ANNUAL NEPEAN RESEARCH DAY
~ Program and Abstracts ~

Thursday, 26th October 2017

Proudly Sponsored by:

Sydney Medical School Nepean
Level 2 Auditorium
62 Derby Street, Kingswood
9am To 3.30pm

#NepeanResearchDay2017
Acknowledgements

The 2017 Annual Nepean Research Day has been organised by the NBMLHD Department of Women & Children’s Health and Nepean Clinical School.

We would like to thank Maree Yabsley, Administration Officer, Nepean Clinical Support for her support in preparing and organizing this event.

In addition, we would like to thank the following for supporting the 2017 Annual Nepean Research Day via Sponsorship and Award donations:

<table>
<thead>
<tr>
<th>GE Healthcare</th>
<th>Douglas Hanly Moir Pathology</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIPS - Medical Indemnity Protection Society</td>
<td>The Brain and Mind Centre</td>
</tr>
<tr>
<td>NBMLHD Medical Imaging Dept</td>
<td>NBMLHD Nursing &amp; Midwifery Services</td>
</tr>
<tr>
<td>NBMLHD Allied Health Primary Community Health</td>
<td>Hon. Stuart Ayres, MP</td>
</tr>
<tr>
<td>Nepean Medical Staff Council</td>
<td>Penrith Panthers</td>
</tr>
<tr>
<td>The Charles Perkins Centre</td>
<td>NBMLHD Department of Geriatric Medicine</td>
</tr>
<tr>
<td>Nepean Clinical School</td>
<td></td>
</tr>
</tbody>
</table>

[Logos of collaborating institutions]
Ben (Willem) Mol, University of Adelaide  
E-mail: ben.mol@adelaide.edu.au  
@bwmol

Ben (Willem) Mol is Professor of Obstetrics and Gynaecology at the University of Adelaide, South Australia. He is focused on the organisation of multi-centric evaluative research in Obstetrics, Gynaecology and Fertility. The research is focused mainly upon everyday practices. As a Professor, Ben considers his most important task to be the stimulation and innovation of evaluative research in Obstetrics, Gynaecology and Reproductive Medicine.

Ben studied Medicine at the University of Amsterdam. From 1993 to 1997, he worked in the department of Clinical Epidemiology and Biostatistics at the AMC. In 1999 he obtained his doctorate with honours at the Faculty of Medicine of the UvA with his dissertation entitled Evaluating the effectiveness of diagnostic tests: tubal subfertility and ectopic pregnancy. Between 1997 and 2003 he was trained as a Gynaecologist at the University Medical Centre (Universitair Medisch Centrum) in Utrecht. Since 2002, he has been a Senior Researcher in the department of Obstetrics and Gynaecology at the AMC. From 2003 to 2007, he worked as a Gynaecologist-Perinatologist at the MMC in Veldhoven.

Ben was instrumental in initiating the Dutch consortium for Research in Women’s health, in which 70 hospitals collaborate in multicenter trials. The initiative is now incorporated by the Dutch Society for Obstetrics and Gynaecology and is supported by the Dutch national funder and the Dutch health insurance companies. In 2010, he co-initiated the Global Obstetric Network GOnet.

Ben holds an NHMRC practitioner fellowship, which was awarded as the highest ranked application in 2014. His professional adage is ‘A day without randomisation is a day without progress.’

Benjamin Tang, Intensive Care Medicine, Nepean Clinical School, University of Sydney  
Head of Nepean Genomic Research Group, Nepean Hospital, Centre for Immunology and Allergy Research, Westmead Institute for Medical Research, Sydney  
Nepean Genomic Research - bringing the science of gene discovery to bedside

Associate Professor Benjamin Tang is the MD research project coordinator at Nepean Clinical School. He oversees a total of 161 MD projects across the entire student cohort in the clinical school with projects in basic science research, systematic reviews, hospital audits, population based studies, clinical trials, qualitative research and observational studies.

In this talk, Associate Professor Benjamin Tang will present the current state of the MD research project in Nepean Clinical School, including (1) how does the performance of Nepean students compared to other clinical schools? (2) is the MD research project an effective mean to encourage/inspire potential early career researchers?
## PROGRAM

**9:00 – 9:05** Opening and Welcome: Kay Hyman, Chief Executive Officer - NBMLHD and A/Professor George Condous  
Acknowledgement of Country

### SESSION 1: CHAIR – ASSOCIATE PROFESSOR GEORGE CONDOUS  
Acting Head of Department – Gynaecology, Women and Children’s Health

Presentation time: 6 minutes, question time - 2 minutes. Total - 8 minutes

<table>
<thead>
<tr>
<th>Time</th>
<th>Topic</th>
<th>Presenter</th>
</tr>
</thead>
</table>
| 9.10 – 9.40 | **Keynote presentation: Associate Professor Benjamin Tang**  
Overview of MD research projects at Nepean Clinical School |                                |
| 9.41 – 9.51 | The relationship of Fibroblast Growth Factor 21 in subclinical atherosclerosis and cardiovascular events in the multi-ethnic study of atherosclerosis | Steven Campbell |
| 9.52 – 10.00 | Doppler color scoring system using offline video analysis in women with an incomplete miscarriage: Inter & intra-observer reproducibility study | Grace Leong |
| 10.01 – 10.09 | In-vitro, randomised, controlled trial on the dissolution of renal calculi with citric acid solutions | Diarmid Foulis |
| 10.10 – 10.18 | Anticonvulsants in the treatment of low back pain and lumbar radicular pain: A systematic review and meta-analysis | Oliver Enke |
| 10.19 – 10.27 | Decision-making In chronic kidney disease: The perspective of culturally- and linguistically-diverse adults receiving haemodialysis | Danielle Muscat |
| 10.28 – 10.36 | Evaluation of Gallium-68 PSMA PET/CT for post-prostatectomy biochemical recurrence in comparison to CT abdomen/pelvis and bone scan | Chris Rothe |
| 10.37 – 10.45 | Falls in Hospital requiring treatment in Nepean Blue Mountains Local Health District | Lieu Trinh |
| 10.46 – 10.54 | Mortality and outcome predictors of Intensive Care patients with decompensated liver disease | Victoria Sadick |
| 10.55 – 11.30 | Poster Exhibition & Morning Tea |                                |

### SESSION 2: CHAIR – ASSOCIATE PROFESSOR EMILY HIBBERT  
Acting Head of Department - Medicine

<table>
<thead>
<tr>
<th>Time</th>
<th>Topic</th>
<th>Presenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.35 – 11.43</td>
<td>Cost-benefit analysis for the use of transvaginal ultrasound in the work up of all women with potential endometriosis to minimal, mild to moderate and complex endometriosis disease</td>
<td>Babak Shakeri</td>
</tr>
<tr>
<td>Time</td>
<td>Title</td>
<td>Author</td>
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<td>----------</td>
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</tr>
<tr>
<td>11.44 – 11.52</td>
<td>Laryngeal Squamous Cell Carcinoma (LSCC) survival in the context of Human Papillomavirus (HPV): A Systematic Review and Meta-Analysis.</td>
<td>Navid Ahmadi</td>
</tr>
<tr>
<td>11.53 – 12.01</td>
<td>Comparisons of two digital, single use flexible uretero-renoscopes. A prospective case-cohort study.</td>
<td>Jonathan Kam</td>
</tr>
<tr>
<td>12.02 – 12.10</td>
<td>Developing professionalism amongst medical interns who have taken part in open disclosure after medication error: feedback that avoids ‘Facebook reflection’.</td>
<td>Stuart Lane</td>
</tr>
<tr>
<td>12.11 – 12.19</td>
<td>Performance of the transvaginal sonographic ‘sliding sign’ in prediction of pouch of Douglas obliteration: does this improve over time?</td>
<td>Babak Shakeri</td>
</tr>
<tr>
<td>12.20 – 12.28</td>
<td>Use of benzodiazepines and risk of dementia: A meta-analysis.</td>
<td>Ross Penninkilampi</td>
</tr>
<tr>
<td>12.29 – 12.37</td>
<td>Everything’s different in Nepal!</td>
<td>Friyan Turel</td>
</tr>
<tr>
<td>12.38 – 12.46</td>
<td>Lessons from 500 Robotic-assisted Radical Prostatectomies in an Australian public teaching hospital.</td>
<td>Christo Joseph</td>
</tr>
<tr>
<td>12.47 – 12.55</td>
<td>Re-evaluating the cerebroplacental ratio. A systematic review and meta-analysis.</td>
<td>Daphne Moreta</td>
</tr>
<tr>
<td><strong>12.56 – 1.35</strong></td>
<td><strong>Poster Exhibition and Lunch</strong></td>
<td></td>
</tr>
</tbody>
</table>

**SESSION 3: CHAIR – PROFESSOR RALPH NANAN**  
Chair and Professor of Paediatrics

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Author</th>
</tr>
</thead>
</table>
| 1.36 – 2.11 | **Keynote presentation: Professor Ben Mol**  
The role of clinical research in medicine: Can we do better? |                            |
| 2.12 – 2.20 | The influence of cigarette smoking and dietary habits on first trimester growth rate and embryonic heart rate. | Babak Shakeri              |
| 2.21 – 2.29 | Antenatal education for childbirth – epidural analgesia.              | Lisa Cutajar               |
| 2.30 – 2.38 | Hospital in the Home (HITH) with Telehealth – The virtual specialist in your home. | Jillian Hennesssy          |
| 2.39 – 2.47 | Characterising microenvironment responsive P2X7 alternative splicing in RPMI 8226, a multiple myeloma cell line. | Luke Hilliar               |
| 2.48 – 2.56 | The molecular mechanisms of chronic lymphocytic leukaemia.            | Abdullah Alshahrani        |
| **3pm** | **Award of Prizes and Grants**  
NMRF Grants  
Isobel Corin Grants  
Lucky Door Prize drawn | A/Prof Stephen Fuller & A/Prof George Condous |
| 3.20 | Close                                                               |                            |
Awards

Best Oral Presentation by a Registrar or Resident
Nepean Medical Staff Council

Best Poster Presentation by a Registrar or Resident
Nepean Medical Staff Council

Best Oral Presentation by a Medical Student
Sydney Medical School Nepean

Best Poster Presentation by a Medical Student
Sydney Medical School Nepean

Best Oral or Poster Presentation in the field of Medical Imaging
NBMLHD Medical Imaging Dept - Nepean Hospital

Best Oral or Poster Presentation in the field of Allied Health
NBMLHD Allied Health – Primary Community Health

Best Oral or Poster Presentation in Educational Research
Hon. Stuart Ayres MP

Best Oral or Poster Presentation in the field of Nursing & Midwifery
NBMLHD Nursing & Midwifery Services

Best Oral or Poster Presentation on Ageing Research
NBMLHD Department of Geriatric Medicine

Best Oral or Poster Presentation on a Charles Perkins Centre Theme
Charles Perkins Centre

Best Oral or Poster Presentation in Brain and Mind Sciences
Brain and Mind Centre

Best Oral or Poster Presentation on Community-based Research
Penrith Panthers

“EXCELLENCE IN RESEARCH” NEPEAN MEDAL
<table>
<thead>
<tr>
<th></th>
<th>Topic</th>
<th>Author</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Prevalence and Associations of Psychological Distress in Australian Junior Medical Officers</td>
<td>Michelle Lau</td>
</tr>
<tr>
<td>2</td>
<td>Pharmacological Evaluation of Novel Bioisosteres of an Adamantanyl Benzamide P2X7 Receptor Antagonist</td>
<td>Stephen Fuller</td>
</tr>
<tr>
<td>3</td>
<td>The prediction of pouch of Douglas obliteration using offline analysis of corresponding ultrasound and laparoscopic video sets: an inter-observer and diagnostic accuracy study</td>
<td>Le Chi Chiu</td>
</tr>
<tr>
<td>4</td>
<td>Practical Skill Education For Medical Students: an economical and efficient way for students to receive hands-on experience with procedures</td>
<td>Adrian Sheen</td>
</tr>
<tr>
<td>5</td>
<td>Audit on viable intrauterine pregnancy outcomes from pregnancy of unknown location</td>
<td>Nicole Stamatopoulos</td>
</tr>
<tr>
<td>6</td>
<td>The proportion of women with a histological diagnosis of molar pregnancy who have an ultrasound diagnosis prior to uterine evacuation</td>
<td>Nicole Stamatopoulos</td>
</tr>
<tr>
<td>7</td>
<td>Button battery causing tympanic membrane injury</td>
<td>Navid Ahmadi</td>
</tr>
<tr>
<td>8</td>
<td>Traumatic brain injury and the risk of Alzheimer’s disease and other dementias: A systematic review and meta-analysis</td>
<td>Ross Penninkilampi</td>
</tr>
<tr>
<td>9</td>
<td>The safety and efficacy of intravenous immunoglobulin (IVIG) for the treatment of Alzheimer’s disease: A systematic review and meta-analysis</td>
<td>Ross Penninkilampi</td>
</tr>
<tr>
<td>10</td>
<td>The association between Helicobacter Pylori infection and Parkinson’s disease: A systematic review and meta-analysis</td>
<td>Ross Penninkilampi</td>
</tr>
<tr>
<td>11</td>
<td>Effect of pre-operative psychological interventions on elective orthopaedic surgery outcomes: A systematic review</td>
<td>Felice Tong</td>
</tr>
<tr>
<td>12</td>
<td>The role of patient information sheets and portable video media in preventing hospital re-presentations for stent irritation: a single-blinded, randomised controlled trial in a major tertiary hospital</td>
<td>Christo Joseph</td>
</tr>
<tr>
<td>13</td>
<td>“Blast it!&quot;- short pulse versus long pulse for improving stone fragmentation and decreasing retropulsion during laser lithotripsy</td>
<td>Jonathan Kam</td>
</tr>
<tr>
<td>14</td>
<td>“Me No Fry&quot;- preloaded ureteric stent deployment saves time and reduces radiation dose exposure</td>
<td>Jonathan Kam</td>
</tr>
<tr>
<td>15</td>
<td>How We Do It: Antegrade memokath deployment for benign, anastomotic uretero-ileal strictures</td>
<td>Jonathan Kam</td>
</tr>
<tr>
<td>16</td>
<td>Practice of blood volume submitted for culture at Nepean Neonatal Unit– A quality improvement audit</td>
<td>Moni Singh</td>
</tr>
<tr>
<td>17</td>
<td>To determine the optimal ultrasonographic screening method for rectal/rectosigmoid deep infiltrating endometriosis: ultrasound “sliding sign&quot;, transvaginal ultrasound direct visualization or both?</td>
<td>Mercedes Espada</td>
</tr>
<tr>
<td>18</td>
<td>Prevalence of negative 'sliding sign' in low-risk population - A feasibility study</td>
<td>Babak Shakeri</td>
</tr>
<tr>
<td>19</td>
<td>Accuracy of different imaging techniques to assess POD obliteration: a systematic review and meta-analysis</td>
<td>Babak Shakeri</td>
</tr>
<tr>
<td>20</td>
<td>The prediction of pouch of Douglas obliteration using offline analysis of laparoscopic video sets: an intra-, inter-observer and diagnostic accuracy study evaluating the performance of general gynaecologists versus advanced laparoscopic surgeons</td>
<td>Babak Shakeri</td>
</tr>
<tr>
<td>21</td>
<td>Nepean VR - Virtual reality (VR) visualization of cerebral aneurysms</td>
<td>David Bairamian</td>
</tr>
<tr>
<td>22</td>
<td>Evaluation of Gallium-68 PSMA PET/CT imaging in individuals with biochemical recurrence following radical prostatectomy</td>
<td>Chris Rothe</td>
</tr>
<tr>
<td>23</td>
<td>A systematic review to inform the development of a shared decision-making training program for culturally and linguistically diverse adults living with chronic kidney disease</td>
<td>Danielle Muscat</td>
</tr>
<tr>
<td>24</td>
<td>Characterisation of the drug binding pocket in human P2x7</td>
<td>Supun Bakmiwewa</td>
</tr>
<tr>
<td>25</td>
<td>Dental care for the elderly through a capped-fee funding model: optimising outcomes for primary government dental services</td>
<td>Jennifer Conquest</td>
</tr>
<tr>
<td>26</td>
<td>Advanced care planning in Nepean Hospital: A pilot study</td>
<td>Karen Fernandez</td>
</tr>
<tr>
<td>Page</td>
<td>Title</td>
<td>Author(s)</td>
</tr>
<tr>
<td>------</td>
<td>----------------------------------------------------------------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>27</td>
<td>Promoting professionalism: using simulation to develop critical reflection</td>
<td>Stuart Lane</td>
</tr>
<tr>
<td>28</td>
<td>&quot;Rethinking the medical management of woman with ectopic pregnancy: A retrospective cohort study&quot;</td>
<td>Eleanor Allison</td>
</tr>
<tr>
<td>29</td>
<td>Don't Jump The Gun…Will harm our tiny toots. A CPI project to reduce radiation in neonates at Nepean Hospital</td>
<td>Erica Motyka</td>
</tr>
<tr>
<td>30</td>
<td>Tetra Color Mobility Board - minimising falls in inpatient setting</td>
<td>Bernadette Dutton</td>
</tr>
<tr>
<td>31</td>
<td>Topical application of medicated honey for the prevention of peritoneal dialysis catheter-related infections: A retrospective Multicentre cohort study</td>
<td>Tayler Wishart</td>
</tr>
<tr>
<td>32</td>
<td>Epidemiological typing of Clostridium difficile isolates from Nepean and Orange Microbiology</td>
<td>Harsha Samarasekara</td>
</tr>
<tr>
<td>33</td>
<td>CD177 as a novel biomarker for high risk influenza patients</td>
<td>Maryam Shojaei</td>
</tr>
<tr>
<td>34</td>
<td>The transcriptomic landscape of severe influenza infection reveals key host response modules associated with disease progression and fatality</td>
<td>Benjamin Tang</td>
</tr>
<tr>
<td>35</td>
<td>Trial of void: what is the least trialling method?</td>
<td>Marinelle Doctor</td>
</tr>
<tr>
<td>36</td>
<td>Long-term nutritional outcome and health related quality of life of patients following oesophageal cancer surgery: A meta-analysis</td>
<td>Trang Soriano</td>
</tr>
</tbody>
</table>
| 37   | Short Chain Fatty Acids skew Human dendritic cells towards a tolerogenic phenotype | Mingjing Hu                  
**WITHDRAWN**
| 38   | A retrospective audit of performance and image enhancing drug (PIED) use and associated biochemical and haematological abnormalities amongst men attending a needle exchange clinic in Western Sydney | Emily Hibbert                   |
| 39   | Identifying contributors to admissions for diabetic ketoacidosis at Nepean Hospital | Minoli Abeysekera               |
| 40   | Innate and adaptive immune interactions during recurrent spontaneous miscarriage at the fetal-maternal interface in human pregnancy: A simplified introduction | Nathaniel Deboever              |
| 41   | Comparison of a 2 dimensional and 3 dimensional measurement of the intracranial translucency using post-processing software | Brendan Mein                    |
| 42   | Comparison of maternal anthropometric and ultrasound measures in the first trimester of pregnancy | Narelle Kennedy                 |
| 43   | Elastography: A novel evaluation of abdominal subcutaneous fat in pregnancy | Narelle Kennedy                 |
| 44   | Association of macronutrient intake in early pregnancy with ultrasound measures of abdominal subcutaneous fat | Narelle Kennedy                 |
| 45   | Consumption, wastage and flavour preferences of thickened fluids in Nepean Hospital inpatients | Rebecca Field                   |
| 46   | A novel method for direct bacterial identification and susceptibility testing of positive blood culture bottles by Maldi-TOF MS and VITEK 2 | Mohammed Al Bawarshy             |
| 47   | One hour diagnosis of clinically significant pathogens from cerebrospinal fluid using the Biofire Filmarray meningitis/ encephalitis panel | Catherine Janto                  |
| 48   | The Movin' Project (Mobilisation of Ventilated ICU patients at Nepean) | Anwar Hassan                     |
| 49   | Incidence of post-operative delirium following elective total hip and knee arthroplasty: A prospective observational study | Muzahid Hassan                 |
| 50   | Bullseye! Do Our Registrars Hit The Mark With MRI Cognitive Fusion Prostate Biopsy? | Hansi Pathirana                 |
| 51   | Moving Towards Zero Sepsis; Our Registrars Can Do It! An Analysis of 214 cases of Transperineal Prostate Biopsy over three years | Hansi Pathirana                 |
| 52   | Providing pain management services via an Outreach Telemedicine Model to a remote Area Health Service in NSW | Renuka Mendonca                 |
| 53   | Retrospective analysis of a Mobile Rehabilitation Program | Renuka Mendonca                 |
| 54   | The Nepean Blue Mountains Lifespan Family Obesity Service: A novel model of multidisciplinary care spanning from pre-conception to early pregnancy through childhood and adolescence into adulthood for individuals and families with severe obesity | A/Prof Gary Leong               |
| 55   | (E-poster) Minor surgery under local anaesthesia: improving surgical skills to enable increased use of minor surgery in general practice | Hasan Sarwar                     |
| 56   | (E-poster) Association between Insulin on Post-Caesarean Resuscitation Rates in Infants of Women with Gestational Diabetes Mellitus (GDM) | Aloysius Ng                     |
ABSTRACTS
~ Oral Presentations ~
The Relationship of Fibroblast Growth Factor 21 in Subclinical Atherosclerosis and Cardiovascular Events in the Multi-Ethnic Study of Atherosclerosis

Steven Campbell, Kwok Leung Ong, Robyn L. McClelland, John Kokkinos, Moyses Szklo, Joseph F. Polak, Matthew A. Allison, Kerry-Anne Rye

Aim: Determine whether an association exists between subclinical measures of atherosclerosis and serum levels of Fibroblast Growth Factor 21 (FGF21).

Rationale: FGF21 is a novel metabolic regulator that plays an important role in glucose and lipid metabolism. We recently reported that in patients with type II diabetes, high baseline FGF21 levels predict increased risk of total cardiovascular disease (CVD) events and microvascular complications. Given the potential role of FGF21 as a biomarker for monitoring and predicting cardiovascular risk, there is a need to investigate the relationship between FGF21 levels and measures of subclinical atherosclerosis.

Objectives:
1. Determine if there are ethnic differences in FGF21 levels in the MESA cohort
2. Determine if FGF21 levels are associated with measures of subclinical atherosclerosis
3. Determine if baseline FGF21 levels predict future adverse CVD events

Methods: FGF21 levels of 5,792 participants were analyzed in conjunction with data from the multi-ethnic study of atherosclerosis (MESA) to determine if significant statistical relationships exist with previously recorded subclinical measures of atherosclerosis and cardiovascular events.

Results to Date:
Clinical characteristics:
1. Highly significant (p<0.001) positive correlations exist between FGF21 levels and age, male sex, Caucasian and Hispanic American ethnicity, pack-years smoking history, BMI, waist-to-hip ratio, resting heart rate, current diabetes, hypertension, serum triglycerides, serum fasting glucose level, serum fasting insulin level, C-reactive protein, serum fibrinogen level, serum IL-6 level, common carotid intima-medial thickness, internal carotid intima-medial thickness, mean carotid intima-media thickness, nonzero Agatston coronary artery calcification score, and incidence of all future cardiovascular events.
2. Highly significant (p<0.001) negative correlations exist between FGF21 levels and female sex, Chinese American and African American ethnicity, educational attainment, gross family income, physical activity, HDL cholesterol, eGFR, and ankle-brachial index.

Objectives:
1. FGF21 varies significantly (p<0.001) with race.
2. FGF21 levels are significant (p<0.001) correlated with common carotid artery calcification and internal carotid artery calcification, but not with coronary artery calcification (p=0.309).
3. Association between FGF21 and mortality will be completed at the end of the analysis.

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Lipid Research Group, School of Medical Sciences, University of New South Wales, Sydney, NSW, Australia
Department of Biostatistics, University of Washington, Seattle, WA, United States
Department of Epidemiology, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, United States
Department of Radiology, Tufts University School of Medicine, Boston, MA, USA.
Department of Family and Preventive Medicine, University of California San Diego, La Jolla, CA, United States

Findings presented here are to be considered preliminary and may be updated after conference materials have been printed.
DOPPLER COLOR SCORING SYSTEM USING OFFLINE VIDEO ANALYSIS IN WOMEN WITH AN INCOMPLETE MISCARRIAGE: INTER- & INTRA-OBSERVER REPRODUCIBILITY STUDY

Grace Ting Ting Leong, Chuan Lu, Brendan Mein, Mercedes Espada, Babak Shakeri, Batool Nadim, Shannon Reid, Ishwari Casikar, George Condous

Acute Gynecology, Early Pregnancy and Advanced Endoscopic Surgery Unit. Sydney Medical School Nepean, University of Sydney, Nepean Hospital Sydney NSW Australia, gleo3225@uni.sydney.edu.au

Objectives

To assess inter- & intra-observer reproducibility of the Doppler Color Scoring (DCS) System in women with 1st trimester incomplete miscarriage noted on transvaginal ultrasound (TVS).

Methods

32 digital videosets were recorded of women with incomplete miscarriage (presence of measurable focus of hyperechoic material) on TVS. Vascularization of retained products of conception (RPC) was recorded using DCS system of IOTA group: DCS 1=absence of vascularity, DCS 2=minimal vascularity, DCS 3=rather strong, DCS=4 very strong. DCS has been previously used to predict successful expectant management of incomplete miscarriage (Casikar et al. Hum Reprod 2013). Each videoset was then reviewed offline by 5 observers who apportioned a DCS to RPC. Same videos reanalysed, albeit in a different order, at least 7 days later, to assess intra-observer agreement. Inter- & intra-observer correlation was performed to determine agreement among the 5 observers. Inter-observer agreement was also measured between each observer & reference standard (GC). Cohen's κ coefficient <0 suggests poor agreement, 0.01-0.20 slight, 0.21-0.40 fair, 0.41-0.60 moderate, 0.61-0.80 substantial, 0.81-0.99 almost perfect. Videaset sample size: assuming participants agree 60% of the time, a sample size of 31 is required with a relative error of 30% (Gwet, 2010).

Results

61% and 89% of cases had agreement between >3 and >2 observers, respectively. Inter-observer agreement ranged from moderate to substantial (0.48-0.751); agreement with GC ranged from moderate to substantial (0.495-0.678). 2 observers had almost perfect intra-observer agreement (0.905-0.912), 3 observers had substantial intra-observer agreement (0.653-0.691). Overall inter-observer agreement for the DCS was substantial (0.626).

Conclusion

DCS inter-observer reproducibility between all observers and the reference standard ranged from moderate to substantial. DCS intra-observer reproducibility was substantial to almost perfect.
In-vitro, randomised, controlled trial on the dissolution of renal calculi with citric acid solutions

Diarmid FOULIS¹, Christo JOSEPH¹, Jonathan KAM¹,², Yuigi YUMINAGA¹, Kieran BEATIE¹, Mohan ARIANAYAGAM¹, Bertram CANAGASINGHAM¹, Richard FERGUSON¹, Ahmed GOOLAM¹, Celi VAROL¹, Mohamed KHADRA¹, Matthew WINTER¹, Raymond KO¹

¹ Nepean Urology Research Group (NURG), Kingswood, NSW, Australia
² University of Newcastle, Newcastle, Australia

Keywords: Renal calculi, citric acid, stone dissolution

Aim:
To investigate if commercial citric acid solutions can play a role in the management of renal calculi and stent encrustation.

Methods:
Stone fragments from patients undergoing treatment for renal calculi were collected for analysis. One fragment from each patient was sent for chemical analysis (as part of routine care) and the remainder of the fragments were then randomised for in vitro dissolution by one of three solutions: 1) Normal saline (0.9%) control solution, 2) 3.23% Citric acid solution (Suby G) and 3) 6% citric acid solution (Solution R). The 2 citric acid solutions are commercial solutions made for the management of indwelling catheter encrustations. Each fragment was placed in 10ml of the dissolution solution at the beginning of the week, and this solution was changed three times each week. Measurements of stone size were taken at the beginning and then at the end of each week.

Results:
30 stone fragments from 10 patients have been included in this study. The mean fragment size was 4.4mm, with 15 calcium oxalate fragments, 3 calcium phosphate fragments and 12 urate fragments. Preliminary results show that calcium phosphate calculi are easily dissolved with both 3.23% and 6% citric acid solutions, will all stones have completely dissolved after 2 weeks. Calcium oxalate calculi showed a mean of 25% dissolution after 2 weeks with both the 3.23 and 6% solution. There was no dissolution of the calcium stones by normal saline solutions. Urate stones showed no response to the citric acid solutions.

Conclusion:
Our study shows in vitro evidence that citric acid can help in the dissolution of calcium renal calculi. Our study provides a scientific basis for further in vivo studies to look at the use of citric acid solutions as an adjunct in the management of renal calculi and stent encrustation. This will be particularly useful for patients who suffer from severe stent encrustation (i.e. pregnant women) whereby the gentle instillation of a small amount of citric acid solutions periodically may reduce the morbidity associated with stent encrustation.
ANTICONVULSANTS IN THE TREATMENT OF LOW BACK PAIN AND LUMBAR RADICULAR PAIN: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Objectives
The use of anticonvulsant medications to treat low back pain related disorders has increased substantially in recent years. However, evidence supporting their use is limited. The aim of this systematic review is to investigate the effects of anticonvulsants for low back pain, sciatica and neurogenic claudication.

Methods
A search was conducted in five electronic databases for randomised controlled trials, controlled clinical trials and crossover trials comparing an anticonvulsant to placebo/no intervention or an alternative conservative treatment in patients with nonspecific low back pain, sciatica or neurogenic claudication of any duration. The primary outcomes were self-reported pain or disability, secondary outcomes were adverse events. Risk of bias was assessed using the PEDro scale and quality of evidence was assessed using GRADE. Where possible, data were pooled and treatment effects were quantified using mean differences for continuous outcomes and risk ratios for dichotomous outcomes.

Results
Nine trials compared the anticonvulsants topiramate, gabapentin or pregabalin to placebo in 859 participants who had low back pain, sciatica or neurogenic claudication. All trials except one were judged as low risk of bias. Fourteen of fifteen comparisons found anticonvulsants were not effective to reduce pain or disability in low back pain or lumbar radicular pain; e.g. there was high quality evidence of no effect on low back pain in the short term (pooled mean difference [MD] = -0.2, 95% CI -7.6 to 7.1) and for lumbar radicular pain in the immediate term (pooled MD = -1.1, 95% CI -7.0 to 4.7). The lack of efficacy is accompanied by increased risk of adverse events, based on high level of evidence for gabapentinoids.

Conclusions
There is mostly moderate to high quality of evidence that anticonvulsants are ineffective for treatment of low back pain or lumbar radicular pain. There is high quality of evidence that gabapentinoids have a higher risk for adverse events.
DECISION-MAKING IN CHRONIC KIDNEY DISEASE: THE PERSPECTIVE OF CULTURALLY- AND LINGUISTICALLY-DIVERSE ADULTS RECEIVING HAEMODIALYSIS

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Objectives: Adults living with chronic kidney disease (CKD) face multiple decisions throughout the illness trajectory. However, little is known about the experience of decision-making among culturally- and linguistically-diverse (CALD) adults or those with lower health literacy. This study sought to explore the experience of decision-making throughout the CKD trajectory among CALD patients with Stage 5 CKD receiving haemodialysis.

Methods: Semi-structured interviews were conducted with CALD patients (n=34) at haemodialysis units across Nepean Blue Mountains and Western Sydney Local Health Districts (Nepean Hospital, Penrith Community Dialysis Centre, Westmead Hospital, Blacktown Hospital, Auburn Hospital). Purposive sampling was used to target Arabic speakers and English speakers from the Indian subcontinent and Pacific Islands. Interviews were audio-recorded, transcribed, and analysed using Framework Analysis.

Results: Participants were 68 years on average. The majority were female (59%) and most (75%) had not completed high school education. Many participants indicated that they wanted to be informed about their health and participate in decision-making. However, responses reflected perceptions of high power-distance in the healthcare environment and difficulty understanding a set of questions to support shared decision-making. While participants felt comfortable talking to healthcare professionals, they did not actively ask questions and reported using more passive decision-making styles.

Family and religion emerged as central to participants’ cultural identity and influenced their perceptions of health and decision-making. Participants reinforced community interdependence citing family and religious institutions as a support network and faith as a source of strength during illness.

Conclusions: Culturally-sensitive shared decision-making training programs are essential to redress inequalities in the provision of healthcare to CALD groups. The Nepean Blue Mountains Local Health District can address inequity by developing and delivering programs that promote the inclusion of all patients in CKD decision-making.
Evaluation of Gallium-68 PSMA PET/CT for post-prostatectomy biochemical recurrence in comparison to CT abdomen/pelvis and bone scan

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Abstract

Aim: We aim to evaluate the use of Gallium-68 PSMA PET/CT, compared to conventional CT abdomen/pelvis and bone scan, for detection of local or distant metastasis following biochemical failure/recurrence in post-prostatectomy patients.

Method: We conducted a chart review of our institutional prospective database to identify patients with post-prostatectomy biochemical failure/recurrence who underwent ⁶⁸Ga-PSMA PET/CT (PSMA), CT abdomen and pelvis (CTAP) and whole body SPECT bone scan (BS). The results of the 3 imaging modalities were analysed for their ability to detect local recurrence and distant metastases. Concordance was assessed and Cohen’s Kappa statistic was applied.

Results: A total of 394 patients were identified with a median PSA of 0.28ng/ml (range 0.01-36ng/ml). 394 patients were identified as having PSMA and CTAP for comparison. 387 patients were identified as having PSMA and BS for comparison.

When PSMA was compared to CTAP for detection of local or distant metastases there was concordance for 266 patients (163 negative and 103 positive for local or distant metastasis). PSMA and CTAP concordance was 68% (Kappa= 0.376 [CI 95% 0.298 - 0.454]). A total of 114 patients had local or distant metastasis detected on PSMA only, while 14 patients had disease detected on CTAP but not on PSMA. PSMA and CTAP non-concordance was 32%.

When PSMA was compared to BS for detection of bone metastases there was concordance for 352 patients (308 negative and 44 patients positive for bone metastasis). PSMA and BS concordance was 91% (Kappa= 0.664 [CI 95% 0.561 - 0.766]). PSMA only positive bone metastases were present in 28 patients while BS only metastases were present in 7 patients. PSMA and BS non-concordance was 9%.

Conclusion: The use of PSMA has a higher detection rate of predicted local or distant metastasis compared to CTAP and BS in the post-operative staging of biochemical recurrences after radical prostatectomy. PSMA and BS concordance was higher in detection of bone metastases than the concordance of PSMA and CTAP for detection of local or distant disease. Further studies are needed to evaluate the true sensitivity and specificity of PSMA in identification of local and distant metastatic disease in the post-prostatectomy setting.
FALLS IN HOSPITAL REQUIRING TREATMENT
IN NEPEAN BLUE MOUNTAINS LOCAL HEALTH DISTRICT

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Objectives: Preventing falls and harms from falls is one of the National Safety and Quality Health Service Standards. Our aims were to: 1) use data from the Health Information Exchange (HIE) to identify falls in hospital requiring treatment; 2) describe characteristics of falls requiring treatment; and 4) identify factors related to a fall recorded in IIMS and was severe enough to be recorded in HIE.

Methods: Falls in HIE were identified using the ICD-10-AM codes W00–W19. Falls were determined as having occurred in hospital if “condition_onset_flag”=1 (in hospital). For records that had missing data for “condition_onset_flag”, the ICD-10-AM code for place of occurrence of Y92.22 (health service area) immediately following the ICD-10-AM codes for falls was used. A set of explicit criteria were applied to exclude records of earlier documented falls. Falls in the IIMS were identified by searching for words indicating a fall and the location of the fall. Data from the HIE and IIMS were linked.

Results: Between July 2012 and June 2017, 2299 falls in hospital requiring treatment were recorded in the HIE (1.5 falls per 1000 bed-days), 4752 falls were recorded in IIMS (3.1 per 1000 bed-days) and 5653 falls were recorded in either dataset (3.7 falls per 1000 bed-days). The HIE data showed 40.7% of these falls and the IIMS showed 84.1%. The number of falls recorded in the HIE but not in the IIMS was 837 (36.4% of falls recorded in the HIE).

The majority of falls that were recorded in the HIE happened in patients older than 65 years (72.3%), in men (54.9%), in acute-care settings (71.6%), during the first episode of admission (79.6%) and among patients who stayed for more than one week (76.1%).

In the IIMS data, the following falls were more likely to also be recorded in the HIE data: falls that happened between 3 pm and 11 pm or between 11 pm and 7 am, due to loss of balance, slipped or tripped, or fell out of bed, resulting in more serious consequences. Falls that happened in the emergency department or a mental health unit were less likely to be recorded in the HIE.

Conclusion: A substantial proportion of falls requiring treatment were not recorded in the IIMS. Fall in some patients were more likely to require treatment than others.
MORTALITY AND OUTCOME PREDICTORS OF INTENSIVE CARE PATIENTS WITH DECOMPENSATED LIVER DISEASE

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Background: Presence of liver disease from any cause independently worsens the prognosis of Intensive Care patients.

Objectives: Primary aim was to determine in-hospital mortality of patients with decompensated liver disease admitted to a non-transplant ICU in Sydney. Secondary aims were to validate the utility of liver specific or general intensive care scoring tools and determine which scoring tool had a greater discriminative ability in predicting outcomes in this population. The study also aimed to determine the independent predictors of mortality associated with critically-ill cirrhotic patients and the rates of pharmacological VTE prophylaxis in this select population.

Methods: A retrospective observational cohort study was conducted in a non-transplant intensive care unit in Sydney over a four-year period between February 2013 and February 2017. Admissions were screened based on sub code upon discharge. Intensive care and hospital mortality was recorded, while liver specific and ICU scoring tools were calculated and compared under the receiver operating characteristic curves. Independent predictors of ICU mortality were identified by univariate analysis.

Results: The overall Intensive Care and Hospital mortality of a total of 63 patients admitted with decompensated liver disease was 37% (95% CI 26-49%). The SOFA (Sequential organ failure assessment) score on admission correlated most closely to short-term mortality outcomes (AUROC 0.86), while bilirubin, INR, WCC, albumin and ascites were found to be independent predictors with similar AUROC values. Only 11/63 patients received mechanical and pharmacological DVT prophylaxis.

Conclusion: The results of our study were similar to previous studies which show significant mortality in those admitted to ICU with decompensated liver cirrhosis, in particular those with multi-organ dysfunction. The markers of severity we have identified may provide assistance to the clinician when faced with difficult decisions that necessitate the balancing of finite healthcare resources and clinical outcomes. The low rates of DVT prophylaxis in this cohort warrants further investigation.
Cost-benefit analysis for the use of transvaginal ultrasound in the work up of all women with potential endometriosis to minimal, mild to moderate and complex endometriosis disease.

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Objectives: 15% of women who present to gynaecology clinic have chronic pelvic pain. Approximately 56% of this group will not have underlying pouch of Douglas (POD) obliteration, endometrioma or deep infiltrating endometriosis i.e. minimal disease present and 26% will have underlying POD obliteration and i.e. severe endometriosis present. 82% of gynaecologists admit to not being able to perform advanced laparoscopic surgery in severe cases of endometriosis. We aim to compare the costs of two models of care in the work-up and management of women with potential endometriosis.

Methods: We compared two models of care: (1) A conventional model (M1) whereby general gynaecologists seeing women with suspected endometriosis proceed directly to diagnostic laparoscopy after a basic pelvic transvaginal (TVS). In M1, if bowel endometriosis+/–POD obliteration was noted at the primary laparoscopy, these women were then referred on to an advanced endosurgery unit for second laparoscopic procedure. (2) A new model (M2) whereby general gynaecologists order a detailed ‘deep endometriosis’ TVS by an expert sonologist in DIE assessment. In M2, if women were predicted to have minimal disease they would have OCP for 3-6 months. If women in M2 were predicted to have underlying bowel endometriosis+/–POD obliteration they would be referred for pre-operative colorectal review (+colonoscopy) before undergoing joint Gynae/Colorectal operative laparoscopic procedure. The costs to the public health care system were: consultation $85, Routine pelvic ultrasound $98, detailed ‘deep endometriosis’ TVS $169, diagnostic laparoscopy $2,541, OCP for 3-6 months in average $60, colonoscopy $4,880 and laparoscopic bowel surgery $14,923. The costs of the two models of care were then estimated and compared.

Results: For an outpatient gynaecology unit that reviews 1000 new women annually, 15% (150/1000) would present with chronic pelvic pain. Of these 56% (84/150) would not have underlying complex endometriosis and 26% (39/150) women would have underlying POD obliteration with severe endometriosis. The cost of treating each woman with minimal disease is $2784 for M1 compared to $314 for M2. This means that there is a cost saving of $2470 per case or $207480 annually. The cost of treating each woman with severe endometriosis disease is $22866 for M1 compared to $20227 for M2. This means that there is a cost saving of $2639 per case or $102921 annually.

Also, the average total cost for every patient in model 1 is $7994 & model 2 is $5937 which is significantly higher.

Conclusions: M2 which incorporates the use of a detailed ‘deep endometriosis’ TVS by an expert sonologist in DIE assessment will lead to a significant cost saving to the public healthcare system annually.
Laryngeal Squamous Cell Carcinoma (LSCC) survival in the context of Human Papillomavirus (HPV): A Systematic Review and Meta-Analysis

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Background: Head and neck (H&N) squamous cell carcinoma (SCC) is a significant contributor to worldwide mortality and morbidity. Human papilloma virus (HPV) has been linked with H&N cancer and HPV-positive H&N SCC have better survival outcomes.

Objective: The aim of this study is to evaluate the overall survival differences between HPV-positive laryngeal SCC and compare regional differences.

Method: A systematic review and meta-analysis was performed using the PRISMA guideline. LSCC was confirmed based on histopathology, and HPV status was confirmed by either polymerase chain reaction (PCR), immunohistochemistry (IHC), and/or in-situ hybridisation (ISH).

Results: Utilising our systematic review, 1214 studies were identified and 14 studies were eligible for our review. A total of 2,578 cases of LSCC were included in analysis with 413 (16.0%) HPV-positive. Overall survival (OS) was not significant for HPV-positive LSCC in first 5 years (year 1: OR 1.33 p=0.17; year 2: OR 1.26 p=0.14; year 3: OR 1.06 p=0.68; year 4: OR 1.17 p=0.29; year 5: OR 1.04 p=0.76). Disease free survival (DFS) was similarly not significant for HPV-positive LSCC (year 1: OR 1.10 p=0.59; year 2: OR 1.25, p=0.18; year 3: OR 1.16, p=0.36; year 4: OR 0.97, p=0.87), however DFS survival is higher in HPV-positive group in year 5 (OR 1.42, p=0.05). When studies are subdivided into continents, Asian studies had better HPV-positive survival in year 4 (OR 2.20 p=0.02) and year 5 (OR 2.22 p<0.01).

Conclusion: This is the first study of its kind to evaluate the survival impact of HPV-positive LSCC patients. While HPV status does not make a difference to OS, HPV-positive LSCC have better DFS 5 years’ post diagnosis. There is also regional variability with better OS in HPV-positive LSCC in Asian studies. This study demonstrates that HPV status has an impact on LSCC survival, but this impact seems to be heterogeneous across various regions of the world.

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COMPARISONS OF TWO DIGITAL, SINGLE USE FLEXIBLE URETERO-RENOSONCOPES: A PROSPECTIVE CASE-COHORT STUDY.

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Keywords: Renal calculi, flexible ureterorenoscopy
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Objectives:
No literature exists directly comparing the performance of commercial digital, single use flexible ureterorenoscopes. We aimed to compare two single use, digital flexible ureterorenoscopes (Pusen UE3022 and Boston Scientific LithoVue) and to compare them to a reusable, video ureterorenoscope (Olympus URF-V2)

Methods:
A prospective case-cohort study was conducted at Nepean Hospital, NSW, Australia. The clinical outcomes for patients undergoing flexible ureterorenoscopy between July 2016 and Sept 2017 were included for analysis. Group 1 underwent surgery using the single use LithoVue, Group 2 used the single use UE3022 and Group 3 underwent surgery with the re-useable URF-V2. All operators were asked to rate on a 5-point Likert scale the visibility and maneuverability of the endoscope for each case. Data was analysed using SPSS 24.0. Continuous variables were analysed with one-way ANOVA and Tukey post hoc analysis. Categorical variables were analysed using Fisher’s exact test.

Results:
102 renal units were treated in 87 patients. Mean age was 54, 35% were female and 95% of cases were performed for renal calculi. There were 37 cases in the LithoVue group, 24 in the Pusen UE3022 group and 41 in the Olympus URF-V2 group. The visibility (out of 5) was rated as significantly better with the LithoVue (4.49, 95% CI 4.27-4.7) and Olympus URF-V2 (4.83, 95% CI 4.71-4.95) when compared to the Pusen (3.88, 95% CI 3.5-4.25), F(99)17.203, p=0.001. This difference was also seen with the maneuverability (out of 5) of the ureterorenoscopes: LithoVue (4.7, 95% CI 4.51-4.89) and Olympus URF-V2 (4.93, 95% CI 4.82-5) when compared to the Pusen (4.08, 95% CI 3.87-4.3), F(99)24.260, p=0.001. There was no difference in the clearance rate of renal calculi, 81% (LithoVue), 92% (Olympus), 96% (Pusen).

Conclusion:
Our study is the first in the world to directly compare two different single use, digital flexible ureterorenoscopes. Our study shows that the performance of single use ureterorenoscopes is approaching that of the reusable video, ureterorenoscopes. In the era of multi-resistant organisms and increasing concern over current sterilising techniques for fragile ureterorenoscopes, the single use ureterorenoscopes are an increasingly feasible alternative to traditional, expensive, reusable ureterorenoscopes.
DEVELOPING PROFESSIONALISM AMONGST MEDICAL INTERNS WHO HAVE TAKEN PART IN OPEN DISCLOSURE AFTER MEDICATION ERROR: FEEDBACK THAT AVOIDS ‘FACEBOOK REFLECTION’.

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Objectives
Mistakes are common within healthcare. Open disclosure is a policy stating doctors should apologise for errors, discussing them with the harmed parties. Many junior doctors take part in open disclosure without training or experience. However, how do junior doctors make sense of their experience of open disclosure?

Methods
A Phenomenological study of ten medical interns involved in open disclosure. Participants were selected using purposive and criterion sampling. Face-to-face semi-structured interviews illuminating their experiences of open disclosure after medication error. The descriptive audio-data was analysed using Interpretative Phenomenological Analysis.

Results
Three super-ordinate themes were identified. The superordinate-theme ‘Rationalisation of medical error’ described how the interns rationalised error in three different ways. ‘Error is in the eye of the beholder’ described rationalisation of their observations: interns demonstrated knowledge gaps and poor clinical reasoning when conceptualising their clinical practice. ‘Apologetic justification’ described rationalisation of their thoughts: interns justified errors using diffusion and distortion of responsibility. ‘Softening the blow’ described rationalisation of their language: interns utilised euphemistic language and discourse markers.

Conclusions
The interns appeared to lack important elements in their cognitive frames, demonstrating conscious incompetence associated with rationalisation: they were aware of their mistakes but framed them due to something that was beyond their practice. Their cognitive frames also demonstrated unconscious incompetence, associated with cognitive dissonance.

A learning model developed from the data suggested the presence of a prior cognitive frame, which was labelled ‘readiness to apologise’. This learning model was linked to the competency framework, along with inherent and future cognitive abilities. ‘Readiness to apologise’ meant that the interns were; aware of the need to apologise; aware of the rationale to apologise; and aware of the want to apologise. This resonated with the theory of intellectual humility. Inability of reflective competence, ensuring the appropriate development of professionalism, was labelled ‘Facebook reflection’.
**Performance of the transvaginal sonographic ‘sliding sign’ in prediction of pouch of Douglas obliteration: does this improve over time?**

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**Objectives:**
Pouch of Douglas (POD) obliteration can be predicted with a high degree of certainty in women with symptoms suggestive of underlying endometriosis using transvaginal ultrasound (TVS). To evaluate preoperative realtime dynamic TVS in the prediction of pouch of Douglas (POD) obliteration in women undergoing laparoscopy for suspected endometriosis over an eight-year period.

**Methods:**
Prospective study between March 2009 and March 2017. Women who attended the Endogynaecology clinic at Nepean Hospital underwent detailed ‘deep endometriosis scan’ and follow up laparoscopy. Each woman was assessed for the presence of ‘sliding sign’ on TVS at the both the retro-cervix (RC) and posterior uterine fundus (PUF). As long as the ‘sliding sign’ is considered positive in both of these anatomical regions the POD is recorded as ‘not obliterated’. If either of these anatomical regions demonstrates that the anterior rectal wall or rectosigmoid does not glide smoothly over the RC or PUF, respectively, then the ‘sliding sign’ is considered negative, and the POD is recorded as ‘obliterated’.

We evaluated the performance of the ‘sliding sign’ to predict POD obliteration in terms of sensitivity, specificity, PPV & NPV for first 200 cases (March 2009 to January 2013) the second 200 cases (February 2013 to March 2017) as well as all 400 cases.

**Results:**
400 consecutive women were included in the study. Sensitivity, specificity, PPV & NPV for first 200 were 97.32%, 88.46 %, 96.03% & 92.00 % respectively, for second 200 were 97.35%, 66.67%, 90.18% & 88.89 % respectively and all the cases were 97.33%, 78.00 %, 92.99% & 90.70 % respectively.

**Conclusions:**
Although the detection rate for POD obliteration was stable between the two cohorts, the false positive rate increased over time. Eliciting the ‘sliding sign’ is an accurate way to predict POD obliteration in women with suspected endometriosis who are planning laparoscopy.
USE OF BENZODIAZEPINES AND RISK OF DEMENTIA: A META-ANALYSIS

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Objective: To investigate the risk of dementia associated with the use of benzodiazepines, after controlling for reverse causation bias.

Methods: We identified observational studies with more than fifty cases, adequate assessment of benzodiazepine exposure, and reliable dementia diagnosis ascertainment from the electronic databases MEDLINE, PubMed, EMBASE, CINAHL, LILACS and CENTRAL through to 30 May 2017, with no language limits. The association of any current or former use of short- or long-acting benzodiazepines with incident dementia was analysed. A sub-group analysis was performed by the introduction of lag-time to assess the effect of reverse causation bias. We also performed analyses considering the effect of higher benzodiazepine cumulative doses, and adjustment for psychiatric covariates. Study quality was investigated using the Newcastle-Ottawa Scale.

Results: We found fifteen studies reported in fourteen articles, which involved 159,090 cases. Ever use of benzodiazepines was associated with a significantly increased risk of dementia (OR=1.39, 95% CI 1.21-1.59). Those studies which implemented the longest lag-times of five or more years, and hence most likely to overcome reverse causation bias, found a risk estimate which was marginally attenuated, but still significant (OR=1.30, 95% CI 1.14-1.48). Long-acting benzodiazepines were associated with a marginally higher magnitude risk (OR=1.21, 95% CI 0.99-1.49) than short-acting benzodiazepines (OR=1.13, 95% CI 1.02-1.26), though the former failed to reach statistical significance (p=0.059). Those studies which controlled for the important confounders depression, anxiety, and insomnia, and also introduced a lag-time, showed an increased risk of dementia associated with benzodiazepine use (OR=1.31, 95% CI 1.11-1.54). Heterogeneity was substantial ($I^2>75.00$) in most analyses. There was no publication bias (p=0.16).

Conclusions: Our findings indicate that the association between benzodiazepine use and dementia incidence is not purely an artefact due to reverse causation bias. Reduction of inappropriate benzodiazepine prescription is likely to modestly attenuate dementia risk.
EVERYTHING’S DIFFERENT IN NEPAL!

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Objectives: Anecdotal evidence suggests a high prevalence of pelvic organ prolapse in Nepali women. To date, no comprehensive assessment of pelvic floor functional anatomy has been undertaken in this population. Our study aimed to determine the prevalence of pelvic organ prolapse and pelvic floor trauma in women attending a Nepali Gynecology clinic.

Methods: 129 consecutive women attending the clinic were offered an interview, clinical examination (POPQ) and 4D translabial ultrasound (TLUS). Most presented with general gynaecological complaints. Five were excluded due to previous pelvic surgery, leaving 124.

Results: A POPQ exam was possible in 123 women, of which 29 (24%) were diagnosed with a significant cystocele, 50 (41%) had significant uterine prolapse and 7 (6%) significant posterior compartment prolapse. Mean Gh was 4.05 (2.5-8), Pb was 3.11 (2-4.5), Gh+Pb 7.16 (4.5-12). Post-processing of US data was possible in 120, of which 25 (21%) had a significant cystocele, 45 (38%) significant uterine prolapse and 10 (8%) significant descent of the rectal ampulla. In 13 cases there was a rectocele with a mean depth of 14 (10-28) mm. Two (2%) women were diagnosed with complete and 13 (11%) partial avulsions. A significant EAS defect was diagnosed in 2 women. Partial (minor) EAS trauma was detected in 14 (12%). Of 114 women in whom uterine position could be determined, 68 (60%) had a retroverted uterus which was associated with uterine prolapse (P =0.038).

Conclusions: Pelvic organ prolapse was common in Nepali women attending a general gynecology clinic, with a high prevalence of uterine prolapse (40%). Major pelvic floor trauma is uncommon in Nepali women. This is intriguing, especially in view of the high prevalence of prolapse. Uterine retroversion was seen in 60% and associated with uterine prolapse. Patterns of pelvic organ prolapse in Nepal seem to be different from patterns observed in Western populations.
Lessons from 500 Robotic-assisted Radical Prostatectomies in an Australian public teaching hospital

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Keywords: Prostate Cancer, Robotic surgery, Radical Prostatectomy

AIM
Nepean Hospital is first public teaching hospital in NSW to perform RARP. We aimed to assess the clinical and oncological outcomes of robotic-assisted radical prostatectomy (RARP) in our Australian public teaching hospital.

METHOD
All patients undergoing RARP using the Da Vinci Si™ Robot at Nepean Public Hospital from October 2012 to September 2017 were included in our study. Operative and oncological data was collected in a prospectively maintained database. A retrospective analysis of clinical and oncological outcomes was performed on this data. Statistical analyses were performed using SPSS 24.0.

RESULTS
Five hundred patients were included in this study. The mean age of the patients was 63 years. Intra-operatively, the average setup time for RARP was 32 minutes with a console time of 165 minutes. The average blood loss was 481mls. Post-operatively, the average length of stay was 2.7 days. The overall positive surgical margin rate (PSM) was 26%. The pT2 PSM rate was 9% and pT3/T4 PSM rate was 40%.

CONCLUSION
Our study shows that RARP can be performed in a public teaching hospital with surgical and oncological outcomes comparable to international data. Our study shows that urological trainees can be trained on the RARP procedure in a public teaching hospital without compromising patient care, oncological outcomes or operating theatre efficiency.
RE-EVALUATING THE CEREBROPLACENTAL RATIO. A SYSTEMATIC REVIEW AND META-ANALYSIS.

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Objective: This meta-analysis evaluates the use of cerebroplacental ratio (CPR) in predicting adverse perinatal outcome.

Methods: An electronic search of PubMed, Embase, Google scholar, Cochrane Library and Up-to-Date was done using variations of ‘cerebroplacental ratio’ and ‘cerebroumbilical ratio’. The references of the review articles were analysed to make sure no usable data was lost. We included studies where CPR was measured and postpartum outcomes were available. The neonatal and obstetric outcomes analysed were; the need for intervention based on presence of fetal distress, neonatal pH, Apgar score, NICU admission as well as stillbirth and neonatal death rates. Only articles available in full-text were used. Exclusion criteria included studies that were small (n<10) or those looking exclusively at multiple pregnancies, congenital anomalies or looking at the effect of certain medications or therapy on Doppler flows.

Results: Data from 66266 patients in 46 studies was extracted. Twenty-one prospective, 18 retrospective and 7 case-control studies were included. Data on each obstetric or perinatal outcome was separately analysed. When analysing the prospective data, it showed abnormal CPR can predict the need for operative delivery due to fetal distress [RR: 2.18, 95% CI: 1.64-2.91; I²=71.45, P<0.001], low pH [RR: 1.96, 95% CI: 1.06-3.63; I²=64.80, P=0.01] and low Apgar score [RR: 2.67, 95% CI: 1.66-4.27; I²=31.88, P=0.16], as well as NICU admission [RR: 2.48, 95% CI: 1.80-3.43; I² 62.10, P=0.02] and neonatal morbidity [RR: 6.78, 95% CI: 1.46-31.65; I²=94.27, p<0.001]. Only retrospective data was available for fetal or neonatal demise, the data showed CPR can predict fetal or neonatal demise [OR: 3.96, 95% CI: 1.45-10.84; I²=56.15, P=0.08].

Conclusion: Our meta-analysis shows that CPR can be used to identify foetuses with higher risk of operative delivery due to fetal distress, low pH, low Apgar score, NICU admission, neonatal morbidity as well as stillbirth and neonatal death rates.
Healthy people have many problems, the sick only have one. When our life is affected by disease, most people have only one priority; getting better. Medicine tries to help these people. The aim of medicine is to take away, overcome or reduce failure of our body to fulfil normal functions. In doing so, the practitioners of medicine are, in Western societies, assumed to use scientific methods.

Evidence based medicine (EBM) was originally defined as the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients. The concept was introduced in mid 80-ies by David Sackett (Sackett et al., 1985, Guyatt, 1991). Evidence-Based Medicine aims to de-emphasize intuition and clinical experience as sufficient ground for clinical decision-making and stresses the appraisal of evidence from clinical research next to pathophysiologic reasoning. It aims to integrate best research evidence with clinical expertise and patient values. As such, clinical research is one of the fundamental features of evidence based medicine.

The biomedical research complex has been estimated to consume almost a quarter of a trillion US dollars every year (Moher et al. 2016). Unfortunately, evidence suggests that a high proportion of this sum is avoidably wasted. In my lecture, I will discuss the process of making medical knowledge and the role that science has. I will touch upon insufficiencies and flaws, but also address room for improvement both from a clinical and research perspective.

The influence of cigarette smoking and dietary habits on first trimester growth rate and embryonic heart rate.

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Objectives: The aim of this study was to evaluate the effects of cigarette smoking and commonly consumed foods/drinks on the first trimester growth and embryonic heart rate.

Methods: This was a prospective observational study performed between February 2013 – June 2015. Women recruited in the first trimester underwent two ultrasound scans; both the crown-rump length (CRL) and the embryonic heart rate (EHR) were recorded. Each woman answered a standardised questionnaire which recorded smoking history, consumption of coffee, hot chocolate, tea, soft drinks, sweets (chocolate, candy bars and toffee) and curry. Consumption of food was calculated by multiplying the consumption frequency by the portion size. The gestational age (GA) was calculated by the first CRL measurement. The CRL growth rate was derived from the increase in CRL in the first trimester as follows: \((\text{CRL}_2 - \text{CRL}_1)/(\text{GA}_2 - \text{GA}_1)\) (mm/day). Univariate and multivariate analyses were performed to determine the relationship between these dietary and smoking habits on the CRL growth rate and the EHR. Linear mixed modelling was used to model the CRL growth and the EHR with GA whilst taking into account multiple variables and their interactions. The relationship between the foods, drinks, smoking and CRL growth and EHR was evaluated using the coefficient of correlation (R). If R = -1.0 to -0.5 or 1.0 to 0.5, there was strong correlation; if R = -0.5 to -0.3 or 0.3 to 0.5, there was moderate correlation; if R = -0.3 to -0.1 or 0.1 to 0.3, there was weak correlation; and if R = 0.1 to 0.1, there was no or very weak correlation.

Results: 700 first trimester women were approached and a total of 378 women were recruited: 244 (64.6%) non-smokers, 58 (15.3%) smokers, 50 (13.2%) ex-smokers or quit in early pregnancy and 26 (6.9%) passive smokers. Mean maternal age was 28 years, mean coffee use was 4.5 cups (250 mL) per day, tea was 2.8 cups (150-190 mL)/day, chocolate was 2.2 bars (45-50 g)/day. The mean EHR was significantly lower in smokers compared to non-smokers or passive smokers (144 bpm vs 147 bpm, p-value=0.02). Smoking habits did not influence the CRL growth. There was a significant correlation between coffee/hot chocolate consumption and the initial CRL value. A negative correlation was noted between the EHR and curry consumption (R=-0.133, p-value=0.009), coffee consumption (R=-0.11, p-value=0.02), hot chocolate intake (R=-0.22, p-value<0.0001), and sweets (R=-0.1, p-value=0.04). Tea intake was positively correlated with the EHR (R=0.16, P=0.002). The CRL growth rate was inversely correlated with coffee (R=-0.11) and hot chocolate (R=-0.14) consumption. Multivariate analysis showed that increasing consumption of coffee & hot chocolate was associated with lower EHR. Consumption of tea correlated with increased EHR (p-value<0.05). Increasing consumption of coffee & hot chocolate was associated with a lower CRL growth rate.

Conclusions: Our findings suggest that first trimester CRL growth rates and the EHR may be influenced by a variety of commonly consumed foods & drinks. The influence of these on the developing foetus on the developing foetus the first trimester requires further studies. Cigarette smoking was associated with lower EHR but did not influence the CRL growth.
ANTENATAL EDUCATION FOR CHILDBIRTH – EPIDURAL ANALGESIA

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Objective
Our objective was to identify the way antenatal information is described and presented by childbirth educators to assess consistency and to what degree language structures used are helpful or harmful.

Method
This observational study of antenatal education was conducted at a single tertiary referral centre. Childbirth educators were video recorded during antenatal classes. Audio data was transcribed and then analysed by two researchers independently categorising information statements, positive and negative statements, storytelling and metaphor.

Results
During the session of medical intervention, labour epidural analgesia was discussed by each of the educators. The time spent on this topic varied with midwife MC3 = 15 minutes, WC3 = 30 minutes and TC3 = 41 minutes.

Definitions of how statements were categorised were taken from previous observational studies of communication in other settings.

The number of statements used by the Childbirth educators when discussing labour epidurals and showed that information statements dominated all other communication techniques. This was followed by negative statements, while positive statements and misinformation scored 35 and 30 statements respectively. Misinformation though not a language structure was observed within the content and confirmed by a 2nd researcher (AMC).

There was a great deal of variation in the number and types of risks mentioned by the educators. The risks were revealed by each of the educators at different points in the class. WC3 discussed eight risks, with a focus on dural puncture. TC3 outlined five risks, and the complication most focused on by TC3 was headaches post epidural leading to meningitis and death. While MC3 only mentioned that the epidural might not work.

Conclusion
The types of language structures used is highly variable in both time, language structure and content between educators. Our findings represent a basis for optimising antenatal education in a consistent way with important implications for future practice and research.
HOSPITAL IN THE HOME (HITH) WITH TELEHEALTH – THE VIRTUAL SPECIALIST IN YOUR HOME

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Aim
The aim was to extend the Nepean HITH service to upper mountains for treatment in patients’ own homes. The patients were to be provided specialist Infectious Diseases (ID) consultations within 72 hours of referral, via Tele health.

Method
We leveraged the Tele health initiative at Nepean Hospital to obtain mobile devices for HITH nurses. An App was designed and developed specially for the purpose of streamlining note and picture taking, providing access to the hospital Cerner system and enabling video-conferenced consultations. Two nurses were recruited to extend treatment services to Blue Mountains. They provided up to twice daily treatments to patients in the upper mountains, particularly patients with cellulitis. The nurses also facilitated Tele health reviews by ID specialists at Nepean to optimize diagnosis and provide appropriate antibiotic therapy.

Outcomes measured were number of days on intravenous antibiotics, number of presentations to Emergency Department (ED) and number of Tele health consultations. Patient satisfaction was assessed via informal feedback. Cost of care was assessed based on bed days.

Results
Over 5 months we saved 99 emergency presentations to Blue Mountains District Hospital (BMDH), a 41% reduction. Antibiotics days for cellulitis were reduced from 4.1 to 3.3, a 21% reduction in length of stay. All patients received an ID review; 50% patients were able to avoid travel to hospital due to consultations via Tele health, resulting in reduction in health costs by AUD 39,204, improved continuity of care and patient satisfaction.

Conclusion
The initiative has allowed more patients to be treated at home with direct access to timely specialist review. Presentations to ED were reduced, so also the prolonged waiting times in ED for patients requiring an evening dose. Readily available specialist advice optimised antibiotic therapy with anticipated secondary gains from reduced indwell times for intravenous cannulas.
Characterising microenvironment responsive P2X7 alternative splicing in RPMI 8226, a multiple myeloma cell line.

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Objectives: The ligand gated cation channel P2X7 is a purinergic receptor with roles in inflammation, cell growth and death. There is emerging evidence of alternative splicing (AS) of P2X7 mRNA, which may mediate changes in channel function. This study aimed to determine if, given the role of P2X7 in ion homeostasis and survival, P2X7 AS is altered by changes in extracellular pH, oxygen tension and nutrient depletion.

Methods: The multiple myeloma cell line RPMI 8226 was exposed to either acidic (pH 6.8), hypoxic (2% O2) or nutrient depleted environments for time points of 4, 24 and 48 hours. Cells were then harvested, lysed and P2X7 isoform mRNA expression levels measured and compared to time matched controls.

Results: We demonstrate that in response to acidic (pH 6.8) conditions, P2X7 AS is altered, with significant changes in expression detected for some isoforms, including P2X7J, P2X7E and P2X7G/H. Additionally, hypoxic (2% O2) conditions resulted in reductions in P2X7E expression, as well as a global reduction of all detectable P2X7 splice isoforms, although not reaching statistical significance (p>0.05). In both cases, levels of total P2X7 mRNA remained stable, implying changes in spliced transcript expression may be associated with changes in the relative amount of full length P2X7A transcript. We also show that nutrient depletion may also induce changes in P2X7 AS.

Conclusions: Together, for the first time, we have demonstrated that P2X7 AS is inducible by changes in the extracellular environment including pH and oxygen tension, as well as potentially nutrient depletion. While it remains unclear if these changes in AS alter channel function, this study suggests that AS may play a key role in regulating how the P2X7 receptor can support cell growth and cell death.
THE MOLECULAR MECHANISMS OF CHRONIC LYMPHOCYTIC LEUKAEMIA

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Background
An inherited risk for developing chronic lymphocytic leukaemia (CLL) is well documented in epidemiological and genetic studies. We performed a comparative study of gene expression and proteomics in affected individuals from a large family with multiple members affected by CLL and sporadic CLL cases. A secondary aim was to study gene expression and proteomics in stable and progressive CLL.

Aims and Methods
1. Compare the RNA profiles in familial/sporadic and stable/progressive cases.
2. Compare the protein in familial/sporadic and stable/progressive cases.

To determine which RNAs are differentially expressed between familial/sporadic and stable/progressive CLL, RNA was extracted from purified B CLL cells and processed using the Affymetrix GeneChip Human Transcriptome Array 2.0. Functional networks of differentially expressed genes between groups were studied using Ingenuity Pathway Analysis (IPA) software. In the same set of CLL samples, proteins were studied using TMT 10plex Mass Tag labelling and analysed using an advanced Orbitrap Fusion Tribrid™ Mass Spectrometer. Levels of expression of proteins between familial versus sporadic and stable versus progressive were determined using functions in the R computational environment. Functional networks of differentially abundant proteins were studied using IPA software.

Results
We identified a list of genes and proteins that were differentially expressed between familial/sporadic and stable/progressive CLL.

Conclusion
We have identified a number of genes and proteins that can be used to distinguish B cells of healthy controls from familial and sporadic CLL, and stable from progressive CLL/MBL cells. These data provide a further understanding of the mechanisms of malignant initiation and proliferation in CLL and potential targets for new therapies.

Acknowledgements
We are grateful to patients and members of the family for their participation in this study.
ABSTRACTS
~ Poster Presentations ~
PREVALENCE AND ASSOCIATIONS OF PSYCHOLOGICAL DISTRESS IN AUSTRALIAN JUNIOR MEDICAL OFFICERS

Objectives: To determine the prevalence of psychological distress in Australian Junior Medical Officers (JMOs) and investigate the determinants associated with psychological distress over a three year (2014-2016) period.

Methods: JMOs were surveyed using the 2014-2016 JMO Census (n=220, 399, and 466 each year, response rate approximately 15%). Levels of psychological distress were assessed using the Kessler Psychological Distress Scale (K10). A K10 ≥ 25 was chosen to indicate high psychological distress and this determinant was compared to various demographic and work-related factors.

Results: Australian JMOs experience a high level of psychological distress (mean of 18.1, median 16.0). There were no differences in demographical variables such as age, sex, marital status, dependents and between PGY 1 and 2. Increasing hours worked per week was associated with a higher K10, with every hour worked increasing odds by 3%. Attitudinal items including feeling unwilling to study medicine again, feeling poorly trained, and experiences of bullying were related to high psychological distress. Coping strategies like exercise and spending time with friends correlated positively with lower distress, whilst time off work, frequent alcohol use, smoking and drug use were associated with increased distress levels. 54.5% of those with a high K10 indicated that they did not use any form of professional support. 17.83% expressed that given their time again, they would not choose to study medicine.

Conclusions: A focused approach to JMO support and education regarding significant risk factors identified is likely to assist health policies that aim to improve the mental wellbeing of Australian JMOs.

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Pharmacological Evaluation of Novel Bioisosteres of an Adamantanyl Benzamide P2X7 Receptor Antagonist


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Background
Numerous drug classes have been identified in the pursuit to discover selective P2X7R antagonists. Of this diverse library, only a handful have proceeded to clinical trials. Adamantanyl benzamide 1 was identified as a potent P2X7R antagonist but failed to progress further due to poor metabolic stability.

Aim
We therefore sought to explore whether the original adamantanyl benzamide structures, identified as potent P2X7R antagonists albeit poor drug candidates due to high lipophilicity and poor metabolic stability, could be improved through bioisosteric strategies with the aim to develop a preclinical lead suitable for CNS studies.

Results
We describe the synthesis and structure-activity relationship (SAR) of a series of bioisosteres of benzamide 1 to explore improvements in the pharmacological properties of this lead. Initial efforts investigated a series of heteroaromatic bioisosteres, which demonstrated improved physicochemical properties but reduced P2X7R antagonism. Installation of bioisosteric fluorine on the adamantane bridgeheads was well tolerated and led to a series of bioisosteres with improved physicochemical properties and metabolic stability. Trifluorinated benzamide 34 demonstrated optimal physicochemical parameters, superior metabolic stability (ten times longer than lead benzamide 1, and an improved physicookinetic profile and proved effective in the presence of several known P2X7R polymorphisms.

Ion Channel Drug Discovery Consortium; DVC Research/Sydney Research Excellence Initiative 2020 (SREI).
The prediction of pouch of Douglas obliteration using offline analysis of corresponding ultrasound and laparoscopic video sets: an inter-observer and diagnostic accuracy study

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Objectives: What is the diagnostic accuracy and inter-observer agreement among experienced and less experienced sonologists compared to general gynaecologists and advanced laparoscopic surgeons when assessing offline ultrasound video sets of the ‘sliding sign’ and laparoscopic videosets to predict POD obliteration, respectively?

Methods: Reproducibility study involving 15 observers (5 sonologists (3 experienced/2 inexperienced), 5 generalists and 5 advanced laparoscopists. 25 preop ultrasound videosets of the ‘sliding sign’ were recorded assessing the POD and 25 intraop laparoscopic videosets were recorded (of the same patients) assessing the POD. The 5 sonologists viewed the offline ultrasound videosets and the 10 surgeons viewed the matching offline laparoscopic videos. Each observer was asked to predict POD obliteration based on the videoset. Gold standard POD state was determined at real-time laparoscopy by GC. Inter-observer correlation was performed to determine the agreement among the 15 different observers as well as within and between the four different groups. Diagnostic accuracy among 15 observers (and the four different groups) were also evaluated. Cohen's κ coefficient <0(poor agreement), 0.01-0.20(slight agreement), 0.21-0.40(fair agreement), 0.41-0.60(moderate agreement), 0.61-0.80(substantial agreement) and 0.81-0.99(almost perfect agreement). Performance of observers from 4 groups to classify POD obliteration (partial + complete obliteration) from non-obliteration was made in comparison with the gold standard.

Results: Gold standard POD categories: 6 complete obliteration, 3 partial obliteration and 16 non-obliteration. The accuracy, sensitivity, specificity, PPV, and NPV for the experienced, inexperienced sonologists, generalists and advanced laparoscopists to predict POD obliteration were 93.3%/70%/75.2%/82.4%, 100%/88.9%/88.1%/91.9%, 89.6%/59.4%/78.1%/90.8%, 84.4%/55.2%/69.8%/82.9%, and 100%/90.5%/91.9%/95.8%, respectively. The difference between sensitivity values among the 4 groups was not significant (p<0.05). The difference between general gynaecologists and inexperienced sonologists in specificity was only borderline (p=0.048). Experienced sonologists were significantly better than inexperienced sonologists in specificity (p=0.0015).The overall agreement between experienced sonologists was almost perfect (Cohen’s κ =0.876) while between inexperienced sonologists was moderate (Cohen’s κ=0.589). The overall agreement between generalists was moderate (Cohen’s κ =0.652) while between advanced laparoscopists was substantial (Cohen's κ=0.876).

Conclusions: The inter-observer agreement amongst experienced sonologists was superior to the other three groups. The prediction of POD obliteration using offline ultrasound videos by experienced sonologists is comparable to offline assessment of laparoscopic videos by advanced laparoscopists.
Practical Skill Education For Medical Students: an economical and efficient way for students to receive hands-on experience with procedures

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Background: Basic suturing technique is a fundamental requirement for all doctors. To gain confidence and competence, medical students need to have adequate suturing teaching practice. Recent observations have found that there is increasing number referrals to Emergency Departments from GPs for simple laceration repair. University of Sydney, Nepean Campus, has developed cost effective aids to teaching suturing.

Aim: To train medical students in basic suturing techniques via tutorials, demonstration and practical sessions using cost effective suturing practice devices.

Methods: Suturing workshops frequently use pig skin for demonstration and practice of skin closure, subcuticular stitching etc. Pig skin needs to be refrigerated. The skin can be hard and thick, not having the features and texture of human skin. As well as issues regarding cleaning of instruments, hands etc pig skin has to be disposed of appropriately.

With our devices we overcome these problems.

1) A wooden board about 20cm square with a 2cm thick is covered by foam. The foam used is specially ordered but relatively easy to obtain. The outside of the foam is usually discarded by the manufacturer but has a "skin" which is similar to epidermis, dermis and fatty layer of human skin. The foam can be re-used several times. It is easy to store and no issues with disposal. Suturing through the foam has similar "feel" to human skin. The board enables tension to be applied to the sutures. It is very easy to set up, friendly, reusable and cost effective.
2) Use of a plastic container for deep, free hand surgical knot training in a confined space
3) Use of a wooden block with coloured string to aid the learning of tying a reef knot

Conclusion: In this presentation, we will show all our devices, These models are cheap an easy to build and can be used for training in suturing technique by other medical schools, GP training and suturing workshops.
AUDIT ON VIABLE INTRAUTERINE PREGNANCY OUTCOMES FROM PREGNANCY OF UNKNOWN LOCATION

Stamatopoulos N, Duncan H, Shakeri B, Espada M, Condous G.

Background: Pregnancy of unknown location (PUL) is defined as a positive pregnancy test, yet there are no signs on transvaginal ultrasonography of an intra or extra-uterine pregnancy. There are four possible outcomes of a pregnancy with unknown location: a failed intrauterine pregnancy, an intrauterine pregnancy, an ectopic pregnancy or persistent PUL. There are various tools which assist in predicting the outcome of PUL including a range of mathematical models – the most commonly used being the M1 and M4 models which use the results of two serum hCG levels taken at 0hr and 48hrs. It is successful in 90% of cases. Acceptable management includes expectant for those patients who are asymptomatic and haemodynamically stable, medical management with Methotrexate for those with increasing serum hCG levels and surgery with uterine curettage and diagnostic laparoscopy for certain cases.

There is little research assessing those PULs which become viable intrauterine pregnancies and the overall outcomes of the neonates.

Aim: The aim is to identify if having an original diagnosis of PUL influences the outcome of the neonate and whether there were any increased maternal or neonatal complications.

Method: 267 cases were identified from the PUL database, using the filters ‘viable pregnancy’ and ‘final diagnosis’. This was narrowed down to 21 cases between 2011-2016. The relevant outcomes were tabulated into an excel spreadsheet. 19 more cases were included using outcomes which were ‘blank’ and ‘Intrauterine pregnancy of unknown viability’ giving the overall case number of 40.

Results: 40 cases were included in this audit. 4 out of the 40 cases (10%) had miscarriages at <15 weeks. A further 10% of cases had no documentation of birth but had recorded antenatal visits, moreover, a total of 30 neonatal cases were evaluated.

92.5% of the women identified for this audit had at least one co-morbidity. 59% delivered at >39 weeks’ gestation and 31% of those delivered after 41 weeks. The majority of women were non-smokers at 82.5% and 62.5% had at least one complication during their.

77% of 30 neonates had an Apgar score observed at 9 in the first minute and 90% had a score observed at 9 at 5 minutes. 37% of neonates were in the 3500-4000g category with 8 being in the category below at 3000-3500g. Only 20% were below 3000g and 10% above 4000g. The average neonatal length was 50.4cm and average head circumference at 33.8cm. Neonatal complications were present in 23% of cases with the majority having respiratory distress at birth.

Conclusion: In conclusion, there can be no definitive answer about whether having an initial diagnosis of pregnancy of unknown location had any adverse outcome on the neonate, as there were many other factors involved in the cases that were evaluated. This audit did support the widely known association between a low birth weight and neonatal complications, however, the sample size was not large enough to have a significant result.
The proportion of women with a histological diagnosis of molar pregnancy who have an ultrasound diagnosis prior to uterine evacuation.

Stamatopoulos N, Bailey A, Shakeri B, Espada M, Weishaupt J, Condous G.

**Background:** Gestational Trophoblastic Disease (GTD) defines a group of placental disorders associated with pregnancy. It includes both complete and partial molar pregnancies. Worldwide, the incidence of molar pregnancy is 1:1200 pregnancies. Historically molar pregnancies would present in the 2nd trimester with vaginal bleeding, a larger than expected uterus and hyperemesis. These women may also present for the first time with a failed pregnancy on routine examination. Changes in ultrasound has reduced the gestational age at which molar pregnancy is diagnosed. A detection rate for ultrasound examination alone has been suggested as 56%. Ultimately histology gives the conclusive diagnosis.

**Aims:** The aim of this study is to compare the proportion of women who had an ultrasound diagnosis of molar pregnancy before histology, with those who did not have a diagnosis prior to histology. By comparing Nepean Hospital's ultrasound detection rates with this figure, it can be seen if diagnosis is effective. We would also like to compare the two groups (those with, and those without a pre-histology diagnosis).

**Method:** Nepean Hospital, in New South Wales, maintains a database for its own patients diagnosed with molar pregnancy. Both partial and complete moles are included in the database, and both patients diagnosed before and after histology examination are included. This was then compared with the detection rate of the United Kingdom. The consultations were performed by the senior trainees in their final 2 years of specialty training in the Acute Gynaecology Service (AGS).

**Results:** The Nepean Hospital molar pregnancy database commenced in 2011 and all patients within the database were considered. A total of 44 patients were registered on the database up to the date of data collection on 14/02/17. 29 out of the 44 cases were diagnosed as being suspicious for complete or partial molar pregnancy. This gives a detection rate of 66%.

**Conclusion:** The detection rate of GTD at Nepean Hospital on ultrasound is comparatively better than that of the United Kingdom with a detection rate of 66% compared with 56%.
Button battery causing tympanic membrane injury

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Background: Button batteries are commonly used for various electronical devices including hearing aids. They are a common foreign body in children and while majority are ingested, 4.1% are inserted into external auditory canal (EAC). Batteries commonly cause damage to mucosa through pressure necrosis, electrolysis, caustic exposure and heavy metal toxicity.1

Methods: We describe the case of a 11-year old boy with button battery in EAC and conducted a literature review. The patient presented to a regional centre emergency department 2 hours’ post insertion of a button battery in right EAC. After unsuccessful attempt to remove, an urgent transfer to tertiary ENT centre was organised and foreign body was successfully removed intra-operatively 5 hours post insertion. Intra-operatively it was noted that there was extensive caustic damage to EAC and tympanic membrane (TM) was perforated. TM was repaired intra-operatively with Gelfoam with good effect. TM was sealed week one post-operatively with normal audiology and healed EAC and TM 3 months post-operatively.

Results: There are only few reported cases of button battery in EAC in literature with limited experience on effects of button battery on EAC and TM. Literature search demonstrated that prompt removal of battery is important to avoid morbidity.3 In addition to significant trauma, button batteries in EAC result in: malignant otitis externa, hearing loss, TM destruction, necrosis of EAC and facial nerve paralysis.

Conclusion: Our case demonstrates the importance of prompt removal of button battery and early ENT involvement.

Reference:
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TRAUMATIC BRAIN INJURY AND THE RISK OF ALZHEIMER’S DISEASE AND OTHER DEMENTIAS: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Objective: To investigate the association between traumatic brain injury and the risk of onset of Alzheimer’s disease and other dementias.

Methods: We performed a systematic search of PubMed from Jan 1 2012 to Feb 15 2017 using relevant search terms as keywords and MeSH subheadings. This was combined with extraction of studies from two previous review articles; together, all relevant literature from 1990-2017 was reviewed. We included case-control and cohort studies with at least fifty cases that related traumatic brain injury at any point in the lifetime with subsequent dementia risk. Data were pooled using a random effects model. Study quality was assessed using the Newcastle-Ottawa Scale, but no studies were to be excluded on the basis of quality score.

Results: Of 4256 citations screened, 48 studies met the inclusion criteria. We found that traumatic brain injury was associated with a significantly increased risk of dementia (OR=1.42, 95%CI 1.17-1.72; p<0.001); however, the heterogeneity was substantial ($I^2=81.93$). When considering only prospective studies, the result was attenuated to statistical non-significance (OR=1.22, 95%CI 0.99-1.50; p=0.058), with only mild heterogeneity ($I^2=46.11$). When considering only retrospective studies, the association remained significant (OR=1.59, 95%CI 1.19-2.05; p=0.001), but with significant heterogeneity ($I^2=86.95$). One source of variation was for geographical location, in which the association was significantly attenuated in European studies (OR=1.13, 95%CI 0.79-1.61; p=0.51), when compared to North American (OR=1.56, 1.20-2.03; p=0.001) and Asian studies (OR=1.51, 95%CI 1.15-1.97; p=0.003). There was no publication bias (p=0.83).

Conclusions: Our findings indicate that it is likely that traumatic brain injury is associated with an increased risk of dementia. However, the significant heterogeneity undermines the reliability of such a finding, and the non-significance of the findings in prospective studies only may indicate recall or reverse causation bias is present. Well-designed prospective studies are needed to investigate this association further.
THE SAFETY AND EFFICACY OF INTRAVENOUS IMMUNOGLOBULIN (IVIG) FOR THE TREATMENT OF ALZHEIMER’S DISEASE: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Objective: To evaluate the safety and efficacy of intravenous immunoglobulin (IVIg) in the treatment of Alzheimer’s disease.

Methods: A systematic search of the databases of the electronic database MEDLINE, PubMed, EMBASE, LILACS, CINAHL, and ClinicalTrials.gov through to 23 January 2017 was performed. Randomised controlled trials involving the administration of intravenous immunoglobulin to human subjects to treat Alzheimer’s disease were included. The co-primary outcomes were the risk of serious adverse events, and changes in ADAS-cog. Secondary safety outcomes were the risk of any adverse events, cerebral microhaemorrhages and infections. Secondary cognitive outcomes were changes in ADCS-ADL, MMSE and CDR-sb. Data were pooled using a random effects model. Quality was assessed using the Jadad scale, but no studies were to be excluded on the basis of Jadad score.

Results: Of 433 screened citations, five studies met the criteria for inclusion in the meta-analysis, including one report of unpublished trial data from ClinicalTrials.gov (NCT01524887). We found no increased risk of serious adverse events (OR=0.73, 95% CI 0.42-1.26), and no significant difference in ADAS-cog (diff in means +0.16, 95% CI -0.08 to +0.40). Use of IVIg was significantly protective against infections (OR=0.70, 95% CI 0.55-0.89), and was not associated with increased risk of cerebral microhaemorrhages. There was no significant difference in the other secondary cognitive endpoints. There was no heterogeneity in either of the co-primary outcomes ($I^2=0.00$), nor was there publication bias.

Conclusions: While IVIg is generally well tolerated in the treatment of Alzheimer’s disease, its failure to meet cognitive endpoints casts doubt on its viability as an option for treatment.
THE ASSOCIATION BETWEEN HELICOBACTER PYLORI INFECTION AND PARKINSON’S DISEASE: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Introduction: To investigate the association between Helicobacter pylori (H. pylori) infection and the risk and motor characteristics of Parkinson’s diseases, including impacts on the pharmacokinetics of levodopa (L-DOPA) therapy.

Methods: We performed a systematic search of the electronic databases MEDLINE, PubMed, EMBASE, CINAHL, LILACS and Cochrane CENTRAL through to 12 January 2017, supplemented by manual search of reference lists. Studies in humans reporting relevant outcomes as odds ratios or differences in means were included. Relevant outcomes were risk of PD associated with H. pylori infection, difference in UPDRS-III score between infected and non-infected PD cases, change in UPDRS-III score after eradication of H. pylori in PD cases, and differences in L-DOPA time of onset and duration. Data were pooled using a random effects model. Heterogeneity was assessed with Cochran’s Q statistic, while Egger’s regression model was used to assess for potential publication bias.

Results: We included twelve studies from 174 citations post-screening. We found a significantly increased risk of PD associated with H. pylori infection (OR=1.56, 95% CI 1.33–1.82). There was no heterogeneity ($I^2=0.00$). After exclusion of one study with a disproportionately high weighting due to large sample size, the result remained significant (OR=1.79, 95% CI 1.36–2.34). Infected PD cases had a worse mean UPDRS-III score (diff in means +0.28; 95% CI -0.03 to +0.58; p=0.078) but improved post-eradication of H. pylori (diff in means -5.04; 95% CI -10.36 to +0.09; p=0.054), though neither analyses reach statistical significance. L-DOPA duration of action was significantly shorter in infected PD cases (diff in means -0.47 hours; 95% CI -0.79 to -0.15; p=0.004). There was no publication bias (p=0.06).

Conclusions: H. pylori increases PD risk and may worsen motor function and L-DOPA absorption. Further research is required to distinguish pathogenetic and pharmacokinetic mechanisms.
EFFECT OF PRE-OPERATIVE PSYCHOLOGICAL INTERVENTIONS ON ELECTIVE ORTHOPAEDIC SURGERY OUTCOMES: A SYSTEMATIC REVIEW

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Objective: Psychosocial factors have been shown to influence orthopaedic outcomes. We investigated the types and effectiveness of pre-operative psychosocial interventions in orthopaedic surgery.

Methods: A systematic review was performed on relevant literature (1960-2016) from established databases (the Cochrane Register of Controlled trials, MEDLINE, PREMEDLINE, EMBASE, PsycINFO, CINAHL, PubMed, PEDro) and hand-searching. Inclusion criteria: prospective controlled clinical trials, adult and adolescent elective orthopaedic surgery patients. Interventions: relaxation, CBT, hypnosis, and mixed therapies; general procedural education was excluded. Outcomes of interest: pain, anxiety, quality of life (QoL), post-operative recovery. Methodological quality assessment: Jaddad scale, Cochrane Risk of Bias Assessment Tool.

Results: We found 146 studies; 15 met inclusion criteria: 1166 patients, mean age 53.5 years old (11-83), 713 (66%) female and 372 (34%) male.

11 studies supported using psychological intervention on pain and/or anxiety in the acute post-operative period (0-2 weeks); 6 studies found a statistically significant benefit. Only 2 studies addressed quality of life/disability- both reported statistically significant improvements with psychological interventions beyond the acute time point.

Data was pooled for meta-analysis from studies in the acute post-operative period. Pain (6 studies, 444 patients): small but statistically significant (p<0.05) reduction in the intervention group (OR=0.07, p=0.01), considerable heterogeneity (I²=96.52, p<0.001) - this statistically significant result was lost post exclusion of a clear outlier in the data set (OR=0.65, p=0.21. (I²=62.03, p=0.03). Anxiety (5 studies, 367 patients, post-data-only analysis): moderate statistically significant beneficial effect size (OR=0.42, p-value=0.00), low heterogeneity (I²=0.00, p=0.43). No trends were discernible between surgery types.

Conclusions: There is low-level evidence that psychological interventions, particularly relaxation techniques, have a small positive effect on anxiety in elective orthopaedic surgery patients in the acute post-operative period. Further high-quality research is needed, with longer follow-up and standardised measures addressing patient-centred outcomes.
The role of patient information sheets and portable video media in preventing hospital re-presentation for stent irritation: a single-blinded, randomised controlled trial in a major tertiary hospital

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Objectives: To determine if the addition of patient information sheets and/or portable video media helps to prevent hospital re-presentations for stent irritation in patients post cystoscopy and insertion of ureteric stent compared to standard verbal consent process.

Method: In this single blinded, randomised controlled trial, patients undergoing a cystoscopy and ureteric stent insertion at Nepean Hospital were consented by the operating Urologist/Urological trainee. The patients were then randomised into three groups: A. Standard verbal consent, B. Standard verbal consent and patient information sheet and C. Standard verbal consent, patient information sheet and further education delivered via portable video media. The consenting surgeon was blinded to patient randomisation. The patient information sheet contained the standard information discussed during the consent process. Video education consisted of a 7 min delivered on a portable video media device. The main outcome measure was representation to Emergency for symptoms of stent irritation prior to laser lithotripsy. Results were analysed using Fishers exact test.

Results: Twenty-five patients have been recruited into the study at interim analysis from July to September 2017. The mean age of the participants was 55 years, 13 (52%) were males and 12 (48%) females. 22 participants (88%) had a 6Fr x 22cm stent inserted and 3 participants (12%) had a 4.8Fr x 26cm stent inserted. 12 patients (48%) had a right ureteric stent, 11 (44%) had a left ureteric stent and 2 patients (8%) had bilateral ureteric stents placed. Fishers exact test was used for analysis of categorical variables. Analysis showed significantly more representations in the group A with 3 out of 8 (37.5%) participants re-presenting for stent irritation 37.5% vs 0% in group B and C combined (p-value = 0.023). This research project is ongoing.

Conclusion: This study demonstrates that patients who receive further information about ureteric stents in addition to the standard verbal consent are less likely to re-present to the emergency department with stent irritation. This is proposed to be due to better understanding of the benefits, risks and side effects of a ureteric stent. This study shows the benefit of patient education to help reduce the number of avoidable emergency department presentations. Further economic analysis will be performed to quantify the cost savings of education implementation.
“BLAST IT!” - SHORT PULSE VERSUS LONG PULSE FOR IMPROVING STONE FRAGMENTATION AND DECREASING RETROPULSION DURING LASER LITHOTRIPSY

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Keywords: renal calculi, operative techniques, laser lithotripsy

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Objectives:
To determine if short pulse versus long pulse laser settings affect the degree of retropulsion and fragmentation of renal calculi during laser lithotripsy

Methods:
A prospective study was conducted at Nepean Hospital, NSW, Australia for patients undergoing flexible ureterorenoscopy for renal calculi. A Cook 10-12Fr ureteric access sheath was used and either a single use Boston Scientific LithoVue or Olympus URF-V2 ureterorenoscope. A 30W Holmium-YAG laser (RocaMed) was utilised. All calculi had a minimum of 1 minute of lasering using both a short and long pulse setting. Lasering was commenced on the lowest power setting and increased based on the operator’s preference. The degree of retropulsion was assessed on a 5-point Likert scale (1-nil, 2-minimal, 3-mild, but manageable, 4-moderate, 5-significant) and the smoothness of fragmentation was also assessed on a 5-point Likert scale (1-very poor, 2-poor, 3-average, 4-good, 5-excellent). Data was analysed using SPSS 24.0. Continuous variables were analysed using independent samples T-test.

Results:
18 calculi were included in this study. Mean calculi size was 5.8mm (95% CI 2.5-9.1). The Olympus URF-V2 was used for 2 calculi and the Boston Scientific used for 16 calculi. 37% of renal calculi were in the inferior pole. For fragments ≥5mm, there was significantly less retropulsion on the long pulse setting compared to short pulse (1.3 vs. 2.3, p=0.002) but no significant difference in fragmentation (4.6 vs. 3.9, p=0.051). For fragments < 5mm, the long pulse setting resulted in significantly less retropulsion (1.9 vs. 2.9, p<0.001) and improved fragmentation (4.1 vs. 3.5, p=0.004).

Conclusion:
Long pulse settings for laser lithotripsy result in significant reduction in retropulsion and improved fragmentation of renal calculi.
“ME NO FRY”- PRELOADED URETERIC STENT DEPLOYMENT SAVES TIME AND REDUCES RADIATION DOSE EXPOSURE

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Keywords: Ureteric stent, radiation exposure, renal calculi, operative techniques

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Objectives:
To describe our technique for deployment of a preloaded ureteric stent following retrograde renal surgery with a ureteric access sheath and compare this to traditional stent deployment methods.

Methods:
A prospective case-cohort study was conducted at Nepean Hospital, NSW, Australia for patients undergoing flexible ureterorenoscopy for renal calculi using a ureteric access sheath. Two operators (1 consultant and 1 junior registrar) performed their stent deployment using a pre-loaded technique. Four other operators (2 consultants and 2 senior registrars) performed their stent deployment in their standard fashion. The pre-loaded stent deployment technique involves the scrub nurse preloading the sensor wire with the ureteric stent (with string attached) and the pusher. The operator then places the sensor wire through the ureteric access sheath to the renal pelvis, retracts the wire by 5cm and uses the image intensifier to confirm the proximal stent coil is in the renal pelvis. The operator then retracts the access sheath to the urethra and advances the pusher to the pubic symphysis. The wire is then retracted completely and the image intensifier used to confirm the distal coil is in the bladder. This method results in the operator having complete control over the stent deployment equipment and is useful when the scrub nurse is inexperienced. All operators were aware that their screening time and radiation dosage were being measured.

Results:
33 cases were included, 21 in the pre-loaded technique group and 12 in the standard group. The pre-loaded group had a significantly reduced radiation screening time, 3.9s (95% CI 2.6-5.1) vs. 14.5s (95% CI 8.8-20.2), p<0.001, and radiation dose exposure (dose area product), 35.2cGycm² (95% CI 20.2-50.2) vs. 141.4cGycm² (95% CI 81.8-200.9) compared to the standard group.

Conclusion:
Our study is the first to evaluate the pre-loaded ureteric stent deployment. This technique can help reduce radiation dose exposure to the patient and operator.
HOW WE DO IT: ANTEGRADE MEMOKATH DEPLOYMENT FOR BENIGN, ANASTOMOTIC URETERO-ILEAL STRICTURES

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²University of Newcastle, Newcastle, NSW, Australia

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OBJECTIVES:
To describe our minimally invasive technique of managing benign, anastomotic uretero-ileal strictures

METHOD
Patients who developed benign, anastomotic uretero-ileal strictures following radical cystectomy and ileal conduit formation were managed initially with retrograde deployment of the thermo-expandable ureteral Memokath 051 metal stent. These patients all had percutaneous nephrostomies placed prior to the procedure to relieve their urinary tract obstruction. If retrograde deployment was unsuccessful, antegrade deployment of the Memokath stent was attempted. This involved using the nephrostomy to place a ureteric guidewire down to the ileal conduit and then dilating the antegrade tract with a ureteric access sheath. A flexible ureteroscope was then placed antegrade through the access sheath and the Memokath deployed across the stricture in the usual fashion.

RESULTS
Two patients had an antegrade Memokath placed between March 2017-June 2017. Both cases had a percutaneous nephrostomy placed initially, due to an infected, obstructed system. Attempts at retrograde Memokath insertion failed as it was difficult to move the Memokath introducer to the correct position due to the angulation of the uretero-ileal anastomosis. Both patients had successful placement of the Memokath via the antegrade approach described above.

CONCLUSION
Benign, anastomotic uretero-ileal strictures are a difficult issue to manage, for which antegrade Memokath deployment is a feasible minimally invasive solution.
OBJECTIVES: To evaluate the impact of education on the volume of blood collected for cultures in the Neonatal intensive care unit (NICU) and to identify the factors influencing the blood volume, as the volume of blood injected into the culture bottle remains one of the most important factors in recovering microorganisms.

METHODS: Initial baseline audit was performed prospectively over a three-month period in a single-blinded manner, to determine the pre-intervention practice. None of the NICU staff except the 2 study investigators were aware of the audit during this period. The volume of blood collected was determined by weighing the bottles before and immediately after the blood inoculation, using a sensitive weighing scale (readability of 0.0001 grams). We identified that 76.2% of the samples collected were less than 0.5ml, which falls below the Clinical Excellence Commission recommendations.

Post-audit interventions included:
1. A guideline for blood collection for culture was developed. Adequate blood volume was defined as at least 1ml (±20%) irrespective of weight or gestation.
2. Education of all the registrars regarding importance of obtaining adequate blood volume.
3. Mandatory documentation of the volume collected and the reasons for sub-optimal collection (if any) was implemented.
4. Circulation of a memo to all the staff by the department head highlighting the importance of blood volume for culture.

Post intervention evaluation is currently is ongoing. Interim data is presented below:

RESULTS:

<table>
<thead>
<tr>
<th>Blood volume (mL)</th>
<th>Pre - intervention n(%)</th>
<th>Post - intervention n(%)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optimal (0.8-≥1.2 mL)</td>
<td>4 (3.1)</td>
<td>89 (68.5)</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>Sub-optimal (&lt;0.8 mL)</td>
<td>126 (96.9)</td>
<td>41 (31.5)</td>
<td>&lt;0.05</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Perceived reason for suboptimal collection</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor flow</td>
<td>10 (7.7)</td>
</tr>
<tr>
<td>No documentation</td>
<td>22 (16.92)</td>
</tr>
</tbody>
</table>

CONCLUSION: This Quality improvement audit highlights the fact that implementation of simple measures such as education and documentation can improve the compliance with blood collection volume.
To determine the optimal ultrasonographic screening method for rectal/rectosigmoid deep infiltrating endometriosis: ultrasound “sliding sign”, transvaginal ultrasound direct visualization or both?

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Objective: to evaluate the diagnostic accuracy of transvaginal ultrasound (TVS) direct visualization compared to the “sliding sign” to rule out deep infiltrating endometriosis (DIE) of the rectum or the rectosigmoid.

Methods: Multicentre prospective observational study undertaken between from January 2009 to February 2017, which included patients with suspected endometriosis. All women included in the analysis underwent TVS to ascertain whether the “sliding sign” was negative or if a nodule within the rectal wall was visualized, followed by laparoscopic surgery for endometriosis. The association between a positive/negative TVS “sliding sign” and the direct visualization/non visualization of a rectal nodule during the TVS were correlated to the presence of rectal/rectosigmoid DIE at laparoscopy. Data were analysed using Fisher’s exact test.

Results: Complete TVS and laparoscopic data were available for 376 women. 76/376 (20.21%) women were confirmed to have rectal and/or rectosigmoid DIE at laparoscopy. The accuracy, sensitivity, specificity, PPV and NPV for direct visualization of rectal/rectosigmoid nodules was significantly higher than the negative “sliding sign” in the prediction of DIE affecting the rectum/rectosigmoid (91.2% vs 87%, 86.8% vs 73.7%, 92.3% vs 9.03%, 74.2% vs 65.9%, 96.5% vs 93.1%) (p<0.05). The co-occurrence of a negative sliding sign and the direct visualization of a rectal/rectosigmoid nodule showed a higher specificity and a higher positive predictive value (95.3% and 79.1%, respectively), with similar accuracy and negative predictive values (90.2% and 92.6% respectively), but lower sensitivity than both the sliding sign alone (69.7% vs 73.7%) or the direct visualization of rectal/rectosigmoid nodules (69.7% vs 86.8%).

Conclusion: In expert hands, direct visualization of rectal or rectosigmoid nodules using transvaginal ultrasound scan is an accurate tool to rule-in the presence of rectal/rectosigmoid DIE with similar results to laparoscopic evaluation. The combination of both techniques (direct visualization of rectal or rectosigmoid nodules and the sliding sign) is a reliable method to rule-out rectal/rectosigmoid DIE.

Diagnostic accuracy of the transvaginal ultrasound “sliding sign” and direct visualization for the prediction of deep infiltrating (DIE) of the rectum and rectosigmoid.

<table>
<thead>
<tr>
<th>Surgical Findings</th>
<th>Accuracy</th>
<th>Sensitivity</th>
<th>Specificity</th>
<th>PPV</th>
<th>NPV</th>
<th>LR+</th>
<th>LR-</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ULTRASOUND NEGATIVE “SLIDING SIGN”</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rectal/rectosigmoid DIE</td>
<td>87.0%</td>
<td>73.7%</td>
<td>90.3%</td>
<td>65.9%</td>
<td>93.1%</td>
<td>7.62</td>
<td>0.29</td>
<td>2.3E-28</td>
</tr>
<tr>
<td>TRANSVAGINAL DIRECT VISUALIZATION</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Rectal/rectosigmoid DIE</td>
<td>91.2%</td>
<td>86.8%</td>
<td>92.3%</td>
<td>74.2%</td>
<td>96.5%</td>
<td>11.3</td>
<td>0.14</td>
<td>1.3E-42</td>
</tr>
<tr>
<td>CO-OCCURRENCE NEGATIVE SLIDING SIGN AND DIRECT VISUALIZATION</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rectal/rectosigmoid DIE</td>
<td>90.2%</td>
<td>69.7%</td>
<td>95.3%</td>
<td>79.1%</td>
<td>92.6%</td>
<td>14.94</td>
<td>0.32</td>
<td>3.9E-33</td>
</tr>
</tbody>
</table>

PPV=positive predictive value, NPV=negative predictive value, LR+=positive likelihood ratio, LR-=negative likelihood ratio
DIE=deep infiltrating endometriosis
Fisher’s exact test was used to calculate p-values (< 0.05 considered significant)
Prevalence of negative 'sliding sign' in low-risk population - a feasibility study

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Objectives:
The prevalence of a ‘negative sliding sign’ in the low risk population is not known. Our aim is to determine the prevalence of a ‘negative sliding sign’ in low-risk women.

Methods:
An ongoing prospective study. Women attending the gynaecology service at Nepean Hospital who were deemed low-risk for rectouterine adhesions were included in the study (i.e. nil previous or current history of endometriosis or PID, nil chronic pelvic pain, nil history of infertility or fertility treatment, nil previous pelvic surgery). Power calculation has predetermined a study size of n=303 women is required. Each woman was assessed for the presence of ‘sliding sign’ on transvaginal ultrasound at both the retro-cervix and posterior uterine fundus. When the ‘sliding sign’ is considered positive in both of these anatomical regions (RC and PUF), the POD is recorded as ‘not obliterated’. If either of these anatomical regions demonstrates that the anterior rectal wall or rectosigmoid does not glide smoothly over the RC or PUF, respectively, then the ‘sliding sign’ is considered negative, and the POD is recorded as ‘obliterated’. Each woman was also assessed for ovarian mobility or presence/absence of an ovarian endometrioma.

Results:
613 women were recruited. 236 were excluded due to the presence of previous PID and/or endometriosis, 4 were excluded from this study as they were concerned about the safety of TVS in early pregnancy, 124 due to previous pelvic surgery, 21 due to previous fertility treatment/subfertility and 22 as they were beyond 12 weeks gestation. We noted that the real-time ultrasound based ‘sliding sign’ was positive in all 206 women and therefore the POD was recorded as non-obliterated. The ovaries were noted to be mobile in all cases as well.

Conclusions:
Although this is an ongoing study, the preliminary results suggest that the prevalence of POD obliteration on ultrasound evaluation in the low-risk population is negligible.
Accuracy of different imaging techniques to assess POD obliteration: a systematic review and meta-analysis

Babak Shakeri 1, Batool Nadi 1, Shannon Reid 2, Wellington Martins 3, George Condous 1

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2. Department of Obstetrics and Gynaecology, Wollongong Hospital, Wollongong, Australia.
3. Ribeirao Preto Medical School, University of Sao Paulo, Ribeirao Preto, Brazil.

Objective:
Pouch of Douglas (POD) obliteration in women with potential endometriosis will warrant referral to a specialized endosurgery unit. Advanced laparoscopic skills are required to manage women with complex endometriosis and underlying POD obliteration. Imaging modalities such as transvaginal ultrasound (TVS) and magnetic resonance imaging (MRI) have been utilized to pre-operatively predict POD obliteration. The purpose of this meta-analysis is to assess the performance of these imaging modalities in the prediction of POD obliteration.

Methods:
This was a systematic review conducted in accordance with the PRISMA statement. We searched MEDLINE, Embase, PubMed and Google scholar from database inception to March 2016. Studies included compared imaging prediction of POD obliteration with laparoscopic gold standard confirmation with at least 10 affected and 10 unaffected participants were considered eligible.

Result:
The electronic searches retrieved 3881 records. We excluded 3780 by reading titles/abstracts and more 82 after reading the full text as they were clearly not eligible. Regarding the other 19 records we excluded more 1 record because it evaluated the same population of other included study and more 8 records because they were related to studies that included less than 10 affected/unaffected women. We included 10 studies in the meta-analysis, four evaluating MRI and the other six evaluating TVS.
For detection of pouch of douglas obliteration, the overall pooled sensitivity and specificity of TVS were 87% (95% CI, 87-96%) and 96%(95% CI, 93-98%) respectively. For detection of pouch of douglas obliteration, the overall pooled sensitivity and specificity of MRI were 84% (95% CI, 74-94%) and 93%(95% CI, 86-99%) respectively.

Conclusion:
MRI and TVS demonstrated high sensitivity and specificity to diagnose POD obliteration. As TVS is more readily available and cost less this should be the first line diagnostic tool for the women with suspected POD obliteration.
The prediction of pouch of Douglas obliteration using offline analysis of laparoscopic video sets: an intra-, inter-observer and diagnostic accuracy study evaluating the performance of general gynaecologists versus advanced laparoscopic surgeons.

Babak Shakeri1, Batool Nadim1, Shannon Reid2, Tim Chang2, George Condous1,2

1. Acute Gynaecology, Early Pregnancy and Advanced Endoscopic Surgery Unit. Sydney Medical School Nepean, University of Sydney, Nepean Hospital Sydney, NSW Australia
2. LaSGeG (Laparoscopic Surgery for General Gynaecologists)

Objectives: What is the diagnostic accuracy and inter-/intra-observer agreement among general gynaecologists and advanced laparoscopic surgeons in the prediction of pouch of Douglas (POD) obliteration (secondary to endometriosis) at offline analysis of laparoscopic videos?

Methods: Reproducibility study involving offline viewing of pre-recorded videosegments(n=33) of women undergoing laparoscopy in order to determine the presence of absence of POD obliteration. Ten observers, five generalists (AGES level 3) and five advanced laparoscopists (AGES level 6). Gold standard for diagnosis of laparoscopic POD obliteration was determined by GC and GR. Ten observers were asked to record if POD was non-obliterated/partially obliterated/completely obliterated based on videos viewed offline. Observers were also asked to reanalyse same videos, albeit in a different order, at least 7 days later to assess for intra-observer agreement. Inter- and intra-observer correlation was performed to determine the agreement among the ten different observers as well as within and between the two different groups (general gynaecologists versus advanced laparoscopic surgeons). Diagnostic accuracy among ten observers (and the two different groups) were evaluated. Cohen’s κ coefficient <0(poor agreement), 0.01-0.20(slight agreement), 0.21-0.40(fair agreement), 0.41-0.60(moderate agreement), 0.61-0.80(substantial agreement) and 0.81-0.99(almost perfect agreement).

Results: At laparoscopy, 19 (58%) cases with POD non-obliteration, 5 (15%) with partial POD obliteration and 9 (27%) with complete POD obliteration. The accuracy, sensitivity, specificity, PPV and NPV for the advanced laparoscopists vs the general gynaecologists for both videosegments were 83.9%/79.1%, 88.5%/79.4%, 89.2%/88.1%, 92.0%/89.9%, 84.7%/76.1%, respectively. The overall agreement of the same observer between the first and second videosegments for diagnosis varied from fair to substantial (Kappa:0.331 to 0.675) for different observers. However, the overall agreement between observers for the description of POD was moderate (Kappa:0.495). The agreements were moderate to substantial (Kappa: 0.588 and 0.675) on non-obliterated and completely obliterated PODs. Advanced laparoscopists had slightly higher within group inter-observer agreement (Kappa: 0.574) compared to the generalists (Kappa: 0.485). The advanced laparoscopists achieved overall almost perfect agreement (kappa = 0.81) on POD description between two videosegments for diagnoses. The intra-observer variability was lower for the generalists (Kappa: 0.638) compared to the advanced laparoscopists (Kappa:0.807), who achieved an overall substantial agreement.

Conclusions: The overall diagnostic performances and intra-/inter-observer correlation of the advanced laparoscopic surgeons were better than the general gynaecologists. This indicates that advanced laparoscopists are more likely to correctly classify the state of the POD compared to the generalist when assessing offline laparoscopic videosegments.
Nepean VR - Virtual reality (VR) visualization of cerebral aneurysms

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¹Nepean Medical School, The University of Sydney, New South Wales, Australia
²Department of Neurosurgery, Nepean Hospital, New South Wales, Australia

Three dimensional (3D) visualization of the cerebral aneurysms has helped preoperative surgical planning, in selected cases. 3D printed models and virtual reality (VR) devices are two options to improve 3D stereovision and stereoscopic depth perception of anatomy for aneurysm surgery.

Objective: In this presentation we introduce Nepean VR, a smart device VR app, and compare the potential advantages and limitations of virtual reality exploration of cerebral angiogram models in comparison with 3D printed models and CT angiograms as a proof of concept study.

The quality of the three different method of visualization was evaluated and compared for Accessibility, Resolution, Physical feedback, Depth perception, Navigation, Preparation time, Reconstruction physical limitations, Capital cost, Cost per item, Ease of group viewing/sharing, Zooming, Positioning (3D rotation of the angiogram to simulate intraoperative view by neurosurgeon), Learning curve (Does the method require specific training?), Future potential for surgical simulation purposes and addition of time/flow (4th dimension).

Conclusion: In selected cases with challenging cerebrovascular anatomy, VR should be considered as a viable alternative to the 3D printed models, with potentials for further developments.
Evaluation of Gallium-68 PSMA PET/CT imaging in individuals with biochemical recurrence following radical prostatectomy

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\textbf{Aims:} Prostate specific membrane antigen (PSMA) is a transmembrane protein that is highly expressed in most prostate cancers, thus presenting a unique imaging target for the detection of prostate cancer recurrence. This study aimed to investigate the correlation between prostate specific antigen (PSA) level and positive findings on the Ga-68 PSMA PET/CT (PSMA PET) scan in patients with biochemical recurrence following radical prostatectomy.

\textbf{Methods:} We conducted a chart review of our institutional prospective database to identify patients with post-prostatectomy biochemical failure/recurrence who underwent \textsuperscript{68}Ga-PSMA PET/CT (PSMA PET). We then analysed the probability of a positive scan finding for PSMA avid prostate cancer recurrence to the PSA level.

\textbf{Results:} A total of 391 patients were identified for analysis. The median PSA of all individuals included in the study was 2.05ng/ml.

<table>
<thead>
<tr>
<th>PSA level</th>
<th>Sample size</th>
<th>Number of positive patients</th>
<th>Detection rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;0.2ng/ml</td>
<td>97</td>
<td>41</td>
<td>42%</td>
</tr>
<tr>
<td>0.2-&lt;0.5ng/ml</td>
<td>101</td>
<td>48</td>
<td>48%</td>
</tr>
<tr>
<td>0.5-&lt;1.0ng/ml</td>
<td>54</td>
<td>36</td>
<td>67%</td>
</tr>
<tr>
<td>1.0-&lt;2.0ng/ml</td>
<td>39</td>
<td>33</td>
<td>85%</td>
</tr>
<tr>
<td>&gt;2.0ng/ml</td>
<td>100</td>
<td>92</td>
<td>92%</td>
</tr>
<tr>
<td>Total (overall)</td>
<td>391</td>
<td>250</td>
<td>64%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PSA level</th>
<th>Bone (%)</th>
<th>Nodal (%)</th>
<th>Local (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;0.2ng/ml (n=41)</td>
<td>10 (24%)</td>
<td>26 (63%)</td>
<td>12 (29%)</td>
</tr>
<tr>
<td>0.2-&lt;0.5ng/ml (n=48)</td>
<td>13 (27%)</td>
<td>26 (54%)</td>
<td>15 (31%)</td>
</tr>
<tr>
<td>0.5-&lt;1.0ng/ml (n=36)</td>
<td>7 (19%)</td>
<td>28 (78%)</td>
<td>7 (19%)</td>
</tr>
<tr>
<td>1.0-&lt;2.0ng/ml (n=33)</td>
<td>13 (39%)</td>
<td>22 (67%)</td>
<td>9 (27%)</td>
</tr>
<tr>
<td>&gt;2.0ng/ml (n=92)</td>
<td>29 (32%)</td>
<td>66 (72%)</td>
<td>36 (39%)</td>
</tr>
</tbody>
</table>

\textbf{Conclusions:} The probability of PSMA avid lesions detected on a Ga-68 PSMA PET/CT are correlated to the PSA levels in post-prostatectomy patients with biochemical recurrence. Even at low PSA levels (<0.2ng/ml) there is a 42% probability of detecting a PSMA avid lesion, this increases to greater than 90% when PSA levels are >2.0ng/ml. Further studies are required to investigate how detection of PSMA avid lesions will influence the management of these patients with early disease recurrence.
A SYSTEMATIC REVIEW TO INFORM THE DEVELOPMENT OF A SHARED DECISION-MAKING TRAINING PROGRAM FOR CULTURALLY AND LINGUISTICALLY DIVERSE ADULTS LIVING WITH CHRONIC KIDNEY DISEASE

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Objectives: Adults living with chronic kidney disease (CKD) face a number of healthcare decisions. A shared approach to healthcare decision-making is now advocated as the ideal model in national and international quality standards, supported by evidence of improved patient outcomes. However, studies continue to show that CKD patients have limited involvement in decision-making. This is particularly true for adults from culturally and linguistically diverse (CALD) backgrounds and those with lower health literacy.

This study sought to investigate the barriers and facilitators of shared decision-making for CALD adults and explore existing interventions and cultural competency frameworks in this context.

Methods: Systematic literature review of seven online databases conducted on 30th November 2016. Articles were screened by title and abstract to identify those which explored barriers and facilitators to decision-making for CALD adults with chronic disease, interventions and frameworks for greater cultural competency. All articles were appraised for risk of bias and results were synthesised thematically.

Results: From 1668 articles extracted in the initial search, 115 articles were included in the review. Most were based on US populations (60%), with almost half (49%) focussing on African Americans, Hispanic or Mexican samples or subsamples. The majority focused on barriers to decision-making (e.g. language, provider biases, stigma). No studies explored facilitators. Few secondary and tertiary interventions existed to support CALD populations to participate in decision-making. Where interventions have been trialed in CALD populations, the majority have not been targeted, tailored or altered according to the core values of diverse cultural groups.

Conclusions: The influence of culture on decision-making is multifaceted and complex. Work is needed to address both patient and provider barriers to decision-making faced by CALD CKD adults. A novel exploration of decision-making facilitators may be useful in this context.
CHARACTERISATION OF THE DRUG BINDING POCKET IN HUMAN P2X7

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Objectives: P2X7A is a trimeric purinoreceptor, which is activated mainly by ATP and expressed on many cell types. Activated receptor opens into an ion channel, and within seconds it can dilate into a non-selective large pore allowing the passage of larger molecules such as ethidium bromide. P2X7A is implicated in various medical conditions, and therefore drugs targeting this receptor have great therapeutic potential. Development of new inhibitors has been hampered by the inability to solve the crystal structure of human P2X7. Recently, using a partial crystal structure of panda P2X7, amino acids that line a drug binding pocket have been identified [1]. These amino acids are conserved in human P2X7. The aim of the present study is to explore whether the same amino acids identified in the panda P2X7 are also relevant to the interaction of antagonists to human P2X7 receptors. We will use commercially available P2X7 antagonists and a newly developed antagonist, SW139 [2]. An understanding of how antagonists bind to human P2X7 at a molecular level will enhance the development of more potent and specific P2X7 antagonists for future therapeutic use.

Methods: Human embryonic kidney (HEK293) cells, an immortalised human cell line that does not express P2X7, were transfected with plasmids containing human P2X7A mutated at one of 7 individual amino acids positions selected from the previous study. Transfected cells were then pre-incubated with various concentrations of known P2X7 antagonists for 30 min. Pore function was determined by a fluorescence plate reader assay which measures the rate of ethidium bromide uptake into cells induced by 1 mmol/L ATP [3].

Results: Human P2X7A plasmids with mutations F95A, M105A, V312A were compared to the wild type (WT) plasmid. Results showed that the mutations influenced the inhibitor’s ability to interact with the human P2X7A protein differently.

Conclusions: F95A mutation rendered P2X7A more susceptible to inhibition by SW139 while M105A, V312A made it more resistant to the inhibitor.

DENTAL CARE FOR THE ELDERLY THROUGH A CAPPED-FEE FUNDING MODEL: OPTIMISING OUTCOMES FOR PRIMARY GOVERNMENT DENTAL SERVICES

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2. University of Western Australia, Human Sciences

Objective: The objectives of this study were to (i) compare a Capped Payment formula for adults, to the fee-for-service model and the New South Wales Government services payment model; (ii) identify the presenting oral health needs of a 65+ years of age cohort during the period January 2011 to March 2015.

Methods: The analysis of New South Wales Government adult de-identified patients' record unit data was from 2011 to 2015, for the three payment models and undertaken in three stages; (i) development of the Capped Payment Model; (ii) evaluation of twenty (20) case studies of adults 65+ years of age; (iii) analyse the cost efficiency of the three payment models.

Results: This study found that the Government model was the most cost effective. The Capped-fee model performed less efficiently, particularly in the 75+ age group, with the fee-for-service model generally more costly. It was $2580 (85%) more costly for the 65-74 age cohort, and $4619 (66%) for the 75+ age cohort.

In relation to access, 60% of the participants were still accessing Government services during 2014/15 will all requiring further dental treatment.

Conclusion: Policy makers in partnership with Government and private service providers should seek to develop opportunities to apply a Capped-fee funding model to help address the oral needs of the elderly.
ADVANCED CARE PLANNING IN NEPEAN HOSPITAL: A PILOT STUDY

Authors: Karen Fernandez, Jacqueline Hampton, Arvind Rajamani, Upul Liyanage, Hailey Carpen, Anita Sharma
kfern012@hotmail.com
Department of Geriatric Medicine

Objectives:
To undertake a prospective study of inpatient units at NBMLHD, starting with a pilot project in the Aged Care Department with the aim of developing a standard and sustainable process on End of Life/ Advanced Care Planning (ACP) in the Local Health District (LHD). This follows a previous snap-shot audit conducted within the LHD for a two-week period to gauge completion and documentation of ACP.

Methods:
The initial audit of high-risk inpatients at Nepean Hospital showed a very low incidence of documented Advanced Care Planning. The Audit tool incorporated SPICT (Supportive and Palliative Care Indicators Tool), which is a validated screening tool designed to support clinical judgment by multidisciplinary teams when identifying patients at risk of deteriorating and dying. We designed and implemented a targeted intervention program consisting of three different workshops. The first was a Diagnostic workshop, followed by the Solutions Workshop and Simulation Workshop. Medical staff, allied health and nursing staff were invited to participate in the workshops and complete surveys.

Results:
The initial audit looking specifically at the Aged Care Cohort: of the 99 files audited, 14 files had evidence of ACP, 10 files with Advance Care Directives documented (ACD), and 4 files with Not for Resuscitation forms (NFR) completed. 66% of files had no evidence of Advance Care Planning documented despite evidence of general Indicators of Deteriorating Health being present and 64% had Clinical Indicators of Advanced Conditions (determined from the SPICT tool).

From the Diagnostic and Solution Workshops, education, both within the hospital and community was identified as one of the areas of need.

The post intervention audit will commence in 2 weeks for a total duration of six months.

Conclusion:
The interventional aspect of the study has been completed and we will conduct an analysis of the post interventional audit once the results become available.
PROMOTING PROFESSIONALISM: USING SIMULATION TO DEVELOP CRITICAL REFLECTION

A/Prof Andrew Stuart Lane, A/Prof Chris Roberts

Discipline of Intensive Care Medicine, Sydney Medical School

Objectives: Many junior doctors take part in open disclosure without training or experience. Simulation is a training method in which learners practice tasks in life-like circumstances, with feedback from observers. However, how do participants of simulation make sense of, and utilise their educational experience?

Methods: A Phenomenological study utilising simulation to explore open disclosure. Eight medical students underwent four immersive mannequin simulations followed by focus-group discussion, with subsequent interviews during their intern year. The descriptive audio-data was analysed using Interpretative Phenomenological Analysis.

Results: Three super-ordinate themes were identified. The superordinate-theme ‘Reflecting on simulation’ described how medical students reflected on simulation over time, in three different ways. ‘Learning of value’ described their initial reflection: the debrief was metacognitive, moving towards mindfulness throughout the session. ‘Reflection of value’ described their current reflection: highlighting the need to reflect beyond descriptive recollection. ‘Professionalism’ described their future cognition: participants aligned future reflection with clinical colleagues and practice, demonstrating ‘belongingness’.

Conclusions: The simulation provided psychological safety promoting ‘risk taking’, developing a growth mindset and cognitive resilience, resonating with Dweck’s theory. Simulation enabled the students to complete their learning cycle, achieving outcomes beyond ‘memorisation’, resonating with Jarvis’ theory. A learning model developed from the data suggested that the current understanding of the competency framework needs to be revisited, as it does not consider; context of the task being learned; regressing directly from unconscious competence to unconscious incompetence; not all learners starting at unconscious incompetence.

Mentorship and guidance by educators is required to motivate and inspire learners to develop cognition and abilities to maintain appropriate reflection and professional development, ensuring learners reflect with the right people, at the right time, in the right manner. Utilisation of the competency matrix during simulation gives educators a powerful tool to promote critical reflection, resilience, and the development of professionalism.
“RETHINKING THE MEDICAL MANAGEMENT OF WOMAN WITH ECTOPIC PREGNANCY: A RETROSPECTIVE COHORT STUDY”

Eleanor Allison, A/Prof George Condous and Dr Batool Nadim
Department of Gynaecology and University of Sydney

Background: Single dose intramuscular methotrexate is commonly used in the medical management of ectopic pregnancy and significantly increases the rate of resolution without the need for surgery. A 15% fall in maternal blood Human Chorionic Gonadotrophin (hCG) between Day 4 and 7 has been validated as a good indicator of the likely success of methotrexate. A fall of less than 15% between Day 4 and 7, necessitates the administration of a second identical dose of methotrexate. One study has demonstrated that hCG testing only at D1 and D7 was equal in prediction of women requiring a second dose of methotrexate as the current management, obviating the need for hCG testing on D4.

Objectives: Determine if testing hCG levels at D1 and D7 is an equal or better predictor of successful outcome than the current practice of D1, D4 and D7 hCG measurements. The conclusions will be used to guide potential modification of the current management protocol.

Methods: Retrospective cohort study of women presenting to the early pregnancy unit at Nepean hospital with a transvaginal ultrasound confirmed tubal ectopic pregnancy between January 2006 and March 2016.

Results: There were 301 tubal ectopic pregnancies during the period. Of these, 83 were initially managed expectantly and 66 initially managed medically with methotrexate. All other tubal ectopic pregnancies had surgical management. The rate of hCG decline between D1/D7 was a predictor of success or failure after initial medical management with methotrexate (p= 0.0007). A fall of 15% in hCG between D1 and D7 had equal accuracy (0.76[0.63,0.86]), sensitivity (0.8[0.64,0.91]) and specificity (0.67[0.41,0.87]) in predicting outcome compared with the current management.

Conclusion: Testing blood hCG levels at D1 and D7 is an equal predictor of successful outcome as the current practice of D1, D4 and D7 hCG measurements.
Minor surgery under local anaesthesia: improving surgical skills to enable increased use of minor surgery in general practice

Author: Hasan Sarwar

Co-authors: Linda Hasler, Paul McInerney, Arlene Bannon, Robyn Totenhofer and Joanne Nicholson

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Email: drhasansarwar@gmail.com

BACKGROUND: There are many procedures that can be performed using Local Anaesthesia (LA) instead of General Anaesthesia. This mitigates health care costs by reducing operating room resources and admission requirements. Common procedures include: finger tip/nail bed surgery; simple hand, lip and facial lacerations; finger fractures; removal of foreign body; animal bites; abscess drainage and skin flap repair.

AIMS & METHOD: The author has over 12 years experience as a Plastic Surgical Registrar at Nepean Hospital. Approximately 400 procedures have been performed under LA in the Emergency Department (ED) each year, assisted by the ED staff. This type of clinical experience is invaluable for those doctors who enter general practice training. Ultimately, the goal is to provide confidence in performing minor surgery in the general practice setting.
Most of these ED patients are referred by their General Practitioner and other local hospitals. The cases are simple, but require extra skill, which is relatively easy to learn. Referring doctors are reluctant to do these procedures, possibly due to lack of training.

RESULTS: The outcome of surgical procedures are acceptable. Patient satisfaction is excellent with the majority of patients discharged on the same day as presentation.

CONCLUSION: Minor surgical procedures can be done under LA provided the doctor has acquired the necessary skills. To obtain this level of competency we need to improve basic surgical skills in training. The team has demonstrated that procedures under LA can have a positive outcome for the organization and the patient. In view of this, the opportunity exists to develop a “minor surgical procedure center complex” in Nepean Hospital. This model of care can provide surgical procedures to be performed in a more organized fashion, without obstructing the operating theatre and emergency department.
DON'T JUMP THE GUN...WILL HARM OUR TINY TOTS. A CPI PROJECT TO REDUCE RADIATION IN NEONATES AT NEPEAN HOSPITAL.

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Department of Neonatology, Nepean Hospital. (Erica.Motyka@health.nsw.gov.au)

Background: Exposure of neonates to multiple x-rays is inevitable in the NICU. It is technically challenging to minimise collimation in sick and tiny infants. However they are uniquely vulnerable to the effects of radiation.

Methods – PDSA cycle.

Plan: Prior to institution of the CPI project, there was no protocol in the NICU for performing x-rays. A baseline audit was performed to evaluate the quality of x-rays (n=335) performed in 3 random months (year 2015) with respect to pre-specified parameters. The CPI project was initiated based on the results of the audit (Table 1) and aimed to improve the quality of x-rays and minimise radiation. The project was approved by the local ethics committee.

Do: Development of standardised protocol; education sessions to nursing staff and radiographers; development of a checklist containing pre-specified parameters, to be completed by nurse and radiographer prior to x-ray. Post-intervention results were assessed after 4 months (n=320, x-rays taken over 3 months).

Study: Results showed a significant improvement (p<0.05) in all the parameters.

<table>
<thead>
<tr>
<th>Quality indicators</th>
<th>Baseline n(%)</th>
<th>Post intervention n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Artefacts in the region of interest</td>
<td>Single artefact 110 (33)</td>
<td>23 (7)</td>
</tr>
<tr>
<td></td>
<td>Two artefacts 67 (20)</td>
<td>0 (0)</td>
</tr>
<tr>
<td></td>
<td>≥3 artefacts 20 (6)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Assistant’s hands exposed to x-ray</td>
<td>10 (3)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Region of interest cut off in x-ray film</td>
<td>37 (11)</td>
<td>10 (3)</td>
</tr>
<tr>
<td>Radiation exposure indicators</td>
<td>Chest x-ray 71 (28)</td>
<td>201 (78)</td>
</tr>
<tr>
<td></td>
<td>Abdominal x-ray 2 (8)</td>
<td>6 (61)</td>
</tr>
<tr>
<td></td>
<td>Chest &amp; abdomen 7 (16)</td>
<td>23 (56)</td>
</tr>
</tbody>
</table>

Act: The checklist continued to be used twice a year for a month each time. Individual feedbacks were provided for less than ideal x-rays. A review of x-rays after one year (n=216, x-rays over 3 months) showed that results were sustained (p>0.05)

<table>
<thead>
<tr>
<th>Quality indicators</th>
<th>Post-intervention n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Artefacts in the region of interest</td>
<td>Single artefact 23 (7)</td>
</tr>
<tr>
<td></td>
<td>Two artefacts 0 (0)</td>
</tr>
<tr>
<td></td>
<td>≥3 artefacts 0 (0)</td>
</tr>
<tr>
<td>Assistant’s hands exposed to the x-ray</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Region of interest cut off in x-ray film</td>
<td>10 (3)</td>
</tr>
</tbody>
</table>

Radiation exposure indicators

| Ideal collimation as per WHO recommendation | Chest x-ray 201 (78) | 114 (82) |
| | Abdominal x-ray 6 (61) | 30 (60) |
| | Chest & abdomen 23 (56) | 31 (55) |

Conclusion: Development of standardised protocol, education and feedback, reinforced with periodic use of pre-specified checklist achieve good quality images and minimise radiation in neonates.
TETRA COLOR MOBILITY BOARD - MINIMISING FALLS IN INPATIENT SETTING

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Background and aims
Falls are the most frequent adverse events reported in hospitals. We have identified inaccuracies in communication related to mobility status has contributed to the number of falls in our ward. An audit conducted in 2015 has shown that handwritten information on mobility boards behind patient’s beds were unclear 64% of the time. We designed a modified version of the “traffic light system” used in St Margaret’s Hospital, Adelaide. The Tetra Colour Mobility Board has coloured magnetic dots paired with pictures of assistive devices to clearly communicate mobility status.

The objective of the study is to analyse the effectiveness of Tetra Color Mobility Board in preventing falls in a general rehabilitation ward and to assess its accuracy.

Method
We retrospectively reviewed falls reported through hospital incident management system, six months pre and post implementation of the Tetra Color Mobility Board in reference to:
1. Falls related to not providing the correct level of assistance by staff and family
2. Falls attributed to patient lack of understanding of level of assistance.

A five day audit was conducted eight months post implementation to assess accuracy of mobility boards.

Results
There were 29 falls in the six months pre and 12 falls post implementation [relative rate ratio 0.41, 95% CI (0.19, 0.84), p=0.012]. The number of falls related to not providing the correct level of assistance by staff, family was 11 falls pre and 2 falls post implementation [relative rate ratio 0.18, 95% CI (0.019, 0.83), p=0.022]. Number of falls attributed to patient lack of understanding of level of assistance was 9 pre and 5 post intervention (NS). The audits have shown a 45% improvement in accuracy (91%) from previous mobility boards.

Conclusions
Tetra color mobility board has significantly improved accuracy of communication of mobility status with resultant statistically significant reduction in falls.
TOPICAL APPLICATION OF MEDICATED HONEY FOR THE PREVENTION OF PERITONEAL DIALYSIS CATHETER-RELATED INFECTIONS: A REOSPECTIVE MULTICENTRE COHORT STUDY

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Objectives: Peritoneal dialysis (PD) catheter-related-infections (CRI) rates are the leading cause of PD technique failure1. Evidence suggests topical application of medicated honey (MH) to PD exit-sites is as effective as intra-nasal mupirocin for PD catheter-related-infection (CRI) prophylaxis2. However, MH may be associated with an increased risk of infection in diabetic patients2. Exit-site application of MH has not been compared with povidone iodine (PI). The present multicentre cohort study aimed to compare PD-CRI rates and time-to-first infection with PD exit-site application of MH or PI; and to assess any effects of diabetic status.

Methods: PD-CRI rates and time-to-first PD-CRI were retrospectively analysed in patients starting PD in two eras: from January 2011-December 2013, when 147 received exit-site care with PI (PI group), and from July 2013-June 2015 when 171 patients applied MH (MH group). Patients were followed-up until first PD-CRI, technique failure, death, transplant, or end of treatment era. Differences in PD-CRI rates were assessed by Poisson regression, and differences in cumulative incidence was analysed by Kaplan-Meier analysis. Significant differences between treatment groups were determined by Log rank tests, both overall and stratified by diabetic status.

Results: There were 41 peritonitis and 15 exit-site infections (ESIs) in PI group (n=147) and 27 peritonitis and 8 ESIs in MH group (n=171). Rates for any PD-CRI (ESI and peritonitis) and ESI were significantly lower in the MH group (p=0.035 and p=0.041 respectively). Cumulative incidence of first PD-CRI and peritonitis were significantly different between the MH and PI groups (p=0.004 and p=0.007 respectively) in favor of MH. Relative risk of PD-CRI was significantly lower in the MH group (p=0.017). Presence of diabetes did not impact PD-CRI rates or time-to-first infection (p=0.59).

Conclusions: Exit-site application of MH was associated with lower rates and longer time-to-first PD-CRI as compared to PI. These outcomes were not affected by diabetic status.
Epidemiological typing of Clostridium difficile isolates from Nepean and Orange Microbiology

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Introduction
Clostridium difficile is an important pathogen causing antibiotic associated diarrhoea and Pseudomembranous colitis. During the 3 year period of 2009-2012, we were seeing apparent increased activity of Clostridium difficile infections both at Nepean and Orange Microbiology. As Clostridium difficile isolates are not routinely typed in diagnostic laboratories, there were clinical concerns about Epidemiology.

Objectives
In this retrospective study, we wanted to identify the infecting Ribotypes of Clostridium difficile which will be helpful to identify important epidemiological factors such as presence or absence of hypervirulent C. difficile and see if there any particular ribotypes related to animals in countryside.

Method
One hundred and twenty seven isolates cultured isolates were included in the study. Clostridium difficile PCR (Ausdiagnostics) was routinely performed on stool specimens at Nepean hospital. Positives samples were cultured in C. difficile agar and isolates stored at -80C. They were sub cultured on to C difficile agar, checked for purity, second PCR performed by Roche LC480 and sent away to a Reference Laboratory for Ribotyping. Moxifloxacin susceptibility performed for all cultured isolates.

Results
Most common Ribotypes were UK 014/020 [G] {UK14} (21%), QX 263 (UK 056) (12%), QX 251 (UK 002) (7%), QX 065 (UK 070) (6%), QX 250 (UK 046) (6%), QX 250 (UK 046) (6%), QX 299 (UK 015) (5%), QX 300 (UK 244) (5%), QX 006 (4%), QX 293 (UK 251) (2%) and QX 073 (UK103) (2%) respectively. 21 additional serotypes were present each with 1% or lower percentage. Moxifloxacin susceptibility was 99.2%.
We could not identify hypervirulent C.difficile Ribotypes among the strains typed.
There was no obvious difference in distribution of Ribotypes between the metropolitan and rural area.

Discussion
This study illustrates the distribution of Ribotypes of C. difficile in two hospitals. Absence of Hypervirulant Ribotypes and very high susceptibility for Moxifloxacin is reassuring.
CD177 AS A NOVEL BIOMARKER FOR HIGH RISK INFLUENZA PATIENTS

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Objectives
The early manifestation of influenza infection is similar in most individuals (nasal congestion, sore throat or fever). However, the likelihood of deterioration (e.g. pneumonia) in each individual is highly variable and unpredictable. This study aims to evaluate whether using host biomarkers can help identify individuals who have an increased risk of influenza-related complications or death.

Methods
We prospectively recruited patients with confirmed influenza infection (n=154) and healthy volunteers (n=89). Study participants were randomly assigned into a discovery cohort (n=159) and a validation cohort (n=84). Blood samples from individuals in the discovery cohort were analysed by microarray analysis to screen for candidate biomarkers. Real-time PCR was used in both cohorts to independently confirm the expression of the identified biomarkers. As a further validation, the identified biomarkers were evaluated in a well-established mouse model of influenza infection.

Results
The neutrophil-specific gene, CD177, was identified as the most highly expressed gene in patients who developed respiratory failure and required mechanical ventilation. An increased CD177 level was highly predictive of influenza-related death, as assessed by the area under the receiver-operator-characteristics (AUROC) analysis; it showed CD177 predicted mortality in the discovery set (AUROC 0.817, p<0.001) and the validation set (AUROC 0.898, p<0.001). Furthermore, CD177 performed better than traditional mortality prediction index, APACHE (a composite index composing of age, premorbid comorbidities and acute physiological derangements). Further analysis performed in a mouse model of influenza revealed that influenza infection was associated with development of a CD177hi neutrophil population that was preferentially accumulated in parenchymal tissues of the infected lungs, suggesting a role for CD177 in neutrophil extravasation and tissue inflammation.

Conclusion
Our study uncovers a previously unappreciated role for neutrophils in influenza pathogenesis in humans and suggests that CD177 is a promising biomarker to identify individuals with a high risk of influenza-related death.
THE TRANSCRIPTOMIC LANDSCAPE OF SEVERE INFLUENZA INFECTION REVEALS KEY HOST RESPONSE MODULES ASSOCIATED WITH DISEASE PROGRESSION AND FATALITY

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Objectives: In severe influenza infection, multiple host response mechanisms contribute to disease progression and death; however, it is unclear which mechanism/s should be the main targets of therapy. In a prospective cohort study of influenza patients, we used a systems biology approach to analyse host response and to identify the immune pathways that might contribute to disease progression.

Methods: Influenza patients with varying severity of infection (n=154) were recruited, including 103 patients with moderate infection (not requiring mechanical ventilation) and 51 patients with severe infection (requiring mechanical ventilation). Patient blood samples were collected within 24 hours of presentation to hospitals. Gene-expression arrays of the blood samples were analysed using weighted gene co-expression network analysis to detect disease-driving modules.

Results: We identified six modules of co-expressed genes in the blood transcriptome associated with influenza infection. After accounting for patient-related variables (age, gender and leukocyte counts), three modules (neutrophils, immune response and cell cycle) were shown to independently associate with disease progression. Within each module, we identified multiple immune pathways each contributing towards disease progression, including neutrophil-mediated inflammation and immune suppression. All modules showed high correlations with infection severity. Gene-expression biomarker derived from the neutrophils module - the most highly upregulated module - predicted death/survival in influenza patients more accurately than combined clinical and laboratory parameters.

Conclusion: This study identified multiple disease modules associated with influenza morbidity/mortality. Targeting host response, in addition to the virus, may be an important strategy to consider in developing future therapy.
Trial of void: what is the least trialling method?

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Keywords: trial of void, indwelling catheter, retention

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OBJECTIVES
There is a large variation in the timing and technique of removal of indwelling catheters (IDC) following urological procedures. We aimed to identify the most efficient method which improved patient flow and discharge from hospital.

METHOD
Patients who underwent a trial of void following a urological procedure between July 2017-Sept 2017 were included in our study. Patients were assigned to one of 3 groups: 1) Removal of IDC at midnight (if urine was clear as assessed by the nursing staff), 2) Removal of IDC in the morning after review by the urology registrar, or 3) removal of IDC at 6am with a 200-300ml pre-fill of normal saline (if urine was assessed as clear by nursing staff). Outcome measures were time to first void, time to discharge and rates of recatheterisation.

RESULTS
Forty-one patients were included in this study. Group one had 8 patients, Group 2 had 22 patients and Group 3 had 10 patients. Group 3 had significantly less patients staying for >24 hrs after removal of IDC (10%) vs 45% (Group 2) and 75% (Group 3), p=0.04. Group 3 had significantly less time from IDC removal to first void compared to the other 2 groups, 0.8hrs (± 0.2) vs 3.3hrs (± 0.4), p=0.002. There was no difference in the volume of first void 204 ml vs 233 ml, p=0.7. 1 patient from each group failed their TOV and had an IDC re-inserted.

CONCLUSION
Our study shows that a removal of IDC at 6am with a 200-300ml normal saline pre-fill results in the most efficient trial of void and discharge of patients.
LONG-TERM NUTRITIONAL OUTCOME AND HEALTH RELATED QUALITY OF LIFE OF PATIENTS FOLLOWING OESOPHAGEAL CANCER SURGERY: A META-ANALYSIS

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Objectives
Long term health related quality of life (HRQL) and nutritional outcome of patients following oesophagectomy for cancer has become increasingly significant as the 5-year survival rate in this patient group is increasing. This meta-analysis aims to investigate the HRQOL, nutritional impact symptoms and nutritional outcomes of patients following an oesophagectomy at greater than 12 months after surgery

Method
A systematic search of the published literature search was conducted to identify original research articles on nutritional outcome and HRQL of patient's following oesophageal cancer surgery. The Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines and MOOSE guidelines were used for this meta-analysis.

Results
In studies reporting on HRQL as an outcome, global QOL score at 6-month compare to greater than 12-month showed no statistically significant difference (65.92 vs. 75.78, p=0.07). Forty-one percent of patients reported a greater than 10% weight loss at six-month follow-up (95% CI: 20%-65%; I²=94.27, p<0.001), and at the greater than 12-month follow-up, 33% of patients had the greater than 10% weight loss (95% CI: 15%-57%; I²=96.18, p<0.001). At the 12-month or longer post oesophagectomy, just over half the patients reported dysphagia (51%, 95% CI: 25%-76%; I²=95.70, p<0.001), nausea was reported by 11% (95% CI: 7%-19%; I²=59.31, p=0.09), dumping syndrome reported by 60% (95% CI: 43%-76%; I²=96.92, p<0.001).

Conclusion
Symptoms such as dysphagia, diarrhoea, reflux, dumping syndrome, and nausea were found to persist following oesophagectomy. There were insufficient robust research investigating how these symptoms impact on the adequacy of dietary intake and micronutrient status.
SHORT CHAIN FATTY ACIDS SKEW HUMAN DENDRITIC CELLS TOWARDS A TOLEROGENIC PHENOTYPE

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Objectives: Short chain fatty acids (SCFAs) are a product of dietary fibre fermentation by gut commensal bacteria. SCFAs directly skew the adaptive T cell mediated immune responses towards tolerance. In contrast there is limited knowledge on the effects of SCFAs on the innate immune system. Dendritic cells (DCs) belong to the innate immune system and play an important role in regulating adaptive, T cell-mediated immune responses. Specifically, immature dendritic cells have been linked to immune tolerance, whereas mature dendritic cells have pro-inflammatory effects. In this study we investigate whether SCFAs influence the differentiation of human dendritic cells towards a tolerogenic phenotype.

Methods: In total 14 healthy donors were recruited. Peripheral blood mononuclear cells were separated and CD14+ monocytes were isolated using Miltenyl magnetic beads. Monocytes were cultured with GM-CSF and IL-4 for 7 days to generate DCs, after LPS stimulation for the last 24h. Flow cytometry analysis of Monocyte-derived Dendritic Cells (MoDCs, n=8) were performed. The rest MoDCs (n=6) were pulsed with OKT3 and co-cultured with autologous sorted naïve CD4+ cells for 5 days, followed by suppression assay.

Results: Addition of butyrate and propionate, but not acetate, decreased the expression of costimulatory molecules (MFI CD80), MHC-II (MFI HLA-DR) and pro-inflammatory cytokines (MFI CXCL9) significantly (p<0.01). In addition, T cells co-cultured with butyrate and propionate treated MoDCs had significantly increased suppressive capacity compared to the control (34.48±4.98%, 26.45±6.93% and 6.91±2.57% respectively, p<0.05).

Conclusion: SCFAs skew human monocyte derived DCs towards a tolerogenic phenotype in vitro. Together with our previous finding, these results confirm the tolerogenic effects of SCFAs on both adaptive and innate immune system in humans. The results of our study support the concept that high dietary fibre intake might have a strong tolerogenic effect in vivo, useful for treatment of allergies or autoimmune conditions.
A RETROSPECTIVE AUDIT OF PERFORMANCE AND IMAGE ENHANCING DRUG (PIED) USE AND ASSOCIATED BIOCHEMICAL AND HAEMATOLOGICAL ABNORMALITIES AMONGST MEN ATTENDING A NEEDLE EXCHANGE CLINIC IN WESTERN SYDNEY

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Objective:
To determine PIED usage in Western Sydney, including the type and pattern of substance use and associated biochemical and haematological abnormalities.

Methods:
A retrospective audit was conducted of records of men attending a needle and syringe program (NSP) at Nepean Hospital for the purposes of PIED injection between October 2008 and February 2016. All men were offered consultation with a sexual health physician for harm minimisation purposes. Consultation included counselling on harms of PIED, physical examination and blood tests. Mean blood parameters were compared in men currently on PIED (CPU) compared with current non-users (CNU).

Results:
Sixty-eight men who visited the NSP at least once were included. Anabolic steroids comprised the majority of drugs used. Drugs used, patterns and duration of usage were highly varied. Self-reported adverse events were infrequent with no reported hospitalisations or serious events.

CPU was associated with a significant change in sixteen biochemical and haematological parameters compared with CNU. Mean serum testosterone was high and significantly greater in CPU compared with CNU (42.4 nmol/L vs. 16.0 nmol/L, p<0.001), with a range of 1.7 nmol/L to >120.0 nmol/L in CPU. Mean oestradiol was elevated in CPU (323.4 pmol/L vs. 130.5 pmol/L, p 0.01), with a range of <100 pmol/L to 3199 pmol/L in CPU. CPU was associated with abnormal lipids, most significantly low mean HDL cholesterol (0.78 mmol/L vs. 1.02 mmol/L, p 0.002). Other potential cardiovascular risk factors including blood pressure, haematocrit, LDL cholesterol, total cholesterol, and C-reactive protein were not significantly different between study groups.

Conclusion:
Significant changes in haematological and biochemical parameters were found during PIED use. A number of these changes, particularly reduced HDL, may be significant contributors to the known increased cardiovascular disease risk in PIED users. This study highlights the need for counselling by health professionals to reduce use of PIED.
IDENTIFYING CONTRIBUTORS TO ADMISSIONS FOR DIABETIC KETOACIDOSIS
AT NEPEAN HOSPITAL

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Objective: To determine contributors to diabetic ketoacidosis (DKA) presentations at Nepean Hospital in patients 16 years or older from patient questionnaire answers.

Methods: Patients admitted with DKA between February 2016 and August 2017 were invited to complete a 58 item questionnaire to explore diabetes mellitus management and contributors to DKA. The questionnaire answers included Likert scales and free text. Answers were recorded by frequency and free text answers grouped in themes.

Results: Twenty-nine participants completed the questionnaire. Not all respondents completed all questions. Analysis was performed based on valid responses. Commonly patient-identified reasons for DKA included infection, financial and family stressors, insulin pump failure, and insulin omission. 50% of participants reported missing mealtime insulin, with forgetfulness, desire for weight loss, diabetes being a low priority, fear of hypoglycaemia, and running out of insulin being the primary reasons. Only 37% of respondents sought medical assistance when feeling unwell, with diabetes nurse educators most frequently contacted. Common reasons for not seeking assistance included feeling they could manage themselves, feeling too unwell or defeated, or not having the means to make contact. Only 62% of respondents reported checking blood glucose levels (BGLs) when unwell, and only 53% checked ketones. 31% of respondents were unsure how to manage high ketone levels. Yet, 61% reported managing diabetes as a high 5/5 priority in their lives. 62% of participants experienced moderate to high emotional stress prior to admission secondary to labile BGLs, and financial, work, family, and mental health issues. The most difficult problems identified with diabetes management included diabetes burnout, labile BGLs, and difficulties with diet and carbohydrate counting.

Conclusions: Contributors to DKA presentations are insulin omission, not checking BGLs or ketones when unwell, uncertainties about implementing sick day management, and high emotional stress. Targeting these factors may assist in decreasing rates of DKA presentations.
INNATE AND ADAPTIVE IMMUNE INTERACTIONS DURING RECURRENT SPONTANEOUS MISCARRIAGE AT THE FETAL-MATERNAL INTERFACE IN HUMAN PREGNANCY: A SIMPLIFIED INTRODUCTION.

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The fetal-maternal interface required for a successful pregnancy needs to be in fine-tuned balance. The interface needs to balance pro-inflammatory activities essential for implantation with anti-inflammatory and tolerance mechanisms to prevent rejection. Miscarriages can occur for multiple reasons and few are understood. First and foremost, in normal pregnancy, tolerance is upheld by the innate immune system involving macrophages along with natural killer and dendritic cells. These cells interact with local stromal cells and trophoblasts. Additionally, the adaptive immune system augments tolerance utilizing regulatory T cells and T helper cells. Crosstalk between these players involves cytokines and enzymes amongst which interleukin 10 and 15 as well as the enzyme indoleamine 2,3 dioxygenase are germane. A breakdown in these mechanisms is proposed to cause miscarriage. We present here the most recent advances on the topic of recurrent spontaneous miscarriages due to unknown causes with a specific focus towards immune interactions at the fetal-maternal interface. In this report we sourced mainly human studies, the report reflects many controversies in the field, which is intrinsically difficult to investigate.
COMPARISON OF A 2 DIMENSIONAL AND 3 DIMENSIONAL MEASUREMENT OF THE INTRACRANIAL TRANSLUCENCY USING POST PROCESSING SOFTWARE.

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Objectives: The aim of the study is to determine the ability to accurately measure and compare the Intracranial Translucency (fourth ventricle) using a stored volume data set. Measurements performed retrospectively by sonographers/sonologists of varied experience were compared to the standardised 2 dimensional image.

Methods: This is a retrospective study on women who attended the Perinatal Ultrasound Department for their nuchal translucency scan.

At the time of the nuchal translucency scan a 2 dimensional measurement of the intracranial translucency was recorded. This was considered the gold standard measurement. A 3 dimensional sweep of the fetal brain was also performed on the same patient by a qualified sonographer or doctor working within the Perinatal Ultrasound unit.

The image criteria used was the same criteria recommended by the Fetal Medicine Foundation for the measurement of the nuchal translucency. Post processing analysis of the 3D volume data set was performed by the four study investigators using Viewpoint software. Investigators were blinded to the standard 2D measurement of the intracranial translucency to avoid bias.

Results: In this retrospective analysis by 4 operators of 173 3D data sets there was a moderate level of agreement ($\kappa = 0.5$)

Conclusions: Our study shows that measurement of the Intracranial Translucency using a 3D data set does not appear to be an accurate method of assessment. This accuracy may improve as the image acquisition technology develops further
COMPARISON OF MATERNAL ANTHROPOMETRIC AND
ULTRASOUND MEASURES IN THE FIRST TRIMESTER OF PREGNANCY

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Objectives: Obesity in pregnancy is associated with adverse outcomes (1). Body mass index is commonly used to assess obesity but has limitations (2). Other inexpensive methods of adiposity such as waist, hips and skin fold measures have inherent problems with accuracy in pregnancy (3). Ultrasound a common tool used in obstetric care demonstrates the ability to accurately assess adiposity (3) and predict adverse pregnancy outcomes (4). The aim was to compare ultrasound measured abdominal subcutaneous fat with other anthropometric methods for obesity assessment in early pregnancy, describing fat distribution in early pregnancy.

Method: A subset of 575 women, recruited from a larger study, had anthropometric measurements performed between 11 and 14 weeks’ gestation. This included height, weight, hip, waist circumference, skin fold measures of the triceps, thigh and supra-iliac and ultrasound measurement of abdominal subcutaneous fat (USSFT). Percentage of maternal body fat was calculated using skin fold measures. Correlations of these measures were performed to assess the association.

Results: Pearson correlation between the anthropometric measures were compared and demonstrated good correlation (0.54-0.93) between the individual adipose measures such as skin folds, waist to height ratio (WSR) USSFT, BMI, percentage body fat and weight. USSFT correlated well with waist, WSR and BMI. (0.72- 0.76) Hip to waist ratio (HWR), demonstrating poorer correlation (0.3 -0.41) with all measures. Mean anthropometric measures were stratified across body mass index (BMI) categories describing adiposity distribution.

Conclusion: Ultrasound measurements of abdominal subcutaneous adiposity correlates well with other anthropometric measures in early pregnancy. Limitations of the gravid uterus on waist measurements, hydration and compressibility on skin-fold measures and pregnancy changes on weight and BMI assessments could be overcome using ultrasound measures. There is a potential for post hoc evaluation with ultrasound and maternal research would benefit from a more accurate measure of adiposity.

ELASTOGRAPHY: A NOVEL EVALUATION OF ABDOMINAL SUBCUTANEOUS FAT IN PREGNANCY

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Introduction: Adipose tissue (AT) fibrosis is the result of chronic inflammation and attributed to excessive extracellular matrix (EC) proteins that provide mechanical support in AT. Adipose fibrosis is associated with metabolic dysfunction in obesity (1). Strain Elastography, a useful tool in assessing fibrosis in liver disease has not previously been used to assess adipose tissue fibrosis. Strain Elastography was used to determine the variance of abdominal subcutaneous tissue (AST) density and correlate fat thickness and body mass index with fat density.

Method: Women (n=210) were recruited in early pregnancy at 11-14 weeks gestation, elastography performed at 4 time-points through pregnancy and post-partum. AST was imaged medial to the anterior superior iliac spine. utilising two anatomical layers, superficial subcutaneous (SSAT) and deep subcutaneous (DSAT). Density of adipose tissue was assessed using strain Elastography. Quantitative measures were achieved using two methods, strain values(SV) plus a ratio of the two layers and ImageJ software to calculate the percentage colour pixels in the Elastography image. Density measures were correlated with BMI and fat thickness.

Results: overall adipose tissue demonstrated a difference in density; DSAT layer was denser than SSAT. There was poor correlation of tissue density measures with BMI. The density of fat remained similar throughout pregnancy and became softer post-partum associated with increased subcutaneous fat deposits. The minimal change of fat density during pregnancy resulted in a tendency towards harder SSAT and softer DSAT in the third trimester. Post-partum SSAT became softer associated with an increase in SSAT thickness.

Conclusion: Elastography demonstrated density differences in adipose tissue. Overall SSAT was denser than DSAT. A difference in density in fat post-partum related to an increased AT deposit and the subcutaneous fat layers became softer. Correlation of strain elastography density with insulin resistance or histology may provide new insights, establishing fundamental information on obesity related disease.

ASSOCIATION OF MACRONUTRIENT INTAKE IN EARLY PREGNANCY WITH ULTRASOUND MEASURES OF ABDOMINAL SUBCUTANEOUS FAT

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Objective: The protein leverage theory suggests the modern diet has increased energy intake to accommodate a fall in dietary protein contributing to the obesity epidemic. Ample research has been performed to find a diet to assist with weight loss, however there has been little research to determine if there is association of dietary macronutrients with fat distribution influencing metabolic health. Associations between dietary macronutrient composition and ultrasound measures of subcutaneous fat layers categorised by body mass index were investigated.

Method: 200 women recruited in early pregnancy completed a food frequency questionnaire and had measurements performed on abdominal subcutaneous fat, dividing it into its two layers superficial subcutaneous adipose tissue (SSAT) and deep subcutaneous adipose tissue (DSAT), assessing fat density with ultrasound and strain elastography. A ratio of DSAT/SSAT was formed and called D/S. Plausible diets of 188 women were used and divided into four BMI categories; underweight, normal weight, overweight and obese. Generalised additive models in the R statistics package mgcv using thin plate regression splines were used to associate intake of dietary protein, carbohydrate and fat(kJ/day).

Result: Dietary intake did not differ between the BMI categories, except when macronutrients intakes were adjusted for weight. In early pregnancy, there was an association between a high protein, low fat intake diet with increased SSAT thickness. There was no association of macronutrient intake with DSAT or D/S. When assessing the relationship of fat density with macronutrient intake there was an association between decreased density of SSAT with low fat intake. There was no association of macronutrients and fat density in the DSAT.

Conclusion: Although it is difficult to make assumptions from human studies using dietary recollection, and considering a life-time of dietary pattern has contributed to the current body fat mass, macronutrient balance may have a prominent place in metabolic health and long-term fat distribution.
CONSUMPTION, WASTAGE AND FLAVOUR PREFERENCES OF THICKENED FLUIDS IN NEPEAN HOSPITAL INPATIENTS

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Objective: To determine whether the daily provision of thickened fluids is sufficient to meet inpatient fluid requirements, monitor the wastage of fluids and identify factors that impact consumption.

Methods:
Over a ten day period all inpatients ordered a thickened fluid diet code via eMR2 were identified. Four mealtimes of twenty patients were observed to collect consumption data of thickened fluids and fluid rich foods. Individual fluid requirements were calculated and the use of intravenous fluids monitored when comparing fluid intake and provision to requirements. Flavour preferences and ability to open packaging was also recorded. Wastage costs were calculated based on product purchase prices and amount consumed at each meal.

Results: Nepean hospital provides 1.26L of thickened fluid per patient per day, adequate to meet only 25% of patient fluid requirements. However, on average, patients consumed only 17% of individual daily fluid requirements when on a thickened fluid diet (0-48% across all patients). Inadequate fluid intake resulted in five patients requiring additional intravenous fluid therapy to meet hydration needs. Overall, there was a decreasing trend in the intake of thickened fluids and fluid rich foods throughout the day from 29% at breakfast to 12% at afternoon tea. Pro lemon-lime had the highest consumption (32%) whilst apple juice had the lowest (9%). The majority of patients also reported difficulty opening thickened fluids. Wastage costs on average were $7.54 per patient per day.

Conclusions: Patients requiring thickened fluids are at high risk of dehydration. To improve inpatient hydration status, changes to default thickened fluid flavours and new functional packaging has been implemented. Further work is being conducted around implementation of a ‘dysphagia happy hour’ designed to thicken fluids such as tea, coffee and ginger ale at the patient bedside. The use of intravenous fluids should also be considered to improve patient hydration and nutritional status and reduce length of hospital stay.
A NOVEL METHOD FOR DIRECT BACTERIAL IDENTIFICATION AND SUSCEPTIBILITY TESTING OF POSITIVE BLOOD CULTURE BOTTLES BY MALDI-TOF MS AND VITEK 2

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Objectives

This study evaluated the reliability and accuracy of the use of Matrix Assisted Laser Desorption/Ionisation Time-Of-Flight mass spectrometry (MALDI-TOF MS) bacterial identification and the Vitek 2 system for antimicrobial testing (AST) directly from positive blood culture broth using a novel method.

Methods

Direct identification and AST were performed in parallel to culture on solid media. 123 isolates were included in the study. 49 underwent AST using the Vitek 2 Compact (BioMérieux). 4ml of positive BD BACTEC™ blood culture broth was centrifuged for 1 minute at low speed to remove leucocytes and erythrocytes. The supernatant was then centrifuged at a higher speed to sediment the bacteria. Lysis buffer was added to the sediment before the final centrifugation which resulted in a suspension of bacteria ready for identification using MALDI-TOF MS (MALDI Biotyper with FlexControl software; Bruker Daltonics). The suspension was brought to 0.5 McFarland for direct AST.

Results

Overall, the correct identification rate was 93% (n=114). 97% (n=56/58) as gram negative rods; 93% (n=56/60) gram positive cocci; and 40% (n=2/5) gram positive rods. Compared to culture methods: direct susceptibility results for 86% (n=42) of isolates were concordant for all relevant antimicrobials within the reported susceptibility profile; 14% (n=7) had a minor error of 1 antimicrobial discrepancy in the panel tested; and only 1 isolate had a major error (2%). No very major errors were observed.

Conclusion

Our study demonstrated a rapid, reliable and cost effective method for the direct identification and AST of bacteria obtained from positive blood cultures. Obtaining a standardised bacterial inoculum for direct AST, improved the reliability of the results. This novel method reduces the turnaround time for identification and susceptibility reporting with the potential of a same day identification and susceptibility result, significantly decreasing the time required to administer effective and targeted antibiotic therapy.
ONE HOUR DETECTION OF CLINICALLY SIGNIFICANT PATHOGENS FROM CEREBROSPINAL FLUID USING THE BIOFIRE FILMARRAY MENINGITIS/ENCEPHALITIS PANEL

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Objective: Meningitis and encephalitis are life threatening diseases which can have serious consequences if not detected early. This study evaluated the effectiveness of the BioFire FilmArray Meningitis/Encephalitis (ME) Panel (BioMérieux) to provide simultaneous rapid nucleic acid detection of 14 pathogens in cerebrospinal fluid (CSF), including herpes simplex virus 1 (HSV-1), herpes simplex virus 2 (HSV-2), human herpes virus 6 (HHV-6), varicella-zoster virus (VZV), enterovirus (EV), cytomegalovirus, human parechovirus (HPeV), Neisseria meningitidis, Streptococcus pneumoniae, Escherichia coli K1, Haemophilus influenzae, Listeria monocytogenes, Streptococcus agalactiae, and Cryptococcus neoformans/gattii.

Methods: 200µl of CSF samples (n=117) were included in this study and tested on the FilmArray ME Panel according to the manufacturer’s instructions. Specimens were also tested on our routine AusDiagnostics CSF assay and results compared.

Results: The FilmArray ME Panel detected at least one positive target in 58% (68/117) of specimens tested. Of the targets comparable to the AusDiagnostics CSF assay (HSV-1, HSV-2, VZV, EV, HPeV, N. meningitidis, S. pneumoniae, H. influenza, L. monocytogenes, and C. neoformans/gattii), the ME Panel had 97% (114/117) correlation with 100% sensitivity and 100% specificity, with the exception of HSV-2 (2 false positive) and C. neoformans/gattii (1 false negative). 4 HHV-6 were detected and confirmed positive by ICPMR Westmead. Other targets could not be evaluated to the full extent.

Conclusion: The BioFire FilmArray ME Panel is highly sensitive and specific assay that provides results in approximately 1 hour. These results were available approximately 24 hours earlier compared to the routine AusDiagnostics CSF assay. This rapid result may have the potential to allow for early administration of targeted therapy, reducing hospital stay, and most importantly has the potential to save lives.
Incidence of post-operative delirium following elective total hip and knee arthroplasty: A prospective observational study

Dr Muzahid Hassan, Dr. Luis Sardinha, Dr. Anita Sharma, Dr. Oddom Demontiero

Background: Post-operative delirium (POD) is a common and serious medical illness in older patients. It is associated with significant morbidity and mortality. The incidence of POD following elective total joint arthroplasty (TJA) is variable, ranging from 0%–80%. Most studies were conducted in North America and Europe, although few Australian studies have examined the incidence of delirium.

Objectives: The primary objective was to determine the incidence of POD following elective lower-limb TJA including the hip and knee. Secondary objectives were to observe the clinical characteristics and complications associated with TJA.

Methods: A prospective observational cohort study was conducted with patients 65 years and older who elected to be admitted on the day of surgery. Eighty patients were recruited consecutively over 3 months. These patients were assessed pre-operatively and then once daily on days 1 and 3 post-operatively. Delirium was assessed using the confusion assessment method (CAM) and other information was collected from the patients’ electronic medical records.

Results: The participants (n=80) had a mean age of 72.7 years and there were 20% more females than males. Almost all patients were functionally independent and 43.8% were ambulatory with the assistance of a walking aid. No episodes of delirium were detected during the study period (95% confidence interval [CI]: 0.00–0.045). Hypertension was the most frequent comorbidity, affecting 65.4% of participants. Post-operative anemia was the most common adverse event, affecting 71.2% of patients, 2.5% of which required blood transfusion. The median length of stay in acute care was 4 days, and 28.8% of patients required inpatient rehabilitation.

Conclusion: Although POD is common following elective TJA, this study did not detect any episodes of delirium; however, more Australian based epidemiological studies examining POD following emergency and elective surgery are warranted to determine the accurate data in order to plan and implement strategies to prevent POD.
Bullseye! Do Our Registrars Hit The Mark With MRI Cognitive Fusion Prostate Biopsy?

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AIM
This study aimed to identify if transperineal (TP) mpMRI cognitive fusion prostate biopsy, performed by urological trainees, improves prostate cancer detection at our Australian teaching Hospital.

METHOD
APOLLO Ethics Review Panel approval for this project was granted (HREC File No, 17-27(A)) by the NBMLHD Human Research Ethics Committee.

30 cases of MRI cognitive fusion biopsy, performed during March to August 2017 at Nepean Hospital, Sydney, were included in the analysis. In addition to the standard systematic transperineal biopsy, patients underwent cognitive fusion ‘targeted’ biopsies of suspicious PIRADS ≥3 lesions on multi-parametric MRI. For each case, the results of systematic biopsy were compared with those from the targeted biopsy. The primary outcome was percentage positive cores and Gleason score. Analysis was performed using SPSS 24.0.

RESULTS
A total of 30 males underwent TP biopsy (systematic and cognitive fusion) with a mean age of 62.3 (95% CI 59.6-65.1), PSA of 9.1ng/mL (95% CI 5.26-12.9) and prostate volume of 46.9cc (95% CI 34.0-56.8).

An average of 30.7 cores were taken with a systematic approach, and 5.6 cores in cognitive fusion biopsy. The percentage of positive cores from systematic biopsy was 17.3% (95% CI 8%-26%), whereas targeted biopsy cores yielded a significantly higher 40.4% (95% CI 22.5%-28.4%).

In 21 out of 30 cases (70%), there was concordance in Gleason scoring between systematic and cognitive fusion biopsies. Cognitive fusion sampling would have decreased non-significant cancer detection (Gleason score 3+3) by 16%. However, in 5 cases (16.7%), cognitive fusion biopsy was unable to detect the highest tumour burden based on Gleason score, thus under-grading.

CONCLUSION
MRI cognitive fusion biopsy can be successfully performed by registrars in a teaching hospital. Further study is required to identify if cognitive fusion biopsies can be performed without systematic biopsy.
Moving Towards Zero Sepsis; Our Registrars Can Do It! An Analysis of 214 cases of Transperineal Prostate Biopsy over three years.

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AIM
Transperineal (TP) biopsy is an increasingly utilised method of prostate biopsy which is associated with low rates of sepsis. This is particularly important with the rise of multi-resistant organisms which make sepsis from standard trans-rectal prostate biopsy more difficult to prevent and manage.

This study aimed to assess post-operative complications of TP prostate biopsy performed by Urological Trainees at an Australian teaching centre.

METHOD
APOLLO Ethics Review Panel approval for this project was granted (HREC File No, 17-27(A)) by the Nepean Blue Mountains Local Health District Human Research Ethics Committee.

Males who underwent TP biopsy from April 2015 until May 2017 at Nepean Hospital, Kingswood, Australia were included in the study. TP biopsy was performed with a standard template grid approach, with additional biopsies taken of any suspicious lesions identified on multi-parametric MRI. Cases received a pre-operative single dose of intravenous cephazolin as prophylaxis. All cases were followed up for re-presentation to hospital within 30 days of biopsy. The primary outcome was re-presentation for TP biopsy related complications. Data was analysed using SPSS 24.0.

RESULTS
A total of 214 males were included with a mean age of 63.4, PSA 9.4ng/mL and prostate volume of 54.3cc. Overall, twenty-one cases (9.8%) had hospital re-presentation within 30 days, with biopsy related complications. 13 cases (6%) re-presented with urinary retention, 5 cases (2.3%) experienced haematuria with clot retention, and 1 case (0.5%) developed a culture-proven urinary tract infection (with blood cultures negative for bacteraemia). No patients had urosepsis following their TP biopsy.

CONCLUSION
Our study supports the growing literature supporting the use of TP biopsy in reducing the rate of urosepsis following prostate biopsy. With rising rates of multi-drug resistance in normal rectal flora, this is becoming highly relevant in the arena of prostate biopsy for cancer diagnosis and active surveillance. At our centre, TP biopsy has resulted in a zero-sepsis rate after 3 years, and an acceptable hospital representation rate, for acute urinary retention and clot retention.
Providing Pain Management Services via an Outreach TeleMedicine Model to a Remote Area Health Service in NSW.

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Background and aim(s) - Tele health provides a means of accessing specialist medical services when consumers are located in rural and remote areas not serviced by specialist medical input. This has relevance for consumers of Pain Management services. Telehealth an emerging Model of Care has the potential to enhance and address the multiple issues that currently inhibit patients access to tertiary pain management services. As part of an ACI initiative the Nepean Pain Management service is providing Clinical Pain Management and Support services to patients and Clinicians in the Murrumbidgee Local Health District (MLHD).

Objectives -
- To facilitate access to specialist evidence based pain management
- To provide appropriate follow-up client support and education maximizing leaning
- To provide appropriate support and training to health care professionals in the local area
- To keep the patient closer to home and close to their community

Planning / Method - This collaborative project, still in its infancy involves a range of approaches to provide clinical support and develop local capacity. Services provided by way of this initiative include Outreach visits to various sites in MLHD/ Telehealth Clinics/Education and Support to the local clinicians. Telehealth consultations are achieved using Health Direct software.

Results - To date we have had 78 referrals, completed 19 consultations via Telehealth. Our Group Pain Management Program- Living with Pain was received by 20 patients. ePOCC questionnaires returned for 39 patients. We have conducted 2 major site visits with Face-face consultations and 2 GP Educational meetings.

Conclusion(s) – The Nepean Pain management service is committed to participation in the Electronic Persistent Pain Outcomes collaboration Program [ePOCC] to help improve services and outcomes for patients experiencing chronic pain through benchmarking of care and treatment. Initial questionnaires have been returned by participants and will be processed after follow-up data is available. Limitations in providing Pain Management Services via Telehealth are to be expected.

There is expected to be a financial impact in running this service, both in terms of establishing and maintaining the Telehealth service [hardware, software etc.] and also in costs saving in providing specialist services closer home and with minimum disruption of client’s lives providing convenience and quality care when needed.
Retrospective analysis of a Mobile Rehabilitation Program

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**Background and Aims**. Liverpool Hospital is a major tertiary Hospital in NSW. The Rapid Response Rehabilitation Team [RRRT] started in 2014 as a shared care model with the aims of,
- Early discharge planning
- Patient independence and an enablement model of care in the acute setting
- Prevention of functional decline during acute hospitalisation
- Integrated assessment of patients in an interdisciplinary environment

This retrospective analysis examined the RRRT referral profile, length of rehabilitation intervention and rehabilitation discharges.

**Method**
The data base of RRRT referrals was retrospectively analysed from 2014 to 2015. Total numbers of referrals and accepted episodes amongst specialities were obtained. Analysis was focused on total therapy days, average therapy days per episode, therapy disruption and types of therapy disruption.

**Results**
- 762 cases were referred
- 433 cases were accepted for RRRT with acceptance rate of 56.8%.
- Referrals from medical teams (447) outnumbered those from surgical teams (315). The five common specialities where referrals were made include Geriatrics (134), Cardiothoracic surgery (86), Orthopaedics (76), Renal medicine (62) and Haematology (49).
- RRRT received approximately 10 referrals/week.
- Geriatrics team utilised 845 therapy days from 121 total episodes when total therapy days were calculated. 110 episodes under orthopaedics team required much less therapy days of 621, which may reflect shorter therapy days needed per episode than those in Geriatrics episodes.
- Discontinuation rates were higher among the Cancer cohort with Haematology (26.6%) and Oncology patients (30%).

**Conclusions**
Key findings include variation in utilisation amongst different specialities at Liverpool hospital. Acceptance rate to and average therapy days under the RRRT program were similar among specialities. The latter may reflect reasonably good awareness of inclusion criteria by staff in acute hospital wards and consistency amongst RRRT triage staffs.

Relatively high discontinuation rates in Haematology and Oncology should not lead to pessimism over cancer rehabilitation in general and other models of care should be developed to meet the needs of this cohort.
THE NEPEAN BLUE MOUNTAINS LIFESPAN FAMILY OBESITY SERVICE: A NOVEL MODEL OF MULTIDISCIPLINARY CARE SPANNING FROM PRE-CONCEPTION TO EARLY PREGNANCY THROUGH CHILDHOOD AND ADOLESCENCE INTO ADULTHOOD FOR INDIVIDUALS AND FAMILIES WITH SEVERE OBESITY.

INTRODUCTION: The Nepean Family Obesity Service (NFOS) was established in early 2017 to address the rising rates of childhood and adult obesity in the Nepean Blue Mountains Local Health District (NBMLHD). The NBMLHD has one of the highest rates of obesity and Type 2 Diabetes-related hospitalisations with 60% of adults in the LHD being overweight and obese (Wentworth Healthcare PHN and the Committee for Sydney 2017).

The NFOS utilises a novel multidisciplinary Family model of care that includes clinics spanning the whole lifespan: a) early pregnancy (OPAL) b) childhood and adolescent (Kids Fit 4 Future) c) young adult (Pre-conception) and d) Adult “Healthy Weight”, including clients with BMI >55kg/m².

Family members of clients referred to the NFOS with severe obesity, including children, siblings and parents, are all encouraged to obtain a co-referral from their GP. The NFOS team includes expertise in obstetrics, paediatric and adult endocrinology and diabetes, nursing midwifery and diabetes education, nutrition and dietetics, clinical psychology, physiotherapy and administration with research support from the Nepean CPC Research Hub and in collaboration with the Wentworth Healthcare PHN.

Clinic environments are sensitive to the needs of our clients, including appropriately sized chairs and bariatric examination beds. We have begun evidence-based individual and adult group programs to deliver the service. Where appropriate, the service utilises the NSW Health “Get Healthy” coaching service (for 16yrs and above) and the Go4Fun Program (age 7-13 yrs) delivered locally by accredited NFOS team members.

The service will utilise a “Research into Practice” research model supported by an integrated REDcap-based database. The service has already established several transdisciplinary and multidisciplinary collaborations with basic, clinical and applied researchers within the Nepean Charles Perkins Centre and Brain and Mind Centre Hubs and the wider University of Sydney campus and Wentworth Healthcare PHN.

SUMMARY: The Nepean FOS is a unique model of Family-based care that encompasses the whole lifespan. Ongoing analysis of the service’s outcomes utilising a "Research into Practice" model of care is paramount to its long-term success and achieving the service’s overall aim to improve the health and well-being of its clients while avoiding team “burnout” in its staff. Adolescent-specific programs remain challenging. Research to improve patient and family outcomes is a major priority of the service in addressing this important public health global challenge.
THE MOVIN’ PROJECT (MOBILISATIO OF VENTILATED ICU PATIENTS AT NEPEAN)
A Quality improvement project based on the principles of knowledge translation to promote Nurse-Led Mobilisation of Critically Ill Ventilated Patients

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Objective: Prospective quality improvement project to evaluate the impact of a training programme to promote nurse-led mobilisation of intubated critically ill patients.

Methods: This project involved an educational programme to upskill nurses and overcome the barriers/challenges to nurse-led mobilisation. Initial strategies focused on educating and upskilling nurses to attain competency in active mobilisation. Subsequent strategies focused on positive reinforcement to achieve a culture shift. A Pre- and post-intervention audit were used to evaluate its effectiveness.

Results: A baseline audit showed that ~9% of ventilated patients were mobilised. Several barriers were identified. Twenty-three nurses underwent training in actively mobilising ventilated patients. This increased their confidence levels and there was reduction in reported barriers. However, the rate of active mobilisation remained low (9.7%). Subsequently, a programme of positive reinforcement with rewards and visual reminders was introduced, which saw an increase in the number of nurse-led mobilisations of both ventilated patients (from 9.7% to 34.8%; $p = 0.0003$), and non-ventilated patients (29.5% versus 62.9%; $p = <0.0001$).

Conclusion: It is safe and feasible to train nurses to perform active mobilisation of ventilated patients. However, to promote a culture change, training and competency must be combined with a multi-pronged approach including reminders, positive reinforcement and rewards.
Association between Insulin on Post-Caesarean Resuscitation Rates in Infants of Women with Gestational Diabetes Mellitus (GDM)

Aloysius NG, Anthony LIU, Ralph NANAN

Background
Gestational Diabetes Mellitus (GDM) and caesarean deliveries independently increases the risk of post-operative complications (1; 2). There is limited data on the influence of insulin use on neonatal outcomes who were delivered via caesarean section (3-6). We sought to investigate the impact of insulin use in women with GDM, on resuscitation rates of infants post-caesarean delivery.

Materials and Methods
A retrospective database review of women with singleton term (≥37 weeks) pregnancies who were on insulin for GDM delivering between January 2005 and December 2014 at a major metropolitan teaching hospital in Western Sydney.

Results
1857 women were identified to have GDM delivering singleton term infants. The women’s mean age was 31.0 ± 5.6 years with mean gestational period of 39.1 ± 1.0 weeks. 31.0% of women received insulin treatment for GDM. Results show that women who were on insulin were older (31.9 ± 5.7 vs. 30.6 ± 5.6 years, p < 0.001), had a higher BMI (31.2 ± 7.7 vs. 29.0 ± 7.4 kg/m², p < 0.001), higher rates of preeclampsia (7.3% vs. 4.1%, p = 0.004), lower rates of alcohol consumption (0.4 vs. 1.7%, p = 0.014) and had infants with lower resuscitation rates (21.2 vs. 28.6%, p=0.001). Infants that required resuscitation had a lower gestational age, lower 5 minute APGAR score, lower birth weight, length, and head circumferences. On multivariate analysis, women with GDM treated with insulin (OR = 0.69, CI = 0.54 – 0.89, p = 0.004), higher gestational age (OR = 0.88, CI = 0.78 – 0.99, p = 0.032), higher maternal BMI (OR = 1.02, CI = 1.01 – 1.04, p = 0.005) and emergency caesarean (OR = 2.33, CI = 1.74 – 3.12, p < 0.001) independently predicted incidence of resuscitation.

Conclusion
The findings suggest a relationship between insulin use and reduced resuscitation rates of infants born from mothers with GDM. Further studies investigating the role, dosage, and criteria for insulin use in women with GDM are required.