FOR ORGAN PRESERVATION, PHYSIOLOGICAL STUDY AND TRANSPLANTATION
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Introduction
Organ transplantation is critically reliant on the supply from heart beating, non-heart beating and living related donors. There is renewed interest in xenotransplantation both as a bridge to transplantation and as an organ source per se. Organ retrieval and preservation in an unfamiliar species are crucial steps when trying to preserve maximal organ function and survival. In addition the use of ex-vivo perfused models can accurately and reproducibly mimic physiological conditions for prolonged periods. They facilitate detailed studies while avoiding the need for the use of live animals. We have developed a logical and straightforward technique for the retrieval and preservation of the porcine liver, biliary tract and pancreas.

Methods
Porcine liver, gallbladder and pancreas were retrieved and preserved from 20 pigs using a standardised technique. We describe the development of this approach and our experience in Leicester using these retrieved organs.

Results
In the porcine liver retrieval, ischemia times were reduced with rapid portal vein cannulation and infusion of cold preservation solution. The en bloc technique included an aortic patch, stomach, spleen, pancreas, liver and gallbladder. If pancreas was retrieved for islet isolation, the most important step was the cannulation of pancreatic duct and perfusion with cold preservation solution.

Conclusions
Reduced ischaemia time of organ retrieval and early infusion with cold preservation solution prolongs subsequent organ survival and maintains physiological function. This is achievable with a well structured technique.

P31 SEVERE COLONIC COMPLICATIONS REQUIRING SUB-TOTAL COLECTOMY IN ACUTE NECROTIZING PANCREATITIS - A RETROSPECTIVE STUDY OF 8 PATIENTS
P Nitin, N Rahul, J Vismit, H Sanjiv
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Abstract Withdrawn
P32 AUDIT ON THE MANAGEMENT OF ACUTE PANCREATITIS – HOW GOOD ARE WE AT FOLLOWING THE GUIDELINES?
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Introduction
The management of acute pancreatitis (AP) in the United Kingdom follows guidelines published by the British Society of Gastroenterology which identify important targets that are believed to improve outcome. The aim of this study was to audit adherence to the guidelines, institute a training program, and then re-audit clinical practice.

Methods
During the initial phase, all cases of biochemically confirmed acute pancreatitis (amylase > 400 IU/l) managed during a 12-month period were identified. Demographic, biochemical and radiological data were collected. Following a transition period during which trainees were educated in relation to the guidelines, prospective data collection was commenced for a second 12-month period.

Results
129 episodes of AP were confirmed in 127 patients during the first period, consisting of 79 women and 48 men with a mean age of 61.1 years (range: 18-98). Of the 10 criteria within the guidelines, the only one clearly met was diagnosis within 48 hours. Following introduction of an education for junior doctors, the audit was repeated. In the repeat study, 187 episodes of AP were confirmed in 178 patients consisting of 94 women and 86 men with a mean age of 58.4 years (range: 18-93). In the second, the only target not achieved was definitive management within 2 weeks of presentation.

Conclusion
This audit has demonstrated that a process of education of junior doctors and use of a simple aide memoire can dramatically improve the care of patients with acute pancreatitis leading to improvements in both morbidity and mortality.

P33 NEUROENDOCRINE TUMORS OF THE PANCREAS: AN ANALYSIS FROM A TERTIARY HOSPITAL FROM SOUTH INDIA
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Amrita Institute Of Medical Sciences

Abstract Withdrawn
P34 SYMPTOMATIC CHOLELITHIASIS HAS 6FS: A CLINICAL VALIDATION OF EPIDEMIOLOGICALLY-DERIVED HISTORICAL PREDICTORS

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Introduction
The ‘5 Fs’ heuristic – ‘Fat, Female, Forty, Fair and Fertile’ can identify patients with upper abdominal pain that have the highest likelihood of having cholelithiasis. However, in our experience, there is also a missing ‘F’, ‘Family History’. Aim: To quantify the value of the existing 5Fs and putative sixth, and hence construct a predictive scoring system.

Methods
398 patients admitted for evaluation of upper abdominal pain were grouped for analysis based on the presence or absence of cholelithiasis. Hierarchical multiple linear regression established the independent predictive factors. These significant variables were then weighted to create the scoring system.

Results
The gallstone group contained significantly more female (75.8% vs 55%, p<0.001), fair (62.9% vs 32.1%, p<0.001) and multiparous (45.5% vs. 33% 3 or more children, p=0.039) patients. Patients with a BMI>30 were more prevalent in the gallstone group (74.7% vs 25.3%, p<0.001). Most patients were over the age of 40, but age did not predict gallstones (58.6% vs 59.3%, p=0.889). 74.3% of the gallstone group had at least 1 first-degree relative with a family history compared with 25.7% of controls (p=0.006). Optimal cutoffs were used to risk-stratify patients on the basis of their history. Patients with a score of 6/12 or more points were significantly more likely to have a diagnosis of symptomatic cholelithiasis than those with 5 or fewer (p<0.001).

Conclusion
We have demonstrated the power of an extended ‘6Fs’ heuristic in the diagnosis of symptomatic cholelithiasis, and have distilled its significant components into a novel algorithm.

Take-home message
The 6Fs, elicited by history alone, are extremely useful in predicting symptomatic cholelithiasis. This rapid, reproducible scoring system may be valuable in directing appropriate use of imaging and further investigation in these patients.

P35 MANAGING OESOPHAGECTOMIES WITHOUT ROUTINE CRITICAL CARE IS SAFE AND EFFECTIVE

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Introduction
The 2010 National Oesophago-Gastric Cancer Audit found 96% of oesophagectomies were admitted direct from recovery to critical care (CC). Demand for elective and emergency CC continues to increase.

Methods
All elective oesophagectomies at a single cancer centre 1.1.2008 – 31.12.2010 were performed with a default management of direct transfer from recovery to a dedicated upper GI surgery ward. Patients with significant co-morbidity or perioperative risk factors were admitted direct to CC. Rate of subsequent admission / readmission to CC, in-patient mortality and length of stay (LOS) were determined retrospectively and compared to national audit data (14%, 3.8% and 14 days [Inter-quartile range 11 - 21] respectively).

Results
164 consecutive oesophagectomies were reviewed (131 men, median age 65 [58 – 71]). 140 patients (85%) were admitted direct to the upper GI surgery ward from recovery (WARD GROUP), 24 patients (15%) were admitted direct to CC (CC GROUP) with a median initial CC stay of 1 day [1 – 3]. 20 patients (12%) required 27 subsequent admissions / readmissions to CC. There were 2 in-patient deaths. Overall in-patient mortality was 1.2%. Overall postoperative median LOS was 13 days [11 - 16]. There was no statistically significant difference between CC GROUP and WARD GROUP in-patient mortality (p = 0.544) or CC admission / readmission rate (p = 0.876). WARD GROUP LOS 13 [10-16] was shorter than CC GROUP LOS 16 [12-21] (p = 0.0137).

Conclusion
Most oesophagectomies can be managed without routine critical care with outcomes comparable to conventional practice.
Take-home message
Most oesophagectomies can be managed without routine critical care, liberating resources with potential cost savings. Data from 164 consecutive oesophagectomies demonstrates this can be achieved with outcomes comparable to the national audit standard.

P36 TUMOUR CELL INVASION OF LYMPHATICS AND VESSELS: TWO IMPORTANT PROGNOSTIC HISTOLOGICAL FACTORS IN THE MANAGEMENT OF GASTRIC TUMOURS
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Introduction
The tumours cells invasion of blood vessels and lymphatic network is associated with tumour recurrence and lymph node metastases. We aim to investigate the incidence and prognostic significance of gastric tumour cell invasion of local lymphatics and blood vessels in a cohort of patients undergoing gastric surgery at a single institute.

Methods
A study was carried out of 49 patients who underwent surgical resection for primary gastric adenocarcinoma. All histological, demographic and follow-up details were collected. No patient in the study population had received neoadjuvant chemotherapy.

Results
The median age of the patients was 66 years (range, 42–74). The vascular invasion was seen in 13 (27%) patients and the lymphatic invasion in 11 (23%). Both lymphatic and vascular invasion were associated with tumour recurrence (p=0.02). The overall (p=0.04) and cancer specific survival (0.03) was poor in patients with vascular and lymphatic invasion.

Conclusion
The histological features of vascular and lymphatic invasion are associated with poor outcome. Improved neoadjuvant chemotherapy regimens can help to improve survival in gastric cancer patients especially after the introduction of MAGIC chemotherapy in the management of gastric cancer patients.

Take-home message
The histological features of vascular and lymphatic invasion are associated with poor outcome and neoadjuvant chemotherapy can help to improve prognosis.

P37 DOES RUNNING AN ESTABLISHED LAPAROSCOPIC ADJUSTABLE GASTRIC BANDING (LAGB) BARIATRIC SERVICE AFFECT THE ACUTE SURGICAL TAKE?
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Introduction
The number of hospital admissions related to obesity increased from 8,000 in 2008/09 to 10,600 in 2009/10. 32% of admissions for obesity are unplanned. This raises the question; does running an established LAGB bariatric service affect the acute surgical take?

Methods
Between July 2003 and July 2011, 1,502 morbidly obese patients were treated with LAGB. We conducted a retrospective analysis of all band-related emergency attendances to the Surgical Assessment Unit (SAU) between July 2010 and July 2011. Symptoms, diagnostics, interventions and follow-up of patients were analysed.

Results
There were 4,964 emergency SAU attendances. The number of emergency band-related attendances was 48 (0.97%). Only 35 (72.9%) patients were previously known to our unit. Patients presented with dysphagia (41), abdominal pain (6) and exposed band (1). Diagnoses of over-restriction (34), transient-dysphagia (6), slipped-band (2), infected-band (2) and unrelated diagnosis (4) were made. 27 patients had a successful blind aspiration of their adjustable port, 8 patients required radiological aspiration, 9 patients required no intervention. 4 patients required surgical intervention; band unfastening for slipped-band (2), band removal for infected-band (1) and for other intra-abdominal sepsis (1). Only 16 (32.7%) patients were admitted to hospital. The median length of hospital stay was 0 (0–26) days. Our re-attendance rate is currently 2.3% per annum.
Conclusion
Emergency band-related attendances are rare. Only a third of patients were admitted to hospital and only a quarter of these required operative intervention. Despite the huge increase in obesity-related admissions nationally, the emergency band-related attendances do not appear to greatly affect the acute surgical take in our high volume LAGB bariatric unit.

Take-home message
Emergency band-related attendances are rare (0.97%). The re-attendance rate is 2.3% per annum. Only a third of patients were admitted to hospital and only a quarter of these required operative intervention. Despite the huge increase in obesity-related admissions nationally, the emergency band-related attendances do not affect the acute surgical take.

P38 REPAIR OF GIANT HIATUS HERNIAS (HH) WITH BIOLOGICAL PROSTHESIS: IMPROVED FUNCTIONAL OUTCOME
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Introduction
High recurrence & serious life threatening complications have been recorded following giant HH repair with synthetic meshes. To review whether laparoscopic biological mesh fixation followed by anterior gastropexy reduces recurrence and improves patient outcome.

Methods
Study included patients referred to the upper GI unit with symptomatic, endoscopic and radiologically confirmed giant hiatus hernias between Sept-07 & Dec-10. Patients had 5-10cm hiatal defects with >50% of stomach in chest. Meticulous dissection was followed by anterior/posterior hiatal repairs without tension. A 3-4cm tennis-racket shaped gap was created in the centre of a biological mesh that helped to bridge the residual hiatal defect >2-3 cm and simultaneously allowed the oesophagus to lie loose in the gap. Mesh fixation to the diaphragm was followed by a 180° anterior fundoplication. A validated questionnaire assessed functional outcomes at 6* months (range 2-18).

Results
Study included 17 patients with a female: male ratio of 15:2, age of 74* (69-91) years and ASA 3*. Presentations included dysphasia 12, heartburn 9, chest pain 8 and vomiting 8. 13 and 4 patients underwent elective and emergency procedures respectively. Operative time was 210* (150-240) minutes and hospital stay 2* (1-14) days. Two patients died (1 from MOF following a postoperative bleed and the second from respiratory failure). Follow up was 12* (3-35) months; one had recurrence while the rest were all asymptomatic with a good quality of life.

Conclusion
Our technique of laparoscopic giant hiatus hernia repair with biological prosthesis is a challenging but unique with a successful outcome.

Take-home message
Our novel technique has not only a reduced recurrence rate but also improved functional outcome

P39 IMPLEMENTATION OF A CLERKING PROFORMA FOR TONSILAR INFECTION ADMISSIONS
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Introduction
Admissions with acute tonsillar infection (tonsillitis, peri-tonsillar abscess and infectious mononucleosis) commonly follow clinical assessment conducted by junior doctors. Concise and clear documentation is crucial to good communication and facilitates efficient senior review and handover.

Methods
Clerking documentation performed by junior ENT doctors was audited on sixty-one patients admitted with acute tonsillar infections. The first cycle audit was performed retrospectively followed by implementation of a ‘tonsillar admissions pro forma’ to replace free-hand clerking. This pro forma included a standard list of relevant clinical parameters (from history and examination) compiled following the systematic evaluation of four popular ENT textbooks. The documentation of the presence or absence of each of these findings scored one point, with a maximum score of 41. Education of junior doctors was followed by the second cycle audit (undertaken prospectively).
Results
The first-cycle median score was 14 (95% confidence interval 12.9 – 15.5, range of 6 – 24). The second cycle median score was 38 (95% confidence interval 37.5 – 39.0, range of 34 to 41). Wilcoxon rank sum test demonstrated the observed improvement to be statistically significant (p<0.0001). This demonstrates that a standardised admission pro forma, specifically for use in acute tonsillar infections, greatly improves documentation.

Conclusions
Implementation of a specialised clerking pro forma has greatly improved documentation for tonsillar infection admissions. Improved documentation is important with the implementation of the EWTD where junior doctors are increasingly likely to undertake shift work thereby relaying upon admissions clerking as an efficient means of handover and continuity of care.

Take-home message:
Implementation of a clerking pro forma greatly improves documentation. This is an important means of handover and continuity of care with the introduction of shift work following implementation of the EWTD.

P40 THE USE OF ROBOTICS IN OTOLARYNGOLOGY-HEAD AND NECK SURGERY
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Introduction
A robotic approach to surgery improves visualization, precision, and articulation, eliminating many of the problems encountered with conventional minimally invasive techniques. Due to the rise in technically challenging endoscopic procedures in ENT surgery, robotic surgery may have a role to play. The aim of this study was to determine whether robotic surgery conveys any benefits compared to conventional minimally invasive approaches in ENT surgery, specifically looking at precision, operative time, and visualization.

Methods
This was a systematic review of the literature. We conducted searches of MEDLINE, EMBASE and CENTRAL using the following strategy: ((robot* OR (robot* AND surgery)) AND (ent OR otolaryngology)) to November 2010. Articles were reviewed by authors and data compiled in tables for analysis.

Results
There were 33 references included in the study. Access and visualization were subjectively reported as key benefits in 12 studies. 6 studies showed decrease in operative time and 1 showed increase due to setup difficulties. 7 studies showed improvements in precision in otological and skull base surgery. 6 studies reported postoperative outcomes equivalent to or better than conventional surgery.

Conclusions
The evidence base to date suggests there are benefits to robotic surgery in ENT surgery, particularly with regards to access, precision, and operative time but there is a lack of controlled, prospective studies with objective outcome measures. In addition, economic feasibility studies must be carried out before a robotic ENT service is established. ENT = Ear, Nose and Throat CENTRAL = Cochrane Central Register of Controlled Trials

Take-home message
This systematic review found benefits with regards to access and visualisation and precision in adopting a robotic approach compared to conventional minimal access surgery, but here is a need for prospective, randomized, controlled trials before recommendations can be made regarding the widespread adoption of robotic ENT surgery.

P41 SOUTH WEST OF ENGLAND ‘QUESTIONNAIRE SURVEY’ ON TREATMENT PRACTICE FOR MALIGNANT MELANOMA (MM)
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Introduction
Sentinel lymph node (SLNB) is a strong predictor of overall survival and risk of recurrence 1, 2. Various studies have shown that sentinel lymph node evaluation improves accuracy of prognostication 3. Revised UK guidelines suggest patients with stage IB (AJCC Staging) or higher require SLNB and referral to specialist skin cancer multidisciplinary team 4. The aims of this study were to analyze the current practice being followed for treatment of Malignant Melanoma (MM).
Methods
A questionnaire to collect data on the treatment plan for Melanomas was circulated to South West of England. Details included the criteria for Sentinel lymph node biopsy (SLNB), treatment pattern for skin grafting and usage of antibiotics. Data are presented as medians (range).

Results
Total number of hospitals included were 27 and 78 questionnaires were sent out. Total Response received was 41%. SLNB was performed in 9 centres, criteria for performing SLNB was variable. Results showed 6% carried out SLNB for a thickness of 0.5mm, 6% for 0.75mm, 60% for 1mm and 20% for >1mm. Vac therapy used routinely by 2 surgeons after skin grafting and antibiotics were used by 5 surgeons.

Conclusion
Management of patients with positive SLNB was variable in different centres and there was no particular common criteria used by multiple surgeons in different single centres. Introduction of guidelines to ensure best practice for management of melanoma could standardise the practise in the region.

Take-home message
Guidelines would promote a standardised best practise.

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**P42 PONSETI TECHNIQUE ACHILLES TENOTOMY: CAN THE FEEL OF THE TENOTOMY PREDICT PROBLEMS?**

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Introduction
Ponseti clubfoot treatment has gained popularity over the last decade. The infant is likely to undergo an Achilles tenotomy as part of their treatment. It is well recognised amongst practitioners performing this procedure that there is usually a satisfying give with the tenotomy but in a minority there is a slow gradual release. To the authors knowledge we are not aware of any studies looking at ease of tenotomy to predict problems.

Method
We reviewed the medical records of 69 infants (20 female, 49 male).

Results
The number of pre-tenotomy casts averaged at 3.6 (min 2 – max 11). There were a total of 104 tenotomies (right 20, left 14, bilateral 35). 27 had a gradual release of which 26 required longer treatments in cast or re-tenotomies (4). 4 patients had bilateral tenotomies of which one side was a good release and the other was gradual. In all of these patients the side with a gradual release required longer in cast post-tenotomy. Conclusion

Our study shows that patients with a gradual release are more likely to stay in a cast for longer post-tenotomy or require re-tenotomy. We recommend that these patients are reviewed more closely to ensure they do not run into any problems. We also recommend an ultrasound scan three weeks post tenotomy.

Take-home message
Tenotomy for correction of Congenital Talipes Equinovarus can help with prognostic indications for child.

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**P43 MINIMISING LEG-LENGTH DISCREPANCY FOLLOWING PRIMARY TOTAL HIP ARTHROPLASTY: AN INTRA-OPERATIVE MEASUREMENT TECHNIQUE**

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Introduction
This study aimed to determine whether significant leg length discrepancy (LLD) can be reduced following hip replacement surgery, using retractor pin and a reference point as a simple intra-operative measurement technique.

Methods
Retrospective analysis on a series of primary total hip arthroplasties (THA) was conducted. The nature and extent of pre and post-operative LLD was calculated and results compared according to the technique used for intra-operative adjustment of leg length.
Results
89 primary THA were analysed, mean age was 74 years (range 54 – 90 years). The mean postoperative LLD was 7.44 mm (range 0-29). There was no statistically significant relationship between the extent of LLD pre and post-operatively (P=0.10). No difference was found between the type of prosthesis fixation (cemented, uncemented, hybrid) and the extent or nature of LLD. Pin measurement technique was used in 56 cases, compared to 33 cases where clinical assessment alone was performed. Statistical analyses were used to examine variation in measurements. Despite the absence of significant differences in the extent or nature of LLD preoperatively across both groups, using the pin measurement was associated with lower LLD postoperatively with median LLD=4mm (IQR 0-6), compared to clinical assessment alone with a median LLD=8mm (IQR 5-12) (P=0.001). Results revealed a greater proportion of limb equalisation when pin measurement was performed, 30% compared to 14%.

Conclusions
The measurement technique described is a useful adjunct in reducing leg-length discrepancy following primary total hip arthroplasty. It has the advantage of being simple, easily reproducible and at low cost.

Take-home message
In summary, the use of intra-operative pin measurement technique helped reduce the extent of post-operative leg length discrepancy measured on plain film radiographs. Further studies are required in order to determine the impact of this technique on functional outcomes and patients perception of leg length discrepancy.
U1 LINEAGE TRACKING IN SITU: WHERE ARE THE PROSTATE STEM CELLS? WHAT ARE THEY DOING?
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Introduction
Stem cells accumulate non-pathogenic mitochondrial DNA (mtDNA) mutations, resulting in a measurable defect in oxidative phosphorylation (OXPHOS), which is transmitted to their progeny. This method allows the mapping of the fate of stem cells in situ. This novel method is used in this instance to study human prostate stem cells.

Methods
Histologically benign specimens were studied from 30 patients. Sequential enzyme histochemistry and immunofluorescence were employed to identify respiratory chain defects and prostate histology. mtDNA mutations were confirmed by whole mitochondrial genome sequencing of areas of interest, following laser capture microdissection.

Results
Respiratory chain defects due to somatic mtDNA mutations can be found within prostate epithelia and are seen to clonally expand along acini. Neighbouring acini deficient in OXPHOS are seen to share mtDNA mutations, supporting that a single stem cells clonally expands to generate entire branching networks of the gland either through branching or gland fission. A common clonal origin for basal, luminal and neuroendocrine cells was demonstrated, resolving key areas of debate in prostate stem cell biology. Formal 3D reconstruction of samples will allow the further characterisation of stem cell fate, identification of where prostate stem cells reside in the gland and identification of novel and improved markers of prostatic stem cells.

Conclusion
The study of mtDNA mutations in the prostate is applicable to the characterise stem cell fate in situ.

Take home message
Better characterisation of prostate stem cells will allow further understanding of what mechanisms go wrong in both benign and malignant disease.

U2 THE PROTEIN PS20 INCREASES TUMOURIGENIC POTENTIAL IN PROSTATE CANCER EPITHELIAL CELLS
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King’s College London

Introduction
The protein ps20 encoded by the WFDC1 gene contains a highly conserved whey 4-disulphide core (WFDC) domain and is a member of a protein family that regulates inflammation. Ps20/WFDC1 is expressed by prostate cancer stromal cells but its expression by cancerous prostate epithelium is associated with tumour progression in patients. The aim of this study was to determine how WFDC1expression by prostate cancer cells alters their tumourigenic properties.

Methods
The cell-lines LNCAP and PC3 were transfected with WFDC1 vector or empty vector (EV) and their growth, adhesive and migratory characteristics were investigated by MTT proliferation, transwell migration and ICAM-1 adhesion assays.

Results
PC3 and LNCAP cells transfected with WFDC1 increased in numbers by 3148±151% and 523±311% after 48 hours respectively compared to EV transfected cell lines (p <0.01 by unpaired T test). WFDC1-transfected cells became smaller and tightly clustered with greater cell-cell contact (See Figure 1). WFDC1 transfected cell migration through 8µM transwells was increased by 73% in PC3s and 57% in LNCaP compared to EV cells (p<0.05 by paired t-test). ICAM-1 expression increased by 67% in WFDC1-LNCaP and by 50% in WFDC1-PC3s compared to EV-cells (p<0.05 by paired t-test). VEGF (vascular endothelial growth factor) was also strongly detectable in the WFDC1-PC3 and LNCaP cells by western-blot whereas none was detectable in EV cells.
Conclusion
WFDC1 transfection of prostate cancer epithelial cells increases proliferation, migration and ICAM-1 expression, and also induces VEGF, which is a potent angiogenic growth factor. WFDC-1/ps20 may therefore be a critical target for prostate cancer therapeutics.

Take home message
Agents that can inhibit WFDC-1/ps20 expression on tumour cells may be critical in therapeutics targeting prostate cancer, particularly in modalities using localised regioselective delivery to prostate cancer lesions.

U3  WFDC1/PS20 INHIBITS EXPANSION OF CD8-T CELLS AND NK CELLS AND EFFECTOR CELL MEDIATED KILLING OF PROSTATE CANCER CELLS IN THE PROSTATE CANCER MICROENVIRONMENT

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Introduction
The protein ps20, encoded by the WFDC1 gene, is a member of a family consisting of one or more whey-4-disulphide core domains (WFDCs). Ps20/WFDC1 expression by prostate cancer epithelium may correlate with tumour progression. Ps20 is known to inhibit CD4 T cell effector function. The prostate cancer lines PC3 and LNCaP both express ps20 at low levels. The aim of this study was to determine whether increased soluble ps20 can inhibit CD8 and NK cell expansion in prostate cancer-lymphocyte co-cultures.

Methods
Irradiated prostate cancer cell-lines LNCaP and PC3 were incubated with non-adherent PBMCs at an 8:1 effector:target ratio. IL-15, which can expand NK and CD8-T cells in this model, was added at 1ng/ml to give sub-maximal NK and CD8 expansion. Soluble recombinant ps20 was added at 0.1-20µg/ml. After 7 days, flow cytometry was carried out using anti-CD8, anti-CD3 and anti-CD56 to determine numbers of NK and CD8-T cells. Percentages of dead/apoptotic tumour cells were determined by propidium-iodide/annexin staining.

Results
With LNCaPs, 2µg/ml ps20 inhibited CD8 expansion by 36%+/-4% (p<0.01 by 1-way anova and post-hoc Newman Keuls) and NK cell expansion was inhibited by 50%+/-18% with LNCaPs, 38% +/-5% with PC3s and 33% +/-9% with non-adherent PBMCs alone(p<0.01 by 1-way anova and post-hoc Newman Keuls). Killing of LNCaPs and PC3s was inhibited by upto 30% and 50% respectively without affects on PBMC viability.

Conclusion
Ps20 inhibits NK and CD8-T cell expansion, and tumour cell killing in prostate cancer-PBMC co-cultures. Ps20 inhibition should therefore be considered in immunotherapies for prostate cancer.

Take home message
WFDC-1/ps20 expression on tumour cells acts as an immunological checkpoint and its inhibition may be critical in immunotherapies targeting prostate cancer, particularly in immunotherapeutic modalities using localised regioselective delivery to prostate cancer lesions.

U4  CIRCULATING MICRORNA SIGNATURES: A NOVEL MINIMALLY INVASIVE BIOMARKER FOR PROSTATE CANCER

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Introduction
Mi(cro)RNAs are small non-coding RNAs whose differential expression in tissue has been implicated in the development and progression of many malignancies, including prostate cancer. The discovery of miRNAs in the blood of patients with a variety of malignancies makes them an ideal, novel biomarker for prostate cancer diagnosis. The aim of this study is to identify a unique expression profile of circulating miRNAs in patients with prostate cancer attending a rapid access prostate assessment clinic.

Methods
RNA was extracted from whole-blood samples from 102 patients (75 with biopsy confirmed cancer and 27 benign samples) attending a prostate assessment clinic. Samples were reverse-transcribed using stem-loop primers and expression levels of each of 12 candidate miRNAs were determined using real-time quantitative PCR. MiRNA expression levels were then correlated with clinicopathological data and subsequently analysed using qBasePlus software and Minitab.
**Results**

Circulating miRNAs were detected and quantified in all subjects. The analysis of miRNA mean expression levels revealed that 4 miRNAs were significantly dysregulated, including the tumour suppressor let-7a (p=0.005), along with the oncogenic miR-141 (p=0.01). In 20 patients undergoing a radical retropubic-prostatectomy, the expression levels of miR-141 returned to normal at day 10 post-operatively. A panel of 4 miRNAs could be used in combination to detect prostate cancer with an AUC of 0.783 and a PPV of 80%.

**Conclusion**

These findings identify a unique expression profile of miRNA detectable in the blood of prostate cancer patients. This identifies their use as a novel, diagnostic biomarker for prostate cancer.

**Take home message**

We have identified a miRNA signature that is unique to men with prostate cancer in a high risk group. This highlights their use as a novel, minimally invasive biomarker.

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**U5 EMT BIOMARKERS IN PROSTATE CANCER PROGRESSION**

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**Introduction**

In the UK, 27,000 new prostate cancer (PCa) cases were identified in the year 2000 (Raja, J et al Clinical Radiology 2006, 61 142-153). PCa has a high prevalence rate but varies greatly in its aggressiveness. Currently, there is no possibility in differentiating between patients that will progress to aggressive disease or those whose tumours will remain indolent and therefore not life-threatening. This results in unnecessary aggressive treatment for many PCa sufferers. There is an urgent need to identify markers of PCa progression, invasiveness and metastasis to accurately predict prognosis. The aim of this study is to assess the usefulness of Epithelial-to-Mesenchymal transition (EMT) markers in identifying patients who will progress to aggressive disease.

**Methods**

Formalin fixed paraffin embedded (FFPE) Trans-Rectal Ultrasound guided (TRUS) biopsies and prostatectomy tissue sections were selected from the years 2002 and 2003. For each patient, where information was available, data was collected for survival time, PSA values, margin positive or negative, and whether there was involvement of the seminal vesicle and lymph nodes. Using Immunohistochemistry techniques, a total of 146 TRUS biopsies and 76 prostatectomy tissue samples were stained for seven EMT markers; Slug, Snail, Twist, Vimentin, E-Cadherin, BMP-2 and BMP-7, where a score between 1 -3 was given for staining intensity and a score of 1-3 given for proportion of cellular involvement (1 low and 3 high). Patients were divided based on a number of different groupings; Age, initial PSA, Gleason Score, TNM, Lymph node status, Seminal vesicle status, and margin positive or negative. The sum of intensity of staining and proportion of cellular involvement were statistically analysed using Kluskall-Wallis and Mann-Whitney U-test. A significant value was considered p= <0.05.

**Results**

Of the seven biomarkers analysed, Twist and slug were equally expressed in both tumour and non-tumour cells and were therefore not statistically analysed. Within the T classification group a reduction in E-cadherin expression (p=0.001) and a reduction in Snail expression (p=0.006) were significant within the T4 group compared to T1 to T3. When patients were grouped into relapse, non-relapse and metastatic groups, the marker E-cadherin had significant reduction in expression within the metastatic cases (p=0.008) when compared to the non-relapse group. The expression of E-Cadherin in the relapse group compared to the non-relapse group was approaching significance (p=0.089). Snail expression was significantly increased within the Gleason groups 7 and 8-10 compared to Gleason group 5-6 (p=0.003).

**Conclusion**

Of the seven biomarkers analysed, initial results suggest a role for E-Cadherin in identifying patients that may relapse or metastasise at a later date with the metastatic group at biopsy or radical prostatectomy stage having significant reduction in its expression. Snail expression is significantly reduced within T4 stage patients and within the higher Gleason score patients (7-10). Within this study, no statistical significance was associated with biomarker staining and Initial PSA, age, or margin status.

**Take home message**

There is a need for the identification of a robust panel of biomarkers that will enable the identification of aggressive PCa. This study has identified a potential use for E-Cadherin and Snail for early identification of patients who will later progress to aggressive disease.
**U6**  
**INDUCED PLURIPOTENT STEM CELL (IPSC) RE-PROGRAMMING IN THE HUMAN PROSTATE**  
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**Introduction**
Prostate differentiation is modelled through enrichment for stem-like populations through a combination of putative stem-cell markers. However, in vitro cultures demonstrate a phenotypic drift that abrogates normal physiology.

**Methods**
IPSC-reprogramming allows for any somatic cell to be transformed into an embryonic-stem-cell-like state; however molecular properties as well as differentiation abilities are limited by the primary tissue type of origin. In this study, we attempted to generate prostate-specific iPS models. We established pure populations of primary epithelia and stroma from >50 human prostatic specimens. Core pluripotent transcription factors Oct-4 and SOX2 were significantly reduced with prolonged in vitro culturing (p<0.05). These cells were thus subjected at early sub-cultures to specific ‘stem-cell induction’ protocols following which live cell imaging of iPS markers allowed identification of a potential pluripotent state.

**Results**
Following stem-cell induction, resultant cells demonstrated altered morphology comparable to an embryonic-stem-cell-like state. An MET -like transition with the up-regulation of epithelial markers (p<0.05) and down-regulation of mesenchymal markers (p<0.05) as well as a reduction in the androgen receptor (p<0.005) was also noted in the stem-cell induction of stroma. Live cell-imaging on the stroma and epithelia induced colonies demonstrated positive staining for embryonic stem cell markers SSEA4, Tra-1-60 and ABCG2.

**Conclusions**
We present evidence for the first time of a model of human prostate de-differentiation. This model will reveal novel insights into complex mechanisms of prostatic differentiation as well as androgen receptor signalling induction pathways in prostatic development and carcinogenesis.

**Take home message**
De-differentiation of prostatic stroma is marked by an apparent epithelial transition with reduction in expression of androgen receptor transcript levels. This prostatic-iPS model offers an insight into prostatic differentiation, development and carcinogenesis.

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**U7**  
**URINARY ERG IMMUNOCYTOCHEMISTRY CAN IDENTIFY PROSTATE CANCER PATIENTS PRIOR TO PROSTATE BIOPSY**  
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**Introduction**
Several studies have demonstrated that TMPRSS2:ERG transcript detection in post-DRE urine sediment can be used to identify prostate cancer patients. In this study we determined the value of urinary ERG immunocytochemistry as a diagnostic tool for prostate cancer.

**Methods**
30mls of post-DRE urine was collected from patients prior to undergoing prostate biopsy. 15mls of urine was used for standard immunocytochemistry. Urine sediment was cytopspun onto glass slides and stained using anti-ERG and anti-PSA antibodies. The remaining 15mls was evaluated with a TMPRSS2:ERG transcript or TMPRSS2:ERG FISH assay in order to confirm gene fusion status. TMPRSS2:ERG and PSA transcript was detected using a nested RT-PCR assay. FISH was performed on cytopspun cells using a TMPRSS2:ERG break apart assay.

**Results**
95 patient samples were processed for immunocytochemical analysis. Of these, 88 were scorable; the remaining 7 samples demonstrated high background signal or were acellular. 42/88 patients had biopsy confirmed adenocarcinoma, 3/88 had ASAP, 16/88 had HGPIN and 27/88 had benign histology. 9/42 patients with adenocarcinoma had positive ERG urine immunocytochemistry. The remaining samples were negative (P=0.003). Urinary ERG immunopositivity correlated with higher gleason grade (P=0.04) and advanced tumour stage (P=0.03). Of the 9 samples positive for ERG immunocytochemistry, 6/9 had positive TMPRSS2:ERG status confirmed using the above described FISH or transcript urinary assays.
Conclusion
Our results indicate that ERG immunocytochemistry on post-DRE urine samples can identify prostate cancer patients. Furthermore, ERG immunocytochemistry appears to identify patients with more aggressive disease.

Take home message
Urinary ERG immunocytochemistry can identify prostate cancer patients and appears to identify patients with more aggressive disease.

U8 A NOVEL APPROACH TO TARGETING THE ANDROGEN RECEPTOR IN ANDROGEN INDEPENDENT PROSTATE CANCER, RESULTING IN CELL CYCLE ARREST AND HIGHLY EFFECTIVE APOPTOSIS

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Introduction
Treatment for advanced prostate cancer uses androgen blockade therapy to inhibit androgen receptor (AR) signalling. All tumours essentially overcome androgen blockade resulting in development of incurable androgen independent prostate cancer (AIPC).

Our current knowledge of AIPC shows that AR is active in these tumours. AR therefore remains a bona fide target in AIPC, but there is a lack of new AR antagonists. This raises the challenge of finding novel ways to target AR in AIPC.

Much work has focused on AR stability in response to various stimuli and MDM2 has been shown by us, and others, to be a ubiquitin ligase responsible for AR destruction. No treatment method has utilised AR destruction as a means to deactivate AR.

Methods
We have used AR positive LNCaP cells and a casodex-resistant LNCaP (AIPC) variant in this study.

Results
We show that in AIPC cells, a specific inhibitor of the p53-MDM2 interaction, Nutlin-3 (i) displaces MDM2 from p53 (ii) promotes MDM2-AR interaction leading to AR degradation (iii) induces cell cycle arrest and apoptosis. Importantly, we demonstrate that AR destabilisation per se contributes to this apoptosis, validating AR destruction as a new treatment strategy.

Conclusion
Inhibition of the p53-MDM2 interaction produces apoptosis of AIPC cells, involving AR degradation. This has particular importance in AIPC that has failed conventional treatment.

Take home message
Pharmacological destruction of AR is a new method of AR inactivation in AIPC. Other compounds that will follow this paradigm are putative therapeutic agents in AIPC.

U9 THE ROLE OF EPITHELIAL TO MESENCHYMAL TRANSITION (EMT) IN IPS INDUCTION OF HUMAN PROSTATE

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Introduction
EMT plays a major role in development and affects organs during embryogenesis. EMT has been known to confer stem-cell properties to human mammary epithelial cells. However, recent studies have suggested that it is a mesenchymal to epithelial transmission (MET) that initiates stem-cell re-programming in mouse fibroblasts. EMT is not irreversible, and studying the pathways and molecular signalling between the prostate mesenchymal and epithelial state will clarify the mechanisms of resistance to nuclear re-programming in the prostate as well as elucidate vital aspects in prostate embryogenesis and carcinogenesis.

Methods
We have successfully cultured >50 primary prostate stroma and epithelia. Both primary cell types were transduced with ‘pluripotent factors’ in order to de-differentiate them. Canonical pathways associated with EMT including TGF receptors and downstream effectors were then studied in the re-programming of prostate stroma and epithelia into prostate-derived stem cells.
Results
Following transduction of the prostatic stroma with iPSC genes, transcript analysis confirmed a MET-like phenomenon during de-differentiation. Mesenchymal makers (SNAIL and SLUG) were down-regulated (p<0.05) whereas the epithelial marker E-Cadherin was up-regulated to levels at par with the matched prostatic epithelia (p<0.05). mRNA transcripts of the EMT pathway were compared to prostate cancer cells as well which revealed a distinct pattern of expression.

Conclusion
Our data unfolds for the first time the mechanisms of induced pluripotency in prostate primary cells and demonstrates a EMT to be instrumental in the journey of a terminally differentiated cell to the immature embryonic-stem cell like state.

Take home message
The initial phase of induced pluripotent stem-cell (iPSC) induction in the human prostate is marked by an MET-like phenomenon.

U10 RETINOIC ACID RECEPTOR RESPONDER PROTEIN 2 (RARRES2) CAUSES INCREASED CELL PROLIFERATION AND MIGRATION IN PROSTATE CANCER CELLS
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Introduction
Retinoic acid receptor responder protein 2 (RARRES2) is an adipokine and is found at higher levels in obese individuals. We hypothesise that RARRS2 may play a role in prostate carcinogenesis and may be, in some part, responsible for the increased disease-specific mortality found in obese patients with prostate cancer.

Methods
PC3 (androgen-insensitive) prostate cancer cells were cultured and treated with 0, 0.1, 1 and 10nM RARRS2 for 24h in order to assess effects on cell proliferation. In order to assess cell migration cells were treated with 0, 1 and 10nM RARRS2 for 24h using a “wound scratch” assay.

Results
In the cell proliferation assay there was a significant dose-dependent increase in cell proliferation with 0.1 nM RARRS2 (p<0.01) with respect to basal levels and in 1nM & 10nM RARRS2 (p<0.001) with respect to basal levels. In the wound scratch assay there was again a significant dose-dependent increase in the inverse of the wound scratch distance. The higher the inverse of the wound scratch distance the higher the degree of migration. 1nM and 10nM RARRS2 were all significantly associated with increased invasion (p<0.001) with respect to basal.

Conclusion
This data provides further evidence that obesity and in particular adipokines may play a role in prostate carcinogenesis.

Take home message
Further work is needed in order to clarify the exact mechanisms and pathways which are responsible for the increased disease-specific mortality in obese patients with prostate cancer but results are encouraging thus far.

U11 ASSESSING THE VALIDITY OF THE PROSTATE CANCER PREVENTION TRIAL PROSTATE CANCER RISK CALCULATOR (PCPT-PCRC) IN AN IRISH COHORT
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Introduction
The current standard of diagnosis for prostate cancer is a prostate biopsy. Unfortunately there are significant risks associated with this procedure. It is of immeasurable benefit therefore to assess the possible benefit of such a procedure before exposing a patient to these risks. One such method is utilising the Prostate Cancer Prevention Trial Prostate Cancer Risk Calculator(PCPT-PCRC),which has been modelled upon, and subsequently validated in cohorts from North America. Because of large geographic variability in prostate-cancer, it is imperative that such tools be validated to assess validity and applicability to that local cohort.

Methods
We prospectively collected the relevant information as described by the PCPT-PCRC, on all men undergoing a TRUS prostate biopsy in our institution, based in a region with the highest incidence of prostate cancer in Europe. Histological specimens were reviewed independently by two Consultant Histopathologists, and information presented at a multi-disciplinary Prostate Cancer Group meeting prior to final biopsy grading. The PCPRT risk calculation formulae, R
statistical and calculation software v2.12.1, and Minitab v16 were utilised. The Prostate-cancer-diagnosis-risk and high-grade-disease-risk were correlated with the final biopsy histological grade.

Results
Of 456 consecutive biopsies, ages ranged from 37 years to 71 years (median 61 years), P.S.A ranged from 0.57 - 739.0 ng/mL (median 7.9 ng/mL) and cancer was subsequently diagnosed in 223 of 456 men (49%). Of these 223 cancer diagnoses, 53 (24%) had high grade disease. Correlation with Cancer diagnosis Risk and Actual Cancer Diagnosis was statistically significant (p<0.0001) and correlation with High Grade Disease Risk and actual High Grade diagnosis was statistically significant (p<0.05) in this cohort.

Conclusion
The Prostate Cancer Prevention Trial Prostate Cancer Risk Calculator demonstrates statistically significant prediction of both prostate cancer and high grade disease diagnoses in this Irish Cohort, p<0.0001 and p<0.05 respectively.

Take home message
The use of the PCPT-PCRC can be used accurately in this cohort, to stratify an individual's risk of a positive biopsy result, to aid in the prioritising of resource allocation, and as an aide to avoid unnecessary patient exposure to the risks inherent in prostate biopsy.

U12  EPHB3 AND EPHB4 RECEPTOR EXPRESSION IN PROSTATE CANCER – A FUTURE DIAGNOSTIC AND PROGNOSTIC MARKER?
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Introduction
Work on prostate cancer cell lines has implicated EphB4 and EphB3 receptors in the disruption of contact inhibition locomotion seen between colliding prostate cancer cells and benign stromal cells - a response theorised as critical to metastasis. Our aim was to investigate the expression of these tyrosine kinase receptors and their complimentary ligand ephrin-B2 in prostate cancer.

Methods
Immunohistochemistry was used to determine the expression of EphB3, EphB4 and ephrin-B2 in human prostate acquired from 18 different patients who had undergone radical prostatectomy. The sections were semi-quantitatively analysed to determine changes in the intensity of immunoreactivity throughout disease progression.

Results
Significantly increased EphB3 and EphB4 receptor expression was observed in cancerous prostate tissue compared to the benign equivalent (P<0.0001 for both receptors; Mann Whitney test). EphB4 expression increased with Gleason grade (P<0.05; Kruskal Wallis – Dunn’s post test), this was not replicated with EphB3 expression. Ephrin-B2 was expressed in the stroma of benign and cancerous prostate tissue.

Conclusion
Expression of EphB3 and EphB4 is a late stage event in prostate cancer. The differences in receptor protein expression observed warrants further investigation into their ability as novel prognostic markers, current markers cannot accurately predict aggressive forms of the disease, which commonly metastasise.

Take home message
As a medical student I would like to share some research that I completed last year, which concerns looking at new diagnostic markers for prostate cancer. The take home message would be ‘Is PSA still the best diagnostic marker available for prostate cancer?’

U13  UROPATHOGEN PATTERN AND ANTIBIOTIC RESISTANCE OF CATHETER ASSOCIATED URINARY TRACT INFECTIONS IN A UK UNIVERSITY HOSPITAL
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Introduction
Up to 25% of hospitalised patients undergo urinary catheterisation. However indwelling catheters are an important cause of nosocomial infection and have been associated with morbidity and mortality. Up to 30% of catheterised patients may develop catheter associated urinary tract infections (CAUTI). This study aim is to study pathogen pattern and antibiotic resistance in CAUTI to optimise management.
Methods
A total of 2500 catheter samples of urine submitted between April 2010 and June 2011 were analysed. The data was divided into two groups of urine samples ranging from 01.04.10 until 19-07-10 and 03-03-11 till 30-06-11 respectively. Both groups had sample sizes of 500 urine samples. Distribution of pathogens cultured and their frequency were plotted initially over the entire period and then the two separate time scales. Antibiotic sensitivity for the cultured pathogens for the two groups were firstly plotted and then analysed for differences in sensitivity using the Chi-squared test.

Results
The commonest cultured urinary pathogens were Enterococci, Coliform and Pseudomonas. Interestingly, only 3 samples in the first group grew E coli. Coliform showed a statistically significant increased resistance to Cefalexin (p<0.04). Coliform showed a rise in sensitivity to both Gentamicin and Nitrofurantoin (p<0.01). Enterococci showed increased sensitivity to Nitrofurantoin (p<0.01). Proteus developed an increase response to Gentamicin (p<0.01).

Conclusion
E Coli was a rare cause of CAUTI in the second quarter of year 2010. There was a considerable change in resistance patterns to antibiotics in a short period of time. A resistance to first generation oral Cephalosporin was noticed.

Take home message
E Coli was a rare cause of CAUTI in the second quarter of year 2010. There was a considerable change in resistance patterns to antibiotics in a short period of time.

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U14  THE ANTI-MICROBIAL PEPTIDE BETA-DEFENSIN-2 PROTECTS THE BLADDER AGAINST FLAGELLATED ESCHERICHIA COLI

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Introduction
The urinary tract maintains sterility through multiple immunological mechanisms including synthesis of cationic antimicrobial peptides (AMP) following activation of Toll-like-receptors (TLR) by bacteria. Recurrent urinary tract infection (rUTI) affects 5% of women. A common heterozygous dominant stop-codon single-nucleotide-polymorphism in TLR5 (TLR5-SNP) abolishes signalling in response to bacterial flagellin and is associated with rUTI. We investigated AMP responses to flagellated uropathogenic Escherichia coli (UPEC).

Methods
In vitro, RT4 immortalised urothelial-cells and finite cultured normal-human-urothelium were used. Cells were challenged with UPEC bacteria and flagellin. Urothelial AMP mRNA expression, secretion and function were assayed by RT qPCR, ELISA and time-kill assays respectively. Clinically, 94 patients (57 rUTI, 37 controls) were recruited. Subjects provided bladder biopsies, blood and overnight urine samples.

Results
In vitro, beta-defensin-2 (BD2) was up-regulated with flagellin challenge. BD2 mRNA expression and peptide secretion increased significantly by 8-hours and 24-hours respectively but could be inhibited by anti-TLR5 antibody. Time-kill assays from challenge media showed 48% reduction in bacterial growth. Clinically, 9(15.8%) rUTI patients had TLR5-SNP; no controls did. 12 patients had infection at time of biopsy (3 with TLR5-SNP). Patients with TLR5-SNP showed significantly lower urothelial BD2 mRNA expression and urinary peptide secretion during infection.

Conclusion
Secretion of BD2, a potent antimicrobial, is a key innate response to flagellated E. coli. We demonstrate for the first time that in vitro, inhibition of TLR5 eliminates the response and clinically, the heterozygous stop-codon TLR5-SNP reduces it. These data suggest that reduced BD2 levels may contribute to rUTI in this group.

Take home message
Beta-defensin-2 is a key innate antimicrobial involved in defending the urinary tract and is activated by E. coli flagellin. A common heterozygous polymorphism in the toll-like-receptor 5 gene can significantly reduce this response and may predispose to recurrent urinary tract infection.
U15 ASSESSMENT OF A VARIABLE STRESS RIG TO IMPROVE THE PROPERTIES OF A TISSUE ENGINEERED PROSTHESIS FOR USE IN STRESS URINARY INCONTINENCE AND PELVIC ORGAN PROLAPSE

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Introduction
Mesas used in the treatment of stress urinary incontinence and pelvic organ prolapse can fail through poor biocompatibility, biomechanics and failure to stimulate new extracellular matrix production. We have described tissue engineered meshes consisting of autologous fibroblasts with thermoannealed poly(l)-lactic acid scaffolds which have good mechanical properties and stimulate new collagen and elastin production. We aimed to assess whether introducing cells to variable biaxial stress during culture would result in a tissue with more normal ECM production.

Methods
Fibroblasts, obtained from oral biopsies were seeded onto 2cm2 scaffold and cultured for two weeks in 10%DMEM medium either free or under simple variable stress which involved alternate day application of 1.0g weights. Scaffolds were assessed for:
- Cell attachment using AlamarBlue (vital stain) and DAPI (nuclear stain)
- Mechanical properties using an uniaxial tensiometer
- Extracellular matrix production by Sirius red and immunostaining

Results
The metabolic activity of fibroblasts increased more in the free scaffolds than in the variable stress rig. The mechanical properties were not significantly different between the two culture conditions. Sirius red staining showed a doubling of total collagen production (p=0.09) with variable stress and immunostaining revealed increased collagen III and elastin production by these cells.

Conclusions
This simple variable stress rig stimulated collagen and elastin production from cells producing tissue closer to native tissue in composition. This study suggests that further work is justified in developing a variable stress loading regime to create tissues for future clinical implantation.

Take home message
A variable stress rig may be used to stimulate increased collagen and elastin production from a tissue engineered prosthesis to match native tissues more closely.

U16 ASSESSMENT OF URINARY LACTOFERRIN AS A SURROGATE MARKER FOR URINARY TRACT INFECTION IN PATIENTS WITH LOWER URINARY TRACT SYMPTOMS

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Introduction
LUTS is a collective term describing urinary storage and voiding symptoms. UTI is the commonest lesion of the urinary tract. Assessing UTI in LUTS patients is fundamental, although currently adopted clinical investigations have been discredited (Khasriya R et al. J Urol 2010; 183(5): 1843-7). Hence pursuing potential indicators of infection for application to LUTS patients is pertinent. Lactoferrin is an iron binding glycoprotein, released in response to mucosal pathogenic invasion to prevent bacterial access to iron essential for growth and development. Urinary lactoferrin has been detected in abundance in patients with acute UTI.

Patients
66 patients presenting to a specialist clinic with LUTS were included and 14 healthy asymptomatic controls.

Methods
Midstream and catheter samples were taken depending upon individual circumstances. Leucocytes and urothelial cells were counted by light microscope using a haemocytometer. Urine was cultured on selective agar media. Urinary lactoferrin was analysed by ELISA.

Results
A quadratic regression model was fitted to the log-transformed lactoferrin data with the log pyuria as the dependent variable with a resultant R of 0.8 (p<0.001; df = 2 and 76). Log lactoferrin was raised in patients compared to controls (t=4.8, df=77, mean diff = 1.5, 95% CI =2.0 to 0.9, p<0.001). The regression model implies a difference related to the presence of inflammation although 72% of patients had negative urine cultures.
Conclusion
Lactoferrin discriminates between controls and LUTS patients. This property would seem to be a manifestation of bladder inflammation, frequently missed by routine urine analysis.

Take home message
Assessing UTI in LUTS patients is pertinent as currently adopted clinical investigations have been discredited. We have shown that urinary lactoferrin discriminates between controls and LUTS patients.

U17 AN INNATE IMMUNE RESPONSE TO MOTILE E. COLI IS EXHIBITED BY BOTH BLADDER AND VAGINAL CELLS
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Introduction
The healthy female bladder is kept free from microbial colonisation by mechanical and immunological factors. Innate immunity plays a key role and is mediated through the NF-kB intracellular signalling pathway which is initiated through cell surface Toll-like-receptor (TLR) activation by bacteria. Urinary tract infections are commonly caused by ascending uropathogenic Escherichia coli (UPEC) which colonises the vagina (which is not sterile) before invading the bladder. We investigated the effect of E. coli on NF-kB expression in the bladder and vagina.

Methods
RT4 urothelial cells and VK2 vaginal cells were transfected with NF-kB luciferase reporter genes and used as in vitro models to examine the effects of bacterial challenge. Cells were cultured and challenged with motile and non-motile UPEC strains plus surface components including lipopolysaccharide, peptidoglycan and flagellin for 24 hours. Antibodies to TLR2, TLR4 and TLR5 were used for inhibition.

Results
A significant NF-kB response in the bladder was evoked by motile E. coli (strain NCTC-10418) and E. coli flagellin. This response peaked at 4-hours and could be inhibited by TLR5 antibody. Similar responses to flagellin could be seen in vaginal cells by 8-hours. Les motile strains and other surface components evoked weaker responses.

Conclusions
Motile E. coli evokes a powerful innate immune response activated by bacterial flagellin through TLR5. This response is seen in both vaginal and bladder cells in vitro suggesting a specific, early ‘danger’ response to motile infection with propensity for ascent with vaginal epithelium playing a key initial role in defending the urinary tract.

Take home message
E. coli flagellin evokes an innate immune response in both the bladder and vagina. An improved understanding of these defence mechanisms may shed light on how bacteria evade host immunity and how host defence mechanisms might be up-regulated in patients with recurrent infections.

U18 ROLE OF INTERSTITIAL CELLS OF CAJAL LIKE CELLS IN HUMAN NEUROGENIC DETRUSOR OVERACTIVITY
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Introduction
Interstitial cells of Cajal like cells (ICCs) have been implicated in the pathophysiology of detrusor overactivity and are thought to have a potential role in various forms of bladder dysfunction. It is believed to play a key role in signal transmission between the urothelium and afferent nerves. To assess this role further we aim to quantify suburothelial ICCs in human detrusor overactivity and whether ICCs harbour muscarinic and sensory receptors.

Methods
Flexible cystoscopic biopsies were obtained from patients with NDO(n=8) before and after botulinum toxinA(BTX-A) treatment. Biopsies were studied with quantitative immunofluorescence using antibodies to c-kit, vimentin, mast cell tryptase (MCT). Furthermore co-localisation was assessed with muscarinic receptors, P2Y6 and NK-1. C-kit immunoreactivity was quantified by counting c-kit positive cells and expressed as a percentage relative to MCT immunoreactivity.

Results
Early data shows mean C-kit immunoreactivity in NDO samples before and after BTX-A were 8 and 14 respectively. Very few MCT positive cells were identified in this tissue. Co-localisation of P2Y6 and M1 receptors with C-kit positive cells were also apparent.
Conclusion
ICCs appear to upregulate after BTX-A treatment, in neurogenic human detrusor overactivity. We have demonstrated both muscarinic and P2Y6 receptors on ICCs in the human suburothelium which may be of relevance in their signal transduction to afferent nerves.

Take home message
C-kit positive cells appear to have a dynamic role in the development of NDO and further functional studies are required to evaluate this.

U19  RENAL DIFFERENTIATION FROM ADULT SPERMATOGONIAL STEM CELLS
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Introduction
There is considerable interest in the use of multipotent stem cells in kidney tissue regeneration. A potential role for adult spermatogonial stem cells (SSCs) in renal tissue engineering is explored.

Methods
A lentiviral-based delivery system was used to transduce green fluorescent protein (eGFP) into mouse SSCs. GFP-SSCs were used to trace lineage and confirm specificity of SSC derived differentiation in organ culture experiments using real time PCR and immunohistochemistry.

Results
We showed that SSCs have the ability to undergo kidney differentiation using an in vitro co-culture technique. Conditioned media from immunomagnetically sorted human kidney fibroblasts induced the expression of epithelial and endothelial lineages in SSCs consistent with nephrogenesis. Furthermore, we showed that these cells expressed renal tubular-specific markers alkaline phosphatase, mineralocorticoid receptor, renal epithelial sodium channel and sodium-glucose transporter-2. GFP-labelled SSCs were engrafted into metanephric kidney organ cultures harvested from E12.5 mouse embryos. After 5 days of organ culture, focal anti-GFP staining was detectable in all inoculated kidneys demonstrating integration of SSCs into the developing kidney. Histological assessment showed renal-specific differentiated structures, consistent with typical developing nephron architecture.

Conclusion
We show that SSCs can be used to generate renal tissue and lay the foundations for further investigations into a potentially novel therapeutic approach for renal insufficiency.

Take home message
SSCs may be used in renal tissue engineering.

U20  21-ACTIVATED KINASES (PAKS) IN UROTHELIAL CANCER
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Introduction
Dynamic changes in the cytoskeleton are necessary for cancer cell motility leading to invasion and metastasis. The signalling pathways that regulate the cytoskeleton involve Ras-related small GTPases and their effectors, including P21-activated kinases (PAKs). The PAK family comprises six isoforms, and we aim to characterise the expression and activity of PAKs in urothelial cancer.

Methods
Bladder cancer cell lines T24 and RT112 were used in these experiments. Western blots with isoform-specific antibodies were used to detect the expression of PAKs. To detect the activation of PAKs, cells were stimulated by Hepatocyte Growth Factor (HGF) and the levels of phosphorylated PAKs were monitored by western analysis at different time points. We have also characterised the morphological and migratory response of our cells to HGF.

Results
Both T24 and RT112 bladder cancer cell lines express PAKs 1,2,4,5 and 6. PAK1 and PAK5 expressions were noted to be higher in T24 compared to the RT112 cells. We have detected PAK1 activation downstream of HGF in both cells, and are currently investigating other family members. We have been able to detect HGF-induced changes in cell morphology in both cells and have evidence that HGF can induce a cell-scattering response in RT112 cells.

Conclusion
Our results from tissue culture studies support the hypothesis that bladder cancer cells respond to HGF stimulation and that PAK family members may play a role in regulating cytoskeletal dynamics in these cells. Further study of PAKs may yield a novel prognostic marker and therapeutic target for invasive bladder cancer.
Take home message
PAKs have a great potential to be prognostic markers and therapeutic targets for urothelial carcinoma.

U21  PATIENT SATISFACTION WITH LASER ABLATION OF RECURRENT SUPERFICIAL TUMOURS OF THE BLADDER VIA A FLEXIBLE CYSTOSCOPE UNDER LOCAL ANAESTHESIA

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Objective
To evaluate Holmium laser ablation of recurrent tumours of the bladder, focusing on patients’ satisfaction, when using the technique under local anaesthesia as an outpatient procedure.

Methods
This study included patients with a recurrence of a superficial papillary tumour who underwent Holmium laser ablation under local anaesthesia (Instillagel per urethra) using a flexible cystoscope. Patients were discharged home a few hours after without a catheter.
Patients completed a questionnaire and visual analogue scale (VAS) to assess pain and patient satisfaction.

Results
122 procedures were performed. 95 patients. Mean age was 68 years with a male preponderance (67.21%). 56% of the patients had no pain during the procedure and none of the procedures were stopped because of pain. The average VAS score was 1.3 and the majority of the patients (99.18%) would undergo the treatment again if necessary.

Conclusion
This study clearly indicates that laser ablation of superficial bladder tumours is feasible, with a high degree of patient satisfaction. By utilising flexible cystoscopy and laser, pressures on elective operative theatre sessions are substantially reduced. The ontological outcome is still to be audited.

Take home message
Laser ablation of superficial bladder tumours is feasible, with a high degree of patient satisfaction.

U22  A PILOT STUDY OF COMPLEMENT CASCADE ACTIVATION AS A MARKER FOR RECOVERY FOLLOWING MAJOR ABDOMINAL SURGERY

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Introduction
Conventional biomarkers of inflammation, such as CRP, are poor predictors of clinical recovery. There is a compelling clinical need to develop more specific, personalised biomarkers capable of reducing the time taken to identify and ‘rescue’ patients developing post-operative complications.

Methods
45-patients undergoing major abdominal surgery had longitudinal serum measurement of Complement Cascade markers C3, C4, C3dg, Terminal Cascade Complex (TCC), Bb together with total IgG and CRP. (C3 and C4 record consumption following activation of the classical, lectin and alternative pathways with C3dg and Bb as activation markers.) Measurements were made at induction, t=0, 2-4 hrs on closure, 8hrs, 12hrs, 24hrs, 36 hrs 48hrs and then daily to discharge.

Results
Initial values of C3 and C4 are measures of the innate immune system for each patient. IV fluids at induction and surgical trauma caused C3 and C4 depletion to 75% of admission values. A normal complement recovery curve was defined. Departure below the curve may offer potential to predict complicated recoveries. Secondary complement consumption events, coupled with increase in activation markers, were observed pre-symptomatically in patients developing complications. Differences were observed between Gram positive and Gram negative infections. Accelerated complement recovery was seen with laparoscopic cases, consistent with reduced surgical trauma and faster recovery.

Conclusion
In this small cohort, complement cascade activation predicted a complication rate in agreement with expected levels. Differential consumption with a concomitant rise in activation fragments may point towards earlier diagnosis of complications and aid differential diagnosis. Initial C3 and C4 levels define a patient innate immunity health or phenotype and the return to these levels is a more intimate measure of patient recovery than CRP.
P44 AN AUDIT OF OPEN PARTIAL NEPHRECTOMIES
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Introduction
Indications for elective open partial nephrectomy (OPN) are T1 renal cell carcinomas, and in cases of bilateral tumours or a single or impaired contralateral kidney. As clinical imaging techniques have become more commonplace and renal cancers are detected earlier, OPN has developed into an important procedure. This audit, the first of OPN within the region, aimed to measure local performance against recognised standards of the EAU and BAUS.

Methods
Data was collected by retrospective analysis of patients’ case notes. Standards used were surgical indication, cancer-specific survival, complications, change in creatinine, and post-operative follow-up including local and metastatic recurrence.

Results
32 patients underwent OPN over 12 years. 27 medical notes were available for analysis. The mean patient age was 54.3 years. Of 20 OPN carried out for suspected malignancy, one was T2 with contralateral disease, and 4 (20%) had benign pathology. There were no positive margins. Complications included: a single intra-operative haemorrhage and 9 (33%) post-operative complications (chest complications the most frequent), compared with 14% (BAUS cancer registry). There was no statistical change in creatinine following OPN. Five patients were followed for less than the suggested 48 months. There have been no deaths or local/distant recurrence on follow-up.

Conclusion
This audit demonstrates that this infrequent procedure has been performed appropriately as per current guidelines. Recorded complications, although higher than described by BAUS, do not appear specific to this approach.

Take home message
OPN is becoming an increasingly common and important procedure. Our trust is meeting current procedure-specific guidelines.

P45 NATURAL HISTORY AND OUTCOME OF PATIENTS WITH HIGH RISK NON-MUSCLE INVASIVE BLADDER CANCER (NMIBC) TREATED WITH BACILLE CALMETTE GUERIN (BCG): A CONTEMPORARY UK SERIES
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Introduction
The endoscopic management of high-risk non-muscle invasive bladder cancer [NMIBC] (carcinoma in situ, papillary carcinoma or subepithelial -invasive TCC) is associated with a very high incidence of recurrence and, more worryingly, progression. This mandates intravesical treatment as per EAU guidelines; 27 instillations over 3 years. Bacillus Calmette-Guérin (BCG) is the mainstay of initial treatment of high risk NMIBC in the UK, and has been shown to reduce recurrence and progression rates. However, the treatment is often poorly tolerated and it remains unknown as to how many bladder instillations are required to achieve acceptable efficacy. Here we review the tolerability and efficacy of intravesical BCG in a cohort of patients with high-grade NMIBC in a UK teaching hospital.

Methods
Between April 2006 and December 2008, 83 patients (mean age 75 years, M:F ratio 4.19) who received a first induction course of BCG for high-risk NMIBC were identified retrospectively. Response to BCG was reviewed by assessing their cystoscopic, histological and clinical outcomes.

Results
25 patients had non-invasive papillary carcinoma (Ta TCC), 11 patients had carcinoma in situ (Tis TCC), 39 patients had subepithelial -invasive carcinoma (T1 TCC), 1 patient had both Ta and Tis, 4 patients had both Tis and T1 and 3 patients had >T1 TCC, prior to induction BCG. The mean length of follow up was 55 months. 15 patients out of 83 completed 3 years of BCG maintenance. Of the 68 patients who stopped BCG maintenance prematurely, 17 stopped because of tumour recurrence, 3 because they required radiotherapy and 48 due to intolerance of side effects. Of these 48, 7 patients (14.58%) went on to develop a later recurrence, compared to 2 of the 15 patients (13.33%) who completed 27 instillations. Neither of these 2 recurrences required cystectomy however 3 of the 7 recurrences in patients intolerant to BCG side effects had progressed to a muscle invasive TCC and went on to have radical cystectomy. The overall survival at mean follow-up (of 55 months) was 75.90%. Cause of death was TCC-related in 13.25%.
Conclusion
In this contemporary, representative UK series of intravesical BCG in high risk NMIBC, we found that compliance with 3 years of BCG induction and maintenance was poor, and in line with previously published data. Interestingly however, at mean follow up of 55 months, the proportion of patients who stopped BCG due to intolerance of side effects had a similar rate of tumour recurrence to those who completed 27 instillations (14.58% vs 13.33% respectively). This suggests that 27 instillations may not be required for optimum efficacy of BCG in order to reduce recurrence and that regimes with shorter maintenance courses may result in better patient compliance. However in this small series it is impossible to conclude whether progression, perhaps the more important clinical outcome can also be reduced by shorter maintenance courses of BCG. Longer term follow up is of course required.

P46 DEVELOPMENT OF A PATIENT SAFETY CHECKLIST FOR ROBOT ASSISTED UROLOGICAL SURGERY
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Introduction
Operating theatres are highly dynamic and stressful environments where patient safety may be compromised. Checklists used within surgery such as the World Health Organisation (WHO) surgical safety checklist have shown improvements in patient safety in healthcare institutions worldwide.

Aim
This study aims to develop a surgical safety checklist to be used in innovative urology operating theatres.

Method
Healthcare Failure Mode and Effects Analysis (HFMEA) methodology was used to develop the checklist. HFMEA is a powerful evaluation tool that involves the interdisciplinary team in identifying and preventing potential errors within a system; through direct observation, workshops, flow diagrams, hazard analysis and decision making tools.

Results
Thirty hours of observation of urological surgery was conducted to develop a detailed list of all processes and steps taken during a surgical procedure and to identify all failure modes within each process. The list was reviewed by an expert team of consultants and theatre staff, who rated each failure mode according to its severity, probability detectibility and lack of control measures. This produced a hazard score for each failure mode and those hazards above a certain threshold (a hazard score of 8) will be chosen for inclusion in the checklist.

Conclusion
HFMEA methodology can be used to identify hazards within a complex system such as the operating theatre with innovative technologies. The results can be useful in implementing changes such as the development of a checklist. Further work will involve randomised trial for evaluation of effectiveness of this checklist.

Take home message
Healthcare Failure Mode and Effects Analysis (HFMEA) is a useful tool in evaluating risks and failure modes within a healthcare system; and can be used to develop methods of preventing failures such as checklists.

P47 THE LEARNING CURVE OF SKILL ACQUISITION ON THE SEP ROBOT
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Introduction
We aim to identify the learning curve of skill acquisition on the SEP Robot, a validated virtual reality simulator, for the design of a training program for robotic surgery.

Method
Participants without robotic or virtual reality experience were recruited from the medical school. The tasks performed were application of clips onto the cystic duct and artery and performing a surgeons knot. We assessed task time for both tasks, clip error for the clipping task and maximum stretch on the thread for the suturing task. Participants alternated between the tasks till they fatigued.

Results
Nine participants were recruited. The mean number of repetitions was 13. The learning curve plateaued at the fifth attempt on the clipping task and the third attempt on the knotting task. On the eighth repetition, of both tasks, participant scores became progressively worse due to fatigue and this skewed the curve means.
Conclusion
To get the most out of their time on the SEP Robot trainees should perform repetitions till they plateau but should not exceed 7 repetitions of any task as their scores are unlikely to improve.
As participants left the study mean scores improved beyond the level of the plateau meaning that people who score better also tend to last longer.

Take home message
Constructive learning experience on the SEP robot can be gained from no more than seven repetitions at one given session before the advent of fatigue.

P48 LEIOMYOSARCOMA OF THE SCROTUM – AN EXCEPTIONALLY RARE TUMOUR. CASE REPORT AND REVIEW OF LITERATURE
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Introduction
Primary cutaneous leiomyosarcoma is an uncommon malignant neoplasm with a predilection for the lower extremities (Limaiem et al. Pathologica 2007;Dec99(6) 415-9). Pure scrotal leiomyosarcomas are particularly rare. It typically occurs in middle-aged/elderly men, presenting as a painless, slow- growing, cutaneous lesion and often resembles a cyst. It is easily mistaken for a benign lesion so awareness of the condition is essential.

Methods
An aggressive initial resection with wide margins is required. Debate exists as to the optimal extent of an oncologically safe margin, chiefly because of the rarity of the tumour and the lack of randomised studies. Recurrence most commonly tends to be local but distant metastases in the bones and lungs have been reported (Diz Rodriguez et al, Actal urol Esp.2006 Jun;30(6 )638-40).

Conclusions
We present a case of histologically confirmed diagnosis of aggressive scrotal leiomyosarcoma in a 30 year old male with a 6-month history of a slowly-enlarging, painless lump on the skin of his left hemiscrotum. This is one of approximately 30 cases reported worldwide in the literature, and the first such case ever reported in Ireland. Following review at the uro- oncology multi-disciplinary team meeting, wide local excision was recommended. Final histology confirmed no residual leiomyosarcoma or evidence of malignancy. No adjuvant treatment was advised by Medical Oncology, although the patient mandates lifelong radiological follow-up to detect local recurrence and distant metastases that can occur years after the initial excision.

Take home message
To highlight this highly aggressive malignancy as a differential diagnosis for cutaneous scrotal lesions and to describe best management and follow up of these patients.

P49 TISSUE DIAGNOSIS USING A NOVEL STIFFNESS PROBE BASED ON FORCE AND VISION SENSING: A FEASIBILITY STUDY
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Introduction
We proposed a novel, smart stiffness sensing approach based on force and vision technique enabling an enhanced detection of mechanical properties and the location of tumor within soft tissues during MIS. The prototype comprises a force sensor, a transparent round indentation head and a digital camera. By measuring the change of captured contact area, the indentation depth can be estimated. The stiffness can be evaluated by measuring indentation force and. The probe can also generalize a mechanical image when doing continue measurement over soft tissue.

Methods
The performance of the proposed probe was validated by feasibility study on multiple materials including silicone phantoms and pork organs. Both uniaxial tissue indentation tests and sliding tissue indentation tests were carried out for stiffness measurement and tumor localization.

Results
The results show that the probe can perform stiffness measurement and tumor localization effectively when the probe indents and slides over the tissue surface.
Conclusion
We discuss the stiffness measurement capability of the proposed probe through multiple experiments on different materials. By using this probe, a surgeon can detect the position of tumor and observe certain area of organ directly, which means that the probe can be used as an endoscope itself. Due to its simple structure without any moving parts, it is easy to manufacture and can be miniaturized for many biomedical applications including detection of urological tumor.

Take home message
A novel, smart stiffness sensing approach based on force and vision technique enabling an enhanced measurement of stiffness and the location of tumor within soft tissues during MIS is proposed.

P50 THE UTILITY OF TRANSPERINEAL TEMPLATE PROSTATE BIOPSIES IN MEN DEEMED SUITABLE FOR ACTIVE SURVEILLANCE FOR THE MANAGEMENT OF PROSTATE CANCER

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Introduction
Prostate cancer is increasingly being diagnosed at an earlier stage. Hence, men diagnosed with low volume Gleason score 6 prostate cancer are thought to harbour low risk disease and are being offered active surveillance as a management option. However, as prostate cancer is often multifocal we determined whether trans-rectal ultrasound (TRUS) guided prostate biopsies accurately reflect the cancer burden by performing transperineal template prostate biopsies (TPTPB).

Methods
Between Jan 2010 and July 2011 a total of 13 men with at least 10 years life expectancy and diagnosed on TRUS guided prostate biopsies with clinically non-significant prostate cancer according to the Epstein criteria [1] and opted for active surveillance underwent 36 core TPTPB.

Results
The mean age of the men was 59 years (range: 53 – 67 years) with a mean PSA at diagnosis of 6.9 ng/dl (range: 3.7 – 14.0 ng/dl). A total of 9/13 (69%) were either Gleason score upgraded or demonstrated significant prostate cancer volume. To date, 7/9 (78%) of this group have undergone treatment with curative intent due to the TPTPB findings.

Conclusion
Our small study has demonstrated that a significant number of men diagnosed with clinically non-significant prostate cancer on TRUS guided prostate biopsies in fact harbour significant disease requiring active treatment. Hence; TPTPB should be considered before determining eligibility for active surveillance. We are currently undertaking a larger prospective study to confirm our initial findings.

References

P51 INTRODUCING THE PRODUCTIVE OPERATING THEATRE (TPOT) PROGRAMME IN UROLOGY THEATRE SUITES

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Background
The productive operating theatre (TPOT) is a module based programme designed by the National Health Service to improve value/efficiency, teamwork, patient experience, staff well-being and the safety and reliability of care in operating theatres.

Aim
To evaluate the effectiveness of introducing TPOT in urology operating theatres and to identify obstacles to running an ideal operating list.

Method
TPOT was introduced in two urology operating theatres in September 2010. The program involved multidisciplinary team meetings to identify and measure obstacles, introducing a brief/debrief system, organising the work environment and auditing problem areas such as recovery.

Results
• Start/Finish Times: There was a 39-41% increase in the percentage of operating lists starting on time and a £3,030 reduction in total monthly cost of delay (based on overhead costs) from September 2010 to June 2011, involving 1365 cases.

• Patient experience: 54 urology patients returning for follow were surveyed. Positive comments regarding waiting times (71%), staff communication (60%) and pain management (62%) were found. Negative comments included lack of privacy in the surgical admissions lounge (28%) and level of pain (20%).

• Staff Well-Being: High positive mean scores from a safety attitudes questionnaire were found: 70% for job satisfaction, 68% for teamwork and safety climate.

• Recovery: continued delays with 7-18% of patients waiting over 1 hour to be transferred or collected from recovery.

Conclusion
The introduction of TPOT has shown improvements in efficiency, patient and staff experience in urology operating theatres. Further obstacles include delays in recovery and improving patient experience.

Take home message
The productive operative theatre programme has proven to be an excellent tool in identifying and dealing with obstacles to running the ideal operating list. We anticipate further improvements with the continuation of the programme.
BP1 THE USE OF THE INTERNET AND SOCIAL SOFTWARE BY PLASTIC SURGEONS
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Introduction
Social software allows users to communicate and share data through online social interaction using Web 2.0 technology.

Methods
356 BAPRAS members were invited by e-mail to complete an e-survey anonymously on their knowledge and use of Web 2.0 technology and whether this technology should be used in e-LPRAS.

Results
58 members completed the e-survey (response rate of 58/356, or 16.3%). The respondents comprised 52 males (89.7%) and 6 females (10.3%) with a mean age (range) of 44.1 (24-61) years. 41 (70.7%) were consultants and 17 (29.3%) were non-consultants. 58 (100%) used the Internet and e-mail, 48 (82.8%) owned a hand held device and 48 (82.8%) owned a digital media player. 16 (27.6%) used instant messaging, 29 (50.0%) used Internet telephone, 12 (20.7%) used videoconferencing, 23 (39.7%) used media sharing, 2 (3.4%) used social bookmarking, 21 (36.2%) used social networking, 24 (41.4%) used forums, 29 (50.0%) used podcasts, 1 (1.7%) contributed to a wiki, 6 (10.3%) wrote a blog and 18 (31.0%) read a blog.

Conclusion
Non-consultants were more likely to use social networking and forums than consultants. 41 (70.7%) used e-learning and 31 (53.4%) would like Web 2.0 technology to be used in e-LPRAS, whilst 5 (8.6%) would not and 22 (37.9%) do not know what Web 2.0 technology is.

BP2 PRE-TIBIAL INJURIES IN THE OLDER POPULATION: THE IMPACT ON A PLASTIC SURGERY DEPARTMENT. WORKING TOWARDS DAY CASE MANAGEMENT.
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Introduction
Pre-tibial injuries are common, typically occurring in the elderly female population, and in patients with multiple co-morbidities, particularly those on long term steroids or anticoagulation. Despite their prevalence there is a wide inconsistency in their management. With an ever increasing elderly population, the incidence of these injuries continues to rise.

Aims
The aims were to evaluate the management, length of hospital stay and outcomes of patients with pre-tibial injuries within a Plastic Surgery department.

Methods
81 consecutive patients aged 65 or over admitted to the Plastic Surgery Department at Addenbrooke's Hospital, Cambridge, with pre-tibial injuries were included. We recorded age, medical history, management, details of admission and follow-up.

Results
Mean age was 80 years (range= 65-96) with 89% (72/81) being female. 63% of patients had three or more co-morbidities. 48% were either on anticoagulation or antiplatelet therapy, and 18% were on steroids. Less than a quarter of patients (19/81 23.4%) were reviewed by the Plastic surgery team on the day of their injury. 43/81 (53%) patients had debridement and split skin graft, and 5/81 (6%) were managed conservatively. Length of hospital stay varied from 0-50 days (mean=13.6). There was a delay in discharge in 20/81 (25%) of cases.

Discussion and Conclusion
Patients with pre-tibial injuries are managed sub-optimally, placing a significant burden on the health care system. We propose a departmental protocol for the management of pre-tibial injuries in a day case setting.
BP3 CAN DELAYED MICROVASCULAR BREAST RECONSTRUCTION ACTIVATE DORMANT BREAST CANCER?
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Introduction
Internal mammary vessels (IMV) are preferential recipient sites for microsurgical breast reconstruction. However, IMV dissection interrupts lymphatic channels as evidenced by frequent incidental encounters of enlarged internal mammary lymph nodes (IMLN). Free flap (FF) anastomoses to the axilla have been shown to ‘precipitate’ local recurrence following delayed breast reconstruction (DBR). No reports exist for the IM recipient site.

Methods
Over a five year period, we identified three cases of local recurrence at the FF anastomosis site in patients undergoing DBR several years after the mastectomy (mean=26 months).

Results
All patients (aged 53, 55, 60 years) were disease-free prior to their abdominal flap reconstruction. The gross recurrences manifested less than 6 months after the DBR. One patient’s flap was resected and remains disease-free, whilst two received teletherapy. Two patients developed systemic metastases, one fatally.

Discussion and Conclusion
Tumour recurrence at the IM dissection site following DBR raises the obvious question; does DBR activate dormant tumour cells? Although accurately ascertaining the exact mechanism(s) for these recurrences is impossible, disturbance of the equilibrium between cancer cells and the immune system is a possible explanation. Similarly, mechanical dispersal of dormant tumour cells in the IMLN’s may alter breast cancer tumorigenicity. Further studies are needed to elucidate the possible mechanisms.

BP4 BOTULINUM TOXIN IMPROVES SYMPTOMS AND HAND FUNCTION IN RAYNAUD’S SYNDROME SECONDARY TO SCLERODERMA
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Introduction
Scleroderma is associated with Raynaud’s syndrome causing pain, paraesthesia, ulceration and gangrene. Botulinum toxin has been shown to improve digital perfusion in patients with Raynaud’s. This is the first study to objectively assess hand function following this treatment.

Methods
Twenty five patients were treated with 100 units of Botox injected into the hand. A hand assessment was performed prior to injection and then 8-12 weeks after. Outcomes assessed were change in pain, appearance, cold intolerance, pinch and power grip, range of movement and disability in daily activities (DASH score). A questionnaire at six months was also carried out.

Results
82% of patients reported an overall improvement in their symptoms. 80% reported a reduction in pain, 75% an improvement in appearance and 65% improvement in cold intolerance. 90% showed an improvement in pinch grip and 65% an improvement in power grip. Four patients reported transient weakness. The majority had improved range of movement. 80% showed an improved DASH score (reduction in disability).

Conclusion
We have found botulinum toxin to be an effective treatment for Raynaud’s syndrome secondary to scleroderma. The majority showed an improvement in their symptoms, it significantly improved their hand function and they would recommend the treatment to other patients.

BP5 SKIN MALIGNANCIES ON THE HEAD AND NECK – WHOSE SPECIALTY IS IT ANYWAY?
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Introduction
With the NHS currently in a state of flux, referral pathways for skin malignancy are currently cause for much concern amongst those who manage skin as well as head and neck cancer. Ambiguous and unclear pathways can lead to inappropriate management by non-specialists in these areas detrimental to overall patient care.
Methods
To identify the current referral pathways in our region, we surveyed local GPs, the current gatekeepers for referrals regarding skin malignancies in the head and neck region.

Results
The results are very interesting. 21 (100%) GPs responded and every question of 8 questions were answered using an online anonymised questionnaire. With respect to benign lesions on the head and neck GPs felt relatively comfortable managing benign looking lesions on the temple, cheek and lip. However, with respect to malignant lesions they felt that plastic surgeons should manage the majority of such lesions on the vermilion border, nasal alar, temple and cheek. They also felt that plastic surgeons, maxillofacial, ent and dermatologists should be core members of both MDTs. They acknowledged that those who have sound knowledge of anatomy and reconstructive techniques and low recurrence rates are the most important factors in directing their referrals.

BP6 DOES PATIENT HEIGHT PREDICT THE INTERCOSTAL SPACE DISTANCE IN WOMEN UNDERGOING RIB PRESERVING INTERNAL MAMMARY VESSEL EXPOSURE FOR FREE FLAP BREAST RECONSTRUCTION?
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Introduction
Rib preservation vessel exposure in microsurgical breast reconstruction is becoming common. Previous anatomical studies have focussed on the characteristics of the internal mammary vessel (IMV) but there are no studies of intercostal distances (ICD). The study aim was to explore the relationship between height and ICDs to facilitate pre-operative planning, and to provide data about ICDs.

Methods
101 women (116 breasts) were included. We recorded age, BMI and characteristics of surgery. Three measurements of the second ICD were taken peri-operatively for each patient.

Results
Heights ranged from 150cm to 185cm with an average of 167cm. ICDs ranged from 14mm to 28mm with an average of 21mm. Pearson testing demonstrated a trend towards a positive correlation between height and ICD (r= 0.1406). (No correlation was found between age or BMI and ICD). There was no increase in anastomotic complications with smaller ICDs.

Discussion and Conclusion
Rib preservation vessel exposure has made the ICD pertinent to microsurgical breast reconstruction. Being able to predict patients with a small ICD in whom microsurgery may be more challenging allows proper surgical planning. Although skeletal size results from many factors, we propose that height is a reliable proxy for ICD.

BP7 A PHOTOGRAMMETRIC METHOD FOR QUANTIFYING THE EFFECTS OF BOTULINUM THERAPY FOR ORAL-OCULAR SYNKINESIS: VALIDATION OF A NEW TECHNIQUE
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Introduction
There is no universally accepted method for objectively quantifying the effects of Botulinum toxin when treating synkinesis. This study validates a new photogrammetric technique that quantifies eye surface area (ESA), using a graphics tablet. Improvement in symmetry in patients with oral-ocular synkinesis after Botulinum toxin injection is also assessed.

Methods
ESA's were calculated from photographs of ten patients' by two independent raters. Rater 1 repeated the procedure after 15 days. Interrater and intrarater variability were determined from Bland-Altman plots.

Results
90% of ESA's derived from the two raters were within a coefficient of variation of 0.1 (95% CI 0.05-0.15). Similarly, 90% of ESA's derived from rater 1 taken 15 days apart were within a coefficient of variation of 0.08 (95% CI: 0.04-0.12). Botulinum toxin significantly reduced synkinesis resulting from lip puckering, Mona Lisa smiling and Hollywood smiling (p<0.05).
Conclusions
We have produced a clinically valid tool for quantifying the effects of Botulinum toxin when treating oral-ocular synkinesis. We recommend this method be used to monitor the response to treatment in patients.

BP8 LONGEVITY OF BECKER-35 EXPANDABLE IMPLANTS IN BREAST RECONSTRUCTION: A 5 YEAR REVIEW
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Introduction
The anatomical Becker-35 expander implant was designed to enable a lasting single-stage prosthetic breast reconstruction. Short-term studies have reported reasonable reconstruction outcomes but long-term performance remains uncertain.

Methods
All patients undergoing reconstructive breast surgery using the Mentor Contour Profile® Becker-35 expanders by a single surgeon between January 2005 and December 2010 were retrospectively reviewed with respect to indication, inflation details, complications, revision rates and in-situ implant longevity.

Results
Fifty patients, mean age 44 years (r=14-69) had 56 anatomical Becker-35 expanders inserted for immediate breast reconstruction (33), delayed reconstruction (7) and correction of developmental breast asymmetry (16). The median numbers of inflations and deflations required to achieve target expansion size and shape were 3 (r=0-7) and 0 (r=0-4) respectively. Mean time from expander insertion to completion of reconstruction was 5 months (r=0-13). Complications were recorded in 39% (22/56 expanders), primarily due to implant-related problems. After a median follow-up of 23 months (r=9-52), severe capsular contracture occurred in 14% (8/56 breasts), majority of which were associated with chest wall radiotherapy. Surgical intervention was required in 36% (20/56 expanders) for haematoma, implant infection, capsular contracture, palpable rippling and implant or port malposition. The overall explanation rate was 23% (13/56 expanders), of which 7 were removed secondary to complications.†

Conclusion
Our medium-term results demonstrate an in-situ longevity rate of 77%, which is comparable to similar expanders and better than that reported for the round Becker expanders. Further research is indicated to evaluate its efficacy as a ‘permanent expander’.

BP9 SIMULTANEOUS ENDOSCOPIC BROW LIFT WITH UPPER LID BLEPHAROPLASTY: RESULTS FROM A SINGLE SURGEONS EXPERIENCE
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Introduction
Endoscopic brow-lift and upper lid blepharoplasty are common procedures undertaken for functional and aesthetic reasons. They provide a synergistic amelioration of symptomatic brow ptosis and blepharochalasia; although such patients would usually request blepharoplasty alone. Performing both procedures at once is poorly described in the literature. We therefore reviewed our experience of this combination to assess its efficacy using patient reported outcome measures (PROMs) and carer reported outcome measures (CROMs).

Methods
A retrospective study of 50 patients (9M, 41F) who had undergone endoscopic brow-lift (endobrow) with or without upper-lid blepharoplasty since 2002 was performed. Data were obtained from their case notes and satisfaction was assessed with a standard questionnaire.

Results
The patients’ mean age was 56 years. 2/3 were treated for functional and 1/3 for purely cosmetic reasons. 24 patients had endobrows alone while 26 had endobrows with upper blepharoplasty. All patients were very satisfied with the cosmetic and/or functional improvement. Post-operative complications in the combination group included; prolonged paraesthesiae (6%), temporary blurring of vision (4%), persistent swelling (2%), release of fixation suture (4%) and temporary lagophthalmos (2%).
Conclusion
Combining endoscopic brow-lift and upper lid blepharoplasty is an effective and safe procedure with high patient satisfaction.

Take Home Message
Combining endoscopic brow-lift and upper lid blepharoplasty is an effective and safe procedure with high patient satisfaction.

BP10 QUANTITATIVE MODELLING OF HUMAN EPITHELIUM IN HOMEOSTASIS AND SQUAMOUS CELL CARCINOMA
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Introduction
Human epithelia in high turnover areas such as the skin, oesophagus and gut require an exquisite balance between loss and replacement. Traditional teaching has held that a multipotent slow-cycling stem cell maintains epithelia using self-renewal and differentiation through an intermediate transit-amplifying cell population. However, increasing evidence using cross-disciplinary techniques from analytical physics and tracing fate of individual cells in vivo from multiple epithelia reveals that such a stem cell population does not maintain mammalian epithelia. Previous and current work from our laboratory and collaborators (Clayton et al, Nature 2007, DoupÈ et al, Dev Cell 2010, and Alcolea et al, in submission) has been the first to describe and expand the concepts of stem-cell independent homeostasis in murine tail, ear and oesophagus.

In this talk, we present our current findings from human epidermal cells in vitro, tracing of single human squamous cells ex vivo to understand homeostatic behaviour, and change in proliferative behaviour in primary squamous cell carcinoma. Quantitative analysis, done in collaboration with Prof Benjamin Simons (Cavendish Laboratories, Cambridge), of this data progresses a predictive approach to biological research that has been previously unexplored.

Take Home Message
Taken together, our findings demonstrate the unifying role of a single type of committed progenitor cell to maintain homeostasis with stem cells remaining quiescent. Stem cells are recruited during homeostasis disruption in injury. This has fundamental implications for our understanding of tissue homeostasis, and translational applications to disordered states of homeostasis in ulcers, wounds and tumours.

JACKSON PRIZE SECTION

BP11 ATTITUDES OF MEDICAL STUDENTS TOWARDS A CAREER IN PLASTIC SURGERY
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Introduction
Junior doctors and medical students are under pressure to select a career path from early years of medical school. We explored the views of fourth year medical students on careers in plastic surgery and pre-existing knowledge of the speciality.

Methods
A cohort of 70 students attended a talk on plastic surgery as part of an educational programme at Keele Medical School. We set out to explore attitudes towards plastic surgery and knowledge of common procedures conducted in our speciality. This was done with an anonymous pre-session questionnaire which explored whether the student had an interest in pursuing Plastic Surgery as a career and to list the top 3 procedures carried out by NHS Plastic Surgeons.

Results
From 49 participants who completed all parts of the questionnaire (70% response rate), 20% expressed an interest in plastic surgery. Reconstructive procedures were correctly associated with plastic surgery (52%). Cosmetic procedures accounted for 47% of procedures. Only 6% of responses recognised skin lesions as part of plastic surgery. We have also noticed a dramatic rise in the number medical students applying for SSMs in plastic surgery as well as attending plastic surgery lists and clinics on an ad-hoc basis.

Conclusion
Our work represents that attitudes to plastic surgery are improving but a proportion of students had poor knowledge of plastic surgery as a speciality. This reflects the need to raise the profile, awareness and the potential for training. In addition to nationally organised career days, locally run events in conjunction with medical schools would help raise the profile of our speciality.
BP12 A PROSPECTIVE ANALYSIS OF THE ROLE OF INCISION BIOPSY IN THE MANAGEMENT OF CUTANEOUS MALIGNANCY

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Introduction
Accurate diagnosis of skin cancer requires a histological diagnosis and facilitates the correct choice of management (1). Incisional biopsy plays a particularly vital role in suspected skin cancer > 3cm on the body or > 2cm within the head and neck region when formal excision may require subsequent reconstruction (2). We aimed to review the value of the incisional biopsy in diagnosis and further management of suspected skin cancer lesions referred to plastic surgery services. Particularly regarding the decision for excision or for complex reconstructions e.g. skin grafts and flaps.

Methods
A prospective analysis of all cases referred for incision biopsy to Bradford Royal Infirmary Plastic surgery services between July 2009 and June 2010 was undertaken. A pre-operative questionnaire was designed and validated that asked the operating surgeon to predict histology results and indicate their management plan if excision were performed (direct closure, or reconstruction with flap or graft). Each case was followed up for a minimum of 12 months. Case notes were reviewed to determine the final histology and subsequent management, and compared to pre-operative questionnaires. Statistical analysis was performed using chi-squared test and results with P<0.05 were judged to be statistically significant.

Results
A total of 100 incision biopsies were performed in the Bradford Royal Infirmary Plastic surgery department within the 12 month period and included in the study. The operating surgeon predicted 82% of lesions to be malignant compared to 47% histopathologically diagnosed, p<0.0001. The sensitivity of the operating surgeons to predict a malignant lesion correctly was 76.6% with a specificity of 25.8%. Pre-operatively the operating surgeon anticipated 32% would require excision and reconstruction in the form of flap or graft. Follow-up revealed a statistically significant difference to actual management with reconstruction performed in only 11%, p=0.0346. At 12 month follow up no false negatives or positives were found.

Conclusion
Incision biopsy has an important role in diagnosis of skin cancer especially when large or located in the head and neck region when excision can cause poor cosmesis or require reconstruction. Performed correctly it provides a more accurate histopathological diagnosis than clinical diagnosis can achieve and reduces the number of patients referred for complex reconstruction.

BP13 THE OBSERVER RESPONSE TO DISFIGUREMENT: DESIGNING FACIAL EYE TRACKING EXPERIMENTS

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Introduction
Facial eye tracking has infrequently been used to study the response to disfigurement. This study used focus groups to determine the most robust way to examine the response to facial disfigurement.

Methods
22 participants were shown a slideshow of 21 faces, with and without facial defects. Participants were randomly allocated into five focus groups. Tobii™ eye tracker recorded the scanpaths for observers. The duration of fixations within areas of interest were analysed.

Results
When shown a face for 1s, the group did not fix their gaze upon the defect. When increased to 3 or 5s, they fixated upon defects, the central facial triangle and other areas. The self-timed groups fixated upon the central triangle and defect, but other areas were minimal. Self-timed groups observed normal faces for 5.38s compared to 6.20s observing those with defects during an ‘aesthetic’ task, and 2.45s compared to 2.29s respectively, in a ‘recognition’ task, with less time looking at the defect.

Conclusions
We found that a self-timed facial recognition task gives best results for analysing response to disfigurement. We are now conducting a large study to determine whether people ‘stare’ at disfigurement, require longer to process the face, or avert their gaze altogether.
BP14 REPIGMENTATION OF CUTANEOUS SCARS IN BLACK AND WHITE SKIN: AN OBSERVATIONAL STUDY
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Introduction
Clinical observation suggests variance in the re-pigmentation of healed wounds in people with different skin types. Previous work from our laboratory has demonstrated that the re-pigmentation process varies according to the depth of the injury. This study investigated the repigmentation of different depth scars over a 98 day observational period, using a black and white porcine model.

Methods
Superficial (SPT), deep partial thickness (DPT) and full thickness (FT) excisional wounds were created on the flanks of black and white striped Hampshire pigs. Wounds were allowed to heal by secondary intention and were macroscopically assessed at weekly intervals until repigmentation had ceased and remained static for one month. Visual analogue scores for pigmentation were done at each assessment and photographic images obtained to create a visual record of repigmentation. At 98 days post-wounding all scars were collected and subjected to analysis using qualitative RTPCR for pigment genes (TYR, TRP1 and MITF) and immunohistochemistry of the translated proteins.

Results
Within all wound depths white skin reepithelialised at the same time as adjacent black skin and returned to the same colour as it was pre-wounding. Within black skin, SPT wounds were fully re-epithelialised at day 11 post-wounding when pigment deposits were also visible at the scar edges and around hair follicles in the scar centre. The whole scar repigmented by day 21 but underwent late hyperpigmentation at day 35 post-wounding, before returning to be indistinct from the surrounding unwounded skin by day 56.

The deep partial thickness wounds reepithelialised by day 14 when pigment was also first noted, but only at the scar margins. Over time, this rim of pigment became darker than the surrounding unwounded skin and persisted until day 50 when it faded to become homogeneous with the surrounding skin. Repigmentation became static at day 70 when the majority of the scar was repigmented but small central islands of hypopigmentation persisted.

The full thickness wounds reepithelialised completely between day 21-28 post-injury. At this time, the pigment was present at the scar periphery. The pigment appeared centripetally in the healed wound. Full thickness scars remained centrally hypopigmented until 98 days post-wounding.

Qualitative RTPCR revealed an absence of the TYR, TRP1 and MITF mRNA in white skin, compared with the black. This correlated with the immunohistochemical studies in which white porcine skin was devoid of the related protein expression. However, pigment genes were present in both unwounded black skin and hypo and hyperpigmented scars.

Conclusion
This study demonstrates the usefulness of the black and white porcine model as a good experimental model to study the process of re-pigmentation post injury. The observational study confirms differences in re-pigmentation of healed wounds to be dependent on the depth of the wound. Furthermore, this study has demonstrated that differences between varying levels of scar pigmentation are not dependent on the three genes and related proteins studied, but need further investigation which is on-going.

BP15 PERCEPTION AND KNOWLEDGE OF APPROPRIATE FIRST AID CARE IN BURN RELATED INJURIES: SURVEY OF ENGLISH UNIVERSITY STUDENTS
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Introduction
Adequate first aid for a burn related injury (BRI) is to apply cool running water to the area for 20 minutes in order to attempt to reverse the zone of stasis to healthy tissue, so reducing BRI surface area and depth. This study aimed to compare BRI first aid knowledge between future healthcare workers and non-healthcare workers and propose realistic recommendations to address any shortcomings.

Methods
A survey proforma was used to collect participant demographics and responses to four multiple choice scenarios involving BRI first aid. An online survey client was used to disseminate to students attending two English Universities and collate responses.
Results
1146 students participated: 325(28.4%) Student Doctors (SDs) and 821(71.6%) non-SDs. 736(64.2%) students, including 246 SDs and 89 non-SDs, having attended a first aid course, with 528(71.7%) covering BRIs. 119(10.4%) answered all scenarios correctly; 30 SDs and 89 non-SDs, with 86(72.3%) having attended a first aid course. In the SD cohort attendance at a first aid course gave an improvement between 6.5%-11% in participant's responses, but none were found to be statistically significant. Dividing the non-SD cohort by generic first aid course attendance revealed similar improvements of between 2.4%-13.3% in responses, with statistical significance in one scenario (13.3% improvement p value 0.002). Dividing all participants by receipt of the specific BRI first aid component revealed improvements between 2.6%-13.3%, statistically significant in two scenarios (2.6% and 13.3% improvement, p values 0.043 and 0.002 respectively).

Conclusion
First aid experience improved participant's responses, but overall knowledge of BRI first aid was poor. Not all first aid courses covered BRIs and not all SDs had completed a first aid course. Suggested recommendations: All first aid courses should cover BRIs; SDs should undertake a compulsory first aid course; and BRI first aid training should be more widely available to the general public through public health measures.

BP16 EVALUATION OF HIGH RESOLUTION DIGITAL THERMAL IMAGING IN THE ASSESSMENT OF BURN DEPTH
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Introduction
Thermal imaging is a tool that can be used to predict burn depth. Major refinements in thermal imaging technology and digital image processing have seen it widely used in the military, law enforcement and industry. Modern digital thermal cameras are quick, simple to use and affordable. We have evaluated the use of this technology in the assessment of burn depth and aim to establish if high resolution technology can be practically used in conjunction with clinical examination to determine burn depth.

Methods
Patients admitted to the West Midlands Regional Burns Centre were imaged with a digital camera and a Thermal camera (FLIR SC660, FLIR Systems, Inc, USA). Thermal images were processed with ImageJ® and compared with standard digital photography. Burn wound thermal intensity was calibrated based upon in vivo skin temperature recording.

Results
11 patients (13 burns) affecting upper and lower limb extremities and the anterior and posterior trunk were included in this pilot study. Burns were imaged at between 42 and 120 hours post-injury. Full thickness burns had a mean calculated temperature of 32. ºC (range 31.6ºC to 33.8ºC); deep partial thickness burns had a mean temperature of 33.4ºC (range 32.4 ºC to 34.5 ºC); and superficial partial thickness burns had a mean temperature of 34.5 ºC (range 32.6ºC to 35.4ºC). When compared to skin temperature, full thickness burns were significantly cooler (p < 0.001), as were deep partial thickness burns (p < 0.05). Superficial partial thickness burns were not significantly different in temperature than unburnt skin (p > 0.05).

Conclusion
Thermal imaging can correctly determine a significant difference in thermal intensity with varying depths of burn. The thermal camera produces images of high resolution and is quick and easy to use, and is a valuable adjunct to clinical assessment of burn depth. This can be utilised intra-operatively to allow real time imaging of the burnt region providing more a precise map of areas requiring excision.

BP17 THE EFFECT OF LOCALISED BURN INJURY ON SKELETAL MUSCLE IN A MOUSE MODEL
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Introduction
Severe burn injuries are associated with significant muscle wasting and loss of muscle strength. Several pharmacological and non-pharmacological treatments have been employed with variable success. However, the effects of smaller burn injuries on skeletal muscle have largely been ignored, whilst the mechanism underlying muscle loss after burn injury is still not clear. A better understanding of the effects of burn injury on skeletal muscle has the potential to identify better intervention strategies, as well as increase our understanding of the body's response to burn injury.
Methods
9 week old female C57BL/6 mice received a full-thickness contact burn on the back, of approx 5% total body surface area (TBSA). In-situ isometric contractile properties were measured on both the Extensor Digitorum Longus (EDL) and Soleus (SOL) muscles following direct muscle stimulation at day 7, day 28, and day 84, and compared to age and gender matched un-injured controls. Skinned fiber contractile assays were performed on the EDL muscles at identical time points. Murine echocardiography was also performed at these time points.

Results
The total body mass of the animals was not significantly different at any time-point post-injury. At day 7 and 28 there was a significant decrease in whole muscle mass in the burn injury group compared with the controls (p=0.01). In EDL, both maximum and specific force was significantly decreased at day 28 and 84 (p<0.05). In SOL, maximum force was decreased at day 28 (p=0.00), but had recovered by day 84. SOL specific force was significantly weaker in the burned group at day 28 and day 84 (p<0.05). There was no significant difference in maximum force generated from the skinned fibers at any time-point.

Conclusion
This data shows that even non-severe burn injury results in significant and long lasting decreases in muscle strength and mass. This is particularly interesting given that the mice gain weight normally and are equally active, strongly suggesting the systemic effects are mediated by a response to the injury rather than the result of hyper-metabolism or lack of physical activity post-injury.

It was interesting to note that the results seen in the whole muscle contraction assays was not mirrored in the skinned fiber experiments. This points to calcium transport, re-release or storage as a possible aberration following burn injury, a theory supported by the differences between EDL (predominantly fast twitch fibers) and SOL (Predominantly slow twitch fibers) muscles, where calcium movement is a key differentiating feature.

This has important implications both for further investigation into the effects of burn injury on skeletal muscle, as well as on the management of patients with more moderate injuries than would normally be expected to experience changes to their skeletal muscle function.

BP18 RADIO-CONTROLLED MODEL VEHICLE FUEL BURNS
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Radio-controlled model vehicles are a popular and enduring hobby across all age groups. Many models are powered by internal combustion engines that use a specific mixture of fuel containing variable amounts of methanol, oil and often, nitromethane. The mixture – termed ‘nitro’ - is highly flammable and widely available. We report a case series of three flame burn injuries (average 15% total body surface area) that were associated with the handling of this fuel. All had injuries to the torso and arms. Two of our patients were unsupervised children and two patients required fluid resuscitation. These burns can be deep enough to require surgery and this may be due to a recurrent tendency for the fuel to re-ignite on clothing.

Despite the existence of restrictions on transportation of ‘nitro’ fuel, a survey of current local and national sales practices found that the fuel frequently was available for purchase by individuals under the age of 18 years, often with no restriction on total volume in a single transaction. We subsequently undertook a national survey of all burn centres and units within the UK to establish the frequency of this mechanism of burn injury and to assess the implications from a public health perspective.

BP19 CHANGING PRACTICE FOLLOWING DEVELOPMENT OF GUIDELINES FOR TRACE ELEMENT SUPPLEMENTATION IN SEVERE BURNS
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Chelsea and Westminster Hospital

Introduction
Trace elements (TE) selenium, copper and zinc play an important role in human physiology. Evidence suggests that adequate early supplementation decreases sepsis following severe burns. The aim was to audit our compliance with local guidelines set up at a London Burns Service to measure and replace TEs following severe burns.

Methods
All adult patients presenting with burns >15% total body surface area (TBSA) were included. Compliance with guidelines was assessed by retrospective case note analysis.

Results
Between January 2010 and January 2011 30 patients presented with >15 % TBSA burns. Sixteen patients were managed according to the guidelines. Most patients presented TE deficient and all showed a significant improvement in TE levels. The mean time to normal serum levels was 16 days. The earlier patients were supplemented the sooner levels normalised.

**Conclusion**

Adequate TE supplementation may have an important role in optimising recovery following severe burns. Normal levels were achieved using the guidelines, but we believe that if levels normalise earlier patients may benefit. We now plan to increase the dose given immediately following the burn with the aim of normalising levels earlier. A large multicentre trial would be needed to show how this impacts morbidity outcomes.
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