



Townsville Health Research Showcase

**3-5
September
2018**

Program

Partners in research



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	Monday, 3rd September	Tuesday, 4th September	Wednesday, 5th September
Workshops Venue: JCU Clinical School Level 1 THHS Near Library	8:30 – 11:30am Enhanced Recovery After Cardiac Surgery with Dr Rakesh Arora Allied Health Research Shark Tank (Robert Douglas Auditorium)	8:30 – 11:30am Using Observational Designs in Health Research with Dr Natisha Sands and Dr Stephen Elsom	8:30 – 11:30am Health Economic Evaluation to Inform Health Service Improvement with Prof Jonathan Karnon
Lunch Venue: RDA Foyer	11:00am Serving Commences – All Welcome 11:30am – 12:00pm – Acknowledgment of Country & Opening Remarks	11:00am Serving Commences – All Welcome Poster Viewing	12:30pm Serving Commences – All Welcome Poster Viewing
Afternoon Venue: RDA	12:00 – 12:45pm Plenary Speaker – Dr Rakesh Arora 12:45 – 1:30pm Indigenous Health Service Group Presentation 1:35 – 4:30pm Abstract Presentations “Worms to Germs and Veins to Brains” *3:00 – 3:30pm Poster Q & A and Afternoon Tea	12:00 – 12:45pm Plenary Speaker – Dr Natisha Sands 12:45 – 4:30pm Abstract Presentations “Transforming Clinical Care” *3:00 – 3:30pm Poster Q & A and Afternoon Tea	12:00 – 12:45pm Plenary Speaker – Prof Jonathan Karnon 2:00 – 4:15pm Abstract Presentations “Counting the Cost of Disease – Hear the Message” *3:15 – 3:45pm Poster Q & A and Afternoon Tea
Evening		Research Networking Dinner 6:30 for a 7:00 start A Touch of Salt Restaurant	

Message from the chair

Professor Damon Eisen



I'm confident you will enjoy the 2018 Townsville HHS Research Showcase as it shows the fascinating and diverse aspects of work performed by our staff.

Events like this play a vital role in hospital life, bringing together specialists in their area of research and ensuring that the audience have their thinking expanded. The opportunities for new collaborations and directions in our working and research lives are very substantial.

Townsville HHS invests very heavily in research and it is a core pillar of the organisation's aims of excellence in clinical care, research and education. There is no doubt that the newly formed Tropical Australian Academic Health Centre will rely on Townsville HHS to lead its clinical research development.

So, whether you are interested in; the prospects of robotic nurse care, new treatments derived from hookworms, telehealth for oncology and radiology patients or advances in care for then this Research Showcase promises to expand your horizons.

The researchers from Townsville HHS and the invited guests are all excited to have the chance to showcase their talents. I'm glad you are here to benefit from learning about their work.

Keynote Speakers



Dr Rakesh Arora

Keynote Speaker - Monday 3rd September 2018 12:00pm

Principal Investigator - Heart Failure Therapy, Institute of Cardiovascular Sciences, St Boniface Hospital

Associate Professor Surgery, Anaesthesia & Physiology, University of Manitoba - Head of Cardiac Surgery, University of Manitoba

Dr. Arora became the first Cardiac Surgeon in Canada to also complete a fellowship in Critical Care Medicine in 2006.

In 2009, Dr. Arora pioneered a national society, The CANadian CARdiovascular critical care (CANCARE) Society (www.cancaresociety.com) that aims to advance the care of critically-ill cardiovascular patients using interdisciplinary expertise in a cooperative model.

He devotes a large proportion of time towards translational and clinical research. He was appointed the Director of Research for the Section of Cardiac Surgery 2007 and has received the Rudy Falk Clinician Scientist Award and the F.W. Clinical Research Professorship from the University of Manitoba in 2011.

Dr. Arora's recent research interests have concentrated on the perioperative care of patients undergoing cardiac surgery. He has specific interest in investigating matters surrounding patient safety, optimization of glycemic control and understanding the impact of frailty and delirium in the cardiac surgery patient.

Based on Dr. Arora's past clinical and research contributions, he has been invited to speak at several international critical care and cardiac surgery societies and has been elected as the President to the American Delirium Society.

Workshop: Monday 3rd September 2018 8:30am – Enhanced Recovery After Cardiac Surgery

Keynote Speakers



Dr Natisha Sands

Keynote Speaker - Tuesday 4th September 2018 12:00pm

Dr Natisha Sands, Director of Nurse Talk Consulting and Adjunct Associate Professor of Nursing of University of Canberra is a dynamic speaker and exceptional nursing academic.

Dr Sands' has extensive clinical and research expertise in mental health, including nursing, triage and teletriage, emergency department mental health, and violence in health. She has published widely in international journals, reports and books.

Dr Sands is a highly skilled nursing professional, with over a decade of leadership experience, two decades of academic teaching, and holds multiple awards for her outstanding contributions to health research.

Workshop: Tuesday 4th September 2018 8:30am – Using Observational Designs in Health Research

Observational research designs are non-experimental, non-interventional approaches that involve direct observation of phenomena in natural settings. Widely used in health and social research, observational designs are commonly employed to examine clinical practices for which current evidence is lacking and where knowledge gaps exist regarding the nature of the practice.

The workshop presents an overview of observational research including the types of observational designs and their application to health research, and the strengths and limitations of these approaches. Using case studies and examples from observational research, the workshop focuses on the practical aspects of undertaking observational research such as developing the research question, tool development, data collection, participant recruitment, consent, and ethical considerations. A particular focus of the workshop is on conducting observational research with vulnerable populations.

Workshop objectives

Following this workshop participants should be able to:

- Define and describe observational research
- Explain the application of observational research design to health research
- Identify the strengths and limitations of observational designs
- Discuss the practical and ethical considerations in undertaking observational research in health settings

Keynote Speakers



Dr Jon Karnon

Keynote Speaker - Wednesday 5th September 2018 13:30pm

Jon Karnon is a Professor of Health Economics at the University of Adelaide. He has been undertaking applied economic evaluations of health care technologies and services for over 20 years.

He has experience in the use of Australian health systems data to assess variation in clinical practice and inform service improvement priorities. Jon is President of the Health Services Research Association of Australia and New Zealand and has sat on the Economic Sub-Committee of the Pharmaceuticals Benefits Advisory Committee since 2009.

Workshop: Tuesday 4th September 2018 8:30am – Health Economic Evaluation to Inform Health Service Improvement

This workshop will cover three broad topics:

- an introduction to the economic evaluation of health services (as opposed to new drugs and devices);
- the use of health systems data to estimate the potential value of service improvement;
- and the economic evaluation of alternative models of care.

The initial section will introduce the key concepts and components of health economic evaluation, including the measurement of resource use, costs, measures of benefit, time horizons and opportunity costs.

The use of health systems data will be illustrated with reference to ongoing research that is comparing processes of care, costs and outcomes across South Australian public hospitals.

The models of care section will reference ongoing research on current approaches to evaluating potential models of care in Australia and overseas, and propose methods for the economic evaluation of models of care to better inform health service investment decisions.

Monday, 3rd September 2018 Program

“Worms to Germs and Veins to Brains”

Time	Topic	Speaker
11:00	Lunch Starts Serving in Robert Douglas Auditorium Foyer – All Welcome	
11:30	Welcome to country and opening remarks	
12:00	Keynote Speaker	Dr Rakesh Arora
12:45	Research involving Aboriginal and Torres Strait Islander Participants	Indigenous Health Service
13:30	Clinician and patient perspectives regarding transgender health in North Queensland	Audrey Heng
13:45	Presentation and outcomes of Indigenous Australians with peripheral artery disease.	Dr Tejas P. Singh
14:00	A pilot study of an opioid weaning group program – radar (reducing analgesic drugs and re-engaging)	Dr Stephen Gilbert
14:15	Correlation between serum cryptococcal antigen titre and meningitis in immunocompetent patients	Dr Ian Gassiep
14:30	Total intended antibiotic delivery related to drug concentration affecting the flowrate of elastomeric devices used in outpatient parenteral antimicrobial therapy	Stephen Perks
14:45	A randomized placebo-controlled trial assessing the effect of 24 weeks fenofibrate therapy on circulating markers of abdominal aortic aneurysm: Outcomes from the FAME-2 trial	Jenna Pinchbeck
15:00	AFTERNOON TEA AND POSTER Q & A	
15:30	Assessing risk of transnational movement of emerging infectious diseases	Dr Adeshina Adekunle
15:45	Aspirin therapy is infective in a mouse model of Staphylococcus aureus prosthetic joint infection	Prof Damon Eisen
16:00	Worm Treatment for RA - Lessons from the Literature	Kane Langdon
16:15	Genomics in nursing practice	Helen Wright

Abstracts

Clinician and patient perspectives regarding transgender health in North Queensland

Audrey Heng

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Background: There are few Australian studies examining the experiences and perspectives that transgender people have about their health care, and none examining clinician perspectives in managing transgender health care. Additionally, reports from Sexual Health Services in Townsville and Mackay show increasing presentations from transgender people. It is unknown what may be the cause of this and how the North Queensland location impacts transgender life and health care. This ongoing study's primary aim is to improve understanding about the life and health care experience of transgender people in North Queensland. It also aims to gain insight into local clinicians' knowledge and perspectives of the transgender population's health care needs. **Method:** This is a qualitative descriptive study utilising semi-structured, in-depth interviews with transgender clients, general practitioners, and sexual health clinicians in Townsville and Mackay. Using an interpretivist framework, interview transcripts are analysed in an iterative manner to identify and synthesise themes related to the topic. **Results:** Data collection and analysis are currently being undertaken. Preliminary results indicate a broad range of transgender life and health care experiences, including a distinct role for shared management between sexual health and general practice. Further preliminary results will be available in time for the showcase. **Conclusions:** Results of this study may provide some idea about the need for services and transgender health education in regional Queensland. This project provides a new perspective to what has been previously shared in the existing literature, which may ultimately inform methods to improve the health care provision for transgender people.

Presentation and outcomes of Indigenous Australians with peripheral artery disease

Dr Tejas P. Singh

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Background: The risk factors for peripheral artery disease (PAD) are more common in Indigenous than non-Indigenous Australians, however the presentation and outcome of PAD in Indigenous Australians has not been previously investigated. The aim of this prospective cohort study was to compare the presenting characteristics and clinical outcome of Indigenous and non-Indigenous Australians with PAD. **Method:** PAD patients were prospectively recruited and followed-up since 2003 from an outpatient vascular clinic in Townsville, Australia. Presenting symptoms and risk factors in Indigenous and non-Indigenous patients were compared using Pearson's χ^2 test and Mann Whitney U test. Kaplan Meier survival analysis and Cox proportional hazard analysis were used to compare the incidence of myocardial infarction (MI), stroke or death (major cardiovascular events) among Indigenous and non-Indigenous patients. **Results:** 401 PAD patients were recruited, of which 16 were Indigenous and 385 were non-Indigenous Australians. Indigenous Australians were younger at entry (median age 63.3 [54.7-67.8] vs 69.6 [63.3-75.4]), more commonly current smokers (56.3% vs 31.4%), and more frequently had insulin-treated diabetes (18.8% vs 5.2%). During a median follow-up of 2.5 years, five and 45 major cardiovascular events were recorded amongst Indigenous and non-Indigenous Australians, respectively. Indigenous Australians were at ~ 5-fold greater risk of major cardiovascular events (adjusted hazard ratio 4.72 [95% confidence intervals 1.41-15.78], $p=0.012$) compared to non-Indigenous Australians. **Conclusions:** These findings suggest that Indigenous Australians with PAD present at a younger age, have higher rates of smoking and insulin-treated diabetes, and poorer clinical outcomes compared to non-Indigenous Australians.



A pilot study of an opioid weaning group program – radar (reducing analgesic drugs and re-engaging)

Dr Ian Gassie^p

Aye C³, Armstrong M¹, Emeto TI^{4,5}, Heather CS^{1,2,3}, Norton RE^{1,2,3}

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Background: *Cryptococcus* is an environmental yeast capable of causing infections in both immunocompetent and immunocompromised individuals. Meningitis is the most common presentation of cryptococcal infection. The aim of this research paper is to determine the correlation between serum cryptococcal antigen and a diagnosis of cryptococcal meningitis in the immunocompetent cohort. **Methods:** Retrospective multicentre analysis of non-HIV, non-transplant patients diagnosed and treated for cryptococcal meningitis between January 2000 and December 2017. **Results:** 143 cases of cryptococcosis were identified in total, and 67 (47%) patients were immunocompetent. Meningitis was diagnosed in 44/67 (67%) cases; *C. neoformans* and *C. gattii* had similar total incidence of meningitis at 20/44 (45%) and 18/44 (41%) respectively. *C. gattii* was more likely to be associated with meningitis, 18/19 (95%) of cases, compared to *C. neoformans* 20/29 (69%), $p < 0.001$. Serum cryptococcal antigen titre was significantly higher in the meningitis cohort, median 1:256 (IQR: 64 – 1024) compared with non-meningitis patients, median 1:64 (IQR: 8 – 256), $p < 0.001$. The relative risk of meningitis with a serum CRAG $\leq 1:64$ was 0.556 (95% CI, 0.354 to 0.871). **Conclusion:** Diagnosis of cryptococcal meningitis remains a challenge, and requires a lumbar puncture for confirmation. This study demonstrates a clear correlation between serum cryptococcal antigen titre and meningitis in the immunocompetent. While the serum titre is not definitive for meningitis, in resource limited settings or where lumbar puncture may be contraindicated, this evidence may aid diagnosis and subsequent therapeutic decisions.

Total intended antibiotic delivery related to drug concentration affecting the flowrate of elastomeric devices used in outpatient parenteral antimicrobial therapy

Stephen Perks

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Background: Many studies investigate drug stability in extended home-infusion pumps, but little is known of other factors which may affect the total daily dose the patient receives. It has been previously noted that up to 40% of these infusion do not completely infuse within the designated run out time. **Aim:** Investigate if concentration can affect the flow rate of home-infusion pumps and thus the total dose the patient receives in OPAT. **Method:** The flow rates of 10 different drug/dose formulations (4g to 18g in 0.9% sodium chloride) in Baxter-LV10 infusion pumps were investigated. The pumps were run out 31°C and weighed at intervals with flow rate and total volume infused calculated over the 24-hour period. **Results:** Piperacillin/Tazobactam-18g was the only formulation to not meet the minimum standard of 90% of the volume being infused over the 24h period. This indicates a failure of intended therapy. The expected dose delivered can be calculated as: %dose delivered = $-1.9x + 122.85$ (where x = total drug and excipient weight within the infusor) **Conclusion:** Dose has an inverse relationship to flow rate with the Baxter-LV10 Infusor. Under nominal conditions any amount greater than 12.02g in the 240mL infusor will result in an incomplete run-out over the 24-hour period. Clinicians should be aware that prescribing daily doses higher than 17.28g may result in less than 90% of the intended dose being received by the patient. Further research is needed to confirm if this decrease in flow rate results in poor clinical outcomes.

A randomized placebo-controlled trial assessing the effect of 24 weeks fenofibrate therapy on circulating markers of abdominal aortic aneurysm: Outcomes from the FAME-2 trial

Jenna Pinchbeck

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Background: There is no drug therapy for abdominal aortic aneurysm (AAA). Rodent studies suggest that fenofibrate limits AAA growth by down-regulating several biological processes implicated in AAA pathogenesis. This placebo-controlled randomized trial assessed whether administration of 145mg of fenofibrate/day for 24 weeks favourably modified circulating markers of AAA. **Methods:** Patients with AAAs measuring 35-49mm in maximum diameter and no contra- indication were randomized to fenofibrate or identical placebo. The primary outcome measure was the difference in serum osteopontin (OPN) and kallistatin concentrations between groups. Secondary analyses compared changes in the circulating concentration of other AAA- associated proteins, and AAA growth, between groups using multivariable linear mixed effects modelling. **Results:** A total of 140 patients were randomized to receive fenofibrate (n=70) or placebo (n=70). By the end of the study 3 (2.1%) patients were lost to follow-up and 18 (12.9%) patients had ceased trial medication. A total of 85% of randomized patients took >80% of allocated tablets. Patients' allocated fenofibrate had expected reductions in serum triglycerides and estimated glomerular filtration rate, and increases in serum homocysteine. Fenofibrate did not influence changes in serum OPN, kallistatin or AAA growth over time. **Conclusions:** Administering 145 mg/day of fenofibrate for 24 weeks did not significantly reduce serum concentrations of OPN and kallistatin, or rates of AAA growth in this trial.

Assessing risk of transnational movement of emerging infectious diseases

Dr Adeshina Adekunle

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¹AITHM, JCU, Australia

Background: Global changes such as urbanisation, population migration, farming practices and encroachment on natural habitats have made emerging infectious diseases increasingly frequent in recent years. This is especially true in the Asia-Pacific region. We aim to develop a global picture of risk of emerging infectious diseases that is accessible to policy makers and the general public, to aid understanding of risk and mitigation strategies. **Method:** This is a web-based activity. We develop a compartmental model of infectious diseases transmission and layer on this a meta-population model to represent all countries of the world. Data sources are international travel data obtained from OAG*, and country population data available from World Bank**. Travel data are origin and destination country travel numbers (people per month) for 220 countries. **Results:** A web-based tool will demonstrate mock-outbreaks and calculate risk of importation from real outbreaks including the current Ebola epidemic. This shows that Australia is at very low levels of risk of receiving an imported case of Ebola unless the prevalence of Ebola in the origin country or subsequent seeded countries exceeds 100,000. **Conclusions:** We have developed a tool that can help policy makers and the general public understand risk of importation of emerging diseases and provide preliminary results on intervention strategies.

Aspirin therapy is ineffective in a mouse model of Staphylococcus aureus prosthetic joint infection

Prof Damon Eisen

Peter Mulvey¹

¹Australian Institute of Tropical Health and Medicine

²Townsville Hospital and Health Service

Background: Prosthetic joint infections due to biofilm forming organisms are the second commonest cause of revision of arthroplasties. These infections are difficult to treat with antibacterials alone and novel strategies are required for effective salvage therapy. Aspirin has been shown to be able to reduce biofilm formation by Staphylococcus aureus and may be useful in combinations with antibiotics. **Method:** A medical grade K-wire was inserted into the femur of mice before contamination with S. aureus to induce a chronic infection. Mice were treated with either daily doses of aspirin, aspirin + cephazolin, cephazolin or PBS. Mice were euthanised at day 14 and K-wire



removed from femur to quantify *S. aureus* on the implant. One-way ANOVA was used to test for significant differences between study groups. **Results:** Only cephazolin treated mice showed a significant reduction in *S. aureus* growth. Aspirin treatment alone did not reduce *S. aureus* and in combination with cephazolin led to more bacterial growth in animals treated with the antibiotic alone. (Figure) **Conclusions:** Aspirin did not improve the effectiveness of cephazolin treatment for *S. aureus* prosthetic joint infection. Other salicylate agents may be more effective adjuvant treatments for these infections.

Worm Treatment for RA - Lessons from the Literature

Kane Langdon

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Background: Proteins from parasitic worms have been posed as treatments for rheumatoid arthritis (RA) and other auto-inflammatory diseases. However, with so many potential drugs and no current guidance, research in this area is not optimised. Therefore, the aim of our systematic review and meta-analysis was to evaluate the effects of worm proteins on RA in an animal model. In the review, we evaluate the overall effectiveness of the proteins and identify which seem to be the most promising, thereby optimising drug discovery for RA. **Method:** Medline, Scopus and Web of Science were searched to identify studies evaluating helminthic therapy in the collagen-induced arthritis (CIA) model of RA. A meta-analysis was undertaken to determine the overall effect of the proteins. Subgroup analyses were undertaken to investigate individual treatments. **Results:** Seven articles were included in the analysis. Overall, helminthic therapy significantly improved arthritis score (SMD -1.193, 95% CI -1.525, -0.860) in CIA. Subgroup analysis found a significant reduction in arthritis score following the ES-62 protein treatment (SMD -1.186, 95% CI -1.633, -0.738) and phosphorylcholine-based treatment (SMD -0.997, 95% CI -1.423, -0.571). ES-62 treatment significantly decreased levels of the major pro-inflammatory cytokine IFN- γ (SMD -1.611, 95% CI -2.734, -0.487) and significantly increased levels of anti-inflammatory cytokine IL-10 (SMD 0.946, 95% CI 0.127, 1.765). **Conclusions:** Therapeutics from parasitic worms is an exciting avenue for drug discovery, especially with all included studies reporting a significant improvement in arthritis score. Based on these studies, the nematode *Acanthocheilonema viteae* seems to be of particular interest for therapeutics.

Genomics in nursing practice

Helen Wright

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²Massey University, Wellington, New Zealand

³RMIT University, Melbourne, Australia

Background: Genomic research is 'changing the landscape' of healthcare worldwide. This has led to an increasing responsibility for all nurses to be knowledgeable of genomics and incorporate this knowledge into their nursing practice. At present, there is limited research addressing the application of genomics in nursing practice in Australia. The aim of this study is to determine how genomics is applied in nursing practice in Australia. **Method:** This qualitative case study involves the use of semi-structured interviews with registered nurses working in oncology-based units within the Townsville Hospital and Health Service. Interview questions were directed towards participants' genomic knowledge and/or skills and their application in oncology nursing practice. Patterns in the data were identified and developed using thematic analysis. **Results:** Results show that most participants have a limited knowledge of genomics despite reporting that genomics is relevant to oncology nursing practice, especially in terms of 'targeted treatment'. However, the majority of participants remain unclear as to their role in applying genomic information to nursing practice, seeing genomics as the domain of the doctor, senior nurse or specialist nursing practice. **Conclusions:** This study indicates that Australian registered nurses have a limited genomic knowledge and are not confident in applying genomic information to clinical nursing practice. The completed study findings will be used to improve the delivery of genomically-informed nursing care, leading to improved health outcomes for patients and their families.

Poster Abstracts

Topic	Author
Marine Algal Compounds as Immunotherapeutic Candidate for Peanut Allergy	Kunal Pratap
Staged Procedure to Assess Repeated Hyperbaric Exposures and Glass Ampoule Safety (SPAREGAS)	Dr Soon Teoh
Changes in Observed Sun-Protective Behaviours in Australia And the United States Between 1991 And 2018 (Preliminary Results)	Hil Yin Choi
How Common Is Seafood Allergy in North Queensland?	Thu Le
A Systematic Review and Meta-Analysis of Risk Factors for And Incidence Of 30-Day Readmission After Revascularisation for Peripheral Artery Disease.	Samuel Smith
The Effects of Continued Smoking in Head and Neck Cancer Patients Treated Radiotherapy: A Systematic Review and Meta-Analysis	Justin Smith
Outcomes of Valvular Surgery for Indigenous Australians With Rheumatic Heart Disease: A Single Centre Experience	Samantha O'Dempsey
Developing A Blood Test for Rapid Diagnosis of Ischemic Stroke	Georgina Anderson
Effect of Negative Middle Ear Pressure Compensation on Transient Evoked Otoacoustic Emissions	Bridget Coghlan



Marine Algal Compounds as Immunotherapeutic Candidate for Peanut Allergy

Kunal Pratap

Aya C. Taki^{1,2,3}, Chris Glasson⁴, Socorro Miranda-Hernandez^{1,2,3}, Arnold Mangott⁵, Marie Magnusson⁴, Rocky de Nys⁴, Sandip D. Kamath^{1,2,3}, Andreas L. Lopata^{1,2,3}

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Background: Food allergy is triggered by the immune response when a food protein antigen is ingested leading to adverse reactions including anaphylaxis. Many allergen-based immunotherapies can be efficacious and have potential but yet to be accepted as a treatment. Marine algal polysaccharides have been reported for their anti-inflammatory properties. We investigated the potential of sulphated-algal polysaccharide, called ulvan, isolated from marine green algae *Ulva ohnoi* for treating peanut allergy in a mouse model.

Method: Groups of 6-8 week-old female BALB/c mice were intragastrically sensitised with peanut in the presence of cholera toxin as an adjuvant. Subsequently, mice were intragastrically challenged with a high dose of whole peanut flour. Purified ulvan treatment was given in three different regimens; prophylactic, therapeutic and combination. The level of peanut-specific immunoglobulin (Ig) G1, IgG2a, IgG, and peanut-specific splenocyte cytokines including interleukin IL-2, IL-5, IL-13, tumour necrosis factor (TNF)- α and interferon (IFN)- γ , were measured. **Results:** Purified ulvan reduced the levels of peanut-specific IgG, sIgG1 and sIgG2a in all three treatment regimens. Peanut-specific cytokine expression in splenocytes, however, shows varying Th1/Th2 modulation. **Conclusions:** Purified ulvan have reduced the immunological factors involved in inducing peanut allergy. This indicates the potential of purified ulvan as an immunotherapeutic candidate for the treatment of peanut allergy.

Staged Procedure to Assess Repeated Hyperbaric Exposures and Glass Ampoule Safety (SPAREGAS)

Dr Soon Teoh

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²College of Medicine and Dentistry, James Cook University, Townsville, Australia

Background: For fear of rupture, glass medication ampoules are not allowed inside our hyperbaric chamber. There is conflicting data as to whether the ampoules are safe for use under hyperbaric conditions. The objective of this study was to test the safety and usability of glass medication ampoules inside a hyperbaric chamber. Allowing ampoules into the chamber will reduce the time for emergency drugs to be available for use inside the chamber. **Method:** We performed a repetitive, rapidly staged compression and decompression of multiple different glass medication ampoules inside the medical lock of a medical hyperbaric chamber. 8 different medications that may be required in a hyperbaric emergency were assessed. Medication ampoules varied in size between 1 and 10mls. 10 ampoules of each medication were tested (N=80). The ampoules were rapidly compressed 100 times to pressures of 140 kPa, 180 kPa, 300 kPa, 400 kPa and 500 kPa. Then dropped from a height of 30 cm while compressed at 500 kPa. Ampoules were then opened at 500 kPa to assess usability under pressure. **Results:** No ampoules were broken during compression or decompression. No ampoules broke when dropped from 30 cm onto the chamber floor. All ampoules opened at a pressure of 500 kPa functioned normally. **Conclusions:** This study suggests that glass medication ampoules appear to be safe for use inside a medical hyperbaric chamber at routine treatment pressures. Further testing should be considered for microscopic fractures as well as the stability and bioavailability of medication.

Changes in Observed Sun-Protective Behaviours in Australia And the United States Between 1991 And 2018 (Preliminary Results)

Hil Yin Choi

Harrison SL¹

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Background: The incidence of skin cancer continues to rise worldwide despite decades of public health campaigns. Few observational studies have objectively assessed sun-protective behaviours over time. This observational study was conducted to determine if the



proportion of people wearing hats and sunglasses had changed between 2000 and 2017 in the United States (US). **Method:** A single field-observer (SLH) unobtrusively filmed US theme-park attendees (California and Florida) in unshaded areas in the summers of 2000, 2007 and 2017. A single trained observer (HC) reviewed all videos frame-by-frame to determine the proportion of people wearing hats and sunglasses. Chi-squared and Fisher's Exact Tests were used to compare hat and sunglass use by age, gender and over time. **Results:** About 70% of the 3762 individuals observed (77.3% adults; 54.3% females) were not wearing a hat. The prevalence of hat-wearing among children declined from 40.2% in 2000 to 22.9% in 2007 ($p<0.001$) and from 2007 to 15.4% in 2017 ($p=0.032$). Almost 62% ($n=1638$) of people observed (74.8% adults; 55.7% females) were not wearing sunglasses. The proportion of adult sunglass-wearers (49.2%) was significantly higher than children (5.6%; $p<0.001$). **Conclusions:** Public health interventions promoting the use of hats and sunglasses need to specifically target children, who are vulnerable to excessive sun-exposure. The reasons for the decline in hat-wearing behaviors among children, and the barriers to hat and sunglass use warrants further investigation.

How Common Is Seafood Allergy in North Queensland?

Thu Le

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Background: Australia is the capital of food allergy in the world, however, there is limited data available on the current status of food allergy in North Queensland. This study investigated the demographic information of seafood allergy and the association between clinical presentations and immunological properties in seafood-allergic patients in North Queensland. **Method:** A total of 70 participants were recruited in the Townsville and Cairns areas: 43 patients and 27 healthy controls. Patients were interviewed to record their clinical data of seafood allergy. Serum was collected to screen for the presence of specific antibodies (IgE) against a panel of seafood extracts. The correlation between clinical presentations and seafood-specific IgE were statistically analysed by using SPSS logarithms. **Results:** Among study population, 70.4% of Australian participants had European heritage, and 29.6% had Asian or American heritage. Only 7.4% of participants visited doctors for their allergic symptoms and only one participant has been prescribed an EpiPen®. Shellfish allergy (76.7%) was found more frequently than fish allergy (23.3%). Most of participants with seafood allergy tend to avoid further consumption of seafood since experiencing adverse reactions. Sensitisation to seafood caused by long-term exposure was found in four participants emphasising the influence of this type of occupational allergy to the chronic health conditions of seafood industry workers.

A Systematic Review and Meta-Analysis of Risk Factors for And Incidence Of 30-Day Readmission After Revascularisation for Peripheral Artery Disease.

Samuel Smith

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Background: Approximately 20,000 revascularisation procedures are performed annually in Australia for peripheral artery disease (PAD) at an estimated cost of \$200 million. This systematic review aimed to determine the risk factors for and incidence of hospital readmission within 30-days of discharge following peripheral revascularisation. **Method:** A systematic search of multiple databases was performed in April 2018. Studies that reported the risk factors for and incidence of readmission were included. Meta-analyses were performed when ≥ 5 studies reported the association of a risk factor with readmission. **Results:** Fifteen publications reporting outcomes of 529 721 PAD patients were included. Reported readmission rates ranged from 10.9-30.0% with a mean of $16.9\% \pm 5.0\%$. Meta-analyses suggested the following risk factors were associated with readmission: female sex (odds ratio, OR: 1.11, 95% CI: 1.03-1.19, $P=0.003$); black race (OR: 1.37, 95% CI: 1.28-1.46, $P<0.001$); critical limb ischemia (OR: 1.97, 95% CI: 1.58-2.46, $P<0.001$); hypertension (OR: 1.36, 95% CI: 1.21-1.53, $P<0.001$); heart failure (OR: 1.76, 95% CI: 1.43-2.17, $P<0.001$); chronic pulmonary disease (OR: 1.14, 95% CI: 1.02-1.26, $P=0.020$); diabetes (OR: 1.46, 95% CI: 1.31-1.63, $P<0.001$); kidney disease (OR: 2.54, 95% CI: 1.01-6.39, $P=0.05$); dialysis dependence (OR: 2.10, 95% CI: 1.61-2.74, $P<0.001$); dependant functional status (OR: 1.72, 95% CI: 1.43-2.05, $P<0.001$); emergency admission (OR: 1.84, 95% CI: 1.47-2.30, $P<0.001$); post-



operative bleeding (OR: 1.74, 95% CI: 1.19-2.54, $P=0.004$); post-operative sepsis (OR: 4.11, 95% CI: 2.01-8.38, $P<0.001$). **Conclusions:** Readmission following revascularisation is common and has defined risk factors. Further research is needed to determine whether better control of modifiable risk factors can reduce readmission.

The Effects of Continued Smoking in Head and Neck Cancer Patients Treated Radiotherapy: A Systematic Review and Meta-Analysis

Justin Smith

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Background: Modified Broström-Gould (MBG) is the preferred surgical repair for lateral ankle instability. Long-term outcomes are poor in patients with high functional demand leading to augmentation with LARS artificial ligaments and tendinous autografts. The aim of this study was to evaluate the functional outcomes of MBG using a gracilis tendon autograft in young high demand patients. **Method:** A prospective, single site, single surgeon study was conducted between August 2014 and April 2016. A total of 19 patients (<50 years) were recruited with functional lateral ankle instability (LAI) and non-operative treatment failure (physiotherapy, taping, strapping or bracing) for a minimum of 6 months. Patients with previous ankle reconstructions were excluded. All patients underwent a primary minimally invasive MBG procedure ($n=18$ unilateral, $n=1$ bilateral surgery) utilising a gracilis autograft, followed by an accelerated rehabilitation program in a functional bracing boot without casting. Outcome scores were performed preoperatively and at 6 weeks, 3 months and 12 months postoperatively. LAI was determined by functional evaluation using the American Orthopaedic Foot and Ankle Score (AOFAS) Ankle-Hindfoot Scale (AHS) and the Karlsson-Petersen (K-P) Ankle Score system performed at each follow up visit. Secondary outcomes were radiological evidence of talar tilt 12 months post-operatively. **Results:** The mean age of patients recruited to the study was 28.4 years (21-47 years). All but one of the patients was Australian Defence Force personnel who have high functional demands post-operatively. Pre-operatively, all ankles displayed poor scores with mean AOFAS scores of <60 and mean K-P scores of 50. At 6 weeks postoperative, functional outcomes improved with all patients returning to work within 12 weeks of surgery. At 3 and 12 months following surgery, AOFAS scores had improved by 15 and 20 points, respectively; K-P scores improved by 13 and 40 points, respectively. Radiological assessment 12 months after surgery demonstrated a reduction in Talar tilt from mean of 5° preoperatively to 1° post-operatively. **Conclusions:** Early outcomes display a significant improvement to lateral ankle instability. This technique provides increased stability whilst maintaining post-operative range of motion and is suitable for patients with a high functional demand. An accelerated rehabilitation program did not lead to early failures.

Outcomes of Valvular Surgery for Indigenous Australians With Rheumatic Heart Disease: A Single Centre Experience

Samantha O'Dempsey

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Background: Rheumatic heart disease (RHD) remains a problem amongst Indigenous Australians with many presenting for surgery at a young age. Long-term outcomes of RHD surgery amongst Indigenous Australians remain unreported. Hence, we aimed at describing outcomes of valvular surgery for RHD in Indigenous Australians at a single centre. **Method:** We reviewed Indigenous Australian patients with RHD undergoing valvular surgery ($n=112$) between 2008-2016. Data was prospectively collected and follow-up was obtained from cardiologists. Multivariate analysis was performed to determine predictors of mortality. **Results:** Mean age was 43 ± 16 years (13-73 years) with 82 (73%) females. Surgery was performed on the mitral valve in 93 (83%), aortic valve in 51 (46%) and tricuspid valve in 28 (25%) patients. In patients ≤ 50 years of age ($n=73$), there were 45 bioprosthetic (62%) valves implanted. Operative mortality was 2.7%. Nine (8%) patients had reoperation for infective endocarditis ($n=3$), bioprosthetic valve degeneration ($n=4$), mechanical valve thrombus ($n=1$) and progression of RHD in other valves ($n=1$). There were 18 (16%) late deaths and survival at 5-years was 83 ± 4.1 (95% CI: 73-89%). Risk factors for mortality were concomitant coronary artery bypass grafting ($p=0.008$) and preoperative left ventricular ejection fraction (LVEF) $\leq 40\%$ ($p=0.043$). The mean follow-up for survivors was 5 years (2 months-9 years) with 97% of patients in NYHA class I/II. **Conclusions:** Valvular surgery for RHD in Indigenous Australians can be performed with a low operative mortality. In patients ≤ 50 years of age, bioprostheses were the valve of choice. Concomitant coronary artery disease and LVEF $\leq 40\%$ were predictors of mortality.

Tuesday, 4th September 2018 Program

Transforming Clinical Care

Time	Topic	Speaker
11:00	Lunch Starts Serving in Robert Douglas Auditorium Foyer – All Welcome	
12:00	Keynote Speaker	Dr Natisha Sands
13:00	The NMBA Midwife standards for practice: describing the development process	Prof Cate Nagle
13:15	Do I or don't I? Self-disclosure of long term conditions at work by health professionals	Dr Wendy Smyth
13:30	Incremental improvements to the graduate nurse program positively evaluated from the perspectives of the participants	Paula Pianta
13:45	Challenging clinical placement models to support student learning	Debbie Maclean & Dr Wendy Smyth
14:00	Exploring Australian Midwives' Practice and Experience of Episiotomy	Prof Cate Nagle
14:15	Supporting the role of the Unit Manager: An Evaluation	Pam Heuber
14:30	Are clinical supervisors ready for students?	Debbie Maclean
14:45	Optimizing sustainability in capital asset expenditure by applying Internet of Things technology to spatial assets utilization	Tim McNabb
15:00	AFTERNOON TEA AND POSTER Q & A	
15:30	Townsville clinicians collaborate to improve clarity for neonatal skin injuries: development and pilot of metric graduated colour tool	Deanne L August
15:45	The use of inhaled nitric oxide in premature neonates: A 15-year retrospective chart review	Dr Kristen Haakons
16:00	Imminent Birth Education for Non-midwives in Queensland	Jane Connell
16:15	Professional Development Needs of Metabolic/Bariatric Nurses in Australia	Dr Kristin Wicking & Prof Melanie Birks

Abstracts

The NMBA Midwife standards for practice: describing the development process

Prof Cate Nagle

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Background: The recently released Nursing and Midwifery Board of Australia [NMBA] Midwife standards for practice [Standards] come into effect 1 October 2018. The Standards set out the expectations of all midwives regardless of the area of practice, model of care, years of experience or practice setting. The Standards guide consumers, employers and other stakeholders regarding what to reasonably expect from a midwife and inform midwifery education accreditation standards, the regulation of midwives and determination of the midwife's capability for practice. This presentation will describe the phases of development of the Standards. **Method:** The Standards were developed across three phases and involved approximately 585 individuals and groups. Phase one involved a literature review, interviews and observations of midwifery practice. Phase two consisted of key stakeholder and open public consultations. Phase three involved validation of draft Standards in a second round of observations of midwives in clinical and non-clinical roles in each state and territory, and in urban, regional, rural and remote locations. **Results:** There are seven standards and each standard has criteria that provide additional detail about the necessary dimensions of that standard of practice. These criteria are the means by which each standard would be demonstrated without limiting the development of the individual midwife's scope of practice. **Conclusions:** The Standards situate midwifery practice as the promotion of health and wellbeing in relation to childbearing, with inherent responsibilities and accountabilities for safety and quality that occur in the context of respectful collaborative relationships.

Do I or don't I? Self-disclosure of long term conditions at work by health professionals

Dr Wendy Smyth

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Background: Long-term (chronic) conditions are increasing within the Australian workforce. The decision to self-disclose long-term conditions to supervisors and/or colleagues influences the accuracy of such data. Although sharing such information may lead to greater support, the stigma associated with some conditions, especially mental health conditions, limits disclosure. **Method:** This presentation presents the findings from the questions about disclosure of main long-term conditions to supervisors/colleagues within two cross-sectional surveys involving nurses, midwives, medical officers and allied health professionals within a northern Australian health service. **Results:** Sixty per cent of survey respondents reported having at least one long-term condition. Although over half of the 545 respondents disclosed their condition to supervisor/colleagues, medical officers were statistically less likely than other staff groups to disclose. There were significant differences in: categories of conditions most likely to be disclosed; relationships between disclosure and importance of receiving workplace adjustments or support and sympathy. Respondents who nominated mental health condition as their 'main' condition indicated it was more important to receive workplace adjustment and sympathy and understanding from their supervisors. **Conclusions:** This is self-reported data and the surveys did not elicit data about why a person chose not to disclose information about their long-term conditions. Whilst decisions to disclose must always lie with the individual, we may need to consider whether the workplace culture as a whole, or the culture of different health professional groups, is making it difficult for individuals to get the support they require.

Incremental improvements to the graduate nurse program positively evaluated from the perspectives of the participants

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Background: The health service's competitive program offered to neophyte nurses has traditionally been tweaked each year, with significant changes to its content and delivery in 2017. Whilst these changes were made to suit the organisation, it is unknown if the program effectively assisted the graduates to transition into their sought-after roles, and become valued members of the nursing/midwifery workforce. This study sought to evaluate the program from the participants' perspectives. **Method:** A four-page questionnaire was developed and distributed to participants of the 2016 (n=92) and 2017 (n=118) programs. The 2016 cohort were second-year practitioners who were still employed by the health service, and the 2017 cohort were first-year practitioners who had completed the formal educational component of their program. **Results:** Respondents from both cohorts were positive about the content and organisation of their graduate program. They were particularly appreciative of the support offered to them throughout the program, a key factor influencing their intention to remain working for this health service. There is a need to continually prioritise which topics are included in the formal education component for all nurses/midwives, and which topics could be allocated to 'optional' education sessions. Barriers in attending some of the ongoing support sessions were identified. **Conclusions:** The program needs adjustments to better meet the needs of the nurses/midwives working within our rural/remote facilities, as well as for those working within specialty areas. It is suggested that the organisation continues to incrementally improve how the program's content is delivered, especially considering preferences of digital-native personnel.

Challenging clinical placement models to support student learning

Debbie Maclean & Dr Wendy Smyth

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2017 21 30

Background: Significant challenges to the provision of quality clinical supervision of undergraduate nursing and midwifery students exist for the nursing profession. Townsville Hospital and Health Service (THHS) and James Cook University developed an innovative clinical placement model that is reflective of student, education provider and contemporary health service needs. The Clinical Partnership Program CPP was introduced at THHS early in 2017. The aim of this study is to evaluate the CPP and assess the experiences of this model in comparison to traditional approaches to clinical undergraduate education. **Method:** A mixed methods descriptive study employing a survey and interviews was used to evaluate the CPP. Questionnaires were used to evaluate the model from the perspective of students and clinical partners (nurses and midwives). Interviews were employed to understand clinical coaches' experiences. Descriptive and qualitative data were collected, results were triangulated and synthesised to provide depth of understanding regarding evaluation of the model. **Results:** THHS has tripled the capacity for undergraduate clinical placement days. This presentation will describe the innovations of CPP and present a synthesis of the results of the surveys and interviews. **Conclusions:** CPP has been successful in expanding access to clinical placements and improving support for both students and clinicians. The case will be made in this presentation for the need for strong, collaborative relationships between education providers and health services, particularly in unique regional environments where the key to a sustainable future workforce is the ability to 'grow our own'.

Exploring Australian Midwives' Practice and Experience of Episiotomy

Prof Cate Nagle

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Background: Evidence underpins the recommended angle and length of episiotomy to avoid morbidity for the woman, yet there is limited research regarding midwives' episiotomy knowledge, skill and attitudes. **Method:** A cross-sectional anonymous survey of Australian midwives with current birthing experience was conducted. The survey contained items modified from validated instruments with Likert scales, a diagram, categorical responses and open-ended responses. Data was analysed using descriptive statistics and thematic analysis. **Results:** A total of 360 survey responses were analysed. Experience varied considerably, with approximately half of the midwives (55.6%) having undertaken <4 episiotomies independently and 20% 'very confident' in the procedure. Two thirds of participants (n=236) identified the correct angle on the pictorial representation, however 28% midwives identified the episiotomy length correctly. The three most common clinical reasons that midwives described for performing an episiotomy were fetal distress, perineal 'buttonhole' and previous severe perineal trauma. Analysis of attitudes revealed themes such as lack of confidence and experience, fear, and limited evidence supporting episiotomy explaining midwives' use/non-use of episiotomy. There was significant variation in health service requirements to establish a midwife's competence to perform episiotomy. Most midwives (75%, n=270) wanted further education regarding episiotomy, with face-



to-face workshops as the preferred format. **Conclusions:** Knowledge and practice gaps demonstrated the need for continuing professional development to translate evidence to practice and promote optimal outcomes for women. Many midwives are inexperienced with the procedure and simulation in workshops may assist midwives feel more confident to perform an episiotomy when is clinically indicated.

Supporting the role of the Unit Manager: An Evaluation

Pam Heuber

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Background: The Nurse Midwife Support Team (NMST) commenced at Townsville Hospital and Health Service (THHS) on 30 June 2017, to support Unit Managers (UMs) so that they have time to focus on clinical leadership and management within their units. **Method:** The impact of the NMST was evaluated using a descriptive exploratory mixed methods approach, involving surveys (UMs across the THHS), interviews (Associate UMs from NMST) and data collection from THHS Human Resource and Quality databases. **Results:** Of the 29 UM survey responses, 26 had used the NMST; the most frequent reasons for use were assistance with recruitment (n=23), resource management (n=17), workforce (n=10) and quality improvement (n=9). Most respondents (n=20) had held a UM role for <5 years. In a typical day, activities that took most of UMs' time (median) were: attending meetings (69.5minutes); assisting and empowering staff to make clinical/resourcing decisions (29minutes); conflict management (29minutes) and involvement in accreditation (25minutes). Most respondents were satisfied/very satisfied with their current position (77%), however only 54% were satisfied/very satisfied with the amount of time spent in clinical leadership. Approximately half UMs planned to leave their positions within four years; the most common reasons were wanting a less stressful position and career advancement. Results of the interviews and audit will also be presented. **Conclusions:** Respondents identified a high uptake of the NMST for tasks that did not require the specialist skills of a UM. With continued use of the NMST, follow-up is required to measure the impact on clinical leadership activities over time.

Are clinical supervisors ready for students?

Debbie Maclean

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Background: Quality learning experiences in the practice environment facilitate undergraduate nursing students' translation of theory to practice. Significant challenges to the provision of effective clinical teaching and supervision of students exist within the nursing profession. The aim of this study was to explore nurses' perceptions of their role in contributing to and supervising undergraduate nursing students and identify enablers and barriers in the provision of clinical supervision in a regional tertiary level Australian hospital. **Method:** This research captured the perceptions of a sample population of nurses, cross sectional in sense of time. A cross sectional qualitative study design utilising interviews and inductive thematic analysis was used. The sample population of 13 nurses represented the workforce demographics of the study site. Participants had M=8.9 years of clinical experience and M=3.9 years supervising students. **Results:** Analysis of the study data identified 5 major themes: student motivation, clearly defined roles, relationships, workloads and organisational support influencing student learning in the clinical setting. This presentation will describe key findings measured against current literature and highlight the significance of this applied in the local context. **Conclusions:** This study builds on the research and findings of others, particularly when exploring nurses' perceptions of their role as clinical supervisors and the conflicts experienced in undertaking the role. These findings will further enhance organisational support for nurses and contribute to building a case for change in education and training practices that better supports nurses for the role of clinical supervisor to undergraduate nursing students.

Optimizing sustainability in capital asset expenditure by applying Internet of Things technology to spatial assets utilization

Tim McNabb

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Background: Capital costs associated with creating, remodelling, and maintaining the physical environment of healthcare service delivery represents 6% of the total cost of providing healthcare to Australian society. Current practice lacks a comprehensive, cost-



effective, solution to demonstrate patterns of healthcare spaces utilisation, thus limiting the evidence-base informing capital works funding decisions. This research presents one method for studying utilization patterns within healthcare spaces using *Internet of Things* (IoT) technology. **Method:** This research proposes to put several types of occupancy sensors in shared, bookable spaces within an operational hospital to study their utilisation. The study period is three months long and captures all humans that present to the target spaces without discrimination. Occupancy data will be analysed through descriptive statistics presented in 'dashboard' format to inform both frontline and executive decision makers. **Results:** Preliminary calibration of sensors will take place from mid to end of May, with initial data comparing the efficacy of multiple commercial 'people sensing' devices compared to visually recorded data in a non-patient area. Subsequent data collection periods in June will enable reporting of preliminary results at the conference. Results will compare recorded utilisation of shared healthcare resources against 'reservation' data. **Conclusions:** Optimizing current space utilization within a healthcare system reduces pressure to increase both the physical and carbon footprint of future healthcare services infrastructure, thereby reducing costs and freeing fiscal resources for reinvestment in the core business of providing healthcare services. Future research will apply the outcomes of this preliminary research into high-value clinical spaces.

Townsville clinicians collaborate to improve clarity for neonatal skin injuries: development and pilot of metric graduated colour tool

Deanne L August

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Background: Clinical images and reference tools are standard practice for adult wounds while their use for assessing neonatal skin injuries are limited. This paper discusses the development of a metric graduated colour (MGC) tool, designed by Townsville Hospital clinicians, for objective assessment and collection of clinical images of neonatal skin injuries. **Method:** Development of the metric graduated colour tool was informed by wound photography, skin assessment reference colours, literature and clinical experience of the hospital photographer and members of the neonatal team. Neonatal skin fragility, tone, colour changes, injury size, and injury bed tone were deliberated for design. Clinical image colour and sharpness were deemed important when testing the tool within injury fields using digital cameras. **Results:** A metric graduated colour tool, 8 cm in length, featuring 15 colours, was produced on a water-resistant material with a mild adhesive backing. Evaluating the tool in 35 digital images showed promising results: (1) it provided a reliable metric and a colour comparison for injury bed assessment; (2) it offered a discernible reference for cameras resulting in enhanced images with clear wound edges; (3) it allows for colour correction of images taken in poor light. Additionally, the MGC tool was inexpensive to produce. **Conclusions:** In this small sample, the MGC tool allowed for objective assessment of injury size, colour, staging and healing. The MGC tool is currently in use in a number of neonatal studies that will validate its use. Production of MGC tool demonstrates unlikely collaborations are likely improve clinical care.

The use of inhaled nitric oxide in premature neonates: A 15-year retrospective chart review

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Background: Inhaled nitric oxide (iNO) reduces pulmonary hypertension and improves ventilation-perfusion mismatch and is useful for treating respiratory distress in term newborns. However less data exists for premature infants <34 weeks, particularly in the extremely premature. We aim to describe some characteristics of premature neonates which may predict a response to iNO. **Method:** Neonates <37 weeks without congenital abnormalities who received a single episode of iNO between January 2002 and December 2016 were included in this retrospective chart review. For this study, we defined a response to iNO as being any reduction in FiO₂ at the time of iNO weaning. **Results:** 52 infants with a 58% overall survival were included. Responders were found to be of older gestational age ($p=0.045$), had a longer duration of iNO treatment ($p=0.004$), longer time to weaning ($p=0.014$) and earlier initiation of treatment ($p=0.010$). Infants <1000g were less likely to respond to iNO therapy ($p=0.006$) and had a higher FiO₂ at weaning ($p=0.037$). Gender had no effect on response to iNO therapy ($p=0.176$). There was no significant correlation between Methaemoglobin level and duration of iNO ($R=-0.08$; $P=0.57$). **Conclusions:** We found that premature infants with birth weight >1000g and older gestational age were more likely to respond to iNO therapy. These findings support the individualized use of inhaled nitric oxide in select premature infants.



Imminent Birth Education for Non-midwives in Queensland

Jane Connell

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Background: Most women in Queensland give birth in hospitals with designated maternity services, however, women may present to a hospital that does not have such facilities when birth is imminent. Clinicians need to be able to recognise labour and provide safe and effective care to the woman until qualified help arrives and/or she is transferred to a birthing facility. The Clinical Services Capability Framework (CSCF) v3.2 Maternity Services (2014) module stipulates that relevant staff in non-birthing facilities must attend education on imminent birth, preferably conducted by a midwife. The Imminent Birth Education Program has been developed and implemented to assist Hospital and Health Services (HHS) to provide this education. **Method:** Phase 1 of the Imminent Birth Education Program included consultation with a steering group and stakeholders, and the development of the online course content. Phase two consisted of development of the face-to-face workshop and train-the-trainer facilitator guide. During phase 3 the program was promoted to relevant staff, and the face-to-face workshop rolled out. **Results:** 1664 people have logged into the Imminent Birth online course and more than 639 completed the course since it went live in February of 2017. The face-to-face workshop has been rolled out and is now being provided in 15 Queensland HHSs. Feedback from participants about both the online and face-to-face components has been very positive. **Conclusions:** Imminent Birth education is now accessible to Queensland Health staff in non-birthing facilities across the state.

Professional Development Needs of Metabolic/Bariatric Nurses in Australia

Dr Kristin Wicking & Prof Melanie Birks

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Background: With Australia as one of the most obese nations in the world, our nursing workforce should be prepared for the impact of the global obesity crisis and the increasing number of metabolic/bariatric surgeries. Unfortunately, there is limited education provided for metabolic/bariatric nurses in Australia to further their knowledge. This quantitative study sought to describe the practice of metabolic/bariatric nursing and identify the professional development (PD) needs of metabolic/bariatric nurses in Australia. **Method:** A total of 37 metabolic/bariatric nurses from across Australia responded to an online survey. Data gathered enabled researchers to describe the nurse's daily tasks in their role, current education needs, their previous PD activities, and their current PD needs. **Results:** This study confirmed there is a gap in available education for metabolic/bariatric nurses in Australia. A third $n=10$ (32%) of metabolic/bariatric nurses did not attend any relevant PD in the last 12 months. Nearly all (34) requested more post-graduate education opportunities. This study provides a list of favored education topics and preferred modes of education delivery. **Conclusions:** Australian nurses are asking for more education and support to provide the specialised care that metabolic/bariatric patients require. The results from this study may be used to: assist in the development of education for metabolic/bariatric nurses at the workplace, conference and university level; support hospital policy on the provision of nurse education; and improve the care of a high-risk group of patients. Collaborating to deliver the education that metabolic/bariatric nurses require will ensure exceptional, knowledgeable and compassionate nursing care for metabolic/bariatric patients.

Poster Abstracts

Topic	Author
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Consecutive Images and Assessments of Neonatal Skin Injuries from A New Zealand Neonatal Unit: A Case-Series

Deanne L August

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Background: Diligent observation and care practices are important to protecting neonatal skin integrity. Preventing the neonatal skin injury is currently difficult due to high association with life sustaining devices. In addition, little is understood concerning the progression, either healing or worsening, of such injuries. **Method:** A case series of participants in the Neonatal Skin Injury and Pressure Injury Assessment (NIPIRA) Study the Dunedin Neonatal Unit between January–October 2017, were tracked over 24-120 hour timeframes. Injuries were assessed according to respective guidelines for intact or broken skin, pressure injury stages or infiltration stages. **Results:** Three neonates were identified with skin injuries that included epidermal stripping to the abdomen, extravasation injury in the limb, and pressure related injury to the nose. For all cases skin integrity was re-achieved within 3 weeks but in two cases initial presentation was not the most sever stage. Examination of injury aetiology revealed best practice recommendations were followed. **Conclusions:** Skin injuries in the neonatal population can occur despite best practice recommendations. Additional research is needed to understand aetiology, duration and progression. This small case series provides some evidence that consecutive digital images will assist with assessment of injury progression. Clinical practice should embrace the assistance that digital images have on the objectivity for injury assessment to improve future findings.

Bowel Sounds Sensor (Boss) Project in Term Newterm Babies

Prof Koh Tieh Hee Hai Guan

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Background: Worldwide, 3.7 million newborn babies per year who require neonatal intensive care are at risk of developing gastrointestinal problems such as necrotising enterocolitis (NEC). Early detection of bowel diseases can improve neonatal outcomes. There is currently no continuous monitoring of bowel functions in the NICU. BoSS Project uses a novel easy-to-apply AcronSensor pad in well and sick term babies to assess a) the safety of the bowel sounds sensor, b) feasibility and ease to collect bowel sounds of well and unwell term babies, c) annotation of collected bowel sounds, d) correlation of bowel sound with the clinical conditions of term babies. **Methodology:** This study is based in The Townsville Hospital and KK Hospital / JCU in Singapore. The project will have institutional Ethics approval and parental consent. Neonatal nurses will record bowel sounds within an hour before a feed and after a feed from normal healthy (n=80) and sick term babies (n=120). We will use Time Series Gaussian Hamming Distance (TSGHD) to improve the robustness of the classifier in the presence jitters, noises, and location errors. The approach evaluates on bowel sounds for binary classification task. Analysis will compare bowels sounds acquired before feeds and after feeds in well term babies and between well and sick term babies **Results / Conclusion:** Recruitment of babies starts in July 2018 and we will present analysis of 2 months of data on bowel sounds in September 2018.

Setting Up and Evaluation of Northern Australia Neonatal Network Initiative (NANNI)

Prof Koh Tieh Hee Hai Guan

Fellows S¹, Rollinson N²

¹Neonatal Unit,

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Background: The Federal Government published a white paper “Our North, Our Future” on developing Northern Australia (NA) (1). The Neonatal Units in NA are similar in climate, culture, rural and remoteness, clinical challenges and opportunities. In early 2016, one of us (Koh) decided to set up Northern Australia Neonatal Network (NANNI), a quarterly telehealth Grand Round involving all 7 Units in NA (Cairns, Mackay, Darwin, Broome, Mt Isa, Townsville, Alice Springs). **Methodology:** There was consensus in the benefits of setting up



NANNI after discussions with all Neonatal Units Directors in NA. The project involved significant secretarial and audio-visual support. All Neonatal Units rotate in presenting at quarterly NANNI Grand Rounds on topics of their choices. All clinical leads of each Unit collect all attendances records and a one-page questionnaire feedback from attendees. Koh collated all feedback / responses and distributed to participants. **Results:** During NANNI first 2 years 7 Grand Rounds were presented by 6 of the 7 Units. There were 216 attendees at the 7 NANNI (13 student nurses, 45 nurses, 97 doctors, 13 NNPs, 13 Allied Health, 21 medical students, 7 midwives, 7 obstetricians, 3 haematologists). The attendees were from: Cairns (n=36), Mackay (52), Townsville (105), Broome (5), NT (15) and LCCH (3). The responses were useful or very useful / good or very good for questions on usefulness of session (96%), audio (93%), video quality (76%). **Conclusion:** The attendance and feedback confirmed that NANNI can encourage a collaborative, multidisciplinary approach in postgraduate education in Northern Australia. Acknowledgment: All our colleagues throughout Northern Australia who partook in NANNI.

Relative Advantage: Findings from The Optimising Freedom of Movement (OFM) Study

Annemarie Lawrence

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Background: Normal birth clinical practice guidelines endorse evidence-based maternity care, and the use of upright and mobile positions for women during first stage labour. **Method:** An OFM intervention was implemented and evaluated with a quasi-experimental research design. Women received routine care during a preceding 3-month control period, and others received the OFM intervention during a 3-month intervention period. Low-risk nulliparous women, aged 20-34 years, who attended The Townsville Hospital in spontaneous labour, with a singleton, term (>37 and < 42 weeks gestation), cephalic presentation were included. De-identified data was collected from electronic medical records, mother and staff surveys, and room compliance audits. **Results:** Room compliance audits found the OFM room and birth-bed set-up 81% (n=47/58) of the time. Women assigned to the intervention group had a higher rate of position changes for pain-relief during first stage labour (51%, n=27/53) (OR: 2.49, 95% CI: 1.11-5.59, p=0.029), compared with women assigned to the control group (29.4%, n=15/51). No statistically significant differences in birth outcomes were found. More than three quarters of all staff survey participants before (82%, n=60/73) and after (77%, n=23/30), considered the OFM study room option to be more acceptable than a standard room set-up, for low-risk nulliparous women. **Conclusions:** Compared with a conventional labour-ward room, the OFM innovation is simple, low-cost, effective, and considered by staff to be a better option for low-risk labouring women.

Caring in Nursing: A Snapshot of Queensland's Undergraduate Nursing Students

Elsbeth Wood

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Background: Building nurse-patient relationships is central to the discipline of nursing and exists specifically to enable the nurse to meet the patients' healthcare needs. At the same time caring is under threat because there is a growing complexity of patient care related to managing chronic illness in an ageing population, exponential growth in health technology use and increasingly intensive interventions, and mounting healthcare costs. Considering the importance that is placed on caring by both ANMAC and the NMBA it follows that it is vital to measure caring behaviours in local, national and international nursing students and build a body of research knowledge surrounding caring behaviours that is relevant and current. The aim of this project is to describe undergraduate nursing students' self-report of their ability to express caring to patients and develop caring relationship with patients, using descriptive statistical analysis. It is foreseen that findings from this project will add value in nursing curriculum development, have a positive impact on nursing students' learning experience and their subsequent practice and contribute to maintaining an exceptional workforce. **Method:** This project uses descriptive statistical analysis to define and summarise the data. Quantitative data is ongoing via an online survey using the Caring Efficacy Tool (Coates, 1997) to measure caring behaviours and attitudes of a cross-section of undergraduate nursing students. **Results:** Data collection is in progress with an expected completion date in July. Results and conclusions will be finalised shortly thereafter.

Lessons Learned on Refeeding Syndrome in The Community

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Background: Refeeding syndrome (RFS) is an understudied phenomenon associated with malnutrition. It refers to clinical signs and



symptoms, metabolic abnormalities and fluid imbalances occurring in starved populations being re-fed either orally, enterally or parenterally. Complications from RFS are well documented in hospital settings. RFS risk is being increasingly identified in a variety of settings along continuum of care. **Method:** A literature search was undertaken to answer the research question “What are the impacts on community dwelling clients at risk of refeeding syndrome who are re-fed in community setting?” Studies were identified by electronic search of databases from 1990-2018, databases included: Aust Health / Informat, CINAHL complete, Cochrane Library, Embase, ERIC, Health Policy Reference Centre, MEDLINE Complete, PsychInfo and PubMed. The review adhered to PRISMA guidelines. **Results:** Five articles met inclusion and exclusion criteria. Articles were excluded due to language, age, sole-use of parenteral nutrition and enteral nutrition, and full text not being available. All patients who commenced refeeding in community setting were transferred to either hospital settings for further medical management. **Conclusions:** Clients at risk of refeeding syndrome should be managed as a part of multidisciplinary team. Starting to refeed prior to admission does not afford time-sensitive monitoring and intervention. Further research in community settings detailing how to care for clients identified with, or as at risk of refeeding syndrome, including administration of prophylactic vitamins and minerals prior to admission.

Developing A Blood Test for Rapid Diagnosis of Ischemic Stroke

Georgina Anderson

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Background: Treatments for acute ischemic stroke (AIS), such as thrombolysis and clot retrieval, are only effective if administered rapidly following symptom onset, however ~90% of patients do not receive the appropriate therapy because diagnosis is not made rapidly enough [1]. Currently, there is no rapid diagnostic tests that can differentiate AIS and other strokes or stroke mimics. An accurate blood test for AIS would enable rapid diagnosis and increase the number of patients receiving appropriate treatment earlier. Previous research suggests that blood tests measuring the protein angiopoietin 1 (Angpt1), and the small ribose nucleic acid microRNA 106b (miR106b), alone or in conjunction with other clinical indicators may be an accurate method for diagnosing AIS [2, 3]. **Primary aim:** To test the diagnostic accuracy of plasma Angpt1 and miR106b for ischemic stroke. **Method:** Following all required approvals the study has commenced. Consenting patients admitted to The Townsville Hospital with a suspected stroke and onset of symptoms <24 hours prior to presentation are being prospectively recruited. Blood is stored for later measurement of Angpt1 and miR106b. Patients are being followed for 3 months for repeat blood measurements and assessment of disability using the modified Rankin scale. Sample size calculations suggest that 187 AIS patients, and 94 patients with stroke mimics are needed (80% power; $\alpha=0.05$). The *primary outcome* measure of the study is the diagnosis of AIS. The *secondary outcome assessments* are the stroke severity at presentation, and disability at 3 months. **Current progress:** The first patient was consented to this study on 19 March 2018. By 25 July 2018, 37 patients had been recruited of whom 19 had confirmed ischemic strokes, 5 were diagnosed with transient ischaemic attacks (TIA), 2 had experienced haemorrhagic strokes, 11 were stroke mimics. Follow up reviews began in June 2018 and are ongoing.

Effect of Negative Middle Ear Pressure Compensation on Transient Evoked Otoacoustic Emissions

Sreedevi Aithal

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Background: Wideband absorbance (WBA) is an emerging test that is sensitive to middle ear conditions. However, studies evaluating Eustachian tube dysfunction (ETD) using WBA are limited with some studies having limited sample size or using simulated negative middle ear pressure in the normal population. Presently, there are no studies exploring systematic changes to WBA in ears with ETD. **Subjects :** Control group included 102 healthy ears from 79 subjects (mean age 10 years). Experimental group 1 comprised of 43 ears from 32 patients (Mean age 16.06 years) with ETD without effusion. Experimental group 2 included 6 ears from 6 patients (mean age, 5.6 years) with negative middle ear pressure and middle ear effusion. Tests performed were tympanometry, pure tone audiometry and WBA at 0 daPa (WBAo) and tympanometric peak pressure (TPP)(WBATPP) conditions **Results:** WBATPP was higher than WBAo between 0.25 and 1.5 kHz in all the three groups. WBATPP was higher than WBAo from 2 to 9% in the control group, 17 to 42% in experimental group 1 and 6 to 21% in experimental group 2. WBAo was significantly lower in both experimental groups compared to the control group. In comparison, WBATPP was similar in control group and experimental group 1 while WBATPP in experimental group 2 was significantly lower than that of control group. **Conclusion:** A comparison of WBA at 0 daPa and TPP provides useful clinical information for the evaluation of Eustachian tube function with and without effusion.

Wednesday, 5th September 2018 Program

Counting the Cost of Disease – Hear the Message

Time	Topic	Speaker
12:30	Lunch Starts Serving in Robert Douglas Auditorium Foyer – All Welcome	
13:30	Keynote Speaker	Prof Jonathan Karnon
14:30	Molar Mass trace from Ultrasonic Pneumography (UPG) is as effective in determining the severity of Chronic Obstructive Pulmonary Disease (COPD) assessed by conventional Respiratory Function Testing	Kirk Graeme Jurgens
14:45	Quality indicators and outcomes for the management of head and neck cancer at the Townsville Cancer Centre	Dr Kylie Lopes Floro
15:00	Telehealth in Radiation Oncology: Service Evaluation and patient satisfaction	Dr Ellie Van Veldhuizen
15:15	AFTERNOON TEA AND POSTER VIEWING	
15:45	The epidemiology of infectious diseases in Townsville Hospital inpatients is described by an eleven-year data-linkage project.	Prof Damon Eisen
16:00	The association between time-to-antibiotics and adverse clinical outcome among patients with acute community-acquired bacterial meningitis: Systematic review and meta-analysis.	Dr Elizabeth Hamilton
16:15	Effectiveness of glycaemic control in adult patients with Diabetes Mellitus at the Rapid Stabilization Clinic of The Townsville Hospital	Dr Swetha Rangaswamaiah
16:30	Assessment of eustachian tube dysfunctions using an innovative wideband absorbance technology	Dr Venkatesh Aithal
16:45	Using Viral Phylodynamics to Infer Epidemiological Data	Dr Michael T. Meehan
17:00	Validating a Wideband Acoustic Immittance Diagnostic Model for Conductive Conditions in Neonates	Joshua Myers

Abstracts

Molar Mass trace from Ultrasonic Pneumography (UPG) is as effective in determining the severity of Chronic Obstructive Pulmonary Disease (COPD) assessed by conventional Respiratory Function Testing

Kirk Graeme Jurgens

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Background: Chronic Obstructive Pulmonary Disease (COPD) is an irreversible disease of the lungs, accounting for significant mortality in Australia and globally. It is associated with high healthcare costs; co-morbidity factors and reduced quality of life. Currently, diagnosis is through spirometry utilising Global Initiative of Chronic Lung Disease (GOLD). Spirometry is poorly sensitive to changes in the small airways, where COPD is thought to originate. Mild and normal classification in at risk groups may be underdiagnosed using current methods. Ultrasonic Pneumography (UPG) analyses airflow and ventilation inhomogeneity in tidal breathing and may sensitively detect early changes in small airways. **Methods:** The aim of this study is to determine if UPG is as specific and sensitive as current classification of COPD. Cross sectional study of 150 individuals, five equal groups determined by COPD diagnosis (GOLD classification) and a single control group. Spirometry and UPG measurements both before and after β -2 agonist (salbutamol) will be measured and COPD Assessment Test to align symptoms with test findings. **Results:** UPG Phas III values for each COPD classification category will be measured for compliance to current classification as well as determining if there are larger differences between the control and mild COPD groups in UPG as opposed to current methods of spirometry. **Conclusions:** UPG measurement of Phase III slope will be analysed amongst the groups to investigate if there is statistical difference between techniques. Should this study yield a positive outcome, this provides evidence that UPG may be a useful technique for diagnosis and monitoring of COPD in the future.

Quality indicators and outcomes for the management of head and neck cancer at the Townsville Cancer Centre

Dr Kylie Lopes Floro

Venkat Vangaveti², Madhavi Chilkuri¹

¹Radiation Oncology, Townsville Cancer Centre (TCC), The Townsville Hospital

²College of Medicine & Dentistry, James Cook University

Background: There is a lack of readily available data on quality of care and outcomes for patients with head and neck cancer. Previous studies have identified an association between high-quality cancer care and improved survival (Gourine et al, 2014, Peter et al, 2010). Additionally, there is evidence suggesting that centres with high caseloads have better clinical outcomes (Cheung et al, 2009). To evaluate the quality of care and its influence on outcomes at our regional centre, we performed a retrospective audit. **Method:** We assessed quality of care with respect to previously validated quality indicators for pre-treatment work-up, treatment and follow-up care. Additionally, we performed time to event analysis for loco-regional control and overall survival. **Results:** 273 patients with head and neck squamous cell carcinoma were treated radically between June 2011 to June 2015. Over 95% of patients met pre-treatment quality indicators for staging, biopsy, MDT presentation, dietician and speech pathology review, but just under 80% of patients had documented evidence of dental assessment. 90% of patients had adequate surgical margins but less than half received timely post-operative radiation therapy. 92% of patients received appropriate IMRT. Post-treatment, 93% of patients had adequate follow-up, but very few received appropriate thyroid function assessment. 3-year overall survival for the entire cohort was 79.7% (95% CI 0.743-0.842). **Conclusions:** This analysis demonstrates good outcomes with respect to overall survival despite some quality indicators which require improvement. Further evaluation with regards to loco-regional control and patterns of failure will be conducted to identify areas for quality improvement.

Telehealth in Radiation Oncology: Service Evaluation and patient satisfaction

Dr Ellie Van Veldhuizen

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²James Cook University, Townsville, Australia



Background: Telehealth (TH) in radiation oncology at Townsville Cancer Centre was implemented in July 2011. The service has grown to include regular TH radiation oncology new and review clinics between satellite regions. A service evaluation was conducted, aiming to describe the service and patient satisfaction. **Method:** A random sample of patient charts with TH consultations from July 2011 to December 2015 was audited. Data including demographics, diagnosis, treatment, and TH appointment details were summarised through descriptive statistics. A satisfaction survey was completed by 106 patients, and analysed through descriptive statistics. **Results:** A total of 1,530 TH consultations were provided to 833 patients, including 305 new and 1,225 follow-up reviews. Median distance from the hospital was 327.3 kilometres (21.6 to 1130.1). A majority were male (71.1%), undergoing curative treatment (73.3%) and median age was 65 (23 to 94). Prostate (32%), breast (12%), and head and neck (10%) were the most common cancer diagnoses. Survey responses were overall positive, with patients identifying that the travel and time savings were the most advantageous. Preferences for future consultations included 54.7% for TH only, and 34.8% for a mix of TH and in-person consultations. Only 3.8% and 5.7% reported a level of dissatisfaction with vision or audio quality of the TH consults, respectively. **Conclusions:** Telehealth provides a valuable and effective way of engaging radiation oncology patients from rural and regional areas. Patient feedback overall was positive, indicating a high level of acceptability and satisfaction, particularly in regard to saving travel expenses and time.

The epidemiology of infectious diseases in Townsville Hospital inpatients is described by an eleven-year data-linkage project.

Prof Damon Eisen

Miriam Harings¹, Oyelola Adegboye², Subashini Sringeram², Emma McBryde²

¹Townsville Hospital and Health Service

²Australian Institute of Tropical Health and Medicine

Background: To describe summary data regarding infectious diseases diagnoses in the cohort of patients discharged from the Townsville Hospital. **Design, setting and patients:** A retrospective, population-based study of a cohort of patients from Townsville Hospital discharged with an ICD10-AM code for an infectious disease between 2006 and 2016 was undertaken. This utilised linked anonymised data from; the Qld Admitted Patient Data Collection, Emergency Department Information Services, Pathology Queensland, pharmacy dispensing data, notifiable conditions and the National Death Index. Main outcome measures: The most common infectious diseases diagnoses coded as Primary and Other Diagnoses – as well as selected conditions of interest were characterised and associated demographics, comorbidity and death calculated. **Results:** The database consisted of linked information on; 41,367 patients with 378,487 admissions and 1,869,239 diagnostic or procedure codes. There were 204,112 episodes of emergency department care described for 35,316 patients among this cohort. Over an eleven-year period, 8,274 (20%) patients died. The commonest infectious diseases were; urinary tract infection (1.6% of all diagnostic codes), Staphylococcus aureus infection (0.73%), cellulitis of the lower limb (0.56%), Escherichia coli infection (0.48%) and pneumonia (0.42%). The commonest comorbidities consisted of; smoking (43.9%), chronic renal disease (17.93%), cancer (14.8%) chronic pulmonary disease (12.42%) and diabetes (11.97%). **Conclusions:** This database reutilising administrative information describes a large cohort of inpatients with infectious diseases. A high eleven-year mortality rate is described in this population with a high prevalence of comorbidities.

The association between time-to-antibiotics and adverse clinical outcome among patients with acute community-acquired bacterial meningitis: Systematic review and meta-analysis.

Dr Elizabeth Hamilton

Miriam Harings¹, Oyelola Adegboye², Damon Eisen^{1,2}

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Background: Community-acquired acute bacterial meningitis (ABM) in adults is a serious and potentially life-threatening disease which requires immediate diagnosis and treatment. Delay in antibiotic administration is believed to be a major risk for adverse clinical outcome. The aim of this systematic review and meta-analysis is to determine the time between hospital admission and appropriate antibiotic administration that minimizes adverse clinical outcomes. **Methods:** A systematic review of multiple databases including Pubmed, EMBASE and various grey literature sources was performed for studies that contained information about ABM, hospitalization, time delay to antibiotics and mortality or neurological impairment as outcomes. Study selection and quality assessment was performed by two authors independently. **Results:** Six articles of the 750 screened were suitable for meta-analysis as they reported the effect of time delay of first appropriate antibiotic dose given within the first six hours of hospitalisation on mortality and neurological impairment. The meta-analysis noted a high level of heterogeneity due to different time functions, outcome measures and follow-up time used in the articles. The overall risk of mortality was 4.58 (95%CI 1.89-11.11) and 1.53 (95%CI 0.93-2.51) for impairment as a function of increase in time between hospitalization and receiving antibiotic therapy. **Conclusion:** Intravenous antibiotics should be ideally given within six hours



to reduce adverse outcomes in ABM. An individual patient meta-analysis is planned to overcome the homogeneity encountered to date.

Effectiveness of glycaemic control in adult patients with Diabetes Mellitus at the Rapid Stabilization Clinic of The Townsville Hospital

Dr Swetha Rangaswamaiah

Dr Fei He¹, Dr Venkat Vangaveti^{1,3}, Dr Yong Mong Tan^{1,2}, Dr Kunwarjit Sangla^{1,2,3}

¹Townsville Hospital and Health Service

²Diabetes and Endocrinology Department

³James Cook University

Background: Townsville Hospital Diabetes Centre like most tertiary hospitals across the globe provides (known patients), phone in service through the rapid stabilisation clinic (RSC) for optimising blood glucose control. We aimed to assess the clinical effectiveness of this clinic. **Methods:** This is a single centre consecutive retrospective (prior to December 2017), observational study of adult patients aged above 18. 50 patients each with existing diagnoses of type 1 Diabetes Mellitus (T1DM), type 2 Diabetes Mellitus (T2DM) and Gestational Diabetes Mellitus (GDM) were assessed for weekly blood glucose profile (BGL), HbA1c, diabetes complications and hospital admissions. **Results:** Mean weekly blood glucose levels as a group before and after review were (11.4, 10.6), T1DM (11.7, 10.9), T1 DM on pump (9.76, 8.96), T2DM (11.72, 10.73) and GDM (5.96, 5.90) mmol/L respectively. HbA1c similarly for all groups was (7.80%, 7.40%), T1DM (8.90%, 8.90%), T1DM on Pump (7.95%, 7.30%), T2DM (9.13%, 8.20%) and GDM (5.29%, 5.20%). There was no statistically significant difference observed for diabetes related hospital admissions, diabetic complications, age, gender, weight, type of insulin or drugs, route of administration, timing of blood glucose measurement or incidence of hypoglycaemia.

Assessment of eustachian tube dysfunctions using an innovative wideband absorbance technology

Dr Venkatesh Aithal

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²Hearing Research Centre for Children, School of Health & Rehabilitation Sciences, University of Queensland, Australia.

³Department of ENT, Townsville Hospital and Health Service, Australia.

Background: Eustachian tube dysfunction (ETD) is one of the most common problems seen in Ear Nose and Throat (ENT) clinics. However, there is no single test which accurately assess negative middle ear pressure. The 226 Hz tympanometry which is traditionally used to assess the ETD usually overestimates middle ear negative pressure. Assessment of ETD is important for predicting prognosis of middle ear and mastoid surgery. A new test known as wideband tympanometry was used to assess eustachian tube function in this study. **Method:** Wideband absorbance at 0 daPa (WBao) and tympanometric peak pressure (TPP) (WBATPP) conditions were compared in healthy ears and ears with ETD. A total of 102 healthy ears from 79 subjects (mean age = 10.0 yr) and 43 ears from 32 patients with ETD (mean age = 16.0 yr) were included in this study. **Results:** WBao was significantly lower in the ETD group than the control group. The WBao of the control group demonstrated a broad peak between 1.25 and 4 kHz while the WBao of the ETD group had a peak between 2.5 and 4 kHz. A differential pattern of WBA at TPP relative to 0 daPa was observed between ears with ETD and ears with OME and negative middle ear pressure which is not possible to measure using 226 Hz tympanometry. **Conclusions:** A comparison of WBao and WBATPP can provide potentially useful diagnostic information, and hence can be used as a test to evaluate ETD, especially in patients who are unable to perform Toynbee or Valsalva.

Using Viral Phylodynamics to Infer Epidemiological Data

Joshua Myers

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Background: This study aimed to validate a previously developed prediction model for identifying conductive conditions in neonates. The

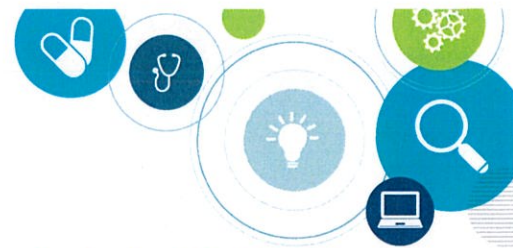


model used wideband acoustic immittance (WAI) measures to predict conductive dysfunction against a composite reference standard consisting of high-frequency tympanometry (HFT) and distortion product otoacoustic emissions (DPOAEs). After correcting for bias with bootstrap resampling, the model had an area under the receiver operating characteristic curve (AUC) of 0.846. **Method:** WAI, HFT, and DPOAEs were measured in 180 neonates aged 5 to 160 hours. HFT and DPOAE results were used to evaluate the conductive pathway of each neonate. The previously developed logistic regression model used the WAI predictors: absorbance at 1000 and 2000 Hz, admittance magnitude at 1000 and 2000 Hz, and admittance phase at 1000 and 4000 Hz. The model was applied to results from the new sample and performance was assessed through measures of discrimination (AUC) and model fit (calibration curves). **Results:** Applying the model to the new sample resulted in an AUC of 0.808 (95% CI, 0.755 to 0.860). Although this was lower than the bias-corrected AUC of 0.846 from model development, the 95% confidence interval for the new sample included the model development AUC. Assessment of calibration showed that predictions were on average slightly lower than were seen in model development. **Conclusions:** Although discrimination and calibration were slightly poorer than seen in model development, validation was overall satisfactory, and the model may be a useful tool for diagnosing conductive dysfunction in neonates.

Poster Abstracts



Topic	Author
Exacerbation Status Is Linked to Dysfunctional Phagocytosis in Stable Chronic Obstructive Pulmonary Disease (COPD) Patients but Not to Pulmonary Function	Louisa D'Arrietta
Wideband Absorbance - A New Measure for Assessment of Cholesteatoma and Retraction Pockets	Jenny Walsh
Insulin Therapy in Outpatient Paediatric Type 1 Diabetes Mellitus - Analogues, Regimens and The Future	Kelvin Robertson
Oral Health Assessment Tools Relevant to Speech Pathology Practice: A Scoping Review	Usman Malabu
Implementing Sensory Modulation Interventions Across Mental Health Units	Tejas P Singh
Continuous Femoral Nerve Catheters Compared to Single Femoral Nerve Block in Hip Fractures: A Pilot Study and Protocol for An Upcoming Randomised Control Trial	Usman Malabu
Ceftriaxone Usage at The Townsville Hospital (TTH)	Ylona Chun Tie
Factors That Contribute to Suboptimal Dose Delivery from Mechanical Home Infusion Pumps: A Pragmatic Review of The Literature and Future Research Recommendations	Daniel Lindsay
Teaching the art of prescribing, can pharmacists bridge the gap: a narrative literature review	Rishabh Verma



Exacerbation Status Is Linked to Dysfunctional Phagocytosis in Stable Chronic Obstructive Pulmonary Disease (COPD) Patients but Not to Pulmonary Function

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Background: Chronic obstructive pulmonary disease (COPD) is a significant and increasing public health challenge. Much of the disease burden and economic cost of COPD is associated with acute exacerbations and resulting bacterial colonisation of the airways. The aim of this study is to determine whether the bactericidal functions of phagocytic cells (monocytes and neutrophils) are impaired in COPD, predisposing patients to increased bacterial infections. **Method:** Spirometry and venous blood were collected from COPD patients at the THHS across the GOLD2015 spectrum and a group of healthy controls were recruited for comparison. Flow cytometry was used to determine differential counts for a range of leukocytes and internalisation of fluorescently labelled *Streptococcus pneumoniae* in whole blood phagocytes. Groups were compared by ANOVA and post hoc tests. **Results:** 26 COPD patients and 13 healthy controls were recruited to this study. Results demonstrated that peripheral blood monocytes ($p < 0.05$) and neutrophils ($p < 0.0005$) in exacerbation prone COPD patients had significant reductions in both bactericidal activity against *S. pneumoniae* ($p = 0.01$) and internalisation of inert microparticles ($p = 0.01$) compared to healthy controls and also to stable COPD patients. Data collection remains ongoing. **Conclusions:** This study has demonstrated that defective phagocytosis in COPD patients prone to exacerbations is irrespective of disease severity (according to GOLD2015). Thus, dysfunctional cellular activity of blood monocytes and neutrophils, and failure to mount appropriate immune responses to infection, may enable bacteria to overwhelm host defences leading to further lung tissue damage.

Wideband Absorbance - A New Measure for Assessment of Cholesteatoma and Retraction Pockets

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Background: Epitympanic Cholesteatomas (EC) are destructive lesions that pose threat to the ossicles and mastoid and impact hearing if left untreated. Epitympanic membrane retraction pockets (ERP) can develop into cholesteatomas if left untreated. Early intervention is required to prevent the formation of a cholesteatoma. Presently, cholesteatomas require computed tomography (CT) scans for clinical confirmation. There are no current studies on wideband absorbance (WBA) in ears with EC and ERP. **Method:** This prospective study included 49 healthy ears, 10 ears with EC and 10 ears with ERP. Wideband absorbance in ambient (WBAo) and pressurised conditions (WBATPP) was performed along with tympanometry and pure tone audiometry. **Results:** EC and ERP demonstrated differential patterns of WBAo and WBATPP. With ERP, WBAo was 10-12% lower than healthy ears at 0.8-4 kHz, while WBATPP approached normal values at all frequencies. WBAo of EC was 8-24% lower than normal values at 0.8-4 kHz while WBATPP was 10-20% lower at 0.6-2 kHz. **Conclusions:** Wideband absorbance (WBA) measures have shown early signs of differentiating middle ear pathology. This could improve referrals and triaging in public health settings to ensure patients with more destructive middle ear pathology, such as cholesteatomas, are triaged with higher priority. Further studies including other WBA measures is recommended to evaluate the usefulness of using WBA to differentiate EC and ERP.

Insulin Therapy in Outpatient Paediatric Type 1 Diabetes Mellitus - Analogues, Regimens and The Future

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Background: Type 1 Diabetes Mellitus (T1DM) is one of the commonest childhood chronic diseases and accounts for 80 - 90% of paediatric diabetes cases. Insulin replacement is the cornerstone of management and efficient glycaemic control is integral for survival, prevention of short and long-term complications and optimisation of quality of life (QOL). There are many insulin preparations and regimens available with each having different effects on glycaemic control, rates of adverse effects and suitability to children. Given prevalence of paediatric T1DM and importance of glycaemic control, understanding insulin therapy is imperative. The aim of this paper was to compare



available insulin preparations and regimens, and present recent developments in insulin therapy in paediatric populations. **Method:** Available evidence regarding efficacy of insulin formulations and regimens and recent advances in paediatric T1DM was reviewed using Cinahl, PubMed, Cochrane and Google Scholar. **Results:** Of the insulins available, analogues are favourable over human insulin due to improved pharmacokinetics, lower inter-person variation and reduced adverse effects. While continuous subcutaneous insulin infusion has benefits over pre-mixed insulin and multiple-daily injections, current literature cannot be used to place a blanket recommendation for insulin regimen. Recent advents of insulin degludec and closed-loop systems offer more effective glycaemic control, better QOL and reduced adverse events. **Conclusions:** Analogue insulins are safer and offer better clinical action than human insulin. Regimen choice must cater to the child's needs, carer views and institutional capabilities. Introduction of closed-loop systems and ultra-long acting insulin are offering children with T1DM more effective methods of management.

Oral Health Assessment Tools Relevant to Speech Pathology Practice: A Scoping Review

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Background: A number of oral health factors may contribute to increased risk and severity of dysphagia, and aspiration pneumonia. These factors may include presence of conditions such as dental caries, plaque, gum disease, oral cancer, thrush, xerostomia, hypersalivation, halitosis and impaired quality of dentition. Speech pathologists typically consider aspects of oral health during swallowing assessment. The aim of this study is to explore what oral health assessment tools may be of value to speech pathologists. **Method:** Between December 2017 and March 2018, a scoping review using the stages described by Arksey and O'Malley (2005), was conducted using MEDLINE (Ovid) and a priori search inclusion/exclusion criteria and search parameters relevant to the aim. **Results:** Seventeen studies met criteria for inclusion in the review. Nine oral health assessment tools were described in the literature: Oral Health Screening Tool for Nursing Personnel (OHSTNP), Oral Health Assessment Tool (OHAT), Brief Oral Health Status Examination (BOHSE), The Bedside Oral Examination (BOE), Revised Oral Assessment Guide (ROAG), Minimal data Set 2.0 (MDS) – Oral Health Portion, Nursing Assessment, Oral Health Examination, World Health Organisation (WHO) Oral Health Assessment. **Conclusions:** Five tools appear to be suitable for speech pathologists. The OHAT was reportedly used by Australian speech pathologists. The OHSTNP, BOE and ROAG include detailed descriptors and some evaluation of swallowing. The OHSTNP also considers patient's communication difficulties. The OHAT, BOHSE and ROAG contain explicit referral procedures. The BOE also contains useful pictures to guide ratings. Further research regarding use and applicability of these tools by Australian speech pathologists would be useful

Implementing Sensory Modulation Interventions Across Mental Health Units

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Background: Over the last decade, the use of sensory modulation (SM) interventions has significantly increased in mental health (MH) settings. These interventions assist consumers self-regulate through optimal emotional and physiological arousal. Occupational Therapists (OTs) have taken the lead role in the implementation of these practices with a view to improving consumers' outcomes and service delivery. This presentation summarises the steps taken to incorporate and consolidate SM interventions across units. **Method:** A SM working party was created by OTs of each MH unit under the supervision of their professional senior. A literature review was conducted to identify the safe and efficient implementation of SM interventions. **Results:** The mental health services group (MHSG) funded staff members to train in SM providing consistency of knowledge and application across settings. SM resources such as weighted blankets, massage chairs, fidget items and others were funded for initial implementation and commitment for ongoing acquisition of resources. Procedures and local instruction documents were put in place for uniform and standardised use of equipment. Clinical competency assessment for use of weighted modalities was developed to support training **Conclusion:** Preliminary findings have shown increased SM interventions by OTs who have completed training and consumers are regularly requesting the SM resources as part of their self-regulation strategies. Areas for future considerations include evidence based practice research and workplace culture change of interventions. Building the workforce capacity in using the SM and maintaining training will be an ongoing challenge for a sustainable service delivery.

Continuous Femoral Nerve Catheters Compared to Single Femoral Nerve Block in Hip Fractures: A Pilot Study and Protocol for An Upcoming Randomised Control Trial

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Background: Inappropriate prescribing of Ceftriaxone is strongly linked to the emergence and outbreaks of multi-resistant organisms, and is listed as a restricted category B antibiotic in the TTH Antimicrobial Stewardship (AMS) guidelines. Authors aimed to a) determine the total usage of Ceftriaxone within the TTH and b) identify any areas using the antibiotic in excess and c) determine any times of the year usage increases. **Method:** Reports were obtained from PYXIS identifying patients receiving ceftriaxone as an inpatient at TTH from April 2017 to March 2018. Data was analysed to answer and interpret the aims. **Results:** The total number of ceftriaxone vials used was 17351. The 3 highest wards (ED Acute, Medical Ward 3 and Surgical Ward 2) administered 6412 vials. This equates to 37% of total hospital usage. Ceftriaxone usages peaks from September to November. Ceftriaxone vials used during the wet seasons months was lower than expected. This could be contributed to the excessive use on the surgical floor which dropped over Dec/Jan by 22%, which is probably attribute to the wind down of surgical elective surgeries. **Conclusions:** Usage of Ceftriaxone varies across the hospital throughout the year. Further investigations into the indication for prescribing Ceftriaxone will determine compliance with AMS policy. Identification of prescribing teams with excessive prescribing rather than just the ward may guide education to improve compliance with AMS guidelines. In particular, excessive usage in ED, AAU and also the surgical floor should be investigated as there is no actual surgical indication in the AMS guideline.

Factors That Contribute to Suboptimal Dose Delivery from Mechanical Home Infusion Pumps: A Pragmatic Review of The Literature and Future Research Recommendations

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Aim: To identify factors that affect the optimum delivery of drugs via mechanical home infusion pumps (MHIP). This paper will aid practitioners with their decision-making process when selecting MHIP for patients, and aid researchers to further investigate the gaps in knowledge in this field. **Method:** Searches were performed using MEDLINE, Scopus and Web of Science databases to find articles associated with; dose delivery using MHIP; and any stability issues with the antibiotics used in this setting. Articles were reviewed to understand where the current literature stands and develop future research recommendations. **Results and Discussions:** 189 articles met the review criteria. Independent of patient misuse, factors can be broadly grouped under two headings; mechanical infusion flow rate effectors, and chemical stability effectors. These factors include but are not limited to drug choice, dosage range, environmental conditions (heat, cold), choice of diluents, pH of the solutions, infusion attachment methods, and concomitant hyperbaric therapy. These may result in patients receiving insufficient dosages of medication potentially leading to suboptimal treatment, treatment failure or treatment delays. It is currently unknown if any of these factors are mutually exclusive or additive. **Recommendations:** There is a knowledge gap pertaining to the factors that affect MHIP. Further studies are needed, to fully understand the impact these factors may have on the optimal delivery of drug to the patients with these devices in these setting. Practitioners and researchers in this field should be aware of available data and the specificity to their current environment.

Teaching the art of prescribing, can pharmacists bridge the gap: a narrative literature review

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Background: Junior doctors entering the workforce are ill equipped to write a clear and legal medication prescription. Seven to ten percent of orders by these junior doctors are estimated to contain errors. The aims of this study were to evaluate if educational interventions on top of traditional teaching methods, can improve medical students prescribing skills before internship. Furthermore, this review explored the types of education sessions that have been trialled or implemented by an appropriate educator - preferably a pharmacist - to increase the students' confidence, knowledge and skill set of the prescribing process. **Method:** MEDLINE, EMBASE, PubMed and Cochrane databases were searched for full papers. Search terms included: medical student, medical undergraduate, MBBS, medication error, prescription, drug prescription and prescribing skills. 22 articles were selected for full text screening. After a thorough review, 15 relevant articles were included in the results. **Results:** All included studies to some degree showed that educational interventions to medical students improved the outcome of prescribing skills. Interventions varied in style from pre- and post-interventions studies to online modules to RCT's with facilitated teaching sessions. The interventions were led by Medical clinicians, pharmacist, pharmacologists, or were self-directed. **Conclusions:** This review highlighted that medical students feel ill prepared to write a safe and legal prescription. Education aimed at final year medical students may assist them in retaining prescribing skills as they transition to junior doctors. The studies have shown, a pharmacist led education session showed significant improvement in prescribing skills and confidence of medical students.

RESEARCH EDUCATION PROGRAM

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