A

Austin LifeSciences

Research Week
13–17 October 2014

Abstract book 2014

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Research Week
13 –17 October 2014

Monday	13 October	
10.15	Schools lecture Professor Sharon Lewin	ELT
12 – 1	Plenary Session Professor Sharon Lewin *"A cure for HIV infection - dream or reality"*	JLLT
4 – 4.45	BioGrid platform technologies	ONJCWC Room 5A+5B
Tuesday	**14 October**	
12 – 1	RJ Pierce Symposium: hosted by Professor Martin Delatycki *"Finding genes and treating genetic disorders"*	JLLT
2.30 – 3.30	Poster session 1	EP
4 – 5	Physiotherapy Research Seminar A/Professor Anne Holland *"Telehealth the way of the future?*	ELT
Wednesday	**15 October**	
12 – 1.30	AMRF Young Investigator Award presentations; Distinguished Scientist 2013 Professor Joe Proietto	JLLT
3.00 – 4.00	E-Poster session; two concurrent minioral sessions	EP & JLLT
5 - 6	Inspiring Research Career Seminar: Professors Scheffer, Berkovic and Zajac	Rm 4.1 EP
Thursday	**16 October**	
12 – 1.15	Debate *"Sport is bad for the health"* Announcement of Research Week Awards and AMRF Grants	JLLT
1.45 - 3.15	Patient Centred Care Awards	JLLT
2.30 – 3.30	Poster Session 2	EP
Friday	**17 October**	
11 – 1	Dunlop Medical Research Foundation symposium	ELT

ELT Education Lecture Theatre **EP** Education Precinct **JLLT** John Lindell Lecture Theatre

www.austin.org.au/researchweek

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Monday 13 October

Research Week 2014 Plenary Lecture
Professor Sharon Lewin, FRACP, PhD
"A cure for HIV infection – dream or reality"
12 noon – 1pm John Lindell Lecture Theatre,
Level 4, Lance Townsend Building, Austin Health

Sharon Lewin is an infectious diseases physician and basic scientist. She is the inaugural director of the Doherty Institute for Infection and Immunity at the University of Melbourne; consultant physician, Alfred Hospital, Melbourne, Australia; and an Australian National Health and Medical Research Council (NHMRC) Practitioner Fellow. Her laboratory focuses on strategies to cure HIV infection and the pathogenesis of HIV-hepatitis B co-infection. She was the local co-chair of the XXth International AIDS Conference (AIDS2014) which was held in Melbourne July 2014 and was the largest health conference ever held in Australia. She is on the leadership team of the International AIDS Society's Strategy Towards and HIV Cure and a member of the Ministerial Advisory Committee on Blood Borne Viruses and Sexually Transmitted Infections.

BioGrid Platform technologies
4 – 4:45pm Rm 5A+5B Olivia Newton John Cancer and Wellness Centre, level 5

BioGrid Australia operates a federated data sharing platform that securely links patient level clinical, bio-specimen, genetic and imaging datasets from multiple sources for the purpose of ethically approved medical research. BioGrid specialises in making these data available to authorised researchers to dynamically extract and analyse data from multiple institutions and diseases whilst protecting patient privacy. We invite you to a session on accessing BioGrid data through the use of SAS Visual Analytics (VA). During this session there will be a demonstration of VA, which is a recent addition to the SAS suite of analytical software

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Tuesday 14 October

R J Pierce Symposium, Honouring the contribution and enthusiasm for medical research of Professor Rob Pierce.
12 noon - 1.15 John Lindell Lecture Theatre,
Level 4, Lance Townsend Building, Austin Health

Finding genes and treating genetic disorders

Finding genes for Mendelian disorders ,
Associate Professor Paul Lockhart, co-director Bruce Lefroy Centre, Murdoch Childrens Research Institute
Resveratrol as a treatment for Friedreich ataxia,
Dr Eppie Yiu, Paediatric Neurologist, Royal Children's Hospital, NHMRC Early Career Fellow, Bruce Lefroy Centre, Murdoch Childrens Research Institute
Is reducing moderate iron overload in hereditary haemochromatosis necessary?
Professor Martin Delatycki, Director, Clinical Genetics, Austin Health

Poster session

2.30 - 3.30 Education Precinct, Level 4, Austin Health Tower
130 Posters describing research in eight areas of research; well represented groups are Neurosciences, Oncology and Haematology, and Anaesthesia. There are also posters in Cardiology, Surgery, and Critical Care. Authors will be present to describe their work and answer questions.
Free barista coffee is available

Austin Physiotherapy Research Seminar

4 - 5pm Lecture Theatre, Education Precinct, Level 4, Austin Health Tower
Telehealth: the Way of the Future? Associate Professor Anne Holland
A/Prof Hollands research investigates new models of pulmonary rehabilitation for people with chronic lung disease. She is based at LaTrobe University and Alfred Health

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Wednesday 15 October

Austin Medical Research Foundation Young Investigator Award presentation and Professor Joe Proietto, AMRF Distinguished Scientist 2013

12 noon - 1.15 John Lindell Lecture Theatre,
Level 4, Lance Townsend Building, Austin Health

Professor Proietto will begin proceedings by describing what motivates him to continue with research. His address will be followed by four presentations from the authors of the best abstracts submitted for Research Week. A panel of 'secret' professors in the audience will adjudicate the presentations of the shortlisted presenters. The AMRF Young Investigator Award will be presented on Thursday 16 October following the debate

Michele Veldsman Hippocampal connectivity in ischaemic stroke patients and age-matched controls

Jennifer Cori The effect of arousal and subsequent hypocapnia on genioglossus muscle activity in obstructive sleep apnea

Willian Korim Activation of medulla-projecting perifornical neurons modulates the adrenal sympathetic response to hypoglycaemia: involvement of TASK3 channels

Prashanth Prithviraj Effect of Pregnant Sera and a Pregnancy Associated Metalloproteinase (PAPP-A) on Melanoma in-vitro and in-vivo: Insights into melanoma progression during pregnancy and potential new therapeutic targets

E-Poster session

3 – 4pm John Lindell lecture theatre and Education Precinct lecture theatre; two concurrent mini oral sessions

Two groups of 15 authors will present their work as a '3x3' i.e three slides for three minutes with one minute for questions. Audience members will be asked to vote for a peoples choice speaker in each session. The audience is required to be present for the hour to be eligible for the $100 audience member prize.

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Thursday 16 October

Debate "Sport is bad for the health"
12 noon - 1.15 John Lindell Lecture Theatre,
Level 4, Lance Townsend Building, Austin Health

Dr Brendan Murphy will moderate the debate of the proposition that Sport is bad for the health . Dr Pascal Gelperowicz, Dr Sandy Iuliano and special guest Mr Matthew Keenan will argue for the negative whilst Dr Dean Cowie, Dr Chris O'Callaghan and Ms Joleen Rose will argue for the affirmative.
The announcement of the Research Week Awards and AMRF Grants will follow the debate

Patient Centred Care Awards
1:45pm – 3:15 pm John Lindell Lecture Theatre,
Level 4, Lance Townsend Building, Austin Health

Showcases consumer engagement projects that are occurring across Austin Health. Presentation of five highly commended posters/projects and presentation of Patient Centred Care Award.

Poster session
2.30 - 3.30 Education Precinct, Level 4, Austin Health Tower
110 Posters describing research in fourteen areas of research; well represented groups are Endocrinology and Metabolism, Nursing, Respiratory and Sleep Medicine and Gastroenterology. Authors will be present to describe their work and answer questions.
Free barista coffee is available

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Friday 17 October

Sir Edward Dunlop Medical Research Foundation Symposium.

11 – 1 pm Education lecture Theatre, Education Precinct, Level 4, Austin Health

"Research Into Chronic Illness: The causes of type 2 diabetes and obesity"	**Assoc. Professor Sof Andrikopoulos, PhD** ***NHMRC Senior Research Fellow*** ***Department of Medicine, AH***
"Investigating the impact of energy-rich environments on susceptibility and resistance to common (diet-induced) obesity	**Past Dunlop Grant Recipient 2013** **Dr Barbara Fam, PhD** ***Research Fellow*** ***Department of Medicine, AH***
"Effective rehabilitation after stroke: Targeting viable brain networks	**Past Dunlop Grant Recipient 2011** **Dr Leeanne Carey, PhD** ***ARC Future Fellow & Head*** ***Neurorehabilitation & Recovery,*** ***National Stroke Research Institute*** ***Florey Neuroscience Institutes***
Identification of novel genes predisposing to male breast cancer, their prevalence and associated risks	**Past Dunlop Grant Recipient 2013** **Dr Ella Thompson, PhD** ***Research Fellow*** ***Research Division,*** ***Peter MacCallum Cancer Centre***
"Flavonol" a novel non-invasive inhibitor of NADPH oxidase 4 for ocular neovascularisation	**Dunlop Grant Recipient 2014** **Dr Hitesh Peshavariya, PhD** ***Research Fellow*** ***National Heart Foundation*** ***Centre for Eye Research Australia***

TUES01 Shoulder pain overnight after stroke: an observational study.
Blennerhassett JM[1], Millet N[1], Conidaris J[1], Churilov L.[2]

TUES02 A prospective pre-post study of clinical school models on BN/BM students report of self-efficacy and practice readiness.
MacDonald, L, [1,2], Murphy, M. C., [1,2,] Watt, E, [2], McKenzie, G, [2], Pleunik, S, [2], Wilson, D [2]

TUES03 Accuracy of methods of detection of meropenem resistance in Gram Negative Bacilli
Hurren F, [1], Montgomery J,[1] Wang J [1] Ellem J,[2]

TUES04 Phenotypic detection of carbapenemases in Gram Negative Bacilli. Which Method is Better
Hurren F,[1] Montgomery J,[1] Wang J [1]

TUES05 Cardiac index measurements during liver transplantation: agreement between radial and femoral monitoring sites
Lee M,[1] Weinberg L,[1] Pearce B,[1] Scurrah N,[1] Story DA,[1,2] Pillai P,[1] McCall PR,[1] McNicol PL,[1] Peyton PJ[1]

TUES06 Agreement between radial and femoral arterial blood pressure measurements during orthotopic liver transplantation
Lee M,[1] Weinberg L,[1] Pearce B,[1] Scurrah N,[1] Story DA,[1,2] Pillai P,[1] McCall PR,[1] McNicol PL,[1] Peyton PJ[1]

TUES07 Clinical predictors of significant postoperative pain after hip arthroscopy
Dr. Chong Tan[1], Dr Phong Tran[2], Dr William Howard[1], Dr. Laurence Weinberg[1]

TUES08 TOE pulmonary valve planimetry compares well with established methods of valve area calculation
Dr. Chong Tan[1], Dr. Laurence Weinberg[1] ,Dr Raymond Hu[1], A/Prof Larry McNicol[1]

TUES09 Standardised RV fractional shortening assessment correlates with RV systolic functioning indices
Dr. Chong Tan[1], Dr. Laurence Weinberg[1] , Dr Ian Harley[1], Dr Peter McCall[1], , A/Prof Larry McNicol[1]

TUES10 Multiplanar assessment via novel TOE views improves accuracy of tricuspid annular measures
Dr. Chong Tan[1], Dr. Laurence Weinberg[1] ,Dr Frank Liskaser[1], Dr Jon Fernandes[1], A/Prof Larry McNicol[1]

TUES11 The TOE Deep Transgastric Right Ventricular Inflow-Outflow view best estimates TAPSE
Dr. Chong Tan[1], Dr. Laurence Weinberg[1] , Dr Nick Scurrah[1], Dr Shiva Malekzadeh[1], A/Prof Larry McNicol[1]

TUES12 Incident angle correction does not improve accuracy of TOE S' measurement for RV function assessment
Dr. Chong Tan[1], Dr. Laurence Weinberg[1], Dr Nick Scurrah[1], Dr Shiva Malekzadeh[1], A/Prof Larry McNicol[1]

TUES13 Validation of indices for RV volume and systolic function between TTE and TOE
Dr. Chong Tan[1], Dr. Suet Ling Goh[1], Dr. Laurence Weinberg[1] ,Dr Parameswan Pillai[1], A/Prof Larry McNicol[1]

TUES14 Doppler interrogation of the TV with 4 non-standard TOEviews obtain superior incident angles
Dr. Chong Tan[1], Dr. Laurence Weinberg[1] ,Dr Jon Graham[1], Dr Louise Ellard[1], A/Prof Larry McNicol[1]

TUES15 Relationship between Doppler Estimated Carotid and Brachial Artery Flow and Cardiac Index
Weber U, [1], Glassford NJ,[1] Eastwood GM, [1] Bellomo R[1,2], Hilton AK[1]

TUES16 Prothrombin Complex Concentrate is associated with death and complication in patients with severe coagulopathy
W Shute[1], MJ Chan[1], S Nandal[1], C Lluch Candal[1], C Knott[1], NJ Glassford[1], A Arumugaswamy[2], C Smith[2], JM Martensson[1], R Bellomo[1]

TUES17 Epidemiology of red blood cell transfusions in patients with severe acute kidney injury - Analysis from the RENAL study
Rinaldo Bellomo[1,2], Johan Martensson[1], Kirsi-Maija Kaukonen[2], Serigne Lo[3], Martin Gallagher[3], the RENAL Replacement Study Investigators

TUES18 Femoral vs non-femoral venous catheterization and delivery of continuous renal replacement therapy - A secondary analysis of the RENAL study
Rinaldo Bellomo[1,2], Johan Martensson[1], Serigne Lo[3], Martin Gallagher[3], the RENAL study investigators

TUES19 Informed consent for procedures in the ICU: The Experiences and Expectations of Patients and Their Families
Dr Lucy Modra[1], A/Prof Graeme Hart[1,2], A/Prof Andrew Hilton[1] and Ms Sandra Moore[1].

TUES20 Urinary NGAL to hepcidin ratio as a biomarker of acute kidney injury in general ICU patients
Johan Martensson[1], Neil J Glassford[1], Sarah Jones[1], Glenn M Eastwood[1], Helen Young[1], Leah Peck[1], Vaughn Ostland[4], Mark Westerman[4], Per Venge[5], Rinaldo Bellomo[1]

TUES21 Assessing renal histological changes at necroscopy in the critically ill.
NJ Glassford[1], MB Guardiola[1], MJ Chan[1], A Skene[2], SM Bagshaw[3], R Bellomo[1], K Solez[4]

TUES22 Physiological changes after fluid bolus therapy in sepsis: a systematic review of the contemporary literature
NJ Glassford[1], GM Eastwood[1], R Bellomo[1]

TUES23 Defining the constituents and expectations of contemporary fluid bolus therapy: a binational survey
NJ Glassford[1], SL Jones[1], J Martensson[1], GM Eastwood[3], R Bellomo[1]

TUES24 The Factors Influencing Adherence to Standard Precautions Scale: Psychometric validation of novel instrument
Stephane Bouchoucha, [1, 2], Kathleen Moore, [1]

TUES25 The effect of higher arthroscopic fluid infusion volumes on postoperative pain in hip arthroscopy
Dr. Chong Tan[1], Dr Yew Ming Chong[2], Dr Phong Tran[3], Dr William Howard[1], Dr. Laurence Weinberg[1]

TUES26 FLUid intervention and Renal Outcome Trial in patients undergoing major surgery: an observational single-centre study (The FLURO Trial)
Armellini A,[1] Weinberg L,[2] Hewitt T,[3] Tan C,[2] McNicol L,[2] R Robbins,[4] Bellomo R,[3]

TUES27 Surgical complications in patients undergoing major surgery: a comprehensive grading system according to the CHADx and the Clavien-Dindo systems
Armellini A[1], Weinberg L[1], Hewitt T[3], Tan C[1], McNicol L[1], Robbins R[2], Bellomo R[3]

TUES28 Sodium bicarbonate infusion does not prevent acute kidney injury in patients undergoing orthotopic liver transplantation: a single-centre prospective phase two blinded randomized controlled trial
Weinberg L[1], Broad B[1], Chen C[1], Scurrah N[1], Pillai P[1], Story D[1], Eastwood G[2], Bellomo L[2], McNicol L[1]

TUES29 Prevention of Hypothermia in Patients Undergoing Orthotopic Liver Transplantation using the Fisher and Paykel 'Humigard'Open Surgery Humidification System: A Prospective Randomised Pilot Clinical Trial
Weinberg L[1], Alban D[1], Pearce B[1], Jones R[2], Story D[1], McNicol L[1]

TUES30 Impact of a surgery-specific goal directed therapy protocol in reducing major complications in patients undergoing pancreaticoduodenectomy (Whipple's procedure)
Weinberg L[1], Ho T[1], Scurrah N[1], Tan C[1], Dimovitis R[2], Collins A[2], Tan C[1], McNicol L[1], Christophi C[2], Nikfarjam M[2]

TUES31 Does surgery-specific goal directed therapy improve outcomes in patients undergoing major open liver resection compared to an ERAS programme alone?
Weinberg L[1], Ho T[1], Scurrah N[1], Dimovitis R[2], Collins A[2], Tan C[1], Christophi C[3], Nikfarjam M[3]

TUES32 A randomized controlled study using video fluoroscopy for the insertion of pulmonary artery catheters in high-risk patients undergoing cardiac surgery
Weinberg L[1], Pillai P[1], Gillard A[1], Tan C [1], Liskaser[1], Fernandes[1], Peyton P[1], Doolan L[1]

TUES33 Blood Optimisation Program To Reduce Blood Transfusions in Total Knee and Hip Arthroplasty: A Practice Change, Quality Assurance Project
Dr Paul Kopanidis[1], Dr Peter McCall[2], Dr Laurence Weinberg[2], Dr Andrew Hardidge[1]

TUES34 Multi detector (64+) CT angiography of the lower limb in symptomatic peripheral arterial disease - preliminary assessment of accuracy and inter-observer agreement in an Australian tertiary care setting
J. Lim, D. Ranatunga, A. Owen, T. Spelman, T. Mulcahy, J. Chuen, R. Lim

TUES35 MHC Class I Gene Transfer to Recipient Liver facilitates Allograft Tolerance
Bunker DLJ[1,2], Cunningham E[1], Moumita P[1], Wang Z[1], Wang C[1], Bishop A[1], Sharland A[1]

TUES36 Investigating the phenomenon of the liver tolerance effect using a skin graft model
Bunker DLJ[1,2], Cunningham E[1], Moumita P[1], Wang Z[1], Wang C[1], Bishop A[1], Sharland A[1]

TUES37 Assessment of distal end radius fractures: are we missing carpal instability syndromes?
Bunker DLJ[1,2], Pappas G, Moradi P, Dowd MB

TUES38 Outcome of Single Port Tenckhoff Catheter Insertion in a Regional Centre
Bunker D [1,2], Ilie V[1,2], Fisher D [1,2,]

TUES39 Prognosticator Showdown: Metabolic vs Pathological Response to Preoperative Chemotherapy for Colorectal Liver Metastases
Lawrence Lau[1], David Williams[2,3], Sze Ting Lee[3], Andrew M Scott[3], Christopher Christophi[1], Vijayaragavan Muralidharan[1]

TUES40 COLT: Computer-predicted Outcomes for Liver Transplantation
Lawrence Lau[1]; James Bailey[2], Benjamin Rubinstein[2], Robert Jones[1], Michael Fink[1], Graham Starkey[1], Bao-Zhong Wang[1], Christopher Christophi[1], Vijayaragavan Muralidharan[1]

TUES41 Indocyanine Green Clearance for assessing Functional Liver Remnant Intraoperatively in Real-Time: Report from a Pilot Study
Lawrence Lau[1], Laurence Weinberg[2], Mehrdad Nikfarjam[1], Graham Starkey[1], Michael Fink[1], Robert Jones[1], Christopher Christophi[1], Vijayaragavan Muralidharan[1]

TUES42 Abdominal Pain in the Emergency Department: Predictors of Surgical Management
Leung JL[1], Chow CL[1], Choong YHB[1], Chong CP[1,2], Parikh S[2], Lim WK[1,2]

TUES43 A study on temporal macrophage changes in colorectal cancer liver metastases following Vascular Disruptive Agent (VDA) treatment
George Kastrappis[1], Theodora Fifis[1], Linh Nguyen[1], Jacques Van Der Merwe[1], Christopher Christophi[1]

TUES44 The Effects of Lymphangiogenic Inhibition on Colorectal Liver Metastases
Jeremy Salim[1], Linh Nguyen[1], Christopher Christophi,[1]

TUES45 Right-sided adenoma detection with retroflexion versus forward view colonoscopy.
Sujievvan Chandran[1,7](MBBS, FRACP), Frank Parker[2] (MBBS, FANZA), Rhys Barrington Vaughan[1,7](MBBS, FRACP, PHD), Brent Mitchell[3,4] (MBBS, FRACP), Scott Fanning[3,4] (MBBS, FRACP), Gregor Brown[5,6] (MBBS, FRACP, PHD), Jenny Yu[1] (MBBS), Marios Efthymiou[1](MBBS, FRACP,MD)

TUES46 Low serum testosterone is associated with sarcopenia in men with cirrhosis
Sinclair M[1,2], Grossmann M[2,3], Angus PW[1,2], Hey P[1], Scodellaro T[2], Hoermann R[2], Gow PJ[1,2].

TUES47 Comparison of organ preservation solutions used in liver transplantation
DJ MacIntyre,[1] MA Fink,[1,2] RM Jones, [1,2]

TUES47A Zinc dependant increase in Hypoxia Inducible Factor 1α (HIF1α) expression in prostate PC3 cells
David Wetherell[1,2], Damien Bolton[1,2], Arthur Shulkes[1], Graham Baldwin[1], Joseph Ischia[1,2], Oneel Patel[1]

TUES48 Genomic profiling of kConFab men with a BRCA mutation status and prostate cancer
Ania Sliwinski[a,f], Sally Hunter[b], Ian Campbell[b], kConFab[a,c], Jason Li[d,g],Gail P. Risbridger[h], Renea A. Taylor[h,], David Clouston[i], Gillian Mitchell[a,c,g], Declan Murphy[e,j], Mark Frydenberg[g,k], Melissa Papagiris[h], Damien M. Bolton[f], Heather Thorne[a,g]

TUES49 Case Series: Ruptured Renal cysts Presenting as Solid Lesions
Sliwinski, A.[1], Kavanagh, L.E.[1], Chan, Y.[1], Lawrentschuk, N.[1], Bolton, D.[1], Clouston, D.[2]

TUES50 Implications of Fc-engineering to a humanised anti-Ley antibody on receptor binding and cellular effector function
King DT,[1,2] Liu Z,[1,2] Catimel B,[1,2] Ramsland PA,[3] Scott AM,[1,2] Burvenich IJG,[1,2]

TUES51 Assessing metabolic and hypoxic changes to treatment in colorectal xenografts with nanoPET/MRI
ST Lee[1,2], SJ Gong[1,3], K Hickson[1,3], A Rigopoulos[2,3], U Ackermann[1,2], GJ O'Keefe[1,2,3], AM Scott[1,2,3].

TUES52 Functional Imaging with 68Ga-DOTATATE PET/CT scan in patients with Neuroendocrine Tumours
Woo J[1], Lee ST[1], Berlangieri S[1], Poon AMT[1], Pathmaraj K[1], Sachinidis J[1], Chan GJ[1], Scott AM[1].

TUES53 Management of brain metastases in patients with renal cell carcinoma in the era of tyrosine kinase inhibitors
L Spain[1], J Stewart[1], A Campbell[1], A Lim[2], D Lim Joon[2], A Weickhardt[1]

TUES54 Computed Tomography (CT) abdomen/pelvis in haematology patients undergoing intensive myelosuppressive chemotherapy
Lim HY[1], Williams B[1], Ashby M[1], Grigg A[1]

TUES55 A survey of the current use of infection prophylaxis post autologous stem cell transplant (ASCT)
Lim HY[1], Grigg A[1]

TUES56 Below knee deep vein thrombosis: A more benign entity or not?
Prahlad HO[1,2], Hui Yin LIM[1], Chong Chyn CHUA[2], Matthew SLEEMAN[1], Joanne TAN[2], Carole SMITH[1], Andrew GRIGG[1], Lachlan HAYES[2]

TUES57 Venous thromboembolism and cancer: The evaluation of epidemiology, risk factors, associations and outcomes
Hui Yin LIM[1], Chong Chyn CHUA[2], Matthew SLEEMAN[1], Joanne TAN[2], Carole SMITH[1], Andrew GRIGG[1], Lachlan HAYES[2], Prahlad HO[1,2]

TUES58 Evaluation of epidemiology, risk factors and treatment strategies of venous thromboembolism in the warfarin era
Hui Yin LIM[1], Chong Chyn CHUA[2], Matthew SLEEMAN[1], Joanne TAN[2], Carole SMITH[1], Andrew GRIGG[1], Lachlan HAYES[2], Prahlad HO[1,2]

TUES59 Fertility outcomes in pre-menopausal women following BEAM conditioning and autologous stem cell transplantation
Masa Lasica[1], Emma Taylor[2], Puja Bhattacharyya[3], Ashwini Arumugaswamy[1], Rachel Cooke[6], Kate Stern[4], Rosemary Ayton[5], Andrew Grigg[1]

TUES60 Patterns of care in Australian patients with metastatic renal cell carcinoma (mRCC)
Daphne Dai[1], Yada Kanjanapan[2], Edmond Kwan[1], Desmond Yip[2], Nathan Lawrentschuk[3], Miles Andrews[4], Ian D. Davis[5], Arun Azad[3], Mark Rosenthal[1], Shirley Wong[4], Shams Arifeen[6], Mahmood Alam[6], Peter Gibbs[1], Ben Tran[1]

TUES61 Two families with Lynch syndrome and unusual cancers with absent mismatch repair protein staining
Burgess MJ[1], Cotter MN[1], Williams D[2], John T[1], Delatycki MB[1,3]

TUES62 Assessing the effect of combined targeting of Epidermal Growth Factor Receptor (EGFR) and intracellular signalling pathways in triple-negative breast cancer
Borosh B, [1,2], Dhomen N,[1,2], Liu Z[1,2], Scott AM, [1,2]

TUES63 Differences in characteristics and outcomes between young and older patients with lung cancer
Puey Ling Chia[1]; Paul Mitchell[1]; Thomas John[1, 2]

TUES64 Investigating the protective role of metformin in colorectal cancer.
Barnett A.C.[1], Dhomen N.S.[1], Ryall J.G.[3], Mariadason J.M.[1], Nijagal B[3], Tull D.[3] Scott A.M.[1]

TUES65 TSP-1 expression in melanoma correlates with EMT and increased invasiveness
Christopher Hudson [1] Andreas Behren [1] Aparna Jayachandran [1] Matthew Anaka [1] Pu-Han Lo [1] Jonathan Cebon [1]

TUES66 Single nucleotide polymorphisms (SNPs) in vascular endothelial growth factor (VEGF) family genes as predictive or prognostic biomarkers in patients (pts) with metastatic colorectal cancer (mCRC) treated with chemotherapy (CT) alone or in combination with Bevacizumab (BEV): analysis of the phase III MAX study.
FJM Chionh[1], V Gebski[2], AC Chueh[1], SJ Al-Obaidi[1], AJ Weickhardt[1,3], C Lee[2], DS Williams[4], C Murone[1], K Wilson[2], AM Scott[1], J Simes[2], TJ Price[5,6], J Mariadason[1], NC Tebbutt[1,3]

TUES67 Histone deacetylase and proteasome inhibitors synergistically induce apoptosis in colon cancer, multiple myeloma and CTCL cells through induction of the immediate early genes ATF3 and JUN.
Janson WT Tse[1], Anderly C. Chueh[1], Ian Y. Luk[1], Georgia A. Corner[1], Dominic CH Ng[2], Hoanh Tran[1], Amardeep S. Dhillon[3], John M. Mariadason[1]

TUES68 Phase II study of everolimus monotherapy as first line treatment in advanced biliary tract cancer: RADiChol
Yvonne H Yeung, [1,2] Fiona JM Chionh, [1,2] Timothy J Price, [3] Andrew M Scott, [1,2] Hoanh Tran, [1] Guangying Fang, [2] Effie Skrinos, [2] Carmel Murone, [2] John M Mariadason, [1] Niall C Tebbutt [1,2]

TUES69 Transcriptional basis for loss of cellular differentiation in colon cancer
Ian Y Luk[1], Hoanh Tran[1], Janson WT Tse[1], Fiona JM Chionh[1], Nicholas J Clemons[2], John M Mariadason[1]

TUES70 Calcitonin receptor isoforms expressed in high grade glioma cell lines derived from the brain tumour glioblastoma and their putative role in resistance conferred to drugs.
O'Shea BP, [1] Furness SGB, [2] Kourakis A, [1] Hare DL, [1] Wookey PJ [1]

TUES71 Intestinal-specific inactivation of HDAC3 in mice results in a reduction in body weight and altered expression of lipid metabolism genes
Davalos-Salas M[1,2], Al-Obaidi S[1,2], Anderton H[1,2], Watt M[5], Mangiafico S[3,4], Andrikopoulos S[3,4] Mariadason J[1,2,3]

TUES72 IDH1 mutation as a novel therapeutic target in cholangiocarcinoma
David K. Lau, [1], Niall Tebbutt[2,3], Andrew Weickhardt[1,2], John Mariadason[1,2,3]

TUES73 In vitro activity of regorafenib in colon cancer cell lines
David K. Lau[1], Fiona Chionh[1], Niall Tebbutt[1,2,3], John Mariadason[1,2,3]

TUES74 The risk factors and sequelae of primary portal vein thrombosis
Hey P[2], Robinson D[3], Grigg A[2,3]

TUES75 Thrombin Generation maybe a better surrogate measure of in-vivo anticoagulation in the era of new oral anticoagulants (NOAC)
Prahlad Ho[1,2,3], Geoffrey A Donnan[2], Lachlan Hayes[3], Carole Smith[2]

TUES76 Thrombin Generation in the Normal Population – Impact of Age and Sex
Prahlad Ho[1,2,] Carole Smith[1], Geoffrey Donnan[2]

TUES77 Immunohistochemistry for Lynch syndrome – Has Uptake Improved?
Lynch E[1*], Kentwell M[2*], Leaver A[1*], Williams D[3], Christie M[4], Lipton L[2], Winship I[2], Delatycki M[1], Macrae F[2,5] (*Joint First Authors)

TUES78 Outcomes of Patients with Acute Decompensated Heart Failure (ADHF) Stratified by Left Ventricular Ejection Fraction: an Australian tertiary centre experience.
Ken J. Lu [1, 2], Michelle Ord [1], Leighton Kearney [1,2], Gerard Smith [3], Ruth Lim [3,4], Elizabeth Jones [1], Louise M. Burrell [2], Piyush M. Srivastava [1, 2]

TUES79 Patients who self-present with ST elevation in myocardial infarction (STEMI): are they forgotten in systems to improve door to balloon time (DTBT)?
Lorelle Martin [1], Carolyn Naismith [1], David Clark [1], Omar Farouque [1].

TUES80 Psychological resilience and depression in cardiac disease settings
Toukhsati SR[1], Johns E[1], Raman B[1], Jovanovic A[1], Stone M[1], Yau L[1], Wang J[1], Dehghani S[1], Tran T[1], Ziffer R[1], Tran A[1], Selvadurai L[1], Hare DL[1,2].

TUES81 Psychometric validation of the Depression Scale Short Form (DS-SF) in cardiac patients
Hare DL[1,2], Selvadurai L[1], Tran A[1], Ziffer R[1], Tran T[1], Dehghani S[1], Wang J[1], Yau L[1], Stone M[1], Jovanovic A[1], Raman B[1], Johns E[1],Toukhsati SR[1].

TUES83 An audit of Resuscitation Medication administered intra procedurally in the Cardiac Catheterisation Laboratory
Carolyn Naismith RN MN, Lorelle Martin RN MN

TUES84 LDL-Apheresis for the Treatment of Patients with Severe Autosomal Dominant Hypercholesterolaemia and Coronary Disease: The Australian Experience
O'Brien RC[1], Page M[2], Ekinci E[1], Watts GF[2]

TUES85 Pericyte mobilisation and their role in the peri-infarct region following renal ischaemia
Pham C,[1] Velkoska E,[1] Hare DL,[1] Kourakis A,[1] Spencer K,[1] Burrell LM,[1] Wookey PJ[1]

TUES86 Effect of dose and timing of sublingual glyceryl trinitrate (GTN) on quality of computed tomography coronary angiography (CTCA).
Numan Kutaiba[1], Matthew Lukies[1], Michael Galea[1], Mark Begbie[1], Gerard Smith[1], Leighton Kearney[2], Tim Spelman[3], Ruth P Lim[1,4]

TUES87 A prospective study of the utility of Egan's model in Phase one cardiac rehabilitation delivery
Chezhan Hall, [1, 2,] Maria Murphy, [1, 2,] Andrew Scanlon, [1], Lorelle Martin, [2], Omar Farouque [2]

TUES88 Staff perceptions of Phase one cardiac rehabilitation in a tertiary setting
Chezhan Hall, [1, 2,] Maria Murphy, [1, 2,] Andrew Scanlon, [1], Omar Farouque

TUES89 Important medical co-morbidities: their impact on the practices of recreational scuba divers
Lippmann J[1], Taylor DMcD[2,3], Mitchell S[4]

TUES90 Variables associated with a high level of parent satisfaction with their child's pain management in the emergency department
Liversidge XL[1,2], Taylor DMcD[1,2], Liu B[1,2], Ling S[1,2], Taylor SE[2]

TUES91 The specific psychological needs of older emergency department patients
Liu B[1,2], Taylor DMcD[1,2], Liversidge XL[1,2], Ling S[1,2], MacGibbon P[2]

TUES92 The effects of vapocoolant spray on skin sterility prior to intravenous cannulation
Evans JG[1,2], Taylor DMcD[1,2], Hurren F[1], Ward P[1], Yeoh M[1], Howden B[1,2]

TUES93 The nature and outcomes of workplace chemical and toxin exposures reported to the Victorian Poisons Information Centre
Ling SL-Y[1,2], Taylor DMcD[1,2], Robinson J[2,3]

TUES94 Medication Costs in an Emergency Department
Harding AM[1,2], Welton C[3], Yeoh M[1]

TUES95 Evidence Based Management of Atrial Fibrillation in the Austin ED
Joules E,[1] Yeoh M,[2] Taylor S,[1] Harding A[1] Visser P[2] Rotella J,[2] Eldridge L,[2] Ward M, [formerly 2]

TUES96 Pre-thrombolysis Time Intervals for Acute Ischaemic Stroke in an Australian Regional Hospital
Tan RYP[1], Gin TJ[2], Wilson I[1], Veth V[1]

TUES97 Hospital-wide HbA1c measurement identifies undiagnosed diabetes in 5% of patients aged 54 years and over: results of the Austin Health Diabetes Discovery Initiative
N Nanayakkara[1], N Pang[1], H Nguyen[2], M Reynolds[2], B Peake[1], S Hoetomo[1], A Tan[2], J Smith[1], G Hart[3], E Owen-Jones[4], J Ross[4], V Stevenson[1], R Robbins[8], L Churilov[9], Q Lam[5],O Farouque[7], D Johnson[2], S T Baker[1,2], J D Zajac[1,6], E I Ekinci[1,6,10]

TUES98 The Effects of Diabetes and Pregnancy on Tumour Necrosis Factor-alpha Receptors 1 and 2
Seah J[1,3], Huyhn J[3], Clarke M[1,3], Sourris K[3], Coughlan M[3], Houlihan C[1], Permezel M[2,3], Fleming G[2], Macisaac R[3], Ekinci E[1,3] Jerums G[1,3].

TUES99 Utility of X-Ray and Computed Tomography in the Assessment of Abdominal Pain in the Emergency Department.
Chow CL[1], Leung JL[1], Choong YHB, Chong CP[1,2], Parikh S[2], Lim WK[1,2].

TUES100 Incidence of Abdominal Pain and Predictors of Admission in the Emergency Department. **Chow CL[1], Leung JL[1], Choong YHB, Chong CP[1,2], Parikh S[2], Lim WK[1,2].**

TUES101 Superbugs in the supermarket? Assessing the rate of contamination with multi-drug resistant Gram-negative bacteria in fresh Australian pork
Josh Pitcher[1], Jade McLellan[1], Susan Ballard[2], Elizabeth Grabsch[3], M. Lindsay Grayson[2]

TUES102 Vancomycin-resistant Enterococcus faecium sequence type 796, a new colonisation and disease outbreak clone shared from Australia to New Zealand
AA Mahony[1,2], EA Grabsch[3], SA Ballard[1], S Xie[3], J Wang[3], SA Roberts[4], H Heffernan[5], RL Stuart[6], D Cotsanas[6], A Cheng[7], N Bak[8], T Seemann[9], TP Stinear[10,11], MMC Lam[10], GW Coombs[12], BP Howden[1,3,10,13], ML Grayson[1,2,3], PDR Johnson[1,2,12]
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TUES103 Improved turnaround time and preserved sensitivity in detecting environmental hospital contamination with vancomycin-resistant enterococcus using polymerase chain reaction versus culture-based techniques.
AA Mahony[1,2], SA Ballard[1], EA Grabsch[3], S Xie[3], PDR Johnson[1,2], ML Grayson[1,2,3]

TUES104 Typhoid Fever: A Retrospective Audit of Epidemiology, Antimicrobial Susceptibility and Clinical Characteristics
Aditya Tedjaseputra[1], Rebecca Ling[1] and Patrick Charles[1,2]

TUES105 Intern Preparation Seminar Changes Medical Student Behaviour
Ryan A[1], Goss B[1], Hill K[1] & O'Brien R[1]

TUES106 Accuracy of patients' perception of their time spent sleeping supine
Wallbridge, P [1,2], Churchward T[1,2], Worsnop C.[1,2]

TUES107 Continuous Positive Airway Pressure (CPAP) adherence in Obstructive Sleep Apnoea (OSA) patients
Jibin Thomas[1,2], Christopher Worsnop[1,2], Tom Churchward[1,2],Julie Tolson[1,2].

TUES108 Respiratory muscle strength and body mass index (BMI) in patients with and without obesity hypoventilation syndrome
Dawood B[1,2], Howard ME[1,2], McDonald CF [1,2], Berlowitz DJ[1,2], Brazzale DJ[1,2]

TUES109 The impact of the 2007 AASM scoring criteria on sleep apnoea indices in people with Acute Quadriplegia
Tolson J [1], Schembri R,[1,2], Spong J, [1], Stevens B,[1], Ruehland W, [1], Rochford PD,[1], Berlowitz DJ,[1,2]

TUES110 Transurethral Resection (TURP) versus Greenlight Laser Photovaporisation (PVP) of Prostate: A comparison of outcomes over 560 consecutive cases from a single institution
Darren Ow[1], Nathan Papa[1], Peter Liodakis[1,3], Shomik Sengupta[1,2,3], Stephen Clarke[1,3], Nathan Lawrentschuk[1,2,3], Damien Bolton[1,3]

TUES111 Automated reporting of Amyloid PET quantification on brain surface through a web interface
V. Dore, P. Bourgeat, L Zhou, J. Fripp, R. Martins, L. Macaulay, C. L. Masters, D. Ames, B Brown, C. C. Rowe, O. Salvado, V. L. Villemagne

TUES112 Put a SOCK on it: Denoising functional MRI of language using automated ICA artifact identification

TUES113 Activation of medulla-projecting perifornical neurons modulates the adrenal sympathetic response to hypoglycaemia: involvement of TASK3 channels.
Willian S. Korim and Anthony J.M. Verberne

TUES114 Hippocampal connectivity in ischaemic stroke patients and age-matched controls
Veldsman M, [1], Cumming T,[1] Li Q[1], Werden E[1], Bird L[1], Brodtmann A[123]

TUES115 Cognition after stroke correlates better with regional brain volume than white matter hyperintensity volume
Toby Cumming[1], Qi Li[1], Emilio Werden[1], Audrey Raffelt[1], Renee Lichter[1], Heath Pardoe[2] & Amy Brodtmann[1]

TUES116 PRIMA1 mutation: a new cause of nocturnal frontal lobe epilepsy and intellectual disability

Michael S. Hildebrand [1], Rick Tankard [2], Elena V. Gazina [3], John A. Damiano [1], Kate M. Lawrence [1], Hans-Henrik M. Dahl [1], Brigid M. Regan [1], A. Eliot Shearer [4,5], Richard J.H. Smith [4], Ingrid E. Scheffer [1,6], Steven Petrou [3], Melanie Bahlo [2], Samuel F. Berkovic[1]

TUES117 Are Mutations of the Respiratory Control Gene PHOX2B Associated with Sudden Unexpected Death in Epilepsy (SUDEP)?

Regan BM,[1] Bagnall RD,[2,3] Crompton DE,[1,4] Cutmore C,[2] Berkovic SF,[1] Scheffer IE,[1,5] Semsarian C [2,3]

TUES118 Variances in hospital deaths following acute stroke: information from the Australian Stroke Clinical Registry

Cadilhac DA[1,2], Lannin NA[3], Kilkenny M[2], Churilov L[1], Kung F[1], Grabsch B[1], Donnan G[1], Dewey H[5] on behalf of the Australian Stroke Clinical Registry investigators.

TUES119 Higher Aβ burden in subjective memory complainers: A flutemetamol sub-study in AIBL

C.C. Rowe,[1] V. Dore,[2] P. Bourgeat,[2] R. Buckley,[3] R Veljanoski,[1] O. Salvado,[2] R Williams,[1] K Ong,[1] A. Rembach,[3] L Macaulay,[2] D. Ames,[4v] C.L. Masters,[3] V.L. Villemagne [1,3]

TUES120 Automated reporting of Amyloid PET quantification on brain surface through a web interface

Vincent Doré[1], Pierrick Bourgeat[2], Luping Zhou[2], Jurgen Fripp[3], Ralph Martins[4], LanceMacaulay[5], David Ames[6], Colin Louis Masters[7], Belinda Brown[8], Christopher C Rowe[9], Olivier Salvado[2], Victor L Villemagne[7,9]

TUES121 Does enhanced PET reconstruction methodology change the quantification of Amyloid with 18F Flutemetamol?

Robert Williams[5], Pierrick Bourgeat[4], Christopher Cleon Rowe[2], Olivier Salvado[4], Victor L Villemagne[1], Vincent Dore[3], Neil Killeen[6]

TUES122 The Victorian Stroke Telemedicine Program: Clinician Survey

Cadilhac DA [1,2], Moloczij N[1], Arthurson L[3],Cottrell J[4], Fox M[5], Bladin C[1]

TUES123 The Resting-State Epileptic Network in Temporal Lobe Epilepsy with Hippocampal Sclerosis

Vaughan D,[1,2] Tailby C,[1,4,] Jackson GD[1,2,3]

TUES124 Assessing the accuracy of a CT-based approach to the partial volume correction of Flutemetamol-PET images
Gareth Jones,[1,2,] G. J. O'Keefe,[1,] Christopher Rowe, [1,2,] Victor L. Villemagne,[1,2]

TUES125 Language Lateralisation in Humans
Thanh Truong [1, 2,] , David F. Abbott [1, 2,], John S. Archer [1, 2,]

TUES126 CHD2 causes a distinctive myoclonic epileptic encephalopathy associated with self-induced seizures
Schneider AL[1], Thomas RH[1,2*], Zhang LM[1,3*], Carvill GL[4], Archer JS[1], Heavin SB[1], Mandelstam SA[1,5,6], Craiu D[7], EuroEPINOMICS-RES consortium, Berkovic SF[1], Gill DS[8], Mefford HC[4], Scheffer IE[1,5,6]

TUES127 Localising posterior language cortex for presurgical planning
Tailby C,[1,2,3], Abbott DF,[1,4] Jackson GD[1,4,5]

TUES128 A neurophysiological study of the hypothalamo-medullary-sympathetic pathway to the adrenal gland
Azadeh Sabetghadam, Willian S. Korim, Anthony J. Verberne

TUES129 Novel 3.0Mb duplication of chromosome 1p36 in a family with microcephaly and intellectual disability
Battaglia, L.C.,[1] Burgess, T.,[2] Dalton, D.,[3] Bankier, A.,[3] Brown, N.J.[3]

TUES130 Novel pathogenic mutation in LMX1B in a family with nail-patella syndrome
Brown N.J., [1], Cotter, M.,[1] Dalton, D. [1], Stark, Z.,[2,]

TUES131 Identification of a metabolic node associated with the sodium co-transporter NKCC1
Katerelos M[1], Galic S[3], Davies M[1,2,], Gleich K[1], Mount PF[1], Kemp BE[3] and Power DA[1]

TUES132 Midlife Vascular Risk, Apolipoprotein E-ε4 and β-Amyloid status 20 years later: Results from the Women's Healthy Ageing Project
Paul Yates[1,2], Christopher Rowe[1,2], Victor Villemagne[1,2], Patricia Desmond[2,3], Colin Masters[2,4], David Ames[2,4], Lorraine Dennerstein[2], Philippe Lehert[2], Kathryn Ellis[2,4], Cassandra Szoeke[2,4]

TUES133 Evidence of amyloid on Florbetaben-PET is associated with reduced episodic memory 10 years prior: results from the Women's Healthy Ageing Project.

Paul Yates[1,2], Victor Villemagne[2], Lorraine Dennerstein[2], Joanne Robertson[3], Chuhui Li[3], Patricia Desmond[2,4], Colin Masters[2,3], Christopher Rowe[1,2] Cassandra Szoeke[2]

TUES134 Brain β-Amyloid, Vascular Factors and Cognition: 54-Month Follow-Up Results from the AIBL Study

Paul Yates[1,3], Victor Villemagne[1,3], Kathryn Ellis[3,5], Olivier Salvado[6], Ralph Martins[7], Cassandra Szoeke[3], Patricia Desmond[2,3], Colin Masters[3,5], David Ames[3,4], and Christopher Rowe[1,3]

TUES135 The Residential Outreach Service: Rising to a Challenge

Clynt Bernhardt, David Webster, Deborah Brown, Wendy Clifton, Hannah Tudor, Jayne Dohrmann, Stephanie McClintock, Meg Storer, Paul Yates

TUES136 **The relationship of subjective cognitive impairment with cerebral β-amyloid: data from the Women's Healthy Ageing Project**

Georgia McCluskey[1], Paul Yates[1,2], Victor Villemagne[2], Chuhui Li[1],

TUES137 New Oral Anticoagulants in the Elderly: What is the evidence?

La Brooy Beth[1,2], Ho Prahlad[1,2], Lim Kwang[2]

TUES138 Slick Scripts: Pharmacist preparing discharge prescriptions to improve patient safety and flow

Tran T, [1] Hardidge A,[1] Heland M, [1] Garrett K[1], Mitri E[1], Taylor S[1]

WED - ELT Establishing the dose of exercise tolerated by chronic stroke survivors with walking impairments.
Wayne Dite[1], Zoe N. Langford[1], Toby B. Cumming[2] Leonid Churilov[2], Julie Bernhardt[2] & Jannette M. Blennerhassett[1]

WED - ELT Predictors of incident heart failure in patients with stable coronary heart disease
Driscoll A[1], Barnes EH[2], Blankenberg S[3], West MJ[4], White H[5], Simes RJ[2], Tonkin AM[6]

WED - ELT Longer term outcomes following critical care
Haines KJ, [1,2], Berney SC,[1,2,] Remedios L,[2,] Denehy L[2]

WED - ELT Indocyanine Green Clearance for assessing Donor Liver Quality Before Retrieval for Transplantation
Lawrence Lau[1], Julie Lokan[2], Robert Jones[1], Graham Starkey[1], Michael Fink[1], Bao-Zhong Wang[1], Peter Angus[3], Adam Testro[3], Paul Gow[3], Christopher Christophi[1], Vijayaragavan Muralidharan[1]

WED - ELT Investigating the protective role of metformin in colorectal cancer.
Barnett A.C.[1], Dhomen N.S.[1], Ryall J.G.[3], Mariadason J.M.[1], Nijagal B[3], Tull D.[3] Scott A.M.[1]

WED - ELT A novel immune function biomarker predicts early clinical outcomes following liver transplantation
Sood S, [1,2,3], Haifer C[1], Yu J[3], Pavlovic J[1], Visvanathan K[3], GOW PJ[1,2], Jones RM[1], Angus PW[1,2], Testro AG [1,2]

WED - ELT Neat, discreet and unseen - young women's views on vulval anatomy
Howarth C [1], Hayes J [1,2], Simonis M [1,3], Temple-Smith M [1,3]

WED - ELT Preferences for end-of-life care and advance care planning in the event of dementia: a nationwide survey of older Australians
M Sellars,[1] R Mountjoy,[1] T Holman,[2] W Silvester[1]

WED - ELT Advance Care Planning having the Conversation across Cultural and Language Barriers
D. Mawren, S. Fraser, K. Detering, K. Whiteside, W. Silvester.

WED - ELT A p21-Activated Kinase 1 Inhibitor, FRAX-597, Combined with Gemcitabine Inhibits the Growth of Pancreatic Cancer
Yeo D[1], He H[1], Baldwin G[1], M. Nikfarjam[1]

WED - ELT Evidence of amyloid on Florbetaben-PET is associated with reduced episodic memory 10 years prior: results from the Women's Healthy Ageing Project.
Paul Yates[1,2], Victor Villemagne[2], Lorraine Dennerstein[2], Joanne Robertson[3], Chuhui Li[3], Patricia Desmond[2,4], Colin Masters[2,3], Christopher Rowe[1,2] Cassandra Szoeke[2].

WED - ELT The role of neuromuscular ultrasonography in the ICU
Selina M Parry [1,2], Doa El-Ansary [2,] Sue Berney [1,] Rene Koopman[3], Michael Cartwright[4], Peter Morris[5] Andrew Hilton[6] Aarti Sarwal[5] Linda Denehy[1]

WED - ELT Excessive daytime sleepiness and falls among older women: examination of a community-based sample.
Hayley, A. C[1,2], Williams, L. J[1], Kennedy, G. A[2,4], Berk, M[1,3,6,7], Pasco, J.

WED - ELT Characterisation of Multidrug Resistant Staphylococcus epidermidis isolated from clinical infections
P. Szczurek[1,], K. Chua[1], J. Lee[1], J. Wang[1], E. Grabsch[1], B. Howden[1,2]

WED - ELT Meropenem-Resistant Gram Negative Infections Among Returned Australian Travellers -Improving Local Laboratory Diagnosis
Kyra CHUA[1], Jenny WANG[1], Gillian WOOD[1].

WED - JLLT Perceived parenting of inpatients with anorexia nervosa: implications for schema theory and practice.
Dr Julian Nesci, A/Prof Richard Newton, Dr Suzy Redston, Michelle Snell, Amy Kaplan, Susannah Cleeve.

WED - JLLT Different sodium transporters mediate the establishment and maintenance of sodium retention in obesity-related hypertension
M DAVIES[1,2,3], S FRASER[1], K GLEICH[1], M KATERELOS[1], P MOUNT[1,2,3] & D POWER[1,2,3]

WED - JLLT Proton Pump Inhibitors as a novel candidate therapeutic to treat severe preeclampsia.
N J. Hannan[1], K Onda[1, 2], S Beard[1], N K. Binder[1], F Brownfoot[1], T Kaitu'u-Lino[1], L Tuohey[1], R Hastie and S Tong[1]

WED - JLLT Best-practice Pain Management in the ED: a multi-centre, cluster-randomised, controlled, clinical intervention trial
Taylor DMcD[1], Fatovich D[2], Finucci D[3], Furyk J[4], Hughes J[5], Jin S-W[6], Keijzers G[7], MacDonald S[8], Mitenko H[9], Richardson J[1], Ting J[6], Thom O[10], Antony Ugoni[11], Ward M[1]

WED - JLLT Routine HbA1c measurement identifies undiagnosed diabetes in 20% of general medical inpatients with an HbA1c above 6.5%: results of the Austin Health Diabetes Discovery Initiative
N Nanayakkara[1], N Pang[1], H Nguyen[2], O Piercey[2], S Romero[2], M Stoke[2]s, D Richmond[2], M Lee[2], Q Lam, G Hart[3], E Owen-Jones[4], J Ross[4], V Stevenson[1], L Churilov[7], Q Lam[5], D Johnson[2], S T Baker[1], E I Ekinci[1,6, 8], J D Zajac[1,6]

WED - JLLT Respiratory acidosis in focal seizures
Forcadela, M.[1] Rotens, A.[1], Carney, P.[2,3], Lightfoot, P.[1] Berkovic, S.[1,3] Mullen, S[2,3]

WED - JLLT Detection of Prodromal Alzheimer's Disease with 18F-Florbetaben Beta-Amyloid Imaging: A Prospective Outcome Study
KT Ong[1], VL Villemagne[1,2], A Bahar-Fuchs[1,3], F Lamb[1], N Langdon[1], AM Catafau[4], AW Stephens[4], J Seibyl[5], LM Dinkelborg[4], CB Reininger[6], B Putz[6], B Rohde[6], CL Masters[2], CC Rowe[1]

WED - JLLT IRONing out some problems
Booth J[1], Lin W[1], Snyder B[2], Harding A[1], Taylor S[1], Hunt K[1]

WED - JLLT VRE - How clean is clean
Danielle Polgar [1], Andrew Mahony,[2]

WED - JLLT Of mice and men: Parallel studies of the skeletal effects of stroke in humans and animals
Borschmann KN,[1] Rewell SS,[1] Iuliano S,[2,3] Ghasem-Zadeh A,[2] Davey RA,[3] Skeers PN,[1]Ho H,[1] O'Keffe GJ,[3,4] Scott AM,[3,4] Crompton DE,[5] Howells DW,[1] Bernhardt JA[1]

WED - JLLT Sense of meaning and its longitudinal relationship with depressive symptoms in primary care patients
Riddoch AS[1], Gunn JM[1, 2], Davidson SK[1, 2]

WED - JLLT Superbugs in the Supermarket? Assessing the Rate of Contamination with Multi-Drug Resistant Gram-Negative Bacteria in Fresh Australian Chicken.
J. E. McLellan[1], J. I. Pitcher[1], S. A. Ballard[2], E. A. Grabsch[2], M. L. Grayson[2]

WED - JLLT A mouse model of spinal cancer causing evolving paraplegia: a new model to test potential therapeutics on spinal cancer
Davina AF Cossigny, Effie Mouhtouris, Sathana Dushyanthen, Augusto Gonzalvo and Gerald MY Quan

WED - JLLT Skeletal muscle-specific glycogen synthase 1 gene (gys1) deletion in adult mice results in insulin resistance
Chrysovalantou E. Xirouchaki, Salvatore P. Mangiafico, Zheng Ruan, Joseph Proietto, Sofianos Andrikopoulos

WED - JLLT Stimulating Learning with Simulation: A Survey of a "Simwars" Approach to Hospital Teaching.
Leung C,[3,4,5], Rotella JA[1,4], Lee V[1], Lim K[1], Gelperowicz P[4], Knott C[2], Nguyen M[5], Apostolov R[5], Jones N[5], Lopresti R[4], Zajac J[5], Radford S[2], Judkins S[1], Kerr F[1].

THURS01 Cortical porosity in women over 80 years of age
Iuliano S[1], Zebaze R[1], Ghasem-Zadeh A[1], Seeman E[1]

THURS02 Metformin improves pancreatic β-cell function in the New Zealand Obese mouse
Metformin improves pancreatic β-cell function in the New Zealand Obese mouse

THURS03 Genetic deletion of the endoplasmic reticulum gene Herpud1 results in impaired insulin secretion
Diane Vue, Nicole Wong, Maria Stathopoulos, Sofianos Andrikopoulos

THURS04 Determinants of falls in ambulant elderly in aged-care
Houda Elhassan [1], Sandra Iuliano-Burns[1]

THURS05 Psychometric properties and performance of the Benefit Finding Scale in an outpatient prostate cancer population.
Pascoe L, [1], Edvardsson D,[1]

THURS06 Assessing Age, Sex, and Racial Differences in Cortical Porosity Requires Adjustment for Site-Specific Variation in the Selected Region of Interest
A Ghasem-Zadeh, A Burghardt, A Zendeli, S Bonaretti , Å Bjørnerem, XF Wang, Y Bala, G Ksazakia , R Zebaze, and E Seeman

THURS07 A Very Early Rehabilitation Trial (AVERT): Austin Hospital Update
H. Williamson[1,2] on behalf of the AVERT Collaboration

THURS08 Silibinin, a phytophenol, as a novel therapy for the prevention of preterm birth
Lim R [1,2], Morwood C [1,2], Barker G [1,2], Lappas M [1,2]

THURS09 The rate of weight loss does not influence long term weight maintenance
Purcell K[1], Sumithran P[1], Prendergast L.A[1,2], Bouniu C.J[1], Delbridge E[1], Proietto J[1]

THURS10 Validation of the Austin Health Falls Screening Tool
C Said[1, 2], K Shaw[1]

THURS11 Tay Sachs disease and related conditions school screening in Melbourne - a 10 year review
Megan Cotter[1], Agnes Bankier[1] and Martin Delatycki[1,2]

THURS12 Comparsion of carbapenem MICs using different methods for KPC- producing Escherichia coli and Klebsiella pneumoniae isolates
Hurren F, [1], Wang J,[1] Szczurek P, [1] Wood G [1]

THURS13 Assessment of bacterial survival using flocked Eswab/in liquid ames vs dacron swab/in ames gel transport medium.
Young, H,[1,] Kelly, S,[1,] Salem, N,[1,] Ward, P,[1,] Wood, G,[1,]
.

THURS14 MALDI-TOF and Susceptibility Testing Direct from Positive Blood Culture Broth Compared to Testing from 6 Hour and Overnight Sub-cultures
G. Ganino, E.A. Grabsch, T. Olejniczak, P.B. Ward, G.M. Wood.

THURS15 An Assessment of Reproducibility of MALDI-TOF
E.A. Grabsch, J. Wang, P.B. Ward[1], G.M. Wood.

THURS16 The influence of rehabilitation health architecture on patient activity, location and social interactions.
Blennerhassett J,[1] Borschmann K,[2] Chamberlain J,[2] Bernhardt J.[2]

THURS16A Understanding activity and occupational participation after stroke
Tse T [1, 2], Lentin P [3], Douglas J [1, 4], Carey L [1, 2]

THURS17 The Development and Evaluation of the Austin Swallowing Ability Profile for FEES
Cimoli, M.,[1,2], Oates, J.[2,], McLaughlin, E.,[2,] & Langmore, S.[3]

THURS18 The Four Square Step Test: Developed at Austin Health
The Four Square Step Test: Developed at Austin Health

THURS19 Non-invasive ventilation & gastrostomy feeding tube - a commonsense approach to community care
Anne Duncan, Tim Given, Simon Conti, Sharon Sibenaler

THURS20 Longitudinal Study of Renal Function in Type 1 Diabetes Mellitus
Hilary Thomson[1], Dr. Elif Ekinci[2,5,6], Prof. Leonid Churilov[3,4], Prof. George Jerums[2,5], Dr. Erosha Premaratne[2,5]

THURS21 Outcomes of patients living with a tracheostomy in the community
Lim ML, [1,2,3,4],Cameron T, [1,3,4,5], McMurray K, [1,3], Chao C, [1,2,3,4] ,Fahey G, [1,2,3,4], Sweeney J, [3,5], Howard M, [1,2,3,4]

THURS22 Difficult airway equipment at University of Melbourne affiliated hospitals: a multicentre audit and quality assurance project (The DAEUM study)
Prof. David Story[1,2], Dr. Irene Ng[3], Dr. Keat Lee[3], A/Prof. Reny Segal[3], Dr. Sajidah Ilyas[3]

THURS23 Haemofiltration in the ICU and Diabetic Status - HIDS study
Peter Williams[1], S Chan [2]

THURS24 Indications for, and expectations of, loop diuretic therapy use by intensive care specialists.
SL Jones[1], NJ Glassford[1]J Martensson[1], GM Eastwood[3], R Bellomo[1]

THURS25 Mental Health Advance Statements: Knowledge and Opinions of Australian Mental Health Clinicians
R Mountjoy[1], W Silvester[1], R Newton[2], R Fullam[1], D Mawren[1]

THURS26 Mental Health Advance Statements: Knowledge and Opinions of Victorian Mental Health Consumers
R Mountjoy[1], W Silvester[1], R Newton[2], L Brophy[3], R Fullam[1], M Sellars[1], D Mawren[1]

THURS27 Advance care planning for adults with CKD: A systematic integrative review
M Sellars[1], T Luckett[2,3,4], J Tieman[1,2], CA Pollock[6,7], W Silvester[1], PN Butow[8], KM Detering[1], F Brennan[9], JM Clayton[2, 6, 10]

THURS28 A national survey of palliative care service managers' advance care planning practices and policies
M. Sellars[1], W. Silvester[1], M. Masso[2], C. Johnson[3], R. Sjanta[1]

THURS29 The impact of Advance Care Planning for renal patients
D. Mawren[1] , K. Detering[1], D Chaffers[1],S. Fraser[1], D. Power[2], W. Silvester[1]

THURS30 Determination of urinary protein fragments in Type 2 Diabetic patients with variable albumin excretion
Clarke MV[1], Leong A[1], Ekinci E[1,2], MacIsaac R[3] Comper WD, Jerums G[1]

THURS31 Regulation of Osteocytic Osteolysis by the Calcitonin Receptor During Lactation in Mice
Michele V Clarke[1], Rachel A Davey[1], Patricia K Russell[1], David M Findlay[2], Jeffrey D Zajac[1]

THURS32 A novel pathway for Androgens to regulate fat mass.
Russell PK[1], Clarke MV[1], Wiren KM[2, 3], Zajac JD[1], Davey RA[1]

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THURS34 Capitalising on a unique opportunity: establishing the Brain Tumour Support Officer role at Austin Health
D. Legge [1], L. Cher [1,2]

THURS35 Regional support network for primary malignant brain tumours.
D. Legge [1], K. Mills [1], L. Cher [1,2]

THURS36 BRCA1/2 mutation prediction algorithms: Argument for the inclusion of ductal carcinoma in situ and other histopathological criteria
Claire Michel[1,2], Elly Lynch[1], Megan Cotter[1], Matthew Burgess[1], Anna Leaver[1], Martin Delatycki[1] ,Thomas John[1,3]

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P. Prithviraj[1], M.Anaka[1], A. Behren[1], M. Permezel[2], J. Cebon[1,3] , A. Jayachandran[1,3]

THURS38 Evaluation of the efficacy of busulphan as second-line cytoreductive therapy for patients with high-risk Philadelphia-negative myeloproliferative neoplasms intolerant of or unresponsive to hydroxyurea
Douglas G[1], Harrison C[2], Bennett M[2], Forsyth C[3], Ross D[6], Stevenson W[5], Hounsell J[7], Ratnasingam S[3], Ritchie D[3], Grigg A[1]

THURS39 Production of the long-life PET radioisotope Zr-89 at Austin Health
Poniger S.S[1,2], Tochon-Danguy H.J[1,2], Panopoulos H[2], Scott A.S[1,2]

THURS40 Imaging of tissue transglutaminase activity in SK-RC-52 tumors
Ackermann U[1,2], Rigopoulos A[3], O'Keefe G[1,2], Hickson K[1,2], Tochon-Danguy H.J[1], Scott A.M[1,3],

THURS41 A novel F-18 labelled anilino sulfoxide for PET imaging of tumor hypoxia
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THURS42 Prediction of Outcome Following Percutaneous Coronary Intervention based on Angiographic Evaluation and Fractional Flow Reserve Measurements
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THURS43 Early retinal microvascular endothelial dysfunction correlates with chronic kidney disease independent of traditional cardiovascular risk factors
Ali Al-Fiadh [1,2], Frank Ierino [1,2], David Clark [1,2], Omar Farouque [1,2]

THURS44 Quantifying Patient Flow for elective day cases in the Cardiac Catheterisation Department
Michael Basset-Smith,[1] Evelyn Zgoznik,[1] Lorelle Martin,[1] Carolyn Naismith[1]

THURS45 Angiotensin converting enzyme 2 (ACE2) is a novel marker of pre-clinical diastolic dysfunction in type 2 diabetes
Patel SK[1], Wai B[1,2], Lancefield TF[1,2], Velkoska E[1], Srivastava PM[1,2], Burrell LM[1,2]

THURS46 Relationship between NT-proBNP with 24-hour haemodynamic parameters in patients with diabetes
Renata Libianto[1], George Jerums[2], John Moran[3], Christopher O'Callaghan[2], Michelle Clarke[2], Richard J MacIsaac[1], Elif I Ekinci[2]

THURS47 Cardiac effects of Ang 1-7 alone and in combination with ACE inhibition, in experimental kidney disease
Gayed D, Velkoska E, Griggs K, Burrell LM.

THURS48 Stent length and GP2B/3A inhibitor use but not eGFR predict peri-procedural myocardial infarction in elective percutaneous coronary intervention.
Cheng Yee Goh[1], Ali Al-Fiadh[1,2], David Clark[1,2], Omar Farouque[1,2]

THURS48A An evaluation of procedural cancellations in the cardiac catheterisation laboratory
Elly Burns[1], Lorelle Martin [1], Carolyn Naismith [1].

THURS49 A randomised controlled trial of CPAP vs non-invasive ventilation for obesity hypoventilation syndrome
M HOWARD[1], A PIPER[2], B STEVENS[1], AE HOLLAND[1,3,4], B YEE[2], E DABSCHECK[3,5], D MORTIMER[5], AT BURGE[3], D FLUNT[2], C BUCHAN[3], L RAUTELA[1], N SHEERS [1], D HILLMAN[6] & DJ BERLOWITZ[1]

THURS50 Evaluation of CT brain image quality, diagnostic adequacy and radiation dose in a paediatric population imaged at a tertiary adult Australian hospital
Perchyonok Y[1,2], Fitt GJ[1,2], Begbie MD[1], U P[3], Schelleman A[1], Fleming CA[4]

THURS51 Evaluation of Chromogenic Media for the Isolation of Group B Streptococcus from Vaginal Swabs in Pregnant Women
Salem N, [1] Anderson J, [1] Ward P, [1] Wood G, [1,2,3]

THURS52 Evaluation of a Kiestra automated specimen inoculation system on quality.
Hurren, F,[1,] Hussain, S,[1,] Salem, N,[1,] Wood, G,[1,] Ward, P[1,]

THURS53 Gastrin positive feed forward loop is dependent on intracellular zinc ions
Mike Chang, Lin Xiao, Arthur Shulkes, Graham S. Baldwin Oneel Patel,

THURS54 An objective immune function biomarker is associated with infection risk in cirrhotic patients awaiting transplantation
Sood S[1,2,3], Yu J[3], Visvanathan K[3], Gow PJ[1,2], Angus PW[1,2], Testro AG[1,2]

THURS55 Low levels of pre-transplant unstimulated cytokines are associated with rejection after liver transplantation
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THURS56 Malaena but not coffee ground vomit or bright haematemesis predicts adverse outcomes in acute upper gastrointestinal bleeding
Zhao R, [1,2], Loh K,[1,2,] Mian M, [1,2,] Chong C[1,2], Lim K[1,2,3]

THURS57 Angiotensin (1-7) ameliorates the progression of biliary fibrosis in mice
Rajapaksha D.I.G,[1] Jia Z,[1] Angus PW[1,2], Herath CB[1]

THURS58 Endoscopic investigation in iron deficiency compared with non-iron deficiency anaemia
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THURS59 Incretin-based therapies for the treatment of non-alcoholic fatty liver disease: a systematic review and meta-analysis
Carbone L[1], Angus P[2], Yeomans N[3]

THURS60 Questioning Organ Donation questionnaires: whose views are counted?
Browne E,[1], Martin D,[2], Ritte R,[2]

THURS61 Transarterial Chemoembolisation for Hepatocellular Carcinoma
D Bako, [1], M Fink, [1,2,] C Christophi, [1,2,] V Muralidharan[1,2], M Goodwin[2]

THURS62 Is invasive fungal infection still a risk in modern liver transplantation?
Urbancic KF[1,2], Ward P[3], Pavlovic J[4], Jones R[4], Gow P[4], Angus P[4], Johnson PDR[2]

THURS63 Wireless Teaching: Use of an Innovative App to Increase Interaction and Learning in Hospital Grand Rounds.
Leung C[1,2,3], Waring J[3], Apostolov R[3], Nguyen M[3], Jones N[3], Dibb P[2], Goss B[1], Lopresti R[2], O'Brien R[1,3], Zajac J[3].

THURS64 Teaching Together by Learning Together: Qualities of an Excellent Educational Experience.
Leung C[1,2,3], Waring J[2], Dibb P[1], Goss B[2], O'Brien R[2,3], Lopresti R[1].

THURS65 Evaluation of an Emergency Department (ED) interprofessional simulation program: What are the behavioural outcome benefits for ED doctors and nurses?
Rotella JA[1], Gelperowicz P, Lim K, Fox S, Ellis Y, Cochrane C, Lee V[1]

THURS66 The role of the General Practitioner in managing female genital cosmetic surgery
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THURS67 Comparison of four immunoassays for Measurement of free Thyroxine (fT4) levels in pregnancy; which assay do you use?
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THURS68 Maternal Serum Prolactin Levels correlate with Plasma Glucose Levels during an Oral Glucose Tolerance Test (OGTT) in Pregnancy
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THURS69 Estimating Glomerular Filtration Rate: the Performance of the CKD-EPI Equation over time in Patients with Type 2 Diabetes
Wood A J[1], Churilov L[2, 3], Perera N[1], Thomas D[4], Poon A[4], MacIsaac R J [5, 6], Jerums G[1, 5] Ekinci EI[1, 5, 7]

THURS70 The microstructural basis of bone loss during menopause
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THURS72 Rapid detection of Clostridium difficile toxins from stool samples using real-time multiplex PCR
Ann Pallis,[1] Jalal Jazayeri,[2] Peter Ward,[1] Karolina Dimovski[3]and Suzanne Svobodova[1]

THURS73 Genetic sensitivity to taste and upper gastro-intestinal symptoms in chronic renal disease
Manley K [1]

THURS74 Audit of the Readmission of Heart Failure Patients Under General Medicine.
Nicholas Jones,[1] Douglas Johnson,[1] Louise Burrell, [1,2]

THURS75 A rare case of Shigella sonnei bacteraemia occurring in a young man with shigellosis
Andrew Huynh[1], Christian McGrath[2], Douglas Johnson[1,2], Louise Burrell[1]

THURS76 Denosumab-associated hypocalcaemia: incidence, severity and patient characteristics in a tertiary hospital setting
Andrew Huynh[1], Scott Baker[1,2], Andrew Stewardson[3] , Douglas Johnson[1,3]

THURS77 Denosumab use in patients with advanced chronic kidney disease: a single centre case series
V DAVE[1], P MOUNT[1], C CHIANG[2]

THURS78 Phenotypic analysis of lymphocyte subsets in renal transplant recipients
V DAVE[1], K PAIZIS[1], M ROBERTS[2], F IERINO[1]

THURS79 Serum angiotensin converting enzyme 2 (ACE2) activity following renal transplantation.
Crosthwaite A,[1,2], Velkoska E,[2] Roberts M, [3] Burrell L[2], Ierino F[1,2]

THURS80 Modality of renal replacement therapy(RRT) and associated subtype of cardiovascular death.
Crosthwaite A, [1,2], Clayton P,[3,4,] Roberts M, [1,2] Ierino F [1,2]

THURS81 The effect of arousal and subsequent hypocapnia on genioglossus muscle activity in obstructive sleep apnea
Jennifer M Cori,[1,2] Therese Thornton,[1,2,] Fergal J O'Donoghue,[1,2,] Peter D Rochford[2], John Trinder[1], Amy S Jordan[1,2]

THURS82 Modification and validation of a motor-response dependent measure of sleepiness (OSLER-2) for use in spinal cord injury
Roberts J, [1], Berlowitz DJ,[2], Spong J, [2]

THURS83 Sleep disruption in tetraplegia: a randomised, double-blind, placebo controlled crossover trial of 3mg melatonin
Spong J, [1], Kennedy GA,[1,2,3], Tseng J, [4], Brown DJ[5], Armstrong S[3,6], Berlowitz DJ[1,5,7]

THURS84 Anxiety and depression symptoms in patients being referred for an in-laboratory polysomnography.
Sanjeevan Muruganandan[1], Melinda Lee Jackson[2,3], Thomas Churchward[1,2], Julie Tolson[1,2], Christopher Worsnop[1,2]

THURS85 Regional differences in care practices do not appear to influence health-related quality of life in ventilator assisted individuals.
Hannan LM[1,2,3,4], Sultan H[1], Road JD[4], McDonald CF[1,2,3], Berlowitz DJ[1,2,3], Howard ME[1,2,3]

THURS86 Autobiographical Memory Bias in Patients with Obstructive Sleep Apnea
Lee V, Jackson ML, Kangen S, Pickersgill, Trinder J

THURS87 Schema modes of inpatients with Anorexia Nervosa: Implications for a functional model.
Dr Julian Nesci, A/Prof Richard Newton, Dr Suzy Redston, Michelle Snell, Amy Kaplan, Susannah Cleeve

THURS88 Widespread Reductions in Cerebral Axonal Density in Lennox-Gastaut Syndrome
Adrian McFadden, [3] David Raffelt, [1] Alan Connelly, [1] John. S. Archer, [1,2,3]

THURS89 Cortical thickness estimation in longitudinal stroke studies: a comparison of 3 measurement methods
Qi Li; Heath Pardoe; Emilio Werden; Toby Cumming; Amy Brodtmann

THURS90 Is altered gut signalling associated with high blood pressure in obesity?
Changkakoti A, How JMY, Davey RA, Sartor DM

THURS91 Outcome of patients diagnosed with non-epileptic events in a first seizure clinic setting.
Patrick Carney[1,2,3], Sibel Saya[2], David Marco[2], Mark Newton, Sam Berkovic[2,3] & Anne McIntosh, [2,3]

THURS92 The characterization of febrile seizures in children following vaccination
Milosescu V[1], Grinton B[1], Burgess R[1], Wood N[2], Crawford N[3], Scheffer IE[1,4]

THURS93 The phenotypic spectrum of SCN2A encephalopathy: a diagnosis with treatment implications
KB Howell[1], JM McMahon[2], GL Carvill[3], A Poduri[4], MT Mackay[1], Rodriguez- V Casero[1], R Webster[5], D Clark[6], JL Freeman[1], S Calvert[7], S Mandelstam[1], HC Mefford[3], AS Harvey[1] and IE Scheffer[1,2,8]

THURS94 MumMoodBooster - An interactive internet treatment for postnatal depression.
Jeannette Milgrom[1, 2], Brian Danaher[3], John Seeley[3], Charlene Holt[1], Jennifer Ericksen[1], Alan Gemmill[1], Chris Holt[1], Jessica Ross[1], Milagra Taylor[3], Scott Stuart[4]

THURS95 Abnormal functional organisation of cognitive networks in Lennox-Gastaut Syndrome
Aaron E.L Warren[1], David F. Abbott[1,2], Graeme D. Jackson[1,2,3], John S. Archer[1,2,3]

THURS96 Diagnosis and Gene Discovery in Rare Neurodegenerative Disorders of Early Adulthood
Oliver KL,[1] Staropoli J,[2] Cotman S,[2] Hildebrand M,[1] Damiano J,[1] Jedličková I,[3] Stránecký V,[3] Simms K,[2] Cossette P,[4] Cadieux Dion M,[4] Kalnins R,[5] Anderson G,[6] Carpenter S,[7] Mole SE,[6] Kmoch S,[3] Berkovic SF[1]

THURS97 Apparent Fibre Density (AFD) Analysis Reveals Decreases in Axonal Density in the White Matter Pathways of Patients with Grey Matter Heterotopia
Farquharson, S[1,2], Raffelt, D[1], Sadeghian, F [1], Tournier, J-D[1,3], Mandelstam, S[1,4], Schneider-Kolsky, M[2], Berkovic,SF [3], Scheffer, I[1,3], Jackson, G[1,3], Connelly, A [1,3]

THURS98 Mutation of the Nuclear Lamin Gene LMNB2 Causes Progressive Myoclonus Epilepsy with Early Ataxia
John A. Damiano [1], Zaid Afawi [2], Harald Hermann-Lerdon [3], Adel Misk [4], Todor Arsov [1], Karen L. Oliver [1], Hans-Henrik M. Dahl [1], Nathan Hall [5], Khalid Mahmood [5], Richard J. Leventer [6], Ingrid E. Scheffer [1,6], Amos D Korczyn [7], Mikko Muona [8], Anna-Elina Lehesjoki [8], Melanie Bahlo [9], Samuel F. Berkovic [1] and Michael S. Hildebrand [1]

THURS99 The Fampridine Upper Limb Study (FULS)

THURS100 A multifaceted approach to improve medication management when patients are fasting or nil by mouth
TO TP[1], Story DA[2], Heland M[3], Bruce P[4], D'Alterio C[4], Hardidge A[5]

THURS101 Developing strategies to improve the management of medications when fasting or nil by mouth
TO TP[1], Story DA[2], Heland M[3], Bruce P[4], D'Alterio C[4], Hardidge A[5]

THURS102 Setup and Initial Evaluation of a Nurse-Led Surveillance Flexible Cystoscopy program

THURS103 Haemodynamic Effect of Intravenous Paracetamol in Healthy Volunteers
Elizabeth Chiam[1], Laurence Weinberg[2], Rinaldo Bellomo[3]

THURS104 Emotional intelligence in acquired brain injury: A new direction for neuropsychological assessment?
Hall, S. [1], Wrench, J. [1,2], Connellan, M. [1], Borcic, N. [1], & Wilson, S. [1,2]

THURS105 Better Backs @ Austin' group back rehabilitation programme: an audit of outcomes to determine programme effectiveness.
Bardin L , [1]

THURS106 SpinalCARE: From inception to implementation.
Marnie Graco*[13], Andrew Nunn[2], Lauren Booker[1], Richard Sinnott[3], Anthony Stell[3], David J Berlowitz[1 3]

THURS107 Epidemiology of chronic dialysis patients requiring intensive care: a single hospital 10-year cohort study.
Fisher C[1], Hart G[1], Roberts M[2]

THURS108 Omission in the clinical handover of acutely injured spinal cord injured patients.
Fisher C[1], Hilton A[1], Nunn A[2], Jones D[1]

THURS109 Pharmacokinetics of the Ghrelin agonist Capromorelin in a single dose phase-1 safety trial in spinal cord injured and able bodied volunteer participants: Towards Improved Quality of Life for SCI Patients.
Ellis A,[1,2,] Zeglinski P,[1,2], Brown D,[3,] Frauman A,[1,2,] Millard M,[3,] Furness J,[3,4,]

Tues01

Blennerhassett JM[1], Millet N[1], Conidaris J[1], Churilov L.[2]

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Shoulder pain overnight after stroke: an observational study.

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Aim

Overnight shoulder pain is a common problem post stroke that can interfere with sleep. This study was a collaboration between physiotherapy and nursing that aimed to explore overnight shoulder pain in terms of incidence and the possible association with arm position during sleep in inpatient rehabilitation.

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Methods

Eighteen people with stroke and a reference group (11 people without restrictions for bed mobility) were observed for 3 consecutive nights during inpatient rehabilitation. Body and arm posture were charted frequently overnight by an independent observer. Shoulder pain, overnight comfort and quality of sleep were recorded using participant surveys, and reports from clinical staff. Data were analysed for group differences and explored for an association between posture and overnight shoulder pain.

Results

One-third of stroke participants reported moderate to severe overnight shoulder pain. This differed to the reference group who did not report shoulder pain (p = 0.03). Sleep disruption was common for various reasons and did not differ between groups (p = 0.25). Four people with stroke were woken due to shoulder pain. Significantly less change in body (p = 0.02) and arm (p = 0.02) position was observed post-stroke. The stroke participants tended to sleep on their back (average 61% of night); the affected arm rested by the side or across the body (60%). The stroke-affected arm appeared well supported and positioned overnight, even for those people who experienced overnight shoulder pain. No clear association between position of the arm and overnight shoulder pain was apparent.

¶

Conclusion

Overnight shoulder pain was common and can interfere with sleep during stroke rehabilitation. Position of the arm did not appear to be associated with overnight shoulder pain. While sleeping, people with stroke tended to not move. Attention is needed to minimise overnight shoulder pain and optimise sleep quality for people with stroke.

Tues02

MacDonald, L, [1,2], Murphy, M. C., [1,2,] Watt, E, [2], McKenzie, G, [2], Pleunik, S, [2], Wilson, D [2]

A prospective pre-post study of clinical school models on BN/BM students' report of self-efficacy and practice readiness.

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2. School of Nursing & Midwifery, La Trobe University, Bundoora, Vic., Australia;

Aim
There is variability in configuration of the La Trobe University Clinical Schools, co-located at Austin Health, Alfred Health, Melbourne Health and Northern Health. The teaching and learning configuration varies from front-loaded to weekly content delivered throughout the semester. It is unclear whether this variability in curriculum delivery by Clinical School influences the students' report of self-efficacy and practice readiness for the acute care clinical practicum.

Methods
Students are pre-enrolled in one of four La Trobe Clinical Schools. A prospective pre-post-test design examined students' (N = 329) report of self-efficacy and preparedness for practice at the beginning and at completion of their acute care clinical practicum by Clinical School model. Validated questionnaires used were: General Self-Efficacy Scale-12 (GSES-12); and a modified Preparation for Hospital Practice Questionnaire (PHPQ). Data analysis: SPSS V21

Results
No statistically significant difference in the reporting of self-efficacy between Clinical School models at baseline with the GSES-12, $p = 0.46$. All Clinical School models displayed a statistically significant increase in GSES-12 over time, $p<0.001$. Difference in the PHPQ scores between Clinical School models at baseline were identified, $p = 0.002$. No differences in PHPQ scores post-clinical practicum were reported, $p = 0.263$.

Conclusion
It is unclear why baseline differences in practice readiness exist between Clinical Schools. Students enrolled in the front-loaded teaching and learning model report a lower baseline PHPQ score. Findings demonstrate that all BN/BM students' report of self-efficacy and practice readiness statistically significantly improves over their acute clinical practicum. Further studies are warranted to investigate these outcomes.

Tues03

Hurren F, [1], Montgomery J,[1] Wang J [1] Ellem J,[2]

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Accuracy of methods of detection of meropenem resistance in Gram Negative Bacilli

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1.Microbiology Department, Austin Pathology, Austin Health, Heidelberg, Vic., Australia;
2.Centre for Infectious Diseases and Microbiology Services, ICPMR, Westmead Hospital, NSW, Australia

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Aim
The dissemination of carbapenem hydrolysing-β-lactamases has become a major issue in the healthcare environment as well as in the community.
This study compared a number of routine laboratory methods for the detection of meropenem resistance in Gram Negative clinical isolates.

Methods
The following methods of meropenem susceptibility testing were compared with the phenotypic gold standard Micro Broth Dilution (MBD) for 105 clinical isolates; Vitek-2 AST-N247 (bioMérieux), Phoenix NMIC-203 (BD Phoenix), Etest (0.002 mg/L-32mg/L) (bioMérieux) and Disk diffusion (10µg) (Oxoid).
Genotypic detection for resistance genes were performed both in-house and at Westmead Hospital using multiplex PCRs[1,2].

¶

Results
Ten (19%) PCR positive organisms tested susceptible to meropenem with MBD and 17 (32%) of PCR negative organisms tested resistant to meropenem.
More major errors occurred with Phoenix than with other methods, of the 52 PCR positive isolates only 33 (63%) tested resistant to meropenem. However, improved agreement was observed when compared with ertapenem susceptibility with 47 (90%) isolates testing resistant.
The phenotypic susceptibility result was concordant with PCR with 81% of MBD testing, 90% with Vitek-2, 62% with Phoenix, 83% with Etest and 91% with disk diffusion.

¶

Conclusion
It is important to be aware that regardless of the method used these organisms can test susceptible, with further investigation required.
It is advisable that *Enterobacteriaceae* with meropenem MICs of >0.25 mg/L on Vitek-2 are further investigated with either meropenem or ertapenem disk diffusion. Potential carbapenemase producers should have further confirmatory testing via molecular investigations.

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Tues04
Hurren F,[1] Montgomery J,[1] Wang J [1]

¶

Phenotypic Detection of Carbapenemases in Gram Negative Bacilli. Which Method is Better?

¶

1.Microbiology Department, Austin Pathology, Heidelberg, Vic., Australia

Aim

This study compared a number of phenotypic tests that are readily available, for the accurate and rapid detection of carbapenemase enzymes in clinically significant isolates of Gram Negative Bacilli.

Methods

The phenotypic screens performed were Carba NP test (CNP), Modified Hodge Test (MHT), Metallo-ß-lactamase screen using EDTA (MBL) and the chromogenic agars; chromID ESBL (ESBL), chromID Carba (CARBA) and brilliance CRE (CRE).

¶

Results

Table 1: Results for the 52 carbapenemase-producing GNB by method

		Chromogenic agar results			Phenotypic test results		
Enzyme	**Number**	**ChromID ESBL**	**ChromID CARBA**	**CRE**	**Carba-NP**	**MHT**	**MBL**
OXA	11	11	6	8	0	7	1
KPC	12	12	12	10	12	12	0
NDM	4	4	4	4	4	0	4
IMP	20	20	17	17	19	17	0
VIM	4	3	3	3	3	0	3
AIM	1	1	1	1	1	0	0
TOTAL	52	51	43	43	39	36	17
Sensitivity (%)		**98.2**	**85.2**	**85.2**	**80.0**	**76.5**	**72.5**
Specificity (%)		**68.5**	**74.6**	**73.6**	**98.1**	**88.3**	**80.3**

Conclusion

The chromID ESBL detected the most isolates but had poor specificity. CNP had excellent specificity but poorer sensitivity, which was improved when OXA-like CGNB were excluded from analysis.

In the routine laboratory where PCR is not readily available no one phenotypic method will detect all CGNB producing organisms. An acceptable screen would include the chromID ESBL and CNP.

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Tues05

Lee M,[1] Weinberg L,[1] Pearce B,[1] Scurrah N,[1] Story DA,[1,2] Pillai P,[1] McCall PR,[1] McNicol PL,[1] Peyton PJ[1]

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FloTrac/Vigileo (version3+) arterial pulse contour cardiac index measurement during orthotopic liver transplantation: agreement between radial and femoral arterial monitoring sites

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1.Department of Anaesthesia, Austin Hospital, Heidelberg, Vic., Australia;
2.Faculty of Medicine, Dentistry & Health Sciences, The University of Melbourne

¶

Aim: We studied agreement between radial and femoral arterial pulse contour derived cardiac index measurements and pulmonary artery catheter bolus thermodilution derived cardiac index measurements to assess whether measurement devices and arterial cannulation sites are interchangeable in adults undergoing orthotopic liver transplantation.

¶

Methods: 25 patients were enrolled. Radial and femoral arteries were cannulated with a standardised kit. Cardiac index and stroke volume variation were measured at four time points. Agreement was assessed by the method of Bland and Altman[1]. Acceptable agreement for cardiac index was a percentage error ≤30% per the standard of Critchley and Critchley[2].

¶

Results: Neither radial nor femoral pulse contour derived cardiac index had good agreement with bolus thermodilution cardiac index. There was poor agreement in cardiac index between radial and femoral arterial cannulation sites. Agreement between radial and femoral stroke volume variation was marginally acceptable.

	Mean Difference ($L/min/m^2$)	Standard deviation ($L/min/m^2$)	Limits of agreement ($L/min/m^2$)	Percentage error (%)
CI rad-fem	-0.5	1.7	-3.9 – 2.9	80.4
CI rad-PAC	-1.1	1.5	-4.1 – 1.8	69.0
CI fem-PAC	-0.6	2.1	-4.7 – 3.5	84.8

SVV rad-fem	0.6%	2.2%	-3.7 – 5.0%

Conclusion: For adults undergoing liver transplantation, FloTrac/Vigileo (version 3+) arterial pulse contour cardiac index cannot be recommended as a substitute for bolus thermodilution cardiac index, regardless of measurement site. Poor agreement in cardiac index and stroke volume variation measurements between radial and femoral cannulation sites is likely due to underlying poor agreement in arterial pulse pressure.

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Tues06

Lee M,[1] Weinberg L,[1] Pearce B,[1] Scurrah N,[1] Story DA,[1,2] Pillai P,[1] McCall PR,[1] McNicol PL,[1] Peyton PJ[1]

¶

Agreement between radial and femoral arterial blood pressure measurements during orthotopic liver transplantation

¶

1.Department of Anaesthesia, Austin Hospital, Heidelberg, Vic., Australia;
2.Faculty of Medicine, Dentistry & Health Sciences, The University of Melbourne

¶

Aim

We studied agreement between radial and femoral arterial pressure measurements in 25 patients undergoing orthotopic liver transplantation surgery to assess whether arterial cannulation sites are interchangeable.

¶

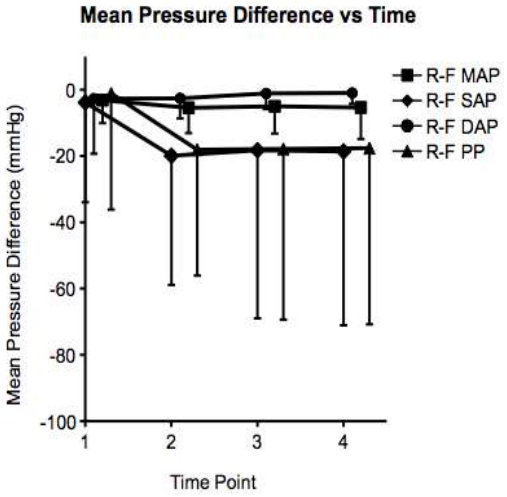
Methods

Radial and femoral arteries were cannulated with a standardised arterial line kit. Mean arterial pressure, systolic arterial pressure, diastolic arterial pressure and pulse pressure were measured at four time points (T1= 30min after induction of anaesthesia, T2= 30min after portal vein clamping, T3= 30min after liver graft reperfusion, T4= 30min after commencement of bile duct anastomosis). Agreement between arterial sites was assessed by the method of Bland and Altman.

¶

Results

Mean and diastolic arterial pressures showed acceptable agreement between measurement sites across all time points. Significant differences between radial and femoral systolic arterial pressures occurred after portal vein clamping (mean difference (SD) = -19.1 (4.2) mmHg) and persisted throughout liver graft reperfusion (-18.3 (5.3) mmHg) and bile duct anastomosis (-18.6 (5.4) mmHg) with wide limits of agreement (-63.5 to 33.7 mmHg).



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Conclusion

Radial artery systolic arterial pressure underestimates femoral artery measurements significantly but unpredictably. As femoral measurements more likely represent central arterial pressure[2], radial systolic arterial pressure measurements are not reliable in adults undergoing orthotopic liver transplantation.

References

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Tues07

Dr. Chong Tan[1], Dr Phong Tran[2], Dr William Howard[1], Dr. Laurence Weinberg[1]

CLINICAL PREDICTORS OF SIGNIFICANT POSTOPERATIVE PAIN AFTER HIP ARTHROSCOPY

This abstract has not been included at the request of the author

Tues08

Dr. Chong Tan[1], Dr. Laurence Weinberg[1] ,Dr Raymond Hu[1], A/Prof Larry McNicol[1]

TOE measurement of pulmonary valve area by planimetry in a novel mid-oesophageal short axis view – comparison with established methods of valve area calculation

This abstract has not been included at the request of the author

Tues09

Dr. Chong Tan[1], Dr. Laurence Weinberg[1] , Dr Ian Harley[1], Dr Peter McCall[1], , A/Prof Larry McNicol[1]

TOE right ventricular fractional shortening measurements performed under a standardised protocol correlate with indices of RV systolic function

This abstract has not been included at the request of the author

Tues10

Dr. Chong Tan[1], Dr. Laurence Weinberg[1] ,Dr Frank Liskaser[1], Dr Jon Fernandes[1], A/Prof Larry McNicol[1]

Multiplanar assessment via novel transoesophageal echocardiographic views improves accuracy of tricuspid annular long axis diameter measurements

This abstract has not been included at the request of the author

Tues11

Dr. Chong Tan[1], Dr. Laurence Weinberg[1] , Dr Nick Scurrah[1], Dr Shiva Malekzadeh[1], A/Prof Larry McNicol[1]

The TOE Deep Transgastric Right Ventricular Inflow-Outflow view best estimates Tricuspid Annular Plane Systolic Excursion (TAPSE)

This abstract has not been included at the request of the author

Tues12

Dr. Chong Tan[1], Dr. Laurence Weinberg[1], Dr Nick Scurrah[1], Dr Shiva Malekzadeh[1], A/Prof Larry McNicol[1]

Incident angle correction does not sufficiently improve accuracy of TOE derived tricuspid annular systolic myocardial velocity (S') measurement for intraoperative RV function assessment

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Tues13

Dr. Chong Tan[1], Dr. Suet Ling Goh[1], Dr. Laurence Weinberg[1] ,Dr Parameswan Pillai[1], A/Prof Larry McNicol[1]

VALIDATION OF INDICES FOR RIGHT VENTRICULAR VOLUME AND SYSTOLIC FUNCTION ASSESSMENT BETWEEN TRANSTHORACIC AND TRANSOESOPHAGEAL ECHOCARDIOGRAPHY

This abstract has not been included at the request of the author

Tues14

Dr. Chong Tan[1], Dr. Laurence Weinberg[1] ,Dr Jon Graham[1], Dr Louise Ellard[1], A/Prof Larry McNicol[1]

DOPPLER INTERROGATION OF THE TRICUSPID VALVE WITH 4 MID-OESOPHAGEAL NON-STANDARD TOE VIEWS OBTAIN SUPERIOR INCIDENT ANGLES COMPARED WITH TRANSGASTRIC AND STANDARD VIEWS

This abstract has not been included at the request of the author

Tues15

Weber U, [1], Glassford NJ,[1] Eastwood GM, [1] Bellomo R[1,2], Hilton AK[1]

Relationship between Doppler Estimated Carotid and Brachial Artery Flow and Cardiac Index

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2. Australian and New Zealand Intensive Care Research Centre and Department of Epidemiology and Preventive Medicine, Monash University, Melbourne, Victoria, Australia

Aim: Doppler-based estimations of carotid and brachial arterial blood flow have been proposed as a non-invasive surrogate measure of cardiac index in man.[1] Little information exists to assess the robustness of this relationship volunteers and cardiac surgery patients,.

Methods: We measured bilateral carotid and brachial artery blood flow by Doppler ultrasound and cardiac index in 11 healthy volunteers and in 25 patients undergoing cardiac surgery, and statistically assessed their relationship.

Results: In volunteers, there was a moderate to good correlation between right and left brachial and carotid flow (fig. 1a). Brachial and carotid flow had no or a weak negative correlation with cardiac index (brachial: right: rho=-0.145; left: rho=-0.349; carotid: right: rho=-0.376; left: rho=-0.285). In cardiac surgery patients, there was a weak correlation between the right and left brachial and carotid flow (fig. 1b). There was a weak or no correlation between cardiac index and brachial (right: rho=0.215, left: rho=0.320) and carotid flow (left: rho=0.159) directly after and one day after surgery (right brachial: rho=-0.010, left brachial: rho=-0.064, left carotid: rho=-0.060).

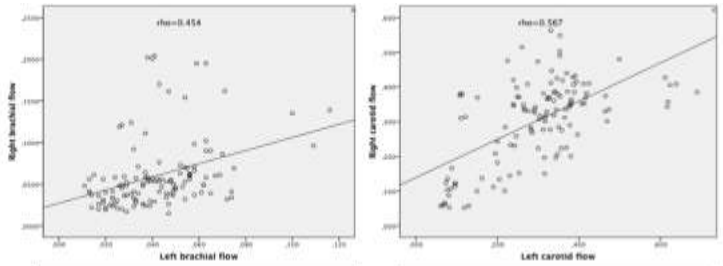

Figure 1a: Correlation between right and left brachial and carotid blood flow in volunteers

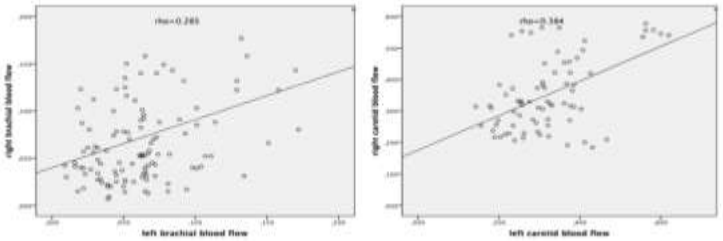

Figure 1b: Correlation between right and left brachial and carotid blood flow in cardiac surgery patients

Conclusion: Doppler-estimated carotid and brachial arterial blood flows only show a weak correlation with cardiac index in healthy volunteers and cannot be used to provide non-invasive estimates of cardiac index.

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Tues16

W Shute[1], MJ Chan[1], S Nandal[1], C Lluch Candal[1], C Knott[1], NJ Glassford[1], A Arumugaswamy[2], C Smith[2], JM Martensson[1], R Bellomo[1]

Prothrombin complex concentrate and fresh frozen plasma are equally effective in reducing prothrombin time in patients with liver disease or upper GI bleeding, but is associated with death and thromboembolic complications.

[1]Department of Intensive Care, Austin Hospital, Heidelberg, VIC, Australia.
[2]Department of Haematology, Austin Hospital, Heidelberg, VIC, Australia.

Aim: Patients with liver disease or gastrointestinal bleeding are often coagulopathic and may receive prothrombin complex concentrate (PCC) and or fresh frozen plasma (FFP). We aimed to explore and compare the magnitude of the effect of PCC or FFP administration on prothrombin time (PT) and to explore the differences in patients with hepatic and gastrointestinal disease receiving PCC and/or FFP during bleeding episodes or in surgery.

Methods: A retrospective observational cohort study of transfusion episodes in patients with severe coagulopathy or active bleeding in a university hospital. We identified predictors of the composite outcome of death or thromboembolic event on univariate and multivariate logistic regression. An episode was defined as a 12-hour period during which either PCC or FFP were administered. We compared pre- and post-episode PTs and the change in PT (ΔPT) between groups.

Results: We studied 40 patients receiving FFP only (45%), PCC only (17.5%) or both (37.5%) during a hospital admission. 40% of patients developed the composite outcome. On multivariate logistic regression analysis PCC administration with or without FFP was an independent predictor of outcome (OR=10.5, 95%CI:1.43–76.93, p=0.021 and OR=18.21, 95%CI:1.54–215.13, p=0.021) compared to those receiving FFP alone. 89 lone transfusion episodes in 32 patients were examined (75.3% of FFP, 24.7% PCC). PT fell significantly in both groups following a transfusion episode (PCC: 28.5, IQR:24–33 seconds vs 22, IQR:18-29 seconds, p=0.01; FFP: 29, IQR:20–39 seconds vs 22, IQR;18–28 seconds, p<0.001). There was no significant difference in the median ΔPT between groups (PCC:5, IQR:2–8 seconds vs FFP:5, IQR:1–9 seconds; p=0.83).

Conclusion(s): PCC and FFP appear to be equally effective in reducing PT in this population. Importantly, there is an independent association between PCC administration and the composite outcome of death or thromboembolic complications in hospital. PCC may contribute to these events, or be a marker of illness severity, or both. Further exploration is warranted.

Tues17

Rinaldo Bellomo[1,2], Johan Martensson[1], Kirsi-Maija Kaukonen[2], Serigne Lo[3], Martin Gallagher[3], the RENAL Replacement Study Investigators

Epidemiology of red blood cell transfusions in patients with severe acute kidney injury - Analysis from the RENAL study

1.Department of Intensive Care, Austin Hospital, Heidelberg, Vic., Australia;
2.Department of Epidemiology and Preventive Medicine, Monash University, Melbourne, Vic., Australia;
3.The George Institute for Global Health, University of Sydney, Sydney, Australia

Aim
To describe current transfusion practice in patients with acute kidney injury treated with continuous renal replacement therapy (CRRT) and to explore the association between red blood cell (RBC) transfusion, haemoglobin (Hb) levels and clinical outcomes in such patients.

Methods
We performed a post-hoc analysis in 1465 patients from the Randomized Evaluation of Normal versus Augmented Level (RENAL) trial [1]. We assessed the relationship between RBC transfusion, Hb levels and 90-day mortality using multivariate adjusted Cox proportional hazard models.

Results
Overall, 977 (66.7%) patients received a total of 1192 RBC units while in ICU. By day 5, 785/977 transfused patients (80.3%) had received at least one RBC unit. Mean daily Hb was >95 g/L and >85 g/L in transfused and non-transfused patients, respectively. RBC transfusion was independently associated with decreased 90-day mortality (HR 0.61, 95% CI 0.49-0.76). In patients surviving at least 5 days, however, we did not show an independent association between RBC transfusion and mortality. Hence, in contrast to previous studies showing an association between RBC transfusions and mortality in general ICU patients [2], our results suggest that such transfusions are not harmful in ICU patients treated with CRRT. As shown by others [3], lower Hb level was associated with mortality in our analyses.

Conclusion
The potential risk of giving RBC transfusion does not seem to outweigh the benefits of targeting a haemoglobin level of >85 g/L in critically ill AKI patients treated with CRRT.

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Tues18

Rinaldo Bellomo[1,2], Johan Martensson[1], Serigne Lo[3], Martin Gallagher[3], the RENAL study investigators

Femoral vs non-femoral venous catheterization and delivery of continuous renal replacement therapy - A secondary analysis of the RENAL study

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2.Department of Epidemiology and Preventive Medicine, Monash University, Melbourne, Vic., Australia;
3.The George Institute for Global Health, University of Sydney, Sydney, Australia

Aim
To describe the use of temporary dialysis catheters in critically ill patients treated with continuous renal replacement therapy (CRRT) and to study the impact of insertion site (femoral vs non-femoral) on CRRT dose.

Methods
We analysed 1399 patients from the Randomized Evaluation of Normal versus Augmented Level (RENAL) trial [1]. First, we described the use of temporary dialysis catheters during CRRT. Second, we used multivariate logistic regression to identify factors associated with using the femoral vein as first site of catheter insertion. Demographics, illness severity and biochemical variables were considered. Finally, we used multivariate linear regression to explore the association of using a femoral (vs non-femoral) catheter with the delivered CRRT dose during the first complete 24 hours of CRRT adjusting for baseline-, catheter- and anticoagulation characteristics.

Results
The femoral vein was used as the first site of catheterization in 937 (67%) patients. For femoral catheterization, 24 cm (48%), 13.5 Fr (68%) catheters were most commonly used. For non-femoral catheterization, 15 cm (46%), 13.5 Fr (59%) catheters were mainly used. Anticoagulation management was similar in patients with and without a femoral catheter. Lower body weight was independently associated with using the femoral vein as the first catheterization site (OR 0.97, 95% CI 0.96-0.98) whereas coagulopathy was not. Using a femoral catheter was independently associated with a minimally lower CRRT dose (1.3 ml/kg/hour less, P = 0.03) during the first 24 hours.

Conclusion
A femoral vein catheter was mainly used for CRRT delivery in the RENAL trial, was chosen in thinner patients and had no major negative impact on CRRT dose.

References
1. Bellomo R, Cass A, Cole L*, et al.* Intensity of continuous renal-replacement therapy in critically ill patients. N Engl J Med 2009; 361:1627-1638.

Tues19

Dr Lucy Modra[1], A/Prof Graeme Hart[1,2], A/Prof Andrew Hilton[1] and Ms Sandra Moore[1].

Informed consent for procedures in the ICU: The Experiences and Expectations of Patients and Their Families

[1]Department of Intensive Care, Austin Health
[2]Austin Centre for Applied Clinical Informantics, Austin Health

Objective
To describe ICU patients' and their Next of Kin's awareness of invasive procedures, and their expectations of informed consent for procedures in the ICU.

Design and setting
A written survey of patients and their Next of Kin (NoK) in a tertiary, university-affiliated ICU. The survey tool utilised multiple choice questions, Likert scales and comments to generate semi-quantitative and qualitative data.

Participants
51 ICU patients and 69 NoK completed the survey. Inclusion criteria were unplanned ICU admission, ICU length of stay greater than 24 hours, English speaking and competent to consent to participate.

Main Outcome Measures
- Proportion of procedures respondents were aware had occurred during ICU admission
- Respondents' satisfaction with information received about procedures
- Respondents' preferred method of receiving information about procedures and giving consent.
- Respondents' expectations of when procedural consent is required

Results
Patients and NoK were unaware of many procedures performed during their admission. Respondents correctly identified 49% (95% CI 0.45-0.53) of procedures performed during the patient's ICU admission. Despite this, most patients (0.80; 95% CI 0.69- 0.91) and NoK (0.94; 95% CI 0.89-1.00) were satisfied with information provided about procedures. Over half of respondents (0.55; 95% CI 0.46-0.64) only expected consent for procedures that were 'risky or not routine'. Approximately one quarter (0.27; 95%CI 0.19-0.35) expected to give consent before every procedure, whilst 15% (0.15, 95% CI 0.08-0.21) expected no procedural consent process. Patients and NoK strongly preferred a verbal, rather than written, consent process.

Conclusion
Our results suggest a limited degree of support for routine procedural consent from ICU patients and their NoK.

Tues20

Johan Martensson[1], Neil J Glassford[1], Sarah Jones[1], Glenn M Eastwood[1], Helen Young[1], Leah Peck[1], Vaughn Ostland[4], Mark Westerman[4], Per Venge[5], Rinaldo Bellomo[1]

Urinary NGAL to hepcidin ratio as a biomarker of acute kidney injury in general ICU patients

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2.Intrinsic LifeSciences LLC, La Jolla, CA, USA;
3.Department of Medical Sciences, Clinical Chemistry, Uppsala University, Uppsala, Sweden

Aim
Neutrophil gelatinase-associated lipocalin (NGAL) and hepcidin are produced in response to acute kidney injury (AKI). However, while urinary NGAL increases more in patients with greater AKI severity [1], urinary hepcidin increase less in those patients who develop AKI as compared to those who do not [2]. We aimed to investigate the value of the urinary NGAL/hepcidin ratio to assess the severity and progression of AKI in general ICU patients.

Methods
Urinary NGAL and hepcidin were quantified on ICU admission. Patients were classified according to the risk, injury, failure, loss and end-stage (RIFLE) criteria on a daily basis. Mild AKI was defined as RIFLE R and severe AKI as RIFLE I, F or the need for dialysis. Diagnostic and prognostic characteristics were assessed by logistic regression and receiver operating characteristics (ROC) analysis.

Results
Of 102 patients, 26 had mild AKI and 28 patients had severe AKI on admission. NGAL values increased whereas hepcidin decreased with increasing AKI severity. The value of NGAL/hepcidin ratio to detect severe AKI was higher than when NGAL or hepcidin were used individually and persisted after adjusting for potential confounders (adjusted OR 2.40, 95% CI 1.20-4.78). The ROC areas for predicting worsening AKI were 0.50, 0.52 and 0.48 for NGAL, 1/hepcidin and the NGAL/hepcidin ratio, respectively.

Conclusion
The NGAL to hepcidin ratio is more strongly associated with severe AKI than the single biomarkers alone. However, NGAL and hepcidin, alone or combined as a ratio, were unable to predict progressive AKI in this selected ICU cohort.

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Tues21
NJ Glassford[1], MB Guardiola[1], MJ Chan[1], A Skene[2], SM Bagshaw[3], R Bellomo[1], K Solez[4]

A novel system of assessing renal histological changes in necroscopic samples of critically ill patients with and without Acute Kidney Injury.

This abstract has not been included at the request of the author

Tues22
NJ Glassford[1], GM Eastwood[1], R Bellomo[1]

Physiological changes after fluid bolus therapy in sepsis: a systematic review of the contemporary literature.

This abstract is not included at the request of the author

Tues23
NJ Glassford[1], SL Jones[1], J Martensson[1], GM Eastwood[3], R Bellomo[1]

Defining the constituents and expectations of contemporary fluid bolus therapy: a binational survey.

This abstract has not been included at the request of the author

Tues24
Stephane Bouchoucha, [1, 2], Kathleen Moore, [1]

The Factors Influencing Adherence to Standard Precautions Scale: Psychometric validation of novel instrument

1. Charles Darwin University, Darwin, NT, Australia;
2. La Trobe University Clinical School @ Austin Health, Heidelberg, Vic., Australia;

Aim
The onset of what is now known as Acquired Immunodeficiency Syndrome (AIDS) caused by the Human Immunodeficiency Virus (HIV) in the early 1980s influenced the development of new guidelines to protect health workers. Originally termed Universal Precautions and since renamed Standard Precautions (SP) (1), they were primarily designed to prevent the transmission of blood borne viruses from patients to healthcare workers. Although not the focus at the time, the guidelines also afford patient protection by reducing cross-transmission of pathogens from healthcare workers.
The aim of this study was to perform a detailed psychometric testing of a novel scale designed to assess the factors influencing adherence to Standard Precautions.

Methods
363 participants were recruited (*M* age = 44.03 *SD* = 9.78). There were 49 males (13.5%, *M* age 41.94 *SD* = 10.36) and 314 females (86.5%, *M* age = 44.36 years, *SD* = 9.66) A repeated measures design using exploratory and confirmatory factor analyses was employed to explore the factor structure and internal reliability of the new Factors Influencing Adherence to Standard Precautions Scale (FIASPS) and its concurrent validity with the Impulsive and Sensation Seeking Scale (ImpSS, 2) and at 4-week follow-up, confirm the factor structure and determine its temporal stability .

Results
Exploratory Factor Analysis produced a 5-factor solution: Judgement, Leadership, Culture/Practice, Risk Assessment and Justification, with internal reliability ranging from α = .60 to .86. The five factors correlated with the ImpSS. A 4-week follow-up, CFA with data from, 384 participants supported the fit of the data to the model and the five factor structure: χ^2/df = 1.64, GFI = .915, AGFI = .896, IFI = .918; and the temporal stability of the factors (*r* = .72 to .44).

Conclusion
The FIASPS is an instrument designed to assess the factors, which influence help workers adherence to SP. It is novel in that it includes factors of a personal and organisational nature, which have not been systematically addressed in past literature. Its use in research determining practitioners as well as students attitudes warrants investigation and may inform intervention strategies to promote adherence.

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Tues25

Dr. Chong Tan[1], Dr Yew Ming Chong[2], Dr Phong Tran[3], Dr William Howard[1], Dr. Laurence Weinberg[1]

THE EFFECT OF HIGHER ARTHROSCOPIC FLUID INFUSION VOLUMES ON POSTOPERATIVE PAIN IN HIP ARTHROSCOPY

This abstract has not been included at the request of the author

Tues26

Armellini A,[1] Weinberg L,[2] Hewitt T,[3] Tan C,[2] McNicol L,[2] R Robbins,[4] Bellomo R,[3]

FLUid intervention and Renal Outcome Trial in patients undergoing major surgery: an observational single-centre study (The FLURO Trial)

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[2]Department of Anaesthesia, Austin Hospital, Victoria, Australia
[3]The Clinical Information Analysis & Reporting Unit, Austin Hospital, Australia
[4]Department of Intensive Care, Austin Hospital, Victoria, Australia

Aim: Quantitative toxicity (fluid overload) and qualitative toxicity (fluid type) are associated with kidney injury and adverse outcomes. We hypothesized that positive perioperative fluid balances and chloride-liberal fluid intervention are associated with adverse renal outcomes and increased morbidity in patients undergoing major surgery.

Methods: Design: single-centre, prospective observational study of adult patients undergoing major surgery. Detailed quantitative and qualitative fluid intervention data were retrospectively analyzed for determinants of early acute kidney injury (AKI) (KDIGO Classification) and adverse outcomes. Prolonged length of stay (LOS) stay and a positive fluid balance were defined a priori as a cut-off value of the mean (or median for skewed data) hospital stay days/fluid balances after surgery. Factors associated with complications and length of hospital stay were evaluated using descriptive statistics, univariate and multivariate regression analysis.

Results: 542 consecutive patients undergoing major surgery were included. Most patients were elderly, overweight, and with pre-existing medical co-morbidities. Median (IQR) fluid balances were positive both intraoperatively and on postoperative day (POD) 1, and negative on POD's 2 and 3. 357 patients (66%) developed at least one postoperative complication. Half of these patients had ≥ 3 complications. The most common complications were cardiovascular (70%), metabolic (34%), genitourinary (30%), respiratory (29%), blood transfusion (23%), and AKI (15%). Amount of administered fluid (median, IQR) intraoperatively and on POD 1,2 and 3 was significantly higher in patients with complications . In patients with complications, chloride supraphysiological fluid use was greater on POD 1: 1035ml (581:2000) vs. 890ml (581:1410); p=0.047. Patients with AKI received significantly more fluids on POD's 2 and 3. For patients with complications, chloride supraphysiological fluid use was higher on POD 1: 1035ml (581:2000) vs. 890ml (581:1410); p=0.047. Median (IQR) hospital LOS was 6 days (4:11). Perioperative mortality was 0.7%. Hospital LOS was longer in patients with complications: 8 days (5:13) vs. 4 days (2:6); p<0.0001. Multivariate regression modelling could not identify specific factors associated with complications.

Conclusion: These findings support the hypothesis that intravenous fluids in themselves may be associated with the development of complications and organ dysfunction, and prolonged length of hospital stay. The type and volume of perioperative fluid may be a modifiable risk factor for the prevention of morbidity in patients undergoing major surgery. These results can be used to generate hypotheses and establish outcome benchmarks for future controlled trials.

Tues27

Armellini A[1], Weinberg L[1], Hewitt T[3], Tan C[1], McNicol L[1], Robbins R[2], Bellomo R[3]

Surgical complications in patients undergoing major surgery: a comprehensive grading system according to the CHADx and the Clavien-Dindo systems

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[2]The Clinical Information Analysis & Reporting Unit, Austin Hospital, Australia
[3]Department of Intensive Care, Austin Hospital, Victoria, Australia

Aims: Postoperative complications are common in patients undergoing major surgery and are associated with increased hospital length of stay, readmissions and poorer long-term survival. The aims of this study were to collect detailed information on postoperative complications and classify complications according to the Classification of Hospital Acquired Diagnoses (CHADx) and the Clavien-Dindo classifications. The CHADx classification allows hospitals to use routine hospital diagnostic coding to improve patient safety. The Clavien-Dindo classification is a validated classification system that ranks surgical complications in an objective and reproducible manner. We hypothesized that postoperative complications in patients undergoing major surgery are common, and are associated with procedural risks and increased hospital length of stay.

Methods: We conducted a single-centre, prospective observational study at a University teaching hospital of adult patients undergoing major surgery. Complications were classified according to the CHADx then graded according to Clavien-Dindo system. The associations between complications, procedural risks and length of hospital stay were evaluated using descriptive statistics.

Results: Over a 12-week period, 542 consecutive patients undergoing major surgery (excluding liver transplantation) were included. The CHADx system identified complications in 357 (66%) patients. Of these, 71 (13%) had 2 complications and 169 (31%) had ≥3 complications. CHADx Class 5 (cardiovascular) was the most common class of complication (70%), followed by CHADx Class 15 (metabolic disorders) (34%), CHADx Class 9 (genitourinary) (30%), and CHADx Class 6 (respiratory) (29%). For the Clavien-Dindo classification system: Grade I: 690 complications were seen in 164 patients), Grade II: 302 complications in 137 patients, Grade III: 57 complications in 37 patients), Grade IV: 23 complications in 14 patients, Grade V (postoperative mortality): 4 complications in 4 patients). Median (IQR) length of hospital stay for patients with complications was 8 days (5:13) compared to 4 days (2:6) for patients without complications ($p<0.0001$). Procedural risks were associated with the development of complications. There were 338 complications in cardiac surgery (24% of patients with complications), followed by orthopaedics surgery (97 complications; 12% of patients with complications), and urology surgery (88 complications, 10% of patients with complications).

Conclusion: Postoperative complications in patients undergoing major surgery were common. Complications were strongly associated with increased length of hospital stay. The type and duration of surgery may influence the development of complications. These results can be used to build hypotheses for future controlled trials.

Tues28

Weinberg L[1], Broad B[1], Chen C[1], Scurrah N[1], Pillai P[1], Story D[1], Eastwood G[2], Bellomo L[2], McNicol L[1]

Sodium bicarbonate infusion does not prevent acute kidney injury in patients undergoing orthotopic liver transplantation: a single-centre prospective phase two blinded randomized controlled trial

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Background: Liver transplantation-associated acute kidney injury (AKI) occurs in over 50% of patients and is associated with significant morbidity and mortality. Bicarbonate infusion has been previously shown to be nephron-protective in several settings. We hypothesized that sodium bicarbonate would reduce the incidence of liver transplantation-associated acute kidney injury.

Methods: With ethics approval, we conducted a blinded, randomized trial in adult patients undergoing orthotopic liver transplantation at a tertiary level hospital. Patients were randomized to receive either a sodium bicarbonate 8.4% (n = 30) or sodium chloride (n = 30) infusion, commencing at the start of anaesthesia, at a dose of 0.5 mEq/kg/hr for the first hour and then 0.15 mEq/kg/hr for the duration of surgery. Primary outcome: number of patients with the development of liver transplantation-associated AKI, defined as an increase in creatinine greater than 25% or 0.5 mg/dL (44 µmol/L) from baseline to peak value within the first 48-hours postoperatively.

Results: There were no significant differences in baseline characteristics including pre-transplantation renal dysfunction, preexisting hepatorenal syndrome, hypoproteinaemia, hypoalbuminaemia, APACHE II and MELD scores. A total of 14 patients (47%) in the bicarbonate group and 13 patients (43%) in the sodium chloride group developed AKI within the first 48 hours postoperatively (odds ratio 0.87; 95% CI: 0.3 to 2.4; p=0.79). One patient from the bicarbonate group required renal replacement therapy postoperatively (none in the saline group). The sodium bicarbonate group had higher postoperative serum bicarbonate ($p<0.001$) and base excess ($p<0.001$), and lower serum chloride ($p<0.01$). Changes in serum creatinine, eGFR and serum Cystatin C (renal biomarker of AKI) from baseline were not significantly different between the two groups over the first 48-hours postoperatively. There were no significant differences in ventilation hours, ICU or hospital length of stay, or mortality.

Conclusions: Intraoperative infusion of sodium bicarbonate did not result in a decrease in the incidence of acute kidney injury in patients following orthotopic liver transplantation.

Tues29

Weinberg L[1], Alban D[1], Pearce B[1], Jones R[2], Story D[1], McNicol L[1]

Prevention of Hypothermia in Patients Undergoing Orthotopic Liver Transplantation using the Fisher and Paykel Humigard® Open Surgery Humidification System: A Prospective Randomised Pilot Clinical Trial

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Aims: Perioperative thermal disturbance during orthotopic liver transplantation can result in arrhythmias, myocardial ischaemia, coagulopathy, increased allogeneic transfusion, wound infection, and prolonged hospitalisation. In this setting avoidance of hypothermia is challenging due to a large open surgical wound, high infusion volumes, the presence of extracorporeal circuits, and the hypothermic insult associated with reperfusion. We hypothesized that patients undergoing orthotopic liver transplantation will have a higher intraoperative core temperature prior to reperfusion and at completion of surgery if the Fisher & Paykel Humigard® system is used.

Methods: With ethics approval we performed a prospective, randomised pilot study of adult patients undergoing primary orthotopic liver transplantation. Exclusion criteria included fulminant hepatic failure, requirements for CVVH, multivisceral transplantation and pregnancy. Twenty-two patients were randomised to receive either open wound humidification with the Humigard® system in addition to standard care (FPH group) or to standard care alone (Control group). Standard care involved intense measures to maintain temperature homeostasis including predetermined temperatures for infused fluid, ambient air and heating mattress temperatures. Temperature measurements were taken at multiple time points using a pulmonary artery catheter (PAC), naso-pharyngeal temperature probe (NPP) and a bladder temperature probe (BTP). Other endpoints included $PaCO_2$, minute ventilation and the use of vasoconstrictors.

Results: Both groups were evenly matched for age, body mass index, MELD, SOFA and APACHE II scores, baseline temperature, and duration of surgery. Immediately prior to reperfusion the mean NPP temperature was 36.0^{o}C (SD: 0.41) in the FPH group and 35.4^{o}C (SD: 0.74) in the Control group (p=0.02); the mean PAC temperature was 35.9^{o}C (SD: 0.51) in the FPH group and 35.5^{o}C (SD: 0.79) in the Control group (p=0.14); the mean bladder temperature was 36.2^{o}C (SD: 0.63) in the FPH group and 35.5^{o}C (SD: 1.03) in the Control group (p=0.09). On wound closure the FPH group had a higher mean NPP temperature compared to the Control group: 36.7^{o}C vs. 36.1^{o}C (p=0.041). At completion of surgery there was a trend towards higher PAC (36.8^{o}C vs. 36.3^{o}C, p= 0.09) and BTP (36.8^{o}C vs. 36.5^{o}C, p=0.27) temperatures in the FPH group. There were no significant differences in the use of vasoconstrictors, $PaCO_2$, ET CO_2 or minute ventilation between the groups at completion of surgery.

Conclusion: The Fisher & Paykel Humigard® open surgery humidification system reduces the incidence of core intraoperative hypothermia during orthotopic liver transplantation. A larger trial is needed to confirm the results of this pilot study.

Tues30

Weinberg L[1], Ho T[1], Scurrah N[1], Tan C[1], Dimovitis R[2], Collins A[2], Tan C[1], McNicol L[1], Christophi C[2], Nikfarjam M[2]

Impact of a surgery-specific goal directed therapy protocol in reducing major complications in patients undergoing pancreaticoduodenectomy (Whipple's procedure)

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[2]*Department of Surgery, University of Melbourne, Melbourne, Australia*

Aims: In 2011, our university hospital introduced an Enhanced Recovery After Surgery (ERAS) programme for all patients undergoing pancreaticoduodenectomy (PD). The additional impact of an intraoperative surgery-specific goal directed therapy (SS-GDT) protocol in improving outcomes is unknown. We hypothesized that a SS-GDT protocol in addition to current care improves outcomes in patients undergoing PD.

Methods: With ethics approval, we performed a retrospective observational study in patients undergoing PD with an established ERAS programme. Patients who received an intraoperative SS-GDT protocol (n=15) were compared to the remaining ERAS cohort (n=50). In the SS-GDT group, a FloTrac/Vigileo device™ (Edwards Lifesciences, Irvine, CA) was used to optimize tissue perfusion and cellular oxygenation by guiding rational use of intravenous fluids and vasoactive drugs. For the surgical stages of resection and reconstruction, patients in the SS-GDT group had IV fluids administered if the stroke volume variation exceeded 20% and the MAP was less than 20% of the preoperative value. Use of vasoconstrictors and inotropes were adjusted where necessary to maintain normal flow-based haemodynamic parameters. During the final surgical stage of confirmation of haemostasis and closure, in the SS-GDT group, fluids were administered to normalize the SVV to less than 12%, whilst maintaining normal flow-based haemodynamic parameters and avoiding hypervolaemia.

Results: There were no significant differences between the groups in gender, age, body mass index, ASA score and co-morbidities. The median duration of surgery in the SS-GDT group was longer (8.0 hours vs. 6.5 hours; p<0.001). Median (IQR) total intraoperative IV fluid administration was less in SS-GDT group (3000ml (IQR:2000-4000ml) vs. 4250ml (IQR:3000-5150ml); p=0.008. The median (IQR) intraoperative fluid balance was lower in the SS-DGT group [2200 ml (IQR:1730-3300ml)] vs. [3600ml (IQR:2300-4656ml); p=0.001]. There were no significant differences in the volumes of fluids administered or cumulative fluids balances on postoperative Days 1 to 3. There were fewer complications in the SS-DGT group (27% vs. 62%, OR:4.5; 95% CI:1.3-16.1; p=0.02). The majority of complications were cardiopulmonary in nature. The median (IQR) length of stay in both groups was similar [SS-GDT group: 10 days (IQR:7-14 days); 95% CI:9-13 days] vs.10 days ERAS only group [(IQR:8-17 days); 95% CI:9-13 days; p=0.86)].

Conclusions: Patients undergoing PD who received a SS-GDT protocol in addition to an ERAS programme received less intraoperative fluids and had fewer post operative complications. A prospective randomized control multicentre trial is currently underway to test these findings.

Tues31

Weinberg L[1], Ho T[1], Scurrah N[1], Dimovitis R[2], Collins A[2], Tan C[1], Christophi C[3], Nikfarjam M[3]

Does surgery-specific goal directed therapy improve outcomes in patients undergoing major open liver resection compared to an ERAS programme alone?

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[2]*Department of Surgery, University of Melbourne, Austin Hospital, Melbourne, Australia*

Aims: Enhanced recovery after surgery (ERAS) protocols can be successfully implemented in liver surgery without compromising morbidity, mortality or readmission rates. The impact of surgery-specific goal directed therapy (SS-GDT) in addition to an ERAS programme is unknown. Therefore, we hypothesized that SS-GDT in addition an ERAS programme improves outcomes in patients undergoing liver resection.

Methods: With ethics approval, we conducted a retrospective observational study in adult patients who had undergone major liver resection with an established ERAS programme. Patients receiving intraoperative SS-GDT (n=25) were compared to the remaining ERAS cohort (n=104). In the SS-GDT group, a FloTrac/Vigileo device® (Edwards Lifesciences) was used to optimize tissue perfusion and cellular oxygenation by guiding rational use of intravenous fluids and vasoactive drugs. For surgical mobilisation and control of inflow/outflow, and for the hepatic resections stages, portal pressures were reduced by a combination of fluid restriction, venodilatation, diuresis, and venesection. In the SS-GDT group for these stages, IV fluids were administered if the stroke volume variation exceeded 20% and the MAP fell to less than 20% of the preoperative value. Use of vasoconstrictors and inotropes were adjusted where necessary to main normal flow-based haemodynamic parameters. During the final surgical stage of confirmation of haemostasis and closure, in the SS-GDT group IV fluids were administered to normalize the SVV to less than 12%, whilst maintaining normal flow-based haemodynamic parameters and avoiding hypervolaemia.

Results: There were no significant differences in gender, age, body mass index, ASA score, co-morbidities, or type of resection. The median duration of surgery in the SS-GDT group was longer [360 min vs. 260 min; $p<0.001$]. Median liver resection volumes were also greater but not statistically different [275 grams vs. 350 grams; p=24). Despite longer operations and larger resection volumes in the SS-GDT group, there were no significant differences in the volumes of IV fluid administered, fluid balances, blood loss, or urine output, intraoperatively and at 24-hours postoperatively. In the SS-GDT group, use of noradrenaline/phenylephrine was more frequent. There were no significant differences in major complications, hospital length of stay, or mortality.

Conclusions: Surgery-specific GDT, in addition to a standardised ERAS programme did not improve outcomes in patients undergoing major open liver resection. A prospective randomized control multicentre trial is currently underway to test these findings.

Tues32

Weinberg L[1], Pillai P[1], Gillard A[1], Tan C [1], Liskaser[1], Fernandes[1], Peyton P[1], Doolan L[1]

A randomized controlled study using video fluoroscopy for the insertion of pulmonary artery catheters in high-risk patients undergoing cardiac surgery

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Aims: Pulmonary artery catheter (PAC) derived haemodynamic data can provide beneficial information in the management of the high-risk cardiac surgical patient. Pressure waveform analysis is the commonest method used to float the PAC, however this technique may difficult in patients with poor cardiac function resulting in arrhythmias, catheter malposition. In high-risk patients undergoing cardiac surgery we hypothesised that video fluoroscopy facilitates optimal catheter floatation and final positioning compared to the traditional pressure waveform flotation technique.

Methods. With ethics approval, 50 high-risk patients undergoing cardiac surgery requiring a PAC were randomized to flotation using the traditional pressure waveform technique (n=25) or video fluoroscopy (n=25). Inclusion criteria: severely impaired LV or RV function, severe pulmonary hypertension, severe tricuspid insufficiency, or when floating the catheter via the left internal jugular vein. Two consultant cardiac anaesthetists performed all PAC insertions. Primary outcome: time to float and position the PAC balloon in the PA (confirmed with TOE performed by an independent echocardiographer). Secondary outcomes: number of attempts at floatation and ventricular rhythm disturbances. Anaesthetists were blinded to the TOE information.

Results. Patients were evenly matched for baseline demographics, NYHA symptoms of heart failure, severity of LV and RV dysfunction, RV and LV end-diastolic pressures and dimensions, LA and RA size, and PA systolic pressure. Mean (SD) time to float the PAC was significantly shorter in the video fluoroscopy group: 73 seconds (SD: 65.1) vs. 176 seconds (SD: 180.6); p=0.014. The median (upper quartile) number of attempts to successful floatation was lower in the video fluoroscopy group: 1 (UQ 2) attempts vs. 2 (UQ 4) attempts; p=0.007. The composite complication rate (malposition and arrhythmias) was higher with the pressure waveform technique (40% vs. 16%; p=0.007). In one patient in the pressure waveform group, the placement of the PAC in the PA was impossible. The patient was crossed over to video fluoroscopy and the catheter was successfully floated in 56 seconds.

Conclusions. In high-risk patients undergoing cardiac surgery, video fluoroscopy facilitates faster and safer PAC catheter floatation and positioning compared to the traditional pressure waveform floatation technique.

Tues33

Dr Paul Kopanidis[1], Dr Peter McCall[2], Dr Laurence Weinberg[2], Dr Andrew Hardidge[1]

Blood Optimisation Program to Reduce Blood Transfusions in Total Knee and Hip Arthroplasty: A Practice Change, Quality Assurance Project

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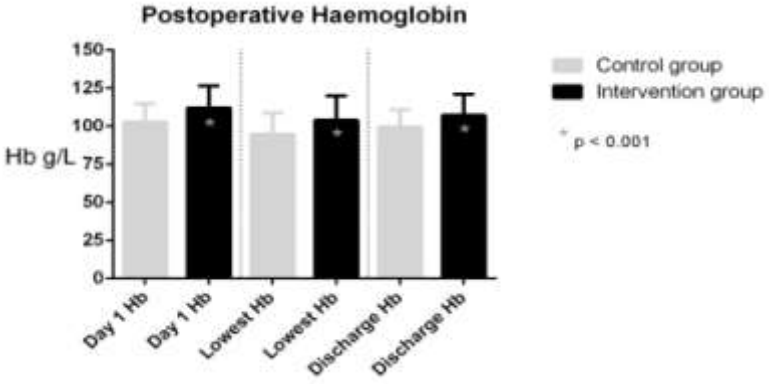
[2]Department of Anaesthesia, Austin Hospital, Melbourne, Australia

Aim: Optimal blood management in patients undergoing major arthroplasty is associated with improved patient outcomes and reduced length of stay (1). This study aimed to establish the effectiveness of a change of practice of preoperative treatment of anaemia together with intraoperative tranexamic acid to reduce the rate of allogenic blood transfusion at our institution.

Methods: Retrospective observational study involving 200 adult patients undergoing elective knee and hip arthroplasty before (Control group) and after (Intervention group) the practice change in an Australian tertiary hospital. Consecutive patients were collected between 2011 and 2013. Patients in the Intervention group underwent preoperative treatment for iron deficiency anaemia with oral or intravenous iron in addition to receiving intraoperative tranexamic acid. The primary outcome measures were rate of blood transfusion and change of haemoglobin (Hb).

Results: There were no differences between the groups in gender, age, weight, BMI, ASA status, preoperative medications relevant to bleeding, or comorbidities. The mean (standard deviation) preoperative Hb was 133.4g/L (13.9) in the Control group, 138.7g/L (13.9) in the Intervention group (effect size 5.3g/L, p=0.008). There was a reduction in the number of patients transfused from 20% in the Control group to 6% in the Intervention group (p= 0.003). The mean day one postoperative Hb in the Control group was 102.7 g/L(12.2) and 112.1 g/L (14.5) in the Intervention group (effect size 9.4g/L, p<0.001), indicating reduced intraoperative blood loss. There was no change in complication rates or duration of hospital stay between groups.

Figure 1: Postoperative changes in haemoglobin



Conclusion: n utilising iron supplementation and intraoperative tranexamic acid has effectively reduced the use of allogenic blood transfusion in patients undergoing elective joint arthroplasty.

References

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Tues35

Bunker DLJ[1,2], Cunningham E[1], Moumita P[1], Wang Z[1], Wang C[1], Bishop A[1], Sharland A[1]

MHC Class I Gene Transfer to Recipient Liver facilitates Allograft Tolerance

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[2]*Department of Surgery, Launceston General Hospital, Launceston, Tasmania*

Aim

The tolerogenic effects of the liver have long been recognised, exemplified by the persistence of hepatotropic viral infections and acceptance of liver allografts across complete MHC mismatches with little or no immunosuppression. We examined the ability of donor MHC gene expression in recipient liver to induce allograft tolerance.

Methods

We harnessed the tolerising effects of the liver using a recombinant adeno-associated viral vector with liver specific promoters (rAAVKb) to confer expression of a donor MHC class I K allele to recipient hepatocytes. Full-thickness skin grafts from 178.3 (H2-Kb) to B10.BR mice (H2-K) one week after inoculation with rAAVKb was performed and time to rejection compared against naive B10.BR controls. B10.BR mice then primed by receiving a 178.3 graft and given rAAVKb at day 7 and day 14 post transplant. We measured time to graft rejection, serum transaminases and performed immunohistochemical staining and histological analysis on harvested livers.

Results

Administration of rAAKB confirmed stable, high level expression of the class I K allele on hepatocytes without an appreciable inflammatory infiltrate or serum transaminase rise. 178.3 grafts to B10.BR mice treated with $5x10^{11}$ vector genome copies of rAAVKb one week prior achieved transplant tolerance (n = 5, MST > 250 days). In contrast, control grafts were readily rejected (n = 6, MST = 16 days). Analysis of harvested livers from B10.BR mice primed by a 178.3 allograft and then administered rAAVKb showed an increased in peri-portal Fox3+ Tregs, suggesting that tolerance was achieved by a suppression of reactive clones.

Conclusion

Transfer of donor MHC class I to recipient liver can lead to tolerance to the antigen and subsequent tolerance towards allograft in a single class I MHC mismatched model. This process conferring tolerance is dependent on direct antigen recognition by alloreactive CD8 T cell clones.

Tues36

Bunker DLJ[1,2], Cunningham E[1], Moumita P[1], Wang Z[1], Wang C[1], Bishop A[1], Sharland A[1]

Investigating the phenomenon of the liver tolerance effect using a skin graft model

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[2]*Department of Surgery, Launceston General Hospital, Launceston, Tasmania*

Aim

We have previously shown that operational tolerance to MHC class I mismatched skin allografts is possible by previous inoculation of recipients with an adenoassociated viral vector (rAAVKb) which conferred hepatic expression of missing donor MHC allele (Kb). The role of direct antigen recognition and the inhibitory PD1:PD-L1 (protein death-ligand 1) was examined to explore the mechanisms by which such tolerance is conferred.

Methods

We constructed a mutant vector (rAAVD227K) which abrogates CD8 co-receptor binding and therefore abolishes direct antigen recognition by alloreactive recipient CD8 T cells. B10.BR (H-2K) mice were injected with 5×10^{10} (n = 6) or 5×10^{11} (n = 6) vector genome copies of rAAVD227K and grafted with skin from 178.3 (H-2Kb) donors one week later and monitored for allograft rejection. Isolated hepatocytes from B10.BR mice treated with rAAVKb and rAAVD227K were analysis by flow cytometry to assess for levels of Kb and PD-1 expression. A repeat group of experiment were performed on mice treated with both rAAVKb and anti-PD-L1 to assess whether PD-L1 blockade could break tolerance induction.

Results

B10.BR (H-2K) mice injected with 5×10^{10} (n = 6) or 5×10^{11} vgc (n = 6) of rAAVD227K and grafted with skin from 178.3 (H-2Kb) donors one week later failed to demonstrate allograft tolerance (MST = 27 and 26 days, respectively). Flow cytometry analysis on hepatocytes isolated from B10.BR livers treated rAAVKb revealed a transient rise in PD-1 which correlated with the onset of Kb expression. However, blockade of PD1:PD-L1 interactions with an anti-PDL1 antibody in B10.BR mice given rAAVKb and subsequent 178.3 grafts led to a state of hepatitis (even in unprimed animals) and failed to break tolerance, suggesting that other candidate pathways are responsible for tolerance induction.

Conclusion

The liver tolerance effect appears to rely at least partially on direct antigen recognition pathways between hepatocytes and CD8 T cells. The subsequent silencing of alloreactive clones is not entirely explained by the inhibitory PD1:PD-L1 pathway.

Tues37
Assessment of distal end radius fractures: are we missing carpal instability syndromes?

Bunker DLJ[1,2], Pappas G, Moradi P, Dowd MB

Aim
Distal end radius fractures (DER) are a common presentation to emergency medical services in a wide population of patients. Transmission of force through the carpal interface can result in concomitant carpal instability, particularly through scapholunate ligament disruption. We performed a retrospective study to investigate the prevalence of static radiographic evidence of carpal instability in patients presenting with DER fractures by assessing scapholunate angle (SLA).

Methods
We performed a retrospective radiographic study of 141 patients presenting to Central Middlesex Hospital, London between January 2002-May 2004 with distal end radius fractures. Fractures were sub-classified as extra-articular (Type A), simple intra-articular (Type B) or complex intra-articular (Type C). Measurement of the scapholunate angle by two independent reviewers was preformed both at presentation and after treatment using plain films. We used abnormal scapholunate angle (> 60^0) as the primary indicator of possible carpal dissociation. Exclusion criteria for patients in this study included age less than 16 years (immature skeleton), severe osteoporosis or osteoarthritis, poor quality radiographs, bilateral DER fractures, concomitant carpal bone fractures of those with an SLA < 30^0.

Results
There were 141 patients selected for inclusion in the study (53 men and 88 women). Average age at presentation was 54 years (range 24 – 98 years). Dorsal tilt was present in 94% (132/141) of cases, the remaining being volar. There were 133 Type A (80%), 11 Type B (8%) and 17 (12%) Type C. The mean pretreatment SLA was 59^0 +/- 12^0 (dorsal cases) and 53^0 -/- 11^0 (volar cases). Overall, 39% (55/141) of patients presenting with distal end radius fractures had an abnormal SLA. Treatment involved closed reduction (n = 88), Kirschner wiring (n = 47), external fixation with Kirschner wiring (n = 5) or volar plating (n = 1). Post-treatment, mean angles were 58^0 +/- 12^0 (dorsal cases) and 51^0 +/- 11^0 (volar cases). Abnormal SLA was seen in 35% (49/141) of follow-up radiographs. Treatment normalised SLA in 40% of cases. However, 33% of abnormal post-treatment SLAs had no pre-treatment evidence of carpal bone misalignment.

Conclusion
There are high rates of persisting radiographic signs of carpal instability in patients with distal end radius fractures. Manipulation may be sufficient to complete partial scapholunate ligament tears and lead to an abnormal SLA. Careful clinical and radiographic examination of the carpus may avoid the long-term morbidity of persistent wrist instability resulting from a missed diagnosis.

Tues38

Bunker D [1,2], Ilie V[1,2], Fisher D [1,2,]

Outcome of Single Port Tenckhoff Catheter Insertion in a Regional Centre

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2.Department of Surgery, Launceston General Hospital, Launceston TAS 7250

Aim

Peritoneal dialysis via Tenckhoff catheter provides a convenient method for patients to dialyse in the community. Nonetheless, it poses a risk of infection in these immunocompromised patients, as well as hernia formation due to increased intra-abdominal pressures. We examined a single-port laparoscopic Tenckhoff catheter insertion technique to assess rates of infection and hernia formation compared to conventional insertion strategies.

Methods

A retrospective study over 6 years (2005 – 2011) was performed on 61 patients who underwent single-port laparoscopic Tenckhoff catheter insertion at our institution and rates of infection and hernia formation assessed. All operations were performed by one consultant surgeon with an interest in single-port laparoscopic catheter insertion techniques.

Results

A total of 61 patients were included in our study (37 men, 24 women). Age at time of Tenckhoff inerstion tranged from 18 – 80 years. Complications included peritonitis (n = 6) and exit-site infection (n = 3). Five patients required Tenckhoff re-insertion, mostly for infective complications. Post-operative hernias developed in 8% of patients (n = 5), mostly inguinal or near the Hassan port entry site.

Conclusion

Single-port laparoscopic Tenckhoff catheter placement technique appears to provide comparable rates of post-operative complications to conventional laparoscopic insertion. Deliberate attention to strict aseptic technique is essential as infection was the most common post-operative complication in our series. Hernia formation rates remain significant and may warrant a more sophisticated approach to port-site closure in this demographic of patients.

Tues39

Lawrence Lau[1], David Williams[2,3], Sze Ting Lee[3], Andrew M Scott[3], Christopher Christophi[1], Vijayaragavan Muralidharan[1]

Prognosticator Showdown: Metabolic vs Pathological Response to Preoperative Chemotherapy for Colorectal Liver Metastases

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2. Department of Pathology, Austin Health
3. Ludwig Institute for Cancer Research, Austin Health

Aim:
The response of colorectal cancer liver metastases (CRCLM) to preoperative chemotherapy is a major determinant of patient outcome. Computed tomography (CT) and pathological response of the resected specimen are considered the gold standards for chemotherapy response assessment pre- and post-operatively, respectively. Tumour metabolic response, is a promising biomarker which has not been previously studied in this context. This study aims to compare the prognostic value of metabolic response to pathological response and post-operative oncological outcome.

Methods:
All patients (n=37) who had ^{18}F-FDG PET before and after preoperative chemotherapy for CRCLM at Austin Health in Melbourne between 2004-2011 were included. Metabolic response was determined as the proportional change in the maximum standardized uptake variable. Resected specimens were scored according to tumour regression grading (TRG) corresponding to significant (TRG 1 or 2) or insignificant pathological response (TRG 3-5). Other prognostic indicators including CT response and clinicopathological prognostic scores were assessed. There was 100% 2-year follow-up following liver resection. Correlation to recurrence-free (RFS) and overall survival (OS) was assessed using Kaplan-Meier survival and multivariate analysis.

Results:
Complete and partial metabolic response was observed in 24% and 50% while stable and progressive metabolic disease was noted in 13% each. Patients with metabolically responsive tumours had an OS of 86% at 3 years vs. 38% with non-responsive or metabolically progressive tumours (p=0.003). Significant tumour regression was noted in 19% while insignificant tumour regression was noted in 81% of patients. Patients with significant tumour regression had an OS of 100% at 3 years vs 72% in those with insignificant tumour regression (p=0.066). Response on CT imaging did not predict outcome. On multivariate analysis, only metabolic response and the Fong prognostic score predicted OS while only metabolic response was predictive of RFS.

Conclusion:
Preoperative tumour metabolic response and pathological response both predict prognosis following CRCLM. Metabolic response correlated to OS and RFS while major pathological response was highly specific (100%) for OS. Tumour metabolic response is a powerful prognostic indicator that may be assessed before committing to invasive surgery and is superior to the current gold standards for chemotherapy response assessment.

Tues40

Lawrence Lau[1]; James Bailey[2], Benjamin Rubinstein[2], Robert Jones[1], Michael Fink[1], Graham Starkey[1], Bao-Zhong Wang[1], Christopher Christophi[1], Vijayaragavan Muralidharan[1]

COLT: Computer-predicted Outcomes for Liver Transplantation

This abstract is not included at the request of the author

Tues41

Lawrence Lau[1], Laurence Weinberg[2], Mehrdad Nikfarjam[1], Graham Starkey[1], Michael Fink[1], Robert Jones[1], Christopher Christophi[1], Vijayaragavan Muralidharan[1]

Indocyanine Green Clearance for assessing Functional Liver Remnant Intraoperatively in Real-Time: Report from a Pilot Study

This abstract is not included at the request of the author

Tues42

Leung JL[1], Chow CL[1], Choong YHB[1], Chong CP[1,2], Parikh S[2], Lim WK[1,2]

Abdominal Pain in the Emergency Department: Predictors of Surgical Management

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2. *Northern Clinical Research Centre, The Northern Hospital*

Aim
To determine which factors predict the need for surgical management in patients presenting to the Emergency Department with abdominal pain.

Methods
Retrospective analysis was undertaken for 1013 consecutive presentations of abdominal pain to emergency triage. Parameters examined include patient demographics as well as variables from history, examination and investigation results. Multivariate logistic regression was used to determine odds ratios for each parameter.

Results
592 patients were included in the study. Mean age was 47±20 years, 358 (60.5%) were female, and mean Charlson Comorbidity Score was 1.49±3.09. The most common diagnoses requiring surgical management were appendicitis (29.8%), cholelithiasis/cholecystitis (15.8%), gynaecological pathologies (12.3%), intestinal obstruction (7.0%), ischaemic bowel (5.3%) and other (29.8%).
Variables associated with a higher likelihood of requiring surgical management included anorexia OR 3.23 (95%CI 1.54-6.76; p=0.002), higher temperature OR 2.23 (95%CI 1.53-3.23; p<0.001), rebound/percussion tenderness OR 3.04 (95%CI 1.32-7.00; p=0.009) and higher neutrophil count OR 1.15 (95%CI 1.07-1.23; p<0.001). The presence of diarrhoea was inversely related to the likelihood of surgical management, OR 0.11 (95%CI 0.03-0.43; p=0.001).

Conclusion
Differentiation of abdominal pain in the Emergency Department can be facilitated by knowing risk factors for surgery. Variables associated with surgical management include the presence of anorexia, a higher temperature, rebound/percussion tenderness and a higher neutrophil count. The presence of diarrhoea decreases the likelihood of requiring surgical management.

Tues43

George Kastrappis[1], Theodora Fifis[1], Linh Nguyen[1], Jacques Van Der Merwe[1], Christopher Christophi[1]

A study on temporal macrophage changes in colorectal cancer liver metastases following Vascular Disruptive Agent (VDA) treatment

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Aim:
The majority of colorectal cancer (CRC) deaths are due to liver metastasis. Treatment with the vascular disruptive agent Oxi4503 kills more than 95% of the tumour. However, a thin rim of viable tumour is left behind in the tumour periphery which invariably leads to recurrence. This study aims to understand the role macrophages have in allowing the viable rim to survive.

Methods:
CRC liver metastasis was induced in CBA mice by intrasplenic injection of a mouse colorectal tumour cell line (MoCR) followed by splenectomy once the cells entered the portal circulation. Liver metastases develop over a 21 day period following induction. Two studies were conducted; in the first study mice were treated with a single dose of OXi4503 at day 16 post tumour induction and the effects of the treatment on tumour macrophage kinetics and phenotypes were investigated at 1hr, 24 hrs and 5 days following treatment by immunohistochemical staining for F4/80 (macrophage marker) and other factors (IL-10, MHC-II and VEGF). In the second study macrophages were depleted prior and after OXi4503 treatment with administration of clodronate-containing liposomes (Cl2MDP-LIP) and the effects on the tumour burden, vascularization and tumour cell morphology were determined at day 5 following treatment using stereological and immunohistochemical techniques.

Results:
OXi4503 treatment has profound effects on macrophage kinetics with marked decrease in macrophage numbers within the surviving tumour at one hour and significant increases compared to controls at 24 hours and five days post treatment. Additionally phenotypic changes in the expression of key pro-angiogenic cytokines and growth factors (IL10, VEGF, MHC II) were found. Depletion of macrophages results in decreased tumour burden and changes in tumour vascularization compared to OXi4503 treatment alone.

Conclusion:
The results indicate macrophages play an important role in tumour resistance. The identification of key factors produced by macrophages following Oxi4503 treatment could provide targets for novel therapies that prevent tumour recurrence.

Tues 44
The Effects of Lymphangiogenic Inhibition on Colorectal Liver Metastases

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Aim

Colorectal cancer is amongst the highest rate of incidence in the world with metastases frequently involving the liver(1). Due to the ability of colorectal liver metastases (CRLM) in inducing angiogenesis and lymphangiogenesis, malignant tissue often spread to other extrahepatic sites increasing the difficulty of surgical resection and thus decreasing disease free survival(2). Novel therapies are intensely sought after for the treatment of CRLM. Due to the possible involvement of lymphangiogenesis in metastatic spread; lymphangiogenic inhibitors are currently being studied on their effects in reducing tumour growth and metastasis(3). A potent specific mTOR inhibitor, Rapamycin (sirolimus), has been shown to induce apoptosis, reduce angiogenesis and lymphangiogenesis in solid tumours(4). The effects of Rapamycin on CRLM were investigated in this study.

Methods

Using an established murine CRLM model, tumour kinetics and the effects of lymphangiogenic inhibition were investigated. Rapamycin was used at 1mg/kg and 2mg/kg together with saline control. Stereological techniques were used to calculate tumour burden and subsequent H&E staining showed the viability of these tumours. Immunohistochemistry was used to detect for apoptosis and proliferation in tumour periphery and core using antibodies against Caspase 3 and Ki67 respectively. Angiogenesis was also investigated by staining for blood vessels using CD34 antibodies.

Results

1mg/kg Rapamycin was effective in reducing angiogenesis within tumour cores by 34%. Although there was a decrease of core tumour proliferation, this was shown to be not significant. However, there was a decrease of overall tumour viability from 78.47% to 66.11% when treated with Rapamycin at this concentration. Treatment with 2mg/kg Rapamycin proved to increase tumour viability to 82.30%. Angiogenesis was also significantly increased both in the periphery and core at. It was also observed that there was significant increase in peripheral cell proliferation.

Conclusion

Rapamycin is effective in reducing tumour burden at 1mg/kg; it was able to reduce tumour core angiogenesis and we propose that this in turn increase hypoxia which may lead to apoptosis. 2mg/kg Rapamycin showed worse outcomes than control treatment. We suggest that this could be due to the immunosuppressive effects of Rapamycin. Future studies should be performed to investigate the effects of Rapamycin on the immune system and how this impacts tumour progression.

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Tues45

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RIGHT-SIDED ADENOMA DETECTION WITH RETROFLEXION VERSUS FORWARD VIEW COLONOSCOPY.

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Aim
Colonoscopy and polypectomy can prevent up to 80% of colon cancer, however a significant adenoma miss rate still exists particularly in the right colon. Our aim was to assess whether retroflexion in the right colon significantly improves the adenoma detection rate (ADR) over forward view assessment.

Methods
A multi-center prospective cohort study was performed across 3 tertiary care public and 2 private hospitals. Withdrawal from the caecum was performed in the forward view initially and identified polyps removed. Once the hepatic flexure was reached the caecum was re-intubated and the right colon was assessed in the retroflexed view to the hepatic flexure. Adenoma detection rate in the retroflexed view when compared with forward view examination of the right colon.

Results
1351 consecutive adult patients undergoing elective colonoscopy were recruited. Retroflexion was successful in 95.9% of patients, with looping being the predominant (69.6%) reason for failure. Forward view assessment of the right colon identified 642 polyps, of which 531 were adenomas yielding a polyp and ADR of 28.57% and 24.64% respectively. Retroflexion identified a further 84 polyps of which 75 were adenomas, improving the polyp and ADR to 30.57% and 26.4% respectively. No complications were noted in our cohort.

Conclusion
Right-sided retroflexion was successful in the majority of our cohort with a statistically significant however small increase in ADR. Right-sided retroflexion is safe when performed by experienced endoscopists with no complications observed in this cohort.

Tues 46

Low serum testosterone is associated with sarcopenia in men with cirrhosis

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Aim: Both low muscle mass (sarcopenia) and low serum testosterone are independent predictors of increased mortality in men with cirrhosis. It is not yet known if low testosterone is a significant contributor to liver-related sarcopenia in men
Methods: Preliminary results of an ongoing observational study of men referred to the Victorian Liver Transplant Unit for transplant evaluation are reported. Baseline demographics including hormone profile and MELD score were recorded. Computerised tomography performed at the time of evaluation was reformatted to calculate skeletal muscle area using validated, Tomovision software-based methodology (Intra-observer variation in our cohort of <2%).
Results: Among 96 men analysed thus far, skeletal muscle area at the L4 region corrected for height was significantly lower in those who died versus those who survived (median 45.4 vs 49.7cm^2/m^2, p=0.009). Serum total testosterone levels were also lower in those who died (median 5.0 vs 8.3 nmol/L, p=0.022). Testosterone levels were significantly correlated with height-adjusted muscle area (r= 0.272, p=0.007).
Conclusion: While low testosterone correlates with sarcopenia in men with cirrhosis, we are currently establishing whether low testosterone and sarcopenia independently contribute to mortality in cirrhosis. This would provide a rational basis for clinical intervention trials to determine whether low Testosterone and sarcopenia are markers or mediatiors of mortality in this population

Tues47

DJ MacIntyre,[1] MA Fink,[1,2] RM Jones, [1,2]

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Comparison of University of Wisconsin and Histidine-Tryptophan-Ketoglutarate organ preservation solutions used in liver transplantation

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Aim

In current practice two solutions, University of Wisconsin (UW) and Histidine-Tryptophan-Ketoglutarate (HTK), are used for the static cold storage and in situ perfusion of the graft during liver transplantation. Few studies directly compare the solutions in terms of clinical outcomes following transplantation. UW is the standard solution while HTK offers theoretical benefits through lower viscosity, potassium and cost.[1, 2]This study provides a single centre comparison of the two solutions.

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Methods

This is a retrospective review of all adult and paediatric transplants conducted by our unit between January 2008 and December 2013. Operations using donor organs procured by other teams were excluded. Recipients are grouped according to whether UW or HTK was used in organ procurement and perfusion. This allocation was sequential. Donor factors investigated include cause of death, donor age, height, weight and cold ischaemic time. Recipient factors include pre-transplant morbidity using the Model for End-Stage Liver Disease (MELD) score. Outcomes are peak alanine transaminase and time to reach normal INR as measures of early graft function, the incidence of biliary complications, graft rejection, graft survival time, and patient survival time.

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Results

75 patients received HTK preserved livers and 210 received UW preserved livers. No significant difference was demonstrated in patient survival or graft survival between the groups. No difference in early graft function was found. The incidences of rejection and strictures did not differ between the two groups. A multivariate analysis suggests that higher risk donor livers were more likely to be preserved with HTK.

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Conclusion

These results agree with the majority of the evidence that there is no major difference in clinical outcomes between the two solutions.

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Tues 47A

Zinc dependant increase in Hypoxia Inducible Factor 1α (HIF1α) expression in prostate PC3 cells.

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Background

Zinc the second most abundant transition metal in the human body is critical for cell proliferation, cell cycle regulation, differentiation, apoptosis protein and most importantly is required for the functioning of Zn-finger transcription factors. The prostate gland contains the highest content of zinc of all soft tissues in the human body. However the mechanistic correlation between prostate malignancy and zinc is unclear. The ability of cells to adapt to hypoxia is via hypoxia-inducible transcription factor (HIF1α) regulated by iron-dependent prolyl hydroxylases (PHD). HIF1α triggers many adaptive survival mechanisms such as anti-apoptosis, angiogenesis and enhanced glycolytic metabolism. Previously we had demonstrated that castrate resistant prostate cancer (CRPC) over-expresses HIF1α and therefore in this study we investigated the relationship between zinc and HIF1α expression.

Methods and Results

Using western blot analysis we demonstrated that HIF1α expression was increased following administration of exogenous zinc to androgen-independent CRPC like PC3 cells (4.2±Y fold) and androgen-dependent LNCaP (2.2±Y fold) cells as compared to untreated cells. Using a fluorescent indicator for zinc (FluoZin-3) we determined that intracellular concentration of zinc is higher in aggressive metastatic CRPC like PC3 (4.43±0.8nM) and DU145 (3.67±1.1nM) cells as compared to androgen dependent LNCaP (2.47±0.2 nM) cells. Cell proliferation assay revealed a significant decrease ($p<0.001$) in proliferation of PC3 cells following 10μM zinc treatment however no such effect was observed in LNCaP cells.

Conclusion

Zinc treatment increases HIF1α in prostate cancer cells however the increase was much higher in CRPC like PC3 cells compared to LNCaP. Determining the altered mechanisms behind zinc in prostate cancer could assist in the development of treatments in the future.

Tues48

Ania Sliwinski[a,f], Sally Hunter[b], Ian Campbell[b], kConFab[a,c], Jason Li[d,g],Gail P. Risbridger[h], Renea A. Taylor[h,], David Clouston[i], Gillian Mitchell[a,c,g], Declan Murphy[e,j], Mark Frydenberg[g,k], Melissa Papagiris[h], Damien M. Bolton[f], Heather Thorne[a,g]

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Genomic profiling of kConFab men with a BRCA mutation status and prostate cancer

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Background

Family history is a well established risk factor for prostate cancer. Men from high-risk breast cancer families with an identified *BRCA2* mutation but also from breast cancer families where no *BRCA* mutation has been identified (*BRCAX*), have an increased risk of prostate cancer and higher rate of prostate cancer-specific mortality. Standard clinical features such as tumour stage and/or outcome prediction models are less predictive of treatment outcomes or indicate the poorer outcomes in *BRCA2* carriers with prostate cancer. Histological features may be more useful in predicting outcomes in this patient group. Intraductal carcinoma of the prostate (IDCP) is regarded as an adverse pathological finding, and has recently been associated with reduced progression free and cancer-specific survival.

It is still unclear whether IDCP is simply a predictive or prognostic factor or if it has a specific pathogenic role in prostate cancer itself. To investigate the routes of tumourigenesis of these distinct prostate histotypes we undertook genome-wide copy number analysis (CNA) of normal matched prostate glandular epithelium, prostatic intraepithelial neoplasia (PIN), adenocarcinoma and IDCP from *BRCA2* mutation carriers, and adenocarcinoma from *BRCAX* carriers for comparison.

Methods

Pathologist (DC) reviewed areas of normal prostate, PIN, adenocarcinoma and IDCP were microdissected from archival FFPE blocks. Genome-wide copy number data was generated using the Affymetrix OncoScan™ array and interpreted using Nexus Copy Number™ software for areas of copy number gain or loss. Comparison was then made across samples to ascertain which areas of aberration were common to each tissue type and the levels of genomic aberration for each sample.

Results

Normal tissue was the most genomically stable, followed by PIN tissue. PIN tissue was more stable than adenocarcinoma tissue (p=0.0497). The average fraction of the genome altered (FGA) in adenocarcinoma tissue was marginally lower than that in IDCP tissue of *BRCA2* carriers (0.14 vs 0.16). Adenocarcinoma tissue from *BRCA2* carriers also displayed, on average, higher levels of aberration than adenocarcinoma tissue from *BRCAX* patients (FGA 0.14 vs 0.09). Broadly, the copy number aberrations observed in PIN, adenocarcinoma and IDCP were similar, with some of the most common aberrations being well-known prostate cancer-associated losses on 6q, 8p, 10q (PTEN) and 13q, and *ERG-TMPRSS2* fusions.

Conclusions

Further work is needed in greater numbers to confirm these trends and sampling tissue from single index lesions within the prostate may lead to a greater understanding of the genetic evolution of prostate cancer.

Tues49

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Case Series: Ruptured Renal cysts Presenting as Solid Lesions

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Aim

To report the phenomena of renal cyst rupture causing an inflammatory reaction and presenting as a solid lesion.

Renal lesions are increasingly being recognised as incidental findings with the increased use of imaging. Interpretation of these lesions can be difficult if they do not meet the requirements of simple cysts. This series presents several cases where benign cysts presented as solid lesions due to fat necrosis of the perirenal fat secondary to rupture of the cyst.

Methods

3 cases of benign cysts that were presumed to be solid lesions were collected. The histology and radiology in each case is outlined.

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Results

These cases demonstrate that cyst rupture of uncomplicated cysts may mimic the appearance of solid lesions. The imaging features were fairly similar across these cases and may allow radiological identification of this process and prevent unnecessary nephrectomy. The location of the solid lesion at the interface between renal cortex and perinephric fat is characteristic, with the solid lesion likely representing an inflammatory reaction in the perinephric fat leading to fat necrosis secondary to cyst rupture.

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Conclusion

While complex cysts cannot be ignored, it is important to be aware that they may sometimes present as solid lesions with no underling malignancy. Reporting the observation of cyst rupture and the resultant inflammatory reaction and characterising its radiological appearance may prevent unnecessary nephrectomy.

Tues50
King DT,[1,2] Liu Z,[1,2] Catimel B,[1,2] Ramsland PA,[3] Scott AM,[1,2] Burvenich IJG,[1,2]

Implications of Fc-engineering to a humanised anti-Le^{y} antibody on receptor binding and cellular effector function

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The interaction between the immunoglobulin G (IgG) Fc region and Fcγ receptors (FcγRs) is the primary mechanism linking antibody-mediated immune responses with cellular effector functions. Enhancement of this interaction through amino acid variation and glycoengineering has provided a way to enhance immune effector functions. The majority of this research has been aimed at enhancement of interactions with FcγRIIIa, which is the key mediator in natural killer (NK) cell antibody-dependent cell-mediated cytotoxicity (ADCC). As NK cells activation is frequently limited in solid tumours, Fc engineering to enhance agonist FcγR binding and effector function is an alternative approach to improving anti-tumour efficacy of recombinant antibodies.

We have engineered a series of novel human IgG1 Fc variants through amino acid mutation, and derived IgG1 antibodies with altered FcγR binding affinities. These novel Fc variants were first determined by *in silico* analysis of crystallography structures of our IgG1 Fc (1), and modelled to FcγR structures. We have produced IgG1 constructs with Fc mutations through a custom mammalian expression system. Preliminary ADCC and binding affinity data for each of the constructs will be presented.

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Tues51

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Assessing metabolic and hypoxic changes to treatment in colorectal xenografts with nanoPET/MRI

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Background: The presence of hypoxia results in poorer prognosis in cancer but the fundamental biology of tumour angiogenesis remains a challenging field of research and these pathways for therapeutic strategies continues to be actively explored. A better understanding of treatment effects in metastatic colorectal carcinoma (mCRC) can lead to optimisation of treatment regimes for this disease. The use of preclinical imaging platforms such as PET/MRI can assist in the molecular assessment of these therapeutic agents non-invasively.

Aim: To analyse and identify changes in metabolism and hypoxia in response to anti-angiogenic and anti-EGFR treatment combinations in colorectal carcinoma xenografts.

Methods: Colorectal carcinoma xenografts were established in nude mice with LIM1215 and HT29 cell lines, which were injected with either cetuximab, bevacizumab, combination treatment of both, with a vehicle control (PBS) xenograft. These mice were imaged using the Mediso nanoPET/MRI® with FDG and FMISO at baseline, after 1 week and 2 weeks of treatment. Tumour metabolic volume (TMV) and hypoxia volume (THV) was assessed on each study.

Results: There was an increase in glucose metabolism and hypoxia levels as demonstrated by an increase in TMV and THV in the non-responsive HT29 xenografts, whilst the responsive LIM1215 xenografts demonstrated a decrease in both TMV and THV, particularly on the Week 2 scan and in the cetuximab and combination treatment cohort.

Conclusion: Pharmacodynamic changes in tumour biochemistry following treatment with anti-EGFR and anti-VEGF therapeutics can be assessed non-invasively with nanoPET/MRI, and allows unique insights into temporal and quantitative effects of therapy in colorectal carcinoma xenografts.

Tues52

Woo J[1], Lee ST[1], Berlangieri S[1], Poon AMT[1], Pathmaraj K[1], Sachinidis J[1], Chan GJ[1], Scott AM[1].

Functional Imaging with ^{68}Ga-DOTATATE PET/CT scan in patients with Neuroendocrine Tumours

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Background:
Neuroendocrine tumours (NET) are a heterogenous group of tumours with at least 13 known neuroendocrine cells that may undergo malignant transformation. NET express somatostatin receptors (SSTR) in 80-90% of cases, and thus radiolabelled somatostatin analogues are used for diagnosis and therapy. PET labelled somatostatin analogues offers higher affinity for SSTR than traditionally used SPECT agents.
Aims:
We aim to assess the use of ^{68}Ga-DOTATATE PET/CT scans performed at Austin Health between May to November 2013 to stage and characterise NET for somatostatin receptor expression in different tissues including assessment of metabolic tumour volumes.
Methods:
An ethics approved, prospective study of patients referred for ^{68}Ga-DOTATATE scans was undertaken. Data collected included subtype of neuroendocrine tumour, presenting symptoms, imaging results and relevant histopathology.
Results:
One hundred (51M; 49F) patients with an average age of 59±15(SD) years, with a total of 104 ^{68}Ga-DOTATATE PET/CT scans were performed. Of the 104 scans performed, 59(57%) scans were positive and 45(43%) scans were negative.

Of the 104 studies, the cell subtype subdivisions were 47(45%) NET, 23(22%) carcinoid, 4(4%) adrenal, 3(3%) paraganglioma, 1(1%) medullary thyroid cancer and 26(25%) not classified due to no prior proven NET, but were suspected of a NET either clinically and/or biochemically.

Of the 59 positive studies, the cell subtype subdivisions were 35(59%) NET, 17(29%) carcinoid, 4(4%) adrenal, 2(2%) paraganglioma and 1(1%) medullary thyroid cancer, of which the metabolic tumour volumes compared favourably with pathologic features.

Of the negative scans, 29(28%) scans were performed for patients with suspected NET, whilst 16(15%) scans were performed for follow-up of patients with treated NET - 10(63%) neuroendocrine, 5(31%) carcinoid, and 1(6%) paraganglioma.

Conclusion:
^{68}Ga-DOTATATE PET is most useful for detection of somatostatin receptor positive neuroendocrine tumours, particularly in neuroendocrine and carcinoid subtype tumours and metabolic tumour volumes of different subtypes correlated with pathologic features.

Tues53

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Management of brain metastases in patients with renal cell carcinoma in the era of tyrosine kinase inhibitors

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Introduction

There are no consensus guidelines for the treatment of patients with metastatic renal cell carcinoma (mRCC) and brain metastases (BM). The necessity for screening and sequence and effectiveness of targeted therapy (TT) in this setting is not yet established. Survival of patients with metastatic RCC has improved with TT, making optimal CNS control and minimisation of neurotoxicity increasingly important.

Methods

Medical records of patients with mRCC and a diagnosis of BM were examined under an ethics approved protocol at a single institution between 2005 (when sunitinib expanded access program opened) and present. A database of all patients with mRCC from 2013-2014 was also reviewed. Data was collated on histology and prior nephrectomy, symptoms associated with BM, treatment of BM, use of TT, and survival from time of diagnosis of mRCC (OS-mRCC), and from time of diagnosis of BM (OS-BM). The Kaplan-Meier method was used for survival analysis.

Results

Thirty nine patients were identified with mRCC and BM from 2005 to 2014. It was possible to calculate the proportion of patients with mRCC and BM from the most recent 2013-2014 period (5/48, 10%). Median age was 59 years at time of diagnosis of mRCC (range 43-90), 74% were male and 74% had clear cell histology. Of patients with BM, 26% had BM documented at the time of diagnosis of mRCC. For the remaining 74%, median time from diagnosis of mRCC to development of BM was 27 months. Median number of BM was 1, mean size was 19mm. Of the 32% presenting with haemorrhagic BM, two patients were on TT at this time. 90% had $\geq$ 1 CNS-directed therapies. Of the 56% who had neurosurgery, 55% had whole brain radiotherapy (WBRT) as well. Overall, median OS-mRCC was 30.5 months and 6.8 months from the time of diagnosis of BM (OS-BM). Patients with asymptomatic BM had a median OS-BM of 13.2 months relative to OS-BM of 7.0 months for patients with symptomatic BM. Patients treated with TT had a median OS-BM of 7.5 months relative to median OS-BM of 4.1 months for patients never treated with TT. Patients treated with stereotactic radiotherapy (SRT) had a median OS-BM of 23.6 months.

Conclusion

This single centre retrospective series has limitations that restrict analysis. However this study shows that once brain metastases are diagnosed, survival is relatively poor. Use of TT may prolong survival following CNS directed therapy and in other studies has been shown to reduce incidence of BM. Given 21% of BM patients were asymptomatic, consideration should be given to periodic CNS screening in mRCC. Earlier detection may allow use of SRT which is associated with lower rates of neurocognitive deficits compared with WBRT, provides durable local control and arguably less morbidity than neurosurgery, especially if repeated.

Tues54

Lim HY[1], Williams B[1], Ashby M[1], Grigg A[1]

Computed Tomography (CT) abdomen/pelvis in haematology patients undergoing intensive myelosuppressive chemotherapy

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Aim

CT abdomen/pelvis (CTAP) is commonly used for investigation of persistent unexplained febrile neutropenia (FN) and/or abdominal symptoms in haematology patients undergoing profoundly myelosuppressive chemotherapy, despite the paucity of evidence supporting its use. We evaluated the diagnostic utility of such CTs in autologous stem cell transplant (ASCT) recipients and patients receiving chemotherapy for acute myeloid leukemia (AML).

Methods

Retrospective evaluation of eligible patients who had CTAP in this context from January 2010 to April 2014 at Austin Health.

Results

Of the 124 ASCT recipients (53% myeloma autografts), 22 (17%) underwent 25 CTAP, a median of 9 days (5-23) from the day of stem cell infusion. 20% were done for persistent FN and the remaining 80% for investigation of abdominal symptoms, mainly for suspected neutropenic enterocolitis. Sixteen (64%) had positive findings, most commonly neutropenic enterocolitis (n=13), although only 3 patients had therapy change attributable to the CT result – addition of anaerobic antibiotic coverage (n=1) and bowel rest (n=2).

In the 122 admissions of 93 patients with AML cohort, 60 CTAP were performed at a median of 8 days (0-20) from the first FN episode. 35% were done for persistent FN and the remaining 65% (n=39) for investigation of abdominal symptoms. Nineteen (32%) had abnormalities (enterocolitis in 14, other 5) with 4 subsequently leading to therapy change – bowel rest for all (including addition of anaerobic coverage in 2). Combining the two groups, only 8% of the CT scans led to therapy change (arguably some of which may have been instituted anyway) with no patient undergoing surgical intervention based on CT findings.

Conclusion

CTAP in haematology patients with FN and/or abdominal symptoms rarely provides useful information unsuspected clinically or results in therapeutic changes which would not be otherwise be made on clinical grounds.

Tues55

Lim HY[1], Grigg A[1]

A survey of the current use of infection prophylaxis post autologous stem cell transplant (ASCT)

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Aim

There is currently inadequate evidence supporting the necessity or recommended duration of Pneumocystis jiroveci (PJP) prophylaxis post ASCT. Raser et al. (ASH 2013 #3372) reported only 5 PJP cases (all on concomitant steroids) in 1191 patients post ASCT *in the absence of prophylaxis.* There are also limited data supporting antiviral prophylaxis and re-vaccination post ASCT. In this context, we conducted a survey overview of local infection prophylaxis practice post ASCT.

Methods

Thirty-four surveys were sent electronically to ASCT centres in Australasia

Results

Twenty-six centres responded. A median of 30 ASCT (range 15-90) are performed per centre annually. PJP prophylaxis is routinely used in 20 centres (77%) using sulfamethoxazole/trimethoprim 800/160mg (bd twice weekly in 50%[n=10], daily thrice weekly in 32%[n=7]). Prophylaxis is commenced from time of engraftment in 16 centres (80%). Duration of prophylaxis varied from <3 months (n=3;15%), 3 months (n=8;40%), 3-6 months (n=2;10%) and 6 months (n=7;35%). CD4+ count only influenced the duration in 3 centres. Only 9 centres (47%) continued prophylaxis during maintenance for thalidomine/prednisolone-based protocols. With the limitations of retrospective memory, responders could recall only 6 cases of PJP infections – 5 within 6 months of ASCT, including 2 cases while on prophylaxis. Twenty-one centres (81%) indicated willingness to be involved in a prospective prophylaxis study.

Twenty-two centres used antiviral prophylaxis with most (n=14) using valaciclovir 500mg daily. The majority commenced prophylaxis around time of admission (n=17) and continued for 1 month (n=8), 3 months (n=7), 6 months (n=2) and 12 months (n=5). Despite published European and local guidelines, only 16 centres (62%) implemented routine revaccination policy post ASCT.

Conclusion

There is substantial variation in infection prophylaxis and revaccination policy post ASCT. The apparent low incidence of PJP in the absence of prophylaxis, suggests that routine prophylaxis, which is not without side effects including myelosupression, may not be warranted except perhaps in the context of concomitant immunosuppression. A prospective study investigating the use of no routine PJP prophylaxis post ASCT is being designed. Similarly, the necessity of routine revaccination post ASCT is worth of further study.

Tues56

Prahlad HO[1,2], Hui Yin LIM[1], Chong Chyn CHUA[2], Matthew SLEEMAN[1], Joanne TAN[2], Carole SMITH[1], Andrew GRIGG[1], Lachlan HAYES[2]

Below knee deep vein thrombosis: A more benign entity or not?

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Aim

Below knee deep vein thrombosis (BKDVT) is traditionally associated with less clinical sequelae such as thrombosis recurrence and malignancy, and often treated with shorter duration and lower intensity of anticoagulation. We aim to evaluate the characteristics of BKDVT in our study population.

Method

Retrospective evaluation of all BKDVT from July 2011 to December 2012 at Austin and Northern Health, Melbourne, including demographics, provoking factors, associations and outcomes.

Result

Of a total of 1029 venous thromboembolism (VTE) cases, there were 279 (27%) episodes of BKDVT, of which 22% had concurrent pulmonary embolism (PE). Median age was 63 years with male predominance (56% vs 44%, p=0.003). Laterality was similar and the majority (96%) was symptomatic. Forty-six patients (16.5%) had active malignancy and they had higher rates of concurrent PE (77% vs 18%, p=0.0001). 191 patients had isolated BKDVT without malignancy. Of these, 18% had a prior history of VTE. Three (1.5%) were subsequently diagnosed with cancer, similar prevalence to those with major VTE (1.7%), defined as proximal DVT and/or PE. BKDVT were more likely to be provoked compared to major VTE (72% vs 55%, p<0.001). Median duration of anticoagulation was 5.4 months versus 7.0 months for major VTE. Patients with major VTE were more likely to experience grade III/IV bleeding complications (6.3% vs 1.0%, p=0.003) despite similar duration of therapy. Recurrence was similar to major VTE (6.8% vs 8.7%, p=0.42), with no difference between provoked and unprovoked BKDVT (7.7% vs 9.3%). Mortality rate was 5.5% with no thrombosis-related deaths.

Conclusion

BKDVT is associated with significant mortality (5.5%) and has comparable rates of recurrence and subsequent cancer detection to major VTE. Given these findings, investigation and treatment of BKDVT should not differ from major VTE. Further studies are required to determine the adequate length of anticoagulation.

Tues57

Hui Yin LIM[1], Chong Chyn CHUA[2], Matthew SLEEMAN[1], Joanne TAN[2], Carole SMITH[1], Andrew GRIGG[1], Lachlan HAYES[2], Prahlad HO[1,2]

Venous thromboembolism and cancer in Northeast Melbourne: The evaluation of epidemiology, risk factors, associations and outcomes

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2.Department of Haematology, Northern Health, Epping, VIC, Australia

Aim

Cancer is a well-recognised risk factor for venous thromboembolism (VTE) and conversely VTE is a major cause of morbidity and mortality in cancer patients. We aim to provide an overview of the relationship between VTE and cancer in our local population.

Method

Retrospective evaluation of VTE from July 2011 to December 2012 at Austin and Northern Health, Melbourne, comparing cancer and non-cancer patients, including demographics, provoking factors, associations and outcomes.

Result

233 (23%) of the 1003 patients had active malignancy at time of VTE with 14 (1.4%) subsequently diagnosed. When compared with non-cancer patients, cancer patients were older (67 vs 61 years, $p<0.001$) with male predominance (59% vs 49%, $p=0.005$). They had higher clot burden with more pulmonary embolism (PE) (64% vs 53%, $p=0.004$), proximal deep venous thrombosis (DVT) (63% vs 46%, $p=0.0008$) and bilateral DVT (16% vs 5%, $p<0.001$) reported. Patients with metastatic cancer were more likely to have unprovoked events ($p=0.015$). Incidental VTE was more common (17% vs 4%, $p<0.001$) and most received enoxaparin. Cancer patients were more likely to require IVC filters (9% vs 3.6%, $p<0.001$) and lifelong anticoagulation (35% vs 18%, $p<0.001$). Interestingly, bleeding rates in cancer patients treated with long-term enoxaparin compared to warfarin were similar. Overall, cancer patients had more recurrent thrombosis (16% vs 8%, $p<0.001$) and Grade III/IV bleeding (9% vs 5%, $p=0.025$). There was a trend towards more recurrence in cancer patients with unprovoked VTE compared to provoked (19.5% vs 12.5%, $p=0.087$). Mortality rate in the cancer and non-cancer patients was 63% and 11% respectively, with higher incidence of complications-related deaths ($p<0.001$) in the former.

Conclusion

Cancer patients have higher clot burden, thrombosis recurrence, bleeding complications and all-cause mortality compared to non-malignant patients. Given these substantial complications, further evaluation of new treatment strategies as well as clinical and laboratory risk assessments are required to improve the management for cancer-related VTE.

Tues58

Hui Yin LIM[1], Chong Chyn CHUA[2], Matthew SLEEMAN[1], Joanne TAN[2], Carole SMITH[1], Andrew GRIGG[1], Lachlan HAYES[2], Prahlad HO[1,2]

Venous thromboembolism in Northeast Melbourne, Australia: Evaluation of epidemiology, risk factors and treatment strategies in the warfarin era

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2.Department of Haematology, Northern Health, Epping, VIC, Australia

Aim

Venous thromboembolism (VTE) is a major cause of morbidity and mortality. While most studies have analysed specific aspects of VTE, we aim to provide a holistic evaluation of local VTE management in the warfarin era.

Method

Retrospective evaluation of VTE from July 2011 to December 2012 at Austin and Northern Health, Melbourne including demographics, provoking factors, management, complications and mortality.

Result

1029 episodes were identified including 26 recurrences - 577 (56%) pulmonary embolism (PE), 428 (42%) deep venous thrombosis (DVT). Median age was 63 years with male predominance (52%), including in the DVT subgroup (57% vs 48%, p=0.003) although there was no gender difference for PE. 20% reported prior VTE. Left limb DVT was more common (49% vs 43%, p=0.0008). 247 patients (24.6%) had cancer and were excluded from analysis. In non-cancer patients, 63% had provoked VTE and thrombophilia screen was performed in 41%. The median duration of anticoagulation was 6 and 7 months for DVT and PE respectively. The majority (90%) was on warfarin for long-term anticoagulation. 5% required further interventions – IVC filter (n=28) and thrombolysis (n=15). 38% had end-of-treatment repeat imaging and residual clot was observed in 40%.

Clot persistence was associated with increased recurrence risk, with an odds ratio of 2.64 (1.15 – 6.04, p=0.02). 8% had recurrent thrombosis with no difference between provoked versus unprovoked VTE (7.5% vs 9.0%, p=0.45). 5% reported grade III/IV bleeding, independent of duration of anticoagulation. Patients on enoxaparin had higher risk of bleeding (28% vs 10%, p<0.001). The mortality rate in this non-cancer cohort was 11%.

Conclusion

VTE is associated with a significant mortality rate of 11% in non-cancer patients. Risk factors for recurrence identified in this retrospective review include residual clot on repeat imaging. This data will serve as an important baseline for future comparison in the new era of novel oral anticoagulants.

Tues59

Masa Lasica[1], Emma Taylor[2], Puja Bhattacharyya[3], Ashwini Arumugaswamy[1], Rachel Cooke[6], Kate Stern[4], Rosemary Ayton[5], Andrew Grigg[1]

Fertility outcomes in pre-menopausal women following BEAM conditioning and autologous stem cell transplantation

This abstract is not included at the request of the author

Tues60

Patterns of care in Australian patients with metastatic renal cell carcinoma (mRCC)

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1) The Royal Melbourne Hospital
2) Canberra Hospital
3) Olivia Newton-John Cancer and Wellness Centre, Austin Health
4) Western Hospital
5) Monash University Eastern Health Clinical School
6) Pfizer Australia

Aim

Large registration trials have demonstrated that sunitinib provides significant clinical benefits for mRCC patients. It remains unclear how these benefits translate in the Australian context. This observational, retrospective study examines patterns of care and survival benefits associated with sunitinib use in Australian mRCC patients.

Methods

Patients with mRCC diagnosed between 2006-2012 were identified from four hospitals in Victoria and ACT. Demographics, clinicopathologic features, treatment data and survival data were recorded by chart review. Detailed data regarding sunitinib dosage and toxicity were also recorded. Descriptive statistics were used to report findings. Survival was estimated by the Kaplan-Meier method and compared using log-rank test. Although, the project was supported by a grant from Pfizer Australia, Pfizer has not been involved in the interpretation and reporting of the data.

Results

Our study identified 212 mRCC patients for analysis. Patients predominantly had mRCC of clear cell histology (75%), ECOG performance status 0-1 (67%) and favourable/intermediate MSKCC risk (68%). 163 (77%) patients received first-line systemic therapy, while 49 (23%) received best supportive care (BSC). The most frequently used first-line treatment was sunitinib (n=125, 77%). Most patients (80%) started at 50mg daily on a 4-weeks-on/2–weeks-off schedule (79%); 42% required dose reductions. Median time on sunitinib was 8.9 months. Patients receiving sunitinib had superior overall survival (OS) compared to BSC (median 27.6 mo versus 7.9 mo, p=0.03). Our data also validated the MSKCC risk classification, stratifying OS for favourable, intermediate and poor risk groups in patients who received first-line sunitinib (median 56.3 mo; 23.8 mo; 7.7 mo, p<0.0001).

Conclusion

Our study confirms that a high proportion of mRCC patients in this cohort received sunitinib, typically delivered at standard doses and schedule. Our survival analyses suggest outcomes reported in clinical trials can be reproduced in an Australian mRCC population.

Tues61

Burgess MJ[1], Cotter MN[1], Williams D[2], John T[1], Delatycki MB[1,3]

Two families with Lynch syndrome and unusual cancers with absent mismatch repair protein staining

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Lynch syndrome (LS) or hereditary non-polyposis colorectal cancer, predisposes to a number of cancers with colorectal and endometrial cancer being the most common. It remains somewhat controversial which other cancers are part of the LS spectrum. We report a family with LS with a *MSH2* mutation in which absent MSH2 staining was identified in several sebaceous adenocarcinomas, adrenal cortical and prostate carcinomas. We report another family with a *MSH6* mutation where the proband had loss of MSH6 staining in a medullary thyroid carcinoma. These families add further evidence for adrenal cortical and prostate carcinomas being part of the LS spectrum and for the first time, reports medullary thyroid carcinoma with absent mismatch repair protein staining in an individual with LS.

Tues62

Borosh B, [1,2], Dhomen N,[1,2], Liu Z[1,2], Scott AM, [1,2]

Assessing the effect of combined targeting of Epidermal Growth Factor Receptor (EGFR) and intracellular signalling pathways in triple-negative breast cancer

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2. University of Melbourne, Parkville, VIC., Australia

Aims

Triple-negative breast cancers (TNBCs), characterised by a lack of oestrogen receptor (ER), progesterone receptor (PR), and human epidermal growth factor receptor 2 (HER-2) amplification, are known to be intrinsically resistant to anti-EGFR therapeutics; this is in spite of ~90% of TNBCs having elevated levels of EGFR expression(1). This study aims to assess the efficacy of combining anti-EGFR therapeutics, such as Cetuximab, with inhibitors of the PI3K/AKT pathway and mTOR in high EGFR-expressing TNBCs. Following positive results we aimed to characterise the mechanisms of action of these combination therapies.

Methods

TNBC cell lines MDA-MB-231, MDA-MB-468, PMC-42-ET, SUM-159-PT, HCC70, and BT-20 were assayed for proliferation change by an SRB assay after 6 days treatment with increasing doses of anti-EGFR antibody (Cetuximab), PI3K/AKT inhibitors, or mTOR inhibitors either as single agents or in combination with a fixed dose. Effects on signalling pathways were also examined by western blot analyses of EGFR, AKT and ERK (and phosphorylated proteins) after 6, 24, and 72 hour treatment of single and combination agents.

Results

Combination treatment with Cetuximab and PI3K/AKT pathway inhibitors demonstrates an anti-proliferative effect in TNBC cell lines superior to either that seen with either agent alone. Western blot analysis of single and combinational treatments shows effects on phospho-AKT and phospho-ERK suggesting inhibition of the PI3K/AKT pathway, and mTOR was found to potentiate the cytotoxicity of Cetuximab.

Conclusions

These results suggest that monoclonal antibody inhibition of EGFR used in combination with small molecule inhibitors of PI3K/AKT or mTOR is a potential therapeutic approach to treat TNBCs.

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Tues63

Differences in characteristics and outcomes between young and older patients with lung cancer

Puey Ling Chia[1]; Paul Mitchell[1]; Thomas John[1, 2]

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Background

About 5% of all lung cancers occur in people under the age of 50 years. We reviewed and compared the incidence and their clinicopathological characteristics between younger lung cancer patients compared to older patients.

Methods

Demographical, stage, histology, mutation status and outcome data were obtained from the Lung Cancer Molecular Database for patients presenting between years 1993 to 2013. Mutational analyses were performed using Sequenom's LungCarta panel. Patients were grouped by age of diagnosis into young (YG, ≤45 years) or older group (OG, >45 years) for analysis.

Results

A total of 432 patients with NSCLC were included [24 YG (median 42, range 29-45 years), 408 OG median 67, range 46-85years)]. Significantly more YG were female [19/24(79%) vs 112/408(27%), p<0.0001]. The most common histological type was adenocarcinoma in YG [17/24(71%) vs (197/408 (48%)] followed by squamous and large cell histology. There was a high proportion of female smokers in the YG (68%) with a higher average pack year smoking history (27.1 vs 22.9) compared to males. Mutational data was available for 425 patients. A high proportion of KRAS mutations were detected in both groups [5/17(29%) vs 85/408(21%)] and EGFR mutation [1/17(6%) vs 21/408(5%)]. Of note, in the older group the mutations present included TP53 (10%), NRF2(4%) and PIK3CA(4%). Cancer specific survival between the 2 groups showed a trend towards poorer survival in the younger group (HR=1.93; 95% CI 0.86-4.34; p=0.10).

Conclusions

In a large surgical series, most patients diagnosed ≤45 years of age were female with significant smoking histories. Rates of EGFR or KRAS mutations were not increased in YG. Despite younger age of diagnosis and female sex, there was a trend for worse survival compared to older patients.

Tues64

Barnett A.C.[1], Dhomen N.S.[1], Ryall J.G.[3], Mariadason J.M.[1], Nijagal B[3], Tull D.[3] Scott A.M.[1]

Investigating the protective role of metformin in colorectal cancer.

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2.Department of Physiology, University of Melbourne, Parkville, Vic., Australia;
3.Metabolomics Australia, Bio21 Molecular Science and Biotechnology Institute, Parkville, Vic., Australia.

Aim

Activation of the EGFR/MAPK signaling pathway, either through epidermal growth factor receptor (EGFR) over-expression or mutation, or through mutation of key MAP kinase (MAPK) signaling components such as KRAS and BRAF has been shown to play an important role in colorectal cancer (CRC) tumour initiation and progression. Anti-EGFR/MAPK pathway therapeutics represent the most advanced treatment option for metastatic CRC and are options to address resistance to these treatments are urgently sought (1).

Widely prescribed diabetes therapeutic metformin is both protective against CRC and known to influence downstream EGFR signalling through AMPK (2). We aim to further characterise the mechanism through which it confers it's protective advantage.

Methods

Metformin 'sensitive' and 'resistant' cell lines were identified from a large panel of CRC cell lines. Gene expression patterns conferring basal metformin sensitivity and treatment induced alteration were visualised and contrasted. Metabolite profiles of 'sensitive' and 'resistant' cell lines were generated and Seahorse Bioscience technology was used to evaluate corresponding metabolic phenotype.

Results

Gene expression analyses have implicated genes involved in fatty acid metabolism as conferring sensitivity to metformin treatment. Stratification of CRC cell lines according to metabolic phenotype indicates that 'sensitive' cell lines are more likely to rely constitutively on oxidative metabolism, exhibiting a less pronounced Warburg effect than 'resistant' cell lines.

Conclusion

We have generated multiple databases of gene expression and metabolite changes in CRC cell lines that inform us on patterns of alteration as a result of metformin treatment. Functional profiling of *in vitro* and *in vivo* metabolic effects of metformin continues with a promising outlook for alignment with transcriptional and translational data.

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Tues65

Christopher Hudson [1] Andreas Behren [1] Aparna Jayachandran [1] Matthew Anaka [1] Pu-Han Lo [1] Jonathan Cebon [1]

TSP-1 expression in melanoma correlates with EMT and increased invasiveness

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Background: Melanoma is an aggressive skin cancer and no curative treatment exists once it has progressed into an advanced stage. We recently identified slow-cycling sub-populations within melanoma cell lines which show a gene-expression signature indicative of EMT-like processes. Mesenchymal-like melanoma cells secrete high amounts of thrombospondin-1 (TSP-1), which possibly act an as immune-evasive signal. We hypothesize that TSP-1 is a crucial player in EMT, immune evasion and invasion in melanoma.

Methods and Results: Microarray analysis of slow-cycling subpopulations within melanoma cell lines identified a gene expression signature characteristic of EMT. One of the most profoundly up-regulated genes was TSP-1. Its over-expression in mesenchymal-like cells could be confirmed by qPCR, ELISA and immunofluorescence. Blocking of TSP-1 by specific antibodies reduced the invasive properties of melanoma cells in vitro. Treatment with TGF-beta induced EMT and expression of TSP-1 in epithelial-like melanoma cells. siRNA-mediated knockdown of TSP-1 led to the up-regulation of E-cadherin and decreased melanoma cell migration within chic neural crest. Furthermore, TSP-1 was shown to reduce immune cell-mediated killing of tumour cells. High amounts of TSP-1 were inversely correlated with the expression of its receptor CD36.

Conclusion: These observations suggest that TSP-1 plays an important role as a regulator of EMT within melanoma cells, and may be responsible for the immune-escape of advanced stage melanomas and their invasive potential.

Tues66

FJM Chionh[1], V Gebski[2], AC Chueh[1], SJ Al-Obaidi[1], AJ Weickhardt[1,3], C Lee[2], DS Williams[4], C Murone[1], K Wilson[2], AM Scott[1], J Simes[2], TJ Price[5,6], J Mariadason[1], NC Tebbutt[1,3]

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Single nucleotide polymorphisms (SNPs) in vascular endothelial growth factor (*VEGF*) family genes as predictive or prognostic biomarkers in patients (pts) with metastatic colorectal cancer (mCRC) treated with chemotherapy (CT) alone or in combination with Bevacizumab (BEV): analysis of the phase III MAX study.

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This abstract is not included at the request of the author

Tues67

Janson WT Tse[1], Anderly C. Chueh[1], Ian Y. Luk[1], Georgia A. Corner[1], Dominic CH Ng[2], Hoanh Tran[1], Amardeep S. Dhillon[3], John M. Mariadason[1]

¶

Histone deacetylase and proteasome inhibitors synergistically induce apoptosis in colon cancer, multiple myeloma and CTCL cells through induction of the immediate early genes ATF3 and JUN.

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Aim

Histone deacetylase inhibitors (HDACi) are approved for the treatment of cutaneous T-cell lymphoma. We have previously demonstrated that HDACi-mediated apoptosis is linked to the induction of a defined transcriptional response involving up-regulation of the immediate-early (IE) genes FOS, JUN, ATF3, EGR1 and EGR3, in cell lines derived from multiple tumour types. To identify other drugs which induce a similar transcriptional response we compared the HDACi-induced transcriptional response with that induced by >1000 bioactive molecules using the Broad Institute's Connectivity Map database. The proteasome inhibitor, MG-262, was identified as inducing the most comparable transcriptional response to HDACi. Notably, combination treatment with HDAC and proteasome inhibitors has been shown to synergistically induce apoptosis in vitro, and a phase III trial of this combination demonstrated activity in patients multiple myeloma. The aim of this study was to determine whether these effects are mediated through the additive induction of IE genes.

Methods

The effect of the HDACi SAHA and the clinically approved proteasome inhibitor Bortezomib, alone, and in combination, on apoptosis induction was determined in colorectal, multiple myeloma and CTCL cell lines PI staining and FACS analysis. Quantitative RT-PCR was performed to determine gene expression changes upon drug treatment. MAPK pathway activation and histone hyper-acetylation was determined by western blot analysis.

Results

Single agent treatment of multiple cancer cells with SAHA or Bortezomib induced expression of the IE genes FOS, JUN and ATF3. In both cases IE gene induction was sustained over 24h. Proteasome inhibitor-induced IE gene expression and apoptosis was selectively dependent on activation of the JNK and p38 stress response pathways, while HDACi-mediated effects were selectively dependent upon the Sp1 and Sp3 transcription factors, indicating these agents induce IE gene expression and apoptosis via independent mechanisms. Co-treatment with Bortezomib and SAHA resulted in synergistic induction of IE gene expression and apoptosis in cell lines derived from multiple tumour types. Importantly, apoptosis induction by the combination was partially inhibited by siRNA-mediated downregulation of two IE genes, ATF3 and JUN.

Conclusion

This study provides insight into the mechanistic basis by which combination treatment with HDAC and proteasome inhibitors synergistically induces apoptosis in tumour cells.

Tues68

Yvonne H Yeung, [1,2] Fiona JM Chionh, [1,2] Timothy J Price, [3] Andrew M Scott, [1,2] Hoanh Tran, [1] Guangying Fang, [2] Effie Skrinos, [2] Carmel Murone, [2] John M Mariadason, [1] Niall C Tebbutt [1,2]

Phase II study of everolimus monotherapy as first line treatment in advanced biliary tract cancer: RADiChol

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2.Olivia Newton John Cancer and Wellness Centre, Heidelberg, Vic., Australia;
3.Queen Elizabeth Hospital and University of Adelaide, Woodville, S.A., Australia

Aim
Advanced biliary tract cancers (BTC) have a poor prognosis with limited standard chemotherapy options. The PI-3Kinase signalling pathway is frequently dysregulated in BTC and preclinical studies using mTOR inhibitors have shown activity in BTC cell lines. This exploratory phase II study aims to evaluate the clinical activity and safety of the mTOR inhibitor RAD001 (everolimus) in BTC, as well as to evaluate potential biomarkers of response in vivo and in vitro.

Methods
Inclusion criteria included advanced BTC and no prior. Treatment involved everolimus (10mg/d) continued until progression. The primary endpoint was disease control (DC) at 12 weeks (w). Secondary endpoints were response rate, progression free survival (PFS), overall survival (OS) and adverse events (AE). The two-stage study allowed progression to stage 2 when > 3/9 patients had DC at 12w and would be declared active when >13/27 had DC. Correlative in vitro studies evaluated biomarkers predictive of benefit to everolimus.

Results
27 eligible patients (median age 64 y) were enrolled between 2009-2011. At 12w, 48% had SD, 8% PR and 56% had DC. Median PFS was 6.0 months (95% CI, 2.1-11.2), median OS was 9.5 months (95% CI, 5.5-16.6) and DCR 76%. Treatment was well tolerated with stomatitis (63%) and rash (52%) being the most frequent AEs. The most common grade 3/4 AEs were infection (26%), hyperglycemia and hypercholesterolemia (11%). After progression, 26% received 2nd line chemotherapy. In vitro studies showed that *k-ras* mutation was associated with everolimus resistance (p=0.03). There was significant negative correlation between basal pAKT: tAKT and drug resistance regardless of *k-ras* status (r=-0.57, 95% CI -0.81 to -0.17, p=0.007). Mutation profiling for Ras and PIK3Ca mutations in tumour tissue from the trial is ongoing.

Conclusion
Single agent everolimus demonstrates activity as monotherapy in advanced BTC, with an acceptable side effect profile. Two potential predictive biomarkers have been identified *in vitro* and are undergoing evaluation *in vivo*.

Tues69
Transcriptional basis for loss of cellular differentiation in colon cancer
Ian Y Luk[1], Hoanh Tran[1], Janson WT Tse[1], Fiona JM Chionh[1], Nicholas J Clemons[2], John M Mariadason[1]
This abstract is not included at the request of the author

Tues70
O'Shea BP, [1] Furness SGB, [2] Kourakis A, [1] Hare DL, [1] Wookey PJ [1]

Calcitonin receptor isoforms expressed in high grade glioma cell lines derived from the brain tumour *glioblastoma* and their putative role in resistance conferred to drugs.

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2. *Monash Institute of Pharmaceutical Sciences, Monash University*

Aim

We have previously demonstrated the widespread expression of the calcitonin receptor (CTR) by malignant glioma cells in glioblastoma (GBM), suggesting a role in tumourigenesis (1). As there are several different CTR isoforms, some of which favour alternative activation pathways, it is important to characterize their expression (2). High grade glioma (HGG) cell lines are derived from GBM as primary cells. They are cultured serum-free *in vitro* and proliferate as expected for cancer stem cells. Our aim is to verify the CTR isoforms present in HGG cell lines and to investigate their role in drug resistance through knockdown experiments.

Methods

RNA was extracted from HGG cell lines and has been submitted for sequencing (RNAseq) and bioinformatic analysis. CTR expression in the HGG cell lines will be knocked down through the introduction of shRNA sequences that recognize CTR mRNA. LDH release assays will be used to measure the impact of knockdown on cell survival following admission of cytotoxic drugs.

Results

RNAseq will allow us to determine the CTR isoforms that are expressed by the HGG cell lines in GBM. Immunoblots will show the correlation between knockdown and CTR expression. The results of the LDH assays performed on the HGG cell lines will allow us to determine if CTR is a driver or passenger in tumourigenesis and whether the putative role in drug resistance is true.

Conclusion

Our results will demonstrate quantitatively the levels of the CTR isoforms expressed by HGG cell lines. The knockdown/LDH results will determine if the CTR receptor acts as a functional target in GBM, rather than playing a passive bystander role.

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Tues71

Davalos-Salas M[1,2], Al-Obaidi S[1,2], Anderton H[1,2], Watt M[5], Mangiafico S[3,4], Andrikopoulos S[3,4] Mariadason J[1,2,3]

Intestinal-specific inactivation of HDAC3 in mice results in a reduction in body weight and altered expression of lipid metabolism genes.

This abstract is not included at the request of the author

Tues72

David K. Lau, [1], Niall Tebbutt[,2,3], Andrew Weickhardt[1,2], John Mariadason[1,2,3]

IDH1 mutation as a novel therapeutic target in cholangiocarcinoma

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2.Olivia Newton John Cancer and Wellness Centre, Heidelberg, Vic., Australia;
3.University of Melbourne

Aim
Cancers of the biliary tract are rarely curable and few treatment options are available for advanced disease. Mutations of isocitrate dehydrogenase 1 (IDH1) have recently been discovered as a driver of oncogenesis in several cancers including glioma, leukaemia and cholangiocarcinoma[1]. Due to the scarcity of native cell lines, preclinical data supporting mutant IDH1 in biliary tract cancer as a therapeutic target is lacking. The study aim was to identify the IDH1 R132 mutation in a panel of biliary tract cell lines and assess its contribution to growth in vitro.

Methods
Sanger sequencing was performed on exon 4 IDH1 on a panel of 21 biliary tract cancer cell lines and was co-related with oncogenic 2-hydroxyglutarate (2HG) levels. The proliferation effects of IDH1 were explored with siRNA knockdown and AGI-5198, a specific inhibitor of mutant IDH1, using the MTS assay.

Results
An intrahepatic cell line was identified harbouring the IDH1 132C mutation. Whilst siRNA knockdown of IDH1 did not contribute to growth inhibition,
AGI-5198 caused growth inhibition of an IDH1 mutant cell line in comparison to IDH1 wild-type.

Conclusion
AGI-5198 causes growth inhibition in IDH1 mutation harbouring cell lines. This represents a novel therapeutic target in cholangiocarcinoma and further study into the mechanisms of action and combination therapeutic strategies is warranted.

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Tues73

David K. Lau[1], Fiona Chionh[1], Niall Tebbutt[1,2,3], John Mariadason[1,2,3]

¶In vitro activity of regorafenib in colon cancer cell lines

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2.Olivia Newton John Cancer and Wellness Centre, Heidelberg, Vic., Australia;
3.University of Melbourne

Aim

Regorafenib, an inhibitor of oncogenic and angiogenic kinases, has recently been demonstrated to have a survival benefit in refractory metastatic colorectal cancer (mCRC)[1]. There are no biomarkers which can select patients who would benefit from regorafenib. The aim was to assess genomic biomarkers of activity and to interrogate the oncogenic signalling pathways of regorafenib in vitro.

Methods

30 colon cell lines seeded into 96 well plates prior to inoculation with varying doses of regorafenib. Growth at 0, 72 hours was assessed using the MTS assay. Corresponding regorafenib GI50 values were compared between KRAS, BRAF wild type and mutant groups and by unpaired t test with P values adjusted for multiple comparisons. Functional activity of regorafenib on the MAPK pathway was undertaken by western blot analysis.

Results

All cell lines did exhibit some growth inhibition, with the GI50 between 1-5uM. No significant association was detected between GI50 and KRAS/BRAF mutational status. Functional analysis showed that MAPK pathway does play a role in the action of regorafenib.

Conclusion

Whilst a biomarker of activity was not ascertained in this study, regorafenib was shown to have significant growth inhibitory effects at clinically relevant doses. Further studies are required to optimise the benefit of this therapeutic in colon cancer.

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Tues74
Hey P[2], Robinson D[3], Grigg A[2,3]

The risk factors and sequelae of primary portal vein thrombosis

1.Ludwig Institute for Cancer Research, Heidelberg, Vic., Australia;
2.Olivia Newton John Cancer and Wellness Centre, Heidelberg, Vic., Australia;
3.University of Melbourne

Aim:
To determine the risk factors and long-term complications of primary portal vein thrombosis (PVT) in a large tertiary centre.

Methods
Radiology reports and patient discharge summaries were searched for patients with a diagnosis of primary PVT from 2000-2013. Patients with 'secondary' PVT related to cirrhosis, Budd-Chiari syndrome (BCS), recent abdominal surgery or biliary procedure, concomitant intra-abdominal sepsis or intra-abdominal malignancy were excluded.

Results
Radiological findings of PVT were identified in 411 patients, of which 23 met the inclusion criteria. Of these, 13 patients had a prothrombotic risk factor including myeloproliferative neoplasms (MPNs) in 9, an inherited thrombophilia in 4 and the oral contraceptive pill as the only risk factor in one patient. 2 patients were identified as having a concurrent MPN and thrombophilia. PVT was the presenting feature of a JAK2+ MPN in 6 patients. No risk factor was identified in the remaining 10 patients. All of these patients underwent an inherited and acquired thrombophilia screen and 7 were tested for JAK2 mutation.

Acute and long-term complications of PVT were assessed in the 23 patients with primary PVT with a median follow up of 24 months (range 1-136). Thrombus extension to the mesenteric veins occurred in 12 patients, 2 of whom required a laparotomy and bowel resection due to mesenteric ischaemia. Seventeen patients (74%) developed portal hypertension, defined by radiographic or endoscopic evidence of varices, ascites or splenomegaly. Gastric or oesophageal varices were identified in 52%. Three patients suffered 4 episodes of variceal bleeding, one requiring the insertion of a decompressive porto-systemic shunt. Seven of 20 patients managed with anticoagulation therapy experienced a major non-variceal bleeding complication, which was fatal in one and required temporary or permanent cessation of therapy in the remainder. Of 21 patients with follow up imaging, 5 (24%) achieved complete recanalisation of the portal vein on anticoagulation over a median time of 4 months.

Conclusions
Primary PVT is a rare but important cause of portal hypertension with frequent and dangerous acute and long-term sequelae. Given the high prevalence of MPNs in primary PVT, in our experience 35-40%, this study supports the key role of JAK2 mutation testing in PVT work-up.

Tues75
Thrombin Generation maybe a better surrogate measure of in-vivo anticoagulation in the era of new oral anticoagulants (NOAC)

Prahlad Ho[1,2,3], Geoffrey A Donnan[2], Lachlan Hayes[3], Carole Smith[2]
1. Austin Pathology, Heidelberg VIC
2. The Florey Institute of Neurosciences and Mental Health, Parkville, VIC
3. The Northern Hospital, Epping, Victoria

The in-vivo therapeutic range between effective anticoagulation and excess bleeding is narrow, and often requires monitoring. Traditionally, the international normalized ratio (INR) of 2.0-3.0 has been a crude surrogate, but only measures the time to the *start* of clot formation without evaluating total clot formation, and cannot be used for evaluating anticoagulants other than warfarin. The arrival of new oral anticoagulants (NOAC) has highlighted the need for better anticoagulation tests, particularly since there are no reliable coagulation tests to measure these agents and no reversal agents are currently unavailable. Thrombin generation (TG) is a new laboratory investigation using the Calibrated Automated Thrombogram (CAT©), which measures various parameters including endogenous thrombin potential (ETP), which represents total thrombin formation, as well as other parameters including thrombin peak. This may provide a more wholistic measure of in-vivo anticoagulation and allow us to estimate therapeutic ranges for NOAC, which is currently unknown.

Aim: Determine the therapeutic range of TG parameters based on the current "gold-standard" therapeutic INR range of 2.0-3.0 for warfarin, as well as describe TG parameters with enoxaparin and the new oral anticoagulants (apixaban, rivaroxaban and dabigatran).

Methods: De-identified INR and spiked plasma samples of rivaroxaban and enoxaparin were evaluated for thrombin generation parameters using the CAT.

Results: 54 INR samples (range: 1.0-4.2) were evaluated. The therapeutic INR range (2.0-3.0) correlated with median ETP of 364 (range: 203–595) nM.min and thrombin peak of 177 (range: 87-200) nM, with a clear distinction from normal INR of 1.0-1.2. This correlated with approximately 20-40% reduction of both thrombin peak and ETP compared to normal controls Xa inhibitor-spiked plasma (rivaroxaban, endoxaban and apixaban) produced a more concave curve with a marked decrease in thrombin peak comparable to warfarin but relative preservation of ETP. Dabigtran curves prolonged lagtime and reduced thrombin peak and ETP, however, these parameters did not vary significantly with increasing doses. Enoxaparin-spiked plasma produced curves similar to warfarin.

Conclusion: TG maybe a better surrogate measure of in-vivo anticoagulation. Further evaluation of TG parameters with NOACs, using a therapeutic warfarin INR of 2.0-3.0 as a surrogate gold standard, may help determine the therapeutic range for these new agents.

Tues76

Prahlad Ho[1,2], Carole Smith[1], Geoffrey Donnan[2]

Thrombin Generation in the Normal Population – Impact of Age and Sex

1. *Austin Pathology, Austin Health, Heidelberg, Victoria*
2. *Florey Neuroscience Institute, Heidelberg, Victoria*

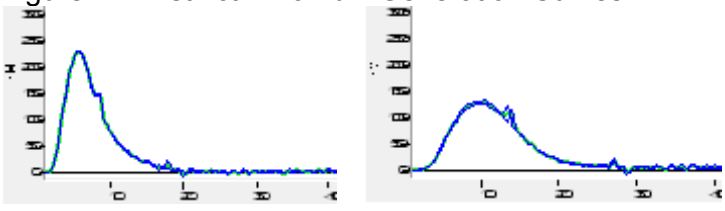
Thrombosis is a major cause of morbidity and mortality in Australia, with age and male sex being major risk factors. Unfortunately, there are no laboratory tests that reflect the true in-vivo coagulation status. Global coagulation assays such as calibrated automated thrombogram (CAT) maybe a better surrogate measure of an individual's cardiovascular risk. However, it is important to understand the impact of these assays in the normal population, particularly

***Methods*:** Normal controls with no prior history of cardiovascular/thrombotic disease were recruited as part of a biomarkers of thrombosis study at Austin/Northern Health, Melbourne, Victoria. All were evaluated with routine laboratory tests to exclude underlying thrombosis risk factors including full blood examination, thrombophilia screen, von Willebrand studies, fasting lipid profile. All samples were double centrifuged at 2500G and frozen at -80^{o}C within 2 hours of collection. Samples were analysed using the calibrated automated thrombogram using standard 5 pmmol reagent (Stago) .

***Results*:** 32 normal controls (20 females, 12 males) with median age of 45 (range: 24-79) years were recruited. All patients had negative thrombophilia screens without significant cardiovascular risk factors. No controls were on the oral contraceptive pill. Thrombin generation parameters varied significantly within this controlled population group and there was no correlation with age (r^2=0.059). There were 2 distinct patterns of thrombin generation curves (Figure 1) – the concave type curve being more common in males. Thrombin generation was higher in females (ETP: 1418 nM, 95% CI: 1294-1542) compared to males (ETP: 1282, 95% CI: 1112-1450). ETP appears to be higher in pre-menopausal women (1524 vs 1410 nM).

***Summary*:** Thrombin generation varies significantly within the normal population but does not correlate with age. This may reflect the unpredictable thrombotic risk profiles within the normal population. There appears to be two distinct thrombin generation curves, the significance of which is unclear. Females have higher thrombin generation compared to males, which maybe related to underlying hormonal status. Further recruitment and analysis is ongoing.

Figure 1 – Distinct Thrombin Generation Curves



Standard Peak Curve Concave Type

Table 1: Thrombin Generation Parameters (median + range)

Tues77
Immunohistochemistry for Lynch syndrome – Has Uptake Improved?

Lynch E[1*], Kentwell M[2*], Leaver A[1*], Williams D[3], Christie M[4], Lipton L[2], Winship I[2], Delatycki M[1], Macrae F[2,5] (*Joint First Authors)

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5. Department of Colorectal Medicine & Genetics, The Royal Melbourne Hospital

Introduction

In May 2007, the Victorian Cancer Oncology Hereditary Bowel Cancer Group (VCOG HBCG) released a position statement in regards to the identification of Lynch syndrome by immunohistochemistry (IHC) testing. The VCOG HBCG recommendation was to test all colorectal cancers in patients under 50 years of age by IHC for mismatch repair (MMR) proteins MLH1, MSH2, MSH6, and PMS2 as part of the routine pathological assessment of cancers presenting in these patients, without direct consent. This recommendation was widely circulated to the clinical community from 2007. In 2011, an audit to ascertain the frequency of IHC being performed for consecutive patients diagnosed with colorectal cancer (CRC) under 50 years of age, by the Pathology Departments of Austin Health and Melbourne Health, was performed. The audit was conducted for the period since the introduction of the position statement in 2007 up to February 2011. This audit demonstrated that the frequency of IHC being performed in individuals diagnosed with CRC under the age of 50 had increased over time at both sites but was not 100%. All patients at The Royal Melbourne Hospital with absent staining for any of the four proteins were referred to the Family Cancer Centre, however this was not the case for all patients with abnormal staining at Austin Health.

Audit aims

This audit aims to identify whether there has been an increase in the frequency of IHC being performed for patients diagnosed with colorectal cancer diagnosed under the age of 50 at Austin Health and Melbourne Health. The audit also aims to identify whether the number of patients demonstrating absent staining being referred to a Familial Cancer Clinic has increased.

Methods

Lists of patients with colorectal cancer diagnosed under 50 years of age from February 2011 until June 2014 will be extracted from each hospital database. Pathology reports for all patients will be checked to assess whether IHC was performed. For those patients with absent staining, the records of the Victorian Familial Cancer Centres will be checked to ascertain whether the patient was referred.

Conclusion:

Identifying colorectal cancer caused by germline mutations in the MMR genes facilitates evidence based surveillance programmes. Similarities and differences between hospitals in the uptake of the recommendation to implement routine IHC for this subset of patients will be analysed, and barriers and enablers identified for initiating routine IHC testing at the hospitals will be explored.

Tues78

Ken J. Lu [1, 2], Michelle Ord [1], Leighton Kearney [1,2], Gerard Smith [3], Ruth Lim [3,4], Elizabeth Jones [1], Louise M. Burrell [2], Piyush M. Srivastava [1, 2]

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Outcomes of Patients with Acute Decompensated Heart Failure (ADHF) Stratified by Left Ventricular Ejection Fraction: an Australian tertiary centre experience.

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Austin Health, Heidelberg, Australia

Aim

Heart failure (HF) can be classified based on left ventricular ejection fraction (LVEF) into heart failure with reduced ejection fraction (HFREF: LVEF <40%) and heart failure with preserved ejection fraction (HFPEF: LVEF >40%). There are limited Australian data comparing the clinical, biomarker and non-invasive imaging profiles and health outcomes in the 2 cohorts.

To compare patients admitted with ADHF stratified according to LVEF (HFREF vs. HFPEF):

1. Clinical characteristics
2. Biochemical characteristics
3. Non-invasive imaging profiles (transthoracic echocardiography (TTE) and cardiac magnetic resonance imaging (CMR))
4. Health outcomes

Methods

100 Patients admitted with ADHF were prospectively studied from 2011-2013. We collected medical history, baseline investigations (including TTE and CMR) and health outcomes.¶

Results

100 patients (55 HFREF, 45 HFPEF) were studied. Mean follow up was 412 (23-766) days. Patients with HFPEF were older (67.5 vs 73 yrs, $p<0.05$), more likely female (65 vs 33%, $p<0.002$) and had higher body mass index (35 vs 29 SI units, $p<0.05$). They were less likely to have coronary artery disease or diabetes but more likely to have hypertension and atrial fibrillation ($p>0.05$). HFPEF subjects had higher admission blood pressure but lower heart rate ($p<0.05$). There was no difference in haemoglobin, glomerular filtration rate , creatinine kinase, highly sensitive troponin, serum potassium and sodium. Admission NTproBNP (3333 vs 5693 pm/ml, $p<0.05$) and uric acid (0.40 vs 0.47mmol/L, $p<0.05$) were lower in the HFPEF group. On TTE, patients with HFPEF had higher LVEF (54 vs 26%), lower E/e' (18 vs 22) and less impaired LV global longitudinal strain on speckle tracking TTE (-14.5 vs -7.5%) (all, $p<0.05$). On CMR, there was no difference in late gadolinium enhancement. On discharge, patients with HFPEF were less likely to be prescribed beta-blockers (72 vs 92%) and aldosterone inhibitors (25 vs 52%), and lower diuretic doses were used (allp<0.05). Use of renin angiotensin inhibition was similar. During follow-up, cardiac readmission (HF, acute coronary syndrome,arrhythmia and pacemaker/defibrillator) and overall mortality was 47% and 12% respectively, and was similar in the 2 groups.¶

Conclusion

HFPEF accounted for 45% of admission to hospital with ADHF.

ADHF is associated with high morbidity and mortality whether due to HFREF or HFPEF. There are clinical, biochemical and echocardiographic differences between HFREF and HFPEF. Further research is required to explore these pathophysiological differences.

Tues79

Lorelle Martin [1], Carolyn Naismith [1], David Clark [1], Omar Farouque [1].

"PATIENTS WHO SELF-PRESENT WITH ST ELEVATION IN MYOCARDIAL INFARCTION (STEMI): ARE THEY FORGOTTEN IN SYSTEMS TO IMPROVE DOOR TO BALLOON TIME (DTBT)"

1. Cardiology Department, Austin Health, Heidelberg, Vic., Australia;

Introduction: Timely treatment for ST-segment elevation myocardial infarction (STEMI) is critical to patient outcomes. The past few years have seen the implementation of systems to reduce door to balloon time (DTBT), in particular pre-hospital notification systems to hospitals. However not all STEMI patients arrive to hospital via this system with a significant percentage self-presenting to the emergency department.

Aims: We sought to determine the characteristics and outcomes of STEMI patients who self-presented compared to those who presented via ambulance with pre-hospital notification.

Methods: A five-year review was undertaken of consecutive patients who either self-presented to hospital or arrived to hospital with pre-hospital notification. Comparisons were made of baseline demographics, clinical characteristics, DTBT and in-hospital, short-term and longer term mortality. Chi-square and Student's t tests were undertaken to identify differences between the groups. Data were expressed as percentage or mean+/-SD.

Results: A total of 176 STEMI patients were examined; 96 patients self-presented to hospital and 80 patients arrived to hospital by ambulance with pre-hospital notification. There were no differences in gender; 87% vs 85% male (p=0.83); presentation in working hours; 47% vs 40% (p=0.45); first cardiac admission 90% vs 94% (p=0.60); diabetes 21% vs 14% (p=0.24); Thrombolysis in Myocardial Infarction (TIMI) risk score greater than five 22% vs 27% (p=0.48) and anterior infarction 41% vs 41% (p=0.74), in patients who self-presented compared to those with pre-hospital notification respectively. Those who self-presented were younger (60+/-12 years vs 64+/-14 years; p=0.05), and less frequently achieved a DTBT< 90 minutes (45% vs 95%; p<0.0001). The median DTBT for self-presenters was 103+/-45 mins vs 52+/-25.1 mins (p<0.001). Although the number of deaths were small, mortality for self-presenters was numerically higher in-hospital (3.1% vs 1.3%; p=0.62), at 30 days (3.1% vs 1.3%; p=0.62) and at 12 months (4.2% vs 1.3%; p=0.38).

Conclusion: Self-presenters to hospital have longer DTBT. Whilst this did not translate to poorer mortality outcomes in this study, patients who self-present remain a challenge to systems of care designed to improve DTBT. Further examination is required to pinpoint the exact cause for delay in this group of STEMI patients to improve access to timely treatment.

Tues80

Toukhsati SR[1], Johns E[1], Raman B[1], Jovanovic A[1], Stone M[1], Yau L[1], Wang J[1], Dehghani S[1], Tran T[1], Ziffer R[1], Tran A[1], Selvadurai L[1], Hare DL[1,2].

Psychological resilience and depression in cardiac disease settings

This abstract has not been included at the request of the author

Tues81

Hare DL[1,2], Selvadurai L[1], Tran A[1], Ziffer R[1], Tran T[1], Dehghani S[1], Wang J[1], Yau L[1], Stone M[1], Jovanovic A[1], Raman B [1], Johns E[1],Toukhsati SR[1].

Psychometric validation of the Depression Scale Short Form (DS-SF) in cardiac patients

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This abstract has not been included at the request of the author

Tues83
Carolyn Naismith RN MN, Lorelle Martin RN MN

An audit of Resuscitation Medication administered intra procedurally in the Cardiac Catheterisation Laboratory.

Introduction

The Cardiac Catheterisation Laboratory (CCL) is a challenging environment with multiple professionals undertaking complex cardiac procedures, many of which may be performed under emergency conditions. The administration of resuscitation type medication is common.

Aim

To quantify the usage of intra procedural intravenous resuscitation medications in the CCL.

Methodology

Data was collected over a 12 month period from the CCL reporting system (Medcon). The database was interrogated for the intra procedural use of the following intravenous medications; Adrenaline, Atropine, Amiodarone and Metaraminol (Aramine). Inclusion criteria were all patients undergoing an interventional or diagnostic cardiac procedure during this time frame. Exclusion criteria were patients undergoing electrophysiology procedures.

Results: During the period of January 2013 to December 2013 there were 2121 interventional or diagnostic cardiac procedures in the CCL at Austin Health. Intra-procedural intravenous resuscitation medication was administered on 132 occasions in 105 cases (4.9% of total cases). Types of intra- procedural intravenous resuscitation medication included: Adrenaline n=15(11%), Atropine n=28 (21%), Amiodarone n=8 (6%), Aramine n= 81 (61%). Types of cases these drugs were administered in were emergency coronary intervention in hours n=34 (32%), emergency coronary intervention out of hours n=26 (25%), planned coronary intervention n = 26 (25%), diagnostic coronary procedures n=19 (18%).

Conclusion

This audit has demonstrated that intra procedural intravenous resuscitation medications are used often in the CCL environment, especially during emergency cases in the out of hour's scenario. This highlights the need to provide appropriately skilled staff with advanced cardiac life support credentialing to provide a safe level of care. Furthermore, quantifying the use of intra procedural intravenous resuscitation medications locally provides the opportunity to benchmark our practice with clinical registries.

Tues84

O'Brien RC[1], Page M[2], Ekinci E[1], Watts GF[2]

LDL-Apheresis for the Treatment of Patients with Severe Autosomal Dominant Hypercholesterolaemia and Coronary Disease: The Australian Experience

1. Endocrinology Unit, Austin Health 2. Royal Perth Hospital, WA.

Introduction and aims: Low density lipoprotein (LDL)-apheresis offers radical therapy for severe dyslipidaemias. We have employed this treatment at Austin Health, Melbourne and Royal Perth Hospital since 2003 and the aim of this study was to pool the data and present the first eight cases.

Methods: Retrospective review of hospital records and patient interviews: data extracted related to demographic, clinical and genetic status, laboratory and imaging findings, and LDL-apheresis procedures.

Results: Four patients had homozygous familial hypercholesterolaemia (FH), three had clinically heterozygous FH and one had heterozygous familial defective apoB-100. Patients had angiographically proven coronary disease. Age at commencement of LDL-apheresis was 44 ± 20 years (range 14-69). Six patients were female. LDL-apheresis was performed by cascade filtration, once every one to four weeks. 604 procedures were performed since 2003. Pre-treatment LDL-cholesterol was 9.5 ± 4.0 mmol/L (range 5.4-16.9) All patients continued on maximal cholesterol-lowering drug therapy if tolerated. Mean lowering of LDL-cholesterol with each procedure was 72.0 ± 7.4% ($P<0.001$); long-term time-averaged lowering was 41.3 ± 18.8% ($P<0.001$). Triglyceride, apolipoprotein B, lipoprotein(a) and HDL-cholesterol were also lowered. Serial ultrasonography of tendons and carotid arteries and coronary angiography were consistent with stabilisation/regression of lesions. All patients remained clinically stable. Problems included iron deficiency, adverse reactions to one batch of filtration columns and vascular access. The mean annual cost per patient was $32,133.

Conclusion: LDL-apheresis by cascade filtration is a safe, effective and well-tolerated treatment for severe hypercholesterolaemia and should be incorporated in clinical services for patients with autosomal dominant hypercholesterolaemia.

Tues85

Pham C,[1] Velkoska E,[1] Hare DL,[1] Kourakis A,[1] Spencer K,[1] Burrell LM,[1] Wookey PJ[1].

Title of abstract Pericyte mobilisation and their role in the peri-infarct region following renal ischaemia

1. Department of Medicine, Austin Health, University of Melbourne

Aim

A new role for nascent pericytes has been described in stroke, which involves the stabilisation of peri-infarct tissue (1). Pericytes are normally located on the abluminal surface of endothelial cells in small blood vessels and are vital for the maintenance of haemostasis. This study investigates the activation of pericytes post-ischaemia in the model of acute kidney disease using the 5/6 subtotal nephrectomized (5/6 STNx) rat model.

Methods

Twelve Sprague-Dawley rats underwent 5/6 nephrectomy and were randomly euthanized at days 1, 3 and 10. Contralateral kidneys excised at the time of surgery were treated as controls. Kidney tissues were stained for α-smooth muscle actin (αSMA), platelet derived growth factor receptor β (PDGFRβ), desmin, nestin and feline leukaemia virus subgroup C receptor (FLVCR2) (2, 3) for immunohistochemistry and confocal microscopy. The numbers of positive-staining cells were counted for each time point and compared for statistical significance.

Results

Quantification of αSMA+ and PDGFRβ+ cells within the peri-infarct region revealed a significant rise in positive staining cells at day 3 (*P<0.0001*). These cells were also found to co-express αSMA, desmin and FLVCR2, and are indicative of a pericyte-like population. A potential zone of proliferation was identified beneath the kidney urothelium and in vascular spaces. At day 5, co-localisation of Ki67 in αSMA+ and PDGFRβ+ cells within the vascularised region beneath the urothelium suggested a possible area of pericyte proliferation post-ischaemia. Furthermore, the expression of nestin, a marker for progenitor cells and immature pericytes, was also seen within the same region, providing strong evidence of pericyte progenitors and consistent with limited proliferation (4).

Conclusion: Pericytes with similar expression of three markers commonly associated with mature pericytes have been identified in the peri-infarct region of kidneys from 5/6 STNx rats. The maximal population was identified at day 3 and potential zones of proliferation have been identified, but the existence of such zones requires further verification. These pericytes contribute to revascularisation of injured kidney tissue in a manner previously discovered in stroke (1).

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Tues86

Effect of dose and timing of sublingual glyceryl trinitrate (GTN) on quality of computed tomography coronary angiography (CTCA).

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[1]Department of Radiology, Austin Health,[2]Department of Cardiology, Austin Health,[3]Burnet Institute,[4]University of Melbourne.

Aim:

Sublingual GTN is routinely administered immediately prior to CTCA. We investigated the effect of varying dose and timing of sublingual GTN on coronary artery lumen diameter and image quality of CTCA.

Methods:

Thirty patients (mean age 53.2 y) were retrospectively reviewed. Current institutional practice is to administer 2 doses of GTN at 10 and 2 minutes prior to CTCA. 10 patients who received 2 doses (Group 3) were compared to gender-matched historical controls: 10 patients receiving GTN 2 minutes prior to CTCA (Group 1) and 10 patients receiving GTN 10 minutes prior to CTCA (Group 2). Cardiovascular risk factors were recorded. One observer noted presence of coronary disease and measured luminal diameter in up to 18 coronary segments per patient. A second observer assessed image quality on a 5 point scale (0=unevaluable, 4=excellent). Age/BMI were compared with Fisher's exact test, diameter measurements with ANOVA and image quality with the Kruskal-Wallis test.

Results:

No significant difference in BMI or age was found between groups. Significant differences were found in luminal diameter between Group 2 and 3 compared to Group 1 (e.g. for the left main, Group 3 is associated with a mean 0.69mm increase in calibre compared with Group 1, p=0.01, with a trend toward a mean 0.51mm increase in calibre for Group 2 versus Group 1, p=0.07). There was no significant difference in segmental image quality scores across groups. Analysis of presence of plaque and cardiovascular risk factors demonstrated no significant association with vessel calibre.

Conclusion:

Sublingual GTN at 10 minutes or 10 and 2 minutes prior to CTCA resulted in significantly larger luminal diameter compared to 2 minutes prior to CTCA with no significant difference in image quality. Evaluation in a larger population to confirm these findings and impact of disease and cardiovascular risk factors is planned.

Tues87

Chezhan Hall, [1, 2,] Maria Murphy, [1, 2,] Andrew Scanlon, [1], Lorelle Martin, [2], Omar Farouque [2]

A prospective study of the utility of Egan's model in Phase one cardiac rehabilitation delivery

This abstract is not included at the request of the author

Tues88

Chezhan Hall, [1, 2,] Maria Murphy, [1, 2,] Andrew Scanlon, [1], Omar Farouque [2]

Staff perceptions of Phase one cardiac rehabilitation in a tertiary setting

This abstract is not included at the request of the author

Tues89

Lippmann J[1], Taylor DMcD[2,3], Mitchell S[4]

1. Diver Alert Network;
2. Austin Health;
3. University of Melbourne;
4. University of Auckland

Important medical co-morbidities: their impact on the practices of recreational scuba divers

Aim
'Fitness to scuba dive' has moved from a prescriptive determination towards risk evaluation and candidate education. We aimed to determine how a range of medical co-morbidities, that previously precluded diving, impact upon recreational diving practice.
Methods
The Diver Alert Network (DAN) is a global organisation that provides diving medical advice, member education, insurance and support, and undertakes diving research. We undertook an online, anonymous survey of DAN (Asia-Pacific) members who had previously declared an important co-morbidity. Each participant completed a general diving questionnaire and another specific to their co-morbidity.
Results
308 (37.0%) of 833 divers responded: males 69.9%, smokers 3.6%, median BMI 26.9, median years of diving 11, median dives 350. Almost all (93.5%) were still diving, 53.5% were taking regular medication and 36.2% reported being fit or very fit. Among those still diving, co-morbidities included myocardial infarction (n=21), angina (3), atrial fibrillation (9), ventricular tachycardia (3), hypertension (58), diabetes (24 total, insulin-treated 3), asthma (32) and pneumothorax (3). Divers also reported patent foramen ovale (27), atrial septal defects (2) and ventricular septal defects (1). Among this subgroup, 25 (83.3%) had suffered decompression illness and 22 (73.3%) had subsequent surgical closure of their defect. Overall, many divers modified their diving practices: conservative dive profiles, less strenuous diving conditions and adjustment of medication pre-dive. Most were aware of how their co-morbidities could impact upon their diving safety.
Conclusion
Substantial numbers of divers with significant co-morbidities appear to dive safely. The greatest risk is associated with patent cardiac septal defects.

Tues90

Liversidge XL[1,2], Taylor DMcD[1,2], Liu B[1,2], Ling S[1,2], Taylor SE[2]

Variables associated with a high level of parent satisfaction with their child's pain management in the emergency department

1. University of Melbourne;
2. Austin Health

Aim
The provision of 'adequate analgesia' (which reduces the pain score by ≥2 and to <4 [0-10 scale]) is significantly associated with high levels of satisfaction with pain management among adult patients. We aimed to determine the variables (including 'adequate analgesia') associated with parent satisfaction with their child's pain management.

Methods
We undertook a prospective, observational, pilot study in a mixed, metropolitan ED. Patients aged 4-16 years with a triage pain score of ≥4 were enrolled. Data included demographics, presenting complaint, pain scores every 30 minutes, analgesics administered, time to first analgesia, provision of nurse-initiated analgesia (NIA) and 'adequate analgesia', and parent satisfaction 48 hours post-discharge (6-point scale: very unsatisfied – very satisfied).

Results
Complete data were collected on 185 patients: mean (SD) age 10.4 (3.6) years; weight 41.9 (17.8) kg; 93 (50.3%) male. 110 (59.4%) parents were very satisfied with their child's pain management. Children of parents who were very satisfied had shorter times to analgesia than those who were not (median [IQR] 14 (33) versus 33 (46) minutes, respectively, p=0.003). Parents whose children received 'adequate analgesia' were more often very satisfied (65.1% versus 54.9%; difference 10.2% [95%CI -5.02, 25.34], p=0.16). Also, parents whose children received NIA were more often very satisfied (66.7% versus 53.5%, difference 13.2% [-1.9, 28.3], p=0.07).

Conclusion
ED staff should aim to provide short times to analgesia. There were trends towards high levels of parent satisfaction following the provision of either NIA or 'adequate analgesia'. These findings will inform a well-powered study to confirm this association.

Tues91

Liu B[1,2], Taylor DMcD[1,2], Liversidge XL[1,2], Ling S[1,2], MacGibbon P[2]

The specific psychological needs of older emergency department patients

1. University of Melbourne;
2. Austin Health

Aim
Older adults differ physically, physiologically and psychologically from younger adults. We aimed to determine the specific psychological needs of older ED patients.

Methods
We undertook a cross-sectional survey of patients in a large metropolitan ED between February and June, 2014. Three patient groups were enrolled: 50-64 years (controls), 65-79 years and 80+ years. We employed a specifically-designed, self-administered questionnaire which had five Likert Scale response options (strongly agree-strongly disagree) for 32 items. Response option proportions for the three groups were compared.

Results
548 patients were enrolled. The groups did not differ in gender, ethnicity or triage category ($p>0.05$). However, the older groups reported more co-morbidities ($p<0.05$). More older patients reported that they did not know how to call for assistance ($p<0.001$) or how the ED works ($p<0.01$). Also, older patients tended to feel more confused about what was happening ($p=0.11$) and concerned about not getting analgesia ($p=0.18$). In contrast, fewer older patients felt frightened by their illness ($p<0.001$) or felt that the ED lights were too bright ($p<0.03$). There were significant differences ($p<0.05$) between the groups (but no trends) in the perceived receipt of good answers, and perceptions that their illness and treatment had been well explained.

Conclusion
Overall, older ED patients appear psychologically resilient. However, staff should ensure they provide clear information about the processes of ED care. The results highlight the importance of being aware of individual patient needs and identify areas which may be targeted for improving the quality of care for older ED patients.

Tues92

Evans JG[1,2], Taylor DMcD[1,2], Hurren F[1], Ward P[1], Yeoh M[1], Howden B[1,2]

The effects of vapocoolant spray on skin sterility prior to intravenous cannulation

1. Austin Health;
2. University of Melbourne

Aim
Alkane vapocoolant spray rapidly evaporates, lowers skin temperature and results in temporary interruption in pain sensation. It significantly reduces the pain of intravenous cannulation. However, concerns exist that it may re-contaminate the sterile cannulation site. We aimed to determine the effects of vapocoolant spray on skin sterility prior to cannulation.

Methods
We undertook a randomised, single-blinded, paired, clinical trial of 50 ED patients. Bacterial skin swabs were taken from the dorsum of both hands of each patient. From one hand, a swab was taken following standard chlorhexidine/alcohol disinfection and a second following the subsequent application of vapocoolant spray. From the other hand, a swab was taken from the unprepared (non-disinfected) skin and a second following vapocoolant application. Skin swabs were sent for bacterial culture and comparison of the bacterial colony count (BCC). The BCC was undertaken by an investigator blinded to the patients' skin preparation.

Results
Standard chlorhexidine/alcohol disinfection was highly effective. The administration of vapocoolant after skin disinfection did not significantly increase the BCC: median (IQR) 0.0 (0.0) changed to 0.0 (0.0) ($p=0.71$). The administration of vapocoolant to the unprepared skin significantly decreased the BCC: median (IQR) 33.5 (68) decreased to 3.0 (11) ($p<0.001$).

Conclusion
Alkane vapocoolant spray does not re-contaminate the skin after disinfection. While it does have an inherent bactericidal action, this is not sufficient for it to be the sole disinfectant. Alkane vapocoolant spray poses no increased risk of infection when used as an anaesthetic agent prior to intravenous cannulation following disinfection.

Tues93

Ling SL-Y[1,2], Taylor DMcD[1,2], Robinson J[2,3]

The nature and outcomes of workplace chemical and toxin exposures reported to the Victorian Poisons Information Centre

1. University of Melbourne;
2. Austin Health
3. Victorian Poisons Information Centre

Aim
We aimed to determine the nature of workplace chemical and toxins exposures reported to the Victorian Poisons Information Centre (VPIC), and the outcomes and adherence to advice provided.

Methods
Data from all cases classified as 'Workplace: Acute' (June 2005 to December 2013) were extracted from the VPIC database. Exposures were assigned into nine substance-type categories and analysed by route of exposure. In addition, a prospective case series, following up consecutive callers to the VPIC (February-June 2014), was undertaken.

Results
4928 cases were analysed (71.5% males). The most common exposure types for males and females were 'Industry/Trade' (24%) and 'Cleaners, Bleaches and Detergents' (37%), respectively. Ocular (33%), inhalational (28%) and dermal (22%) routes were most commonly reported overall. Ocular exposure to 'Cleaners, Bleaches and Detergents' was the largest route/substance category combination. Veterinary/Animal and Agricultural/Plant exposures were significantly more common in Spring ($p<0.05$). Most callers were symptomatic although this varied (50.8%-82.1%) with exposure category and route. Over 70% of calls were assigned a Poisons Severity Score of 'Mild'. All cases followed up had followed VPIC advice although 32.4% had developed additional symptoms. 97.1% reported that breaches in standard safety procedures led to the exposure and most provided advice for future prevention strategies.

Conclusion
Workplace exposures are common although most are of limited clinical significance. However, high risk environments, chemicals and seasons are clearly apparent and vary by gender. Standard safety procedures, especially the use of protective eyewear, needs to be encouraged and additional recommendations for exposure avoidance were provided.

Tues94

Harding AM[1,2], Welton C[3], Yeoh M[1]

Medication Costs in an Emergency Department

1. *Department of Emergency Medicine, Austin Health, Heidelberg, Victoria, Australia*
2. *Pharmacy Department, Austin Health, Heidelberg, Victoria, Australia*
3. *Pharmacy Department, Bendigo Health, Bendigo, Victoria, Australia*

Aim

To determine the average medication costs associated per emergency department (ED) presentation. To determine the top 10 medications by cost to the emergency department.

Methods

Design: Retrospective audit
Setting: Tertiary hospital emergency department
Duration: January-December 2013
Sample: all patients presenting to the emergency department
Data collection: Cost of medication collected from Merlin Hospital Drug Management System. Patient presentations data collected from the hospital emergency department information system (MedTrak)

Results

There were a total of 75,180 presentations to the ED at a total cost of $563,204 for medications.

The top 10 medications by cost were determined, in order, as alteplase, ADT (diphtheria and tetanus vaccine, adsorbed), Hartmanns intravenous fluid, 10 mL normal saline ampoules, enbucrilate (tissue adhesive), digoxin immune Fab, acetylcysteine injection, icatibant, ondansetron wafers and metaraminol . These 10 medications accounted for 47% of the total ED expenditure.

The average medication cost per patient per episode of care in ED during 2013 was $7.49 per presentation. As alteplase accounts for 20% of the total ED expenditure, a further analysis occurred with these costs removed. Without alteplase costs, the total cost per patient was $6.03 per episode of care.

Conclusion

The total cost of medication per patient presentation in the ED is small and represents limited opportunities for cost savings through changes to prescribing practices.

Tues95

Joules E,[1] Yeoh M,[2] Taylor S,[1] Harding A[1] Visser P[2] Rotella J,[2] Eldridge L,[2] Ward M, [formerly 2]

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Evidence Based Management of Atrial Fibrillation in the Austin ED

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1.Pharmacy Department, Austin Heath, Heidelberg, Vic.,
2. Emergency Department, Austin Health, Heidelberg, Vic.

¶

Aim

To implement and evaluate a multi-faceted intervention to improve consistency and comprehensiveness of management of atrial fibrillation (AF) in patients presenting to the emergency department (ED).

¶

Methods

A quality improvement intervention study was conducted in 2013. For evidence implementation, a multidisciplinary team was led by a pharmacist, and included two ED consultants, one ED registrar, two other pharmacists, one nurse and a research assistant. Key areas of focus were optimal selection of rhythm vs rate control strategy and identification of patients likely to benefit from anticoagulation. The multifaceted intervention comprised development of a guideline, education sessions, clinical championing, provision of “AF patient information packs”, visual aids, audit-and-feedback emails and quick reference name-badge cards outlining $CHADS_2$ and HASBLED score calculation. Pre- and post-intervention data collected retrospectively from the electronic patient record were compared.

¶

Results

Forty-three patients were included in each group. Concordance with the guideline occurred in 74% of post-intervention cases. Documentation of $CHADS_2$ score and HASBLED/bleeding risk increased from 5% to 59% ($p<0.01$) and from 14% to 48% ($p=0.01$) of cases, respectively. Documentation of rate/rhythm control strategy on discharge increased from 58% to 77% ($p=0.3$), while documentation of symptom duration, chronicity and representation rates remained unchanged.

¶

Conclusion

A multi-faceted intervention for treatment of patients presenting to ED with AF was associated with improvements in key aspects of patient care, while other aspects which were already well documented, were maintained. Although significant increases in key endpoints were observed, considerable room for improvement remains.

Tues96

Tan RYP[1], Gin TJ[2], Wilson I[1], Veth V[1]

Pre-thrombolysis Time Intervals for Acute Ischaemic Stroke in an Australian Regional Hospital

1. Northeast Health Wangaratta, Vic., Australia;
2. Melbourne Health, Vic., Australia

Aim
Prompt administration of intravenous tissue plasminogen activator (tPA) for acute ischaemic stroke improves clinical outcomes (1). However, the delivery of optimal acute stroke care in rural Australia is challenging due to the limited access to stroke specialists and acute healthcare services offering thrombolysis (2). The purpose of our study was to assess the time intervals during the diagnostic process preceding stroke thrombolysis at an Australian regional hospital over a 3 year period.

Methods
Data was collected by medical file audit for all cases who received intravenous tPA for acute ischaemic stroke admitted to acute care at Northeast Health Wangaratta (NHW) between 1 January 2011 and 31 December 2013. Baseline demographics, major logistic parameters and inpatient complications were recorded.

Results
Within 3 years a total of 32 patients underwent intravenous tPA for acute ischaemic stroke. Following symptom onset, there were on average 27 and 105 minute delays before the ambulance was called and hospital triage respectively following symptom onset. Symptom onset-to-thrombolysis time was an average of 190 minutes. Over 3 years the mean door-to-CT time decreased from 21 to 17 minutes (19%), and the door-to-needle time was shortened from 99 to 79 minutes (20%).

Conclusion
The performance of stroke management in an Australian regional hospital has improved over a 3 year period. Further improvements in the NHW in-hospital fast track for acute stroke are required.

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Tues97

N Nanayakkara[1], N Pang[1], H Nguyen[2], M Reynolds[2], B Peake[1], S Hoetomo[1], A Tan[2], J Smith[1], G Hart[3], E Owen-Jones[4], J Ross[4], V Stevenson[1], R Robbins[8], L Churilov[9], Q Lam[5],O Farouque[7], D Johnson[2], S T Baker[1,2], J D Zajac[1,6] , E I Ekinci[1,6,10]

Hospital-wide HbA1c measurement identifies undiagnosed diabetes in 5% of patients aged 54 years and over: results of the Austin Health Diabetes Discovery Initiative

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4. Austin Centre for Applied Clinical Informatics, Austin Health, Heidelberg VIC 3084
5. Pathology Department, Level 6, Harold Stokes Building, Austin Hospital, Heidelberg, VIC 3084
6. University of Melbourne (Austin Health), Parkville, VIC
7. Department of Cardiology, Austin Health, Heidelberg VIC 3084
8. Department of Administrative Informatics, Austin Hospital, Melbourne, Australia
9. The Florey Institute of Neuroscience & Mental Health, Melbourne, Australia
10. Menzies School of Health Research, Darwin

Background
Hospital admission represents an opportunity to diagnose and manage diabetes mellitus. As HbA1c measurement is superior to other tests for diabetes diagnosis in the hospital setting[1], we aimed to investigate the prevalence of undiagnosed diabetes and poor glycaemic control using routine HbA1c testing in inpatients at Austin Health, a tertiary referral centre.
Methods
Patients (aged ≥54 years) admitted between June 2013 and January 2014 had routine HbA1c testing via an automated order using the Cerner Millennium® Health IT System. Patients were classified as having diabetes if the HbA1c was ≥6.5% and poor glycaemic control if the Hba1c ≥8.5%[1]. A history of diabetes was obtained from the hospital medical record.
Results
Patients (n=5083, 6716 admissions, mean age 72.9±10.8 years) were divided into three categories: those with a prior history of diabetes (28.6%, CI 27.3-29.8%, n=1453), no prior history of diabetes and HbA1c <6.5% (66.1%, CI 64.8-67.4%, n=3359), and no prior history of diabetes (5.3%, CI 4.7-6.0%, n=271) and HbA1c ≥6.5%. Medical units had a higher rate of undiagnosed diabetes compared to surgical units (5.9%, [CI 5.1-6.9%] vs 4.3% [CI 3.4-5.3%] p=0.008). Readmissions during the study period were higher in patients with an HbA1c ≥6.5% with and without a prior history of diabetes (26%, CI 23.6-28.2% and 23%, CI 18.4-28.7%, respectively), compared to patients with an HbA1c <6.5% and no prior history of diabetes (21%, CI 20.4-23.2%) (p=0.007). No significant differences in rates of intensive care unit admission (9.1%, CI [8.1-10%], 10.6% [CI 9.1-12.3%] and 7.0% [CI 4.2-10.7%] respectively, p=0.105) or inpatient mortality (11.4%%, CI [10.3-12.5%], 11.8% [CI 10.2-13.5%] and 14.4% [CI 10.4-19.1%] respectively, p=0.324) were observed between the groups.
Conclusions
Approximately 5% of inpatients > 54 years attending our tertiary hospital have undiagnosed diabetes. Routine inpatient HbA1c testing addresses a currently missed opportunity to identify patients with newly diagnosed diabetes and poor glycaemic control. The impact of early identification and treatment of poor glycaemic control on patient outcomes requires further study.

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Tues98

Seah J[1,3], Huyhn J[3], Clarke M[1,3], Sourris K[3], Coughlan M[3], Houlihan C[1], Permezel M[2,3], Fleming G[2], Macisaac R[3], Ekinci E[1,3] Jerums G[1,3].

The Effects of Diabetes and Pregnancy on Tumour Necrosis Factor-alpha Receptors 1 and 2

1.Endocrine Center, Heidelberg, Vic., Australia;
2.Mercy Health, Heidelberg, Vic., Australia;
3.University of Melbourne

INTRODUCTION

Increased soluble Tumour Necrosis Factor-alpha receptors (sTNF-aR) 1 and 2 have been associated with Diabetic Kidney Disease (DKD) in type 1 and type 2 diabetes[1,2]. Whether this applies to pregnancy is not known.

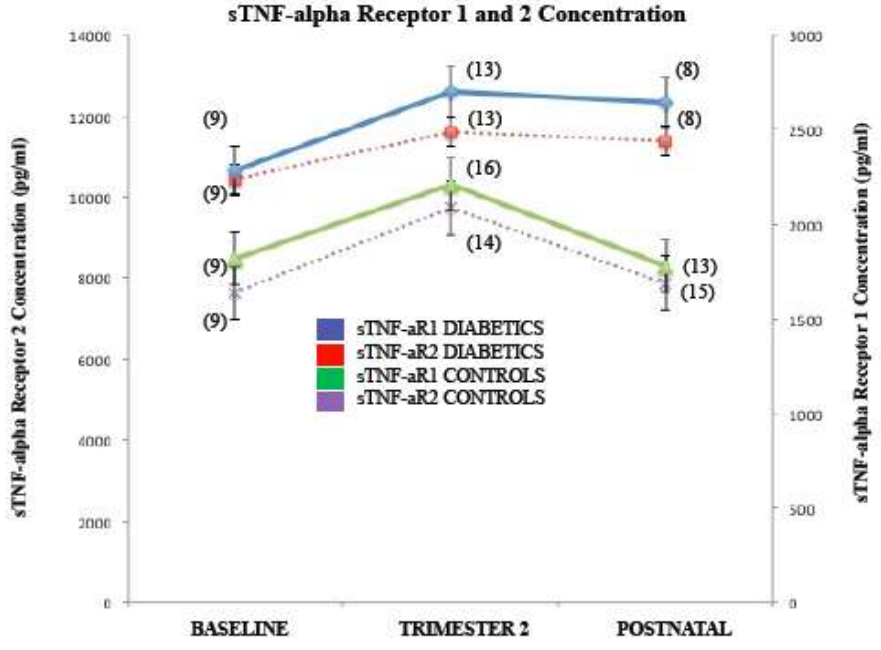
METHODS

We measured serial levels of sTNF-aR1 and 2 (R1+R2) pre, during 2nd trimester (T2) and post pregnancy in healthy women and women with pre-existing diabetes using the Multiplex immunoassay.

RESULTS

At baseline, estimated glomerular filtration rate was > 90ml/min/1.72m2 in all but one case. The baseline 24 hour albumin excretion rate for diabetics and controls at baseline was [97.1±72.6] and [5.9 ±1.95] µg/min (p=0.29).

Data for the study group as a whole are shown in the figure. There was 73% of type 1 compared to 27% of type 2 diabetes participants. Using serial comparison within subjects, in the diabetes group (N=8) there was a significant increase in R1+R2 from baseline to T2 (p =0.01), which did not return to pre-pregnancy values post partum (p> 0.05) (Figure). For paired controls, from T2 to post-partum, there was a significant reduction of both TNF-aR1 (N=3) and TNF-aR2 (n=4). There was no significant difference in changes in R1+R2 in type 1 compared with type 2 diabetes.



CONTROL VS. DIABETES	BASELINE	TRIMESTER 2	POSTNATAL
sTNF-aR 1	p =0.14	p= 0.08	p=0.03
sTNF-aR 2	p= 0.03	p=0.14	p=0.02

CONCLUSION:
Whether the failure of sTNFRs to return to pre-pregnancy levels post partum is linked to early DKD as reflected by microalbuminuria or the persisting effects of hyperfiltration of pregnancy requires further studies.

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Tues99

Chow CL[1], Leung JL[1], Choong YHB, Chong CP[1,2], Parikh S[2], Lim WK[1,2].

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Utility of X-Ray and Computed Tomography in the Assessment of Abdominal Pain in the Emergency Department.

¶

This abstract is not included at the request of the author

Tues100

Chow CL[1], Leung JL[1], Choong YHB, Chong CP[1,2], Parikh S[2], Lim WK[1,2].

Incidence of Abdominal Pain and Predictors of Admission in the Emergency Department.

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This abstract is not included at the request of the author

Tues101

Josh Pitcher[1], Jade McLellan[1], Susan Ballard[2], Elizabeth Grabsch[3], M. Lindsay Grayson[2]

Superbugs in the supermarket? Assessing the rate of contamination with multi-drug resistant (MDR) Gram-negative bacteria (GNB) in fresh Australian pork

1.University of Melbourne;
2.Infectious Diseases Department, Austin Health;
3.Microbiology Department, Austin Health

Aim
Use of antibiotics when raising livestock is a common practice worldwide. Overuse of antibiotics has been shown to lead to the development of MDR bacteria. It is therefore possible that antibiotic use in livestock production can lead to MDR bacteria that may end up in the human population as meat contaminants. This study investigated whether MDR bacteria were present on Australian meat products sold in local supermarkets.

Methods
Pork ribs were collected from 30 suppliers (supermarkets or butchers) across Melbourne's eastern suburbs on two occasions over a 10 week period. Meat specimens were massaged in buffered peptone water before this rinsate underwent a two step amplification process (overnight incubation in tryptone soya broth [TSB] and a second overnight incubation in TSB with ceftriaxone and vancomycin). The second broth culture was inoculated onto extended-spectrum beta-lactamase (ESBL) chromogenic agar and incubated for 48 hours. Colonies that grew on these plates were purified, identified and underwent antibiotic susceptibility testing to determine their sensitivity profiles.

Results
A total of 60 specimens were processed, from which 56 (93%) grew at least one isolate, with a total of 79 isolates. All isolates exhibited ESBL aciivity, with 43 isolates having resistance to one other antibiotic class and a further 3 isolates with resistance to two other antibiotic classes.

Conclusion
The results suggest a low rate of MDR bacteria in commercially sold meat, however there are high rates of ESBL producing organisms consistent with the use of ceftiofur in livestock.

Tues102

AA Mahony[1,2], EA Grabsch[3], SA Ballard[1], S Xie[3], J Wang[3], SA Roberts[4], H Heffernan[5], RL Stuart[6], D Cotsanas[6], A Cheng[7], N Bak[8], T Seemann[9], TP Stinear[10,11], MMC Lam[10], GW Coombs[12], BP Howden[1,3,10,13], ML Grayson[1,2,3], PDR Johnson[1,2,12]

¶

Vancomycin-resistant *Enterococcus faecium* sequence type 796, a new colonisation and disease outbreak clone shared from Australia to New Zealand.

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4 – Department of Clinical Microbiology, Auckland District Health Board, Auckland, New Zealand
5 – ESR Antibiotic Reference Laboratory, Wellington, New Zealand
6 – Monash Infectious Diseases, Monash Health, Melbourne, Victoria, Australia
7 – Department of Infectious Diseases, Alfred Health, Melbourne, Victoria, Australia
8 – Department of Infectious Diseases, Royal Adelaide Hospital, Adelaide, South Australia, Australia
9 – Victorian Bioinformatics Consortium, Monash University, Clayton, Victoria, Australia
10 – Department of Microbiology and Immunology, University of Melbourne, Parkville, Victoria, Australia
11 – Department of Microbiology, Monash University, Clayton, Victoria, Australia
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13 – Microbiological Diagnostic Unit, Peter Doherty Institute, University of Melbourne, Parkville, Victoria, Australia

Aim

Vancomycin-resistant *Enterococcus faecium* (VREfm) continues to arise and spread within healthcare facilities despite widespread implementation of hand hygiene programs and infection control measures. We aimed to compare recent Australasian VREfm outbreaks to better understand the clonality, origin and extent of an emerging strain.

Methods

Five tertiary hospitals across south-eastern Australia and New Zealand compared recent (2012-2014) outbreak *vanB* VREfm isolates using whole genome sequencing (WGS) following traditional Infection Control based epidemiologic investigation +/- pulsed field gel electrophoresis typing (PFGE).

Results

A new VREfm type, designated sequence type 796 (ST796) on multilocus sequence typing, was discovered in all five hospitals with a highly conserved core genome (70 isolates sequenced of 117 patients infected according to PFGE pattern; ~100 single nucleotide polymorphisms across the 70 strains). Rectal colonisation was the most commonly observed form of infection, with bacteraemia occurring at two Melbourne sites (13 cases). Variable high-level gentamicin resistance was found in invasive isolates, in contrast to streptomycin. Importations of ST796 into New Zealand likely arose through international patient transfers from Melbourne. Outbreaks occurred in settings with good pre-existing hand hygiene compliance (range 65-85%) amongst healthcare workers.

Conclusions

ST796 VREfm poses a new threat in nosocomial infection and appears to be readily transmissible between colonised patients. WGS of geographically widespread VREfm isolates suggests a common source of this clone, with Melbourne the presumed epicentre.

References

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Tues103

AA Mahony[1,2], SA Ballard[1], EA Grabsch[3], S Xie[3], PDR Johnson[1,2], ML Grayson[1,2,3]

¶

Improved turnaround time and preserved sensitivity in detecting environmental hospital contamination with vancomycin-resistant enterococcus using polymerase chain reaction versus culture-based techniques.

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1 – Austin Centre for Infection Research, Austin Health, Heidelberg, Victoria, Australia
2 – Department of Medicine, University of Melbourne, Heidelberg, Victoria, Australia
3 – Department of Microbiology, Austin Health, Heidelberg, Victoria, Australia

¶

Aim

Deficiencies in cleaning contribute to the spread of multi-drug resistant organisms, such as vancomycin-resistant enterococcus (VRE), in hospitals between patients. We aimed to develop an environmental VRE detection system with a relatively rapid turnaround time (TAT) that could help improve cleaning and vulnerable patients' safety.

Methods

Swabs were collected from high-touch surfaces in VRE-colonised and non-colonised patients' rooms, then incubated in tryptone soya broth (TSB). After preliminary incubation for 18 hours, an aliquot was taken for polymerase chain reaction (PCR) testing using two different sets of reagents (Perth vanAB or Roche VRE assays) on a LightCycler platform, as well as for culture on chromogenic VRE agar (bioMérieux) for 24-48 hours. A second aliquot was cultured in the same manner after 48 hours' incubation in TSB, and considered the gold standard.

Results

630 swabs were collected, with 90/328 (27%) VRE-colonised and 12/302 (4%) non-colonised patients' rooms' swabs culture-positive. Both PCR assays provided excellent sensitivity and specificity when compared with the 18-hour TSB + 24-hour agar cultures (Perth: 95.4%, 99.6%; Roche: 98.9%, 98.2% respectively), although missed 13 cultures that were positive only after prolonged TSB incubation, suggesting a low inoculum of VRE on those surfaces.

Conclusions

PCR offers a greatly reduced TAT (~24 hours versus >96 hours for culture) for detection of VRE environmental contamination. A direct patient safety study utilisting PCR in measuring hospital cleaning is now warranted.

References

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Tues104

Aditya Tedjaseputra[1], Rebecca Ling[1] and Patrick Charles[1,2]

Typhoid Fever: A Retrospective Audit of Epidemiology, Antimicrobial Susceptibility and Clinical Characteristics

1. Austin Health Clinical School, The University of Melbourne, Heidelberg, Victoria, Australia
2. Infectious Disease Department, Austin Health, Heidelberg, Victoria, Australia

Aim. Typhoid fever (**TF**) is a systemic illness due to infection by *Salmonella enterica enterica*, serovar Typhi. An estimated 16 million cases and 600,000 deaths are attributed to TF worldwide, making it an important infectious disease globally[1]. As a center of education and leisure travel in Australia, the prevalence of TF in Victoria has been stable at 5 to 60 cases per year[2]. In recent years, emerging antimicrobial resistance in many countries has presented as an enormous issue for clinical care. As such, we undertook a retrospective audit of TF cases admitted to the Austin Health under the Infectious Disease (**ID**) Department from 2004 to 2013 to examine its epidemiology, antimicrobial resistance pattern and natural history of these cases.
Methods.TF cases were identified by searching through the database of the ID Department of Austin Health in the time period between 2004 to 2013 for a clinical diagnosis of 'Typhoid Fever' or a positive isolate of 'Salmonella Typhi'. 21 cases were included in the audit. Data was collected by reviewing subject inpatient files, in hard-copy as well as via Scanned Medical Records (SMR). Antimicrobial susceptibility profile of the clinical isolates from each case was obtained from the Microbiology Laboratory of Austin Health. Clinical data was then recorded and statistical analysis performed in Microsoft Excel®. These are presented in the form of figures and tables.
Results. The majority of the cases come from the Visiting Friends and Relatives (VFR) population, as they went back to their country of origin – all of which did not seek pre-travel advice/consultation with a medical professional. The most popular travel destination is the Indian Subcontinent. First-line investigations which shows consistent abnormality beyond the reference range include Complement Reactive Protein (CRP, average = 107.8) and Alanine Transaminase (ALT = 119.4), but not White Cell Count (WCC = 6.4) on Full Blood Examination (FBE). There is a trend of increasing resistance to ciprofloxacin with no isolatre and 60% isolate being resistant prior to and post 2006, respectively. All isolates remain sensitive to ceftriaxone throughout this study period and as such serve as first-line treatment (intravenous) in most cases. Defervescence took on average 7 days post administration of intravenous ceftriaxone. Full results also will be presented.
Conclusion. The VFR population, especially those originating (and travelling back to) the Indian subcontinent is a particularly vulnerable population. Antimicrobial susceptibility is an issue with a trend of increasing resistance to fluoroquinolones also observed in this study, consistent with global trend. Haematological tests consistently reported as abnormal including CRP and ALT albeit non-specific, may be included in clinical guidelines to guide severity of disease. Intravenous ceftriaxone should be first-line treatment and improvement in clinical parameters in this study can be used to decide timing of oral step-down therapy.

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Tues105

Ryan A[1], Goss B[1], Hill K[1] & O'Brien R[1]

Intern Preparation Changes Medical Student Behaviour

[1] Austin Hospital Clinical School, University of Melbourne, Victoria, Australia

Aim
A novel seminar introduced to the Austin/Northern Clinical School was designed to give final year students a realistic expectation of Internship, and to direct their learning in their final semester.

Methods
Students were contacted for anonymous feedback directly after the seminar, and at the start and completion of Internship. Responses were gathered on the influence & usefulness of the seminar, and whether it had an impact on their confidence as an Intern.

Results
81% of the first cohort & 98% of the second cohort reported that the seminar would change their behaviour for the rest of the semester. At the start of their Internship, 81% of the first cohort & 88% of the second cohort rated the overall usefulness of the seminar as excellent or above average.
After the seminar, students became more involved in their allocated units and were motivated to complete non-assessed tasks of relevance to their pending internship. During their work as Interns, they recalled this seminar being useful and reported that this seminar improved their confidence on commencing Internship.

Conclusions
The Intern Preparation Seminar provides significant motivation for learning, results in behaviour change, and appears to result in better preparation for internship. Tying final year medical student learning events to their forthcoming Internship provides significant motivation for learning.

Tues106

Wallbridge, P [1,2], Churchward T[1,2], Worsnop C.[1,2]

Accuracy of patients' perception of their time spent sleeping supine

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2. Institute for Breathing and Sleep, Heidelberg.

Aim
Obstructive events in patients with obstructive sleep apnoea (OSA) occur more frequently in supine sleep than in sleep on the side. Some patients will only have OSA in the supine position, and these can be treated with a positional device to keep them off their backs when asleep. Some people claim that they do not sleep on their backs, making acceptance of a positional device more difficult.

Methods
Consecutive patients undergoing sleep studies at the Austin Hospital from December 2013 to March 2014 were asked for how long they slept, if they slept on their backs, and if so, for how long. Data were analysed with descriptive statistics, bias-plot (Bland-Altman) analysis to assess agreement between patient perception and PSG results and Spearman's correlation to analyse relationships between continuous data.

Results
There were 518 patients in the study period, and data from 368 were analysed. Patients were excluded because of missing or incomplete data (n=133) or immobility (n=17). 98 patients said that they did not sleep on their backs, but 34 (34.7%) of these had more than 60 minutes of supine sleep recorded. (Range 0 – 305.5mins). A few were "unsure" (n=8) and all had supine sleep recorded (31.5 - 257.5mins). Most of those reporting definite supine sleep (n=262), 253 had PSG supine sleep demonstrated. For the presence of any PSG supine sleep, questioning had a sensitivity of 77.9%, specificity 72.7% with PPV of 96.7% and NPV of 24.5%. There was a significant correlation ($r = 0.51$, $p=0.02$) between perceived and PSG supine sleep, however there were wide limits of agreement (-246.9, 194.2mins).

Conclusion
Patients having in-laboratory sleep studies are not accurate in saying that they do not sleep supine. This aspect of the history cannot be relied upon when considering a positional device for the treatment of supine only OSA.

Tues107

Jibin Thomas[1,2], Christopher Worsnop[1,2], Tom Churchward[1,2],Julie Tolson[1,2].

Continuous Positive Airway Pressure (CPAP) adherence in Obstructive Sleep Apnoea (OSA) patients

1. *Department of Respiratory & Sleep Medicine, Austin Health, Heidelberg, Vic., Australia*
2. *Institute of Breathing and Sleep, Heidelberg Vic., Australia*

Aim

CPAP therapy is the most effective treatment option currently available for OSA. However, adherence to CPAP therapy is not ideal. The aim of this study was to assess CPAP adherence in our patients in a subsidised CPAP treatment program.

Methods

CPAP usage among patients (n=42) was obtained at 4 weeks, 3 months and 6 months by downloading directly from the pumps the time that the CPAP mask was at the prescribed pressure.

Results

69% (n=29) were male with a median age of 63 years. The median Apnoea Hypopnoea Index (AHI) was 35 with an Epworth Sleepiness Score (ESS) ranging from 1 to18 (median 11). CPAP pressure ranged from 8 cm to 17 cm of H_20 (median12). 31% (n=13) of patients hired a CPAP machine to ascertain their adherence to therapy before being enrolled in the treatment program.

At 6 months, the CPAP usage rate ranged from 0 hours to 8.25 hours with a median usage of 3.5 hours per night. 48% (n=20) of the patients were using CPAP for more than 4 hours a night. 6 patients (14%) never used CPAP (0 hrs). 69% (n=9) of previously CPAP hired patients had used CPAP for >4h/night compared with 37% (n=11) in the non-hired group. There were low correlations between AHI and adherence (r=0.1), ESS and adherence (r= -0.6) and CPAP pressure and adherence (r=0.08). The median change in CPAP adherence rate from 4 weeks to 3 months was 0.7 hours and at 6 months, it was 1 hour. About 80% of the initially treatment compliant patients remained adherent at 6 months. Only one patient from the non-adherent group had a better compliance at 6 months.

Conclusion

About half of patients in a subsidised CPAP treatment program are adherent with CPAP. Patients who had previously hired CPAP had better adherence. There was no relation observed between AHI, ESS, the level of CPAP and CPAP adherence. CPAP adherence did not improve with increased duration of treatment in non-adherent patients.

References

1) Engleman HM, Martin SE, Douglas NJ. Compliance with CPAP therapy in patients with the sleep apnoea/hypopnoea syndrome. Thorax 1994; 49:263.
2) McArdle N, et al. Long-term use of CPAP therapy for sleep apnea/hypopnea syndrome. Am J Respir Crit Care Med 1999; 159:1108.
3) Kohler M, Smith D, Tippett V, et al. Predictors of long-term compliance with continuous positive airway pressure. Thorax 2010 65: 829–832.

Tues108

Respiratory muscle strength and body mass index (BMI) in patients with and without obesity hypoventilation syndrome

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1. Dept of Respiratory and Sleep Medicine, Austin Health, Heidelberg, VIC.
2. Institute for Breathing and Sleep, Heidelberg, VIC.

Aim: Obesity impacts several aspects of respiratory physiology, however its effect on respiratory muscles is unclear. Previous studies did not examine the relationship between respiratory muscle strength and obesity hypoventilation syndrome (OHS). The aim of this study was to investigate the effect of obesity on respiratory muscle strength in patients with and without OHS.

Methods: A retrospective review was carried out of all patients who had undergone respiratory muscle strength testing at the Austin Hospital Respiratory Laboratory between January 2000 and November 2012. Those with known causes of respiratory muscle weakness were excluded. Regression analysis was used to assess relationships between BMI and respiratory muscle strength, expressed as maximal inspiratory (MIP) and expiratory (MEP) pressures. Generalised linear models were also used to assess the relationship between BMI, OHS and respiratory muscle strength adjusted for confounding variables. The presence of OHS and other confounding variables was determined by either laboratory results and/or correspondence from a respiratory physician in the patient medical record.

Results: After taking into account the exclusion criteria, 314 adult patients were included in the analysis (52.2% male, mean age 61.5 years). There was no statistically significant correlation between respiratory muscle strength expressed by MIP % predicted[#] or MEP % predicted[#] and BMI. After correcting for common confounding co-morbidities, there were statistically significant differences in both MIP (p=0.031) and MEP (p=0.043) in patients with OHS compared to those without. After excluding patients with co-existing COPD, only MIP (p=0.038) was statistically lower in patients with OHS compared to those without.

	Study population			Study population excluding COPD		
	OHS	No OHS	p value	OHS	No OHS	p value
Mean FEV_1 (L)	1.68	1.98	0.025	1.89	2.27	0.037
Mean FVC (L)	2.25	2.82	0.004	2.33	2.94	0.014
Mean VC (L)	2.48	2.83	0.052	2.47	3.10	0.02
Mean MEP (%)	102.8	95.3	0.043	99.8	94.5	0.257
Mean MIP (%)	85.6	96.4	0.031	84.2	97.9	0.038
Mean Age (yrs)	56.5	62.8	0.0007	54.4	61.6	0.004
Mean BMI (kg/m^2)	49.4	33.6	0.00	51.4	33.8	0.00

Conclusion: Patients with obesity hypoventilation syndrome have weaker inspiratory muscles regardless of BMI. These results may shed light on the pathogenesis of OHS.

[#] Wilson S et al. Thorax. 1984;39:535–8.

Tues109

Tolson J [1], Schembri R,[1,2], Spong J, [1], Stevens B,[1], Ruehland W, [1], Rochford PD,[1], Berlowitz DJ,[1,2]

¶

The impact of the 2007 AASM scoring criteria on sleep apnoea indices in people with Acute Quadriplegia

¶

1.Department of Respiratory and Sleep Medicine, Institute for Breathing and Sleep, Heidelberg, Vic., Australia;
2.University of Melbourne, Parkville, Vic., Australia

¶

Aim

Obstructive sleep apnoea (OSA) is highly prevalent in people with quadriplegia. The continuous positive airway pressure (CPAP) for OSA in quadriplegia (COSAQ) trial is a randomised controlled trial, which is assessing the effect of diagnosing and treating OSA in people with quadriplegia. The previous gold standard for scoring sleep studies (PSGs) was developed by Rechtschaffen and Kales (R&K)[(1)] for sleep staging and the "Chicago" (Quan, Gillin et al, 1999)[(2)] method for respiratory scoring. These scoring rules were used to conduct and analyse PSGs in the COSAQ trial. In 2007 the new American Association for Sleep Medicine (AASM) scoring rules were released and the beginning the COSAQ trial predates this release. The aim of this study was to quantify the difference between the R&K/Chicago and the AASM OSA indices in an acute quadriplegic group.

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Methods

Twenty-four PSGs previously conducted on patients in the COSAQ trial were re-analysed twice by 3 experienced sleep scientists, using both the R&K/Chicago and the AASM criteria.

¶

Results

PSGs analysed using AASM resulted in significantly fewer scored hypopnoeas (mean=46.78, SD=48.30) than the R&K/Chicago criteria (mean=136.60, SD=99.08, p<.001) and significantly more obstructive apnoeas (mean=105.81, SD=130.41) versus R&K/Chicago (mean=73.18, SD=108.14, p<.001). The AASM criteria produced a lower overall apnoea hypopnoea index (AHI) (mean=30.02, SD=28.63) than R&K/Chicago (mean=38.55, SD=28.27, p<.001).

¶

Conclusion

The significant difference in the mean AHI between the two sets of scoring criteria will affect disease severity classification and potential treatment decisions in this group of quadriplegic patients.

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2. Quan SF, Gillin JC, Littner MR, Shepard JW. Sleep-related breathing disorders in adults: Recommendations for syndrome definition and measurement techniques in clinical research. Editorials. Sleep. 1999: 22(5): 662-689.

Tues110

Darren Ow[1], Nathan Papa[1], Peter Liodakis[1,3], Shomik Sengupta[1,2,3], Stephen Clarke[1,3], Nathan Lawrentschuk[1,2,3], Damien Bolton[1,3]

Transurethral Resection (TURP) versus Greenlight Laser Photovaporisation (PVP) of Prostate: A comparison of outcomes over 560 consecutive cases from a single institution.

This abstract has not been included at the request of the author

Tues111
Automated reporting of Amyloid PET quantification on brain surface through a web interface

V. Dore, P. Bourgeat, L Zhou, J. Fripp, R. Martins, L. Macaulay, C. L. Masters, D. Ames, B Brown, C. C. Rowe, O. Salvado, V. L. Villemagne

Background:
Molecular brain imaging using Positron Emission Tomography (PET) is a robust diagnostic tool for which several tracers labelled with either 11C or 18F are available. For visual inspection of the images, cortical surface based visualisation presents the advantage of providing a compact and more convenient display than volumetric scans. We have developed an automated reporting tool to display the semiquantitative PET signal for several common tracers without the need of a MRI and using several standard normalisation methods (i.e. using the Pons, the whole Cerebellum WCB and the cerebellum cortex CB-CTX). This tool is available on-line to registered users and the processing is performed remotely (http://milxcloud.csiro.au/capaibl). The method was validated by comparing the surface signal computed with and without MRI.

Methods:
Three hundred and thirty nine participants from the AIBL cohort underwent MRI and PET scans with different tracers: 18F-Flutemetamol (n=101), 11C-PIB (n=91), 18F-Florbetapir (n=77), 18F-FDG (n=38), 18F-Florbetaben (n=14) and 18F-NAV4694 (n=18). Each individual PET image was spatially normalised to the MNI space and SUVR corrected with a common mask. Radiotracer retention was then estimated vertex-wise within several GM prior atlases. Atlas selection and Bayesian fusion were then used to estimate retention on the cortical surface. For comparison with MR-based approach, radiotracer retention was also estimated for each vertex with the individual GM segmentation and projected onto the individual cortical surface. The difference in radiotracer estimation between the MRI-dependent and CAPAIBL (Computational Analysis of PET from AIBL) approaches was measured by absolute difference of SUVR values at each vertex. The SUVR differences were averaged over vertices and over the total subjects.

Results:
Visual inspection revealed high concordance between PET only and MRI based surface projection; the surface projection was defined on 8 standard views for consistent reporting (Fig 1). Across the 6 tracers tested, the average absolute error over the brain surface with and without MRI was 0.12, whereas the average variance was 0.018.

Conclusions:
The proposed MRI-less surface projection method demonstrated better estimation of 11C-PIB retention than recently published methods displaying similar accuracy for various 18F labelled radiotracers. CAPAIBL provides an efficient reporting tool for PET imaging easily accessed remotely through a web interface.

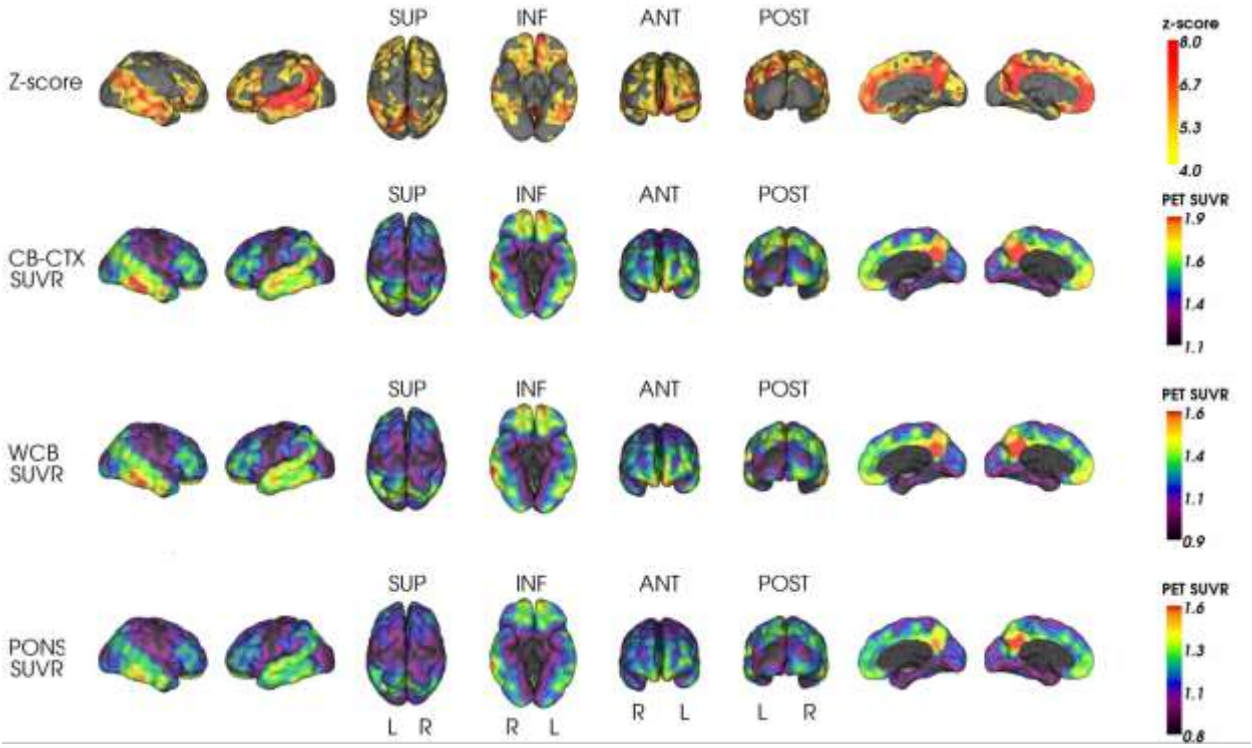

Fig 1: Example of CAPAIBL inspection on a positive 18F-Florbetapir. The report displays the radiotracer retention z-score when compare to a normal negative population followed by normalisation with cortical cerebellum, whole cerebellum and Pons.

Tues113

Willian S. Korim and Anthony J.M. Verberne

Activation of medulla-projecting perifornical neurons modulates the adrenal sympathetic response to hypoglycaemia: involvement of TASK3 channels.
This abstract is not included at the request of the author

Tues114

Veldsman M, [1], Cumming T,[1] Li Q[1], Werden E[1], Bird L[1], Brodtmann A[123]

Hippocampal connectivity in ischaemic stroke patients and age-matched controls

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2. Austin Health, Heidelberg, Vic., Australia;
3. Eastern Clinical Research Unit, Monash University, Box Hill Hospital, Vic., Australia

Aim
The effects of ischaemic stroke are neither confined to the lesion site nor to the acute phase of the cerebrovascular event. Recovery and reorganisation over time are likely to affect network dynamics after stroke, yet this is rarely investigated in timescales beyond a few months post-stroke. Memory function is often impaired after stroke and this has been associated with hippocampal dysfunction. We sought to examine the effect of stroke on known large-scale networks, including a hippocampal network, 3 months and 1 year following stroke.

Methods
24 ischaemic stroke patients and 12 age-matched controls completed a battery of tests including the Hopkins Verbal Learning Test-Revised (HVLT-R) for memory function. 7 minutes of whole brain T2* echoplanar images were acquired on a Siemens 3T scanner with volunteers at rest.

Seed based analyses and data driven multivariate principal components analyses were used to identify disruptions in connectivity in known functional networks in the brain across time.

Results
Hyper-connectivity was evident in a sensorimotor network in patients 3 months after stroke, compared to healthy controls. Hippocampal connectivity appeared to be preserved 3 months after stroke but was disrupted at 1 year, compared to healthy controls. Memory performance in stroke patients declined from 3 months (mean ZScore 0.46, SE 0.14) to 1 year (-0.26, SE 0.16) but was preserved in controls ($F(1,11)=.48$, $p=.46$).

Functional networks showed disruptions and alterations 3 months and 1 year after stroke reflecting large-scale, dynamic reorganisation and recovery beyond the lesion site.

Tues115

Toby Cumming[1], Qi Li[1], Emilio Werden[1], Audrey Raffelt[1], Renee Lichter[1], Heath Pardoe[2] & Amy Brodtmann[1]

Cognition after stroke correlates better with regional brain volume than white matter hyperintensity volume

[1]Florey Institute of Neuroscience and Mental Health, Melbourne, Australia
[2]School of Medicine, New York University, USA

Aim
To determine the associations between white matter hyperintensity (WMH) volume, regional brain volume and cognitive performance after stroke.

Methods
The Cognition And Neocortical Volume After Stroke (CANVAS) project is an ongoing, prospective longitudinal study. Acute ischemic stroke patients were tested within 30 days of symptom onset. Isotropic 1 mm MPRAGE images were acquired on a Siemens Trio 3T MRI scanner. Images were processed using Freesurfer V5.1, generating automated measures for total brain volume, cortical thickness and amygdala volume. Hippocampal and WMH volumes were calculated via manual tracing. Patients completed tests of memory (Hopkins Verbal Learning Test-Revised: immediate and delayed recall), working memory (CogState one-back task) and attention (CogState simple and choice reaction time tasks).

Results
Fifty patients were included: age 68.8±11.6 years, years of education 13.3±4.0, NIHSS 3.8±3.1, MoCA 23.1±4.3, days to testing 22.3. Performance on the HVLT-R was below expected norms: mean immediate recall z-score -0.9±1.1, delayed recall -1.1±1.7. Surprisingly, WMH volume was not significantly associated with any cognitive measure. Hippocampal and amygdala volumes were significantly associated with measures of short-term and working memory. Cortical thickness was significantly associated with both memory measures and with simple reaction time.

Conclusion
Memory and attentional performance is more closely related to structural brain volumes (hippocampi, amygdalae, cortical thickness) than to WMHs in the first month after stroke.

Conclusion
We demonstrated the feasibility of using resting-state paradigms to examine large-scale network connectivity changes longitudinally in stroke patients. Resting-state connectivity paradigms are well suited to study the effects of stroke because they do not put pressure on patients to perform; multiple large-scale networks can be examined simultaneously from data acquired in short non-invasive scans; and they are capable of revealing recovery and reorganisation.

Tues116

Michael S. Hildebrand [1], Rick Tankard [2], Elena V. Gazina [3], John A. Damiano [1], Kate M. Lawrence [1], Hans-Henrik M. Dahl [1], Brigid M. Regan [1], A. Eliot Shearer [4,5], Richard J.H. Smith [4], Ingrid E. Scheffer [1,6], Steven Petrou [3], Melanie Bahlo [2], Samuel F. Berkovic [1]

PRIMA1 mutation: a new cause of nocturnal frontal lobe epilepsy and intellectual disability

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[6] *Department of Paediatrics, University of Melbourne, Royal Children's Hospital, Melbourne, Victoria, Australia*

Aim
We report a *PRIMA1* mutation segregating with autosomal recessive nocturnal frontal lobe epilepsy (NFLE) and intellectual disability in one family.

Methods
Linkage analysis and mutation detection using exome sequence data from the family showed four linkage peaks on chromosomes 7, 8, 13 and 14 with maximum LOD scores ranging between 1.5 and 1.93 due to the small size of the family.

Results
Exome variant filtering under these peaks revealed that two affected siblings were homozygous for a novel splice site mutation (c.93+2T>C) in the *PRIMA1* gene on chromosome 14, whereas the unaffected sibling had no mutation and the unaffected parents were heterozygous carriers. No additional *PRIMA1* mutations were found in 150 sporadic NFLE cases. The effect of the c.93+2T>C mutation on *PRIMA1* mRNA splicing was analysed using a minigene system, which demonstrated that the mutation leads to skipping of the first coding exon of the mRNA.

Conclusion
These findings suggest that the c.93+2T>C mutation abolishes protein expression. PRIMA1 is a transmembrane protein that anchors acetylcholinesterase (AChE), an enzyme hydrolysing acetycholine, to membrane rafts of neurons, and the PRiMA knockout mutation in mice results in reduction of AChE and accumulation of acetylcholine at the synapse. Mutations with gain of function effects in acetylcholine receptor subunits cause autosomal dominant NFLE. Thus, enhanced cholinergic responses are the likely cause of the severe NFLE and intellectual disability segregating in this family, representing the first recessive case to be reported and the first *PRIMA1* mutation implicated in these diseases.

Tues117

Regan BM,[1] Bagnall RD,[2,3] Crompton DE,[1,4] Cutmore C,[2] Berkovic SF,[1] Scheffer IE,[1,5] Semsarian C [2,3]

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Are Mutations of the Respiratory Control Gene *PHOX2B* Associated with Sudden Unexpected Death in Epilepsy (SUDEP)?

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4. *Department of Neurology, Northern Health, Epping, VIC, Australia*
5. *Florey Institute of Neurosciences and Mental Health, Melbourne, VIC, Australia*

¶

Aim

Sudden unexpected death in epilepsy (SUDEP) is the most common cause of epilepsy-related premature death and is characterised by a sudden, unexpected, non-traumatic and non-drowning death in patients with epilepsy, and an unrevealing post-mortem examination. Despite increasing awareness of SUDEP, underlying causes remain elusive. Cardiac death has been implicated due to the occurrence of ictal cardiac arrhythmias; however, the recent MORTEMUS study suggests central apnoea might be the key mechanism. Congenital central hypoventilation syndrome (CCHS) is a potentially fatal autonomic nervous system disorder characterized by hypoventilation with an impaired response to hypercapnia and hypoxaemia. It is caused by expansion of an alanine repeat in the homeobox gene *PHOX2B*. We sought to determine if mutations in *PHOX2B* are associated with SUDEP.

¶

Methods

SUDEP cases were identified in two major Australian cohorts, the Epilepsy Genetics research program (Melbourne) and post-mortem cases from the Department of Forensic Medicine (Sydney). *PHOX2B* exons were sequenced and a segment spanning the *PHOX2B* polyalanine repeat sequence was PCR amplified with a fluorescently labelled reverse primer, and sized on an ABI3730xl DNA analyser using PeakScanner™.

¶

Results

68 cases of SUDEP underwent *PHOX2B* analysis. In one case, a 15 nucleotide deletion in the *PHOX2B* polyalanine repeat region was identified. The patient, who died at 16 years, had focal dyscognitive seizures from 5 years and mild intellectual disability. The functional significance of the deletion is unknown. Two synonymous variants were identified in 4 cases, but no *PHOX2B* polyalanine repeat expansion alleles or point mutations were found.

¶

Conclusion

The absence of *PHOX2B* polyalanine repeat expansion alleles or point mutations in 68 cases of SUDEP, with one deletion of uncertain significance, shows that *PHOX2B* mutations are not a common risk factor for SUDEP.

Tues118

Cadilhac DA[1,2], Lannin NA[3], Kilkenny M[2], Churilov L[1], Kung F[1], Grabsch B[1], Donnan G[1], Dewey H[5] on behalf of the Australian Stroke Clinical Registry investigators.

Title of abstract

Variances in hospital deaths following acute stroke: information from the Australian Stroke Clinical Registry

1. *Florey Institute of Neuroscience and Mental Health, Heidelberg*
2. *Stroke & Ageing Research Centre, Monash University*
3. *Alfred Clinical School, Faculty. of Health Sciences, La Trobe University*
4. *Austin Health, Heidelberg*

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Aim

To compare risk-adjusted outcomes (in-hospital deaths) to assess quality of stroke care among hospitals participating in the Australian Stroke Clinical registry (AuSCR). Established in 2009, AuSCR provides national, prospective data on stroke severity, clinical processes and outcomes for people admitted to hospital with acute stroke or transient ischaemic attack.

Methods

Data from eligible patients (demographics, clinical care, outcomes) registered in AuSCR during 2012 were used for the analysis. The risk adjusted in-hospital mortality for each hospital was calculated using hospital-level risk adjustment models as described by Katzan et al (*Stroke*, 45:918-944, 2014). The following factors were included in the model: age, gender, ability to walk on admission, and major pathological stroke subtype. Hospitals submitting ≥100 episodes of care were included. Adjusted risk stratified mortality rates are presented.

Results

At the end of 2012 there were 4572 individual patients (median age 76 years; 47% female; 74% stroke unit management; median length of stay 5 days, and 89% discharged from hospital) registered in AuSCR from 31 hospitals. Among the 2983 registrants with post-discharge data (from 4473 eligible for follow-up), 24% had died within 90 days (72% of those while in hospital). Among the 14 hospitals with ≥100 episodes (n=3,341), the smallest in-hospital risk stratified mortality rate was 6% while the greatest was 20%. Four hospitals had risk stratified mortality rates <10%; and ten hospitals had rates >10%.

Conclusion

We found about a 3-fold difference for in-hospital death rates in hospitals contributing ≥100 episodes of stroke care to AuSCR in 2012. Administrative data are limited in providing explanations for variance in stroke outcomes between hospitals since they lack the ability to comprehensively adjust for case-mix differences. The data being acquired in AuSCR assist in understanding variances in the quality of care and outcomes for stroke among hospitals in Australia since case-mix can be accounted for in greater detail for this condition. Further research is needed to identify potentially modifiable clinical factors related to variance in observed deaths and other outcomes.

Tues119

C.C. Rowe,[1] V. Dore,[2] P. Bourgeat,[2] R. Buckley,[3] R Veljanoski,[1] O. Salvado,[2] R Williams,[1] K Ong,[1] A. Rembach,[3] L Macaulay,[2] D. Ames,[4v] C.L. Masters,[3] V.L. Villemagne [1,3]

¶

Higher Aβ burden in subjective memory complainers: A flutemetamol sub-study in AIBL

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1. Austin Health, Dept of Nuclear Medicine and Centre for PET, Melbourne,
2. CSIRO Preventative Health National Research Flagship, Australian e-Health Research Centre - BioMedIA, Brisbane, Australia,
3. The Florey Institute of Neuroscience and Mental Health, University of Melbourne, Australia,
4. National Ageing Research Institute, Melbourne, Australia

¶

Aim
The underlying pathological process, diagnostic utility and prognostic value of subjective memory complaints (SMC) in relation to Alzheimer's disease (AD) remains unclear. The relationship between SMC and Aβ-burden as assessed by 18F-flutemetamol was explored in healthy elderly controls (HC) with and without SMC and compared to participants with mild cognitive impairment (MCI) and AD patients.
¶
Methods
187 AIBL participants who had not been previously imaged were evaluated: 134 HC (age 74.4±5.6), 42 MCI (age 73.9±6.2) and 11 mild AD patients (age 74.8±8.6). HC were further classified according to the presence (HC-SMC, n=80) or absence of SMC (non-memory complainers HC-NMC, n=54). All participants underwent a comprehensive neuropsychological examination, and a 3D T1 MP-RAGE MRI. 18F-flutemetamol-PET images were acquired from 90-110 mins post-injection of 18F-flutemetamol and regional and global cortical SUVR were calculated using the pons as reference region. A SUVR cut-off of 0.62 was used to define scans as low (Aβ-) or high (Aβ+) Aβ burden.
¶
Results
About 91% of AD, 55% of MCI, and 22% of HC were deemed Aβ+. Despite normal neuropsychological scores, HC-SMC had significantly higher 18F-flutemetamol retention (0.54±0.14 vs. 0.49±0.10, respectively, p=0.026) and significantly higher prevalence of Aβ+ cases (33% vs. 7%, respectively, p=0.0006) than HC-NMC.
¶
Conclusion
Subjective memory complaint indicated increased risk of preclinical AD in this study population. Longitudinal follow-up of this cohort continues.

Tues120

Vincent Doré[1], Pierrick Bourgeat[2], Luping Zhou[2], Jurgen Fripp[3], Ralph Martins[4], LanceMacaulay[5], David Ames[6], Colin Louis Masters[7], Belinda Brown[8], Christopher C Rowe[9], Olivier Salvado[2], Victor L Villemagne[7,9]

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Automated reporting of Amyloid PET quantification on brain surface through a web interface

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5. CSIRO, Parkville, Australia;
6. National Ageing Research Institute, Parkville, Australia;
7. Florey Institute, UoM, Parkville, Australia;
8. Edith Cowan University, Perth, WA, Australia;
9. Austin Health, Melbourne, Australia;

Aim

Molecular brain imaging using Positron Emission Tomography (PET) is a robust diagnostic tool for which several tracers labelled with either 11C or 18F are available. For visual inspection of the images, cortical surface based visualisation presents the advantage of providing a compact and more convenient display than volumetric scans. We have developed an automated reporting tool to display the semiquantitative PET signal for several common tracers without the need of a MRI and using several standard normalisation methods (i.e. using the Pons, the whole Cerebellum WCB and the cerebellum cortex CB-CTX). This tool is available on-line to registered users and the processing is performed remotely (http://milxcloud.csiro.au/capaibl). The method was validated by comparing the surface signal computed with and without MRI.¶

Methods

Three hundred and thirty nine participants from the AIBL cohort underwent MRI and PET scans with different tracers: 18F-Flutemetamol (n=101), 11C-PIB (n=91), 18F-Florbetapir(n=77), 18F-FDG (n=38), 18F-Florbetaben (n=14) and 18F-NAV4694 (n=18). Each individual PET image was spatially normalised to the MNI space and SUVR corrected with a common mask. Radiotracer retention was then estimated vertex-wise within several GM prior atlases. Atlas selection and Bayesian fusion were then used to estimate retention on the cortical surface. For comparison with MR-based approach, radiotracer retention was also estimated for each vertex with the individual GM segmentation and projected onto the individual cortical surface. The difference in radiotracer estimation between the MRI-dependent and CAPAIBL(Computational Analysis of PET from AIBL) approaches was measured by absolute difference of SUVR values at each vertex. The SUVR differences were averaged over vertices and over the total subjects.

Results

Visual inspection revealed high concordance between PET only and MRI-based surface projection; the surface projection was defined on 8 standard views for consistent reporting (Fig 1). Across the 6 tracers tested, the average absolute error over the brain surface with and without MRI was 0.12, whereas the average variance was 0.018.

Conclusion

The proposed MRI-less surface projection method demonstrated better estimation of 11C-PIBretention than recently published methods displaying similar accuracy for various 18F labelled radiotracers. CAPAIBL provides an efficient reporting tool for PET imaging easily accessed remotely through a web interface.

Tues121

Robert Williams[5], Pierrick Bourgeat[4], Christopher Cleon Rowe[2], Olivier Salvado[4], Victor L Villemagne[1], Vincent Dore[3], Neil Killeen[6]

Does enhanced reconstruction methodology change the quantification of Amyloid PET with Flumetamol?

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Aim
Standardization of amyloid imaging results is important for both research and clinical application. New PET reconstruction algorithms enhance image lesion contrast but their effect on amyloid quantification is unclear. We compared the effect of three reconstruction algorithms on a Siemens mCT - standard, time-of-flight (TOF), ULTRA HD - on Flutemetamol quantification in the AIBL study. ¶

Methods
114 subjects (80 HC, 22 MCI and 12 AD) from the Australian Imaging, Biomarkers and Lifestyle study were imaged using 3T MRI and 18F-Flutemetamol PET. Using the MilxView program developed by CSIRO and AIBL, MRI grey matter segmented cortex within AAL regions of interest were used to quantify regional and global cortical SUVR using the pons or cerebellum gray matter (GM) as reference regions. SUVR using the three reconstruction methods were compared.
¶
Results
SUVR in ULTRA and TOF images were significantly lower than SUVR using the standard reconstruction method ($p<0.001$). Neocortical SUVRpons was systematically lower using TOF (-0.046) and ULTRA (-0.094) across all scans. However, SUVRcereb was lower for negative scans and higher for positive scans for both TOF and ULTRA resulting in a small increase in the effect size between HC and AD. There was no difference in effect size between HC and AD cohorts using SUVRpons for the 3 reconstruction methods. ¶

Conclusion
New reconstruction algorithms introduce yet another challenge to the standardization of amyloid imaging. Enhanced reconstruction methods lead to lower SUVRpons on Flutemetamol PET images, likely due to reduced contamination of the neocortical regions by non-specific white matter uptake and background activity. Given the high degree of correlation between the different methods when using the pons as the reference area, a conversion factor is easily determined. Using the cerebellum GM as reference region is more problematic as the new algorithms lower the results in HC and elevate them in AD as would be expected by better image resolution reducing spill-over and partial volume effects. Until accurate conversion methods are developed, multicenter and longitudinal PET imaging studies must ensure uniform use of a reconstruction method.

Tues122

Cadilhac DA [1,2], Moloczij N[1], Arthurson L[3],Cottrell J[4], Fox M[5], Bladin C[1]

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The Victorian Stroke Telemedicine Program: Clinician Survey

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2. Stroke and Ageing Research Centre, Monash University, Clayton, Vic., Australia
3. Echuca Regional Health, Echuca, Vic., Australia
4. Mildura Base Hospital, Mildura, Vic., Australia
5. Swan Hill District Health, Swan Hill, Vic., Australia

¶

Aim

To describe the perceptions of rural and regional clinicians before commencing the Victorian Stroke Telemedicine (VST) program with regards to acute stroke management and use of telemedicine for stroke. A virtual network of metropolitan-based neurologists provides telemedicine consultations on patients with suspected hyperacute stroke presenting to Emergency Departments at rural and regional hospitals.

¶

Methods

Clinicians from three new hospitals were surveyed prior to the commencement of the VST program. A descriptive analysis of the responses received to date from the pre-VST clinician surveys is presented.

¶

Results

Twenty-seven clinicians from three hospitals completed the pre-VST surveys, with 92% being from the Emergency Department. Fifty-nine per cent of respondents were nurses. Ninety-three per cent agreed that stroke was an emergency and 79% indicated that they were likely to use tissue plasminogen activator (tPA) in the management of acute ischaemic stroke. However, just over half of the respondents (56%) agreed that staff were familiar with local stroke management protocols. All agreed that using telemedicine technology could improve the diagnosis and treatment of acute stroke, and 89% agreed that they intend to use stroke telemedicine. Interestingly, 46% were undecided as to whether there was local clinician or supervisor support for the use of stroke telemedicine. Respondents reported a number of barriers to providing evidence-based stroke care or telemedicine at their hospital including: having limited access to radiology and pathology outside business hours; a perceived lack of clinician buy-in and availability of medical staff; and poor awareness of stroke protocols for acute stroke.

¶

Conclusion

Implementing evidenced-based stroke care is complex. In this pre-VST multi-site survey, clinicians were generally supportive of the use of stroke telemedicine and in the administration of tPA for acute ischaemic stroke. Several barriers could be addressed to facilitate the uptake of stroke telemedicine and to improve stroke care at these hospitals.

Tues123

Vaughan D,[1,2] Tailby C,[1,4,] Jackson GD[1,2,3]

The Resting-state Epileptic Network in Temporal Lobe Epilepsy with Hippocampal Sclerosis

This abstract has not been included at the request of the author

Tues124

Gareth Jones,[1,2] G. J. O'Keefe,[1] Christopher Rowe, [1,2] Victor L. Villemagne,[1,2]

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Assessing the accuracy of a CT-based approach to the partial volume correction of Flutemetamol-PET images

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2.University of Melbourne

Aim

Partial volume correction (PVC) is an important issue in Aβ imaging due to both the increased cortical atrophy associated with dementia and also the high non-specific binding of radiotracers in white matter. Currently, PVC requires a paired MRI image segmented into grey and white matter tissue maps or uses the questionable assumption about the standard geometry of the brain. Kemmling[1] proposed a method of segmentation by spatially normalising tissue map templates to a subject's CT. This is advantageous due to the widespread availability of hybrid PET-CT scanners.

Methods

117 subjects underwent imaging in both a 3T MRI and Flutemetamol in a hybrid PET-CT scanner. A pre-existing database of 137 segmented MRI images were spatially normalised to the attenuation-CT associated with each PET scan to create a set of grey and white matter maps. For comparison, VBM8 segmentation was applied to the individuals' MRI image, producing a second set of tissue maps. Using these tissue maps, 2-compartment and 3-compartment PVC[2] was applied to the Flutemetamol-PET images. The accuracy of the CT-based PVC was assessed using the MRI-based PVC as a gold standard.

Results

The MRI- and CT-based segmented images were subtracted to produce residual images from which agroup t-test of the residual images showed that there were no significant systemic difference between the methods . Residual PVC-PET images also showed no significant patterns. The AAL atlas was used to sample the corrected images. Mean correlation coefficients of 0.98 and 0.86 were found over the AAL regions between the CT- and MRI-based PVC Flutemetamol images using 2-compartment and 3-compartment correction, respectively. Quantitatively, the 2 groups were found to have a mean difference in neocortical $SUVR_{cb}$ of 0.01 (standard deviation 0.03) after 2-compartment correction and 0.29 (standard deviation 0.26) after 3-compartment correction.

Conclusion

PVC using tissue maps from CT images produced corrected PET images that were robustly similar to those using MRI-based segmentation. 3-compartment correction is more sensitive to changes in segmentation or spatial normalisation, so it is unsurprising that the CT-corrected images varied further from the MRI-corrected PET. These results suggest that MRI-less partial volume correction could potentially be used more routinely.

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Tues125

Thanh Truong [1, 2], David F. Abbott [1, 2], John S. Archer [1, 2]

Measuring language lateralisation in humans

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Aim: Accurately determining language lateralisation is important for neurosurgical planning and to study the effects of diseases such as epilepsy. The Laterality Index (LI) calculates the ratio of activation between the left and right hemispheres in functional Magnetic Resonance Imaging (fMRI), given by , where N = the number of active voxels. Hence LI can be dependent on the statistical threshold chosen. To determine whether language organisation is atypical requires a complete set of normative values across age and gender. This study aims to derive normative control data for a threshold independent method of LI assessment (1), and to compare this with existing methods of LI assessment. We also quantify possible trends of language localisation that may vary with age and gender.

Methods: Functional MRI images of subjects from existing studies undertaken at the Brain Research Institute were collected. Language tasks included Orthographic–lexical Retrieval tasks (OLR) and Noun Verb tasks (NV) using a block design paradigm on a 3 T scanner. Images were pre-processed using SPM8 and iBrain (2), and de-noised using SOCK (Spatially Organised Component Klassifikator) (3). Two Threshold independent methods of LI assessment were used to determine LIs for subjects at key language regions of interest (Broca, Wernicke, Visual word form area, cerebellum, and subcortical regions).

Results: 167 subjects (73 male, 94 female, mean age = 29.6 years, SD = 12.97 years) were obtained for the normative data. Preliminary assessment suggests that there was not a significant difference in language localisation between genders or across the age range tested (7 - 79 years). Anterior regions were on average more strongly lateralised than posterior regions (Broca's mean LI = 0.71, SD = 0.22, Wernicke's mean LI = 0.52, SD = 0.24). Cerebellar language areas did not lateralise as strongly, tending toward bilateral localisation (mean LI = 0.44, SD = 0.23). A strong correlation coefficient of 0.94 (OLR) and 0.95 (NV) was found between the two threshold independent methods of LI assessment.

Conclusion: Threshold independent analysis of LI provides a robust measure of language lateralisation across age and gender. These data can be used as normative control data to which individuals can be compared.

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Tues126

Schneider AL[1], Thomas RH[1,2*], Zhang LM[1,3*], Carvill GL[4], Archer JS[1], Heavin SB[1], Mandelstam SA[1,5,6], Craiu D[7], EuroEPINOMICS-RES consortium, Berkovic SF[1], Gill DS[8], Mefford HC[4], Scheffer IE[1,5,6]

¶

CHD2 causes a distinctive myoclonic epileptic encephalopathy associated with self-induced seizures

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**These authors contributed equally*

¶

Objective

To delineate the phenotype of epileptic encephalopathy due to *de novo* mutations of *CHD2*, which encodes the chromodomain-helicase-DNA-binding protein 2.

¶

Methods

Medical history, MRI and video-EEG recordings of nine individuals with *de novo CHD2* mutations and one with a *de novo* 15q26 deletion encompassing *CHD2* were analysed.

¶

Results

Mean seizure onset was 26 months (range 12-42 months) with myoclonic seizures in all cases. 7/10 exhibited exquisite clinical photosensitivity; 6/10 self-induced with the television. Absence seizures occurred in 9 patients including typical (4), atypical (2) and absence seizures with eyelid myoclonias (4). Generalized tonic-clonic seizures occurred in 9/10 cases (mean onset 5.8 years). Convulsive and non-convulsive status epilepticus were seen later in 6 cases (mean onset 9 years). Tonic (4) and atonic seizures (3) also occurred. In 3 cases an unusual seizure type, the atonic-myoclonic-absence, was captured on video. 7 cases had moderate to severe intellectual disability and refractory seizures including tonic attacks (mean onset 23 months). 3 cases had a later age of onset (34 months) with relative preservation of intellect and an initial response to anti-epileptic medication.

¶

Conclusion

A phenotypic spectrum of *CHD2* encephalopathy was identified and has distinctive features of myoclonic epilepsy, marked clinical photosensitivity, atonic-myoclonic-absence and intellectual disability ranging from mild to severe. Recognition of this genetic entity will permit earlier diagnosis and enable the development of targeted therapies.

Tues127

Tailby C,[1,2,3], Abbott DF,[1,4] Jackson GD[1,4,5]

Localising posterior language cortex for presurgical planning

This abstract is not included at the request of the author

Tues128

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A neurophysiological study of the hypothalamo-medullary-sympathetic pathway to the adrenal gland

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Aim

Characterization of the pathway between hypothalamic glucose-sensing neurons and the adrenal sympathetic outflow is important for understanding diabetic complications such as hypoglycaemia unawareness. In this study we describe an electrophysiological characterisation of the pathways between the perifornical hypothalamus (PeF), the rostroventrolateral medulla (RVLM) and adrenal pre- and post- ganglionic sympathetic nerve discharge.

Methods

Urethane-anaesthetised Sprague-Dawley rays were used. Intermittent electrical stimulation (0.5 Hz, 1 ms pulse width, 200 μA) was applied to the PeF or RVLM using a monopolar stimulating electrode and the evoked adrenal nerve response was averaged (50 trials) to produce post-stimulus-time neurograms. Pre- or post-ganglionic adrenal sympathetic nerve activity (aSNA) was discriminated using the ganglionic blocker hexamethonium (40 mg/kg, i.v.)

Results

Depending on whether pre- or post-ganglionic aSNA was recorded, stimulation of RVLM or PeF evoked unique aSNA responses. Pre-ganglionic RVLM-aSNA consisted of an early peak (latency - 63±3 ms, n=4) and a late peak (latency - 132±7 ms) while post-ganglionic RVLM-aSNA consisted of early and late peaks whose latencies were 56±6 and 139±4 ms, respectively. aSNA was reduced by 53 % with no changes in peak latencies after elimination of post ganglionic activity after hexamethonium (n=4). On the other hand, PeF stimulation evoked an aSNA response that had different latencies with similar early and late peaks. Pre- and post-ganglionic activity of aSNA following PeF stimulation consisted of early peaks at 84±1 ms and 91±1 ms as well as late peaks at 133±2 ms and 143±2 ms, respectively. The post-hexamethonium evoked peaks had latencies of 85±1 ms and 136±1 ms (pre-ganglionic aSNA only). Considering the distance between RVLM and PeF, we expected that the peak latencies following RVLM stimulation should be less than those following PeF stimulation. While this was true for the early peaks, no significant change was observed in the latencies of the late peaks for pre- and post-ganglionic activity.

Conclusion

he early peak component of the pre-ganglionic evoked response following RVLM and PeF stimulation may represent sympathetic vasomotor activity while the late peak component of pre-ganglionic activity may be involved in the control of catecholamine secretion from adrenal chromaffin cells. There may be a unique monosynaptic pathway between PeF and adrenal sympathetic preganglionic neurons that bypass RVLM that may also be relevant for the glucose counterregulatory response.

Tues129

Battaglia, L.C.,[1] Burgess, T.,[2] Dalton, D.,[3] Bankier, A.,[3] Brown, N.J.[3]

Novel 3.0Mb duplication of chromosome 1p36 in a family with microcephaly and intellectual disability

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3. Department of Clinical Genetics, Austin Health, Heidelberg, Vic, Australia.

Aim: Chromosome 1p36 deletion is a common cause of intellectual disability, associated features can include microcephaly and facial dysmorphism[1]; pure reciprocal duplications of this region are rare[2]. We describe a mother and daughter with a novel 3.0Mb duplication of chromosome 1p36 and compare their phenotypes to two similar cases from the literature[2]. We aim to identify common phenotypic features and provide evidence of pathogenicity for this rare duplication.

Methods: Phenotypes were obtained by standard clinical assessment including history, physical examination and paediatric developmental assessment. DNA was extracted from peripheral blood lymphocytes. SNP microarrays were performed using the Illumina CytoSNP12 v.2.1 platform.

Results: The 12 month old female proband is microcephalic (head circumference <3rd percentile) with preserved length and weight (both 50th percentile). She has mild early language delay with normal motor development. Subtle facial dysmorphism shared with her affected mother includes upslanting palpebral fissures and large ears. The mother has moderate intellectual disability with normal head circumference. Two similar duplications of 1p36 have previously been described; both are male with developmental delay/intellectual disability and normal head circumference. Consistent facial dysmorphism is not apparent.
¶
Conclusion: Together these four cases provide support for pathogenicity of large duplications of 1p36, with a variable spectrum of neurocognitive phenotypes including developmental delay/intellectual disability and microcephaly. Severity of intellectual and developmental impairment appears less than that seen in the 1p36 deletion syndrome. The scarcity of such duplications in control populations further validates the probable pathogenicity of 1p36 duplications, and their potential role in neurodevelopment.

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Tues130

Brown N.J., [1], Cotter, M.,[1] Dalton, D. [1], Stark, Z.,[2,]

Novel pathogenic mutation in *LMX1B* in a family with nail-patella syndrome

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2. Victorian Clinical Genetics Service, Parkville, Vic, Australia

Aim: Nail-patella syndrome (NPS) is a rare autosomal dominant disorder associated with progressive renal disease and glaucoma. Skeletal and nail features can be subtle and the condition may be under recognised[1,2]. Haploinsufficiency of *LMX1B* is causative in over 90% of cases[2,3]. We describe a family with NPS where nail and skeletal features are mild, however significant ophthalmological and renal features were identified on screening investigation. We aim to illustrate the variable spectrum of features in NPS and alert clinicians to subtle manifestations that warrant further investigation.

Methods: Phenotypes were determined by standard clinical assessment. Renal ultrasound, urinary protein excretion and formal ophthalmological examination were performed. DNA was extracted from peripheral blood lymphocytes in the proband. Sanger sequencing of *LMX1B* was arranged.

Results: Three affected individuals were evaluated. Subtle nail features include longitudinal splitting, triangular lunulae, flattened nail beds and thin nails. Skeletal features are not prominent in this family. Significant renal and ophthalmological complications were identified in the proband. In addition, three younger children demonstrate nail changes consistent with NPS and therefore are clinically affected, and require lifelong surveillance. A novel mutation within *LMX1B* was identified in the proband; this is predicted to be pathogenic. Cascade testing of other clinically affected individuals is in process.

Conclusion: This family demonstrates the variable phenotypic features of NPS. Significant renal and ophthalmological complications can occur without obvious skeletal features. Subtle nail changes in isolation warrant formal renal and ophthalmological evaluation.

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Tues131

Katerelos M[1], Galic S[3], Davies M[1,2], Gleich K[1], Mount PF[1], Kemp BE[3] and Power DA[1]

Identification of a metabolic node associated with the sodium co-transporter NKCC1

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3.St. Vincent's Institute of Medical Research, Fitzroy, Vic., Australia

Aim
To identify metabolic control proteins associated with NKCC1.
Regulation of intracellular sodium concentration is a major energy-requiring process, but it is not clear how sodium uptake and the availability of energy required for its excretion by the cell are linked. AMP-activated protein kinase (AMPK), a master metabolic control protein, immunoprecipitates with NKCC1, a sodium co-transporter present on the basolateral surface of many cells. As a major controller of fatty acid oxidation, AMPK phosphorylates acetyl CoA carboxylase 1 (ACC1) on S79 to reduce its activity and increase entry of fatty acids into mitochondria. In this study, we wanted to determine whether ACC1 associated with NKCC1 and regulated its co-transporter activity of NKCC1 as a novel mechanism to link sodium uptake and energy supply.

Methods
Mouse embryonic fibroblasts with a knock-in mutation of the AMPK phosphosite in ACC1 (MEF-ACC1_S79A) and proximal tubular cells from ACC1 knock-in mice (PTC-ACC1_S79A) were used. Cells were incubated in normal and low salt media and the phosphorylation of NKCC1 was examined by Western Blot.

Results
ACC1 co-precipitated with NKCC1 from cultured cells. Incubation of wild type MEF cells in low salt media activated AMPK and increased phosphorylation of ACC1 on S79A. NKCC1 phosphorylation on T100/105, which activates the co-transporter, was increased in wild type MEF cells incubated in low salt media but not in MEF-ACC1_S79A cells. Similar results were obtained in PTC-ACC1_S79A.

Conclusion
ACC1 increases T100/105 phosphorylation of NKCC1, potentially linking energy supply through increased fatty acid oxidation with sodium uptake by the cell.

Tues132

Paul Yates[1,2], Christopher Rowe[1,2], Victor Villemagne[1,2], Patricia Desmond[2,3], Colin Masters[2,4], David Ames[2,4], Lorraine Dennerstein[2], Philippe Lehert[2], Kathryn Ellis[2,4], Cassandra Szoeke[2,4]

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Midlife Vascular Risk, Apolipoprotein E-ε4 and β-Amyloid status 20 years later: Results from the Women's Healthy Ageing Project

Aim.
There are conflicting reports linking vascular risk factors and Alzheimer's disease biomarkers and histopathology. Timing of exposure to risk factors may be critical in mediating their association. However there is little literature to date examining mid-life risk measurements with later-life disease-specific biomarkers such as amyloid PET imaging.

Methods.
125 participants from the Women's Healthy Ageing Project, a longitudinal study of Australian women, with vascular risk measurements in 1992 and cognitive assessment and 18F-Florbetaben (FBB) PET imaging in 2012. FBB PET Standardized Uptake Value Ratio (normalized to the cerebellar cortex [SUVR]), and episodic memory measured by CVLT-long delay score, were compared by tertile of midlife PROCAM and Framingham Coronary Risk Scores. Groups were compared using ANOVA and linear regression models were performed including Risk Score tertile, age, education, apolipoprotein E-E4 status, and E4 x Risk Tertile.

Results.
Mean age was 49.9±2.4 years at vascular risk assessment and 68.8±2.3y at time of PET scan/CVLT. Participants in the highest PROCAM tertile had significantly higher late-life mean FBB SUVR than those in intermediate ($p<0.04$) or low tertiles ($p<0.03$), and poorer mean CVLT performance (10.5±4.6 words vs 12.2±3.0 words, $p<0.02$). Similar, though non-significant trends were also seen with midlife FCRP and late-life SUVR and CVLT. Midlife PROCAM tertile, APOE E4 status and E4 x PROCAM were each significantly associated with late-life FBB burden, correcting for age and education. Age, years of education, and PROCAM tertile were independently associated with later-life CVLT-LD performance. In addition, the interaction between E4 status and PROCAM was significantly associated with CVLT-LD score, such that E4+ with high PROCAM risk score performed much worse than E4 non-carriers or low-risk PROCAM tertiles.

Conclusions, Mid-life vascular risk factors are associated with both amyloid burden, assessed by Florbetaben PET, and poorer episodic memory function 20 years later. The presence of E4 interacted to increase this association.

Tues133

Paul Yates[1,2], Victor Villemagne[2], Lorraine Dennerstein[2], Joanne Robertson[3], Chuhui Li[3], Patricia Desmond[2,4], Colin Masters[2,3], Christopher Rowe[1,2] Cassandra Szoeke[2]

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Evidence of amyloid on Florbetaben-PET is associated with reduced episodic memory 10 years prior: results from the Women's Healthy Ageing Project.

Aim.
Positron emission tomography (PET) has shown that accumulation of brain amyloid begins 20-30 years prior to dementia in Alzheimer's Disease. It is less clear when decline in cognitive function begins. We sought to identify whether reduced episodic memory (EM) was present a decade earlier in participants of the Women's Healthy Ageing Project (WHAP) who showed evidence of amyloid accumulation on a recent amyloid PET scan (18F-Florbetaben).

Methods.
125 participants with cognitive measures at 1998, 2002, 2004 and 2012-13 and 18F-Florbetaben PET (FBB-PET) imaging in 2012-13 were studied. All participants had normal range cognition at 1998-2004. FBB Standardised Uptake Value Ratio (SUVR) was calculated for the neocortical regions normalized to cerebellar cortex. Cognitive assessment included the CERAD word list recall (1998, 2002 and 2004) and CVLT-delay (2002, 2004 and 2012-13). EM scores were compared between high and low late-life FBB SUVR using linear regression to adjust for age, education and E4 status, and linear mixed models used to compare rates of change in cognitive performance over time.

Results.
Mean age at the time of FBB PET was 69.2±2.4y. Individuals with higher later-life FBB SUVR demonstrated poorer EM performance than those with low FBB ($p<0.006$) at the time of FBB-PET (2012-13). This group also scored worse on EM tasks in 2002 and 2004 but not in 1999. With linear mixed models regression, there was a significant effect of time ($p=0.007$), FBB x time ($p=0.03$), age x time ($p=0.04$), and education (main effect) ($p=0.04$) on longitudinal EM performance.

Conclusion.
Individuals with higher amounts of AD-pathology in later life demonstrate greater change in memory performance over time and subtle decrements in episodic memory function are apparent up to ten years earlier.

Tues134

Paul Yates[1,3], Victor Villemagne[1,3], Kathryn Ellis[3,5], Olivier Salvado[6], Ralph Martins[7], Cassandra Szoeke[3], Patricia Desmond[2,3], Colin Masters[3,5], David Ames[3,4], and Christopher Rowe[1,3]

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Brain β-Amyloid, Vascular Factors and Cognition: 54-Month Follow-Up Results from the AIBL Study

Aim.
There is great interest in the interplay between cerebrovascular disease (CVD) and amyloid in mediating cognitive decline in Alzheimer's Disease (AD). Vascular disease risk factors increase risk for dementia, however whether this is synergistic or additive to concurrent AD-pathology is unclear.

Methods.
287 participants from the Australian Imaging, Biomarkers and Lifestyle Study of Ageing, ranging from normal cognition through MCI to AD dementia, assessed four times over 54 months with amyloid imaging (11C-PiB PET), 3T-MRI and neuropsychology assessment.
Linear mixed models regression was used to compare longitudinal change in episodic memory (EM), executive function (EF), and amyloid burden (PiB PET SUVR) between groups with and without significant baseline PiB and CVD burden (PiB+/-, CVD+/-).

Results
In mixed models analyses adjusted for age, education and E4 status, the PiB x time interaction was significantly associated with poorer longitudinal EM performance ($p<0.001$), whereas CVD and CVD x time was not. However, for executive function, there was a significant CVD x time interaction ($p=0.01$), and the PiB x time interaction was of trend-level significance only ($p=0.09$).
There was no association between presence of CVD and PiB at baseline, and no difference in change in PiB between CVD+ and CVD- individuals over time.

Conclusions
In this sample of cognitively-normal elderly, PiB and CVD were additive but not interactive processes in mediating cognitive decline; PiB most strongly associated with memory, and CVD with executive function. No association was seen between markers of vascular pathology and longitudinal PiB accumulation.

Tues135

Clynt Bernhardt, David Webster, Deborah Brown, Wendy Clifton, Hannah Tudor, Jayne Dohrmann, Stephanie McClintock, Meg Storer, Paul Yates

Continuing Care CSU, Austin Health, Heidelberg, VIC Australia

The Residential Outreach Service: Rising to a Challenge

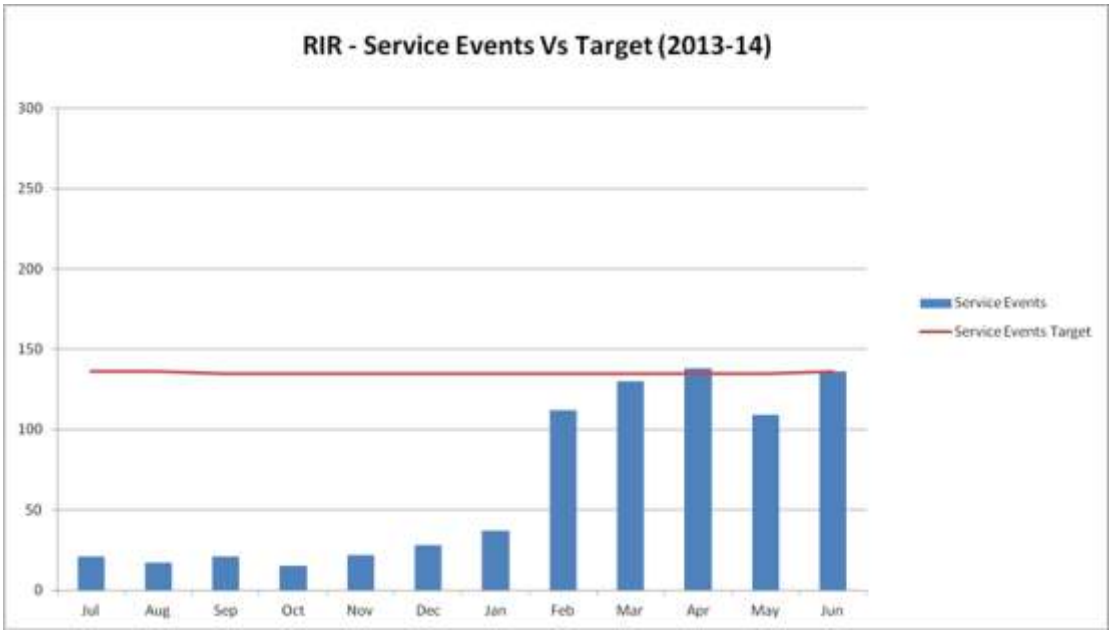
Aim.
The Residential Outreach Service (ROS) serves to review aged care residents within residential aged care facilities (RACFs), to provide a timely, person-centred management approach for acute medical conditions. By doing this, the service aims to reduce the need for avoidable transfer to the Emergency Department (ED) and provide medical intervention for acute issues, in particular for people for whom hospital admission poses a higher risk of harm (e.g. delirium, pressure injury).
In 2013, in response to new activity targets from the Department of Health, a redesign to the ROS model of care was undertaken and implemented in February 2014.

Methods.
A prospective audit of ROS activity (service contacts) was performed. In addition, a retrospective audit of ED presentations from RACFs in the period pre- and post-implementation of ROS redesign is currently underway.

Results.
Following implementation of the ROS model redesign, service events (patient visits) increased almost threefold ($p<0.001$), and by April 2014, the team had met its service event target (Figure 1).

Conclusions
Redesign of the Residential Outreach Service Model of Care to improve links with both inpatient units and the Emergency Department, as well as improved clinician availability to RACF visits has led to a substantial increase in service events (patient visits) and meeting of Department of Health-mandated activity targets, however further analyses are required to determine the impact of this increase in activity on ED presentations or inpatient admissions from residential aged care facilities.

Figure 1.


RIR - Service Events Vs Target (2013-14)
300
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May
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Service Events
Service Events Target

Tues136

The relationship of subjective cognitive impairment with cerebral β-amyloid: data from the Women's Healthy Ageing Project

Georgia McCluskey[1], Paul Yates[1,2], Victor Villemagne[2], Chuhui Li[1], Christopher Rowe[2] and Cassandra Szoeke[1]

[1] *The University of Melbourne, VIC, Australia;* [2] *Department of Nuclear Medicine and Centre for PET, Austin Health, VIC, Australia*

Introduction: The pathological hallmark of Alzheimer's disease (AD), β-amyloid accrual, is thought to begin decades before the onset of clinical disease. Thus disease-modifying treatments may require implementation well before patients are symptomatic. The utility of self-reported deficits in cognition, subject cognitive impairment (SCI) has received attention as a means of identifying those in the early stages of developing AD. In this study we aimed to assess the clinical value of SCI by examining the relationship between β-amyloid and SCI identified a decade earlier and SCI at the time of *in vivo* β-amyloid scanning.

Methods: We examined the associations between β-amyloid and current and prior SCI assessed in 2002 and 2012, in a cohort of 117 cognitively normal subjects. Subjective cognition was assessed using specific questions on memory and cognition and the MAC-Q. Participants also had cerebral β-amyloid load measured by ^{18}F-Florbetaben Positron Emission Tomography (PET) in 2012.

Results: No significant associations were found between SCI identified in 2002 and β-amyloid measured 10 years later. In 2012, measures of subjective *memory* impairment were not associated with cerebral β-amyloid, however subjective cognitive impairment (by reports of feeling confused) was predictive of a higher global β-amyloid burden in the same year (p = 0.002), after controlling for confounders (age, APOE-ε4 and mood). Regional analysis revealed significant associations of confusion with β-amyloid in the prefrontal region (p = 0.004), posterior cingulate and precuneus cortices (p = 0.004) and the lateral temporal lobes (p = 0.001) after controlling for confounders.

Conclusion: AD-type pathology was found to be associated with SCI (self-reported confusion) on cross-sectional analysis but not SCI identified 10 years earlier. Further research is needed to explore what this symptom represents by examining objective cognitive measures. The significance of early SCI will be assessed by the follow-up of long-term cognitive and functional outcomes of this cohort.

Tues137
La Brooy Beth[1,2], Ho Prahlad[1,2], Lim Kwang[2]

New Oral Anticoagulants in the Elderly: What is the evidence?

1. *The Austin Hospital, Heidelberg, Vic., Australia;*
2. *The Northern Hospital, Epping, Vic., Australia;*

Aim
New oral anticoagulants (NOAC) are non-inferior to warfarin in terms of efficacy and primary outcomes for their prescribed indications, including prevention of stroke and systemic embolism in patients with non-valvular atrial fibrillation (AF. No studies have shown superiority to warfarin for these indications other than patient convenience, and reduced rates of intracranial haemorrhage. Their convenience has resulted in their rapid adoption. However, there remain specific concerns regarding lack of reversibility and laboratory monitoring, which are particularly important in at risk populations such as those with renal failure, extremes of weight and the **elderly**. The aim is to review the specific considerations in elderly taking NOAC and suggest guidelines for the safe prescription of NOAC in this **frail** population.

Methods
Literature review until July 2014 was performed and included a sub analysis of the landmark NOAC randomized controlled trials: RE-LY, ROCKET-AF, ARISTOTLE. A retrospective analysis of bleeding complications at the Austin Hospital over a 14month period was also performed.

Results
The Elderly are at greatest risk of non-valvular atrial fibrillation thus requiring anticoagulation and are also more likely to bleed. Local analysis of >500 patients demonstrated 79% of bleeding complications occurred in patients over 70 years and 51% in >80 years. Australian population studies show that the elderly are also more likely to fall and sustain fractures requiring surgery. The landmark NOAC trials demonstrated that at best, 25% of study participants were aged >80years, had a creatinine clearance <50ml/min or were <60kg. Recently published sub-analyses of patients aged >75 years favoured NOAC in reducing stroke or systemic embolic events compared with warfarin irrespective of age, mainly driven by a reduction in haemorrhagic stroke. Higher rates of major extra-cranial bleeding with NOAC compared to warfarin was also significant, more so in the elderly

Conclusion
The elderly have a disproportionately high risk of bleeding, falls and fractures requiring operative intervention and most clinical trials are not representative of 'real world elderly'. These factors are important considerations in the use of anticoagulation, specifically the use of NOAC due to the lack of monitoring and reversal. There are some elderly who would benefit from NOAC and there are many who physiologically fall outside of the clinical trial inclusion criteria and therefore we cannot assume the same efficacy and safety of these drugs. Dedicated guidelines to address the use of NOAC in the elderly are necessary

Tues138

Tran T, [1] Hardidge A,[1] Heland M, [1] Garrett K[1], Mitri E[1], Taylor S[1]

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Slick Scripts: Pharmacist preparing discharge prescriptions to improve patient safety and flow

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1.Austin Health, Heidelberg, Victoria

¶

Aim

There are many factors that may delay patient discharge from hospital. One factor is the writing and preparation of discharge prescriptions by hospital doctors. The aim of this project is to evaluate the effect on patient safety and flow of having a pharmacist prepare discharge prescriptions electronically.

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Methods

An 8 week pre- and post-intervention study with a 2 week run-in period was conducted on two surgical/orthopaedic wards at the Austin Hospital. During the intervention, an additional pharmacist (Monday to Friday) prepared discharge prescriptions in consultation with the hospital doctor. The endpoints evaluated included:

- % of patients admitted from the Emergency Department (ED) within 4 and 6 hours
- mean time (minutes) past 9am that patients who required a discharge prescription were discharged from the ward
- % of patients who required a discharge prescription who were discharged prior to 9am
- % of prescriptions requiring amendments by the ward pharmacist.

¶

Results

Patients discharged during the intervention were discharged 57 minutes earlier compared to baseline (median 211 cf. 154 minutes past 9am). The percentage of patients discharged prior to 9am doubled from 6% during baseline to 12% during the intervention (difference in percentage 6%, 95%CI 1.4-11%, p=0.012). The percentage of scripts that required amendment by the ward pharmacist decreased from 66% to 22% (difference in percentage 44%, 95%CI 37-51%, p<0.001). There was no statistically significant difference in the percentage of patients admitted from ED to the wards at 6 hours (42.5% cf. 42.3%) or 4 hours (16.9% cf. 19.6%).

There were 312 patients during baseline and 341 patients during intervention who were discharged from the wards and required a discharge prescription. The project pharmacist prepared 80% (n = 273) of prescriptions during the intervention.

¶

Conclusion

Having a pharmacist prepare discharge prescriptions resulted in patients being discharged from the ward earlier and increased the accuracy of the discharge prescription.

Wed – ELT

Wayne Dite[1], Zoe N. Langford[1], Toby B. Cumming[2] Leonid Churilov[2], Julie Bernhardt[2] & Jannette M. Blennerhassett[1]

Establishing the dose of exercise tolerated by chronic stroke survivors with walking impairments: A phase 1 dose-escalation trial.

This abstract is not included at the request of the author

Wed – ELT

Haines KJ, [1,2], Berney SC,[1,2,] Remedios L,[2,] Denehy L[2]

¶

Longer term outcomes following critical care

1. Austin Health, Melbourne, Heidelberg, Vic., Australia;
2.The University of Melbourne

¶

Aim: The aim was to investigate the mortality, physical function, health-related quality of life (HRQoL) and psychological outcomes of survivors at 4-5 years following critical care. Limited research exists regarding longer-term outcomes of general survivors of critical illness and no longitudinal data exists for Australia. These data are important to understand the chronicity and disease burden of survivorship.

Methods: Prospective observational study of 119 patients (to date) from a randomised controlled trial of 150 participants, admitted to critical care for ≥5 days. ¶Outcome measures: mortality; physical function (Six-Minute Walk Test (6MWT); HRQoL (Short Form 36 version 2 (SF36v2)); depression/anxiety (Centre for Epidemiological Studies-Depression (CES-D), Hospital Anxiety and Depression Scale (HADS)) and post-traumatic stress disorder (PTSD) (Impact of Events Scale (IES)) at 4-5 years following critical care discharge. These were compared with participant one-year data, normative values and the minimal clinical important difference (MCID) where available.

Results: Of the 119 patients, 62 (52%) were deceased, 6 (5%) lost to follow up, 9 (8%) declined, 2 (5%) resided in nursing homes and could not consent. Forty survivors were included. Mean (SD) age was 68 (15.0) years. Survivors' mean (SD) 6MWT distance increased between 1 and 4-5 years (472.1m, (152.4) vs. 498.8m (114.5)) (mean difference = -26.7m, CI -66.1, 12.6, p= 0.2) and was 94% of predicted. Survivors had an improved mean (SD) SF36v2 Physical and Mental Component Scores between 1 year and 4-5 years (41.9 (12.2) vs. 46.6 (8.3)), (mean difference = -4.6, CI -8.61, -0.60; p = 0.02) and (41.03, (13.70) vs. 47.83, (12.11)), (mean difference = -6.80, CI -13.08, -0.51, p = 0.04), exceeding the MCID. Depression was low, median (IQR) score of 7.0 (2.0-15.0) (CES-D scores >16 indicate clinically meaningful depression). Survivors' symptoms of anxiety and depression were within normal, median (IQR) scores of 3.0 (1.0-6.0) and 2.0 (0.3-5.8) respectively (HADS normal range 0-7). PTSD scores were sub-clinical, median (IQR) 1.5 (0-11) (IES scores: 9-25 for mild, 26-44 moderate and >44 severe).

¶

Conclusion

These results indicate that critical care admission is associated with high mortality at 4-5 years. Survivors have good functional capacity, report improved HRQoL compared with 1 year post discharge and low psychological morbidity 4-5 years after critical care.

Wed – ELT

Lawrence Lau[1], Julie Lokan[2], Robert Jones[1], Graham Starkey[1], Michael Fink[1], Bao-Zhong Wang[1], Peter Angus[3], Adam Testro[3], Paul Gow[3], Christopher Christophi[1], Vijayaragavan Muralidharan[1]

Indocyanine Green Clearance for assessing Donor Liver Quality Before Retrieval for Transplantation

This abstract has not been included at the request of the author

WED – ELT

Barnett A.C.[1], Dhomen N.S.[1], Ryall J.G.[3], Mariadason J.M.[1], Nijagal B[3], Tull D.[3] Scott A.M.[1]

Investigating the protective role of metformin in colorectal cancer.

1.Ludwig Institute for Cancer Research, Heidelberg, Vic., Australia;
2.Department of Physiology, University of Melbourne, Parkville, Vic., Australia;
3.Metabolomics Australia, Bio21 Molecular Science and Biotechnology Institute, Parkville, Vic., Australia.

Aim

Activation of the EGFR/MAPK signaling pathway, either through epidermal growth factor receptor (EGFR) over-expression or mutation, or through mutation of key MAP kinase (MAPK) signaling components such as KRAS and BRAF has been shown to play an important role in colorectal cancer (CRC) tumour initiation and progression. Anti-EGFR/MAPK pathway therapeutics represent the most advanced treatment option for metastatic CRC and are options to address resistance to these treatments are urgently sought (1).

Widely prescribed diabetes therapeutic metformin is both protective against CRC and known to influence downstream EGFR signalling through AMPK (2). We aim to further characterise the mechanism through which it confers it's protective advantage.

Methods

Metformin 'sensitive' and 'resistant' cell lines were identified from a large panel of CRC cell lines. Gene expression patterns conferring basal metformin sensitivity and treatment induced alteration were visualised and contrasted. Metabolite profiles of 'sensitive' and 'resistant' cell lines were generated and Seahorse Bioscience technology was used to evaluate corresponding metabolic phenotype.

Results

Gene expression analyses have implicated genes involved in fatty acid metabolism as conferring sensitivity to metformin treatment. Stratification of CRC cell lines according to metabolic phenotype indicates that 'sensitive' cell lines are more likely to rely constitutively on oxidative metabolism, exhibiting a less pronounced Warburg effect than 'resistant' cell lines.

Conclusion

We have generated multiple databases of gene expression and metabolite changes in CRC cell lines that inform us on patterns of alteration as a result of metformin treatment. Functional profiling of *in vitro* and *in vivo* metabolic effects of metformin continues with a promising outlook for alignment with transcriptional and translational data.

References:

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2 D.B. Shackelford, R.J. Shaw. The LKB1-AMPK pathway: metabolism and growth control in tumour suppression. Nature Reviews Cancer 9:563-575, 2009.

Wed – ELT

Sood S[1,2,3], Haifer C[1], Yu J[3], Pavlovic J[1], Visvanathan K[3], GOW PJ[1,2], Jones RM[1], Angus PW[1,2], Testro AG [1,2]

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A novel immune function biomarker predicts early clinical outcomes following liver transplantation

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This abstract has not been included at the request of the author

Wed – ELT

Howarth C [1], Hayes J [1,2], Simonis M [1,3], Temple-Smith M [1,3]

Neat, discreet and unseen – young women's views on vulval anatomy

1. General Practice and Primary Health Care Academic Centre, University of Melbourne;
2. Department of Anatomy and Neuroscience, University of Melbourne;
3. Victorian Primary Care Practice-Based Research Network

Aim

From 2000-2011, Medicare claims for Victorian women undergoing labiaplasty (surgical reduction of the labia minora) increased from 444 to 1,565 per annum.[1] To understand young women's motivations for seeking Female Genital Cosmetic Surgery (FGCS) this novel study explored young women's knowledge and perceptions of vulval appearance and their views on genital cosmetic surgery.

Methods

Female students aged 18-28 years, recruited via the University of Melbourne Student Portal, were interviewed about perceptions of "normal" and "ideal" vulval anatomy, FGCS and sources of information. Standardised photographs and an anatomical line drawing facilitated discussion. All interviews were recorded, transcribed and analysed thematically.

Results

Interviews ranged from 25-80 minutes. Six major themes emerged ("normal", "ideal", sources of information, influences, terms, FGCS) and thirty subthemes were identified. Young women commonly referred to their genital area as "vagina", even though some acknowledged this was not anatomically correct. Young women were unsure what constitutes "normal" vulval anatomy. A lack of opportunity to view "normal" female genitals and access realistic depictions in educational resources was noted. Despite this uncertainty, all participants identified Picture D (hairless with no visible labia minora) as the socially accepted "ideal" vulva. Influences cited in shaping women's views of "normal" included the media, internet, family and peers.

Conclusion

Knowledge and perceptions of genital anatomy have important psycho-social and sexual health implications.[2,3] Results indicated that women would benefit from access to resources showing the range of normal vulval anatomy, and that General Practitioners (GPs) receiving requests for referral for FGCS should explore women's understanding of this. GPs play an essential role in patient education and reassurance of normality.[4] It is important that doctors do not assume women have an inherent knowledge of their genitalia and the anatomical terms used to describe it.

References

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Wed – ELT

M Sellars,[1] R Mountjoy,[1] T Holman,[2] W Silvester[1]

¶

Preferences for end-of-life care and advance care planning in the event of dementia: a nationwide survey of older Australians

This abstract is not included at the request of the author

Wed – ELT

D. Mawren, S. Fraser, K. Detering, K. Whiteside, W. Silvester.

Advance Care Planning having the Conversation across Cultural and Language Barriers

This abstract is not included at the request of the author

Wed – ELT

Yeo D[1], He H[1], Baldwin G[1], M. Nikfarjam[1]

A p21-Activated Kinase 1 Inhibitor, FRAX-597, Combined with Gemcitabine Inhibits the Growth of Pancreatic Cancer

1. University of Melbourne, Department of Surgery, Heidelberg, Vic., Australia

Background and Aims
Pancreatic ductal adenocarcinoma (PDAC) is one of the most deadly forms of cancer. Kras mutations are almost universal (>95%) in PDAC. Kras mutations can over-activate p21-activated kinase 1 (PAK1), which regulates a number of cellular functions involved in carcinogenesis. This project aims to investigate the role of PAK1 and the potential benefit of targeting PAK1 through the use of a direct PAK1 inhibitor, FRAX-597, for the treatment of PDAC.

Method
The effect of FRAX-597 on cell proliferation, toxicity, migration/invasion and survival in the human PDAC cell-lines, BxPC-3, PANC-1 and MIA PaCa-2, and in the murine PDAC cell-line, PAN02 and LM-P, *in vitro* was examined either alone or in combination with Gemcitabine. The effect of FRAX-597 and Gemcitabine was further assessed on tumour growth and metastatic potential, *in vivo,* in an orthotopic pancreatic tail murine model.

Results
FRAX-597 inhibited proliferation and migration/invasion of all pancreatic cancer cell lines without toxic effects. The combined effects of FRAX-597 and Gemcitabine were found to be synergistic. Combination therapy, compared to Gemcitabine alone, significantly inhibited the growth of tumours, and significantly decreased peritoneal carcinomatosis, *in vivo*.

Conclusion
FRAX-597 in combination with Gemcitabine synergistically inhibited the growth and spread of pancreatic cancer both *in vitro* and *in vivo*. These results implicate PAK1 as a promising and novel therapeutic target for the treatment of PDAC. Clinical studies to further assess FRAX-597 with Gemcitabine for treatment of PDAC are warranted.

Wed – ELT

Paul Yates[1,2], Victor Villemagne[2], Lorraine Dennerstein[2], Joanne Robertson[3], Chuhui Li[3], Patricia Desmond[2,4], Colin Masters[2,3], Christopher Rowe[1,2] Cassandra Szoeke[2]

[1]Austin Health, Heidelberg, Australia,

[2]University of Melbourne, Parkville, Australia

[3] Florey Institute of Neuroscience and Mental Health, Parkville, Australia,

[4] Melbourne Health, Parkville, Australia

Evidence of amyloid on Florbetaben-PET is associated with reduced episodic memory 10 years prior: results from the Women's Healthy Ageing Project.

Aim.
Positron emission tomography (PET) has shown that accumulation of brain amyloid begins 20-30 years prior to dementia in Alzheimer's Disease. It is less clear when decline in cognitive function begins. We sought to identify whether reduced episodic memory (EM) was present a decade earlier in participants of the Women's Healthy Ageing Project (WHAP) who showed evidence of amyloid accumulation on a recent amyloid PET scan (18F-Florbetaben).

Methods.
125 participants with cognitive measures at 1998, 2002, 2004 and 2012-13 and 18F-Florbetaben PET (FBB-PET) imaging in 2012-13 were studied. All participants had normal range cognition at 1998-2004. FBB Standardised Uptake Value Ratio (SUVR) was calculated for the neocortical regions normalized to cerebellar cortex. Cognitive assessment included the CERAD word list recall (1998, 2002 and 2004) and CVLT-delay (2002, 2004 and 2012-13). EM scores were compared between high and low late-life FBB SUVR using linear regression to adjust for age, education and E4 status, and linear mixed models used to compare rates of change in cognitive performance over time.

Results.
Mean age at the time of FBB PET was 69.2±2.4y. Individuals with higher later-life FBB SUVR demonstrated poorer EM performance than those with low FBB ($p<0.006$) at the time of FBB-PET (2012-13). This group also scored worse on EM tasks in 2002 and 2004 but not in 1999. With linear mixed models regression, there was a significant effect of time ($p=0.007$), FBB x time ($p=0.03$), age x time ($p=0.04$), and education (main effect) ($p=0.04$) on longitudinal EM performance.

Conclusion.
Individuals with higher amounts of AD-pathology in later life demonstrate greater change in memory performance over time and subtle decrements in episodic memory function are apparent up to ten years earlier.

Wed – ELT

Selina M Parry [1,2], Doa El-Ansary [2,] Sue Berney [1,] Rene Koopman[3], Michael Cartwright[4], Peter Morris[5] Andrew Hilton[6] Aarti Sarwal[5] Linda Denehy[1]

The role of neuromuscular ultrasonography in the ICU

This abstract is not included at the request of the author

Wed – ELT

Hayley, A. C[1,2], Williams, L. J[1], Kennedy, G. A[2,4], Berk, M[1,3,6,7], Pasco, J. A[1,5].

Excessive daytime sleepiness and falls among older women: examination of a community-based sample.

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2. Institute for Breathing and Sleep, Austin Health, Melbourne, Australia.
3. Department of Psychiatry, The University of Melbourne, Parkville, Australia
4. School of Psychology, Cairnmillar Institute, Camberwell, Australia
5. NorthWest Academic Centre, Department of Medicine, The University of Melbourne, St Albans, Australia
6. Orygen Research Centre, Parkville, Australia
7. Florey Institute for Neuroscience and Mental Health Parkville Australia.

Aim
Excessive daytime sleepiness (EDS) is often associated with an increased risk for falls among older adults; however little information is available assessing the nature of the reported falls among community-dwelling populations.
Methods
This study assessed 367 women aged 60-93 years (median= 72yr, IQR 65-79), who participated in the Geelong Osteoporosis Study (GOS) between the years 2001-2008. Fall history was obtained via self-report. Anthropometric measurements, lifestyle, mood, demographic and health-related factors were obtained. Sleepiness was assessed using the Epworth Sleepiness Scale (ESS), and scores of ≥ 10 were used to indicate EDS.
Results
In total, 50 (13.6%) women reported EDS. Those with EDS were more likely to report a fall (p=0.01), and a trend was noted for those with EDS reporting more than two falls (p=0.05). Associations between EDS and falls was sustained following adjustment for the use of a walking aid (adjusted OR 1.93, 95%CI 1.04-3.60), however, an EDS*antidepressant use interaction was seen to attenuate this relationship (adjusted OR 2.55, 95%CI 1.26-5.16). After stratifying data by antidepressant medication use (yes/no), associations between EDS and falls was sustained following adjustment for nocturia (adjusted OR 2.63, 95%CI 1.31-5.30, p<0.01) among non-antidepressant users only.
Conclusion
EDS is common among older women, and is associated with an increased risk for falls. Targeted falls prevention programs are required for this group.

Wed – ELT

Characterisation of Multidrug Resistant *Staphylococcus epidermidis* isolated from clinical infections

P. Szczurek[1], K. Chua[1], J. Lee[1], J. Wang[1], E. Grabsch[1], B. Howden[1,2]

[1] *Microbiology Department and Austin Centre for Infection Research, Austin Health, Victoria*
[2] *Department of Microbiology & Immunology, University of Melbourne, Victoria*

Objectives: *Staphylococcus epidermidis* is an important cause of nosocomial infections, and while it is less pathogenic than *Staphylococcus aureus*, the tendency for multi-drug resistance can make treatment difficult. At Austin Health, an 800 bed teaching hospital in Melbourne, a multi-drug resistant *S. epidermidis* (MDRSE, including rifampicin and fusidic acid resistance) was isolated from the cerebrospinal fluid of a patient with a post neurosurgical intracranial infection. The patient failed treatment with vancomycin. Given the previous association between rifampicin resistance and heterogeneous vancomycin-intermediate *S.aureus* (hVISA), we wondered if the MDRSE also had reduced susceptibility to vancomycin. The aims of this project was to i) determine if a clonal outbreak of MDRSE has been occurring at Austin Health, and ii) determine of the rifampicin resistant strains are also more glycopeptide resistant.

Methods: The Austin Microbiology laboratory database was queried for all rifampicin and fusidic acid resistant *S.epidermidis* (MDRSE) infections from blood cultures or sterile sites. Isolates from 2007 and 2012 were selected for additional testing, which included, detailed susceptibility testing using Vitek 2, glycopeptide macromethod Etest, vancomycin population analysis profile, and pulsed field gel electrophoresis (PFGE) for clonality testing. In addition to this, a number of less resistant isolates were included as a comparator group.

Results:
There were 26 MDRSE isolated in 2007 and 41 in 2012-2013. A subset of those which caused clinically significant infections were selected for additional testing (7 from 2007 and 9 from 2012-2013). There were also 13 non-MDRSE included as controls. There was significant variability in the antibiograms and comparison of MDRSE to non-MDRSE demonstrated no difference in glycopeptide susceptibility. PFGE demonstrated a heterogenous population of the MDRSE with strains isolated in 2012-2013 also present in 2007.

Conclusion: MDRSE has been present in our institution since at least 2007. The apparent outbreak of MDRSE at Austin Health was in fact polyclonal, and while these strains have vancomycin PAPs that would be consistent with hVISA in *S. aureus*, rifampicin and fusidic acid resistance did not appear to predict higher glycopeptide resistance.

Wed - ELT

Kyra CHUA[1], Jenny WANG[1], Gillian WOOD[1].

Meropenem-resistant Gram negative infections among Returned Australian travellers – Improving local laboratory diagnosis

[1] Dept. of Microbiology, Austin Health, Victoria, Australia

Aims:
1. Document the patients infected or colonized with multidrug-resistant gram negatives at the Austin Hospital between 2011-2013, who have recently travelled.
2. Determine the antibiogram of these organisms and the mechanism of resistance.
3. Optimise laboratory diagnosis of meropenem-resistant isolates (MRs) by determining the:
a) Limit of detection (LOD) of chromogenic media (chromID ESBL, chromID Carba, Brilliance CRE).
b) Performance of the Carba-NP assay for carbapenemase detection.

Methods:
Susceptibility testing was done using Vitek2 and Etest. LOD was performed by serial dilution. Carba-NP and *bla*$_{OXA-23}$-like PCR was performed as previously published[1,2].

Results:
There were 10 patients with 17 multidrug-resistant gram negatives – 12 of these were meropenem resistant (MRs). Resistance mechanisms for carbapenemase producers included *bla*$_{KPC-2}$, *bla*$_{VIM}$, *bla*$_{OXA-23}$. The LOD for MRs was ~10x10 CFU/ml on chromogenic media for most isolates. However, Brilliance CRE failed to detect one KPC-2-producing *E. coli*. The Carba-NP assay failed to detect *Acinetobacter baumannii* containing *bla*$_{OXA-23}$. In response to this result, a *bla*$_{OXA-23}$-like PCR was developed.

Discussion:
There appears to be a high risk of colonization or infection MRs in patients who are repatriated from overseas. Optimising local laboratory diagnosis of these organisms is essential in preventing outbreaks in our hospitals.

References:
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Statement of contribution:

Kyra Chua designed the study, performed clinical data collection, organism identification and susceptibility testing, limit of detection testing and analysis, Carba-NP assay and design of *bla*$_{OXA-23}$-like PCR.

Jenny Wang performed *bla*$_{OXA-23}$-like PCR.
Gillian Wood provided supervision.

Wed JLLT

Dr Julian Nesci*, A/Prof Richard Newton, Dr Suzy Redston, Michelle Snell, Amy Kaplan, Susannah Cleeve.

Perceived parenting of inpatients with anorexia nervosa: implications for schema theory and practice.

Objectives: To analyse the profiles of perceived parenting amongst inpatients with Anorexia Nervosa. Additionally, the relationships between perceived parenting, psychological, and clinical variables were explored.
Methods: Profiles of perceived parenting were analysed in 20 consecutively consenting inpatients of a specialist Eating Disorder unit. The Young Parenting Inventory, Schema Mode Inventory, Pros and Cons of Eating Disorders scale, Eating Attitudes Test, Depression Anxiety and Stress Scale were completed by participants. Results were analysed with nonparametric statistical methods.
Results: Inspection of the profile of subscale means suggested that emotional inhibition, unrelenting standards, negativity/pessimism, approval-seeking, and punitiveness were common experiences in perceived parenting. Inspection of the frequency of high scoring items highlighted that perceived parenting styles that involved emotional inhibition and deprivation, and unrelenting standards are common, and likely clinically relevant, across the majority of participants. Positive relationships between perceived punitive parenting, maternal approval-seeking, and perceived positive functions of eating disorders were found. Participants who perceived their fathers as providing more emotionally depriving and inhibited parenting were more likely to have been abusing laxatives, and those who saw their mothers as having provided more punitive parenting had greater eating psychopathology. Positive relationships between several perceived parenting styles and schema modes were found.
Conclusions: Particular styles of perceived parenting may form part of a common pathway to developing and valuing anorexia nervosa, and particular schema modes. Understanding the types of perceived unmet needs has implications for the tone and focus of limited reparenting interventions in schema therapy for eating disorders. Following from this, there may also be implications for the assessment and treatment of family members of those with an eating disorder.

Wed JLLT

DIFFERENT SODIUM TRANSPORTERS MEDIATE THE ESTABLISHMENT AND MAINTENANCE OF SODIUM RETENTION IN OBESITY-RELATED HYPERTENSION

M DAVIES[1,2,3], S FRASER[1], K GLEICH[1], M KATERELOS[1], P MOUNT[1,2,3] & D POWER[1,2,3]

This abstract has not been included at the request of the author

Wed JLLT

N J. Hannan[1], K Onda[1, 2], S Beard[1], N K. Binder[1], F Brownfoot[1], T Kaitu'u-Lino[1], L Tuohey[1], R Hastie and S Tong[1]

Proton Pump Inhibitors as a novel candidate therapeutic to treat severe preeclampsia.

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This abstract has not been included at the request of the author

Wed JLLT

Taylor DMcD[1], Fatovich D[2], Finucci D[3], Furyk J[4], Hughes J[5], Jin S-W[6], Keijzers G[7], MacDonald S[8], Mitenko H[9], Richardson J[1], Ting J[6], Thom O[10], Antony Ugoni[11], Ward M[1]

Best-practice Pain Management in the ED: a multi-centre, cluster-randomised, controlled, clinical intervention trial

1. Austin Hospital;
2. Royal Perth Hospital;
3. Prince of Wales Hospital;
4. Townsville Hospital;
5. Princess Alexandra Hospital;
6. Mater Hospital, Brisbane
7. Gold Coast Hospital;
8. Armadale Hospital;
9. Bunbury Hospital;
10. Nambour Hospital;
11. Seek

Aim
Research shows that 'adequate analgesia' (which decreases the pain score by ≥2 and to <4 [0-10 scale]) is significantly associated with a high level of satisfaction with pain management. We strived to provide 'adequate analgesia' and determine its effect on patient satisfaction.

Methods
We undertook a national, multi-centre, cluster-randomised, controlled, clinical intervention trial. The intervention was a suite of educational activities to encourage staff to provide 'adequate analgesia'. It was rolled out at five early-intervention EDs between the 0 and 6 month time-points and at four late-intervention (control) EDs between 3 and 6 months. At 0, 3 and 6 months, data were collected: demographics, pain scores, analgesia provided, and pain management satisfaction 48 hours post-discharge (6-point scale, very dissatisfied – very satisfied).

Results
1317 patients were enrolled. Logistic regression (controlling for site and other confounders) indicated that, between 0 and 3 months, satisfaction was stable at the control sites (OR 0.8, 95%CI 0.5-1.3, p=0.35) but increased significantly at the early intervention sites (OR 2.2, 95%CI 1.5-3.4, p<0.01). Pooling of data from all sites indicated that the proportion of patients very satisfied with their pain management increased from 42.9% immediately pre-intervention to 53.9% after 3 months of intervention (difference in proportions 11.0%, 95%CI 4.2-17.8, p=0.001). Logistic regression of all data indicated that 'adequate analgesia' was significantly associated with patient satisfaction (OR 1.4, 95%CI 1.1-1.8, p<0.01).

Conclusion
Striving to provide 'adequate analgesia' significantly improves patient satisfaction. It provides a simple and efficient target in the pursuit of best-practice ED pain management.

Wed JLLT

N Nanayakkara[1], N Pang[1], H Nguyen[2], O Piercey[2], S Romero[2], M Stoke[2]s, D Richmond[2], M Lee[2], Q Lam, G Hart[3], E Owen-Jones[4], J Ross[4], V Stevenson[1], L Churilov[7], Q Lam[5], D Johnson[2], S T Baker[1], E I Ekinci[1,6, 8], J D Zajac[1,6]

Routine HbA1c measurement identifies undiagnosed diabetes in 20% of general medical inpatients with an HbA1c ≥6.5%: results of the Austin Health Diabetes Discovery Initiative

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6. University of Melbourne (Austin Campus), Parkville, VIC
7. Statistics and Decision Analysis Academic Platform, The Florey Institute of Neuroscience & Mental Health
8. Menzies School of Health Research, Darwin

Background
While a high and rising prevalence of diabetes in acute inpatient settings is well recognised, up to 40% of inpatients with diabetes remain undiagnosed[1]. In hospital inpatients, including those admitted under general medicine, inpatient hyperglycaemia is associated with increased mortality and morbidity[2,3]. HbA1c measurement is superior to diagnose diabetes in hospital inpatients as it is unaffected by factors such as stress hyperglycaemia, fasting and recent glucocorticoid use. The aims of this study were to investigate the prevalence and outcomes for patients with diagnosed and undiagnosed diabetes admitted to the general medicine ward.
Methods
Under the Diabetes Discovery Initiative and using the Cerner Millennium® Health IT Platform, HbA1c testing was performed automatically for all patients aged ≥54 years admitted to Austin Health, a tertiary metropolitan hospital between June 2013 and January 2014. Diabetes was diagnosed in patients with an HbA1c ≥6.5%[4]. Clinical and demographic information was collected by examination of the medical records.
Results
Over 35% (372/1072) of patients admitted under general medicine had an HbA1c ≥6.5%. Of these 372 patients (table 1), 72 (19%) had no prior history of diabetes and 76 (20%) had a prior history of diabetes and an HbA1c≥8.5%. While overall HbA1c level did not correlate with length of stay (LOS), in patients with HbA1c ≥8.5%, there was a correlation with length of stay (r=0.23, p=0.04), with each 1% rise in HbA1c corresponding to an increased LOS by 0.75 days. There were no significant differences between the two groups in the rates of intensive care unit admission and inpatient mortality.
Conclusions

Undiagnosed diabetes affects nearly 20% of patients in patients admitted under general medicine with an HbA1c≥6.5. Routine admission HbA1c measurement can identify patients with undiagnosed diabetes as well as patients with poor glycaemic control for review. Further study is required to determine if early identification and management of these patients improves patient outcomes.

Table 1: Characteristics of 372 patients with an admission HbA1c ≥6.5%.

	Known Diabetes	**New Diabetes**	**P value**
Number (n)	300	72	-
Male (%)	51	44	0.361
Mean Age (years)	78.3 +/- 8.6	80.4 +/- 8.4	0.041
Mean HbA1c (%)	7.9 +/- 1.6	7.9 +/- 1.9	0.219
Mean SBP (mmHg)	134 +/- 28	131 +/- 26	0.715
IHD	48%	34%	0.034
PVD	17%	7%	0.260
Stroke/TIA	26%	23%	0.716
Nephropathy	55%	37%	0.014
Neuropathy	23%	3%	<0.001
Retinopathy	28%	0%	<0.001

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Wed JLLT

Forcadela, M.[1] Rotens, A.[1], Carney, P.[2,3], Lightfoot, P.[1] Berkovic, S.[1,3] Mullen, S[2,3]

Respiratory acidosis in focal seizures

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2. *Florey Institute of Neuroscience and Mental Health, University of Melbourne*
3. *Dept of Neurology, Austin Health*

AIM
Recent animal studies suggest that a potent mechanism enhancing seizure termination may be alterations in arterial CO2. This has not been well studied in the clinical environment. We aimed to investigate the importance of central hypoventilation in non-convulsive focal seizures.

METHOD:
20 patients admitted for video-EEG monitoring (VEM) for focal epilepsy were recruited and underwent real time, transcutaneous monitoring of arterial carbon dioxide (tcCO2) using the TOSCA 500 (Radiometer, Basel, Switzerland). Data was recorded using Compumedics Profusion 4 software allowing time-synchronised review of EEG, video and tcCO2.

RESULTS:
Three patients with brief (<2 minute) self-limiting temporal lobe seizures demonstrated a rapid increase in tcCO2 of 6-10mmHg. Return to baseline tcCO2 was slow, taking up to 45 minutes. Peak tcCO2 occurred within 100 seconds of seizure onset. Two temporal lobe seizures progressing to convulsion showed markedly slower rise in tcCO2 during the focal phase (mean 1.5mmHg vs 7.3mmHg, p=0.03).

CONCLUSION:
Brief temporal lobe seizures result in rapid hypoventilation that is sustained long past apparent clinical recovery. In seizures that instead progress to convulsion, this hypoventilation is significantly reduced. This suggests that hypoventilation may contribute to the homeostatic mechanisms that bring seizures to an end.

Wed JLLT

KT Ong[1], VL Villemagne[1,2], A Bahar-Fuchs[1,3], F Lamb[1], N Langdon[1], AM Catafau[4], AW Stephens[4], J Seibyl[5], LM Dinkelborg[4], CB Reininger[6], B Putz[6], B Rohde[6], CL Masters[2], CC Rowe[1]

¶

Detection of Prodromal Alzheimer's Disease with 18F-Florbetaben Beta-Amyloid Imaging: A Prospective Outcome Study

Aim

Beta-amyloid (Aβ) imaging has been approved for clinical use. We sought to better understand its clinical utility in mild cognitive impairment (MCI). We aimed to evaluate the prognostic accuracy of Aβ imaging with 18F-florbetaben (FBB) for progression from MCI to AD, compare semi-quantitative assessment with visually assessed scans, explore relationships between Aβ, hippocampal volume and memory over time, and examine whether progressive Aβ accumulation is detectable.

¶

Methods

Forty-five elderly MCI referred from memory clinics underwent FBB PET, MRI and neuropsychological assessment at baseline and 2 years. Participants and informants were contacted to 4 years. Positive FBB (FBB+), was defined by a cortical-to-cerebellar cortex uptake ratio (SUVR) ≥ 1.45, was compared with increased cortical uptake if visible to at least 3 of 5 readers. Hippocampal volume (HV) was measured by NeuroQuant®. Amnestic MCI (aMCI) was defined by a composite episodic memory (EM) Z-score of < -1.5.

¶

Results

At baseline, 24 (53%) MCI were FBB+. Majority reads strongly agreed with SUVR classification (kappa 0.96). In 2 years, 18 (75%) FBB+ progressed to AD compared to 2 (9.5%) FBB-, giving a predictive accuracy of 82% [95%CI:67-90%] and hazard ratio of 11.1. Four FBB- developed non-AD dementia. Predictive accuracies of HV (58% [95%CI:42-73%]) and aMCI status (73% [95%CI:58-81%]) were lower. Combinations did not improve accuracy. By 4 years, 21 (87.5%) FBB+ had AD whereas 5 (24%) FBB- had non-AD dementia. The two FBB- AD were MCI and FTLD at 4 years. FBB PET predictive accuracy for AD was 93.3% ($p<0.0001$). A strong baseline linear association between SUVR and EM ($r=-0.41$, $p<0.05$) declined over 2 years ($r=-0.27$) while an association of EM with HV developed ($r=0.36$, $p<0.05$ at 2 years). SUVR increased 2.2%/year in FBB+ with no change in FBB-.

¶

Conclusion

Aβ imaging with 18F-florbetaben facilitates accurate detection of prodromal AD. As AD neurodegeneration progresses, hippocampal atrophy may overtake Aβ in driving memory impairment. Progressive accumulation of Aβ can be detected with serial FBB PET.

Wed JLLT
Booth J[1], Lin W[1], Snyder B[2], Harding A[1], Taylor S[1], Hunt K[1]

¶

IRONing out some problems

1. *Pharmacy Department, Austin Health*
2. *Clinical Pharmacology, Austin Health*

Aim
To evaluate how iron infusions are prescribed and administered, to inform educational interventions and review of guidelines related to patient, product, dose and administration rate selection.

Method
A retrospective audit was undertaken of medical records of patients administered an iron polymaltose infusion between January-December 2013. A random selection of 100 patients who received an infusion on an inpatient ward and 100 admitted to the ambulatory care centre (ACC) were reviewed, using a standardised data collection tool. Appropriate indications were determined by clinical pharmacology and haematology staff according to national guidelines and local expert opinion.

Results
Median age was 69.7 years (interquartile range 50.9-81.2 years) and 78 (39%) pts had renal disease (stages 3-5). Seventy-five percent of ward patients and fifty percent of ACC patients had an appropriate indication for an iron infusion. A rapid infusion rate was administered to 19 ward patients and 38 ACC patients. A wide variety of doses and other infusion rates were utilized. Twenty-two ward patients received their infusion on the day of discharge, potentially delaying hospital discharge. Nineteen ACC patients experienced an adverse event associated with their iron infusion; five required infusion cessation and one event was reported to the Adverse Drug Reaction (ADR) committee. Four ward patients experienced an adverse event; two required infusion cessation and both were reported to the ADR committee.

Conclusions
Numerous patients are receiving iron infusions without an identifiable clinical indication, exposing patients to potentially unnecessary risk of adverse events and wasting nursing and pharmacy time and resources. There is marked variability in dosing and administration approaches. Educational interventions are planned to improve patient selection for iron infusions. Guidelines require simplification and rationalization.

Wed JLLT
Danielle Polgar [1], Andrew Mahony,[2]

VRE – How clean is clean?

1.University of Melbourne;
2.Infectious Diseases Department, Austin Health, Heidelberg, Vic., Australia

Aim
At the Austin Hospital clinical infection with Vancomycin-resistant Enterococcus (VRE) increased significantly in the late 2000s. Effective bleach-based cleaning and new infection control strategies were introduced in 2010. However, VRE transmission and colonisation has remained problematic.
We aimed to determine the extent and common locations of VRE contamination in rooms of colonized patients. The effectiveness of cleaning was assessed by detecting VRE contamination twice over a one-week period. Patient medication usage was recorded to determine whether anti-anaerobic antibiotics, vancomycin or cephalosporins affected environmental contamination.

Methods
Five swabs were taken from single rooms in which the one patient had resided for five or more consecutive days and had returned a positive VRE screening test in the last month. Swabs were incubated in Tryptone Soya Broth +Tween80 for 48 hours and then VRE was isolated using chromogenic agar. Isolates were confirmed as VRE using MALDI-TOF analysis. Any room with positive swabs was then re-tested exactly one week after the initial analysis. Pearson's chi-squared tests were used to analyse the data for significant differences.

Results
The majority of rooms grew VRE (30/41 rooms) although less than a third of swabs were positive (66/205 swabs - 32.2%). The call bell was the most contaminated site (53.1% of swabs positive), followed by the bed remote (43.8%). When rooms were re-sampled after one week, the extent of VRE contamination declined significantly (32.3% vs. 12.0% P=0.012). There was no difference in contamination levels between rooms with patients who were prescribed the relevant antibiotics and those who were not. (P=0.985)

Conclusion
Environmental contamination of hospital single rooms containing VRE-colonised patients is very common and patients appear to be contributing to this contamination in addition to healthcare workers. Current hospital cleaning effectively decreases VRE contamination although cleaning is incomplete in some cases. Antibiotic exposure does not clearly correlate with VRE environmental contamination. Further study of this finding is warranted.

Wed JLLT

Borschmann KN,[1] Rewell SS,[1] Iuliano S,[2,3] Ghasem-Zadeh A,[2] Davey RA,[3] Skeers PN,[1]Ho H,[1] O'Keffe GJ,[3,4] Scott AM,[3,4] Crompton DE,[5] Howells DW,[1] Bernhardt JA[1]

Of mice and men: Parallel studies of the skeletal effects of stroke in humans and animals

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Background and aim: Deterioration of bone occurs rapidly after stroke, leading to increased risk of fracture and worsening outcomes for stroke survivors. Two complementary studies have been designed with aligned comorbidities and key outcomes, using humans and animal models. We aim to determine the timing and magnitude of bone loss after stroke and to explore relationships with physical activity, muscle and brain impairments in order to target rehabilitation interventions. A further aim is to explore the utility of a proven stroke model in rats for investigating skeletal changes. Provision of an animal model which parallels human stroke allows more detailed assessment of bone at the cellular level from very early after stroke, providing significant insight into the effects of stroke on bone structure and bone cell metabolism.

Methods: *Study 1:* Adults unable to walk independently within one week of stroke are recruited to this prospective study. Primary end point is six months post-stroke, with a sub-study to 24 months. *Study 2:* Middle aged (15 weeks old) spontaneously hypertensive rats randomised to stroke (R MCA occlusion) or sham surgery, monitored for four weeks before tissue collection.

Skeletal outcomes:	Study 1: Human	Study 2: Animal
• Volumetric BMD	HR-pQCT (tibia)	Micro-CT (femur)
• Cortical & trabecular thickness	HR-pQCT	Micro-CT
• Bone turnover	CTX, P1NP, osteocalcin	CTX, P1NP, osteocalcin
• Static & dynamic histomorphometry	Not possible without invasive bone biopsy	Bone formation & mineral apposition rates
• Muscle and fat	Lean & fat mass - DXA	Cross-sectional areas (PET/MRI & SPECT/CTTM)
Stroke impairments:		
• Brain lesion	Oxfordshire classification	Brain infarct volume
• Motor impairment	Chedoke McMaster	Grid walk – foot faults
• Physical activity	PAL2 accelerometry	Video & coding of cage activity

Preliminary Results: *Human study:* To date, 37/43 people have been recruited. Average age of participants is 69.6 years (SD 12.0), 37.8% are female. Within six months, reduction in tibia volumetric bone mineral density (vBMD) was greater in paretic than non-paretic limbs (p=0.05). A reduction of 2.5% (SD 2.8, n=20, p=0.001) was observed at the distal tibia of the paretic leg and 0.8% (SD 2.4, n=21, p=0.17) on the non-paretic side. Participants who regained the ability to walk independently within three months (n = 19) experienced less reduction in tibia vBMD in the paretic

leg (p = 0.003) but not non-paretic leg (p = 0.46). Bone formation markers increased from baseline (6.0 days post stroke (SD 3.5)) to six months: P1NP 145.6% (SD 147.9%, p <0.001) and osteocalcin 57.6% (SD 78.4%, p=0.002). Bone resorption (CTX) did not change. *Animal study:* 17/20 rats survived to 28 days. Left femoral midshaft micro CT scans indicated no difference between stroke and sham rats in apparent or material vBMD, or bone/total volume ratio. Analyses are ongoing.

Conclusion In humans a reduction of vBMD was observed at the distal tibia within six months of immobilising stroke, more so in paretic limbs of people who did not walk independently by three months. Animal data will add greater detailed assessment of bone from very early after stroke.

Wed JLLT
Riddoch AS[1], Gunn JM[1, 2], Davidson SK[1, 2]

Sense of meaning and its longitudinal relationship with depressive symptoms in primary care patients

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Background: A sense of meaning in life has been found to be inversely related to severity of depressive symptoms across many patient populations, yet few studies have examined the role of a sense of meaning in predicting depression outcome[1]. Longitudinal studies are also absent in primary care, where depression is most likely to be encountered and treated[2].

Aim: To examine whether a person's sense of meaning can predict a reduction in depressive symptoms at 12 month follow-up in the primary care setting.

Methods: A secondary analysis of the longitudinal cohort study Diagnosis, Management and Outcomes of Depression in Primary Care (*diamond*)[3], comprising 789 adult patients with depressive symptoms from 30 primary care clinics across Victoria, Australia. Sense of meaning was measured using the Spirituality Index of Well-Being (SIWB)[4] at current study entry. The outcome was depressive symptoms measured with the Patient Health Questionnaire (PHQ-9)[5] at 12 month follow-up. Linear regression was used to explore the relationship between a sense of meaning and depressive symptoms.

Results: Cross-sectional analysis at study entry showed that higher levels of meaning were associated with less depressive symptoms (coefficient: -0.41, 95% CI: -0.46 to -0.36, $p < 0.001$). Higher sense of meaning at study entry also predicted a decrease in depressive symptoms at 12 month follow-up (coefficient: -0.33, 95% CI: -0.38 to -0.28, $p < 0.001$). After adjusting for age, sex, and depressive symptoms at study entry, a sense of meaning remained a predictor of depressive symptom level at 12 month follow-up (coefficient: -0.08, 95% CI: -0.15 to -0.01, $p = 0.03$).

Conclusion: A person's self-reported sense of meaning predicts their level of depressive symptoms after 12 months in primary care. This study provides evidence that a sense of meaning is more than a philosophical concept, and has implications for how primary care physicians approach the long-term management of depression.

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Wed JLLT

J. E. McLellan[1], J. I. Pitcher[1], S. A. Ballard[2], E. A. Grabsch[2], M. L. Grayson[2]

Superbugs in the Supermarket? Assessing the Rate of Contamination with Multi-Drug Resistant Gram-Negative Bacteria in Fresh Australian Chicken.

This abstract has not been included at the request of the author

Wed JLLT

Davina AF Cossigny, Effie Mouhtouris, Sathana Dushyanthen, Augusto Gonzalvo and Gerald MY Quan

Characterization of an *in vivo* mouse model of intraosseous spinal cancer causing evolving paraplegia: a new model to test potential therapeutics on spinal cancer

Spinal Biology Research Laboratory, University of Melbourne, Department of Surgery, Austin Health, Heidelberg, Vic., Australia;

Aim

The spine is the most common site of skeletal metastatic disease. Uncontrolled growth of cancer in the spine will inevitably cause pain and neurologic compromise. Animal models are desperately needed to improve understanding of this devastating condition and to test adjuvant therapies. Therefore, the aims of this study were to 1. Identify factors involved in driving the tumour-bone microenvironment interactions in our animal model and 2. To test the bisphosphonate Zoledronic Acid (ZA) *in vitro*, to determine its suitability to inhibit cancer growth and spread in the spine in our animal model.

Methods

An intraosseous injection of human prostate (PC-3) cancer cells (either naïve or transfected with luciferin, (PC-3.luc)) was administered into the upper lumbar spine of male nude mice and animals were scored as previously described[1]. Mice developed evolving paralysis in their hindlimbs in a predictable pattern[1]. Immunohistochemical analysis (RANKL, OPG, MMP-9, PTHrP and IL-6) were performed using standard procedures. *In vitro* PC-3 cells were treated with the bisphosphonate ZA (50nM, 100nM). Proliferation rates and gene expression of RANKL, OPG, MMP-9, PTHrP and IL-6 were analysed via flow cytometry.

Results

Immunohistochemistry confirmed the presence of all factors within the tumour-bone microenvironment. A correlation between disease progression and protein expression for RANKL and IL-6 was found. Proliferation assays identified that ZA was able to inhibit PC-3 cell proliferation at both 50mM and 100mM and preliminary data revealed that expression of all factors was inhibited.

Conclusion

Preliminary characterization of our mouse model of spinal cancer highlights the importance of the factors RANKL, OPG, MMP-9, PTHrP and IL-6 within the tumour-bone microenvironment in prostate cancer in the spine. Initial studies with ZA has indicated it as a potential candidate drug to delay and/or inhibit cancer cell proliferation in the spine and thus, may provide a suitable platform for the preclinical evaluation of spinal metastases. Future studies will examine its effects *in vivo* in our animal model.

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Cossigny D, Mouhtouris E, Dushyanthen S, Gonzalvo A, Quan G. An in vivo model of intraosseous spinal cancer causing evolving paraplegia. JNeurooncol. 2013 115:189-96.

Wed JLLT

Chrysovalantou E. Xirouchaki, Salvatore P. Mangiafico, Zheng Ruan, Joseph Proietto, Sofianos Andrikopoulos

Skeletal muscle-specific glycogen synthase 1 gene (*gys1*) deletion in adult mice results in glucose intolerance and insulin resistance

Department of Medicine, Austin Health, University of Melbourne

Aim
Impaired glucose storage is considered to be a contributing defect to peripheral insulin resistance, a principal characteristic underpinning type 2 Diabetes. The aim of the present study was to examine the effects of *gys1* muscle-specific deletion on glucose metabolism.¶
Methods
Tamoxifen-inducible muscle-specific knockout (KO) mice with C57/BL6 background were generated via conditional Cre-LoxP system. Ten week-old mice were fed a diet containing 1 mg/g tamoxifen for 8 weeks followed by a recovery period of up to 4 weeks on tamoxifen-free chow diet. KO mice displayed >90% deletion of muscle gys1 protein levels, preserved for 1-4 weeks following tamoxifen withdrawal. We have previously shown at this meeting that 18-22 week old *gys1* KO animals are characterized by impaired glucose tolerance when challenged with an OGTT as well as by decreased glucose infusion rate, reduced rate of glucose disappearance and decreased skeletal-muscle and white adipose tissue glucose uptake, under hyperinsulinaemic-euglycaemic conditions, suggestive of insulin resistance. After establishing the phenotype, we are currently carrying out further mechanistic studies via glycogen assays and immunoblotting, in order to identify a potential pathway linking gys1 deletion and insulin resistance.
Results
Our preliminary results indicate that muscle-specific gys1 deletion leads to reduced skeletal muscle glycogen phosphorylase and GLUT-4 protein levels associated with the reduced muscle glycogen concentration. In addition, there was no difference in Glucose-6-phosphate isomerase protein levels between the two groups of mice as expected. We are currently investigating other enzymes and metabolites including hexokinase II and glucose-6-phosphate levels in order to get a clear picture of the mechanism.
Conclusion
We conclude that our study demonstrates that a muscle-specific gys1 deletion could modify the glucose metabolism pathway, resulting in glucose intolerance and reduced glucose uptake in skeletal muscle and adipose tissue.
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Wed JLLT

Leung C[3,4,5], Rotella JA[1,4], Lee V[1], Lim K[1], Gelperowicz P[4], Knott C[2], Nguyen M[5], Apostolov R[5], Jones N[5], Lopresti R[4], Zajac J[5], Radford S[2], Judkins S[1], Kerr F[1].

Stimulating Learning with Simulation: A Survey of a "SimWars" Approach to Hospital Teaching.

This abstract is not included at the request of the author

Thurs01

Iuliano S[1], Zebaze R[1], Ghasem-Zadeh A[1], Seeman E[1]

Cortical porosity in women over 80 years of age

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Aim
About 85-90% of the skeleton in over 80 year-olds is cortical because most trabecular bone has been resorbed leaving mainly cortical fragments in the medullary canal. High remodeling due to sex hormone deficiency is exacerbated by secondary hyperparathyroidism variously due to vitamin D deficiency, a low calcium intake and malabsorption. As intracortical remodeling is the major source of cortical bone loss, we hypothesized that cortical porosity will be elevated in these women and more severely in those with elevated circulating PTH.

Methods
We imaged distal tibial microstructure in 36 women (mean age 89±4 years) and 73 post-menopausal women (mean age 60±5 years) using HR-pQCT and quantified porosity using StrAx1.0.

Results
Despite similar total bone area, in older compared with younger women respectively, the compact-appearing cortical area was ~12% smaller (101±24 v 114±17mm^2), ~21% less dense (586±90 v 745±75 mgHA/cc) and porosity ~25% higher (60.9±8.7 v 45.4±7.4%) (all $p<0.01$). In the older women, PTH was elevated (9.0 ± 4.4pmol/L) and dietary calcium intake low (636±175mg/day) with 2/3 of women consuming <600mg/day.

In all women, porosity was related to age ($r=0.72$) and PTH ($r=0.46$) (both $p<0.001$). In the older women, age accounted for 10% of the variance in porosity. PTH levels in the elderly women were systemically elevated, and the small sample size may have limited the ability to detect a relationship with porosity. Dietary calcium in the elderly was related to porosity in those with intakes below 600mg/day ($r=0.47$, $p=0.05$).

Conclusion
We infer that a reduced calcium intake independently contributes to deficits in cortical mineralized bone matrix volume by influencing intracortical remodelling. Studies are needed to examine the effects of calcium intakes below 600 mg/day on bone loss and the effects on repletion in this high-risk elderly population.

Thurs02

Waters, M., Andrikopoulos, S., and Lamont, B.J.

Metformin improves pancreatic β-cell function in the New Zealand Obese mouse

Department of Medicine (AH), The University of Melbourne.

Background and Aim
The development of type 2 diabetes (T2D) coincides with the inability of insulin secreting pancreatic β-cells to compensate for insulin resistance. Pancreatic β-cell dysfunction and loss of β-cell mass are thought to contribute to reduced insulin output, worsening glucose control and ultimately, overt hyperglycaemia. Metformin is commonly used in the treatment of T2D. It acts to reduce liver glucose output and increase glucose uptake into insulin sensitive tissues. This effectively improves blood glucose control. However, the effect of metformin on pancreatic β-cells is not well understood. The New Zealand Obese (NZO) mouse is insulin resistant and glucose intolerant. We aimed to determine if metformin could improve β-cell function in this model.

Methods
Male NZO mice, aged 7-8 weeks were fed a standard rodent chow, or a diet containing metformin (1000 mg drug/kg food). Random-fed blood glucose was measured at 2, 4 and 6-weeks. Oral and intraperitoneal glucose tolerance tests were performed after 5 weeks of treatment, while intravascular glucose tolerance tests were performed after 6 weeks. At the conclusion of the study pancreatic histology was examined to determine β-cell mass. Student's t-tests were used to determine statistical significance and differences between groups, with a p-value < 0.05 deemed statistically significant.

Results
Metformin improved glucose-stimulated plasma insulin levels during intraperitoneal glucose tolerance tests (NZO metformin: 1.97 ± 0.25 ng/ml; NZO chow: 1.25 ± 0.30 ng/ml, $p < 0.05$, $n = 8$-11), intravascular glucose tolerance tests (area under the curve for plasma insulin for NZO metformin: 54.6 ± 9.4 ng/ml x 30 min; NZO chow: 27.7 ± 5.7 ng/ml x 30 min, $p < 0.05$, $n = 3$) and trended higher in oral glucose tolerance tests (NZO metformin: 1.75 ± 0.38 ng/ml; NZO chow: 1.03 ± 0.13 ng/ml, $p = 0.06$, $n = 7$-8). β-cell mass was not affected by metformin (NZO metformin: 7.93 ± 0.90 mg, NZO chow: 8.46 ± 0.85, $n = 5$-6). Following the treatment period, there was no difference in body weight and even though the insulin secretory capacity improved, metformin did not significantly improve blood glucose levels.

Conclusion
Improved glucose-stimulated insulin levels during glucose tolerance tests demonstrate that metformin can enhance β-cell function. Further investigation is needed to determine whether metformin has a direct effect on pancreatic β-cells. In the NZO mouse this effect was not sufficient to improve blood glucose levels.

Thurs03

Diane Vue, Nicole Wong, Maria Stathopoulos, Sofianos Andrikopoulos

Genetic deletion of the endoplasmic reticulum gene *Herpud1* results in impaired insulin secretion

Department of Medicine, University of Melbourne, Austin Health

Background and Aim:
Prolonged physiological stress which causes over secretion of insulin can result in endoplasmic reticulum (ER) stress in the pancreatic islet β-cell. The increased production of insulin exceeds the folding capacity of the ER causing ER stress which can lead to β-cell dysfunction and ultimately Type 2 Diabetes (T2D). We have previously shown that the gene, *Herpud1* has a function in the islet β-cell and insulin secretion.(1) *Herpud1* encodes the ER-resident protein HERP which plays a protective role in ER-stress related pathways. The aim of this project was to determine the mechanism of *Herpud1* in the islet β-cell.

Methods:
We obtained a knock-out mouse model with global deletion of *Herpud1* and generated homozygous knockouts and negative littermates (control). These mice were studied at 8 weeks of age to determine whether deletion of *Herpud1* affected body weight and basal glucose and insulin levels as well as insulin secretory responses *in vivo* using the intravenous glucose tolerance test (IVGTT).

Results:
The data show that there was no difference in body weight (Negative littermates: 21.4 ± 0.9 grams, Knockout: 19.8 ± 0.3 grams, p=0.08, n=5-7) or basal insulin levels (Negative littermates: 0.6 ± 0.1 ng/ml, Knockout: 0.5 ±0.1 ng/ml, p=0.20, n=5-7) between the *Herpud1* knockout mice and their negative littermates. Basal glucose concentrations were lower in the knockout compared with the negative littermates (10.4 ± 0.8 mmol/L vs 8.3 ± 0.6 mmol/L, p=0.04, n=5-6). Following the IVGTT *Herpud1*-deficient mice had a decrease in glucose-mediated insulin secretion compared with their negative littermates (AUC - negative littermates: 54.3 ± 6.7 ng/ml x 30min, Knockout 42.6 ± 3.3 ng/ml x 30 min, p = 0.03, n=5-6).

Conclusion:
We conclude that the preliminary data suggest that *Herpud1* plays an important role in the islet β-cell since its genetic deletion caused reduced insulin secretion in response to glucose. Further studies will be performed to determine the mechanism of this reduction in secretion and whether a high fat diet worsens the phenotype of the mice.

References

1. Wong N, Morahan G, Stathopoulos M, Proietto J, Andrikopoulos S. A novel mechanism regulating insulin secretion involving Herpud1 in mice. Diabetologia. 2013;56(7):1569-76.

Thurs04

Houda Elhassan [1], Sandra Iuliano-Burns[1]

Determinants of falls in ambulant elderly in aged-care

1.University of Melbourne, Austin Health, West Heidelberg, Vic., Australia

Background and aim
Falls in the elderly pose significant risks and are associated with increased morbidity and mortality. Within the elderly, falls rates are highest for those living in aged-care settings. Falls risk is associated with vitamin D (25(OH)D) deficiency, muscle weakness, poor balance and mobility, and prescription of ≥5 medications. We aim to determine the best predictor of falls for the elderly living in aged-care.

Methods
This prospective study involved a sample of 108 elderly residents (mean age 85.8 ± 6.5yrs, 75% females) from 15 aged-care facilities in Melbourne. Residents underwent the following assessments: fasted blood sampling (25(OH)D nmol/L), balance (Lord's balance test), hip, ankle and knee strength (Nicholas manual muscle tester), mobility (Timed Up and Go [TUG] and 6 metre walking velocity), and medication use (medical record review). Total body densitometry was also performed to determine total and regional lean muscle mass, from which a sarcopenia index was calculated (DXA, Lunar GE). Falls were assessed prospectively over a 12-month period from mandatory incidence reports. Logistic regression was used to determine risk factors for falls.

Results
113 falls were recorded in 41.6% of residents (n=45) over 12 months. Fallers did not differ significantly from non-fallers for all measured parameters ($p>0.05$), but tended to have a slower walk velocity (12.4 ± 8.6 vs. 9.9 ± 3.8 sec, fallers vs. non-fallers, $p=0.08$). Mean 25(OH)D was 51 ± 31 nmol/L (50.4 ± 33.9 vs. 52.2 ± 29 nmol/L). On average, ~9 medications were prescribed for each group, and mean TUG was 18.7 ± 9.8 seconds (20.72 ± 12.9 vs. 17.1 ± 6 sec). Those who fell more than once also did not differ from non-fallers in risk factors.

Conclusion
Based on established criteria for falls risk identification, the majority of residents were considered to be at high-risk for falling. More than half however, did not experience a fall over the 12-month period. The available criteria for identification may be applicable for community dwelling elderly, but more sensitive falls risk detection may be needed for those who are residing in aged-care.

Thurs05

Pascoe L, [1], Edvardsson D,[1]

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Psychometric properties and performance of the 17-item Benefit Finding Scale (BFS) in an outpatient population of men with prostate cancer.

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1. *La Trobe/Austin Clinical School of Nursing. Heidelberg. 3084*

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Aim

To analyse the psychometric properties and performance of the 17-item Benefit Finding Scale (BFS) (1) in an Australian outpatient sample of men with prostate cancer.

¶

Methods

The instrument psychometric properties and performance was rated against established criteria for reliability (internal consistency), construct validity (instrument dimensionality) and variability (floor and ceiling effects).

¶

Results

Internal consistency reliability was satisfactory as evidenced by a Cronbach's alpha of 0.95. Dimensionality analysis confirmed a unidimensional structure indicating construct validity. A greater than 15% floor effect suggested limited data variability. The high internal consistency reliability points to the instruments ability to reliably capture the benefit finding construct in this population. The evidence for instrument dimensionality indicates a unidimensional scale, and thus a calculation of a single total score can be recommended. The >15% floor effect suggests that there may be issues with the instrument's ability to detect variance, and thus some questions remain regarding the instrument's ability to discern change in health status over time.

¶

Conclusion

The 17-item BFS seems to have satisfactory psychometric properties for use in an outpatient sample of men with prostate cancer, with some questions regarding detection of variability. The findings of this study together with previous evidence indicate that the 17-item BFS can be recommended as the tool of choice when exploring benefit finding in adult cancer populations.

Reference

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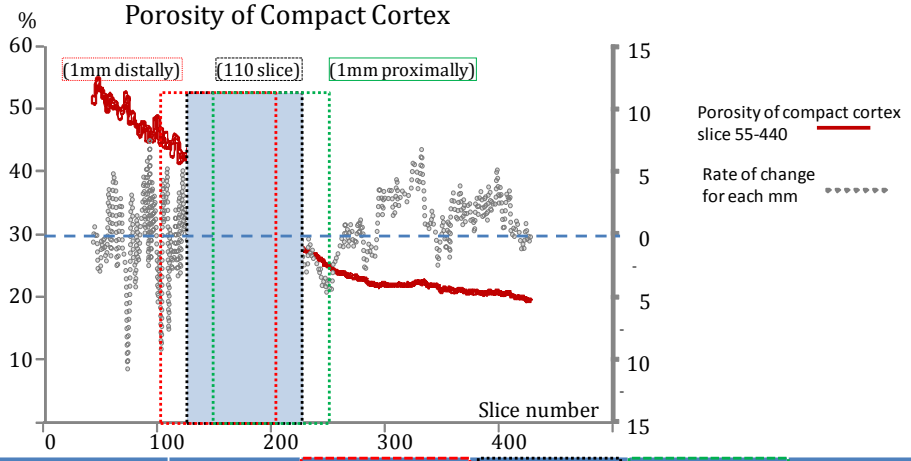
Thurs 06

Assessing Age, Sex, and Racial Differences in Cortical Porosity Requires Adjustment for Site-Specific Variation in the Selected Region of Interest

A Ghasem-Zadeh, A Burghardt, A Zendeli, S Bonaretti , Å Bjørnerem, XF Wang, Y Bala, G Ksazakia , R Zebaze, and E Seeman

High-resolution peripheral quantitative computed tomography (HR-pQCT) measures micro-architecture in a region of interest (ROI) at the distal radius and tibia. Bone width and micro-architecture vary slice by slice along the length of a bone so differences in micro-architecture by age, pubertal stage, sex and racial group may be the result of differences in the placement of the ROI rather than the characteristics of the subjects.



	2mm Distally (Mean ±SD)	1mm distally (Mean ±SD)	Default (9.02mm from endplate) (Mean ±SD)	1mm proximally (Mean ±SD)	2mm proximally (Mean ±SD)
Porosity of total cortex(%)	46.5±5.0	44.6±5.1	43.2±5.2	41.9±5.3	40.5±5.4
Porosity of compact cortex(%)	40.0±4.9	38.3±5.1	36.3±5.2	34.7±5.3	32.9±5.4
Porosity of transitional zone(%)	62.2±3.5	61.8±3.6	61.4±3.7	61.1±3.8	60.7±3.9
Cortical area	70.9±16.5	72.2±17.7	73.8±18.8	75.13±19.7	81.9±20.6

To assess the slice-by-slice variation in cortical porosity of radius, 18 radii scanned as standard ROI and extended to 9.02 mm distally and 18.04 mm proximally(440 slices).We used Strax 1.0 software to assess slice by slice of total cortex, compact cortex, and transitional zone porosity for whole 440 slices.

We found 1 mm replacing ROI distally, in comparison with standard ROI, produce 2.02, 3.49, and 0.61% increment on the measured porosity of total cortex, compact cortex and transitional zone, respectively, however replacing 1 mm proximally produce 2.8, 4.8, and 0.50% reduction.

We infer that a more distal ROI has a significant effect on cortical porosity measurement particularly compact cortex porosity which may result in erroneous age, sex and racial differences being reported. This variation needs to be considered when interpreting data in persons who differ in bone length.

Thurs07

H. Williamson[1,2] on behalf of the AVERT Collaboration

A Very Early Rehabilitation Trial (AVERT): Austin Hospital Update

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Aim
A Very Early Rehabilitation Trial (AVERT) is a large, investigator led, multi-centre, phase III randomised controlled trial of very early rehabilitation (with a focus on mobility) after stroke. The Austin Hospital stroke unit team aims to recruit 10% of stroke admissions into the trial.
Method
The inclusion and exclusion criteria are broad but patients must be admitted and recruited within 24 hrs of stroke symptoms. A team of nurses and physiotherapists are trained to assess patients, deliver and record rehabilitation interventions. All outcomes are blinded, with disability at 3 months (modified Rankin Scale) the primary outcome. Recruitment of 2104 patients will provide 80% power to detect a significant effect (2 sided, p=0.05).
Results
The Austin Hospital commenced recruitment in July 2006, the first of 58 hospitals. Over eight years, five main investigators and more than 50 hospital staff have supported this trial. 2423 stroke patients were screened for eligibility, with 243 patients recruited (10.0%). At 3 months, 239 patients have completed follow-up, with 33 (13.8%) deaths and 1 (0.4%) dropout. Austin Hospital has recruited the largest number of patients to the trial, contributing 12.2% of the 2010 patients recruited.
Conclusion.
The Austin Hospital is the flagship hospital for this trial, with the stroke unit team achieving trial recruitment goals as well as recruiting the largest number of stroke patients into the AVERT trial. The sustained commitment of staff to clinical research over 8 years is making a major contribution to this important international clinical trial.

Thurs08

Lim R [1,2], Morwood C [1,2], Barker G [1,2], Lappas M [1,2]

Silibinin, a phytophenol, as a novel therapy for the prevention of preterm birth

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2. Mercy Perinatal Research Centre, Mercy Hospital for Women, Heidelberg, Victoria, Australia

Aim

Preterm birth is the largest cause of infant death and of neurological disabilities in survivors. Little progress, however, has been made with interventions aimed at prevention. Bacterial infection and/or inflammation, the largest aetiological factors involved in preterm birth, induce a cascade of events that lead to myometrial contractions and rupture of fetal membranes. Of clinical relevance, intrauterine infection is also a major risk factor for brain injury in neonates. The aims of this study were to determine the effect of silibinin, a polyphenolic extract obtained from milk thistle, on pro-inflammatory mediators in (i) human fetal membranes and myometrium treated with bacterial endotoxin lipopolysaccharide (LPS) or the pro-inflammatory cytokine IL-1β, and (ii) in preterm fetal membranes with active infection. Further, the effect of silibinin in a mouse model of infection-induced preterm birth was assessed for markers of inflammation and brain injury.

Methods

Human fetal membranes and myometrium (tissue explants and primary cells isolated form these tissues) were treated with 200 μM silibinin in the presence or absence of 10 μg/ml LPS or 1 ng/ml IL-1β. Endpoint analysis was assessed by qRT-PCR and ELISAs. Pregnant C57BL/6 mice were injected with 70 mg/kg silibinin with or without 50 μg LPS on day 15.5. Fetal brains were collected after 6 h.

Results

In fetal membranes, myometrium and primary cells, silibinin significantly decreased LPS and IL-1β-stimulated expression of the pro-inflammatory cytokines IL-6 and IL-8, COX-2 and subsequent prostaglandin (PG)E_2 and $PGF_{2\alpha}$ release. Moreover, in primary cells, silibinin decreased the expression and secretion of the extracellular matrix degrading and remodelling enzyme, matrix metalloproteinase (MMP)-9. Preterm fetal membranes with active infection treated with silibinin also showed a decrease in IL-6, IL-8 and MMP-9 expression. Notably, fetal brains from mice treated with silibinin showed a significant decrease in LPS-induced expression of IL-8 and a marker of brain injury, ninjurin.

Conclusion

Silibinin can reduce infection and inflammation-induced pro-labour mediators in human fetal membranes and myometrium. Excitingly, silibinin exerted a protective effect on infection-induced brain injury in a mouse model of preterm birth. Collectively, silibinin may be a novel therapeutic to reduce the unacceptably high rates of neonatal mortality and morbidity associated with preterm birth.

The authors would like to acknowledge the Austin Medical Research Foundation for funding for this project.

THURS09

THE RATE OF WEIGHT LOSS DOES NOT INFLUENCE LONG TERM WEIGHT MAINTENANCE

Purcell K[1], Sumithran P[1], Prendergast L.A[1,2], Bouniu C.J[1], Delbridge E[1], Proietto J[1]

This abstract has not been included at the request of the author

Thurs10

C Said[1, 2], K Shaw[1]

Validation of the Austin Health Falls Screening Tool.

1.Physiotherapy Department, Austin Health, Heidelberg, Vic., Australia;
2. The University of Melbourne, Parkville, VIC.

¶
Aim
The validity of falls screening and assessment tools should be explored in the specific setting in which they are used. The purpose of this study was to explore the concurrent validity of the Austin Health Falls Screening Tool (AHFST), compared with The Northern Hospital Modified STRATIFY (TNH-STRATIFY), and to compare the psychometric properties of the two tests.
¶
Methods
The AHFST and the TNH-STRATIFY were completed by a research physiotherapist on 130 participants admitted to Austin Health (five acute wards, n = 115 two subacute wards n = 15, average LOS 10.2 days ± 15). Classification of participants as 'High' or 'Low' risk was compared between the two tools using Kappa coefficients. The predictive accuracy of the two tools was also assessed.
¶
Results
Seven falls occurred during the study period (fall rate of 5.2 per 1000 bed days). There was moderate agreement between the AHFST and the TNH-STRATIFY (kappa = 0.68, 95% CI 0.52-0.78). The TNH-STRATIFY demonstrated higher sensitivity than the AHFST (85.7% versus 57.1%), and the area under the ROC curve was greater (0.599 versus 0.513), however this difference was not statistically significant.¶

Conclusion
There was moderate agreement between the 3 item AHFST classification of falls risk and the longer, 9 item TNH-STRATIFY classification. However, both tools demonstrated limited predictive validity in the Austin Health population. One reason for the limited predictive validity is that some participants had fall prevention strategies implemented (following identification of falls risk using the AHFST by clinical staff), which may have reduced falls in those at 'High' risk. The results of this study highlight the need to re-evaluate the validity of falls risk screening tools and their clinical value in identifying patients who are most likely to fall in differing hospital settings.

Thurs11

Tay Sachs disease and related conditions school screening in Melbourne – a 10 year review

Megan Cotter[1], Agnes Bankier[1] and Martin Delatycki[1,2]

1. Austin Health Clinical Genetics Service
2. Bruce Lefroy Centre for Genetic Health Research, Murdoch Childrens Research Institute

A number of autosomal recessive conditions have a higher carrier frequency in the Ashkenazi Jewish population. Carrier screening for Tay Sachs disease has been offered in Jewish high schools in Melbourne since 1997 after similar programs were introduced internationally over 30 years ago.

Over the course of the program in Melbourne, advances in genetic technologies have allowed for this testing to transition from a blood test to a cheekbrush testing which has resulted in a higher uptake of testing. In 2008 a further six conditions were added to the standard Ashkenazi Jewish genetic testing panel: cystic fibrosis, familial dysautonomia, Canavan disease, Fanconi anaemia, Bloom syndrome and Niemann-Pick disease type A.

Over 10 years from 2003-2013, 3542 students were tested through the program and 268 (7.8%) were identified as carriers of at least one of the conditions. The carrier frequencies varied from 1 in 32 for Tay Sachs disease to 1 in 161 for fanconi anaemia.

This program has grown from a single disease to a multi-disease screening program. Uptake has increased from 70% to 95% as a result of introduction of cheekbrush testing. It will be important to monitor the uptake of testing by partners of carriers as the cohort have children.

Thurs12

Hurren F, [1], Wang J,[1] Szczurek P, [1] Wood G [1]

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Comparsion of Carbapenem MICs using different methods for KPC-Producing *Escherichia coli* and *Klebsiella pneumoniae* isolates

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1. Microbiology Department, Austin Pathology, Heidelberg, Vic., Australia

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Aim

¶This study was undertaken following discordant MIC values for a clinical isolate in our laboratory using Vitek 2, Etest and disk diffusion methods.
The study compared Vitek 2, Etest and disk diffusion with the gold standard broth microdilution (BMD) for the accurate detection of meropenem resistance.

Methods

Nine *K. pneumoniae* and nine *E. coli* isolates of which fourteen were KPC producing organisms and quality control strains were tested by BMD, Etest (bioMérieux), Vitek 2 AST-N246 (bioMérieux) and disk diffusion (Oxoid).

Results

Table 1: Performance of meropenem susceptibility testing methods compared to the gold standard MBD

Testing method	Sensitivity (%)	Specificity (%)
V2	100	80
Meropenem Etest	38.5	100
Ertapenem Etest	100	100
Meropenem disk	100	80
Ertapenem disk	100	80

In this study a significant variation in meropenem MICs by Etest (0.125 µg/ml to 16 µg/ml) was observed among the KPC-producing isolates including nine isolates with MICs within the susceptible range.

Conclusion

Although this study was limited, focusing on isolates from a single patient, it highlighted the imperative to understand the limitations of the various methods available for determining the meropenem MIC values of these organisms.
The use of Vitek 2 together with meropenem BMD and meropenem or ertapenem disk diffusion provide excellent screening tests for presumptive detection of *Enterobacteriaceae* that produce carbapenemases.

References

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Thurs13

Young, H,[1,] Kelly, S,[1,] Salem, N,[1,] Ward, P,[1,] Wood, G,[1,]

Assessment of bacterial survival using flocked Eswab/in liquid ames vs dacron swab/in ames gel transport medium.

1.Microbiology Austin Pathology

Background

An automated inoculation system for microbiology specimens using liquid specimens and flocked swab collection in liquid transport medium offer reproducible culture results with increased numbers of isolated colonies. Introduction of automation into Austin Health provides the opportunity to improve quality and turn-around-time of microbiology investigations.

Aims

To assess

1) Recovery and viability over 24-48 hrs storage at room temperature and at 4ºC of specific pathogens from flocked Eswabs in liquid Ames medium (BD 220245) compared with dacron swabs in Ames gel medium (Interpath M40).
2) Equivalence of culture of buccal swab specimens using the 2 swab types
3) The quality of Gram stains smears from automated and manually prepared smears of selected specimens

Materials and Methods

1) Organism viability was assessed according to the CLSI M40-A2 standard.
2) Selected pathogens included *Pseudomonas aeruginosa,* MRSA, *Strep pneumoniae, Haemophilus influenzae, Peptostreptococcus anaerobius a*nd *N gonorrhoea*.
3) Reproducibility of culture results of buccal swabs from 6 volunteers were checked at collection and after 24 hrs to check viability of specimens in respective transport media.
4) Gram stains were prepared by standard manual and automated methods from each swab type using buccal swabs from 8 volunteers and selected and sputum samples.

Results

1) Recovery and viability of most organisms was equivalent for *Pseudomonas aeruginosa* and MRSA; and 10 to >1000 fold greater for other organisms using Eswabs. Viability was better when stored at 4ºC rather than room temperature.
2) The buccal swab and sputum samples showed that viability was maintained or improved for the Eswab compared with the gel swab.
3) Gram stain smears were more evenly spread and clearer using Eswabs than gel swab systems

Conclusions

Flocked Eswabs systems and the use of automation will improve the quality of microbiology and will potentially reduce reworking and delays in availability of final results.

Thurs14

MALDI-TOF and Susceptibility Testing Direct from Positive Blood Culture Broth Compared to Testing from 6 Hour and Overnight Sub-cultures

G. Ganino, E.A. Grabsch, T. Olejniczak, P.B. Ward, G.M. Wood.
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Objective

Recently the matrix-assisted laser desorption ionisation time of flight mass spectrometry (MALDI-TOF) has been introduced in microbiology diagnostic laboratories for rapid identification of organisms. We evaluated the performance of MALDI-TOF and Vitek -2 for the identification and susceptibility testing of organisms testing direct from positive blood culture (using gel/saponin method) and from 6 h subcultures.

Methods

Positive blood cultures were Gram stained and subcultured as per a standard protocol. In addition, 6 ml of the broth was transferred to a gel vacutainer tube, and 1% saponin was added for 15 minutes before centrifugation, and washing with sterile deionised water (for Gram positive isolates and heavily blood stained deposits). MALDI-TOF and antibiotic susceptibility were performed on broths (with positive smears indicating a single organism) using MALDI-TOF MS and Vitek 2 systems (AST-N or AST-P cards). Results for direct or 6 h testing were compared to results for MALDI-TOF and Vitek-2 from 18-24 h subcultures.

Results

Overall, 117 (68 Gram-negative, 49 Gram-positive) isolates were tested directly from positive blood culture by MALDI-TOF MS. 56/68(82.3%) Gram-negative and 33/49(67.3%) Gram-positive isolates were correctly identified to species level. A total of 54 isolates were tested directly for antibiotic susceptibility Vitek-2. 35/44 (79.5%) Gram-negative and 6/10 (60%) Gram-positive isolates had the same (no interpretation differences) susceptibility pattern as the overnight culture result. 103 isolates where tested after 6 h subculture incubation. 56/58 (96.6%) Gram-negative and 36/45 (80.0%) Gram-positive isolates were correctly identified to the species level. 65 isolates had susceptibility testing performed after 6 h sub-culture incubation and 40/45 (88.9%) Gram-negative isolates and 18/20 (90.0%) Gram-positive isolates gave the correct susceptibility pattern compared to overnight culture test results.

Conclusion

Although 6 h testing gave higher rates of correct identification and susceptibility testing of blood culture isolates, both direct and 6 hour methods especially for Gram-negative isolates have the potential to improve patient management and clinical outcomes.

Thurs15

E.A. Grabsch, J. Wang, P.B. Ward[1], G.M. Wood.

An assessment of reproducibility of MALDI-TOF MS

Microbiology Dept, Austin Health, Heidelberg, Victoria, Australia

Aims

We evaluated the performance of matrix-assisted laser desorption ionisation time of flight mass spectrometry (MALDI-TOF) to repeatably identify 5 ATCC isolates when tested by four different key operators (KOs) in the same run and different runs. Secondly we assessed all the laboratory staff (LS) who perform MALDI-TOF, for competency in testing a blinded set of the same isolates.

Methods

MALDI-TOF was performed on the Vitek MS (BioMerieux). The identification confidence level (CL) was defined as > 90% for an acceptable result. KOs tested *Staphylococcus aureus* ATCC 25923, *Escherichia coli* ATCC 25922, *Pseudomonas aeruginosa* ATCC 27853, *Enterococcus faecalis* ATCC 52199 and *Candida albicans* ATCC 14053, on four different occasions, each time inoculating the organism 20 times without formic acid (direct method [DT]) and 20 times with formic acid (FA). The other LS processed the same 5 organisms (unidentified) by DT and FA.

Results

Overall key operators performed 1200 (960 bacteria, 240 yeast) tests by DT, and similarly 1200 FA tests. Re-acquisition was repeated once if the calibration control or the test failed acquisition.
60 target slides were processed by the 4 KOs. 173/180 (96.1%) calibration target cells passed assessment, and 6/7 that failed passed the re-acquisition. After re-acquisition 280/1200 (23.3%; bacteria: 44 [3.7%], yeast: 236 [19.7%]) by DT and only 21/1200 (1.8%; bacteria: 15 [1.3%], yeast: 6 [0.5%]) tests by FA failed due to bad spectrum/insufficient peaks or failed calibration (n=16). Failures included two *E.coli* ATCC 25922 (identified as *Citrobacter youngae* [76.4%]; and *E.coli* [74.4%]) and one *P.aeruginosa* ATCC 27853 (not differentiated from *Acinetobacter junii* 50% *vs* 49.5%), and 3 tests on *C.albicans* ATCC 14053 failed due to low CL (25- 50%).
Fifteen additional LS performed 225 (180 bacteria, 45 yeast) DT and similarly 225 FA tests. Overall identification rate for bacteria was 91.1 -100% by DT, and 95.6 -100% by FA. *C.albicans* ATCC 14053 could only be reliably identified by FA, and the overall rate was 82.2%.

Conclusion

In this evaluation MALDI-TOF performed well, repeatability and reliably identifying bacterial isolates by DT and FA method, and could also reliably identify *C.albicans* ATCC 14053 provided FA method was used.

Thurs16

Blennerhassett J,[1] Borschmann K,[2] Chamberlain J,[2] Bernhardt J.[2]

The influence of rehabilitation health architecture on patient activity, location and social interactions.

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[2] Florey Institute of Neuroscience and Mental Health, Heidelberg, Vic., Australia.

Aim
Improved patient care and outcomes is the goal of 'evidence-based health architecture'. The degree to which the built environment influences patient behaviour in rehabilitation environments is unknown. This study aimed to examine whether a new rehabilitation ward, designed to be more 'modern and serene,' influenced patient activity, where patients chose to be and their social interactions.

Method
Consenting inpatients were observed every 10 minutes from 8am to 5pm for one midweek day while undergoing rehabilitation. The observations recorded patient activity, location and alone time, and were done before and after redevelopment of the Mellor Unit of Royal Talbot-Austin Health.

Results
Observations of 47 patients occurred (23 before and 24 after redevelopment). Half (48.9%) of participants had neurological conditions, predominantly stroke. The remainder had medical or neuro-oncology (21.2%), and musculoskeletal (27.7%) conditions. Between the two groups, patients were similar for age (old ward 61.5 y (SD 14.7), new ward 61.5 y (SD 13.8)), gender (male 65.2% v 62.5%) and ability to walk independently (26.1% v 20.8%). Physical activity was similar between groups and there was little difference in time that patients spent in therapy areas (old 25.0%, new 24.0%). Across the study, more time was spent in physiotherapy (old 16.5% v new 19.8%) compared to other allied health therapies combined (old 7.3% v new 6.3%). The proportion of time that patients were observed to be alone reduced from 41.0% in the old ward to 35.7% in the new ward. Time spent interacting with staff did not change, however family members were present more often in the new environment (old 4.7%, new 9.3%). Time spent in communal areas was similar (old 9.4%, new 11.1%), despite the new communal area being redeveloped to be more modern and serene. In the new ward, patients spent less time in bedrooms (old 47.3%, new 41.2%).

Conclusion
Evidence based health architecture is a relatively new field and the science is nascent. Similar patterns and levels of patient activity and social interaction were observed despite moving to a redeveloped rehabilitation ward. The behavioural mapping method seemed useful to observe patterns of activity within a rehabilitation setting. However, further development of qualitative and quantitative methods is needed to interrogate the impact of the environment on patient outcomes and behaviours.

Thurs16A

Tse T [1, 2], Lentin P [3], Douglas J [1, 4], Carey L [1, 2]

Title: Understanding activity and occupational participation after stroke

1. The Florey Institute of Neuroscience and Mental Health, Neurorehabilitation and Recovery, Stroke Division
2. La Trobe University, Department of Occupational Therapy
3. Monash University, Department of Occupational Therapy
4. La Trobe University, Department of Human Communication Sciences.

Aim:
The aim of this study was to investigate why stroke survivors participate in the activities they do and if the reasons have changed since before their stroke.

Methods:
This mixed method study was conducted as a concurrent nested design. The qualitative study sat within a large multi-centre observational cohort study investigating recovery post-stroke: the START-PrePARE study (1). Thirty face-to-face semi-structured interviews guided by a constructivist approach were conducted at 3-months post-stroke. Activity participation was assessed quantitatively using the Activity Card Sort (ACS). The ACS assesses participation in the domains of household, leisure and social/educational activities. The qualitative data was analysed using spiral content analysis.

Results:
The mean National Institute of Health Stroke Scale score for participants was 1.3 and their mean age was 69 years. Eight participants were female and 27 had returned home after their stroke. The mean percentage of retained activity participation was 95%. Qualitative analysis revealed that stroke survivors' reasons for occupational participation included enjoyment, identity, necessity, routine, personal factors, and social and physical environmental factors. These reasons tended not to change since before their stroke.

Conclusion:
The ACS provided a quantitative measure of activity participation showing a high percentage of retained activity participation in mild stroke survivors 3 months after stroke. Qualitative methods revealed in-depth the reasons that underpinned activity participation, and that there was little change in the reasons following stroke. These findings provide in-depth evidence of the reasons for activity participation at 3 months post-stroke thus advancing our understanding of occupational participation after stroke.

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Thurs17

Cimoli, M.,[1,2], Oates, J.[2,], McLaughlin, E.,[2,] & Langmore, S.[3]

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The Development and Evaluation of the Austin Swallowing Ability Profile – Fibreoptic Endoscopic Evaluation of Swallowing (ASAP-FEES)

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This abstract is not included at the request of the author.

Thurs18
Wayne Dite and Jannette M. Blennerhassett

The Four Square Step Test: Developed at Austin Health

Royal Talbot Rehabilitation Centre, Austin Health, Vic, Australia.

Background: Research has found stepping speed in the forward, backward and sideway directions decreases with age[1] and trips and slips have been identified as the most common reasons why people fall.[2] Despite this, a clinical test to measure rapid stepping to change direction and avoid obstacles was not available. Austin Health Exercise Physiology and Physiotherapy staff collaborated to develop the Four Square Step Test (FSST).

Since the original FSST publication[3], peer reviewed research has come from 21 different countries, with study samples including: healthy adults from 18 to 100, Frail older adults, Vestibular Disorders[4], Stroke[5], Multiple Sclerosis[6], Children, Osteoporosis, Amputees, Joint Replacements, Fibromyalgia, Arthritis, Cerebral Palsy, Parkinson's and Huntington's Disease. Research has identified FSST scores that discriminate between fallers and non-fallers, healthy adults and adults with neurological and orthopaedic conditions, as well as changes in response to training, levels of impairment and ageing.

As a clinical test, the FSST has been found to be reliable, valid, easy to score, quick to administer, requires little space, and needs no special equipment. It is unique in that it involves stepping over low obstacles, multiple changes in direction and has a cognitive demand (remembering step sequence). Clinically the FSST is now widely used as a test of dynamic standing balance, and is an approved outcome measure under America's Health Insurance Plans.

The Four Square Step Test is the first clinical test of multiple direction stepping. The development of the FSST highlights; 1) the benefit of a multidisciplinary approach to clinical problems in the health sector and 2) the close clinical and research ties practiced at Austin Health.

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Thurs19
NON INVASIVE VENTILATION & GASTROSTOMY FEEDING TUBE
A COMMONSENSE APPROACH TO COMMUNITY CARE

Anne Duncan, Tim Given, Simon Conti, Sharon Sibenaler
Victorian Respiratory Support Service, Austin Health

The Victorian Respiratory Support Service (VRSS) is a multi disciplinary team providing domiciliary non-invasive (NIV) and invasive ventilation to over 750 patients throughout the Australian state of Victoria. Of these, 58 (8.5%) are patients living at home with motor neuron disease (MND) and NIV.

The VRSS Outreach nurse role is to educate, provide equipment and support these ventilated patients in the community; this includes home visits as required.

In 2001, when it was noted that there was no consistent community support available for our MND patients with gastrostomy tubes, the Outreach nurses extended their scope of practice to include routine gastrostomy tube management. This includes telephone support, in-home support, routine balloon replacement tube changes and provision of consumables.

Our clinical experience suggests that combining NIV and gastrostomy tube care negates the need for hospital admissions for routine gastrostomy tube changes; reduces emergency presentation for tube dislodgement; provides continuity of gastrostomy tube care, and minimises the number of health professional into the home.

Outcomes:

- Outreach has developed two policies to support their extended scope of practice: ‘Gastrostomy Feeding Tube Change – Balloon Replacement Tube (BRT) – Community’ and ‘Community Management Of Hypergranulation Tissue In Patients With Feeding Tubes’.
- There is greater communication and continuity of information between hospital based dietetic departments, community dieticians and other care services.
- Our patients are receiving timely evidence based care for both their NIV and gastrostomy tubes whilst remaining at home.

Take Home Points:

- VRSS Outreach recognises that the care needs for people living with MND is complex and burdensome.
- Our patient group has improved access to gastrostomy tube services by virtue of our extended community practice.
- Routine gastrostomy changes by the Outreach team have no recorded complications.

Thurs20

Hilary Thomson[1], Dr. Elif Ekinci[2,5,6], Prof. Leonid Churilov[3,4], Prof. George Jerums[2,5], Dr. Erosha Premaratne[2,5]

Longitudinal Study of Renal Function in Type 1 Diabetes Mellitus

1. Austin Clinical School, Heidelberg, Vic., Australia;
2. Austin Health Endocrine Centre, Heidelberg, Vic., Australia;
3. Florey Institute of Neuroscience and Mental Health, Heidelberg, Vic., Australia
4. RMIT University, Melbourne, Vic., Australia
5. University of Melbourne
6. Menzies School of Health Research, Darwin, NT, Australia

Aim
The significance of hyperfiltration (GFR >125ml/min/1.73m²) in patients with early Type 1 diabetes (T1DM) is still disputed despite extensive investigation. We aimed to analyse longitudinal data to investigate whether baseline GFR is independently associated with the rate of decline in renal function.

Methods
Adult T1DM patients (n=142) attending Austin Diabetes Clinics, with at least two measured GFR (mGFR) measurements over a minimum of 4 years. Plasma disappearance of DTPA was used to calculate mGFR, using the Brochner-Mortensen correction equation. Random effect GLS regression was used to investigate the association between baseline mGFR and rate of decline in mGFR from baseline

Results
142 participants had baseline mGFR measurements. At baseline, median mGFR was 112.71ml/min/1.73m^2 (IQR 96.41-125.53). The rate of decline in mGFR was significantly associated with the baseline mGFR values (p<0.0001). The average decline of the first quartile group was significantly different to the other quartile groups with higher GFRs (See Table 1), with higher baseline mGFR associated with a faster rate of decline.

Quartile	mGFR Range (ml/min/1.73m^2)	Avg. decline compared to 1st quartile (ml/min/1.73m^2/year)	95% CI	P value
1st	60.9-96.4	0.69	0.41-0.97	<0.0001
2nd	96.5-112.6	0.54	0.14-0.94	=0.008
3rd	112.7-125.5	0.68	0.28-1.09	=0.001
4th	>125.5	0.95	0.56-1.33	<0.0001

Table 1. Average decline per year by quartiles. 2nd, 3rd and 4th quartile average declines are relative to average decline of 1st quartile.

Conclusion
This study demonstrated that baseline renal function is statistically significantly associated with the progression of diabetic renal disease in patients with Type 1 diabetes.

Thurs21

Lim ML, [1,2,3,4],Cameron T, [1,3,4,5], McMurray K, [1,3], Chao C, [1,2,3,4] ,Fahey G, [1,2,3,4], Sweeney J, [3,5], Howard M, [1,2,3,4]

Outcomes of patients living with a tracheostomy in the community

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2. *Institute of Breathing and Sleep (IBAS), Austin Health, Heidelberg*
3. *Tracheostomy Review and Management Service (TRAMS), Austin Health, Heidelberg*
4. *Victorian Respiratory Support Service (VRSS), Heidelberg*
5. *Department of Speech Pathology, Austin Health, Heidelberg*

Aim
To report on outcomes of patients with a tracheostomy living in the community under the Austin Health services of the Victorian Respiratory Support Service (VRSS) and Tracheostomy Review and Management Service (TRAMS) respectively

Methods
A retrospective review of a 2 year period was conducted. Patient information was obtained from 2 patient databases kept by VRSS and TRAMS respectively, and correlated with Austin Health Information Services (HIS). Descriptive statistics and survival curve analysis with Cox regression model was used to analyse the data.

Results
58 patients were included. 51.7% were invasively ventilated, while the remainder had a tracheostomy but not mechanically ventilated. During the study period 25.9% (15/58) died. Of these, 53.3% (8/15) had a head and neck cancer. No deaths were as a result of an adverse event related to the tracheostomy. 82.8% (48/58) were living at home and 17.2% were living in some form of supported facility.

Conclusion
Patients living with a tracheostomy can be managed safely in the community with no unexpected outcomes on mortality or significant adverse events related to the tracheostomy.

Thurs22

Prof. David Story[1,2], Dr. Irene Ng[3], Dr. Keat Lee[3], A/Prof. Reny Segal[3], Dr. Sajidah Ilyas[3]

Difficult airway equipment at University of Melbourne affiliated hospitals: a multicentre audit and quality assurance project (The DAEUM study)

This abstract has not been included at the request of the author

Thurs23

Peter Williams[1], S Chan [2]

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Haemofiltration in the ICU and Diabetic Status – HIDS study

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1.Critical Care HMO, Austin Hospital, Heidelberg, Vic., Australia;
2. Professor of Surgery, The University of Melbourne, NorthWest Academic Centre, Sunshine Hospital, Vic., Australia;

¶

Aim
Diabetes is already a major health burden and prevalence is expected to double by 2025. The impact of diabetes and clinical outcomes in the intensive care unit is an evolving area of research. This study seeks to identify whether diabetic status is an independent risk factor for haemofiltration
¶
Methods
This is a retrospective cohort study. All unique patients from a seven-year period from 2004 to 2010 at a major intensive care unit in Melbourne, Australia were analysed using multivariate regression to look for an association between diabetic status and haemofiltration.
¶
Results
After exclusion criteria there were 7262 patients, 1674 with a history of diabetes (median age of 69, 66.72% male) and 5588 without a history of diabetes (median age 64, 64.13% male). Diabetic status was an independent risk factor (odds ratio 1.401, 95% confidence interval 1.079 to 1.820, P=0.011) for haemofiltration.
¶
Conclusion
Diabetic status was an independent risk factor (odds ratio 1.401, 95% confidence interval 1.079 to 1.820, P=0.011) for haemofiltration. Further research may identify intensive care unit-based renoprotective measures specifically for patients with diabetes.

Thurs24

SL Jones[1], NJ Glassford[1]J Martensson[1], GM Eastwood[3], R Bellomo[1]

Indications for, and expectations of, loop diuretic therapy use by intensive care specialists.

This abstract has not been included at the request of the author

Thurs25

R Mountjoy[1], W Silvester[1], R Newton[2], R Fullam[1], D Mawren[1]

Mental Health Advance Statements: Knowledge and Opinions of Australian Mental Health Clinicians

¶

This abstract is not included at the request of the author

Thurs26

R Mountjoy[1], W Silvester[1], R Newton[2], L Brophy[3], R Fullam[1], M Sellars[1], D Mawren[1]

¶

Mental Health Advance Statements: Knowledge and Opinions of Victorian Mental Health Consumers

This abstract is not included at the request of the author

Thurs27

M Sellars[1], T Luckett[2,3,4], J Tieman[1,2], CA Pollock[6,7], W Silvester[1], PN Butow[8], KM Detering[1], F Brennan[9], JM Clayton[2, 6, 10]

¶

Advance care planning for adults with CKD: A systematic integrative review

¶

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¶

Aim

To conduct an Integrative systematic review of the literature to inform future ACP practice and research in CKD.

¶

Methods

We searched electronic databases in April 2013 and included studies of any design, qualitative or qualitative, which focused on adults with a primary diagnosis of CKD in any setting. ACP was defined as any formal means taken to ensure that health professionals and family members are aware of patients' wishes for care in the event they become too unwell to speak for themselves. Measures of all kinds were considered of interest and synthesis used narrative methods.

¶

Results

55 articles met criteria reporting on 51 discrete samples. All patient samples included people with CKD stage 5; 2 also included patients with stage 4. Seven interventions were tested; all were narrowly focused and none was evaluated by comparing wishes for end-of-life care with care received. One intervention demonstrated effects on patient and family outcomes in the form of improved well-being and anxiety following sessions with a peer mentor. Insights from qualitative studies that have not been used to inform interventions include the importance of instilling patient confidence that their advance directives will be enacted and discussing decisions about (dis)continuing dialysis therapy separately from other life-sustaining treatments (eg, ventilation).

¶

Conclusions

Research on ACP in CKD patients is limited, especially intervention studies. Interventions should attend to the barriers and facilitators at the levels of patient, caregiver, health professional, and system. Intervention studies should measure impact on compliance with patient wishes for end-of-life care.

Thurs28

M. Sellars[1], W. Silvester[1], M. Masso[2], C. Johnson[3], R. Sjanta[1]

¶

A national survey of palliative care service managers' advance care planning practices and policies

¶

This abstract is not included at the request of the author

Thurs29

D. Mawren[1] , K. Detering[1], D Chaffers[1],S. Fraser[1], D. Power[2], W. Silvester[1]

The impact of Advance Care Planning for renal patients

This abstract is not included at the request of the author

Thurs30

Clarke MV[1], Leong A[1], Ekinci E[1,2], MacIsaac R[3] Comper WD, Jerums G[1]

¶

Determination of urinary protein fragments in Type 2 Diabetic patients with variable albumin excretion

¶

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[2] The University of Melbourne, Department of Medicine
[3] St Vincent's Hospital, Fitzroy, Victoria 3065, Australia

Aim

Normal albumin excretion involves rapid degradation during renal passage to small (<15kDa) fragments which cannot be detected by most conventional clinical laboratory assays[1]. A reduction in the ratio of fragmented to intact urinary albumin has been associated with increases in albuminuria in diabetic patients,[2] and a crossectional assessment of urinary peptides has shown that there is a marked decrease in urinary peptide levels in association with an increase in proteinuria.[3] However the relationship between urinary protein fragments and albumin excretion in Type 2 Diabetic patients has not been examined.

¶

Methods

Type 2 diabetic patients with repeated AER measurements at 3-12 month intervals were classified into normo- (<20mcg/min), micro- (20-200 mcg/min) or macroalbuminuric (>200 mcg/min) groups based on 2 of 3 baseline measurements. 24 hr urine samples from peak- and low-AER timepoints in each subject were passed through a 10kDa cut-off protein filter, and the <10kDa (peptide fragments) and >10kDa (intact protein) fractions were assayed separately using the Pierce BCA protein assay to detect peptide bonds based on the Lowry method.

¶

Results

The urinary Fragment:Intact ratio correlated negatively with increased AER. (Figure 1) Preliminary data in 4 out of 6 normoalbuminuric patients with variable AER showed an inverse relationship between peak AER and lowest protein fragment concentration.

¶

Conclusion

These findings demonstrate that in Type 2 Diabetic patients, variations in albumin excretion correlate inversely with the excretion of peptide fragments. This is consistent with the concept that albumin excretion rate is modulated not only by glomerular sieving but also by renal tubular resorption and fragmentation.

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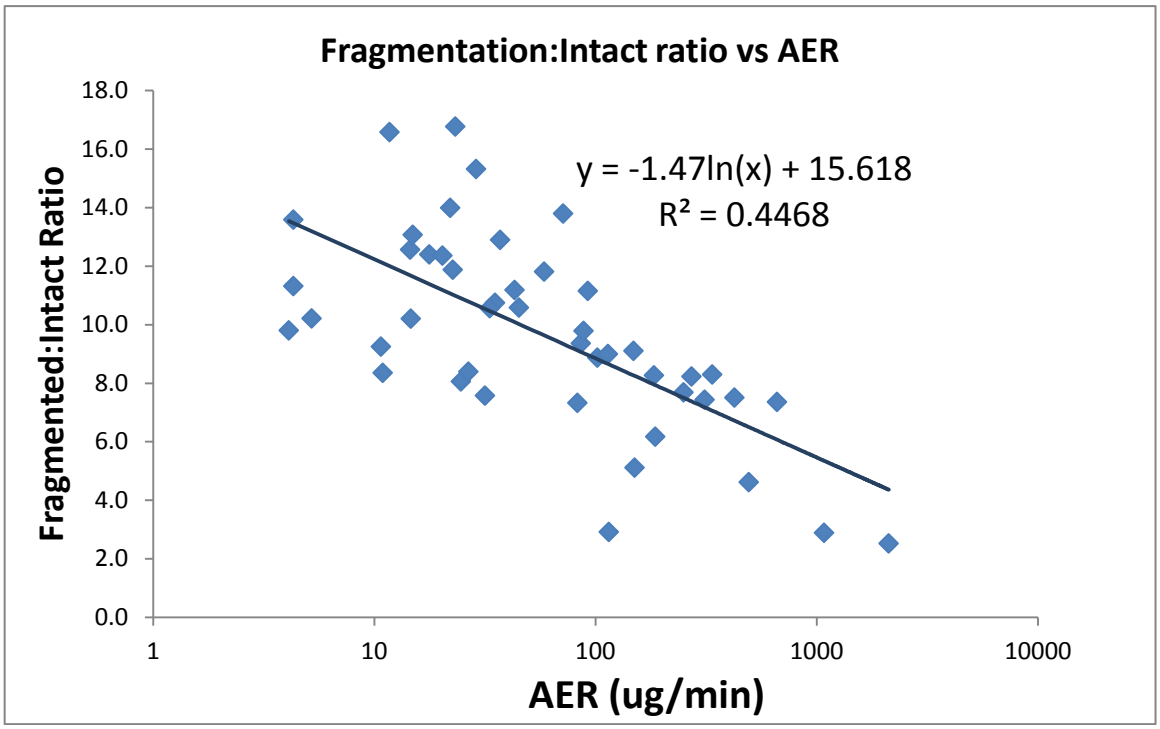
Figure 1: Relationship between urinary Protein Fragment:Intact ratio and Albumin Excretion Rate in Type 2 Diabetes



Thurs31

Michele V Clarke[1], Rachel A Davey[1], Patricia K Russell[1], David M Findlay[2], Jeffrey D Zajac[1]

¶

Regulation of Osteocytic Osteolysis by the Calcitonin Receptor During Lactation in Mice

¶

1.Department of Medicine (Austin Health), University of Melbourne
2.University of Adelaide, Royal Adelaide Hospital

¶

Aim

We have shown previously, that the calcitonin receptor (CTR) plays a physiological role to protect against induced hypercalcemia in mice. In order to determine whether the CTR also protects the skeleton from excessive resorption in times of high calcium demand, we assessed the maternal skeleton of global-CTRKO and littermate control mice following pregnancy and lactation.

¶

Methods

Viable Global CTRKO mice were generated by breeding floxed CTR mice with CMV-Cre mice, resulting in >94% but <100% global deletion of the CTR. Global-CTRKO and littermate control females were time-mated to C57BL/6 males at 8 weeks of age and their bone phenotype assessed by microCT and histomorphometric analyses at the end of pregnancy (E18) and at the end of lactation (P21). For the lactation group, following the birth of pups, litter sizes were made equal (n=4) by sacrificing the necessary number of pups in order to normalize the requirements of breast milk from each mother.

¶

Results

MicroCT analyses showed no effect on trabecular and cortical bone in the distal femur and L5 vertebra by global CTR deletion during pregnancy and lactation in the Global CTRKOs, compared to controls, at a resolution of 6.5μm. However, global CTRKO mice were hypercalcemic following pregnancy (Control: 2.17±0.22mmol/L; Global CTRKO: 3.34± 0.30mmol/L; $P<0.05$), indicating a role for the CTR to regulate calcium homeostasis during pregnancy. In the absence of any changes in osteoclast number or activity, cathepsin K mRNA levels were elevated 2 fold in the bone of lactating Global-CTRKO females compared to controls ($P<0.05$). Given the recently identified function of osteocytes to resorb their surrounding bone matrix during lactation, together with their reported expression of the CTR, we assessed osteocytic osteolysis in the Global-CTRKOs and controls by determining osteocyte lacunae area in cortical bone. The top 20% of osteocyte lacunae area was increased by 10% following lactation in global-CTRKOs compared to controls ($P<0.05$). Consistent with the increased osteocytic osteolysis, serum calcium was elevated in global-CTRKOs following lactation compared to controls (Control: 2.43±0.21mmol/L; Global CTRKO: 3.00±0.17mmol/L; $P=0.05$).

¶

Conclusion

These data provide strong evidence for a significant physiological role of the CTR to protect the maternal skeleton during lactation by a direct action on osteocytes to inhibit osteolysis.

Thurs32

Russell PK[1], Clarke MV[1], Wiren KM[2, 3], Zajac JD[1], Davey RA[1]

¶

A novel pathway for androgens to regulate fat mass.

¶

[1]Department of Medicine, Austin Health, University of Melbourne, [2]Bone and Mineral Research Unit, Portland Veterans Affairs Medical Center, Oregon, USA and [3]Department of Medicine, Oregon Health and Science University, Portland, Oregan, USA.

Aim

Androgens are sex hormones that play an integral role in male sexual differentiation, development and body composition. Low levels of androgens in males is associated with obesity. Surprisingly, for such an important aspect of physiology, the mechanisms by which androgens exert these effects are largely unknown. We and others have shown that global deletion of the target for androgen action, the androgen receptor (AR) in mice, (Global ARKO) leads to increased adiposity. We propose that a possible target for androgen action to regulate fat mass is via bone marrow stromal cells (BMSCs). BMSCs are pluripotent cells, which can differentiate into a variety of cell types including fat, bone and muscle, and express the AR. The aim of this study was to investigate the role of androgen action via the AR in BMSCs to regulate fat mass in male mice.

Methods

We have generated a unique genetically modified mouse model in which we have replaced the AR in bone marrow stromal cells of Global-ARKO mice (BMSC-AR Replacement). This was achieved by crossing female Global-ARKO mice with male BMSC-AR transgenic mice, which express the AR in bone marrow stromal cells. A unique feature of the BMSC-AR Gene Replacement mice is that as they inherit the X chromosome (on which the AR is located) from their Global-ARKO mother, they do not express endogenous AR in any tissue. At 12 weeks of age, tibiae were collected, RNA extracted and mRNA levels of endogenous AR and AR transgene determined by quantitative Real Time PCR (Q-PCR). Fat depots were excised and weighed.

Results

AR transgene expression within bone and bone marrow of BMSC-AR Gene Replacement mice were 1.7 fold and 2.1 fold compared to endogenous AR expression in wild type (WT) littermate controls, respectively. Replacement of the AR in BMSCs of Global-ARKOs was able to attenuate their increased fat mass, reducing fat depots, including subcutaneous and peri-renal, to normal or even below normal levels observed in WT littermates. This was not attributed to changes in food consumption as there was no difference in total daily food intake between Global-ARKO and BMSC-AR Gene Replacement mice whether unadjusted or adjusted for body weight. Replacement of the AR in BMSCs of Global-ARKOs had no effect on brown Adipose.

Conclusion

Androgens act via the androgen receptor in bone marrow stromal cells to decrease fat mass in male mice. These data are consistent with an action of androgens via the AR in BMSCs to divert their differentiation away from the adipocyte lineage, thereby decreasing fat mass and altering body composition.

Thurs33
A Phase 1 Study Evaluating ABT-414 in Combination with Temozolomide (TMZ) for Subjects with Recurrent or Unresectable Glioblastoma (GBM)

Hui K. Gan[1], Lisa Fichtel[2], Andrew B. Lassman[3], [4]Ryan Merrell, Martin van den Bent[5], Priya Kumthekar[6], Andrew M. Scott[1], Michelle Pedersen[7], Erica Gomez[7], JuDee Fischer[7], William Ames[7], Hao Xiong[7], Matt Dudley[7], Wijith Munasinghe[7], Lisa Roberts-Rapp[7], Peter Ansell[7], Kyle Holen[7], David A. Reardon[8]

This abstract is not included at the request of the author

Thurs34
D. Legge [1], L. Cher [1,2]

Capitalising on a unique opportunity: establishing the Brain Tumour Support Officer role at Austin Health
1. Olivia Newton-John Cancer and Wellness Centre, Heidelberg, Victoria
2. Epworth Hospital, Richmond, Victoria

Brain tumour patients and families face enormous challenges that are unmet in usual clinical practice. We describe the implementation of a cost effective support program, funded by philanthropy. With limited resources, the model was defined by drawing on the literature, identifying the critical areas of unmet need and meeting with key stakeholders within hospital and consumer communities. Service gaps were identified and strategies developed to address these elements in the most efficient way.

Direct patient service commenced in late 2008, with the Brain Tumour Support Officer (BTSO) assisting 40 families in the first 12 months. In 2013, the BTSO provides a range of support services accessed by over 130 families annually. The BTSO also plays active role in community education and awareness activities for consumers and health professionals. The BTSO model is designed to enable patients and families to be supported through their healthcare journey from diagnosis, through their treatment, and beyond. This contrasts with a nurse practitioner model, separated from but integrated with medical care. The key strategies are informing, resourcing, supporting and acknowledging the impacts at different stages. 47% of interventions are individual consultations; group interventions account for 21 % and phone-based consultations make up 23%.

Challenges along the way have included management of staff & patient expectations, avoiding the pitfall of being all things to all people. It has also been critical to engage key medical staff, peak bodies & patient advocacy organisations, to ensure all activities are relevant and endorsed.

This is a unique opportunity to work across boundaries of private/public health, in partnership with a philanthropic fund passionate about their cause. We have attempted balance between individual support and resourcing, whilst building a range of awareness and educational activities creating a natural impetus within the broader health community and beyond.

Thurs35
D. Legge [1], K. Mills [1], L. Cher [1,2]

Regional support network for primary malignant brain tumours.

1. Olivia Newton-John Cancer and Wellness Centre, Heidelberg, Victoria
2. Epworth Hospital, Richmond, Victoria

Background:
Supportive care needs of patients and families affected by brain tumours are challenging and unique. Coordinating skilled support in rural areas is difficult, when only small numbers of patients present. This project explored ways of facilitating skill development in health practitioners, and enhancing professional networks between regional and city based brain tumour support personnel.

Methods:
Following a comprehensive review of educational needs, including liaising with key stakeholders, two primary strategies where implemented:
1) A clinical education day for regional and metropolitan health professionals focusing on brain tumours, treatment options, complex supportive care needs and available resources.
2) A day placement for regional health professionals with the Austin Brain Tumour Support Service.

Results:
The clinical education day attracted 116 participants, with 31% travelling from regional areas. 56% of participants were nurses and 23% from allied health backgrounds. 65% of attendees were referred <10 brain tumour patients annually and 44% rated their understanding of brain tumours as fair to poor. The overall evaluation response rate was 81%. Delegates rated content on a 5 point scale, with all presentations rating greater than 4.21. 91% of respondents felt that the forum met their aims for attending and 100% would attend a similar forum if held annually. Day placement program was conducted with 2 staff from regional Victoria, both rated the experience positively. Post placement surveys indicated improved confidence in needs identification, increased ability to provide practical strategies to assist and seek support.

Conclusion:
Despite the small number of people diagnosed with brain tumours in Victoria, this project demonstrated a strong need for ongoing professional development in this challenging area particularly in regional areas. Through collaboration with Cancer Council Victoria, ongoing planned initiatives include an annual brain tumour clinical professional day, mentor program and a quarterly newsletter for health professionals focused on brain tumours.

Thurs36

Claire Michel[1,2], Elly Lynch[1], Megan Cotter[1], Matthew Burgess[1], Anna Leaver[1], Martin Delatycki[1] ,Thomas John[1,3]

BRCA1/2 mutation prediction algorithms: Argument for the inclusion of ductal carcinoma *in situ* and other histopathological criteria

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Background:
The identification of individuals harbouring *BRCA1/2* mutations is important as it informs immediate and long-term management decisions of the patient and family alike. At present, *BRCA*-mutation prediction algorithms rely heavily on family history and tumour histopathology as prediction inputs. Unlike in sporadic breast cancer, where the step-wise progression of tumourigenesis is well documented, it remains unclear whether ductal carcinoma *in situ* (DCIS) is a feature of BRCA-driven tumourigenesis; consequently non-high grade DCIS is excluded in current *BRCA* risk-prediction models. We therefore sought to determine whether DCIS and other histopathological criteria could improve mutation-carrier identification, thus arguing for their inclusion in prediction algorithms.

Methods:
We conducted a retrospective clinical audit of patients referred to Clinical Genetics at Austin Health between 2005 and 2013; selecting for patients having undergone germ line *BRCA* mutation testing. This yielded a total study population of 329 patients including 35 individuals with *BRCA1*, 56 with *BRCA2* mutations and 238 who were mutation negative. Three-generational family history, tumour histopathology and receptor status were reviewed. Predictors of mutation-status for both *BRCA1* and *BRCA2* (vs mutation-negative) were identified using multiple logistic regression and subsequently grouped into prediction models from which areas under receiver operator characteristic (ROC) curves were generated.

Results:
Several features were found to increase the probability of *BRCA1* mutation-carriage compared to those without a *BRCA* mutation including: histological grade of primary tumour (OR 10.57 (2.58–43.2) P<0.001); absence of DCIS in the primary tumour (OR 2.98 (1.46–6.09) P=0.003); and higher grade of DCIS (adjacent or intermixed with primary tumour). For *BRCA2* features that increased the likelihood of a mutation being identified were: other family history of cancer (≥2 cancers including: prostate, peritoneal, and pancreatic on the same side of the pedigree OR 2.08 (1.16 – 3.73) P=0.02); and higher grade DCIS (OR 2.84 (1.00 - 8.00) P=0.05). The area under the ROC curve for the best *BRCA1* prediction model was 0.90 (0.81-0.98), and 0.77 (0.68-0.85) for the best *BRCA2* model.

Conclusions:
Absence of DCIS and its histopathological features in primary invasive breast cancers act as strong predictors of *BRCA1* and, to a lesser extent *BRCA2,* mutation-carrier status in high-risk populations. The inclusion of differential weighting for DCIS in *BRCA*-risk assessment is warranted in mutation-prediction algorithms.

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Effect of Pregnant Sera and a Pregnancy Associated Metalloproteinase (PAPP-A) on Melanoma *in-vitro* and *in-vivo*: Insights into melanoma progression during pregnancy and potential new therapeutic targets

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Background: At 45/10^5pregnancies, Malignant Melanoma (MM) is the commonest cancer diagnosed in pregnant women. An aggressive course & poor outcomes are recognised to occur during pregnancy. IGF1 plays an important role in embryogenesis & cancer progression. IGF1 circulates as a complex with IGFBP4, which is cleaved by Pregnancy-Associated Plasma Protein-A (PAPP-A), resulting in release of IGF1. PAPP-A serum levels increase exponentially during pregnancy.

Methods: 8 MM cell lines were cultured with pregnant & normal sera. Effect on proliferation (MTS) & invasion/migration (wound healing & matrigel transwell assays) were analysed. PAPP-A expression in human MM & cell lines was analysed by PCR, ELISA & IHC. Transient siRNA knock-down of PAPP-A & downstream gene/protein expression were confirmed. Functional assays were performed after PAPP-A knockdown at 24, 48 & 72hrs. An avian neural crest cell migration assay was used to confirm effects in-vivo. Furthermore, effect of PAPP-A neutralising Ab on cell motility & migration induced by sera was analysed.

Results: PAPP-A is widely expressed in MM tumors and cell lines. While the proliferation of MM cells did not change with PAPP-A knockdown, migratory & invasive capacity was significantly decreased (>40% $p<0.05$). This effect was confirmed in-vivo. The neutralizing Ab attenuated invasion and migration of MM cells, confirming the knockdown results. PAPP-A levels in pregnant sera were 70-fold higher than in control sera. Treatment of MM cells with this serum led to decreased proliferation, but enhanced migration & invasion of MM cells in-vitro. Using an antibody against PAPP-A to evaluate its role in this, we detected a reversion of pregnant serum-induced invasion and migration.

Conclusions: Pregnant sera enhances the migratory & invasive behaviour of MM cells in-vitro, which can be effectively attenuated by Ab against PAPP-A. Reduced invasion & migration after PAPP-A knockdown suggests a potential therapeutic target in treatment of MM. This study also gives an indication towards a biological mechanism (PAPP-A) involved in MM progression during pregnancy.

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Evaluation of the efficacy of busulphan as second-line cytoreductive therapy for patients with high-risk Philadelphia-negative myeloproliferative neoplasms intolerant of or unresponsive to hydroxyurea

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Aim

Hydroxyurea (Hu) is the preferred first-line cytoreductive therapy for patients with high-risk Philadelphia-negative myeloproliferative neoplasms (Ph-MPN). However, a small proportion of patients fail to respond to Hu or experience significant adverse effects. Alternative therapies include anagrelide for thrombocytosis (at a cost of approximately $A13,000 per year) and interferon, an agent poorly tolerated in this predominantly elderly patient group. Studies have demonstrated that Busulphan (Bu), a cheap drug (approximately 85c per 2mg tablet), is an active agent as first-line therapy in MPN, but there is minimal literature on its role as second-line therapy post Hu. This multicentre collaborative retrospective study aimed to determine whether Bu is an effective, tolerable and safe alternative in Hu intolerant or resistant patients.

Method

An audit of Ph-MPN patients from seven centres and three private haematology practices who had received Bu as second-line therapy for Hu intolerance or resistance. Study eligibility criteria included availability of Hu and Bu response data with a minimum of 6 months follow-up. Patients who had received other cytoreductive therapies were excluded. Therapeutic response and tolerability data were collated for descriptive analysis.

Results

Fifty-one eligible patients were identified, 23 with Hu resistance and 28 with intolerance. Median age was 73 years (range 48 – 92 years); 27 (53%) were female and 24 (47%) male. Underlying diagnoses were essential thrombocythaemia (ET; n=24), polycythaemia vera (PV; n=19), other miscellaneous MPN (n=8). A total of 135 cycles of Bu (median total dose per cycle of 51mg [cost approximately $A54], range 14 – 676mg) were administered. Responses were as follows: CR/PR (complete or partial treatment response as defined by the European LeukaemiaNet Consensus, with improvement in haematological markers and disease-related symptoms) in 80 cycles (59%), stable disease in 43 cycles (32%), progressive disease in 2 cycles (2%); 10 cycles (7%) were not assessable due to inadequate response data. Median time to next cycle (in patients receiving multiple cycles) was 9 months (range 4-67 months). Response tended to be better in ET patients (81% CR/PR). Bu was generally well tolerated, with 21/135 (15%) cycles complicated by adverse effects attributable to Bu, predominantly anaemia and thrombocytopenia; only 8/135 cycles (6%) were ceased prematurely. 6 patients underwent disease transformation, 3 with blast crises. Median duration to transformation from first Bu dose was 4.43 years (range 0.5 – 11.5 years).

Conclusion

Bu is a cheap, effective and generally well-tolerated agent in Ph-MPN, in the setting of Hu intolerance or unresponsiveness. Longer-term follow-up data are required to assess whether this potent alkylating agent increases the likelihood of disease transformation.

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Production of the long-life PET radioisotope Zr-89 at Austin Health

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Aim

Few PET isotopes are suitable for antibody labelling since immunoPET requires that the decay half-life of the isotope should match the pharmacokinetics of the mAb. Yttrium-89 (^{89}Zr, $t_{½}$ = 3.3 d) have a near ideal half-life for antibody-based imaging and the low energy of its positron (395.5keV) results in a PET images with a good spatial resolution. Furthermore, ^{89}Zr is a residualizing isotope, which is trapped inside the target cell after internalization of the mAb.

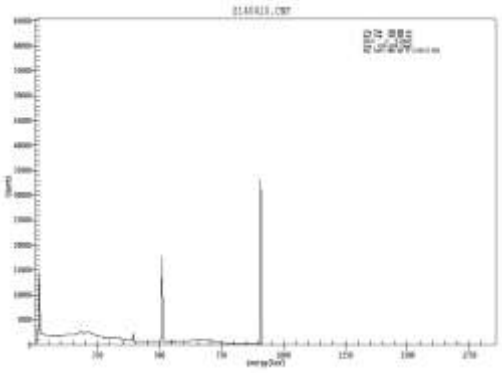
Methods

^{89}Zr is produced by irradiation of an yttrium foil (0.127mm thick, 8mm ∅) at 14.9MeV and 20 μA for 1.5 hours. The irradiated target is then loaded directly into a processing module for dissolution/purification. Purification of ^{89}Zr from ^{89}Y, ^{88}Y and other radionuclidic impurities was performed using a hydroxamate column, with ^{89}Zr eluted with 1.0M Oxalic acid (as described by Holland et al. 2009).

Results

The figure shows the Spectrum of the γ-ray emissions from a purified sample of ^{89}Zr recorded 2hrs after end of bombardment. Note that there is a small radioactive impurity due to ^{88}Zr (392.87keV).

Radionuclidic purities were evaluated by gamma spectroscopy and traces of metallic impurities were determined by ICP-MS. Since yttrium has one stable isotope only, relatively pure ^{89}Zr is produced at low energy (14.9MeV).



Conclusion

In these preliminary non-optimized cyclotron productions, average purified ^{89}Zr yield of 0.34mCi/μA.h was achieved, in comparison to values of 1.5mCi/μA.h found in the literature

References

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Thurs40

Ackermann U[1,2], Rigopoulos A[3], O'Keefe G[1,2], Hickson K[1,2], Tochon-Danguy H.J[1], Scott A.M[1,3],

Imaging of tissue transglutaminase activity in SK-RC-52 tumors

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Aim
The aim of this project was to radiolabel cadaverine with F-18 SFB and to evaluate this putative radiotracer in a preclinical model of renal cancer. Although F-18 FDG is currently the most frequently used radiotracer in Positron Emission Tomography (PET), there are inherent limitations of F-18 FDG that can result in false-negative and false-positive findings. The increased levels of tissue transglutaminase 2 (TG2) that are found in almost all solid tumors might provide an alternative imaging strategy for the detection of cancerous lesions and the evaluation of the response to treatment.

Methods
F-18 fluoride was produced using an IBA Cyclone 10/5 cyclotron via bombardment of oxygen-18 water with a proton beam. F-18 fluoride was transferred to a commercially available Flexlab system (iPhase Technologies) with a quaternary HPLC gradient pump and two reactor vials was used for the synthesis of F-18 SFB labelled cadaverine.
In vivo studies were carried out in SK-RC-52 tumor bearing balb/c nude mice. 100 uL of saline solution containing 250 mCi of the radiotracer was injected and a static image at 2 h post injection was generated using a Mediso small animal PET/MR. PET and MR image were co-registered for exact tumor location and radioactivity in tumor and muscle measured using the Pmod software package.

Results
We obtained F-18 SFB labelled cadaverine in an overall radiochemical yield of 15%. The synthesis time was approximately 120 min. The quality control showed less than 5% of unreacted F-18 SFB and this solution was diluted with saline for use in the in vivo studies. There was accumulation of the radiotracer in the thyroid as well as in the tumor and a tumor to muscle ratio of 3.45 was measured at 2 h post injection. The major excretion pathway was via the kidneys and the bladder.

Conclusion
An F-18 SFB labelled cadaverine was synthesised and evaluated in an SK-RC-52 tumor model in balb/c nude mice. The radiotracer showed uptake in the lesion and the concept of TG2 activity imaging in cancer warrants further investigation.

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A novel F-18 labelled anilino sulfoxide for PET imaging of tumor hypoxia

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Aim
The aim of this study was to synthesise and evaluate a novel sulfoxide imaging agent for tumor hypoxia. The presence of hypoxia is a negative prognostic factor in many solid tumors. In order to accurately apply novel treatments such as intensity modulated radiation therapy, imaging of the hypoxic fraction in tumors is crucial. The slow kinetics and poor contrast of the currently used FMISO imaging agent have sparked the development of new probes.

Methods
Radiolabelling of the new precursor was achieved with the [^{18}F]KF/kryptofix complex at 100 °C over a period of 20 min using the FlexLab module (iPhase Technologies). After radiolabelling, 9 mL of water were added to the crude reaction solution and the radiotracer subsequently trapped on a C-18 solid phase extraction (SPE) cartridge. After elution with 2 mL of acetonitrile into the loop vial, which contained 3.5 mL of 0.1 M ammonium formate, the compound was injected into the semi-preparative HPLC system for purification. The peak at 25 min was collected and reformulated using the SPE method.
The radiotracer was evaluated in balb/c nude mice bearing SK-RC-52 tumors. Animals were imaged dynamically over a period of 2 h from time of injection using the small animal PET/MRI scanner at the ACRF Centre for Translational Cancer Therapeutics and Imaging.

Results
The radiotracer was synthesised in 5±2% yield with a radiochemical purity of >95% and a specific activity of 1.8±0.3 Ci/µmol. The synthesis time including reformulation was 92 min. In hypoxic tumors, the tracer showed rapid accumulation, while clearance from normoxic tissue was fast. A tumor to muscle ratio greater than 1 was achieved at 40 min post injection,.

Conclusion
F-18 labelled anilino sulfoxide shows rapid tumors accumulation and faster clearance and thus resulting in faster PET imaging of tumour hypoxia than FMISO.

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Prediction of Outcome Following Percutaneous Coronary Intervention based on Angiographic Evaluation and Fractional Flow Reserve Measurements

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[1] University of Melbourne, [2] Austin Health, [3] Heart Care Victoria

Introduction: A fractional flow reserve (FFR) of ≤0.80 indicates a functionally significant coronary stenosis that may benefit from percutaneous coronary intervention (PCI).

Objectives: Evaluation of whether post-PCI FFR of >0.80 or FFR increment of >0.10 may enhance angiographic assessment in predicting outcome in the current drug eluting stent (DES) era.

Methods: Patients with stable coronary artery disease (CAD) and stenoses of intermediate severity angiographically were recruited from two hospitals. FFR was measured utilising a coronary pressure guidewire during intravenous adenosine induced coronary hyperaemia (140 or 180μg/kg/min). Those with FFR ≤0.80 (n=50) proceeded to PCI and FFR was reassessed. Major adverse cardiovascular events (MACE) including death, myocardial infarction and target vessel revascularization (TVR) following PCI were determined at 6 months and thereafter.

Results: Mean age of the cohort was 66±11 years with 79% being male. Eighteen patients were diabetic (36%) and more than half of the patients had ≥3 coronary risk factors. Two-thirds of the target vessels were LAD (67%). Baseline FFR prior to PCI was 0.69±0.08. Second generation DES was used in 85% of cases, with mean stent diameter being 3.0±0.5mm and stent length of 19.8±8.7mm. Stent deployment based on angiographic criteria was satisfactory and all patients had either post-PCI FFR >0.80 (0.85±0.06) or FFR increment >0.10 (0.17±0.08). Two patients (4%) had post-PCI troponin >1μg/L and there were no clinically significant in-hospital complications. Thirty-four (71%) patients had completed 6 months of follow-up. Three patients (9%) underwent TVR one of whom had post-PCI FFR of 0.76 and FFR increment of 0.11, and was found to have suboptimal stent expansion by intravascular ultrasound examination. Preliminary comparison of patients with MACE (n=3) with those without (n=31) revealed no significant differences in pre-PCI FFR (0.67±0.03 vs 0.69±0.08; p=0.80), post-PCI FFR (0.84±0.87 vs 0.85±0.07; p=0.75) and FFR increment (0.17±0.05 vs 0.17±0.09; p=0.99).

Conclusion: In this preliminary experience of patients with functionally significant CAD undergoing physiologically guided PCI with high DES usage, satisfactory angiographic outcome combined with favourable FFR measurements (post-PCI FFR >0.80 or FFR increment >0.10) predict low adverse event rate in short to medium term follow-up. Ongoing recruitment and clinical follow-up is planned.

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Early retinal microvascular endothelial dysfunction correlates with chronic kidney disease independent of traditional cardiovascular risk factors

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[1] University of Melbourne, [2] Austin Health

Introduction: Endothelial dysfunction is common in patients with advanced kidney disease.
Objectives: We sought to determine the association between kidney function and novel measures of endothelial function including retinal microvascular assessment.
Methods: Patients with at least two atherosclerosis risk factors (n=192) were recruited. Flicker light induced retinal arteriolar dilatation (FI-RAD), a measure of microvascular endothelial function, was assessed using the Dynamic Vessel Analyzer (DVA) and expressed as % increase over baseline diameter. Brachial artery flow mediated dilatation (FMD) during reactive hyperaemia was assessed utilising vascular ultrasound and expressed as % increase over baseline diameter. Serum endothelin was measured by radioimmunoassay. Estimated glomerular filtration rate (eGFR) was measured using the MDRD formula. Logistic and linear regression was used to determine the relationship between eGFR and endothelial function.
Results: Compared to patients with normal eGFR (≥90ml/min, n=84), patients with reduced eGFR (<90ml/min, n=108) were older (62±9 vs 53±12 yrs; p<0.01), more likely to have hypertension (87% vs 65%; p<0.01) and dyslipidaemia (88% vs 74%; p=0.02). FI-RAD and FMD were lower with reduced eGFR (1.78±1.65% vs 2.4±2.02%; p=0.02 and 3.3±1.4% vs 4.5±2.4%; p<0.01) respectively, while endothelin was higher (2.66±0.78 vs 2.38±0.57 pmol/L; p=0.01). Retinal vascular structural changes including diabetic retinopathy, AV nicking, focal arteriolar narrowing and retinal vessel calibre were not different between groups. Decreased FI-RAD and FMD, and increased endothelin were associated with increased odds of eGFR < 90ml/min after adjustment for risk factors and medication use (Table). For each 10 ml/min eGFR reduction, FI-RAD and FMD decreased by absolute values of 0.13% (95%CI-0.23, -0.03; p=0.01), and 0.24% (95% CI-0.35, -0.13; p<0.01) respectively, and endothelin increased by 0.11pmol/L (95%CI 0.07, 0.15; p<0.01) after adjustment for clinical variables.

	OR	95%CI	P
FI-RAD (1% decrease)	1.27	1.05, 1.54	0.01
FMD (1% decrease)	1.38	1.13, 1.68	<0.01
Endothelin (1pmol/L increase)	1.94	1.12, 3.38	0.02

Conclusion: Novel measures of endothelial function are independently associated with kidney function. Impairment in retinal microvascular function begins before retinal vascular structural changes are evident. Retinal microvascular assessment and biomarkers of endothelial function may be future tools for early detection of vascular disease and guide early intervention in chronic kidney disease.

Thurs44

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"Quantifying work flow for elective day cases in the Cardiac Catheterisation Department"

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Introduction*:* Cardiac Catheterisation Laboratories provide specialised cardiac care to outpatients, inpatients and emergency patients. Elective day cases account for 35% of overall procedures for the Cardiac Catheterisation Laboratory at Austin Health. Excessive patient waiting times for these procedures are an important issue for the productivity of health care systems, impacting on patient flow and ultimately patient satisfaction and outcomes. Currently there is no existing standard to measure efficiency and identify delay in patient wait times in the Cardiac Catheterisation Laboratory at Austin Health.

Aim: To evaluate the current patient flow for elective day case patients through the Cardiac Catheter Laboratory and describe the potential variants of this flow, thus establishing an internal benchmark for department performance and productivity.

Methodology: Data was collected consecutively over a six month period. Three months of time specific data was retrospectively extracted from the Patient Management System (PMS). A further three months of data was collected prospectively documenting the same time specific data and further quantifying the reasons for delay. Inclusion criteria were elective day case patients scheduled for coronary and electrophysiology procedures. Exclusion criteria were coronary CT, any elective patient booked for an overnight admission and emergency patients.
The patient journey was measured over five timeframes: 1) Patient arrival time in 5 North reception to 5 North recovery; 2) Patient arrival time in 5 North recovery to initial contact with a nurse; 3) First contact with nurse to Cath Lab Time Out; 4) Cath Lab Time out to start time of procedure; 5) Start time to end time of procedure.
Data collected was separated into days of the week. Prospectively documented reasons for delay at any timeframe were also identified and categorised.

Results: 479 patients had an elective day case procedure in the Catheterisation Laboratory. For 6 months from the 1st October 2013 to 31st March 2014. The total time from patient arrival to procedure completion time during this period was 172 mins (median) and 186 mins (mean). All patients had a further four hour recovery post this period. When the data was separated into working days from patient arrival at reception to procedure completion time, the median times were as follows; Monday: 164 mins (n= 74); Tuesday: 158 mins (n=73); Wednesday: 186 mins (n=161); Thursday: 176 mins (n=116), Friday: 138 mins (n=58).
The patient journey was further analysed into specific timeframes and were as follows; *Timeframe 1*: Patient arrival in 5 North reception to 5 North recovery was 23 mins (median) and 32 mins (mean); *Timeframe 2:* Patient arrival in recovery to initial contact with a nurse was 12 mins (median) and 15 mins (mean); *Timeframe 3:* Initial contact with 5 North nurse to patient arrival in Cath Lab Time Out was 75 mins (median) and 90 minutes (mean); *Timeframe 4:* Cath Lab Time out to start time of

procedure was 14 mins (median) 15 mins (mean) *Timeframe 5*: Start time of procedure to end time of procedure was 26 mins (median) and 32 mins(mean). Of the prospective cohort of day patients 19% (n=92) had documented delay to patient flow. Causes of delay were categorised into five main causes: 1) *Staff* 51% (n=47); 2) *Clinical* 24% (n=22); 3) *Equipment* 6% (n=6); 4) *Patient* 4% (n=4); 5) *Other* (STEMI, PPM check, consent, interpreter) 15% (n=13). Timeframe 1 had 15% (n=14) of the categorised delay to patient flow; Timeframe 2 had 15% (n=14); Timeframe 3 had 47% (n=43); Timeframe 4 had 18% (n=16) and Timeframe 5 had 5% (n=5).

Conclusion: This evaluation of patient journey flow has identified that multiple variables play a part in the day to day flow of the Cardiac Catheterisation Laboratory. Reducing these variants of patient flow whilst maintaining flexibility for unforseen medical urgency or scheduling variability could lead to greater consumer satisfaction and have a significant impact on efficiency and staffing resource management in the Austin Cardiology Department.

Thurs45

Patel SK[1], Wai B[1,2], Lancefield TF[1,2], Velkoska E[1], Srivastava PM[1,2], Burrell LM[1,2]

Angiotensin converting enzyme 2 (ACE2) is a novel marker of pre-clinical diastolic dysfunction in type 2 diabetes

This abstract has not been included at the request of the author.

Thurs46
Relationship between NT-proBNP with 24-hour haemodynamic parameters in patients with diabetes

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[1]St Vincent's Hospital, Melbourne [2]Austin Health, Melbourne [3]Queen Elizabeth Hospital, Adelaide

Background
N-terminal pro-brain natriuretic peptide (NT-proBNP) is considered a marker of poor cardiovascular prognosis in patients with diabetes[1]. Increased resting heart rate is also associated with increased cardiovascular complications and mortality in patients with diabetes[2]. There is evidence that BNP modulates the autonomic nervous system[3]. This study aimed to investigate the relationship between NT-proBNP and 24h haemodynamic parameters in patients with type 1 and type 2 diabetes.

Methods
Clinical characteristics, serum NT-proBNP level and 24h ambulatory blood pressure were collected in 141patients with type 1 and type 2 diabetes who attended diabetes clinics at Austin Health, a tertiary referral centre in Melbourne. A multiple regression model was generated to predict $\log_{10}$(NT-proBNP), with the following variables as potential predictors: 24h systolic, diastolic and mean arterial blood pressure; morning blood pressure surge; night-to-day systolic blood pressure ratio; 24h heart rate; age; sex and BMI.

Results
The mean age was 64±13 years, 65% were males, and 74% had type 2 diabetes. The mean 24h systolic, diastolic and mean arterial pressure was 130±13, 70±9, and 91±8 mmHg, respectively. The mean 24h heart rate was 73±10 bpm. In a multiple regression model, night-to-day systolic blood pressure ratio, age, and 24h heart rate significantly predicted $\log_{10}$(NT-proBNP) (R^2=0.4, $p<0.001$).

Conclusions
In patients with diabetes, lack of nocturnal blood pressure dipping is associated with increased NT-proBNP level. Further studies are needed to define the relationship between heart rate and NT-proBNP.

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Thurs47
Gayed D, Velkoska E, Griggs K, Burrell LM.

Cardiac effects of Ang 1-7 alone and in combination with ACE inhibition, in experimental kidney disease

This abstract has not been included at the request of the author.

Thurs48

Cheng Yee Goh[1], Ali Al-Fiadh[1,2], David Clark[1,2], Omar Farouque[1,2]

Stent length and GP2B/3A inhibitor use but not eGFR predict peri-procedural myocardial infarction in elective percutaneous coronary intervention.

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2. Department of Medicine, University of Melbourne.

Background:
Peri-procedural myocardial infarction (PPMI) is common after elective percutaneous coronary intervention (PCI) and is associated with low eGFR. We sought to evaluate this relationship and determine predictors of PPMI.

Methods:
682 stable patients undergoing PCI were recruited and divided into 2 groups. Group 1 had eGFR ≥60 vs group 2 with eGFR < 60 mL/min/1.73m^2. PPMI was defined as Troponin I ≥3 times upper limit of normal; measured within 24-hours post PCI. Multivariate linear regression was used to determine predictors of PPMI, adjusting for age, gender, risk factors, heart failure (HF), and previous coronary disease (CAD).

Results:
527 patients (77%) were male. Mean age was 66±11 years. Diabetes was present in 28%, hypertension in 83%, dyslipidaemia in 92%, smoking in 10%, CAD in 43% and HF in 5%. GP2B/3A inhibitors were given in 6%. Compared with patients in group 1 (n=554;eGFR=86±19), patients in group 2 (n=128;eGFR=43±14) were older (71±9 vs 64±11; p<0.001), more likely women (31% vs 21%; p=0.014) and hypertensive (92% vs 80%; p=0.001). The incidence of PPMI (49% vs 43%; p=0.236) and total stent length (21±12mm vs 22±14mm; p=0.361) were not different. There was a higher troponin in group 2 (0.91±5.31 vs 0.51±2.31µg/L; p=0.195). After adjustment, GP2B/3A inhibitor use (β=1.17 µg/L;95%CI 0.14, 2.21; p=0.026) and stent length (β=0.023 µg/L;95%CI 0.003, 0.043; p=0.023) were the only predictors of PPMI.

Conclusion:
Low eGFR was not predictive of PPMI. Use of GP2B/3A inhibitors and stent length were independent predictors of PPMI, and may be markers of complexity of coronary disease.

Thurs48A

Elly Burns[1], Lorelle Martin [1], Carolyn Naismith [1].

"AN EVALUATION OF PROCEDURAL CANCELLATIONS IN THE CARDIAC CATHETERISATION LABORATORY".

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Introduction: Procedural cancellations occur regularly in the Cardiac Catheterisation Laboratory. Cancellations have an undefined impact of inconvenience and anxiety on patients and their families, not to mention the loss of efficiency and productivity within the department.

Aim: We sought to identify and evaluate the reasons for procedural cancellations in order to reduce the occurrence of the cancellations that were deemed preventable.

Methodology: Data was retrospectively collected from the hospitals patient management system (PMS) over 4 years. Inclusion criteria were all elective coronary and electrophysiology procedures booked on the PMS then subsequently cancelled. Cancellations were separated into 5 common groups; initiated by the patient, the doctor, the hospital, administration, or for undocumented (unknown) reasons.

Results: In 2010 18% (n=375) of procedures were cancelled. 25% (n=95) of these cancellations were initiated by the patient, 23% (n=85) were initiated by the doctor, 16% (n=59) were initiated by the hospital and 6% (n=24) were initiated by administration. 30% (n=112) were cancelled for an unknown reason.

In 2011, 17% (n=258) of procedures were cancelled. 32% (n=82) of these cancellations were initiated by the patient, 22% (n=58) were initiated by the doctor, 19% (n=48) were initiated by the hospital and 10% (n=25) were initiated by administration. 17% (n=45) were cancelled for an unknown reason.

In 2012, 15% (n=244) of procedures were cancelled. 31% (n=75) of these cancellations were initiated by the patient, 26% (n=65) were initiated by the doctor, 16% (n=38) were initiated by the hospital and 7% (n=17) were initiated by administration. 20% (n=49) were cancelled for an unknown reason.

In 2013, 15% (n=218) of procedures were cancelled. The further breakdown into the 5 common groups is in progress.

Conclusion: Identifying the reasons for procedural cancellations has provided opportunity to improve productivity of the Cardiac Catheterisation Laboratory. It has also highlighted the need for thorough documentation and accurate booking systems in order to be used as an effective tool for evaluating the booking process. This in turn would ideally lead to enhanced patient satisfaction.

Thurs49

M HOWARD[1], A PIPER[2], B STEVENS[1], AE HOLLAND[1,3,4], B YEE[2], E DABSCHECK[3,5], D MORTIMER[5], AT BURGE[3], D FLUNT[2], C BUCHAN[3], L RAUTELA[1], N SHEERS [1], D HILLMAN[6] & DJ BERLOWITZ[1]

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A RANDOMISED CONTROLLED TRIAL OF CPAP VS NON-INVASIVE VENTILATION FOR OBESITY HYPOVENTILATION SYNDROME

¶

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6 Sir Charles Gairdner Hospital WA 6009.

¶

Background Although obesity hypoventilation syndrome (OHS) has become the most common indication for domiciliary Non-Invasive Ventilation (NIV) optimal treatment remains unclear.

Methods We undertook a 3 month randomised controlled trial of NIV (spontaneous-timed mode bi-level positive airway pressure – Bi-level PAP) vs CPAP for initial treatment of OHS and evaluated the impact on treatment failure (hospital admission, persistent ventilatory failure or non-compliance), quality of life and control of ventilatory failure.

Results 60 participants were randomised (29 Bi-level PAP and 31 CPAP, age 53 y (SD 10), BMI 55 kg/m^2 (SD 12), PaCO2 60 mmHg (SD 14)). There was no difference between groups in treatment failure at 3 months (Bi-level PAP, 17.2% vs CPAP, 12.9%, p=0.65). Sleepiness (Epworth Sleepiness Scale (ESS)), quality of life (SF36 and Severe Respiratory Insufficiency questionnaire (SRI)), obesity and ventilatory failure improved in both groups (p<0.01 for all), however there was no difference between groups.

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	Bi-level PAP		CPAP		*ANOVA*
	Baseline	**3 mths**	**Baseline**	**3 mths**	*p-value*
ESS	12.1 (7.0)	7.8 (6.0)	11.5 (6.3)	7.4 (5.4)	*Group 0.77* *Time <0.01* *GT 0.83*
SF36	0.55 (0.11)	0.61 (0.15)	0.59 (0.13)	0.69 (0.14)	*Group 0.09* *Time <0.01* *GT 0.16*
SRI	50.6 (18.3)	63.2 (20.4)	57.1 (21.0)	68.4 (18.5)	*Group 0.30* *Time <0.01* *GT 0.47*
$PaCO_2$ mmHg	50.0 (4.6)	44.2 (4.8)	52.2 (6.1)	46.0 (4.4)	*Group 0.02* *Time <0.01* *GT 0.41*

GT=Group x Time interaction

Conclusions CPAP and Bi-level PAP provided similar improvements in symptoms, quality of life and ventilatory failure for OHS after 3 months with no difference in treatment failure.

Supported By: The ResMed Foundation

Thurs50

Perchyonok Y[1,2], Fitt GJ[1,2], Begbie MD[1], U P[3], Schelleman A[1], Fleming CA[4]

Evaluation of CT brain image quality, diagnostic adequacy and radiation dose in a paediatric population imaged at a tertiary adult Australian hospital

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Aims

Minimising radiation exposure in paediatric imaging examinations whilst maintaining acceptable diagnostic quality continues to present a challenge. The aims of our study are (1) to assess institutional compliance of paediatric CT brain (CTB) examinations performed in an adult hospital with ARPANSA radiation dose recommendations and (2) to compare qualitative CTB diagnostic acceptability with objective imaging parameters and radiation dose.

Method

Retrospective review of 116 consecutive CTB examinations in patients under the age of 18 years presenting to the emergency department of an adult tertiary referral centre in Australia was undertaken over an 18 month period. Dose length product (DLP) was compared with the ARPANSA recommended standards[1]. CTB image quality was subjectively classified as diagnostically adequate or suboptimal by two neuroradiologists independently with discordant results resolved by consensus. Objective assessment of image quality included measurements of signal to noise (SNR) and contrast to noise ratios (CNR) of grey and white matter.

Results

All patient scans complied with ARPANSA DLP recommendations. There was almost perfect agreement between two reviewers in subjective assessment of diagnostic adequacy of images (kappa = 0.81). Ten out of 116 scans were classified as being of diagnostically suboptimal image quality. These scans had significantly lower mean DLP values compared with diagnostically adequate examinations (105.1 vs 379.2 mGy.cm; $p < 0.0001$). CTB of adequate diagnostic quality when compared to diagnostically suboptimal scans had significantly higher CNR (1.8 vs 1.1; $p < 0.0001$) and SNR in grey (7.1 vs 4.6; $p<0.0001$) and white matter (5.6 vs 3.8; $p <0.0001$).

Conclusion

All CTB examinations in this series complied with the ARPANSA DLP recommendations, however 9% were of suboptimal diagnostic image quality. While it is important to minimize unnecessary radiation exposure, our results suggest that low DLP values can lead to suboptimal diagnostic image quality.

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Thurs51

Salem N, [1] Anderson J, [1] Ward P, [1] Wood G, [1,2,3]

Evaluation of Four Chromogenic Media for the Isolation of Group B S*treptococcus*

from Vaginal Specimens in Pregnant Women

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2. Mercy Hospital for Women, Heidelberg, Vic., Australia;
3. Department of Infectious Diseases, Heidelberg, Vic., Australia;

Aim
To find a more efficient method that is at least as sensitive and specific as the CDC recommended method for the isolation of GBS from maternal screening swabs.

Methods
Pregnant patients from the Mercy Hospital for Women were asked to self-collect vaginal/perineal swabs. These were tested for the presence of GBS by following the CDC recommended method and by testing on four commercially available chromogenic agar.

Results
Out of 242 patients, the GBS positivity rate was 21%. Three of the four 'new generation' chromogenic agar tested, displayed sensitivity (92-96%) comparable or better than the CDC recommended method (92%) for processing vaginal swabs to detect GBS.

Conclusion
The findings of this study demonstrate the adequacy of new chromogenic media on the market and allow for results to be reported earlier than our current (CDC recommended) method.

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Thurs 52

Hurren, F,[1,] Hussain, S,[1,] Salem, N,[1,] Wood, G,[1,] Ward, P[1,]

Evaluation of a Kiestra automated specimen inoculation system on quality.

1.Microbiology Austin Pathology

Background

Automation in microbiology specimen culture processing is reported to improve quality through increased numbers of isolated colonies reducing the likelihood of co-incident colonies resulting in a need for reworking cultures. Before introducing such as system we assessed the number of isolated colonies on current manual wire streaked specimens with automated Kiestra inoculation. We also assessed the quality of Gram stain specimens using manual gel swab and a liquid Eswab system.

Aims

Assessment of

4) The quality of cultures as the number of isolates colonies from positive blood cultures comparing automated and manual streaking of agar culture plates
5) The number of isolated colonies from patient specimens with and without UTI
6) The quality of Gram stains smears from automated and manually prepared smears of selected specimens

Materials and Methods

5) The number of isolates colonies was compared from positive blood cultures after streaking using automated and manual systems
6) The number of isolates colonies and the ability to detect mixed cultures was compared from ~200 urines specimens using automated and manual systems
7) The morphology and number of isolated colonies was compared from seeded culture suspensions ranging in density from 10^8/L to 10^4/L
8) Gram stains were prepared by standard manual and automated methods from each swab type using buccal swabs from volunteers

Results

4) The number of isolated colonies was 2.5 fold greater from automated streaked plates for both positive blood cultures and urines specimens. This improved detection of mixed cultures and identification of pathogens.
5) Colony morphology and the number of isolated colonies was significantly greater from the automated vs. manual (wire streaking) system.
6) Gram stain smears were more evenly spread and clearer using automated than the manual gel swab system.

Conclusions

Use of Eswabs will improve the quality of microbiology cultures and will potentially reduce reworking and Turn-Around-Time to the availability of final results of culture and susceptibility testing.

Thurs53

GASTRIN POSITIVE FEED FORWARD LOOP IS DEPENDENT ON INTRACELLULAR ZINC IONS.

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Background

Zinc (Zn) the second most abundant transition metal in the human body is critical for cell proliferation, cell cycle regulation, differentiation, apoptosis protein and most importantly is required for the functioning of Zn-finger transcription factors. Gastrin and its precursors act as growth factors for the normal and neoplastic gastrointestinal mucosa. Gastrin increases its own synthesis in GI cancer cells via the gastrin receptor (CCK2R). In a recent publication we identified an 11bp sequence containing an E-box motif located between -120bp and -109bp in the gastrin proximal promoter as the Zn response element which regulates gastrin expression in response to exogenous Zn in AGS cells.

Results

In the current study we demonstrate that the same 11bp E-box is responsible for activation, via a positive feed-forward loop, of the gastrin promoter downstream of CCK2R activation by gastrin in AGS-CCK2R cells. Further as the cell permeable Zn chelator TPEN (*N,N,N,N* tetrakis-(2-pyridylmethyl)-ethylenediamine) inhibited gastrin promoter activity induced by gastrin even in the presence of excess Ca and Fe, we hypothesized that occupation of the CCK2 receptor by gastrin activates downstream Zn signalling. Using the Zn-specific fluorescent probe Fluozin3 in combination with the Zn chelator TPEN we confirmed an increase in intracellular free Zn downstream of the CCK2 receptor.

Conclusion

Our study indicates an entirely novel connection between gastrin and Zn signalling, which may be involved in the development of gastrointestinal cancers via activation of E-box binding transcription factors leading to an epithelial-mesenchymal transition (EMT). A better understanding of the Zn-gastrin axis will aid in defining the role of Zn signalling in the EMT, and may lead to the development of new treatments for metastatic gastric cancers.

Thurs54

Sood S[1,2,3], Yu J[3], Visvanathan K[3], Gow PJ[1,2], Angus PW[1,2], Testro AG[1,2]

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An objective immune function biomarker is associated with infection risk in cirrhotic patients awaiting transplantation

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This abstract has not been included at the request of the author

Thurs55

Sood S[1,2,3], Skinner N[3], Yu J[3], Millen R[3], Gow PJ[1,2], Angus PW[1,2], Testro AG[1,2], Visvanathan K[3]

This abstract has not been included at the request of the author

Thurs56

Zhao R, [1,2], Loh K,[1,2,] Mian M, [1,2,] Chong C[1,2], Lim K[1,2,3]

Malaena but not coffee ground vomit or bright haematemesis predicts adverse outcomes in acute upper gastrointestinal bleeding

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ABSTRACT

AIM

Upper Gastro Intestinal Bleeding (UGIB) can present with either bright red haematemesis and/or coffee ground vomit and/or malaena which allows it to be categorized into different clinical patterns. In this study, the prognostic significance between clinical patterns of presentation was examined.

METHODS

A retrospective review of 349 patients from 1st January 2009 to 31st December 2010 was undertaken. Information on patient demographics, comorbidities, medications, the pattern of bleeding, presence of haemodynamic instability, serum haemoglobin (Hb), urea, creatinine, eGFR levels, transfusion requirements, rebleeding and death were analysed. Patterns of bleeding were divided into bright red haematemesis, coffee ground/altered blood vomiting and melaena. The relationship between these subgroups in relation to outcomes (ie. need for transfusion, rebleeding and death within 30 days of presentation) were analysed using logistic regression.

RESULTS

Melaena alone was the most common pattern of bleeding, present in 37.0% (129/349), followed by coffee ground vomitus alone 29.2% (102/349) and bright red haematemesis alone 11.7% (41/349). 34.7% of patients (121/349) required a blood transfusion during their admission, 11.2% (n=39/349) rebled within their admission and mortality overall was 4.3% (15/349) within 30 days of admission. Significant factors independently associated with adverse outcomes as defined by composite outcome of mortality, rebleed and/or need for transfusion using multivariate analysis were malaena OR 8.26 (95% CI 1.09-62.58, p<0.05), Charlson's Comorbidity Index OR 1.14 (95% CI 1.02-1.17, p<0.05), urea more than 7 on admission OR 2.09 (95% CI 1.20-3.64, p<0.05), hypotension OR 2.94 (95% CI 1.56-5.57, p<0.05), and tachycardia OR 1.90 (95% CI 1.09-3.32, p,0.05)

CONCLUSION

There is a difference to clinical outcomes when comparing patterns of patient presentation of UGIB. Malaena was an independent prognostic predictor but not coffee ground vomit alone nor bright red haematemesis alone. Separating patients into clinical patterns of UGIB may add to existing risk scoring systems in order to identify and urgently treat high risk patients.

Thurs57

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Angiotensin (1-7) ameliorates the progression of biliary fibrosis in mice

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2. Department of Gastroenterology, Austin Health, Heidelberg, Victoria, Australia

Aims:
The aim of this study was to investigate the therapeutic potential of angiotensin (1-7) (Ang-(1-7)) using a gene knockout mouse model with progressive hepato-biliary fibrosis. We and others have previously shown that (Ang 1-7), a peptide of the alternate axis of the renin angiotensin system (RAS), has an anti-fibrotic activity in the rat. In the current study we investigated the effects of Ang-(1-7) infusion in multiple drug resistant gene 2 knockout (Mdr2-KO) mouse model as Mdr2-KO mice provide a model of liver injury which produces lesions that are comparable with those seen in patients with primary sclerosing cholangitis (PSC).

Methods:
Three-months-old Mdr2-KO male mice randomly assigned into two groups. One group received a continuous infusion of Ang (1-7) peptide over 4 weeks via an intraperitoneal osmotic pump and the second group (controls) received sterile saline. After 4 weeks, animals in both groups were sacrificed and blood and tissue collected for analysis. Fibrosis was quantified using picrosirius red staining and liver hydroxyproline content. Gene expressions of collagen type 1α1 (Col 1α1), an extracellular matrix protein, alpha smooth muscle actin (αSMA), a marker of hepatic stellate cell (HSC) activation, and profibrotic cytokines, transforming growth factor beta 1 (TGFβ1) and interleukin-6 (IL-6) were performed by using quantitative real time PCR (qPCR). Plasma was used for liver function tests (LFTs).

Results:
Ang (1-7) significantly ($p<0.05$) reduced liver fibrosis as assessed by measuring collagen in picrosirius stained sections when compared to saline infused animals. Liver hydroxyproline content was lower in Ang-(1-7) treated than in saline treated mice, however, the difference did not reach statistical significance. An improved fibrosis in Ang-(1-7) treated mice was accompanied by reduction in the expression of Col 1α1 ($p<0.01$), HSC marker gene αSMA ($p<0.05$), and profibrotic cytokines TGFβ1 ($p<0.01$) and IL-6 ($p<0.01$) as compared with those in the saline infused group. LFTs showed improvement in Ang-(1-7) treated mice compared with those in the control group.

Conclusions:
Ang-(1-7) of the RAS has anti-fibrotic activity in a mouse model of biliary fibrosis. Therefore, Ang (1-7) could be a potential therapeutic agent to treat liver disease with biliary disorders.

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Thurs58 EMBARGO UNTIL24OCT

Thurs59

Carbone L[1], Angus P[2], Yeomans N[3]

Incretin-based therapies for the treatment of non-alcoholic fatty liver disease: a systematic review and meta-analysis

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Aim
Nonalcoholic fatty liver disease (NAFLD) represents a spectrum of disease, from isolated steatosis to inflammation and varying degrees of fibrosis[1]. It is one of the most common causes of liver disease in Western societies[2], and has potential to progress to cirrhosis and hepatocellular carcinoma[3]. Despite its significance there are no definitive treatments[4]. Two novel classes of potential pharmacotherapies are the glucagon-like peptide-1 receptor agonists (GLP-1 RA) and dipeptidyl peptidase-4 inhibitors (DPP-4I), collectively known as incretin-based therapies[5]. These agents have several metabolic and anti-inflammatory actions that may be of benefit in ameliorating NAFLD[5]. The aim of this meta-analysis was to evaluate the efficacy of these medications for the treatment of NAFLD via a pooled analysis of relevant studies. It was hoped findings would provide new insights into management of this important condition and potentially guide clinical practice.

Methods
Studies were sourced from electronic databases and major meetings in hepatology. Main inclusion criteria were original studies investigating treatment of adults with NAFLD using GLP-1 RA/DPP-4I. Key outcomes were a reduction in serum alanine transaminase (ALT), as a marker of liver inflammation, and an improvement in disease status as measured by imaging or histology. Statistical analysis was performed using MIX 2.0 Pro.

Results
Initial searching retrieved 1356 peer-reviewed articles and abstracts. Four studies met all inclusion and exclusion criteria. There were a total of 136 participants with NAFLD and concomitant type 2 diabetes mellitus (T2DM). Meta-analysis revealed a significant decrease in serum ALT following treatment (mean change -14.1 IU/L, 95% CI -19.8 IU/L to -8.3 IU/L, $p<0.0001$). In two studies with imaging and tissue data, treatment was found to significantly reduce steatosis, inflammation and fibrosis.

Conclusion
The significant decrease in a key biochemical marker of hepatic inflammation following treatment with GLP-1 RA/DPP-4I, as well as improvements in imaging/histology, suggest these agents may be effective options for managing NAFLD with comorbid T2DM. Limitations of this meta-analysis are the absence of randomised placebo-controlled trials and paucity of tissue data. Given this is a very novel area of research, more studies are required, particularly with greater rigor in study design and more pre-post imaging and tissue data.

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Thurs60

Browne E,[1], Martin D,[2], Ritte R,[2]

Questioning Organ Donation questionnaires: whose views are counted?

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Aim
There is a significant gap in many countries between the number of patients in need of an organ transplant and the number of available donated organs. Understanding attitudes and intentions regarding deceased donation of organs is critical to the development of effective organ procurement policies. We aimed to provide the first international descriptive review of populations sampled in surveys examining intentions regarding deceased organ donation, and to explore the ethical implications of population sampling for policy-makers and researchers in the context of responsibilities to promote equity.

Methods
We systematically reviewed the literature using electronic databases (EBSCO [Medline with Full Text, PsycINFO, ERIC, CINAHL], Web of Science, ProQuest Central). Inclusion criteria were: primary quantitative survey data; specifically evaluating willingness/intention to donate organs after death or donor registration status; published from 1950-2013; published in English; peer-reviewed. We recorded year of publication, country, category of population sampled, number of respondents, mean age and percentage of female respondents. Recorded data were analysed using descriptive statistics in Microsoft Excel. Ethical evaluation and analysis were performed.

Results
302 articles were included for analysis, representing data from 307 studies and 255,861 participants. 68% of studies (210) included were published from 2005-2013. 31% of all studies (95) represented United States-only data, and a total of 55 countries contributed to at least one included study. Only 13% of studies (40) targeted ethnic minorities, and 3% (9) targeted specific religious groups. In 174 studies (78% of those providing data on participant gender), more than 50% of participants were female, demonstrating a strong gender bias in the collective research. The data revealed that some population groups appear to be under-represented in organ donation research, raising issues of equity and respect for the autonomy of affected individuals.

Conclusions
Given the influence survey data may have in informing the development of deceased donation policy, ensuring equitable representation of potential donor populations affected by policy is an important ethical issue. As this review shows, the current literature may fail to capture important perspectives, so researchers in this field have an epistemic responsibility to ensure that future research contributes to a more representative account of public attitudes towards deceased donation in the international literature.

Thurs61

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Transarterial Chemoembolisation for Hepatocellular Carcinoma

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Aim
To evaluate the risk factors for eradication of hepatocellular carcinoma following transarterial chemoembolization therapy by reviewing patients' parameters and the histological response rate (complete versus partial tumour necrosis) in explanted or resected liver tissues. Transarterial chemoembolization is a neo adjuvant therapy that aims to treat tumour tissues by selective administration of chemotherapeutic drugs as well as selective hepatic arterial occlusion[1]

Methods
A retrospective study of 33 patients with hepatocellular carcinoma (HCC) who were treated with transarterial chemoembolization (TACE) prior to liver transplantation or resection between January 2009- March 2014 was conducted. Data from medical records, pathology reports and imaging studies from multiple databases were reviewed. Factors to be studied include demographic factors (age, gender), liver disease factors (diagnosis, presence or absence of cirrhosis, model of end-stage liver disease score), tumour factors (size, number, alphafetoprotein level), technical factors (conventional TACE vs drug eluting bead TACE, chemotherapeutic agent used) and combination factors (BCLC stage). From the 33 patients' reports collected there were 24 explanted liver and 9 resected liver data reviewed

Results
The chemotherapeutic agent Epirubicin 50 mg has been demonstrated to be the only statistically significant (p-value 0.001) factor for complete necrosis in this study

Univariate analysis was performed to determine risk of incomplete necrosis. Chi Square analysis was used for categorical data and Mann-Whitney test was used to analyse continuous data

Conclusion
For selected patients who are in the liver resection or transplantation waiting list, Epirubicin 50mg should be considered as the chemotherapeutic agent of choice for TACE in order stabilise their disease as it is likely to achieve more complete eradication of HCC.

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Thurs62

Urbancic KF[1,2], Ward P[3], Pavlovic J[4], Jones R[4], Gow P[4], Angus P[4], Johnson PDR[2]

Is invasive fungal infection still a risk in modern liver transplantation?

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2. Infectious Diseases Department, Austin Health, Heidelberg Vic
3. Microbiology Department, Austin Health, Heidelberg Vic
4. Liver Transplant Unit, Austin Health, Heidelberg Vic

Aim:
Invasive fungal infection (IFI) is a serious complication of liver transplantation, developing in 5-20% of patients[1] and is associated with high mortality, morbidity and treatment costs. We aimed to describe the epidemiology and incidence of IFI in our liver transplant population in the context of targeted antifungal prophylaxis, with low dose liposomal amphotericin.

Methods:
We retrospectively reviewed liver transplants performed at Austin Health between 2009 and 2013 inclusively. Those patients who received systemic antifungals over this period were identified for review. The presence of IFI was assessed according to international definitions[2] with review of the clinical notes, and fungal microbiology records and radiology results.

Results:
232 patients received 242 liver transplants were identified for review. Primary antifungal prophylaxis was given to 36 patients (15.5%), with a further 12 patients (5.2%) receiving antifungal treatment at the time of liver transplant. 27 cases (11.6%) of proven or probable IFI were identified of which 24 (10.3%) had *Candida*, 3 (1.3%) *Aspergillus*, and 1 (0.4%) *Cryptococcus* infections (one patient had 2 IFIs). There were an additional 5 patients (2.2%) with non-invasive *Aspergillus* infection who received antifungal treatment. Of the *Candida* infections, the majority were fluconazole-susceptible *Candida albicans* (15/28; 53.6%). 8/36 (22.2%) receiving antifungal prophylaxis and 14/188 (7.4%) not receiving prophylaxis had proven or probable IFI, predominantly *Candida* infections. These groups are not directly comparable as prophylaxis is reserved for those considered high-risk. Of 18 patients with fulminant hepatic failure (FHF), 4 (22.2%) patients were diagnosed with IFI, despite most (17/18; 94.4%) being on antifungal prophylaxis or treatment at the time of transplantation. The majority of IFIs (14/27; 51.9%) were diagnosed within the first 4 weeks after liver transplant. 4/232 patients (1.7%) died of IFI soon after liver transplantation.

Conclusion:
The incidence of proven or probable IFI in liver transplant patients in this audit was 11.6%. Targeted antifungal prophylaxis appears effective but did not prevent all cases of IFI, particularly *Candida* infections. While only one *Candida* infection was fatal, all invasive *Aspergillus* infections in FHF patients resulted in death. Further analysis to identify risk factors for IFI is warranted to better protect high-risk patients, particularly those with FHF.

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Thurs63

Leung C,[1,2,3], Waring J[3], Apostolov R[3], Nguyen M[3], Jones N[3], Dibb P[2], Goss B[1], Lopresti R[2], O'Brien R[1,3], Zajac J[3].

Wireless Teaching: Use of an Innovative App to Increase Interaction and Learning in Hospital Grand Rounds.

This abstract is not included at the request of the author

Thurs64

Leung C[1,2,3], Waring J[2], Dibb P[1], Goss B[2], O'Brien R[2,3], Lopresti R[1].

Teaching Together by Learning Together: Qualities of an Excellent Educational Experience.

This abstract is not included at the request of the author

Thurs65

Rotella JA[1], Gelperowicz P, Lim K, Fox S, Ellis Y, Cochrane C, Lee V[1]

Evaluation of an Emergency Department (ED) interprofessional simulation program: What are the behavioural outcome benefits for ED doctors and nurses?

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Aim
Interprofessional simulation education (IPSE) creates a unique learning environment where users can develop their clinical skills without causing a patient harm. We run a monthly IPSE for medical and nursing staff in the Austin Emergency Department (ED). We were interested in evaluating whether there were any behavioural outcome benefits with regards to the areas of teamwork, assertiveness, and communication based on existing curriculum frameworks (Junior Doctor Curriculum Framework, Nursing and Midwifery Board of Australia National Competency Standards for the Registered Nurse).

Methods
This was an ongoing evaluation of the ED interprofessional simulation program pre- and post-scenario. Data was collected over 2 months and a descriptive analysis was performed. Feedback was collected from ED medical and nursing staff participating in regular IPSE. Evaluation of this feedback commenced in April 2014. Evaluation forms used a 10-item Likert to ascertain level of agreement to questions relating to teamwork, communication and assertiveness in addition to their general perception of the simulation session. Furthermore, participants are asked about what they expected to learn from the IPSE session. A follow-up electronic survey via Survey Monkey™ was sent two weeks later (and an additional survey will be sent six months later) asking about whether IPSE has contributed to their 'real world' clinical practice and what elements of IPSE would be beneficial to their own 'real world' practice.

Results
To date, 27 respondents have completed initial feedback with a further 10 completing the 2-week follow-up survey. Two thirds were nursing staff, the remainder were medical. Respondents reported that IPSE offered more opportunities to debrief after a clinical scenario but this was weighted more towards medical staff. Perceptions relating to several aspects of teamwork generally improved following IPSE. Self-reported sense of assertiveness improved in participants following IPSE. Differences were noted in medical and nursing perceptions regarding clarity and effectiveness of communication.

Conclusion
In this initial evaluation, IPSE has potential benefits to improve team behaviour. It proves opportunities for debriefing and participants show self-reported improvements in teamwork and assertiveness after participating in IPSE. Whether this has long-term effects is not well-understood and will be address as part of our ongoing research.

Thurs66

Harding TW, Howarth CJ, Hayes J, Simonis M, Temple-Smith MJ

The role of the General Practitioner in managing female genital cosmetic surgery

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Introduction
Labiaplasty, the surgical reduction of the labia minora, has significantly increased in demand in Australia. Medicare statistics reveal a three-fold increase in procedures between 2001 and 2011, with no known increase in pathology, suggesting these procedures are increasingly being performed for cosmetic reasons. General Practice is the gatekeeper for patients electing for the procedure, as a General Practice referral is necessary to claim Medicare entitlements. To date, no studies have investigated labiaplasty in the Australian context and there are no guidelines to assist General Practitioners (GPs) in management of these patients.

Methods
Semi-structured, qualitative interviews were conducted with health professionals, including GPs, Gynaecologists and Plastic Surgeons. Participants were recruited through the Victorian General Practice Research Network (VicReN), clinical teaching hospitals affiliated with the University of Melbourne, and snowball sampling. In all, thirty interviews were audiotaped and transcribed in full. Analysis was conducted by hand.

Results
All participants were aware of genital labiaplasty, and many had patients with concerns about genital appearance, some of whom requested referral for labiaplasty. Most practitioners attributed the rise in requests to pubic hair removal and increased accessibility of pornography. Practitioners agreed on the need for training and for appropriate resources with which to educate patients.

Conclusion
This study has for the first time demonstrated the need for clinical resources and management guidelines around requests for genital labiaplasty in an Australian General Practice setting.

Wei-Ling Chiu[1], Elif Ekinci[1,2], Zhong X Lu[3,6], Ken Sikaris[3], Que Lam[4], Intissar Bittar[4], Karey Cheong[1], Nick Crinis[4] and Christine Houlihan[1,5]

Comparison of four immunoassays for measurement of free thyroxine (fT4) levels in pregnancy; which assay do you use?

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Background: The aim of antithyroid drug treatment of hyperthyroidism due to Graves' disease in pregnancy is to control maternal hyperthyroidism while minimizing risk of fetal hypothyroidism. Consequently, it is recommended in such pregnancies to maintain "free T4 (fT4) values at or just above the upper limit of normal" using trimester-specific fT4 values," or in their absence to use "reference ranges for non-pregnant patients"[1].

Aim: We sought to determine trimester-specific fT4 reference intervals (RI) for common methods used in Australia.

Methods: Healthy, thyroid-peroxidase antibody negative women with singleton pregnancy ≤13 weeks gestation were followed prospectively throughout pregnancy with samples collected at Trimester-1 (T1), Trimester-2 (T2), Trimester-3 (T3), and postpartum (PP). Serum fT4 was measured by four immunoassays: Beckman DXI800, Roche e602, Abbott Architect and Siemens Centaur. Reference intervals are presented as 95%CI (calculated as mean±2SD). Differences in mean were tested using ANOVA.

Results: Samples from the same group of women were analysed by all four methods. There were 118 women at T1 (11.8±0.2) (mean±SE weeks gestation), 78 at T2 (24.4±0.3), 63 at T3 (35.9±0.3) and 73 at postpartum (PP).

Table 1: Assay and trimester specific fT4 reference intervals.

METHOD	T1	T2	T3	PP
n	118	78	63	73
Beckman [7.5-21.1]	10.6 ± 2.4 (5.9-15.4)	8.1 ± 1.6* (4.9-11.3)	7.8 ± 1.7* (4.5-11.1)	10.3 ± 2.3 (5.6-15.0)
Roche [12-22]	15.1± 2.7 (9.6-20.6)	12.4 ± 1.9* (8.6-16.2)	11.9 ± 1.9* (8.2-15.6)	15.6 ± 3.0 (9.5-21.7)
Abbott [9.0-19.0]	14.5 ± 2.1 (10.3-18.7)	12.1 ± 1.4* (9.4-14.8)	11.9 ± 1.4* (9.1-14.8)	13.1 ± 1.8 (9.4-16.8)
Siemens [10-19]	17.0 ± 2.1 (12.7-21.2)	14.6 ± 1.5* (11.5-17.7)	14.9 ± 1.6* (11.8-18.0)	16.0 ± 2.5 (11.0-20.9)

FT4 results (pmol/L) are shown as mean±SD (95% Confidence Intervals). The manufacturer quoted non-pregnant reference intervals are shown in [ ]. * p<0.001 for T2 or T3 versus T1 in each method.

Within each method, all showed an approximate 15-20% decrease in fT4 in T2 and T3 compared to T1. Between methods, significant differences were present at all time points. The Beckman method was approximately 30% lower than the Roche and Abbott methods, and 45% lower than the Siemens method. Roche and Abbott gave similar results.

Conclusion: Both gestation and assay method had a significant influence on fT4 results in pregnant women. Knowledge of trimester and method specific reference intervals assists in optimizing antithyroid drug therapy in pregnancies affected by Graves' disease.

Reference: Stagnaro-Green A, Abalovich M, Alexander E, et al. Guidelines of the American Thyroid Association for the Diagnosis and Management of Thyroid Disease During Pregnancy and Postpartum. Thyroid. 2011;21(10):1081-25.

Thurs68

Elif I Ekinci[1,2,3], Sabashini K Ramchand[1,*], Ken Sikaris[4], Zhong X Lu[4,5], Christine A Houlihan[1,6]

[*] Joint first author

Maternal Serum Prolactin Levels correlate with Plasma Glucose Levels during an Oral Glucose Tolerance Test (OGTT) in Pregnancy

This abstract has not been included at the request of the author

Thurs69

Wood A J[1], Churilov L[2, 3], Perera N[1], Thomas D[4], Poon A[4], MacIsaac R J [5, 6], Jerums G[1, 5] Ekinci EI[1, 5, 7]

Estimating Glomerular Filtration Rate: the Performance of the CKD-EPI Equation over time in Patients with Type 2 Diabetes.

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7. Menzies School of Health Research, Darwin, Northern Territory, Australia

Background:
Serum creatinine based equations are routinely used to assess renal function. Recently the validity of these equations in diabetes has come under scrutiny.
Aim:
To determine the performance of the Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI) equation to estimate glomerular filtration rate (eGFR) over time in adults with type 2 diabetes.
Methods:
Adults (n=152) with type 2 diabetes attending Austin Health, Melbourne, with ≥ 3 prospectively measured GFR (mGFR) values over ≥8 year follow up period were included. Plasma disappearance of DTPA (diethylene-triamine-penta-acetic acid) was used to calculate mGFR and compared to eGFR. The agreement between mGFR-eGFR was estimated using Intraclass Correlation Coefficient and reduced major axis regression. The association between variables was investigated using random effect linear regression.
Results:
152 patients had a median of 4 (IQR: 3, 5) mGFR measurements over a follow up period of 11 years (IQR: 9, 12). Median baseline mGFR was 95ml/min/1.73m^2 (IQR: 77,109) and median baseline CKD-EPI eGFR was 83 ml/min/1.73m^2 (IQR: 72, 95). Adjusted for mGFR and age at baseline, the average within-participant decline per year was 2.6ml/min/1.73m^2 for mGFR ($p<0.001$) and 1.6ml/min/1.75m^2 for eGFR ($p<0.001$).
Despite substantial overall agreement between mGFR and eGFR (ICC=0.65), the magnitude of mGFR-eGFR difference increased by 0.2ml/min/1.75m^2 per every 1ml/min/1.75m^2 increase in mGFR, with the highest agreement achieved at an mGFR of 60ml/min/1.75m^2 (Figure 1). No statistically significant associations between the mGFR-eGFR difference and Body Mass Index, body surface area or age were detected. As earlier stages of CKD are associated with higher mGFR values, the baseline eGFR underestimated mGFR by an average of 10ml/min/1.75m^2, and the mGFR-eGFR difference decreased by 0.78ml/min/1.75m^2 per year ($p<0.001$) (Figure 2).
Conclusions:
The current findings raise concerns regarding the use of the CKD- EPI formula to monitor renal function in patients with type 2 diabetes without overt nephropathy.

Thurs70

Å Bjørnerem[1], X Wang[1], A Ghasem-Zadeh[1], R Zebaze[1], M Bui[2], JL Hopper[2], E Seeman[1]

The microstructural basis of bone loss during menopause

This abstract is not included at the request of the author

Thurs71

Novel Mouse Models of Diabetes Susceptibility in the Gene Mine Dissect Complex Pathogenesis of Type 2 Diabetes

Chieh-Hsin Yang[1], Salv Mangiafico[1], Ramesh Ram[2], Grant Morahan[2], Sof Andrikopoulos[1]

This abstract has not been included at the request of the author

Thurs72

Ann Pallis,[1] Jalal Jazayeri,[2] Peter Ward,[1] Karolina Dimovski[3] and Suzanne Svobodova[1]

Rapid detection of *Clostridium difficile* toxins from stool samples using real-time multiplex PCR

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Aim
To determine the clinical utility of a rapid real-time multiplex PCR assay for *Clostridium difficile* infection (CDI) in an acute hospital setting.
Methods
From January to April 2012, 650 stool samples from patients with suspected CDI were directly cultured onto pre-reduced chromID *C. difficile* culture plates, and tested by faecal cytotoxin assay (CYT), cytotoxigenic assay (CYTGC) and real-time multiplex PCR capable of detecting four *Clostridium difficile* genes; *tcdA*, *tcdB*, encoding toxin A (TcdA) and toxin B (TcdB), and the binary toxin *C. difficile* transferase genes (*cdt*A and/or *cdtB*) encoding CDT toxin. All patients with positive real-time multiplex PCR results or discrepant results were also tested using other PCR based methods, the GeneXpert (Cepheid Inc., USA) or high-resolution melting (HRM) real-time PCR.
Results
93/650 (14.3%) stool samples tested by real-time multiplex PCR and cell culture cytotoxicity assays were identified as positive for toxigenic *C. difficile* strain. Using the cell culture cytotoxicity assays (CYT and CYTGC) as the reference standard, PCR had sensitivity of 100%, specificity of 99.1%, positive predictive value (PPV) of 94.9% and negative predictive value (NPV) of 100%. Five stool samples which were low positives for *tcdA* and *tcdB* with a real-time multiplex PCR cycle threshold (*Ct*) close to 40 were negative by cell culture cytotoxicity assay (CYT). *C. difficile* isolates were not available for these samples to test by cell culture cytotoxicity assay (CYTGC) as culture was persistently negative. However, using the alternative PCR assays, the Cepheid GeneXpert assay results were negative (probably due to this PCR assay being less sensitive) and HRM real-time PCR results were all positive. Analytical sensitivity results for the real time multiplex PCR assay yielded 100% specificity against all 10 different strains from the genus clostridia.
Conclusion
Rapid diagnosis of CDI using the real-time multiplex PCR assay was rapid, (4 hours per 21 stool samples) accurate and correlated well with other clinical methods. Besides detecting the targeted *C. difficile* genes, this assay can also be used to detect the presence of any inhibitory components in the PCR and combined with a selective culture medium, such as the chromID™ *C. difficile*, can be applied directly for screening *C. difficile*-associated disease. The assay protocol can be used as a rapid screening tool to assist infection control units and in managing infected patients by reducing the number of patients requiring isolation and extended hospitalization. Rapid detection can prevent unnecessary antibiotic therapy and potentially reduce the spread of infection by emerging hypervirulent *C. difficile* strains.

Thurs73

Manley K [1]

Genetic sensitivity to taste and upper gastro-intestinal symptoms in chronic renal disease

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Aim
Many chronic kidney disease (CKD) patients experience uraemic symptoms including dry mouth, taste changes, nausea, vomiting and dry retching. The genetics of taste is complex allowing for the enjoyment of food while avoiding toxins. Genetic sensitivity to the compound thiourea is common in the population with ~70% being able to taste it, with ~30% finding it unbearably bitter. The present cross-sectional study was performed to assess whether there are any associations between known genetic sensitivities to taste and self-reported upper gastric symptoms experienced in CKD patients.

Methods
Fifty-six CKD patients (35 males, 21 females, age 67 ± 14yrs), with glomerular filtration rate <30 ml/min were selected from a tertiary hospital renal outpatient clinic. Subjects answered a questionnaire to assess number and severity of upper gastro-intestinal (GI) symptoms experienced. Participants were tested for genetic sensitivities to phenylthiocarbamide (PTC), thiourea and sodium benzoate. Saliva and blood samples were collected to determine their biochemical composition. Possible associations between genetic taste sensitivities, saliva and blood composition and upper GI symptoms were assessed**.**

Results
Of the 56 patients enrolled 29(52%) reported major upper GI symptoms while 27 (48%) had no or only minor complaints mainly of dry mouth. Uraemic symptoms were reported by 66% of women while only 44% of men ($p < 0.023$). Intensity of symptoms reported related to lower eGFR ($p<0.002$). The genetic sensitivity to thiourea was related to total symptom burden especially to taste changes ($p<0.022$) and nausea ($p<0.007$).

Conclusion
This study provides evidence that genetic sensitivity to thiourea impacts on taste perception and symptoms of nausea in CKD patients with the increase in levels of urea found in their saliva. Further research is required to clearly establish if changing the saliva environment improves uraemic symptoms, taste sensitivity and food intake in CKD patients.

Thurs74

Nicholas Jones,[1] Douglas Johnson,[1] Louise Burrell, [1,2]

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Audit of the readmission of heart failure patients under General Medicine.

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2.University of Melbourne

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Aim

Heart Failure patients are internationally recognised as a high risk group for readmission. At Austin Health, the vast majority of inpatient, acute decompensated heart failure patients are managed by the Department of General Medicine. The readmission rate, within 28 days, for a patient admitted under general medicine with a diagnosis of heart failure is 20%. This is in line with comparable international studies. These same studies have shown that the readmission rate increases to 50% if readmissions are measured at 6 months (1).

Recent years have seen the large international cardiac society including the Heart Foundation, release evidence based guidelines for the management of heart failure. These guidelines focus on a multi-disciplinary approach, with involvement of allied health, nursing staff, physicians and GP in a well-coordinated team.

The aim of the audit at Austin Health was to ascertain weather, in the readmitted patient population, the current evidence based guidelines were being followed. This is the first stage of a larger Austin-by-Design supported project to reduce readmissions of this high risk group.

Methods

Patients, who were admitted under the Department of General Medicine with either a primary or secondary diagnosis of congestive cardiac failure, were retrospectively identified for the 2013-2014 finical year. A file audit was completed against current evidence based guidelines.

Results

Initial analysis of the audited files, suggest that the largest deficiencies are in discharge, follow up planning and the involvement of allied health teams. The completed analysis will be available by research week.

Conclusion

While these are preliminary results, they suggest scope for improvement in the areas of discharge planning and follow up for these patients. International data states that early review of these patients in a physician outpatient clinic can decrease readmission rates by as much as 50% (2).

The next step of this project is to develop and implement an effective intervention, such as a Cerner® care-set, to improve compliance. Following implementation, this will be reassessed for effectiveness with a repeat audit.

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Thurs75
Andrew Huynh[1], Christian McGrath[2], Douglas Johnson[1,2], Louise Burrell[1]

A rare case of Shigella sonnei bacteraemia occurring in a young man with shigellosis

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2 Department of Infectious Diseases, Austin Health, Heidelberg, Vic., Australia;

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Introduction:
There is a current outbreak in Victoria, Australia of shigellosis affecting men who have sex with men (MSM). Approximately 100 cases of shigellosis are reported in Victoria each year. However between 1 January and 17 April, 2014, an outbreak of 133 cases of shigellosis was reported; two-thirds of the adult male cases occurred in MSM, and had no history of overseas travel. We present a rare case of *Shigella sonnei* bacteraemia in a patient with shigellosis.

Case description:
A 34 year old male presented with a 6 day history of watery diarrhoea and abdominal cramps associated with fevers and rigors. His last episode of sex with a man was three months previously, with a negative HIV screen 2 months prior to admission. He had no recent travel to developing countries and no sick contacts.

He was febrile with a temperature of 38.6°C, and a white cell count of 8.9 x 10^9/L, neutrophil count of 1.7 x 10^9 /L, and an elevated C-reactive protein level at 39.9mg/L. A blood culture taken was positive in the aerobic bottle, initially identified as *Escherichia coli.*

A contrast CT abdomen-pelvis showed a pancolitis with some terminal ileal thickening and no evidence of perforation or intra-abdominal collection. He was treated empirically with ampicillin, ciprofloxacin and metronidazole. A stool sample contained erythrocytes (4+) and leukocytes (3+), and was culture positive for *shigella sonnei* biotype f. The initial blood culture result was amended to *shigella sonnei* biotype f in the aerobic bottle. A repeat HIV test was negative. The patient remained afebrile and clinically well, and both the abdominal cramps and diarrhoea resolved during his 3-day admission. He was discharged on a 14-day course of ciprofloxacin, and remained well at follow-up 2-weeks later.

Discussion:
To date, there have been 10 reported cases for *Shigella sonnei* bacteraemia and it is associated with increased mortality. Unlike the patients in previous reports, our case was fit and healthy with no underlying co-morbidities. Although there is an increased risk of shigellosis in MSM with a current outbreak in Victoria, Australia, *Shigella sonnei* bacteraemia is a rare complication of shigellosis.

Thurs76

Andrew Huynh[1], Scott Baker[1,2], Andrew Stewardson[3] , Douglas Johnson[1,3]

Denosumab-associated hypocalcaemia: incidence, severity and patient characteristics in a tertiary hospital setting

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3. Department of Infectious Diseases, Austin Health, Heidelberg, Vic, Australia

Background and aim:
Denosumab, a humanised monoclonal antibody against receptor activator of nuclear factor kappa beta ligand (RANKL), reduces bone turnover via inhibition of osteoclasts and osteoclastogenesis and is used in the management of osteoporosis and metastatic bone disease. While hypocalcaemia complicating denosumab treatment has been reported, the real world incidence, clinical and biochemical risk factors are not fully elucidated. This study aims to investigate the incidence of denosumab-associated hypocalcaemia (DAH) and identify relevant clinical and investigation features.

Methods:
We performed a retrospective observational audit of patients administered denosumab (60mg/120mg) over a 12 month period at a tertiary hospital in Australia. Data collected: denosumab dosage and indication, 25-hydroxyvitamin D concentration, parathyroid hormone, estimated glomerular filtration rate (eGFR),nadir and duration of hypocalcaemia (albumin adjusted serum calcium concentration <2.15 mmol/L or ionised calcium <1.13 mmol/L upto 6 months post denosumab administration), calcium and colecalciferol pre- and post-administration of denosumab. The primary outcome was the incidence proportion of DAH.

Results:
Of 161 patients administered denosumab (106 osteoporosis, 55 bone metastases), 20 patients (12.4%, mean age 78.5 years, 11 male, 11 osteoporosis, 9 bone metastases) developed hypocalcaemia. Median calcium nadir was 2.06 mmol/L (interquartile range (IQR) 1.81-2.11), with the median time to diagnosis 24.50 days (IQR 9.25-41.25). One patient required intravenous calcium gluconate treatment. 75% of affected patients had a 25-hydroxyvitamin D concentration >50nmol/L and 90% of affected patients were on calcium or colecalciferol supplementation. DAH was associated with sex (27% males versus 8% females, p=0.004), but not age (8% under 60 years versus 13% aged 60 or more, p=0.74) or indication (16% with bone metastases versus 10% with osteoporosis, p=0.32).

Conclusion:
Denosumab-associated hypocalcaemia occurred in over 12% of patients in this population, despite wide use of appropriate calcium and colecalciferol supplementation.

THURS77

DENOSUMAB IN PATIENTS WITH ADVANCED CHRONIC KIDNEY DISEASE: A SINGLE CENTRE CASE SERIES

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Aim: To study the use of denosumab in patients with stage IV and stage V chronic kidney disease (CKD).
Background: Denosumab is a potential treatment option for osteoporosis in postmenopausal female patients who cannot have bisphosphonates due to severe CKD (eGFR <30 ml/min). While it is not cleared renally, little is known about its effects and safety profile in patients with severe CKD.
Methods: At our institution, anecdotal reports suggested that patients with CKD IV/V had episodes of significant hypocalcaemia following denosumab administration. We therefore decided to undertake a thorough study of all patients with CKD stage IV or V who had been administered denosumab in the last 3 years. Patients were identified by cross-referencing pharmacy administration records with patient's renal function prior to the administration. Data was collected and analysed retrospectively for a number of parameters prior to and following the administration of denosumab.
Results: A total of 8 patients with stage V and 5 patients with stage IV CKD were identified as having received denosumab in the last 3 years. 6 of the 8 patients with CKD V, and 2 of the 5 patients with CKD IV had significant hypocalcaemia, with a corrected calcium <2.0 mmol/L, with the lowest corrected calcium of 1.18 mmol/L. Of these 8 patients, 3 patients had significant life-threatening complications requiring intensive monitoring.
Conclusions: Hypocalcaemia is a known side-effect of denosumab, but the risk of developing this in patients with severe CKD is much higher than is reported in the general population (0.05%). Based on this data, at our institution, we are no longer prescribing denosumab in this patient population, but further work needs to be done to further clarify if there are other risk factors apart from the renal impairment.

Thurs78

PHENOTYPIC ANALYSIS OF LYMPHOCYTE SUBSETS IN RENAL TRANSPLANT RECIPIENTS.

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Aim: To characterize peripheral blood lymphocyte subsets in renal transplant recipients.
Background: Lymphocyte depletion is a recognized complication of modern era immunosuppression used in renal transplant recipients. However, little is known about the degree of depletion, or the effects of these medications on the individual lymphocyte subsets.
Methods: Patients were invited by mail to participate in a study looking at immunological effects of immunosuppression in renal transplant recipients for whom we were the caring centre in 2013. Flow cytometry for lymphocyte subsets was performed, and the results analyzed in all patients who consented to participate. The data was correlated with baseline characteristics at the time of transplantation and at the time of testing.
Results: 148 patients consented to participate, with mean patient age of 55 years at the time of the study, 18% of patients were lymphopenic (total lymphocytes <1000 cells/μL). Majority of patients (128/148) exhibited CD19+ lymphocyte depletion. In addition, the severity of CD19+ lymphocyte depletion was profoundly low, with a median count of 75 cells/μL, (range 3-189 cells/μL). Increasing age and time post transplantation were positively correlated with CD19+ lymphocyte depletion. Of the 148 patients, 49% of patients had low CD3 counts (<1090 cells/μL), 51% of patients had low CD4 counts (<650 cells/μL) and 33% of patients had low CD8 counts (<330 cells/μL).
Conclusions: This study demonstrates significant depletion in all lymphocyte subsets in renal transplant recipients; in particular, significant depletion of CD19+ lymphocytes suggests B-cell depletion. This data underscores the need for further work to investigate the clinical correlates and sequelae of the lymphocyte depletion.

Thurs79

Crosthwaite A,[1,2], Velkoska E,[2] Roberts M, [3] Burrell L[2], Ierino F[1,2]

Serum angiotensin converting enzyme 2 (ACE2) activity following renal transplantation.

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2.Department of Medicine, Austin Health, The University of Melbourne
3.Eastern Health Integrated Renal Service

Aim

Angiotensin converting enzyme 2 (ACE2) is a novel regulator of the renin-angiotensin system that counteracts the adverse effects of angiotensin II. ACE2 activity predicts adverse events and myocardial dysfunction in non-transplant patients with heart failure(1) however there is limited data on the role of ACE2 in kidney transplant recipients. The aim of this study is to investigate the changes in plasma ACE2 activity in patients undergoing live donor renal transplantation.

Methods

This is an ongoing prospective cohort study of patients with end-stage kidney disease undergoing kidney transplantation. Blood collection is performed weekly for 12 weeks and then monthly for 12 months. Serum is transported on ice and aliquots frozen at -70^{o}C. ACE2 enzyme activity was measured using an ACE2-specific quenched fluorescent substrate assay. The rate of substrate cleavage is expressed as pmol of substrate cleaved per mL of plasma per minute. Values below are expressed as mean ACE2 enzyme activity ± Standard Deviation.

Results

Analysis of pre-transplant ACE2 plasma activity (n=12) demonstrated a baseline level of 18.4±13.2 which increased significantly at week one (53.0±27.9) ($p < 0.05$). ACE2 activity in subsequent weeks gradually reduced towards the baseline level – Week 2 = 31.8±11.5; Week 3 = 33.2±21.1; Week 4 = 30.0±15.2; Week 6 = 26.2±15.7; and Week8 = 20.1±8.5. Further analysis of continuing samples are in progress.

Conclusion

The present study demonstrates a significant surge in ACE2 during the critical early post-transplant period with physiological and immunological changes. The clinical implications of this early rise in ACE2 and compensatory regulatory role will be the focus of follow up studies.

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Thurs80

Crosthwaite A, [1,2], Clayton P,[3,4,] Roberts M, [1,2] Ierino F [1,2]

Modality of renal replacement therapy (RRT) and associated subtype of cardiovascular death.

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Aim

The impact of RRT modality on the aetiology of the high rates of cardiovascular death in end-stage kidney disease is poorly understood. The aim of this study is to characterize the cardiovascular death subtype according to RRT modality.

Methods

A retrospective observational study of Australian patients was performed using Australian and New Zealand Dialysis and Transplant Registry data (1992–2011). This included adult patients (n = 52945) receiving RRT (Peritoneal Dialysis (PD), Haemodialysis (HD), Renal Transplants (RT)) yielding 294009 years of RRT. Death rates were calculated according to RRT modality (including hours) and cause of death (CVD subtype: Ischaemic Heart Disease (IHD), Heart Failure (HF), Cardiac Arrest (CA), Withdrawal due to CVD). Poisson modelling calculated incident rate ratios (IRR) corrected for multiple variables.

Results

RRT modality was associated with the prevalence of CVD death subtypes. Compared with facility HD (< 15 hours/week), Home HD, and RT (but not PD) were significantly associated with reduced risk of all-cause mortality (RT IRR 0.30 (95%CI 0.29 – 0.32), p<0.001) and all CVD death subtypes. When comparing conventional hours dialysis (CH, <15 hours/week) and extended hours dialysis (EH, >15 hours/week), Home HD had reduced CA and IHD for both CH (CA IRR 0.78 (95%CI 0.66-0.93), p<0.05, IHD IRR 0.69 (95%CI 0.59-0.81), p<0.001) and EH (CA 0.53 (95%CI 0.41-0.70) p<0.05, IHD IRR 0.52 (95%CI 0.40-0.66), p<0.001) dialysis. HF (IRR 0.43 (95%CI 0.21-0.87), p<0.05) was significantly less common in home EH but not CH dialysis patients compared with facility HD CH patients.

Conclusion

Home HD and RT are associated with a reduced risk of all CV death subtypes. In addition, EH but not CH home HD is associated with a reduced risk of death due to HF.

Thurs81

Jennifer M Cori,[1,2] Therese Thornton,[1,2,] Fergal J O'Donoghue,[1,2,] Peter D Rochford[2], John Trinder[1], Amy S Jordan[1,2]

The effect of arousal and subsequent hypocapnia on genioglossus muscle activity in obstructive sleep apnea

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Aim

To determine whether hypocapnia following a large ventilatory response to arousal in obstructive sleep apnea (OSA), promotes further obstruction by reducing upper airway dilator muscle activity on return to sleep, as predicted by the current arousal model.

Methods

Data was obtained from 16 OSA patients who slept untreated and instrumented with standard sleep polysomnography, partial pressure of end-tidal CO_2 ($PetCO_2$) monitoring and intramuscular genioglossus electrodes (EMGgg). Post-study, NREM respiratory arousals were categorised by $PetCO_2$ relative to waking baseline on the last arousal breath immediately before return to sleep. Arousals 0-3mmHg below participant's waking baseline CO_2 were classified 'low'. Arousals 0-3mmHg above participant's waking baseline CO_2 were classified 'high'. Muscle and respiratory data at return to sleep were compared using a two-way repeated measure ANOVA (CO_2 condition-low vs. high) x (Breath-first five breaths of return to sleep).

Results

There were 376 low CO_2 arousals and 236 high CO_2 arousals. By design, CO_2 on the last breath of arousal was significantly less for the low condition compared to the high condition (38.7±2.7 vs. 41.4±2.7mmHg, p<.001). CO_2 condition effects were observed for Peak EMGgg with activity significantly elevated over breaths during return to sleep following low, versus high, CO_2 arousals (See Figure 1). The results are inconsistent with the current arousal model which would predict the low CO_2 arousals to have worsened muscle activity on return to sleep.

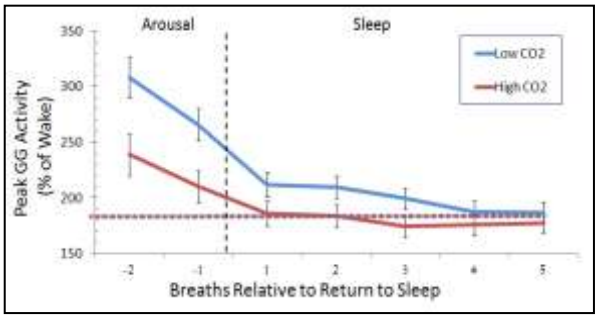

Figure 1.Peak EMGgg for low and high CO_2 conditions across arousal and sleep breaths

Conclusion

These results suggest a large ventilatory response to arousal leading to low CO_2 may not be detrimental in reducing dilator muscle activity. Rather the large ventilatory response to arousal appears to induce elevated muscle activity on return to sleep which would be considered protective of the upper airway. These findings may explain why studies that attempt to reduce incidence of arousal have shown mixed efficacy in reducing the AHI.

Thurs82

Roberts J, [1], Berlowitz DJ,[2], Spong J, [2]

Modification and validation of a motor-response dependent measure of sleepiness (OSLER-2) for use in spinal cord injury

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Aim
Daytime sleepiness is commonly reported by people with tetraplegia but full laboratory testing is logistically difficult. A simple, portable measure of daytime sleepiness is the Oxford Sleep Resistance Test (OSLER-2) which requires participants to respond to a displayed red light. If they fail to respond repeatedly then they are considered asleep. The test requires rapid, accurate finger responses and thus would give falsely low scores in people with impaired hand function. This study aimed to modify the OSLER-2 test and assess the measurement of daytime sleepiness using two alternative, non-hand held response switches.

Methods
The unit was modified to accept the standard hand-held switch, a head-tap switch ("jelly-bean") and a chin-tap switch ("wand"). The test presented an LED light centrally for one second every three seconds. The test terminated following either seven consecutive missed responses (errors) or forty minutes (maximum test length). Able-bodied, sleep restricted participants attended three testing days with switch order randomised. The test was performed in a darkened room four times over each day. Time taken from test start to errors if they occurred (sleep latency), performance times and errors were recorded. Video was recorded to qualitatively describe performance.

Results
22 participants (median age=21yrs)(IQR=6.3) with no diagnosed sleep disorders were recruited. Analyses were conducted on those who fell asleep only (sleep latency) and again including those who completed the test without falling asleep (performance times). Participants took longer to fall asleep when using the wand (M=1265sec(546)) than the jelly-bean (M=1102(544)) and hand-held switch (M=1037sec(557), $p<0.05$;CI:-60,-543). Performance times were slower with the wand (M=1788sec(695)) than the jelly-bean (M=1530sec(758); $p<0.05$;CI:72,589) and hand-held switch (M=1459sec(784); $p<0.01$;CI:101,619). There were no significant differences in sleep latency, performance times or errors between the jelly-bean and hand-held switches. Video suggested the wand was occasionally activated erroneously by forward (drowsy) head-drops.

Conclusion
The wand appeared to result in false responses, however the jelly-bean appeared to provide a promising alternative. Future research will validate this setup against EEG in tetraplegia and establish the range of "normal" values in this population.

Thurs83

Spong J, [1], Kennedy GA,[1,2,3], Tseng J, [4], Brown DJ[5], Armstrong S[3,6], Berlowitz DJ[1,5,7]

Sleep disruption in tetraplegia: a randomised, double-blind, placebo controlled crossover trial of 3mg melatonin

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Aim
Investigate the effect that 3mg melatonin supplementation has on objective and subjective sleep, quality of life and mood of people living with complete tetraplegia.

Methods
Two week run-in followed by three week nightly administration of 3mg melatonin or placebo, two-week washout and further three week administration of the opposite treatment. Four testing sessions were conducted; the last nights of the run-in, treatment and wash-out periods. Testing sessions involved recording full polysomnography, completing a questionnaire battery and collecting urine and blood samples. The questionnaires assessed mood, sleep symptoms and health-related quality of life and the urine and plasma samples assayed 6-sulphatoxymelatonin (aMT6s) and melatonin levels respectively. A sleep diary was completed throughout the study.

Results
Eight participants (mean(SD): age 49.5yrs(16), post-injury 16.9yrs(7.1)) were recruited in which seven concluded the protocol. Endogenous circulating melatonin was significantly higher ($p \leq 0.01$) following melatonin (urine:152.94ug/h(74.51), plasma:43554.57pM(33527.11)) than placebo (urine:0.86ug/h(0.40), plasma:152.06pM(190.55)). Subjective sleep improved significantly following melatonin specifically for duration of sleep per night and psychological wellbeing. Objective sleep showed a significant increase in light sleep with melatonin, with all other sleep parameters being unchanged.

Conclusion
These results suggest that increasing melatonin in people with complete tetraplegia is beneficial, especially for subjective sleep. Investigation of the pharmacokinetics of melatonin metabolism in this population is warranted.

Sponsorship:

This research was supported by funding from the Transport Accident Commission.

Thurs84

Sanjeevan Muruganandan[1], Melinda Lee Jackson[2,3], Thomas Churchward[1,2], Julie Tolson[1,2], Christopher Worsnop[1,2].

Anxiety and depression symptoms in patients being referred for an in-laboratory polysomnography.

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Introduction: Depression and anxiety often co-exist with sleep disorders. These are associated with reduced quality of life as well as increased morbidity. Depression may cause sleep problems, and sleep problems may cause or contribute to depressive disorders. Previous studies have demonstrated higher rates of depression in obstructive sleep apnoea (OSA); however there is less evidence about the prevalence of anxiety in this population.
Aim: The purpose of this study was to determine the prevalence of depression and anxiety symptoms in patients being referred for a diagnostic sleep study and to examine whether the severity of depression and anxiety symptoms are associated with the degree of somnolence and physiological sleep measurements.
Methods: Consecutive patients undergoing an overnight polysomnography in the sleep laboratory were assessed using the Epworth Sleepiness Scale (ESS) and the Hospital Anxiety and Depression Scale (HADS) for anxiety and depressive symptoms.
Results: 96 consecutive patients (mean age 50.6 years, 39 women) have been studied.
80.2% had an AHI ≥ 5, and 35% had AHI ≥ 30. On the HADS questionnaire, 25.3% and 10.3% of patients exhibited significant anxiety and depressive symptoms respectively by scoring more than 11 on these scales. Both anxiety and depression were significantly associated with ESS ($r = 0.57$; $p < 0.01$), and gender ($r = 0.3$; $p < 0.01$). Depression was also significantly associated with body mass index (BMI) ($r = 0.3$; $p=0.002$). There were no significant associations between HADS scores and PSG variables.
Conclusion: Depression and anxiety symptoms are highly prevalent in patients with OSA, and appear to be related to sleepiness rather than AHI.
Keywords: Hospital Anxiety and Depression Scale, depression, anxiety, obstructive sleep apnoea, in-laboratory polysomnography
Conflict of interest: None

Thurs85

Hannan LM[1,2,3,4], Sultan H[1], Road JD[4], McDonald CF[1,2,3], Berlowitz DJ[1,2,3], Howard ME[1,2,3]

Regional differences in care practices do not appear to influence health-related quality of life in ventilator assisted individuals.

This abstract is not included at the request of the author

Thurs86

Lee V, Jackson ML, Kangen S, Pickersgill, Trinder J

Autobiographical Memory Bias in Patients with Obstructive Sleep Apnea

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Aim
Obstructive Sleep Apnoea (OSA) has been associated with higher rates of depressive symptoms and recent studies have linked overgeneral autobiographical memory (AM) with the course of depression in depressed OSA patients.[1,2] However, it is unclear if overgeneral AM is specifically linked to depression in OSA patients or whether it can also be observed in OSA patients without depression, as a result of their sleep disturbance. This study aims to investigate whether AM overgenerality can be observed in OSA patients, both with and without co-morbid depressive symptoms.
Methods
To date, 17 moderate to severe OSA patients (mean AHI = 28.63 events/hr; age = 42.23 years), 10 of whom had significant depressive symptoms (Center for Epidemiology Studies - Depression (CES-D) score >16), and 18 healthy controls (mean AHI = 0.13 events/hr; age 31.61 years) have completed the AM Test, which assesses specific memory generation for 6 positive and 6 negative cue words.

Results
Preliminary data indicated that OSA patients with depressive symptoms recalled more overgeneral memories when compared to healthy controls ($p = 0.001$). There was also a trend-level increase in over general AM recollection in OSA patients without depression compared to healthy controls ($p = 0.053$), however no difference was observed between the two patient groups ($p = 0.10$). These data support previous findings of increased overgeneral AM in OSA patients with depressive symptoms. Inconsistent with predicted results, an overgenerality bias of AM memory was not established in OSA patients without depressive symptoms.
Conclusion
These early results suggest an autobiographical memory overgenerality effect in OSA patients with depressive symptoms. More data is needed to confirm current findings in non-depressed OSA patients.

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Thurs87

Dr Julian Nesci*, A/Prof Richard Newton, Dr Suzy Redston, Michelle Snell, Amy Kaplan, Susannah Cleeve.

Title: Schema modes of inpatients with Anorexia Nervosa: Implications for a functional model.

Objectives: The aim of the current study was to explore the relationships between the schema modes of inpatients with Anorexia Nervosa, their perceptions of the pros/cons of their eating disorders, and psychopathology.

Methods: The Young Parenting Inventory, Schema Mode Inventory, Pros and Cons of Eating Disorders scale, Eating Attitudes Test, Depression Anxiety and Stress Scale were completed by 19 consecutively consenting inpatients of a specialist Eating Disorder unit. Results were analysed using nonparametric statistical methods.

Results: Multiple significant correlations between schema modes, perceptions of the pros/cons of the eating disorder, mood symptoms, and eating psychopathology were found. Elevated scores for the Vulnerable Child, Compliant Surrenderer, Detached Protector, Detached Self-Soother, Punitive Parent, and Demanding Parent modes appeared particularly characteristic of inpatients with eating disorders. With the exception of the Punitive Parent, schema modes were not related to weight. Cluster analysis revealed that subgroups of participants could be identified based on their profiles of Vulnerable Child, Detached Protector, Punitive Parent modes, and levels of depression.

Conclusions: Schema modes are relevant in this population and may help understand the maintenance cycle of eating disorders in more nuanced ways than the current dominant models. The results add to schema mode models of eating disorders and the relationships between the modes and other variables are discussed in terms of hypothesized ‘vicious cycles’ of schema maintenance. As treatments on such a model have been successful for other populations, the current results suggest that schema therapy for anorexia nervosa may be beneficial. The assessment and treatment implications for each cluster are also discussed.

Thurs88

Adrian McFadden, [3] David Raffelt, [1] Alan Connelly, [1] John. S. Archer, [1,2,3]

Widespread Reductions in Cerebral Axonal Density in Lennox-Gastaut Syndrome

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2.Austin Health, Heidelberg, Vic., Australia;
3.University of Melbourne

Aim

Lennox-Gastaut syndrome (LGS) is a severe, childhood onset epileptic disorder with a wide range of underlying causes but characteristic electro-clinical features including tonic seizures. (1)

Recent studies have shown suppression of activity in the sensorimotor cortex during epileptiform discharges of LGS, suggesting that tonic seizures may involve motor pathways other than the corticospinal tract. (1-3)

The purpose of this study was to assess the structural integrity of the standard and alternate motor pathways in LGS patients and healthy controls, using a diffusion based MRI imaging technique. (4)

Methods

8 LGS patients (3 female; age 14.8 – 38.2), 8 controls (3 female; age 15.9 –37.5).

Diffusion weighted imaging – b3000 s/mm2, 60 diffusion directions.

Image pre-processing – motion correction, intensity normalization and bias field correction. Fibre orientation distributions computed using constrained spherical deconvolution. All fibre orientation distribution images registered to population average template.

Image analysis - whole-brain apparent fibre density calculated for each subject, then group comparison (AFD – 'MRtrix', www.brain.org.au/software/).

Results

Global reductions in apparent fibre density throughout cerebral white matter in LGS patients compared to controls. This reduction was most marked (~30%) in the corticospinal tract and mid-body of the corpus callosum.

Conclusions

Widespread reductions in apparent fibre density may reflect an effect of recurrent epileptic activity and seizures upon the brain. More marked decreases in apparent fibre density in the corticospinal tract suggests this pathway is more severely affected, and may be more susceptible to seizure related damage.

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Thurs89

Cortical thickness estimation in longitudinal stroke studies: a comparison of 3 measurement methods

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Background:

There is considerable controversy about the causes of cognitive decline after stroke, with evidence for both the absence and coexistence of Alzheimer pathology. A reduction in cortical thickness has been shown to be an important biomarker for the progression of many neurodegenerative diseases, including Alzheimer's disease (AD). However, brain volume changes following stroke are not well described. Cortical thickness estimation presents an ideal way to detect regional and global post-stroke brain atrophy. In this study, we imaged a group of patients in the first month after stroke and at three months. We compared three methods of estimating cortical thickness on unmasked images: one surface-based (FreeSurfer), and two voxel-based methods (a Laplacian method and a registration method, DiRecT). We used three benchmarks for our analyses: accuracy of segmentation (especially perilesional performance), reproducibility, and biological validity.

Imaging and analysis:

Whole brain images were acquired on a 3T Siemens TIM Trio Scanner with following parameters: TR/TE = 1900 ms/2.6 ms, TI =900ms, flip angle = 9°, slice thickness = 1.0 mm, matrix size = 256×256, number of slices = 160 and voxel size= $1\times1\times1mm^3$. Sixteen stroke patients (13 male), 10 healthy control participants (5 male) were included. The mean age of patients was 68.6 years (SD = 10.0) and the mean age of control participants was 67.8 years (SD = 5.5). Time difference between stroke and baseline scan in patient group was 20.24 (SD=8) days. Descriptive statistics were used to report cortical thickness measurements at each time point. Independent t-tests and Pearson's correlation coefficients were employed to establish whether percentage change values and percentage change were significantly different between methods.

Results:

The inclusion of manual boundary correction at the segmentation stage reduced the Laplacian estimates of cortical thickness from mean 4.9 mm to 3.5 mm. DiRecT estimates were much higher than in Test One: increasing from mean 1.3 mm to 4.6 mm. FreeSurfer estimates were not affected by this correction; remaining at mean 2.5 mm. Variability was slightly reduced from Test One in the Laplacian and DiRecT methods (SDs 0.19-0.36 mm), but they remained more variable than FreeSurfer (SDs 0.07-0.11 mm).In terms of percentage change between baseline and three months, all the methods produced estimates between -7.61%and 2.43%.

Correlations were compared for each hemisphere and at each time point for patients. When mean cortical thickness values from FreeSurfer and DiRecT were compared, significant correlations were identified ($r > 0.55$, $p < 0.001$ in all 4 cases). When FreeSurfer and Laplacian values were compared, again significant correlations were identified at baseline time point in both hemispheres($r > 0.50$, $p < 0.001$) but moderate negative significant correlation were identified at 3 month ($r = -0.50$, $p < 0.001$ in left hemisphere; $r = -0.37$,$p < 0.001$ in right hemisphere). When DiRecT and Laplacian values were compared, there was strong significant correlation in both hemisphere at baseline ($r = 0.90$, $p< 0.001$) but strong negative correlation at 3

months ($r = -0.77$, $p = 0.001$ and $r = -0.71$, $p = 0.003$ in both hemisphere separately). When percentage change values were compared, there was low correlation between FreeSurfer and DiRecT, in the left ($r = 0.15$, $p = 0.74$) and right ($r = -0.03$, $p = 0.79$) hemispheres. There was negative and moderate correlation between percentage change values for FreeSurfer and Laplacian, both in the left($r = -0.40$, $p < 0.001$) and right ($r = -0.22$, $p < 0.001$) hemispheres. There was moderate correlation between DiRecT and Laplacian percentage change ($r = -0.34$, $p < 0.001$ and $r = -0.50$, $p < 0.001$ in left and right hemisphere separately).

Conclusion:

All three methods performed poorly in peri-infarct regions due to limitations in current tissue segmentation methods, with FreeSurfer providing the best segmentation (and exclusion) of cortical ischemic strokes. The presence of significant regional change over time in a number of regions in control participants using VBMs suggest that such results should be interpreted with caution in highly-convoluted regions. VBMs were improved by manual boundary correction, a step that did not affect the SBM estimates. We conclude that FreeSurfer was a more robust method in the face of poorly segmented brain, but that SBM segmentation accuracy can be improved by voxel intensity correction, especially in the region of subcortical strokes. The two VBMs displayed similar regional thickness estimates between time-points, but FreeSurfer was more stable in both control and stroke populations. The smaller standard deviations in FreeSurfer measures indicated that this method may be more stable than the DiRecT method, although overall the Laplacian method had the least variability over time. We conclude that all 3 methods had acceptable test-retest reproducibility. Cortical thickness measured by FreeSurfer was found to be consistent with the ranges from post-mortem studies, with VBMs producing consistently higher results. We conclude that, with caveats and optimization of techniques, both surface- and voxel-based methods are valid for estimating cortical thickness in stroke populations.

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Thurs90

Changkakoti A, How JMY, Davey RA, Sartor DM

IS ALTERED GUT SIGNALLING ASSOCIATED WITH HIGH BLOOD PRESSURE IN OBESITY?

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Aim
We have previously demonstrated that the gut hormone, cholecystokinin (CCK) plays an integral role in homeostatic cardiovascular regulation. It acts via a centrally-mediated sympathetic reflex to elicit an inhibitory response in both renal and splanchnic nerves, resulting in vasodilation in the kidney and the gut to aid in digestive processes. However, in obese hypertensive animals, these responses are blunted, and we have hypothesised that this may be important in the aetiology of hypertension. To further explore the role of gut related signals in obesity-related hypertension, the aim of the present study was to determine whether physiological release of CCK using secretagogue administration into the gut, also induces blunted renal sympathetic nerve and arterial pressure (AP) responses, in a diet induced model of obesity.

Methods
Thirty-two male Sprague-Dawley rats were placed upon either a low fat diet (controls; n=8) or a MHFD (n=24) diet for 13 weeks. The latter animals were deemed obesity-prone (OP; n=8) or obesity resistant (OR, n=8) depending on whether their weight gains fell into either the upper or lower tertile, respectively. Rats were placed under isoflurane anaesthesia and tracheostomised for artificial ventilation. The brachial artery was cannulated for the measurement of AP. A cannula was also placed into the proximal duodenum for infusion of CCK secretagogues sodium oleate and soybean trypsin inhibitor. The left renal nerve was isolated and placed on silver wire electrodes for the recording of sympathetic nerve discharge (RSND).

Results
OP animals had a significantly greater weight gain and adiposity index compared to OR or control rats and a higher resting AP (P 0.05 for all compared to OR and control, ANOVA). Within 5 minutes of administration, the CCK secretagogues induced an inhibitory effect on RSND in control (-16± 5% decrease) and OR animals (-15% ± 5% decrease) that was significantly different to the excitatory effect seen in OP animals (1 ± 3% increase, P 0.05 compared to OR and control, ANOVA). Secretagogue administration was accompanied by a modest decrease in AP in controls (-4 ± 2%) and OR animals (-7 ± 4%), but an increase in OP animals (5 ± 5%).

Conclusion
Since over 50% of blood can be directed towards the gut and kidney after a meal, these results suggest that blunted vasodilator responses may increase vascular resistance and contribute to elevated blood pressure in obesity.

Thurs91

Patrick Carney[1,2,3], Sibel Saya[2], David Marco[2], Mark Newton, Sam Berkovic[2,3] & Anne McIntosh, [2,3]

Outcome of patients diagnosed with non-epileptic events in a first seizure clinic setting.

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2.University of Melbourne, Parkville, Australia.
3. Austin Health, Heidelberg, Australia.

Aim: We aimed to study the outcome of patients seen in a first seizure setting who were diagnosed as having a seizure mimic, (eg. syncope or paroxysmal non-epileptic seizure {PNES]), following their first presentation to clinic. We analyzed the concordance of the initial diagnosis with the follow-up diagnosis.

Methods: We studied patients who presented to clinic over a 10 year period (August 1996 – June 2006) who were diagnosed with a non-epileptic event. Patients were retrospectively classified by an epileptologist on the basis of the first clinic letter, and routine investigations when performed. Patients were invited to participate in a phone interview using a validated questionnaire. Links to the national death index was performed to identify deceased patients. Outcome questionnaires were reviewed by a single epileptologist and assessed on the basis of recurrence of events, requirement for treatment, and presence of new events. Concordance with the initial diagnosis was assessed.

Results: Ninety six patients participated in the interview (26.5% of eligible patients) and eight were deceased. Concordance data is shown in table 1. Of the deceased patients 1 was subsequently diagnosed with epilepsy and in 2 cases it could not be established whether their death was related to their reason for referral to the first seizure clinic.

Initial Diagnosis	**Subsequent event dx**			
	No events	Concordant	Discordant Non-epileptic	Discordant Epileptic
Syncope n=75	55	14	3	3 (4%)
Psychogenic n=5	2	1	0	2 (40%)
Other n=16	12	1	1	2 (13%)
Total 96	**69 (72%)**	**16 (17%)**	**4 (4%)**	7 (7%)

Table 1: Concordance between initial and subsequent diagnosis.

Conclusion
Syncope is the most common non-epileptic presentation to the first seizure clinic. Recurrent events are uncommon amongst these patients. However a small proportion of cases (7%) were subsequently identified as having epileptic seizures.

Thurs92

Milosescu V[1], Grinton B[1], Burgess R[1], Wood N[2], Crawford N[3], Scheffer IE[1,4]

The characterization of febrile seizures in children following vaccination

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3.Department of General Medicine, Royal Childrens Hospital, Parkville, Victoria;
4.Florey Institute for Neurosciences and Mental Health, Heidelberg, Victoria

Aim
Febrile seizures (FS) affect 3% of children and are the most frequent seizures associated with vaccination. The aetiology of post vaccination febrile seizures (PVFS) is not known, nor whether it differs from the aetiology of common FS. We aimed to investigate whether the semiology of PVFS differs from FS.

Methods
Patients with FS presenting to the emergency departments of two major children's hospitals over a 15-month period were recruited to the Paediatric Active Enhanced Disease Surveillance (PAEDS) study. Two cohorts were selected from the PAEDS study participants: all PVFS and children with age-matched non-vaccine related FS. A detailed seizure history was obtained from the patients' parents, and this information along with medical records and retrospective analysis of the PAEDS data, was used to compare the characteristics of the seizures in the two cohorts.

Results
Data was collected on 19 children with PVFS and 17 control cases with age-matched FS (total n=36). A comparative analysis did not show any statistically significant differences. Non-significant trends included a difference in the number of seizure types observed in PVFS: GTCS (13/19), GTCS + other (6/19) compared with GTCS predominating in FS (16/17) and GTCS + other (1/17). Duration was longer in PVFS with seizures >10 minutes in 15/19 patients, compared to FS control cases where seizures >10 mins were not seen in any individuals.

Conclusion
This study suggests PVFS and non-vaccine related FS are clinically indistinguishable, however the findings are limited due to the small sample size. Non-significant trends suggest that PVFS may be of longer duration and may be associated with more diverse seizure types.

Thurs93

KB Howell[1], JM McMahon[2], GL Carvill[3], A Poduri[4], MT Mackay[1], Rodriguez- V Casero[1], R Webster[5], D Clark[6], JL Freeman[1], S Calvert[7], S Mandelstam[1], HC Mefford[3], AS Harvey[1] and IE Scheffer[1,2,8]

The phenotypic spectrum of *SCN2A* encephalopathy: a diagnosis with treatment implications

This abstract is not included at the request of the author

Thurs94

Jeannette Milgrom[1, 2], Brian Danaher[3], John Seeley[3], Charlene Holt[1], Jennifer Ericksen[1], Alan Gemmill[1], Chris Holt[1], Jessica Ross[1], Milagra Taylor[3], Scott Stuart[4]

MumMoodBooster – An interactive internet treatment for postnatal depression

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Aim

We aimed to develop and test an internet intervention for women with a clinical diagnosis of postnatal depression (PND). There is little research examining the efficacy of internet-based treatment for PND despite the potential for improved treatment uptake and accessibility.

Methods

The online MumMoodBooster intervention is highly interactive, individually tailored, and embodies key Cognitive Behavioural Therapy elements as well as low intensity telephone support and a partner website. Development was an iterative process. Women were first surveyed on their attitudes to internet treatment for PND. Next, we conducted formative research using focus groups with postpartum women followed by systematic usability testing. Once functioning program components were created, participants directly tested user-system interactions. The resulting MumMoodBooster intervention was then evaluated in a feasibility trial with n = 53 women diagnosed with depression. Subsequently, we have conducted a pilot RCT and have commenced a large 3-arm RCT funded by NHMRC.

Results

Focus group feedback was overwhelmingly positive. System-testing showed MumMoodBooster to have excellent usability [1]. The feasibility trial showed good program engagement and treatment effectiveness [2] that exceeded the minimal clinically important difference. Preliminary pilot-RCT results also demonstrated reduced symptoms of depression, anxiety and stress. 76% of women receiving usual care still met DSM criteria for depression at 3-month follow-up compared to just 25% of women receiving the online intervention.

Conclusion

An internet program for PND has proven highly acceptable to women and has been shown to be clinically effective in treating major depression compared to usual care. The next phase of our research examines comparability to face-to-face treatment and self-guided delivery.

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Thurs95

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Abnormal functional organisation of cognitive networks in Lennox-Gastaut Syndrome

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Aim

Lennox-Gastaut Syndrome (LGS) is an epileptic encephalopathy associated with intractable seizures and cognitive impairment. We have recently shown that epileptic discharges of LGS recruit diffuse areas of association cortex, including elements of two cognitive networks that normally show independent signal fluctuations–the default mode network (DMN), which displays increased activity when the brain is at rest, and the task-positive network (TPN), which engages during tasks requiring attention. Here we sought to compare the interactions between these networks in a group of LGS patients and a group of healthy controls using resting-state functional MRI and seeded functional connectivity.

Methods

17 patients with LGS (mean±1SD age 34.41±10.7 yrs) and 17 healthy controls (27.8±6.4 yrs) were recruited. Each subject underwent up to 60 mins of task-free fMRI in a 3T GE scanner. For each subject, the mean signal was extracted from a seed in the right posterior cingulate (PC, involved in DMN), and then correlated with all brain voxels to produce individual maps of voxels correlated with the PC. Maps were averaged across each group separately and then compared using *t*-tests.

Results

i) Controls: an expected pattern of positive correlation was observed in other nodes of the DMN, including medial prefrontal cortex, angular gyri, and superior frontal cortex (Fig. 1a). ii) LGS: a more extensive pattern of connectivity was observed, with positive correlations seen in TPN regions including intraparietal sulcus (IPS) and lateral frontal cortex (Fig. 1b). iii) The between-groups comparison (LGS>controls) confirmed that LGS patients had significantly increased positive correlation with the TPN (Fig. 1c).

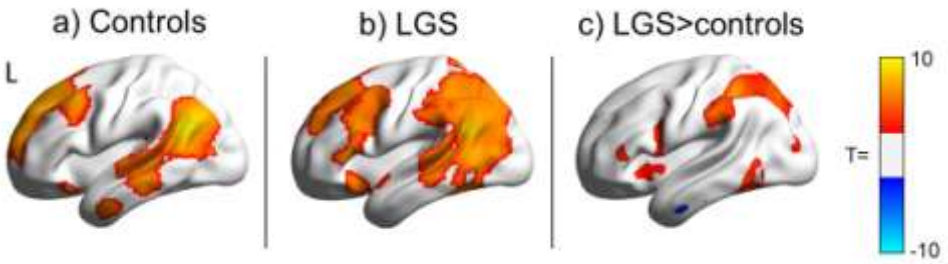

Figure 1. Significant positive correlations with DMN seed, displayed on left (L) lateral surface of template brain for a) control group, and b) LGS group. c) Group comparison showing regions of significantly increased correlation in LGS relative to controls. $p<.05$ cluster-level familywise error correction.

Conclusion

LGS shows abnormally increased signal co-fluctuation between the DMN and TPN. Altered interactions in these key cognitive brain networks may contribute to patients' cognitive impairment. These results support our previous observations that epileptiform activity in LGS is expressed through widespread areas of association cortex. We conceptualise LGS as a 'secondary network epilepsy', where the electroclinical manifestations reflect an abnormal mode of cognitive network behaviour.

Thurs96
Diagnosis and Gene Discovery in Rare Neurodegenerative Disorders of Early Adulthood

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Background
The diagnosis of young adults with neurodegenerative disorders encompassing cognitive decline, seizures and extra-pyramidal or cerebellar features is challenging. The neuronal ceroid lipofuscinoses (NCL) encompass genetically distinct neurodegenerative disorders that result from accumulation of abnormal lipopigment in human tissues.

Childhood forms are well-recognized and relatively easily diagnosed by established pathological criteria and heterogeneous genetic causes are now known. The adult form, known as Kufs disease, is rare and more difficult to diagnose due to sparse pathological findings that are hard to distinguish from normal age-related changes. Whilst molecular genetic abnormalities have been discovered in a subset of patients, many reported cases remain unsolved.

Aim
To facilitate genetic diagnosis and enhance research in unsolved Kufs disease cases through the establishment of the **Adult NCL Gene Discovery Consortium**, involving groups from the UK, Europe, USA, Canada and Australia.

Methods
Consortium members pooled 48 familial and sporadic unsolved cases into a shared database. Expert clinicians and neuropathologists established diagnostic criteria for Kufs disease. Each case is given a final classification of ‘definite Kufs’, ‘probable Kufs’, ‘possible Kufs’ or ‘not Kufs’ based on the available clinical, biochemical and histopathological data.

All cases, except those classified as ‘not Kufs’, will be subjected to comprehensive genomic analysis including exome sequencing, copy-number analysis and gene expression studies.

Results

Of the 48 cases, detailed review with further investigation established an alternate diagnosis in eight. These comprise single cases of Huntington disease, Leigh Syndrome, early-onset Alzheimer disease, cerebral lymphoma, ARSACS, NBIA (neurodegeneration with brain iron accumulation), neuroserpinopathy, and Niemann-Pick disease. Misdiagnosis was usually due to over-interpretation of pathological analyses in peripheral tissues. Additionally, two cases were re-classified as childhood or juvenile NCL.

Nine of the remaining 38 cases fulfil our established clinical and pathological criteria of Kufs disease (4 definite; 2 probable; 3 possible). Seven cases have features suggesting an alternate diagnosis, but no specific condition was identified, in five the data were inadequate for classification and 17 cases remain under evaluation.

Conclusion
We conclude that although diagnosis of Kufs disease is challenging (even in expert hands misdiagnosis occurs), there is group of cases with an unsolved molecular basis. The **Adult NCL Gene Discovery Consortium** has the ability to facilitate the identification of new causative genes, with comprehensive genomic analyses underway.

Thurs97

Apparent Fibre Density (AFD) Analysis Reveals Decreases in Axonal Density in the White Matter Pathways of Patients with Grey Matter Heterotopia

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This abstract is not included at the request of the author

Thurs98

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Mutation of the Nuclear Lamin Gene *LMNB2* Causes Progressive Myoclonus Epilepsy with Early Ataxia

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Aim To discover the gene responsible for a recessive progressive myoclonic epilepsy with early ataxia

Methods We ascertained a consanguineous Israeli Arab family segregating an autosomal recessive progressive myoclonic epilepsy (PME) with early ataxia. Myoclonic and tonic-clonic seizures commenced at 6-7 years of age and progressively become more severe. Ten members of this family were genotyped to perform genetic linkage analysis and the disease locus was narrowed to a single region on chromosome 19.

Results In one gene in the linkage region, *LMNB2*, a novel homozygous missense mutation was identified that segregated in the family and was not found in matched controls. Analysis of whole exome data on 83 other PME cases did not reveal further *LMNB2* variants. *In vitro* assembly analysis of lamin B2 protein carrying the mutation showed a distinct defect in its association to fibrillar arrays – a loss of order relative to the assembly of the wild-type protein.

Conclusion
Our data suggest that disruption of the organisation of the nuclear lamina in neurons causes progressive myoclonic epilepsy and early ataxia in this family. This extends the etiological spectrum associated with this disease.

Thurs99

The Fampridine Upper Limb Study (FULS)

Modified-release 4-aminopyridine (fampridine) is licensed in Australia for the symptomatic treatment of walking disability in patients with multiple sclerosis. Its potential for use in other neurological domains, its mode of action, and the reasons for widely variable responses in treated patients, remain unknown. This study aims to test the following hypotheses:

1. Modified-release fampridine is associated with improvements in upper limb impairment in patients with multiple sclerosis.
2. Objective electrophysiological measures differ between patients on and off treatment, and can potentially be used to differentiate clinical responders and non-responders.

Study design:

Substudy 1: Randomised, double-blind, placebo-controlled trial in patients with MS and upper limb impairment. Clinical and electrophysiological measurements are made at baseline, conclusion and on three occasions while participants are taking fampridine-MR or placebo.

Substudy 2: Single-blind study in patients already taking fampridine for walking disability. Clinical and electrophysiological measurements are made in patients on (twice) and off (once) drug, by a blinded assessor.

Clinical measurements:

- 9-hole peg test
- Upper limb grip strength
- Sensory discrimination capacity
- Visual acuity and contrast sensitivity
- Modified Fatigue Impact Scale

Electrophysiological measurements:

- Resting motor threshold
- MEP recruitment curves
- Short-ISI paired pulse TMS
- Median nerve SSEP
- VEP
- Median NCS

Primary Outcome Measure: clinical response to fampridine as measured by performance on the nine-hole peg test.

Secondary outcome measures:

- correlation between clinical and electrophysiological measures in responders as compared with non-responders
- changes in upper limb grip strength, visual acuity and sensory discrimination capacity
- changes in in modified fatigue impact scale score

Our hypothesis is that clinical responders to fampridine will show increased motor pathway recruitment and cortical excitability with TMS measures, with improvements in latency and amplitude of evoked potential responses.

This novel study seeks to determine whether fampridine can have beneficial effects in domains other than ambulation. By combining clinical and electrophysiological measures, we seek to better understand the mode of action of fampridine as a symptomatic therapy for Multiple Sclerosis and the reasons for the wide observed variation in clinical response.

Thurs100

TO TP[1], Story DA[2], Heland M[3], Bruce P[4], D'Alterio C[4], Hardidge A[5]

A multifaceted approach to improve medication management when patients are fasting or nil by mouth

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Background
Confusion about managing medications when patients are *fasting* or *nil by mouth* affects patient safety and has caused adverse outcomes for patients.

Aim
To improve the management of medications when patients are *fasting* or *nil by mouth*.

Methods
An implementation process that simplified and standardised medication administration instructions and included the use of decision aids, champions, opinion leaders and audit/feedback was rolled out on a surgical ward. Interventions focussed on distinguishing *fasting* from *nil by mouth* with respect to medication administration. All medications should be given unless advised when a patient is *fasting* whereas nothing is to be given orally if *nil by mouth* – a different route of administration should be sought. Decision aids were colour coded using the traffic light system (i.e. red/do not give, amber/check before giving, green/give) to aid association. Data on inappropriate medication omissions were collected from approximately 20 consecutive preoperative non-elective orthopaedic surgery patients, per month, 8 months pre- and post-intervention. Logistic regression was used to compare the proportions and odds of inappropriate medication omission pre- and post-intervention.

Results
There were 160 and 159 patients pre- and post-intervention, respectively. Inappropriate medication omissions decreased from 35% (260/748, 95% CI 31% – 38%) pre- to 9% (73/817, 95% CI 7% – 11%, OR 0.18, 95% CI 0.13 – 0.27, p<0.0001) post-intervention. There was also a decrease in the percentage of patients with one or more inappropriate omissions (67%, 95% CI 59% – 74% pre- compared with 28%, 95% CI 21% – 36%, OR 0.20, 95% CI 0.12 – 0.32, p<0.0001, post-intervention).

Conclusion
Our results suggest that a multifaceted approach, which simplified and standardised medication administration instructions and included the use of decision aids/reminders, was associated with an improvement in the management of oral medications in non-elective orthopaedic surgery patients who were *fasting* or *nil by mouth* preoperatively.

Thurs101

TO TP[1], Story DA[2], Heland M[3], Bruce P[4], D'Alterio C[4], Hardidge A[5]

Developing strategies to improve the management of medications when fasting or nil by mouth

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Medication administration errors have occurred when patients have restrictions on oral intake such as when *fasting* or *nil by mouth* and this has led to adverse outcomes for patients.

Aim: To develop strategies to improve medication adminstration in patients who are *fasting* or *nil by mouth*.

Methods: The Perioperative Medication Committee was formed to investigate potential causes of medication administration errors in *fasting* or *nil by mouth* patients. Investigations included review of anecdotal incident reports, floor staff consultation, a staff survey on medication administration and a snapshot audit. Strategies were developed with stakeholders, including pharmacists, surgeons, speech pathologists and nurses, to address the issues identified.

Results: There was confusion about how to manage medications when patients are *fasting* or *nil by mouth*. The terms *fasting* and *nil by mouth* were being used interchangeably, which contributed to the confusion. The Medications & Oral Intake policy was developed with the primary aim to distinguish *fasting* from *nil by mouth* with respect to medication administration. All medications should be administered unless advised otherwise when *fasting* and absolutely no oral administration, including medication, is permitted when *nil by mouth* and an alternative route should be sought. This policy was supported by tools such as bedside signs, a decision flowchart, a lanyard card and logo. The tools were colour coded using the traffic light system (i.e. red/don't give, amber/check before giving, green/give) to aid association. Feedback from staff indicate the policy and its associated tools are applicable, practical and well received.

Conclusion: The Medications & Oral Intake policy and associated tools, which distinguished *fasting* from *nil by mouth* in terms of medication administration, were developed to improve medication management when patients are *fasting* or *nil by mouth*. Feedback to-date suggests that the policy is appropriate, practical and well-accepted by staff.

Thurs 102
Setup and Initial Evaluation of a Nurse-Led Surveillance Flexible Cystoscopy program

Thurs103

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Haemodynamic Effect of Intravenous Paracetamol in Healthy Volunteers

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Introduction:

IV paracetamol is one of the most ubiquitously used pharmaceuticals in the hospital setting worldwide; yet may be associated with transient hypotension in ICU patients[1, 2]. There are no studies investigating the haemodynamic effects of IV paracetamol in healthy volunteers and little is known about the effects of the 3.91g of mannitol present in the majority of IV paracetamol formulations available. We tested the hypothesis that IV paracetamol (+ mannitol) and IV mannitol would have adverse effects on blood pressure (BP) in healthy volunteers compared to IV 0.9% normal saline (NS).

Methods:

With Austin HREC approval we performed a double-blinded, triple-crossover, controlled trial (RCT) of 24 adult healthy volunteers. Each volunteer received paracetamol (1g paracetamol + 3.91g mannitol/100mL IV), mannitol (3.91g mannitol/100mL IV) and 100mL 0.9% NS over a 15 minute infusion period. A minimum washout period between treatment arms was 24 hours. Endpoints were continuously measured over 1 hour using the Edwards Lifesciences Nexfin™ and included MAP, SBP, DBP, HR, SV and CI.

Results:

IV paracetamol was associated with a decrease in BP from baseline during infusion. Results are described as alterations from baseline. In paracetamol, at infusion end (T60): MAP -1.85mmHg, SBP -0.54mmHg and DBP -1.92mmHg, $p<0.0001$. Post-infusion, BP returned to baseline and continued to increase. At T60, BP in paracetamol was evenly matched with mannitol: MAP (+1.96mmHg vs. +1.95mmHg), SBP (+5.15mmHg vs. +5.89mmHg) and DBP (+1.03mmHg vs. +0.77mmHg). NS had a significantly increased BP at T60: MAP +4.31mmHg, SBP +8.91mmHg and DBP +2.28mmHg, $p<0.0001$. SV at T60 was similar in mannitol and NS (+5.19mL vs. +5.22mL) vs. paracetamol +3.58mL. HR was similar in paracetamol and mannitol (-2.47bpm vs. -2.85bpm) vs. NS -1.49bpm, $p<0.0001$. CI at T60 was significantly higher in NS +0.1L/min/m^2 vs. paracetamol -0.01L/min/m^2 and mannitol +0.02L/min/m^2.

Conclusion:

IV paracetamol reduced BP in healthy volunteers during the infusion period. End-study BP variables were comparable between paracetamol and mannitol. Transient alterations in BP reported in this healthy volunteers study warrants further studies to determine the haemodynamic effects of IV paracetamol and its mannitol content in patient subgroups who are at risk of haemodynamic instability e.g. surgical and ICU patients.

Thurs104

Hall, S. [1], Wrench, J. [1,2], Connellan, M. [1], Borcic, N. [1], & Wilson, S. [1,2]

Emotional intelligence in acquired brain injury: A new direction for neuropsychological assessment?

This abstract is not included at the request of the author

Thurs105
Bardin L , [1]

'Better Backs @ Austin' group back rehabilitation programme: an audit of outcomes to determine programme effectiveness.

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Aim
'Better Backs @ Austin' is a novel 8-week (16 sessions) programme for group back rehabilitation, comprising spine education and supervised therapeutic exercises for patients with chronic low back pain (CLBP). The programme, which aims to integrate evidence-based components of back rehabilitation, has achieved high patient satisfaction[1]. Effectiveness of response to rehabilitation is measured by assessing changes in outcomes of pain, function, flexibility and global rating of change. This study evaluated these outcomes in patients who completed the 8-week programme.

Methods
Patients with CLBP (>6 weeks) were enrolled and data collected prospectively for two years for participants at baseline, 4 and 8 weeks for pain (numeric and descriptive), function (Roland Morris Questionnaire (RMQ) and Oswestry Disability Index) and flexibility (fingertips-to-floor). Global ratings of change (GROC) were obtained after 4 and 8 weeks in the programme. Outcomes from patients who had completed a minimum of 12/16 sessions were compared using Kruskal-Wallis analyses. Austin Health ethical approval was obtained.

Results
Outcomes from 21 patients (age (yrs): 31-73, mean 58.9) were analysed and compared to evaluate change across all domains at 4 and 8 weeks. Statistically significant change was noted at 8 weeks for outcomes of descriptive pain ($p<0.017$), function (RMQ) ($p<0.046$) and flexibility ($p<0.011$), but not at the shorter duration 4 week mark. GROC ($p<0.0001$) indicated significant patient-report change at both 4 and 8 weeks. The Better Backs @ Austin programme was effective to i) reduce pain ii) improve function iii) improve flexibility in patients with CLBP. Participation for 8 weeks' duration is important and is consistent with previous studies.

Conclusion
The 'Better Backs @ Austin' group back rehabilitation programme was effective to improve clinical outcomes in CLBP patients who adhered to supervised exercise. This suggests successful implementation at Austin Health. As group back rehabilitation is more cost-effective than individual physiotherapy[2], it merits further research in the public healthcare sector.

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Thurs106
SpinalCARE: FROM INCEPTION TO IMPLEMENTATION.

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Introduction and Aims

In Victoria, Australia the Victorian Spinal Cord Service (VSCS) provides comprehensive care to people with SCI from accident for the rest of their lives. Until recently, the VSCS had no electronic register of its patients, and provided only limited case registration and injury surveillance information to the Australian Spinal Cord Injury Register (ASCIR). The VSCS identified the need for a secure, web-based registry that could facilitate a range of future research questions, quality improvement programs and international collaborations. With no provision for ongoing funding, an affordable, sustainable model for data entry was sought.

Material and Methods

Researchers, clinicians and service managers undertook an iterative approach to collating a dataset for the VSCS, through mapping of the clinical pathway to available national and international datasets and benchmarking with other units. This enabled a comprehensive, parsimonious dataset to be assembled and documented in a data dictionary. The dataset consists of six of the International SCI datasets, the ASCIR dataset, the Australasian Rehabilitation Outcomes Centre (AROC) dataset, five clinical indicators, time based information about the patient journey, and patient outcome measures, including the ASIA impairment scale (AIS) and the Spinal Cord Independence Measure (SCIM). This dataset was translated into SpinalCARE, a secure web-based database. The provision of search, export and clinical reporting functions were built into the system to provide a strong incentive for clinical staff to enter data. VSCS clinicians developed a protocol for how data would be collected and audited within existing resources. All clinical staff were trained in use of the database and provided with supporting documentation.

Results

Data capture for all incident cases of SCI commenced in December 2013. Thirty-seven new cases have been registered and data entry is proceeding well. The hospital discharge summary is built into the database and over 80% of the information required for this report is automatically populated by the database. The automated discharge summary will reduce duplication and inconsistencies between disciplines and not increased clinician workloads. More clinical reports will be developed in the coming months. Despite some initial teething problems, clinical staff have expressed overall satisfaction with the new system. A thorough review of the database and systems will be conducted in September 2014.

Conclusion(s)

Thankfully SCI is a rare injury, but with this low incidence come immense challenges in our searches for improvements in health status, clinical care and community participation. It is increasingly apparent that the key to achieving these improvements lies with affordable, scalable and effective collaboration. This project has successfully developed a low-cost model for local implementation of the international SCI datasets, and established processes for embedding data collection within usual care.

Thurs107

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EPIDEMIOLOGY OF CHRONIC DIALYSIS PATIENTS REQUIRING INTENSIVE CARE: A SINGLE HOSPITAL 10-YEAR COHORT STUDY.

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Introduction:
Dialysis patients have an increased risk of hospital admission and acute illness. The long-term outcomes of dialysis patients admitted to the Intensive Care Unit (ICU) are not well understood. We aimed to determine the patient characteristics and survival of dialysis patients requiring ICU admission.

Methods:
We retrospectively linked data between the Intensive Care databases (AORTIC©) and the Austin Health's Nephrology Department's register of dialysis patient to identify all chronic haemodialysis patients admitted to ICU from 2003- 2013. Patients undergoing peritoneal dialysis, or who underwent kidney or liver transplant pre-admission were excluded.

Results:
We identified 229 chronic haemodialysis patients who were admitted during the study period. The median (IQR) age was 66.5 yrs (57.3-75.6) years, 141 (62%) were male, and the median duration of dialysis prior to ICU admission was 2.7 (0.93-6.9) years. The mean APACHE3j score was 77±24.4. Most patients were referred to the ICU from the Emergency Department (113, 49%) or the inpatient ward (103, 45%). Sepsis (47 (20%) and cardiac events (40, (17%) were the most common admission diagnoses. Key clinical features upon admission included a lowest mean systolic blood pressure of 99±mmHg and serum albumin 25.3±6.2 g/L. Seventeen (7.4%) died in the ICU and 41 (18%) died during that hospital admission. Of the 143 patients followed up for 5 years; the 12 month, 24 month and 5 years survival was 80 (56%), 61 (43%), 23 (16%) respectively.

Conclusions:
Patient with undergoing haemodialysis who experience critical illness are commonly male and are admitted with sepsis. Two and five year mortality appears to be higher post critical illness compared to national registries. Further research is required to identify factors that may allow prediction of early mortality post critical illness.

Thurs108

Fisher C[1], Hilton A[1], Nunn A[2], Jones D[1]

OMISSION IN THE CLINICAL HANDOVER OF ACUTELY INJURED SPINAL CORD INJURED PATIENTS.

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Introduction:
Accurate clinical handover is important in ensuring safe and effective continuum of care. Poor handover exposes patients to unnecessary risk. Inter-hospital transferred critically ill patients may be at even higher risk. In Victoria acute traumatic spinal cord injured patients are often transferred between hospitals. It is currently unknown the specific areas of omission and their frequency, in the handover of these patients.

Method:
We performed a 3-year retrospective study looking at omissions in the written clinical handover of inter-hospital transferred acute traumatic spinal cord injured patients. The frequency of key variables required for clinical handover were recorded. Transfers were sub-divided into early (D0-2 post injury) and late (D7 + post injury) transfers. Early and late transfers underwent 2 group comparisons. Research was approved by Austin Health Research and Ethics Committee.

Results:
One hundred and twenty-seven patient transfers were analysed. Early transfers composed 85/127 (66%) and late transfers 33/127 (26%) of total transfers. The frequency of a provided referral letter was 58/127 (50%), referring medical team 75/127 (60%), and discharge summary 51/127 (42%). The frequency of provided operative details was 30/39 (76%) and post-operative orders 23/39 (59%). Early transfers had statistically significant more omissions of the discharge summary ($p<0.0001$), referring medical team ($p<0.01$), and relevant investigations ($p<0.001$), with a trend to towards statistical significance of a missing post-operative plan ($P= 0.072$).

Conclusions:
The clinical handover of acute spinal cord injured patients has numerous omissions. These omissions may increase this population's risk of morbidity and mortality. Our study highlights deficiencies of clinical handover and highlights areas for improvement. Consideration of the role and potential impact of handover failure in inter-hospital transfers requires further research.

Ellis A,[1,2,] Zeglinski P,[1,2], Brown D,[3,] Frauman A,[1,2,] Millard M,[3,] Furness J,[3,4,]

Pharmacokinetics of the Ghrelin agonist Capromorelin in a single dose phase-1 safety trial in spinal cord injured and able bodied volunteer participants: Towards Improved Quality of Life for SCI Patients.

This abstract is not included at the request of the author.

Tues 34

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Multi detector (64+) CT angiography of the lower limb in symptomatic peripheral arterial disease - preliminary assessment of accuracy and inter-observer agreement in an Australian tertiary care setting

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Aim

Multidetector computed tomography angiography (MDCTA) is a widely available technology commonly used in the initial evaluation of peripheral arterial disease (PAD). Meta-analyses comparing mainly 2-, 4-, and 16-detector MDCTA with the gold standard, digital subtraction angiography (DSA), have shown high accuracy in patients with symptomatic lower extremity PAD [1,2]. However, limitations of CTA include its susceptibility to 'blooming artefacts' when vessel wall calcifications are present, and potentially decreased accuracy in detecting and quantifying in-stent restenosis due to beam hardening artefact [3,4]. The purpose of this study was to evaluate accuracy and inter-observer agreement of current generation (64+ detector) MDCTA for detection of haemodynamically significant stenosis in patients with symptomatic PAD in a tertiary care setting using DSA as the reference standard.

Methods

A retrospective cross-sectional study was performed in a preliminary group of 10 patients (mean 64 yrs, 8 male) with symptomatic PAD who underwent lower limb MDCTA and DSA. Arterial stenosis was independently graded on both MDCTA and DSA as not significant (<50%) or haemodynamically significant (≥50%) in the infrarenal aorta and 15 defined pelvic/limb segments by 2 vascular interventional radiologists. Sensitivity, specificity and accuracy of MDCTA were calculated in segments where DSA was available. Inter-observer agreement was assessed with Cohen's kappa statistics for all segments visualised on MDCTA.

Results

75/211 (35.5%) arterial segments had haemodynamically significant stenosis at DSA. Overall, MDCTA had sensitivity of 81.8%, specificity of 83.3%, PPV of 66.5% and NPV of 91.9% for significant stenosis. There was substantial overall inter-observer agreement (kappa statistic 0.74). On segmental analysis, relatively inferior sensitivity and specificity was observed below the knee with only fair inter-observer agreement (kappa 0.39) within the dorsalis pedis artery in particular. Calcification was a factor in diagnostic confidence and accuracy of stenosis assessment .

Conclusion

Our preliminary results demonstrate reasonable sensitivity and specificity of MDCTA in detecting significant arterial stenosis in a symptomatic PAD population. Sensitivity, specificity and inter-observer agreement was relatively poor in the infrageniculate

arteries where assessment may be challenging due to small vessel caliber and vessel calcification. Further analysis of a larger population will be conducted to investigate factors impacting accuracy of MDCTA.

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Put a SOCK on it: Denoising fMRI of language using automated ICA artifact identification

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BACKGROUND & INTRODUCTION

Data driven techniques such as spatial Independent Component Analysis (ICA) can be employed to de-noise fMRI data prior to a General Linear Model (GLM) analysis. However this requires labelling of each independent component as either noise or signal of interest. To avoid laborious manual classification, automated algorithms have been developed that utilise training data to assist the classification (e.g. De Martino et al., 2007; Tohka et al., 2008; Salimi-Khorshidi et al., 2014). However, training data is not always available. We have developed a fully automatic method for the identification of artifact in independent components (ICs) of fMRI, that does not require the user to train the algorithm. Our method, dubbed Spatially Organised Component Klassifikator (SOCK), has been shown to remove a substantial number of unwanted noisy components in ICA analyses of resting-state fMRI data (Bhaganagarapu et al., 2013). In the present study we assess the use of SOCK to automatically filter/de-noise a conventional fMRI block-design language study.

METHODS

Subjects / Data: 29 healthy controls (age rage 7 - 70, mean±SD = 27±17 years, 18 male) who had undertaken a conventional fMRI language study in a 3T MRI scanner at our institute (Abbott et al., 2010).

Task: Four 30-s blocks of a covertly performed orthographically cued lexical retrieval (OLR) task alternating with blocks of rest (visually presented cross hair). During task blocks the subjects were required to silently think of as many words they could beginning with a visually presented letter (the letter changed each 15 seconds).

Data pre-processing: Used SPM8 (www.fil.ion.ucl.ac.uk/spm) and the iBrain Analysis Toolbox for SPM (www.brain.org.au/software) and included slice-timing correction, realignment, non-linear warping to MNI space, 8mm FWHM Gaussian smooth. Processed data saved at voxel size 3mm x 3mm x 3mm.

Overview of the de-noising process:

1. ICA was applied to the pre-processed fMRI data using MELODIC (Beckmann and Smith, 2004), yielding both thresholded and unthresholded ICs and associated time courses and power spectra.

2. ICs were classified into one of two categories using SOCK: artifact or unlikely artifact (see below).

3. All ICs classified into the artifact category were discarded and a de-noised fMRI data series was constructed with only the unlikely artifact ICs.

SOCK classification: SOCK classifies ICs using features likely to indicate motion, physiological noise, or machine or undetermined noise. The algorithm is described in detail elsewhere (Bhaganagarapu et al. 2013) and our implementation is freely available at www.brain.org.au/software. Briefly, individual slices in each IC are assessed for:

1. Smoothness: contributions of low and high spatial frequency content, to detect components with a large number of isolated very small clusters or isolated voxels (i.e. a "spotty" appearance)

2. Edge activity: extent of activity in an edge mask.

3. Ventricular activity: extent of activity in a CSF mask.

4. Temporal Frequency Noise (TFN): the power in temporal frequency beyond 0.08Hz.

Based on these measures and with the assistance of k-means clustering, ICs dominated by artifact are classified into an Artifact category and all other ICs (i.e. those containing possible neuronal signal) into an Unlikely Artifact category.

SOCK Evaluation: We investigated the effectiveness of the SOCK de-noising filter on the detection of activation within a cortical language Region of Interest (ROI, figure 1). We compared the significance of activation obtained in a conventional GLM analysis of the data with and without the use of SOCK. For the purposes of this comparison, for each subject we considered their 'anytime active voxels' defined as voxels that were active in at least one of their analyses (i.e. with or without SOCK) at a lenient threshold of p<0.001 (uncorrected).

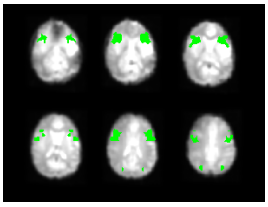
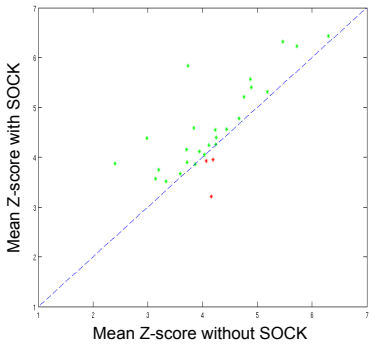


Figure 1: Cortical language ROI within which fMRI activation was assessed.

RESULTS

ICA yielded an average of 22 components per subject (range 13 - 32). SOCK classified between 25% and 65% of each subject's components as artifact (mean 43%). These ICs were discarded to construct de-noised fMRI data. Mean of 'anytime active' within-ROI Z-scores are compared with and without SOCK in figure 2 and were significantly higher for the with-SOCK analysis (Student's T-test; p<0.05). Example SPMs are shown in figure 3.

Figure 2: Means of Z-scores of 'anytime active' voxels within the ROI for each subject. In 26 of the 29 studies (90%), the mean was higher or the same when using SOCK as a filter (green points), indicating SOCK successfully removed substantial artifact components.



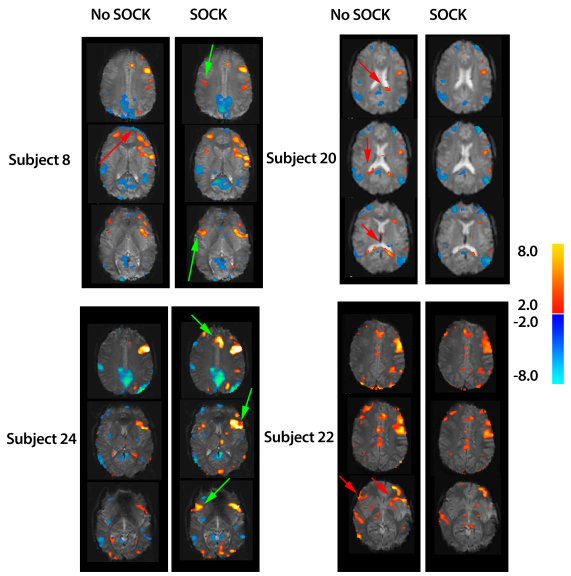


Figure 3: SPMs of 4 subjects without using SOCK (left columns) and with SOCK (right columns). Additional activity likely to be of neuronal origin is revealed after SOCK filtering (highlighted by green arrows). SOCK has also removed spurious activity (see red arrows; for example around the edge of the brain in Subject 8 and ventricles in Subject 20). In subject 22, SOCK caused the largest reduction in significant activity within the ROI, however much of this was likely artifact due to considerable task-correlated motion in this subject.

CONCLUSION

We have demonstrated the effectiveness of ICA + SOCK applied as an automated denoising filter for conventional GLM analyses of fMRI data. In this language study, application of the filter almost always improved sensitivity to detect stimulus-related activation within the language ROI.

ACKNOWLEDGMENTS

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Tues137
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New Oral Anticoagulants in the Elderly: What is the evidence?

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Aim

New oral anticoagulants (NOAC) are non-inferior to warfarin in terms of efficacy and primary outcomes for their prescribed indications, including prevention of stroke and systemic embolism in patients with non-valvular atrial fibrillation (AF)[i,ii, iii]. No studies have shown superiority to warfarin for these indications other than patient convenience, and reduced rates of intracranial haemorrhage. Their convenience has resulted in their rapid adoption. However, there remain specific concerns regarding lack of reversibility and laboratory monitoring, which are particularly important in at risk populations such as those with renal failure, extremes of weight and the **elderly**. The aim is to review the specific considerations in elderly taking NOAC and suggest guidelines for the safe prescription of NOAC in this **frail** population.

Methods

Literature review until July 2014 was performed and included a sub analysis of the landmark NOAC randomized controlled trials: RE-LY[1], ROCKET-AF[2], ARISTOTLE[3]. A retrospective analysis of bleeding complications at the Austin Hospital over a 14month period was also performed.

Results

The Elderly are at greatest risk of non-valvular atrial fibrillation thus requiring anticoagulation[iv] and are also more likely to bleed. Local analysis of >500 patients demonstrated 79% of bleeding complications occurred in patients over 70 years and 51% in >80 years (*Figure2*). Australian population studies show that the elderly are also more likely to fall and sustain fractures requiring surgery[v,vi]. The landmark NOAC trials demonstrated that at best, 25% of study participants were aged >80years, had a creatinine clearance <50ml/min or were <60kg. Recently published sub-analyses of patients aged >75 years favoured NOAC in reducing stroke or systemic embolic events compared with warfarin irrespective of age, mainly driven by a reduction in haemorrhagic stroke[vii,viii]. Higher rates of major extra-cranial bleeding with NOAC compared to warfarin was also significant, more so in the elderly[ix].

Conclusion

The elderly have a disproportionately high risk of bleeding, falls and fractures requiring operative intervention and most clinical trials are not representative of 'real world elderly'. These factors are important considerations in the use of anticoagulation, specifically the use of NOAC due to the lack of monitoring and reversal. There are some elderly who would benefit from NOAC and there are many who physiologically fall outside of the clinical trial inclusion criteria and therefore we cannot assume the same efficacy and safety of these drugs. Dedicated guidelines to address the use of NOAC in the elderly are necessary

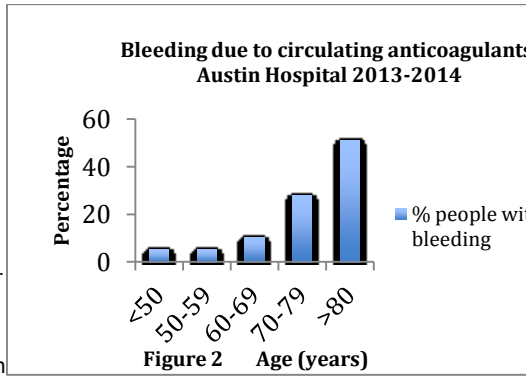

Figure 2

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Setup and Initial Evaluation of a Nurse-Led Surveillance Flexible Cystoscopy program

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Introduction

Nurse-led cystoscopy services provide additional resources for busy urology units, but need to be set up with care to ensure appropriate training and oversight.

The **objective of this study** is to present the establishment and initial evaluation of such a service at our institution.

Methods

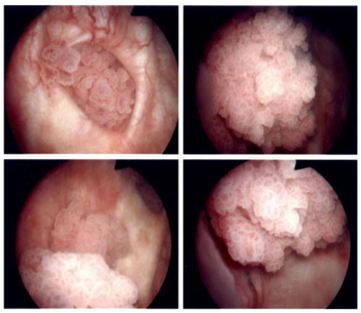
An experienced urology clinical nurse consultant undertook in excess of 500 flexible cystoscopies (FC) under supervision of experienced urology fellows prior to the commencement of the service.

Independent nurse-led FC started in September 2012, enrolling only patients returning for surveillance of urothelial carcinoma.

Methods cont'd

Formal urology operating lists run at the same time in an adjacent operating suite, providing ready access to a urology trainee and consultant for advice and assistance as required.

All suspected recurrences are documented photographically and booked for rigid cystoscopy.



A prospective record was kept of patient details.

The period from September 2012 to March 2014 has been assessed as part of this evaluation of the service.

Results

8-10pts, 1 list per week

297 patients after prior bladder cancer treatment

- 177 low-grade
- 98 high-grade
- 27 CIS

6 patients after prior nephro-ureterectomy.

Results cont'd

Suspected recurrences: 46 (15.2%) ➔ rigid cystoscopy.

Biopsies obtained: 35/46 (76.1%)

- 11 (31%) Benign (BCG change / cystitis)
- 24 (69%) Malignant (4 HG)

4 patients (9%) also had lesions treated by diathermy

True positive rate 28/46 (60.8%).

Impact on waiting list:

- Surveillance FC now on time, prev 6-8wks delay on average
- Diagnostic FC wait time now <4w, prev 5mo

Initial challenges faced:

- Decision making: BCG/MMC changes vs recurrence
- Strictures requiring dilatation
- False passages or unusual anatomy

Conclusions

This evaluation suggests that a nurse-led surveillance flexible cystoscopy service is feasible to set up with appropriate training and supervision. Further evaluation is ongoing.

Austin Health

Olivia Newton-John Cancer & Wellness Centre