



Townsville Health Research Showcase

4-8
September
2017

Program

Partners in research



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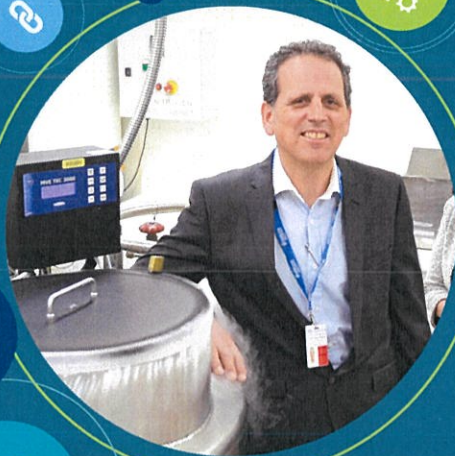
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	Monday, 4th September	Tuesday, 5th September	Wednesday, 6th September
Workshops	8:30 – 11:30am Health Economics for Decision Making	8:30 – 11:30am Grounded Theory 9:00 – 11:30am Statistics for Research	8:30 – 11:30am Writing for Publication 9:00 – 11:30am Allied Health Speed Mentoring (AH only)
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	11:00am Serving Commences – All Welcome Poster Viewing
Afternoon Venue: RDA	12:00 – 12:45pm Plenary Speaker Prof David McGiffin 12:45 – 1:45pm Indigenous Health Service Group Presentation 1:45 – 3:50pm Surgical Service Group Abstract Presentations 3:50 – 4:50pm External Entries Abstract Presentations *3:00 – 3:30pm Poster Q & A and Afternoon Tea	12:00 – 12:45pm Plenary Speaker Prof Cate Nagle 12:45 – 2:20pm Health and Wellbeing Service Group Abstract et al Presentations 2:50 – 4:30pm Mental Health Service Group, Executive, external et al Presentations *2:20 – 2:50pm Poster Q & A and Afternoon Tea	12:00 – 12:45pm Plenary Speaker Dr Rosalie Boyce 12:45 – 2:00pm Medical Service Group Abstract et al Presentations 2:00 – 4:15pm External Entries Abstract Presentations 4:25 – 5:25pm Innovation Abstracts and Grant Awards *2:50 – 3:05pm Poster Q & A and Afternoon Tea
Evening		Research Networking Dinner – C-Bar on the Strand – Guest Speaker Qld Integrity Commissioner – Dr Nikola Stepanov	
JCU Science Research Festival - 7th and 8th September			

Message from the chair

Professor Damon Eisen



All the staff of the Townsville Hospital and Health Service show tremendous dedication to providing the people of our region the very best health care. We all need to incorporate new information into our practice and this comes from health sciences research. Research is becoming a strength of our Health Service shown by the growth in numbers and, I hope you agree, quality of research presentations you can see during this year's Health Research Showcase.

Clinical research is of value for our patients and economy. A recent report has shown the dollar value of large clinical trials designed and conducted in Australia. This report showed that there would be a 2 billion dollar benefit to the Australian economy if patients were treated according to the results of local trials with a return of \$5.80 for every dollar invested in the trials networks that performed these studies.

These are impressive figures and they can translate to better health outcomes for the patients we treat in the Townsville Hospital and Health Service district. This shows us that it's valuable to be aware of the results of new high quality research and to be conducting this at our hospital.

I hope that this year's Research Showcase gives you a chance to celebrate the tremendous work that is being done right now and inspires you to be part of future research.

Keynote Speakers



Professor David McGiffin

Plenary Speaker - Monday, 4th September

Professor McGiffin graduated from the University of Queensland Medical School and subsequently interned and trained in General Surgery at Princess Alexandra Hospital, Brisbane before going on to train in Cardiothoracic Surgery at the Prince Charles Hospital. In 1982, Professor McGiffin went to the United States as a Fulbright Scholar and undertook a Fellowship at the University of Alabama at Birmingham. He joined the faculty at the University of Alabama, but returned to Australia in 1986 to work at The Prince Charles Hospital where he did adult and paediatric cardiac surgery and also set up the Queensland Heart Transplant Program. In 1992, Professor McGiffin returned to the University of Alabama at Birmingham. At UAB, his clinic duties included the full range of adult cardiac surgery, adult and paediatric heart transplantation and adult lung transplantation. He commenced a pulmonary endarterectomy program for chronic thromboembolic pulmonary hypertension. Professor McGiffin's research interests at UAB were primarily outcomes analysis in cardiac surgery and transplantation. Other areas of interest include homograft aortic valves and research into biomechanics and myocardial oxidative stress associated with chronic mitral regurgitation.

Professor McGiffin returned to Australia to take up a position as Director of Cardiothoracic Surgery at the Alfred Hospital in 2013.



Professor Cate Nagle

Plenary Speaker - Tuesday, 5th September

Commencing in July 2017 Cate Nagle is the Professor of Nursing and Midwifery at Townsville Hospital and Health Service and James Cook University (JCU) and Director of Centre for Nursing and Midwifery research at JCU. A registered nurse and midwife, Cate has postgraduate qualifications in public health and diabetes education. Cate has held advisory and leadership positions with both federal and state departments of health. Currently Cate leads the Nursing and Midwifery Board of Australia's development of the Midwife standards for practice project.



Dr Rosalie Boyce

Plenary Speaker - Wednesday, 6th September

Rosalie Boyce (PhD) is a recognised authority on the management and organisation of the allied health professions. An accomplished communicator, she had delivered in excess of 60 workshops and seminars to a variety of health profession audiences with the aim of inspiring learning and personal growth in participants. After 10 years as an allied health clinician and department manager, Rosalie commenced her research career where she has spent two decades investigating and sharing how professions and organisations are reshaping themselves in the face of significant health workforce reform agendas. Dr. Boyce has authored over 100 papers in academic and professional outlets, earned in excess of \$8 million from research grants and awards and advised many national and international organisations on reconfiguring the organisation of their allied health services. Director of her own consultancy company, Dr Boyce also has appointments at the University of Queensland and University of Southern Queensland. She is a Fellow of the Australasian College of Health Service Management of 20 years standing.

Monday, 4th September 2017 Program

Abstracts from Surgical Services Group, Indigenous Health Service Group Presentation, et al

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	Prof David McGiffin
12:45	Indigenous Health Service Presentation	
1:45	The renal parenchyma – Evaluation of a novel ultrasound measurement to assess fetal renal development	Sonja Brennan
2:00	Development of a rat model of prosthetic joint infection for evaluation of new preventative and therapeutic strategies	Peter McEwen
2:20	A prediction model for diagnosis of middle ear pathology in 6- to 9-month-old infants using wideband absorbance	Joshua Myers
2:35	Tau protein in Chronic subdural haematoma fluid	Piers Thomas
2:55	Transcutaneous Oximetry Measurement: Normal Values for the Upper and Lower Limb	Derelle Young
3:00	AFTERNOON TEA AND POSTER Q & A	
3:30	Job Satisfaction of mental healthcare workers in multidisciplinary teams	Louise Scanlan
3:45	Hearing screening of school-aged children with TEOAE at Kirwan Health Campus.	Alehandrea Manuel
3:50	Angiosomes of the foot and their anatomical variation	Maria Shilova
4:05	Implementation of a web-based digital platform to streamline and deliver quality, evidence-based patient care for elective orthopaedic surgeries across North Queensland	Andrea Grant
4:20	Demonstrating safety of Adenosine, Lignocaine and Magnesium (ALM) against human chondrocytes.	Andrea Grant
4:35	World Health Organization Surgical Safety Checklist decreases postoperative mortality and length of admission in the long term; an in depth analysis of an Australian tertiary care centre over 5 years.	Elzerie de Jager
4:50	Closing Remarks	

Abstracts

The renal parenchyma – Evaluation of a novel ultrasound measurement to assess fetal renal development

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Background: Abnormal fetal growth can adversely impact on renal development and is associated with increased risks of developing hypertension and chronic kidney disease later in life. A non-invasive, sensitive method of assessing normal and abnormal fetal kidney development is needed. We hypothesise that the renal parenchymal thickness could be used to evaluate the impact of abnormal fetal growth on the developing fetal renal parenchyma. This study, using antenatal ultrasound, will assess the renal parenchymal growth in a pregnant population demonstrating either normal or abnormal growth and determine if abnormal fetal growth influences renal parenchymal thickness. The relationship between renal parenchymal thickness, renal artery Dopplers, other fetal Dopplers and amniotic fluid will also be assessed. **Method:** A longitudinal, observational study will be conducted over 12 months, beginning May 2017. Women with an accurately dated, singleton pregnancy will undergo an ultrasound scan every four weeks between 16 and 40 weeks gestation. Outcome measures will be – renal parenchymal thickness and echogenicity, renal volume, fetal growth biometrics, amniotic fluid measurements, renal artery Doppler and other fetal Dopplers. **Results:** None to date. **Conclusions:** The outcome of this study is to have a better measure and understanding of fetal renal growth according to overall fetal development.

Development of a rat model of prosthetic joint infection for evaluation of new preventative and therapeutic strategies

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Background: Prosthetic joint infections (PJI) are the leading cause of total knee arthroplasty failure and need for revision surgery. Staphylococcus aureus is the most common cause of PJI. The global threat of antibiotic resistance continues to ignite interest in bacteriophage as a novel therapy for the treatment of PJI. The purpose of the current study was to investigate the therapeutic potential of customised bacteriophage cocktails for the treatment of PJI caused by S. aureus and to develop a clinically relevant model of knee implant surgery that could be used for future preclinical trials. **Method:** The in vitro antibacterial activity of bacteriophage cocktails toward planktonic and biofilm-forming S. aureus strains derived from preoperative nasal swabs from patients undergoing joint replacement surgery (Mater Health Services North Queensland) was assessed using microbiological culture and scanning electron microscopy. To facilitate future assessment of the in vivo efficacy of bacteriophage, a rat model of uncomplicated knee implant surgery (n=6) was developed using customised, 3D-printed porous titanium and porous polyethylene implants. **Results:** S. aureus-specific bacteriophage cocktails exerted bactericidal activity against planktonic and biofilm cultures of methicillin-sensitive (MSSA) and methicillin-resistant (MRSA) S. aureus strains. The capacity for an MSSA strain (OR16_02) to form a biofilm on the titanium and polyethylene implants, and the susceptibility of this strain to killing by a S. aureus-specific bacteriophage cocktail killing in vitro was established. Pilot studies were completed to demonstrate the surgical feasibility of performing uncomplicated knee implant surgery on male Sprague-Dawley rats. Implant osseointegration, haematology, and inflammatory marker kinetics were assessed at 7, 14 and 28 days postoperative to validate this model of knee implant surgery. **Conclusions:** Investigation of innovative biofilm-disrupting treatments are at forefront of biomedical research and have particular application for the management of difficult to treat PJI. Our findings support the potential application of tailored bacteriophage cocktails in the treatment of PJI caused by both MSSA and MRSA S. aureus. A rat model of knee implant surgery using miniature titanium and polyethylene implants was validated and is currently being progressed to a model of chronic-onset PJI caused by S. aureus for future evaluative studies of bacteriophage.



A prediction model for diagnosis of middle ear pathology in 6- to 9-month-old infants using wideband absorbance

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Background: Wideband absorbance is an emerging clinical tool for assessing middle ear function with significant advantages over traditional clinical tests. There is a dearth of evidence, however, on the diagnostic performance of absorbance for infants outside of the neonatal period, and further research in this population is needed. **Method:** Two hundred and seventeen infants aged 6 to 9 months were included in the study. Infants were tested at Kirwan Community Health Campus. Middle ear function was evaluated in each infant with high-frequency tympanometry and distortion product otoacoustic emissions. Wideband absorbance was also measured from 226–8000 Hz at ambient pressure. Absorbance frequencies were used as logistic regression predictors to model the probability that an ear had middle ear dysfunction. Results from one ear of each infant was used for model development, and opposite ears were used for validation. The model's accuracy was assessed with the area under the receiver operating characteristic curve (AUC), and calibration plots. Both AUC and calibration were validated using bootstrap resampling and the opposite ears. **Results:** The diagnostic model had an AUC of 0.87. Bias of 0.01 in the AUC calculated from bootstrap resampling, and 0.05 from the opposite ears. Model calibration was satisfactory for the development, opposite ears, and bootstrapped samples. **Conclusions:** The absorbance model accurately detected middle ear pathology in infants, and was well calibrated. Validation detected only a slight amount of optimism in the model, which indicates that it may perform well when applied to new infants.

Tau protein kinase in Chronic subdural haematoma fluid

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Background: Chronic subdural haematoma (CSDH) is a common neurosurgical pathology in the aging population. Recognised risk factors include male sex, cerebral atrophy and antecedent head trauma, often minor. Tau protein exclusively resides within the central nervous system, stabilising axonal microtubules. Defective Tau protein aggregation is associated with pathologies such as Alzheimer's disease; increased CSF levels of Tau are also seen in trauma. Normal Tau protein is phosphorylated (Tau-P) by a Tau protein kinase (Tau-K); one such, TTBK-1, is implicated in neurodegeneration. S100 is associated with neural crest tissue, and is elevated after TBI. No study has documented presence of any Tau-K within CSDH fluid. Aims: Prospective assessment of TTBK-1 in CSDH fluid and its relationship with clinical and radiographic parameters. **Methods:** Clinical and CT data, and CSDH fluid, was collected from a prospective cohort of patients admitted with CSDH. **Results:** Data was obtained in n=49 (M:F 34:15). Most (n=44) had moderate or severe atrophy, and most (n=45) had a GCS $\geq$ 14. TTBK-1 (7.6 $\pm$ 4.2ng/ml), Tau-P (47.3 $\pm$ 15.4pg/ml) and S100 (363.6 $\pm$ 206.2pg/ml) were present in high concentrations in all CSDH fluid samples. TTBK-1 (P=0.008) and discharge modified Rankin score (mRS, P=0.04) were both significantly associated with atrophy. TTBK-1 was negatively correlated with Tau-P (r=-0.563, P=0.001) and S100 (r=-0.592, P<0.001). TTBK-1, Tau-P and S100 were not correlated with trauma history nor with CSDH CT characteristics. S100 was correlated with Tau-P (r=-0.367, P=0.05). **Conclusions:** TTBK-1, Tau-P and S100 were present in high concentrations in all samples. TTBK-1 and mRS were both associated with atrophy. Whilst Tau-P and S100 were correlated, both were negatively correlated with TTBK-1. TTBK-1, Tau-P and S100 were not markers for a history of trauma; further work is required to explain the relationship between TTBK-1 and Tau-P in CSDH.

Transcutaneous Oximetry Measurement: Normal Values for the Upper and Lower Limb

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Background: Transcutaneous oximetry measurement (TCOM) is a non-invasive process of measuring the tissue partial pressure of oxygen through the skin. Confirmation of tissue hypoxia and demonstrated responsiveness of the tissue to oxygen in the area surrounding a wound allows selection of patients most likely to benefit from hyperbaric oxygen therapy (HBOT). Current guidelines for TCOM define tissue hypoxia as a transcutaneous oxygen partial pressure < 40 mmHg, however this single reference value may not be an accurate



normal value for all positions on the body. Normal TCOM reference values for multiple positions on the upper and lower body would make interpretation of these measurements more meaningful. The aim of this study is to determine normal partial pressure tissue oxygen levels and response to a 100% oxygen challenge in the upper and lower limbs of healthy adults. **Method:** This was a prospective observational study at The Townsville Hospital. Thirty-two healthy, non-smoking volunteers (male 16, female 16) had TCOM (Radiometer TCM 400) performed at six positions on the upper limb, and six on the lower limb. Measurements were taken with subjects lying supine breathing air, and whilst breathing 100% oxygen. The primary outcome of this study was a determination of the normal range of TCOM readings at multiple positions. Descriptive statistics (mean, standard deviation (SD), 95% confidence interval (CI)) were used to report TCOM readings at each of the twelve sensor sites. We also report the frequency of TCOM measurements below 40 mmHg. **Results:** The 32 subjects ranged in age from 26 to 76. Baseline measures of perfusion were clinically unremarkable in all subjects. Room air TCOM values mean $\pm$ SD (95% CI) were: chest 53.6 ± 13.7 (48.7-58.5), upper arm 60.0 ± 11.0 (56.1-64.0), forearm 52.3 ± 9.7 (48.8-55.8), dorsum of the hand 50.2 ± 11.4 (46.1-54.3), thenar eminence 70.8 ± 8.4 (67.7-73.8), hypothenar eminence 77.9 ± 7.8 (75.1-80.7), lateral leg 50.2 ± 11.0 (46.2-54.2), lateral malleolus 50.5 ± 10.6 (46.6-54.3), medial malleolus 48.9 ± 9.0 (45.6-52.1), dorsum between first and second toe 53.1 ± 10.8 (49.2-57.0), proximal fifth toe 58.5 ± 9.7 (55.1-62.0), plantar foot 73.7 ± 9.5 (70.3-77.1). Using the currently accepted threshold for tissue hypoxia of < 40 mmHg, 31 of 384 (8%) of our readings would have been classified as hypoxic. Whilst subjects breathed 100% oxygen, one TCOM measurement from the upper limb failed to reach 100 mmHg, compared to 19 readings from the 3 most distal sites of the lower limb. **Conclusion:** Our study demonstrates that normal partial pressure tissue oxygen levels vary with sensor position and underlying anatomical structures. In our study positions more likely to produce a value < 40 mmHg were the lateral leg (5/32 readings), lateral and medial malleolus (6/32 and 4/32), dorsum of the hand (5/32 readings), and chest (4/32). Positions that produced no readings < 40 mmHg included the plantar foot, and the hypothenar and thenar eminences. Clinical decision making should not be based on a single value, as isolated low readings are common even in healthy populations.

Job Satisfaction of mental healthcare workers in multidisciplinary teams

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Background: Mental healthcare work is stressful for staff. Work associated stress correlates with burnout and absenteeism affecting productivity, morale and service delivery. The purpose of this study was to identify the current level of job satisfaction experienced by mental healthcare workers in multidisciplinary teams; to explore the factors that impact on job satisfaction; and to investigate if there are any differences between disciplines. This research increases our understanding of factors that impact mental healthcare workers. **Method:** A mixed method study of mental healthcare workers in multidisciplinary teams, who provide direct service delivery in hospital and community settings, was conducted in regional Australia. Mental healthcare workers consisted of: mental health nurses, Aboriginal and Torres Strait Islander health workers, occupational therapists, psychologists and social workers. Quantitative data was collected from an anonymous online survey. Results from the survey data informed the qualitative questions focusing on issues specific to each discipline. Qualitative data was collected from focus groups of nursing, and allied mental healthcare workers, and from a yarning circle of Aboriginal and Torres Strait Islander health workers. Results were subject to statistical and thematic analysis. **Results:** 79 mental healthcare workers participated in this study, 31% from mental health inpatient settings and 69% from community mental health services. A range of factors were found to impact on job satisfaction of respondents. Common factors were related to: making a difference; team dynamics; the nature of mental healthcare work itself; and the qualities of management and/or leadership. The differences between the disciplines was in the value and impact of those factors in delivering mental healthcare. **Conclusion:** Mental healthcare workers who participated in the study report being satisfied in their work. Mental healthcare work itself is valued highly across all professional groups. Trends suggest features of the mental health service environment had most impact on job satisfaction.

Hearing screening of school-aged children with TEOAE at Kirwan Health Campus.

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Background: Transient Evoked Otoacoustic Emissions (TEOAE) screening is an objective test which has been proposed as an efficient tool for assessing peripheral auditory status in children. TEOAE is recognised for its simplicity, short test duration, low-cost, and ability to detect mild or greater hearing losses in the presence of middle ear and/or cochlear pathology. Conventional pure tone audiometry screening is the current tool used for hearing screening which closely represents the audiometry techniques used in an audiological evaluation. The purpose of this study was to assess the sensitivity and specificity of TEOAE screening results when compared with conventional pure tone audiometry screening among children in a community health setting. **Method:** TEOAE and pure tone screening results were collected from a total of 150 children (4 – 15 years old) who attended the Kirwan Child Health Hearing Screening Clinic. Hearing thresholds were screened with headphones across all major speech frequencies (0.5, 1, 2, and 4 kHz). The Rhode Island screening criteria of 30 dB at three definite frequencies between 1 and 4 kHz were used to determine a TEOAE pass. **Results:** Of the 300 ears evaluated, the sensitivity and specificity of the TEOAE screenings compared with pure tone screenings were 56% and 81%, respectively. Chi-square test analysis showed a statistically significant relationship between TEOAE and pure tone screening [$\chi^2 = 35.308$, $df = 1$, $P(< 0.05)$]. **Conclusions:** TEOAE screening shows promise as an alternative method to screening children's hearing. Further investigation is required to assess whether changing the screening criteria for TEOAE increases sensitivity to detect hearing loss and middle ear pathology. With



such evidence different pathways for detection of middle ear pathology and/or hearing loss can be identified.

Angiosomes of the foot and their anatomical variation

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Background: Revascularisation procedures are needed for foot ulcers with an ischaemic aetiological component. Modern revascularisation procedures have increasingly focused on obtaining arterial flow to the particular vascular territory affected by the foot ulcer, rather than aiming to increase arterial run-off to the foot. These vascular territories, or angiosomes, are three-dimensional areas of tissue supplied by a specific artery. The common anatomy of the six foot angiosomes has been delineated in previous research, but no studies have examined the variation of these vascular territories and their anastomoses with one another, despite vascular variation being common. This study aimed to describe the interaction of the variations of the foot arteries, and hence angiosomes, with the healing or non-healing of foot ulcers in patients who underwent a revascularisation procedure. **Method:** This is a retrospective qualitative study, which involved the observation and description of arterial variations demonstrated on foot angiograms of 33 adult patients with 36 foot ulcers who underwent revascularisation procedures. The variations were correlated with healing or non-healing of the foot ulcers following the revascularisation procedures. **Results:** Arterial anatomy of the foot is highly variable in both healed and non-healed ulcers. We found that variations in healed ulcers commonly created anastomoses between angiosomes. Several variations of the fibular artery, which created inter-angiosome anastomoses were also found. **Conclusions:** This study found that variations of the fibular artery in the foot are common, and can enhance collateral circulation between angiosomes. Angiosomes of the foot and their anastomoses with one another were found to be variable, a factor which should be taken into account when performing a revascularisation procedure. Patients with healed foot ulcers typically have variations, which create anastomoses between angiosomes but the role of inter-angiosome anastomoses in non-healing ulcers requires further investigation.

Implementation of a web-based digital platform to streamline and deliver quality, evidence-based patient care for elective orthopaedic surgeries across North Queensland

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Background: The Orthopaedic Research Institute of Queensland's (ORIQL) clinical research program includes multiple study sites across a vast geography. FORCE Therapeutics is a connective technology that engages patients and collects constant, real-time data and analytics as the patient moves through an episode of care, encompassing preoperative, postoperative and rehabilitation assessments. The platform provides access to tailored pre- and post rehabilitation exercises, provides an interface for direct patient/provider communication, real-time data on range-of-motion and gait assessment, daily pain and visual analogue scores (VAS) and patient reported health and mobility outcomes. In 2016, ORIQL commenced a partnership with FORCE Therapeutics to streamline delivery of comprehensive care and improve clinical outcomes for elective orthopaedic patients, regardless of their locality. The goal of this partnership is to 1) increase patient engagement in their healthcare, and 2) to create a comprehensive Orthopaedic Databank of research data from clinical orthopaedic research to facilitate evidence-based improvements to practice. **Method:** Prospective patients from five private orthopaedic practices in North Queensland were registered on the FORCE platform from December 2016, after providing participant consent. Routine preoperative, postoperative and rehabilitation assessments were performed in line with current practices with data captured within FORCE. **Results:** Since the introduction of the FORCE, 327 elective orthopaedic patients have been enrolled to the platform with over 85% of patients across the study sites choosing to opt-in to the program. The average age of patients using either the web version of FORCE or the downloaded FORCE app is 59 years (18 to 88 years). Of the enrolled patients, over 70% actively used FORCE post-operatively to complete patient-reported health, pain and mobility assessments and to communicate directly with their care team. **Conclusions:** The use of the FORCE platform has potential to challenge the way we engage 'care-team' provision of health throughout the episode of care. Utilisation of FORCE for integrated patient care and data capture has potential to deliver considerable cost-savings through streamlined healthcare delivery and improved health outcomes for patients, particularly those residing in rural and remote communities. In addition, the creation of the Orthopaedic Databank is significantly increasing the accuracy, uniformity and volume of data that orthopaedic surgeons may utilise for the purposes of clinical research. The Databank may also enable reduction in repetition of unnecessary research by creating provision for external researchers to access data through application. Future research will be conducted to quantitate cost-savings in areas relating to services for outreach patients, private physiotherapy and other allied health consultation, reduction in ED admissions and ad hoc GP visits.



Demonstrating safety of Adenosine, Lidocaine and Magnesium (ALM) against human chondrocytes

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Background: Surgical trauma associated with elective orthopaedic surgery triggers a systemic inflammatory response. Inflammation activates coagulation and coagulation reciprocates to modulate inflammatory activity. Inflammation is essential for recovery and tissue reconstruction however over expression can lead to post-operative complications such as arthrofibrosis. ALM (Adenosine, Lidocaine, Mg2+) is a novel drug therapy with the potential to modulate the inflammatory response and decrease adhesions following surgery. Prior to human trials we must demonstrate safety and toxicity. The purpose of the current study was to examine the *in vitro* effect of ALM on human chondrocytes in terms of viability and inflammatory response. **Method:** Human chondrocytes differentiated from healthy human bone marrow-derived mesenchymal stromal cells (n=10 participants from Townsville Hospital and Health Service, THHS) were transferred to the Stem Cell Laboratory (THHS). Confirmation of Chondrocytes was through Pellet culture (H&E, Alcian Blue and Trichrome) and Histology. Chondrocytes were exposed to 1 and 4 hour ALM exposure (adenosine, 0.01-1mM; lidocaine 0.03-75mM; magnesium, 2.5mM) in 0.9% and 1.3% normal saline. Dose and time dependent chondrocyte viability in the presence of ALM was determined after 24hrs of culture using colorimetric WST-8 viability assay. Supernatant extraction from viability assays were collected and stored at -80° for cytokine expression analysis (Human cytokine panel: IL-1 β , TNF- α , IL-8; Human Matrix Metalloproteinase Panel: MMP3, MMP12, MMP13). **Results:** Chondrocyte cultures exposed to a therapeutic dose of ALM (adenosine, 1mM; lidocaine 3mM; magnesium, 2.5mM) for 1 and 4 hours *in vitro* remained viable after 24hr of culture. The viability of the chondrocytes is superior in the physiological preparation of saline (0.9% NaCl) as compared to 1.3% NaCl however the difference is not significant. Less than 10% chondrocyte viability was present after exposure to 60mM ALM. Supernatant assays are currently being assessed by MAGPIX® MILLIPLEX®. **Conclusions:** There is no adverse effect on human chondrocytes *in vitro* with a therapeutic dose of ALM. The expression of inflammation *in vitro* of ALM on chondrocytes is still under investigation. Current *in vivo* research is planned to investigate intravenous infusion of low volume ALM to assess ALM ability to reduce coagulopathy, attenuate pro-inflammatory cytokine response and modulate scar formation in a rat model of arthrofibrosis.

World Health Organization Surgical Safety Checklist decreases postoperative mortality and length of admission in the long term; an in depth analysis of an Australian tertiary care centre over 5 years.

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Background: The World Health Organization Surgical Safety Checklist (WHO SSC) has been widely implemented in an effort to decrease surgical adverse events. The effects of the checklist on postoperative outcomes have not previously been examined in Australia and there is limited evidence on the effects of the checklist in the long term. **Methods:** A retrospective review was conducted using administrative databases to examine the effects of the implementation of the checklist on postoperative outcomes. Data from 21,306 surgical procedures, performed over a 5-year time period at a tertiary care centre in Australia where the WHO SSC was introduced in the middle of this period were analysed using multivariate logistic regression. **Results:** Postoperative mortality rates decreased from 1.2% to 0.92% (p=0.038, OR 0.74 (0.56-0.98)) and length of admission decreased from 5.2 to 4.7 days (p=0.014). The longer the duration of surgery the greater the effect of the checklist on reducing postoperative mortality rates. An analysis of cases in the immediate (within 6 months) and short term (within 12 months) before and after the checklists implementation found no significant changes after the implementation of the WHO SSC. **Conclusion:** Implementation of the WHO SSC was associated with a statistically significant reduction in mortality and length of admission over a 5-year time period in a regional tertiary care centre in Australia. This is the first study demonstrating a reduction in postoperative mortality after the implementation of the checklist in a developed country. A relatively longer period studied may have allowed factors like surgical culture change to take effect.

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The association of peripheral arterial disease with abdominal aortic aneurysm growth: A systematic review and meta-analysis

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Background: The role of atherosclerosis in abdominal aortic aneurysm (AAA) pathogenesis is controversial. Atherosclerosis-associated peripheral arterial disease (PAD) has been reported to be a risk factor for AAA diagnosis in population screening studies, but its relationship with AAA growth is controversial. **Methods:** A systematic search of MEDLINE, Scopus, CINAHL and the Cochrane Central Register of Controlled Trials was conducted in April 2016 and repeated in January 2017. Databases were screened for studies reporting AAA growth rate in patients with and without PAD. The included studies underwent a quality assessment and where possible, were included in the meta-analysis. A subgroup analysis was performed, including only studies that adjusted for confounding factors. **Results:** Seventeen studies, including a combined total of 4,873 patients, met the review entry criteria. Data from 15 studies were included in meta-analysis. There was marked heterogeneity in the study design, methodology and statistical analyses used. In the main analysis, PAD was found to be associated with reduced AAA growth (standard mean difference= -0.13 [95% CI -0.27 to -0.00], P=0.04). However, statistical significance was not maintained in sensitivity analysis. In a sub-analysis that only included data adjusted for other risk factors, no significant association between PAD and AAA growth was found (standard mean difference -0.11 [95%CI -0.23 to 0.00], P=0.05). **Conclusion:** This systematic review suggests that currently reported studies demonstrate no robust and consistent association between PAD presence and reduced AAA growth. A small reduction in AAA growth in patients that have PAD cannot be ruled out.

The association of circulating matrix metalloproteinase-9, D-dimer, osteoprotegerin, homocysteine and C-reactive protein with endoleak, following endovascular repair of abdominal aortic aneurysm

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Background: Endoleak is a common complication of endovascular repair (EVAR) for abdominal aortic aneurysm (AAA), but can only be detected through prolonged follow-up with repeated aortic imaging. This study examined the potential for circulating matrix metalloproteinase-9 (MMP9), osteoprotegerin (OPG), D-dimer, homocysteine (HCY) and C-reactive protein (CRP) to act as diagnostic markers for endoleak in AAA patients undergoing elective EVAR. **Methods:** Linear mixed effects models were constructed to assess differences in AAA diameter after EVAR, between groups of patients who did, and did not develop endoleak during follow-up, adjusting for potential confounders. Circulating MMP9, OPG, D-dimer, HCY and CRP concentrations were measured in pre- and post-operative plasma samples. The association of these markers with endoleak diagnosis was assessed using linear mixed effects adjusted as above. The potential for each marker to diagnose endoleak was assessed using receiver operator characteristic (ROC) curves. **Results:** Seventy-five patients were included in the current study, 24 of whom developed an endoleak during follow-up. Patients with an endoleak had significantly large AAA sac diameters than those that did not have an endoleak. None of the assessed markers showed a significant association with endoleak. This was confirmed through ROC curve analyses indicating poor diagnostic ability for all markers. **Conclusions:** Circulating concentrations of MMP9, OPG, D-dimer, HCY and CRP were not associated with endoleak in patients undergoing EVAR in this study. The assessed biomarkers appear to have low potential to impact on post-EVAR monitoring.

Are the patients with peripheral artery disease interested in a Mediterranean diet?

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Background: Peripheral arterial disease (PAD) affects ~15% of adults. Patients have poor quality of life due to walking impairment and high rates of serious complications, operations, amputations, strokes, heart attacks and death. Previous population studies in Spain and Italy suggested that a Mediterranean diet could reduce cardiovascular events in people with and without established artery disease. There is limited information on whether Australians with PAD are willing to adopt a Mediterranean diet. This study assessed the willingness for dietary change in patients with PAD. **Methods:** Twenty patients with PAD and 20 age and sex-matched controls were recruited in Northern Queensland via a vascular biobank. Participants completed an 18 item questionnaire about willingness to change diet. Responses were recorded using a five point Likert scale which was then dichotomized into agree/ disagree and analysed using chi-squared test. **Results:** Both groups believed diet was important for their heart and blood vessels (PAD=90%, controls=100%; $p=0.14$). However, patients with PAD were significantly less willing than controls to include nuts (PAD=50%, control=80%, $p=0.04$), wholegrain (PAD=70%, control=100%, $p=0.008$) and red wine (PAD=35%, control=70%, $p=0.02$) in their diet. There were no significant between group differences for including fish (PAD=95%, control=100%, $p=0.31$) and olive oil (PAD=35%, control=50%, $p=0.33$) or excluding meat (PAD=30%, Control=45%, $p=0.32$) from their diet. **Conclusions:** This study suggests that although patients with PAD believe diet is important for their cardiovascular health, they are less willing to adopt a Mediterranean-style diet than controls. Further research is required to identify effective ways to support dietary change within low motivated PAD patients.

Evaluation of a workforce model incorporating a trained assistant in Computed Tomography (CT)

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Background: Every CT examination requires multiple steps and coordinating stakeholders and systems. Currently, these tasks are performed by radiographers while fielding multiple distractions. We will trial different workforce models in the CT area to identify efficiencies. Our aim is to identify a better skill-mix and understand potential impacts of each method. **Method:** This study will use four Plan, Do, Study, Act cycles. Each cycle will represent a model we wish to trial made up of 7 days with each cycle trialling a different workforce configuration. The first model (control) will comprise of two radiographers. The second model will substitute a Medical Imaging Assistant (MIA). The third model will substitute an administrative assistant. The fourth model will be the control, with an additional MIA. Observation will be performed by a third-party 'shadow' to observe the different models under consideration. We will avoid scheduling the observation period with events that may affect the referrals from emergency (i.e. school holidays etc). We will use an observer to obtain real time activity, rather than a survey, to avoid recall bias. Activities will include Scans, phone calls, bookings, etc. A cost analysis will be performed. Costs will include workforce costs, capital, and cost of disposables. The costs will be valued from the THHS perspective and will be expressed as cost per time saved or cost of the number of CTs completed. The results of the cost analysis will be used to build a business case to implement the optimal model of care at the THHS. **Results:** We anticipate our results will realise a reduction in risk through appropriate staff-mix, an increase in efficiency and a more cost-effective, future proofed service. **Conclusions:** If successful, results from this study can be used by other Health Services to introduce efficiencies within their Medical Imaging Departments.

Medial opening wedge high tibial osteotomy with the navigated iBalance® HTO system and early weight-bearing: evaluation of precision and maintenance of correction after 1 year

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Background: High tibial osteotomy (HTO) is a surgical technique used to manage osteoarthritis localised to one area of the knee joint. It involves cutting, repositioning and stabilising the tibia with a fixation device so as to reduce pressure and pain at the damaged joint surface. The Arthrex iBalance® HTO system is a polyetheretherketone (PEEK) implant that does not require plate fixation. Safety and stability of the iBalance® has been demonstrated using standard surgical techniques and conventional postoperative rehabilitation protocols. The purpose of the current study was to investigate radiological alignment changes of the knee following implantation of the iBalance® using a minimally-invasive, navigated surgical technique, in combination with an accelerated rehabilitation protocol. We also studied the accuracy of our navigated technique, comparing the intraoperative final alignment with postoperative radiological alignment. **Method:** A prospective observational study of 20 consecutive patients undergoing medial opening HTO was conducted at a single centre, by a single surgeon. A minimally-invasive, computer-navigated surgical technique was used. The Arthrex iBalance® HTO system and implant was used in all patients. Intraoperative data collected included pre- and post-procedure range of motion (ROM) and pre- and post-procedure neutral and stressed hip-knee-ankle angles (HKA). HKA was also measured on postoperative long leg weight bearing plain radiographs taken at 2 weeks, 6 weeks, 3 months and 1 year after surgery. Loss of correction over a 1 year period was determined. Intra-operative post-procedure stressed



HKA was compared to the long leg radiographic HKA to determine the accuracy of our technique. Patient-reported outcome measures (PROM) of satisfaction and limb function were assessed preoperatively and at 2 weeks, 6 weeks, 3 months and 1 year after surgery. **Results:** No significant change was observed for the ROM (pre op mean $125.4^\circ \pm 41.5^\circ$, post op mean $123.9^\circ \pm 34.4^\circ$; $p > 0.05$), post-operatively. The mean navigated correction to the neutral and stressed HKA was $5.4^\circ \pm 1.3^\circ$ and $5.8^\circ \pm 1.3^\circ$, respectively. A slight loss of correction was observed radiographically between 2 weeks and 3 months post-operative ($1.4^\circ \pm 1.6^\circ$) however, no further changes were observed in the mean total loss of correction at 1 year post-surgery ($1.6^\circ \pm 1.7^\circ$). PROM demonstrated general improvement in patient satisfaction and limb function over the 1 year period, with significant reduction in pain scores and increased mobility occurring between 6 weeks to 3 months postoperative. **Conclusions:** The iBalance® system provides an alternative strategy for HTO, eliminating the need for plate fixation and thus additional surgery for plate removal. Intraoperative use of computer navigation was able to accurately reproduce pre-planned correction angles, validating this minimally-invasive free-cut surgical technique for placement of the iBalance®. Our data demonstrate maintenance of tibial correction over 1 year using the iBalance® in combination with an accelerated rehabilitation program.

Early functional outcomes of a hamstring graft-augmented, modified Broström-Gould surgery with an accelerated non-casted rehabilitation program for high demand patients with lateral ankle instability

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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.

Flavonols reduce atherosclerosis in mice: a systematic review and meta-analysis

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Background: Cardiovascular disease is the leading cause of death in the western world, and its prevalence has been linked to high fat diets and sedentary lifestyle. Diets rich in flavonoids have been reported to lead to a substantial reduction in cardiovascular events. Despite the widespread availability of flavonoid supplements to the public, there are limited data on the cardiovascular benefits of purified flavonoid supplementation in humans. The aim of this systematic review and meta-analysis was to examine the reported effects of isolated flavonoids on aortic atherosclerosis in current mouse studies, to estimate possible benefits of flavonoids as a purified dietary supplementation in humans. **Method:** Medline, Pubmed, Sciondirect and Web of Science were searched to identify studies which examined isolated flavonoids on aortic atherosclerosis in apolipoprotein E deficient mice. A meta-analysis was performed to determine the overall effect of the flavonoids, and sub-analyses were performed to compare the effects of the flavonols and flavan-3-ols. **Results:** Eleven studies which examined a total of 208 mice receiving a flavonoid and 126 control mice were included. Overall the flavonoids significantly reduced aortic atherosclerosis (SMD 1.1, 95% CI 0.69, 1.51). Of the 18 flavonoid interventions examined 12 were flavonols and 3 were flavan-3-ols. Sub-analyses suggested that the flavonols (SMD 1.31, 95% CI 0.66, 1.91) but not the flavan-3-ols (SMD 0.33, 95% CI -0.19, 0.85) significantly decreased atherosclerosis area. **Conclusions:** Based on the included studies, supplementation with purified flavonols appears beneficial in reducing the severity of atherosclerosis in mouse models. Given the widespread availability of both purified and dietary flavonoids to the public, future studies should investigate the use of flavonols as preventions and treatments for cardiovascular disease.



Alternate Alignment for Total Knee Replacement: Rationale and evaluation of surgical technique

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Background: While the Australian Orthopaedic National Joint Replacement Registry (AOANJRR) report a 7% revision rate for TKR, patient-reported dissatisfaction following TKR is 24%. We hypothesise that patient dissatisfaction may be a consequence of the inability to surgically address so-called “constitutional natural alignment” and kinematics using traditional mechanical alignment principles. Recent advancements have enabled surgeons to predict natural limb alignment and attempt to more accurately recreate normal knee kinematics in TKR. The purpose of this study was to determine the accuracy of a navigated kinematic alignment technique for reproducing native patient anatomy during TKR. **Method:** A prospective study of 50 patients undergoing computer-navigated, kinematic alignment TKR was performed. The surgery was performed using the Triathlon Knee with Precision Navigation system. Accuracy between intra-operative predicted and postoperative achieved alignment angles and kinematic curves was determined. Intra-operative resection angles were also compared with the preoperative radiological angular assessments. Patient-reported outcome measures were assessed at 6 weeks, 6 months and 12 months postoperatively. **Results:** At full extension, the preoperative stressed angle and postoperative angle for varus knees were $-3.8^{\circ} \pm 1.6^{\circ}$ and $3.3^{\circ} \pm 1.1^{\circ}$, respectively. Similarly for valgus knees, the means were $1.7^{\circ} \pm 1.7^{\circ}$ and $2.1^{\circ} \pm 1.8^{\circ}$, respectively. A comparable postoperative angle ($0.1^{\circ} \pm 1.4^{\circ}$) was achieved for patients in preoperative neutral alignment (0°). At 90° of flexion, the mean preoperative stressed angle and mean postoperative angle for varus knees were $-3.3^{\circ} \pm 1.7^{\circ}$ and $2.2^{\circ} \pm 2.5^{\circ}$ respectively; for valgus knees this was $2.2^{\circ} \pm 0.8^{\circ}$ and $0.9^{\circ} \pm 2.3^{\circ}$, respectively. At 90° of flexion, neutral knees postoperatively had a mean of $-0.5^{\circ} \pm 1.4^{\circ}$. The postoperative kinematic curve was accurately predicted in all but 1 patient. There was no statistical difference between the mean intraoperative resected lateral distal femoral angle (LDFA) and preoperative mechanical LDFA ($2.4^{\circ} \pm 2.5^{\circ}$ vs $2.0^{\circ} \pm 1.6^{\circ}$, respectively; $p=0.53$). Navigated intraoperative coronal angles were also comparable to postoperative radiological hip-knee-ankle angle in varus ($-2.5^{\circ} \pm 1.9^{\circ}$ and $-2.7^{\circ} \pm 1.6^{\circ}$) and valgus ($1.9^{\circ} \pm 2.2^{\circ}$ and $2.9^{\circ} \pm 1.7^{\circ}$) knees. No difference was observed in the femoral rotation deviation of the posterior condylar kinematic axis and the natural knee kinematic axes to the transepicondylar axis ($-4.4^{\circ} \pm 1.7^{\circ}$ and $-4.4^{\circ} \pm 1.7^{\circ}$, respectively). Patient-reported satisfaction and health outcomes significantly increased over a 1 year follow up period were comparable to findings using mechanical alignment techniques for TKR. **Conclusions:** In the current study, use of a navigated kinematic alignment TKR technique was able to reliably achieve preoperative, pre-diseased limb extension alignment angles. Furthermore, this method was able to restore the knee rotational kinematics, whilst allowing balancing of the knee within natural knee laxities.

A systematic review of use of fibrin glue in surgery

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Background: With recent advances in bioengineering techniques, the use of biological glues such as fibrin based glue has become more common in surgery. Fibrin is a protein involved with clotting, which can be prepared and used in surgery to assist with haemostasis or adherence, particularly with skin grafts. It has potential advantages over more traditional techniques of graft affixation (such as suturing tissues together) by covering a larger surface area, particularly assisting in difficult to access or mobile tissues. This systematic review aims to survey the literature in regards to use of fibrin glue for adherence of skin grafts in surgery with a particular focus on randomised controlled trials. **Method:** Using the PRISMA guidelines for systematic reviews, the databases Medline, Embase, CINAHL, Informit and Scopus were searched for papers with fibrin glue and skin grafts (with all associated terms). Duplicates were removed and results were screened and excluded based on title and abstract, and then again by full text. **Results:** 825 papers were found initially which was narrowed down to 29 after screening and assessing. Of those, only two were large scale, randomised controlled trials, with four smaller randomised controlled trials and other papers being retrospective analyses of fibrin glue. All papers showed fibrin glue to be at least equivalent to sutures or staples in terms of graft take, and those which measured post-operative pain or operative time showed improvement in these measures. **Conclusions:** There is currently a reasonable body of evidence surrounding the use of fibrin glue in affixing skin grafts. Much of this evidence seems to suggest that there may be benefits to using fibrin glue in terms of increased graft take, as well as secondary benefits such as improved pain and decreased operative time. However there is a lack of large scale randomised controlled trials which support the use of fibrin glue.

Bilirubin production and Haemoxygenase-1 activity in cerebrospinal fluid following haemorrhage

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Background: Diagnosis of aneurysmal subarachnoid haemorrhage (SAH) in the setting of a normal computer tomography (CT) scan remains challenging despite advances in imaging and cerebrospinal fluid (CSF) sampling for the presence of bilirubin. The dogma for collecting CSF more than 12 hours following onset of symptoms is based on 'Walton's 12 Hour Rule'. The validity of Walton's original findings has not been established in the context of modern laboratory spectrophotometry that is now used to measure CSF bilirubin. The production of bilirubin has also been shown to be dependent on the rate-limiting action of the inducible enzyme Haemoxygenase-1 (HO-1) and therefore HO-1 may act as an alternative measureable marker of SAH. Therefore we aim to investigate the time-course of CSF bilirubin production post-SAH to validate 'Walton's 12 Hour Rule' in the spectrophotometry era and the utility of HO-1 as a potential diagnostic alternative to bilirubin in SAH. **Method:** Serial CSF samples were collected prospectively from 19 adult patients (>18yrs) undergoing lumbar or external ventricular drainage at The Townsville Hospital, Queensland from January 2015 to January 2016. Samples were collected up to 94 hours post drain insertion from control, aneurysmal SAH and non-aneurysmal SAH patients. Bilirubin was analysed using scanning spectrophotometry and iterative protocols based on reducing interferences from haemolysis and methaemoglobin. HO-1 was measured by enzyme-linked immunosorbent assay (ELISA; ENZO Life Sciences). Bilirubin was considered positive if measured at a diagnostic level >0.3umol/L. The lower detection limit for HO-1 was 0.78ng/ml. **Results:** Serial CSF samples were analysed from 19 patients. 9 had no history of SAH (controls), 10 had a SAH or intraventricular haemorrhage from aneurysm rupture (5), traumatic brain injury (2), post-surgical (2) or tumour rupture (1). Bilirubin was detected after intracranial haemorrhage but only after more than 12.5 hours. HO-1 was identified above the lower detection limit at 26-94 hours post-TBI, post-surgery or post-tumour-rupture but was not detected after isolated aneurysmal-SAH at any stage. In one patient, a positive HO-1 result was obtained at 60 hours post SAH, however this patient had undergone craniotomy and clipping of the ruptured aneurysm, with the positive result obtained at 32 hours post operatively. **Conclusions:** Our findings are consistent with 'Walton's 12 hour rule' – that there is a delay in the production of bilirubin in the CSF post haemorrhage therefore reinforcing the importance of a delayed lumbar puncture in the setting of a suspected aneurysmal SAH after 12 hours. HO-1 was detected in CSF only in the presence of associated trauma (external or operative) and was delayed relative to the detection of bilirubin. HO-1 is therefore it is not a reliable alternative marker for diagnosing aneurysmal SAH.

Physical activity and physical performance in patients with peripheral artery disease

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Background: Peripheral arterial disease (PAD) is a common problem leading to poor mobility. PAD management focuses on surgical revascularisation but this has limited durability. An alternative treatment is to focus on increasing physical activity (PA) by exercise-therapy, but there is uncertainty how feasible this is in patients with severe PAD. There is limited data on free-living PA and physical performance (PP) levels in PAD patients. This study aimed to investigate the PA and PP of PAD patients and assess the association of PA and PP with PAD severity. **Method:** PAD patients were recruited from 4 Australian centres (n=120). Controls with no history of cardiovascular disease were recruited from the community (n=22). PP was assessed using a 6 minute walk test (6MWT). PA was assessed using a continuous 7-day accelerometer. PAD severity was assessed by Ankle Brachial Pressure Index (ABPI). Data was analysed using univariate non-parametric tests. **Results:** Mean age and sex distribution were similar in PAD patients and controls. Measures of PA (median 7-day step count: PAD=35360, controls=59586; p<0.001), and PP (median 6MWT distance: PAD=350.3m, controls=450.6m; p<0.001) were significantly lower in PAD patients than controls. ABPI was correlated with 6MWT distance (r=0.394, p<0.001) not step count (r=0.164, p=0.073). In patients with severe PAD (ABPI<0.5) 37.5% had PA greater than the median (33458 steps) for patients with mild PAD (ABPI=0.50-0.89). **Conclusions:** Markers of PA and PP were reduced in PAD patients, but PA was not strongly related to PAD severity. This suggests there is potential to promote PA even in patients with severe PAD.

Identification of outer/middle ear pathology in neonates using wideband acoustic immittance

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Background: Wideband acoustic immittance (WAI) is an emerging technology for diagnosis of middle ear disorders that has significant advantages over presently available clinical tests. Previous large-scale diagnostic WAI studies in neonates have used transient-evoked, or distortion product otoacoustic emissions as the reference test, but further research is needed assessing the accuracy of WAI against a more stringent gold standard. The aim of the present study was to assess the diagnostic accuracy of WAI in neonates against a composite reference standard composed of distortion-product otoacoustic emissions (DPOAEs) and high-frequency tympanometry (HFT). **Method:** Five hundred and five neonates were recruited to the study from the Townsville Hospital Maternity Ward. DPOAEs and HFT were measured in both ears of each neonate to assess outer and middle ear function. Wideband absorbance, admittance magnitude, and admittance phase were also measured from 226–8000 Hz ambient pressure. **Results:** Best separation between pass and fail groups



was at frequencies from 1500–3000 Hz for wideband absorbance, 1000–2000 Hz for admittance magnitude, and 2000–4000 Hz for admittance phase. Multivariate logistic regression was used to model WAI and the model was validated using bootstrap resampling. The WAI model accurately identified conductive conditions with an area under the receiver operating characteristic (ROC) curve of 0.89. The model validated well, with minimal bias detected between the fitted, and bootstrapped samples (0.02). **Conclusions:** WAI was able to detect conductive conditions in neonates accurately, as demonstrated with high area under ROC curve. The model validated well with minimal bias, indicating that it may perform well in new samples.

Postoperative adverse events inconsistently improved by the World Health Organization Surgical Safety Checklist; a systematic literature review of 25 studies.

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Background: The World Health Organisation Surgical Safety Checklist (SSC) has been widely implemented in an effort to decrease surgical adverse events. **Methods:** This systematic literature review examined the effects of the SSC on postoperative outcomes. The review included 25 studies; two randomised controlled trials, 13 prospective and ten retrospective cohort trials. A meta-analysis was not conducted as combining observational studies of heterogeneous quality may be highly biased. **Results:** The quality of the studies was largely suboptimal; only four studies had a concurrent control group, many studies were underpowered to examine specific postoperative outcomes and teamwork training initiatives were often combined with the implementation of the checklist, confounding the results. The effects of the checklist were largely inconsistent. Postoperative complications were examined in 20 studies; complication rates significantly decreased in ten and increased in one. Eighteen studies examined postoperative mortality. Rates significantly decreased in four and increased in one. Postoperative mortality rates were not significantly decreased in any studies in developed nations, whereas they were significantly decreased in 75% of studies conducted in developing nations. **Conclusions:** The checklist may be associated with a decrease in surgical adverse events and this effect seems to be greater in developing nations. With the observed incongruence between specific postoperative outcomes and the overall poor study designs, it is possible that many of the positive changes associated with the use of the checklist were due to temporal changes, confounding factors and publication bias.

Aboriginal Australians and pain management: a systematic review

Dr Matthew Bryant

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Aim: to search for and critically analyse published research with a primary focus on pain management within the Australian Aboriginal and Torres Strait Islander population. **Background:** Chronic or persistent pain is a very common and disabling condition. Australian Aboriginal people have worse health outcomes compared with other Australians, and we are failing to Close the Gap. Research at the intersection of Aboriginal Health and pain management in Australia is the focus of this systematic review. **Methods:** A database search strategy was created using several databases, most notably Medline and CINAHL. Inclusion criteria were Australian Aboriginal and Torres Strait Islander health with a primary focus on pain management. Two studies were added from the reference lists of accepted articles. Of 81 studies identified, six qualitative studies were included in the systematic review. **Results:** The literature is sparse, with varying research methodologies, levels of research rigour and cultural safety, study populations and clinical settings. Findings are heterogeneous and at times conflicting. Cultural and communication barriers impede patient assessment and management. The prevalence of chronic pain was found to be high. The degree to which this contributes to disability is at opposites in different studies, with more recent studies suggesting chronic pain is profoundly disabling for Aboriginal people. **Conclusion:** There is very little published research considering Australian Aboriginal people and pain management and none involving Torres Strait Islanders. Gaps in the literature are significant in number and scope. Further research is needed to guide acute and chronic pain management for Aboriginal and Torres Strait Islander peoples: defining and measuring acute pain quality indicators, incidence and burdens of disease, solutions to cultural and communication barriers, obstacles to referral and on-going management and optimal models of care. Before any Gap can be closed, it must be defined and measured over time. One very positive aspect of existing literature is the increasing importance and acknowledgment of cultural safety for research involving Aboriginal and Torres Strait Islander Peoples.

Tuesday, 5th September 2017 Program

Abstracts from Health and Wellbeing Service Group, Mental Health Service Group Et Al

Time	Topic	Speaker
11:00	Lunch Starts Serving in Robert Douglas Auditorium Foyer – All Welcome	
12:00	Keynote Speaker	Prof Cate Nagle
12:45	Emergent research grants to build allied health research capacity	Tilley Pain
12:50	Exploring parental perceptions of a family-centred model of care in the delivery of public child development services	Nicole Argall
1:05	Retrospective study to identify perinatal factors that contribute to Cerebral Palsy in neonates born in the Townsville region.	Amy Forbes-Coe
1:10	The effect of gender on the outcome of premature and very low birth weight babies born in a regional neonatal intensive care unit	Yoga Kandasamy
1:15	A non-invasive method to detect glomerulomegaly in premature neonates	Sonja Brennan
1:30	Student contribution to physiotherapy services within Queensland Health while on clinical placement	Mark Gooding
1:35	Occupational therapy led paediatric burn telehealth review clinic – keeping kids closer to home	Debra Phillips
1:40	Salmonella in children in Queensland – a retrospective cohort study	Daria Romanik
1:45	Acceptable and feasible: Findings from the Optimising Freedom of Movement (OFM) Study	Annemarie Lawrence
1:50	An analysis of ED representations for primarily psychogenic / psychosomatic conditions	Katherine Thornton & Vidula Garde
2:05	Biting the bullet: From biennial pap tests to 5 yearly primary HPV screening - Renewal of Australia's National Cervical Screening Program	Tracey Bessell
2:20	AFTERNOON TEA AND POSTER VIEWING	
2:50	Why Are Doctors Not Referring to Consultation-Liaison Psychiatry? A Qualitative Study	Kai Yang Chen
2:55	Establishing a clozapine clinic with an early intervention psychosis service: Reinventing the wheel for treatment-resistant schizophrenia	Tahnee Bridson
3:00	Closing the gap in the stillbirth rate: Understanding the issues and challenges in gaining permission for autopsy	Meegan Kilcullen
3:10	What are the perceptions and experiences of provider stigma from nurses working in adult mental health inpatient units and the implications for education?	Sonia Macdonald
3:25	Cultural impact on the career choices of adolescents - a scoping review	Peter Akosah-Twumasi
3:30	The role of academic health centres in improving health equity: a systematic review	Alexandra Edelman
3:35	Self-reported long-term conditions of medical and allied health staff in a regional Australian health service	David Lindsay
3:50	Normative ambient pressure and wideband tympanometric measures in Caucasian and Aboriginal children.	Venkatesh Aithal
3:55	Stroke recovery in rural and remote Australia: A review of the stroke survivors' perspective	Sarah Jackson
4:10	Outcomes and impact of an ICU admission for severe maternal complications during pregnancy or birth: A case study	Marie McAuliffe

Abstracts

Emergent research grants to build allied health research capacity

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Background: Allied health professionals are emerging researchers. To increase allied health research capacity the Research Fellows successfully applied for SERTA funds to: conduct a follow up research capacity survey; provide health economics support for allied health researchers; train allied health staff to conduct cost effectiveness analyses; and provide funds for emergent researchers. The combined aim of the funds was to increase research activity among allied health professionals. Our aim is to demonstrate that increasing allied health research activity can improve the efficiency and effectiveness of THHS service delivery. **Method:** The emergent researcher funds were disseminated using a competitive process. Staff submitted a protocol of the research and budget to perform the research. The Allied Health Research Committee reviewed the applications and awarded the funds on merit. Health economics funds were disbursed as per the grant application. **Results:** Three individuals and two teams received emergent researcher funds. Funds for three of the projects were for backfill or research assistant and the others were for equipment and services. One project is complete and journal article submitted. Fifteen staff attended the Economic Evaluation workshop and 21 staff attended the 'Economics for decision makers' workshop. Since the workshop, the use of health economics has increased in allied health research with four projects including an economic evaluation. **Conclusions:** Providing funds increases allied health research activity. However, research support is also required for novice researchers to complete research projects. Providing economics workshops increases the use of health economics in allied health research.

Exploring parental perceptions of a family centred model of care in the delivery of public child development services

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Background: Contemporary paediatric allied health practice recognises family-centred care (FCC) as crucial to delivering effective health services to children and families. Limited evidence exists on how to translate FCC theory into practice for child development services. In response to service structure reform, Child Development Service Townsville applied a model of care consisting of a formal orientation session, a multidisciplinary assessment, a transdisciplinary feedback session and a formal interdisciplinary goal setting session. **Method:** Parents participated in a semi-structured in-depth interview and completed rating scales of service satisfaction. Interview data of 15 participants were audio recorded and transcribed verbatim. Thematic analysis and data triangulation were completed by three investigators to enhance validity, and descriptive statistics also extrapolated. **Results:** The model of care operating was positively perceived by families. Participants rated the model structure highly. Health professional and service factors themes were identified and included the value of communication; fostering of respect and partnership; and therapist skills. Service themes included the benefit of a holistic approach, staffing continuity, uncertainty of wait list timeframes and transition points as a source of stress. **Conclusions:** This research investigates what components of FCC are meaningful to consumers in the public healthcare setting. This research considers the practical components of delivery family-centred child development services and may assist other services in responding to the changing landscape of service provision in the context of National funding reforms.

Retrospective study to identify perinatal factors that contribute to Cerebral Palsy in neonates born in the Townsville region.

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Background: The current prevalence of cerebral palsy (CP) is 2 per 1000 live births, a figure that has been declining over the last decade. However, the extreme preterm and the term infant have been identified as having an increased risk to develop this disability. Research has identified many changes and advances in perinatal care that have contributed to the positive outcome of 'high risk' births especially, neuroprotective measures. **Method:** This retrospective case control study identified 23 children that have developed CP within the Townsville region over a recent five-year period. The medical charts were reviewed to obtain available perinatal data particularly; antenatal, intrapartum and neonatal factors that contribute to CP as well as the child's severity of the disability. 100 randomly selected neonates matched for admission to neonatal intensive care unit (NICU) had the same data collected and were assigned to the control group. **Results:** After application of the inclusion and exclusion criteria 21 children were included for analysis identifying, a prevalence



of 1.8 per 1000 live births who acquired cerebral palsy in pre/perinatal period. A gestation less than 32 weeks especially, 28-32 weeks and low birth weight (less than 2500g) were recognised via logistic regression as statistically significant factors associated with CP. **Conclusions:** In conclusion, cerebral palsy has many factors that occur within the perinatal period affecting the severity of this disability. In this study gestation (28-32 weeks) and birthweight (<2500g) were significantly associated with CP. Furthermore, preliminary findings indicate that male gender and Indigenous ethnicity were factors that contribute to the prevalence of CP. Further research is recommended within a larger cohort to clarify these findings.

The effect of gender on the outcome of premature and very low birth weight babies born in a regional neonatal intensive care unit

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Background: Advancements in neonatal care during the last few decades have improved survival for babies born at lower gestations. However, despite the overall increase in survival for premature babies there is a gender difference reported whereby male gender has been associated with poorer outcomes. Similar gender differences have been reported in neurodevelopmental sequelae later in life for ex-premature babies. Notably, some studies confound this notion by purporting no difference in mortality or morbidity between males and females. This study sought to determine the role of gender in neonatal survival, as well as long-term neurodevelopmental outcome.

Method: A retrospective cohort study was conducted for babies born at < 37 weeks gestation with a very low birth weight (VLBW, < 1500 g) and admitted to The Townsville Hospital NICU between January 2010 and January 2015. The effect of gender was determined by survival to NICU discharge, neurodevelopmental outcome at two years corrected age, and neonatal complications. **Results:** Data was collected for 430 babies (50% males). There were 53 babies who died before NICU discharge, with no significant differences between the number of males or females. Follow-up assessment was completed for 84 ex-neonates from the original cohort and demonstrated no gender differences in neurodevelopmental outcome. Males had a significantly higher prevalence of chronic lung disease ($P = 0.009$). Regression analyses for death by discharge and neurodevelopmental outcome did not identify gender as a significant predictor of outcome. **Conclusions:** There were no gender differences in survival or neurodevelopmental outcome for premature and VLBW babies. However, the number of chronic lung disease cases was significantly higher in males. There may have been factors in this study that masked the gender differences in outcomes so further elucidation of gender differences may benefit from continued research into identifying important predictors of survival and neurodevelopmental outcome.

A non-invasive method to detect glomerulomegaly in premature neonates

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Background: There is increasing evidence that prematurity results in chronic kidney disease. We hypothesised that renal parenchyma thickness could be measured and monitored in premature infants and conducted a study to compare renal parenchymal growth in a cohort of neonates born prematurely. Screening and early diagnosis of individuals for renal impairment could alter the course and delay, or even prevent these high-risk individuals from developing renal diseases. **Method:** This prospective case-control study was conducted in the Department of Neonatology, Townsville Hospital from October 2010 until October 2016. The study subjects underwent ultrasound assessment at 32 weeks postmenstrual age (PMA) and 37 weeks PMA. Term neonates (gestation >37 completed weeks) admitted to the neonatal unit with minor neonatal conditions were recruited into the control group. **Results:** Complete data sets were available in 91 premature neonates; however, one infant was excluded because of hydronephrosis. During the same period, 56 term neonates were recruited as the control but one neonate was excluded because of hydronephrosis. The median birth weight was 930[780-1220] g, and the mean gestational age was 27.0(2.1) weeks. Total renal volume (TRV) increases from 14.6(4.3) cm³ to 20.5(5.3) cm³ from 32 to 37 weeks PMA. During the same period, the total renal parenchyma (TRP) thickness increased from 1.6 (0.3) cm to 1.8(0.3) cm. At 37 weeks PMA, ex-premature have a significantly smaller total renal volume (20.5(5.3) vs. 25.9(6.4) cm³; $P < 0.001$) and total renal parenchyma thickness (1.8(0.3) vs. 2.0(0.2) cm; $P = 0.015$) compared with term (control). However, premature neonates at 37 weeks PMA have a larger TRP:TRV ratio compared to term neonates (0.09(0.02) vs. 0.08(0.02); $P < 0.001$). **Conclusions:** Premature neonates have smaller renal volumes compared to term neonates. However, our study showed that renal parenchyma to renal volume ratios in premature infants to be bigger when compared to term neonates. We propose that this observed difference is due to glomerulomegaly. Effects of prematurity on the developing kidney can now be assessed by ultrasound imaging.



Student contribution to physiotherapy services within Queensland Health while on clinical placement

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Background: The education of allied health students on clinical placements is essential to the development of safe and effective clinicians. In the context of the increasing demand for both health services as well as student placements, it is important to understand, maximise and provide evidence of student contribution to health service delivery. Whilst some evidence exists regarding the clinical workloads of health professionals, there is limited quantitative data identifying student contribution (clinical care activity) to service delivery while undertaking clinical placements. **Method:** Data were collected from five Queensland hospitals in 2016 in cardiorespiratory, musculoskeletal, orthopaedics and neurorehabilitation including: students; clinical supervisors, and comparator staff – junior (HP3) and senior (HP4) registered physiotherapists. Students and staff recorded their daily number of occasions of service (OOS) and length of OOS (LOOS) in information management systems. Data from approximately 400 clinical placements were analysed across five hospitals representing 40% of all (2016) Queensland Public Health Sector (QPHS) placements in the four clinical areas. **Results:** Analysis of student clinical care activity data demonstrated that the 400 clinical placements produced over 32000 OOS across all placements and clinical areas. All clinical areas demonstrated a statistically significant increase in the number of student OOS over the course of a clinical placement. Results demonstrated that over the course of a five week clinical placement a group of students met or exceeded the overall total OOS compared to registered physiotherapists in all clinical areas. Analysis by placement week revealed that the average group of students, met or exceeded the equivalent daily workload of staff physiotherapists by at least mid-placement (week 3). The supervisor: student ratio had an impact on when in the placement this occurred. **Conclusions:** The clinical placement supervisor has a key role in both the clinical education of students as well the maintenance of safe and effective health service delivery. The results of this study should encourage placement providers to consider their models of clinical education; clinical education resourcing and workforce distribution to optimise the student contribution to direct clinical care activity and maximise student and staff non-direct clinical care activity.

Occupational therapy led paediatric burn telehealth review clinic – keeping kids closer to home

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Background: Rural and remote children post burn injuries are geographically disadvantaged compared to metropolitan residents. Studies have shown rural children are more likely to require skin grafting and have increased complications (Hyland et al. 2015). The North Queensland Paediatric Burns Service identified an opportunity to provide an alternative service utilising telehealth. Telehealth is clinically effective for reviewing patients post burn injury (Wallace et al. 2012). In response to clinical need the Occupational Therapy (OT) Led Paediatric Burn Telehealth Review clinic was developed. **Method:** Service design was based on stakeholder consultation and needs analysis to establish clinical guidelines and a delegation framework to allied health assistants. Evaluation included: patient and clinician satisfaction surveys; number of patient reviews pre- and post-implementation of the telehealth clinic. **Results:** To date twenty-three families have been reviewed. Families have received between one and three telehealth consultations saving travel time up to 12 hours per appointment. Surveys demonstrate family and clinician satisfaction. There has been an increased frequency of clinical reviews post implementation of the model. Less than one percent of consultations have required re-engagement with paediatric surgeons. **Conclusions:** The OT- Led Paediatric Burn Telehealth Review clinic has increased the frequency of clinical reviews, saved patient travel time and reduced demand on paediatric surgeon appointments in the Burns clinic. Success of this local study will provide a template, including resources developed, for other Health Services to implement the model.

Salmonella in children in Queensland – a retrospective cohort study

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Background: Non-typhoid salmonella infection is an important food-borne disease but is also emerging as an important cause of invasive disease in malnourished and immunosuppressed children. It has also been noted that the incidence of salmonella bacteraemia



in north Queensland appears to be higher than other locations worldwide. The aim of this study was to describe the epidemiology of salmonellosis in paediatric populations in Queensland with a focus on tropical and sub-tropical areas. This is the first and largest study to describe the distribution of salmonella in children in Queensland. **Method:** Retrospective cohort study reviewing Queensland health pathology (Auslab) positive salmonella specimens in children aged 0 – 17 years over a period of 20 years from 1996-2016. Additional information was sourced from the Communicable Disease Branch and Australian Bureau of Statistics. Frequency analysis was performed for age, sex, location based on tropical or sub-tropical zones, postcode, specimen, serovar and antibiotic resistance variables with SPSS and excel. **Results:** The highest incidence of salmonellosis was identified in the < 12 month age group with 880/100,000 children. A 2011 population sub-analysis demonstrated that the proportion of children living in the north of Queensland was 16.49% and that this region contributed 36.2% of positive salmonella specimens for the same year. We identified a total of 8,162 positive hospital samples of which 90.92% were faecal and 6.2% blood. All of the 13 cerebrospinal fluid (CSF) samples positive for salmonella spp. were in the < 9 month age group. Serovar profiles varied across geographical areas and age groups. Notably, 71.26% of all s. Birkenhead positive specimens were associated with the Brisbane and Gold Coast postcodes. Multiple drug resistance (MDR) was demonstrated in 17.3% of all samples and single drug resistance (SDR) in 3%. Resistance to trimethoprim, amikacin, tobramycin and carbapenem occurred most frequently. Alarming, the Townsville region contributed 36.5% of all MDR samples. **Conclusions:** Our findings suggest a high hospital burden of salmonella related disease in the tropical north of Queensland compared to the sub-tropical south, particularly in the 0 – 4 year age groups. We recommend focused resource allocation to tropical north Queensland health districts for public health promotion regarding food preparation and hand hygiene targeting families with young children. Additionally, it is recommended that the use of antibiotics in gastroenteritis in the Townsville and Mackay areas is reviewed and updated guidelines established through ongoing antimicrobial stewardship. Additionally, this study highlights a need for a national, unified and paediatric-specific salmonella surveillance with a focus on the 0 – 4 year age group with inclusion of meteorological data as well as appropriate risk factors.

Acceptable and feasible: Findings from the Optimising Freedom of Movement (OFM) Study

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Background: Cochrane Review evidence suggests benefits for low-risk women who use upright and mobile positions during first stage labour. The purpose of this study was to implement evidence-based maternity care in the conventional labour-ward. The aim was to improve outcomes for mothers and babies. The research questions explored whether an optimising freedom of movement intervention was acceptable, feasible, and beneficial. **Method:** A quasi-experimental design was used to implement and evaluate an optimising freedom of movement intervention. The setting was the conventional labour-ward at The Townsville Hospital. The sample population was all low-risk nulliparous women, aged 20-34 years, who presented with spontaneous labour and a singleton, term, cephalic-presenting infant. Eligible women were included if they gave birth during the three-month control period or the three-month intervention period. Measurement tools included de-identified data obtained from: mother and baby electronic medical records; new-mother surveys; labour-ward staff surveys; and labour-ward room compliance audits. The analysis approach was mostly quantitative and descriptive. Where applicable, Chi-squared statistical tests were used to compare categorical data. **Results:** The sample size was 104 eligible women. Other data came from 37 eligible new-mother survey participants, 103 eligible labour-ward staff survey participants, and 58 eligible individual labour-ward room compliance audits. In terms of acceptability and feasibility, the study was found to be a success because at least 70% of women received the intervention and at least 70% of women and staff found it to be acceptable. Audits show the birth bed set-up was compliant with the study protocol 81% of the time (n=47/58); 75% of women in the intervention group walked during first stage labour (n=40/53); 92% of women who used any upright/movement position in late first stage labour felt happy with the positions they chose (n=23/25); and 95% of labour-ward staff pre-implementation and 100% post-implementation considered the OFM study room set-up to be more acceptable for low-risk nulliparous women compared with that of a standard room set-up (n=60/63; 23/23). **Conclusions:** In conclusion, the OFM study was found to be both feasible and acceptable. Further analysis of the quantitative and qualitative data is currently underway.

Why do patients re-present? An analysis of ED representations for primarily psychogenic / psychosomatic conditions

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Background: To identify the proportion of patients re-presenting at the Townsville Hospital Emergency Department between October 2016 and March 2017 who presented with likely psychogenic conditions that could have benefited from referral to Psychological service. **Method:** Monthly re-presentation lists were provided by the Emergency Department and reviewed by the Psychology Department for non-specific diagnoses. For those identified, the integrated electronic Medical Record (ieMR) notes of that presentation were reviewed



to determine any psychological factors either accounting or contributing to the re-presentations. Primary presenting diagnoses related to mental illness or substance misuse were excluded as service provisions to meet the needs of these consumers are available and the research was carried out primarily in order to assess service gaps. **Results:** During the six month review period there were 680 people on the re-presenter lists, generating 3060 service episodes. Of these, 218 people were reviewed in depth, accounting for 992 service episodes. The proportion of these individuals requiring further psychological support is discussed in some depth. **Conclusions:** This research will assist service planning regarding an alternative care pathway for patients to access psychological services when ED re-presentations have contributory psychological features.

Biting the Bullet: From biennial PAP tests to 5 yearly primary HPV screening – Renewal of Australia’s national cervical screening program

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Background: Since 1991 Australia has recommended 2-yearly cytological screening in women 18-69 years, and the incidence and mortality of cervical cancer has halved. In 2007, HPV vaccination was implemented in with subsequent reported falls of CIN2/3 in young women. In late 2011, a major review of the National Cervical Screening Program (NCSP) commenced that considered test, interval, age range and clinical pathway options for both HPV vaccinated and unvaccinated women against current practice. In 2017, Australia will implement 5 yearly primary HPV screening. This presentation will focus on the journey from evidence to practice. **Method:** A comprehensive dynamic model of HPV and cervical screening was used to evaluate the pathway options. The safety, effectiveness and cost-effectiveness of the options were independently assessed to make policy and funding recommendations for consideration by Governments. The Implementation Plan was informed via stakeholder consultation, expert working groups, and the local Compass trial. **Results:** In April 2014, it was recommended that 5-yearly HPV screening with partial HPV genotyping in HPV vaccinated and unvaccinated women, 25-69 years of age, with exit testing to 74 years of age, should replace current practice. One of the most effective and cost-effective strategies was the referral of women for oncogenic HPV16/18 direct to colposcopy, with reflex cytological triage for women with other oncogenic types. This strategy is now predicted to reduce cervical cancer incidence and mortality by 31 and 36% respectively, in unvaccinated cohorts and by 24 and 29% respectively in cohorts offered vaccination, compared with the current program. The Compass trial has demonstrated that screen-positive rates for HPV16/18 in women aged 25-33 years are low (0.9%(CI:0.3-1.9) for HPV16/18 and 13.6%(CI:11.1-16.3)% for other oncogenic HPV) and comparable to those of older women. A large increase in colposcopies is not predicted due to the number of women HPV vaccinated in Australia. The Implementation Plan addressed subsidised health items, registers, workforce, clinical practice guidelines; quality and safety; and communication and information, involving both private and public healthcare providers. **Conclusions:** Holistic change requires an evidence based approach, consultation, collaboration and planning. Australia’s renewed NCSP will be safe, effective and cost-effective. On 1 December 2017, Australia will be one of the first countries in the world to transition to a primary HPV screening within the context of a national screening program.

Why Are Doctors Not Referring to Consultation-Liaison Psychiatry? A Qualitative Study

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Background: Consultation-Liaison Psychiatry (CLP) is a subspecialty of psychiatry that addresses the mental health needs of patients in a non-psychiatric setting. Patients with mental health needs and are admitted to the hospital may have more adverse outcomes. Despite evidence of benefits, CLP referrals are lacking. This qualitative study aims to understand and explore barriers to CLP referrals from hospital doctors’ perspective. **Methods:** Exploratory, semi-structured individual interviews were used to interview hospital doctors. Participants were recruited through purposeful sampling until data saturation. Data was analysed using constant comparison method. **Results:** 9 individual and 1 group interviews were held. Participants came from wide-range of specialities including surgery, medicine, intensive care and rehabilitation. Participants’ responses can be categorised into three themes: referrer factors, patient factors and systemic factors. These factors confirm and offer explanations to current literature on CLP referrals. **Conclusion:** This pioneer study had shown new understanding into CLP referral barriers. This may pave the way for future research. Possible intervention targets to increase CLP referrals may be routine screening for at-risk patients or education for at-risk doctors.



Establishing a clozapine clinic with an early intervention psychosis service: Reinventing the wheel for treatment-resistant schizophrenia

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Background: Up to one third of people with schizophrenia experience persistent psychotic symptoms despite adequate treatment with two or more antipsychotic medications ("treatment-resistant schizophrenia"). Clozapine is the most effective medication for treatment resistant schizophrenia: many patients experience a reduction in symptoms and an improvement in mood and cognition. Despite its benefits, there are often long delays before clozapine treatment is initiated due in part to the risk of rare, serious adverse effects, including agranulocytosis and myocarditis. In a nurse-led initiative, a 'clozapine clinic' was established at Orygen Youth Health with the aim of reducing delays, managing dose titration, and providing a structure to monitor and address medication side-effects. **Method:** A retrospective file audit was conducted for all patients who were commenced on clozapine within the Early Psychosis Prevention and Intervention Centre (EPPIC) service of Orygen Youth Health from April 2016 onwards. A clinical audit tool was developed to collect data on patient demographics, clinical characteristics, duration of untreated psychosis, time to commencement of clozapine and number of previous unsuccessful medication trials. The outcomes of each patient commenced on clozapine were also assessed including: rates of adverse events and side effects; physical health outcomes; and psychosocial recovery. **Results:** In the first 12 months after the clinic was established, 15 patients were started on clozapine across two sites. The patient age range was between 15 and 24 years. To date, there have been no occurrences of myocarditis or neutropaenia. A range of side-effects including weight gain, hypersalivation, and constipation were effectively managed within the clinic. Preliminary results suggest that most patients have seen a reduction in psychotic symptoms and an improvement in psychosocial functioning. **Conclusions:** To our knowledge, this is the first clozapine clinic to be established and evaluated in an early intervention for psychosis service. This nurse-led initiative has successfully streamlined clozapine commencement, supported patient compliance, and provided a framework for monitoring and addressing side effects in a time-efficient manner. Wider use of clozapine clinics within youth mental health services may help to overcome existing barriers to using clozapine for treatment resistant schizophrenia.

Closing the gap in the stillbirth rate: Understanding the issues and challenges in gaining permission for autopsy

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Background: Over the past 30 years, the Perinatal Mortality Rate (PMR) in Australia has been reduced to almost a quarter of that observed in the 1970's. In 2012, the PMR was 8.2 perinatal deaths for every 1,000 births. However, to a large extent, the decline in the PMR has been due to a reduction in neonatal mortality, with neonatal deaths declining at a faster rate than the stillbirth rate. Stillbirths now account for 70% of perinatal deaths. The stillbirth rate for Indigenous babies remains over twice the non-Indigenous rate. Perinatal autopsy is an essential tool in the process of perinatal mortality audit. While autopsy of the foetus is the gold standard for foetal investigation, the parental consent rate for the procedure remains very low. The objective of this study is to identify the factors that Aboriginal & Torres Strait Islander parents take into consideration when asked to give consent for an autopsy. **Method:** This study will be carried out in The Townsville, Queensland. Indigenous and non-Indigenous women who have experienced a stillbirth within the past 10 years will be invited to participate in the study. The study will begin with a chart audit to identify women who have experienced stillbirth in the Townsville Hospital between January 2005 and December 2014. From the chart audit, we will make personal contact with Aboriginal and Torres Strait Islander parents who have experienced stillbirth. Making personal contact with potential participants rather than standardised letters was advised by the Advisory Group and community members as it is more in keeping with Indigenous communication styles, particularly with sensitive matters. After that, letters of invitation to participate in the study will be posted to all eligible and willing participants. Semi-structured interviews will be conducted with women and their families. Qualitative analysis will be conducted on the interview data within. **Results:** Data will be qualitatively analysed within an Interpretive Phenomenological Analysis (IPA) framework. IPA is an explicitly emergent research methodology that seeks to describe the lived experience of the participants and asks if the findings and descriptions help to make meaning and sense of that lived experience. Within this framework, a thematic analysis will be conducted using a 6-phase process. This analysis methodology is appropriate within Indigenous research as there is limited information and literature available to direct hypothesis testing. This approach allows the direction of the data collection to be responsive to the research situation. To aid analysis, the NVivo 10 computer software package will be used. Data collection will be guided by information saturation. **Conclusions:** The incidence of stillbirth in the Aboriginal and Torres Strait Islander communities remains twice as high as that in non-Indigenous women. This study fills a significant gap in the understanding about potential barriers to Aboriginal and Torres Strait Islander women and partners/families being approached for an autopsy in the case of stillbirth and the reasons why some agree to the procedure and some do not. It is envisaged that the information obtained from this study will enable health professionals to offer evidence based advice for parents, who in turn will be empowered to make decisions. To reduce the rate of intra-uterine foetal demise, first and foremost it is essential to diagnose the cause of foetal death. Only after the cause has been established, can any intervention program be introduced successfully.



Perceptions of Provider Stigma and Implications for Education

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Background: Stigma, a belief that casts negative connotations, is often associated with mental illness. People who experience mental illness say the stigma they receive because of their illness can be challenging. Literature suggests mental health professionals may hold and convey stigma, described as provider stigma, and quantitative data supports this. There is however, little data in the form of a narrative from mental health nurses to assist with understanding their perceptions and experiences of provider stigma. This research project explores these perceptions and experiences from mental health nurses using stories, and identifies approaches to education required to overcome this, to provide better outcomes for people with mental illness. **Methods:** A phenomenological approach and semi-structured interviews were used to identify how stigma is perceived by nurses working in adult mental health inpatient units. Questions were used to reflect on experiences of stigma within workplaces along with establishing what education or professional development needs existed. Thematic analysis was undertaken to explore concepts and summarise meaning. **Results:** Three registered nurses and two clinical nurses from three of the four adult mental health inpatient units volunteered to be interviewed which was 5% of the nursing workforce at the time. The average age was 52 years old. Provider stigma was defined in a negative context and identified as being present in the adult mental health inpatient units. Stigma themes of authoritarianism, degradation and blame existed and were identified by the nurses. Reactions of the participants and others to stigma were also noted. Contact education was identified as being required to assist with provider stigma along with support to challenge stigma. **Conclusions:** Mental illness stigma exists in many forms within adult mental health inpatient unit and is explicit and implicit in nature. Minimal stigma education had been received but all participants felt it was essential for the future. Awareness was required from a lived experience along with challenging stigma at the time of occurrence however this remains a difficulty for mental health nurses. Reflection in the form of Clinical Supervision may assist with this. These results are important for the future development of mental health nurses to support a non-stigmatising inpatient environment for people with mental illness and more research is needed to develop and evaluate stigma education for mental health nurses.

Cultural impact on the career choices of adolescents- a scoping review

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Background: Well-planned career choices enhance job satisfaction and life fulfilment. However, cultural background and societal values can significantly impact on the career development of adolescents. This scoping review aimed to examine the scope and range of existing literature on the factors influencing adolescents' career choices in both collectivist and individualistic cultural settings. **Method:** Articles were identified through database searches of ERIC, PsycINFO, Informit, SCOPUS, ProQuest Platform, as well as screening of relevant article reference and citation lists. Assessed criteria were country and continent of participant enrolment, cultural setting, study design, participant numbers and educational level, influential factors and major study outcomes. **Results:** Of the 34 articles that met the eligibility criteria, eleven were from Europe, six from North America, nine from Asia, eight from Africa and one from Australia. Three main factors affect the career decision-making of adolescents: intrinsic, extrinsic and interpersonal. Only three studies explored the career choices of adolescents from both cultures. In collectivist cultures, parents impress upon their children to conform to familial and societal expectations, while in individualistic cultures, the parents encourage their adolescents to explore and construct their own careers. **Conclusions:** The review highlights the interplay of culture and parental influences as motivators for adolescents' career choices. With increasing cross-cultural transitions, future research should aim to explore whether family intrusiveness in adolescents' career choices, as applied in collectivist cultures, is still viable when migrant families relocate to individualistic societies.

The role of academic health centres in improving health equity: a systematic review

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Background: Academic health centres (AHCs) are complex organisations often defined by their 'tripartite' mission to achieve high standards of clinical care, undertake innovative clinical and laboratory research, and educate health professionals. In the last decade, AHCs have sought to move away from a dominant focus on high impact clinical interventions towards a population-health oriented paradigm requiring networked institutions and inventive responses to issues of health outcomes distribution and health determinants. Reflective of this shift is a growing interest in the role of AHCs in addressing health system equity. To the best of our knowledge, only one global review using systematic methods (scoping review) has been undertaken to date of the literature on AHCs. This review assessed



the literature exploring the managerial, political and cultural perspectives of AHCs, finding the literature on AHCs 'largely atheoretical and heavily dominated by case study reports from North America'. The current review is one of the first attempts to synthesise and critically appraise evidence on the role of AHCs in contributing to equitable health systems locally and globally. **Method:** We searched peer-reviewed and grey literature published in English between 2000 and 2016. We included articles that identified AHCs as the primary unit of analysis and that also addressed health equity concepts in relation to the AHC's activity or role. Unpublished data and records reporting clinical interventions or trials were excluded. Quality and relevance appraisal was undertaken utilising Joanna Briggs Institute critical appraisal tools. Thematic synthesis methods were used to develop descriptive themes and interpret the findings. **Results:** 483 unique records were identified of which 103 met the inclusion criteria. 83% examined AHCs in the United States, and the remaining studies examined AHCs and AHC models within Australia, Canada, China, Singapore, Tanzania, Uganda and the United Kingdom. A majority (64%) were written as individual perspectives or opinions, 17% were descriptive case studies of one or more AHCs, and a further 14% were books, reviews, policy reports or conceptual frameworks. Only 5% of papers reported the results of original studies using empirical methods. Health equity principles were described in relation to the role and activities of AHCs in population health, community engagement, the social determinants of health, global health and research translation and innovation. Reflecting the predominance of northern American literature, a major theme was the implications of equity-focussed health care reform on US-based AHCs. A number of drivers, barriers and facilitators to a health equity role in AHCs were also described, and multiple examples were provided of initiatives aimed at improving health equity including efforts to integrate with primary/community care organisations, target health services to the needs of vulnerable populations, and foster community-engaged research. **Conclusions:** The review has found a strong consensus within perspective, opinion and commentary papers that AHCs are uniquely positioned to address health disparities. Yet there is a profound lack of robust evidence to show that AHCs have a capacity to contribute to health equity goals, or are demonstrating this contribution. Future research should improve the quality of the evidence base by empirically examining health equity strategies and interventions of AHCs across multiple countries and contexts. The findings of this review are relevant to the Tropical Australian Academic Health Centre (TAAHC) in northern Queensland.

Self-reported long-term conditions of medical officers and allied health staff in a regional Australian health service

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Background: A previous study examined the self-reported long-term conditions within nurses and midwives across a regional health service in North Queensland. However, little is known about the frequency, type and impact of long-term conditions among medical officers and allied health professionals. The purpose of this current study, undertaken across the same health service, was to describe the self-reported long-term conditions among these professional groups. **Method:** Using a cross-sectional survey design, a paper questionnaire was sent to 1150 medical officers and allied health staff members. **Results:** Of the 365 respondents, 217 (59.5%) reported having a long-term condition. A greater proportion of medical officers reported having only one long-term condition compared with allied health staff ($p < 0.05$). Although the patterns varied amongst the professional groups, and across age groups, the top four categories of conditions were respiratory, musculoskeletal, mental health, and episodic and paroxysmal. Respondents managed their nominated main long-term condition with personal strategies such as medication, exercise, and monitoring and responding to symptoms, and rarely used workplace strategies. The findings, both the type of self-reported long-term conditions and management strategies, were essentially similar to the findings in the study involving nurses and midwives. **Conclusions:** This study highlights the need for larger empirical studies that describe the long-term conditions among health professionals and their use of self-management strategies. The findings from such studies can be used to inform targeted occupational health, health promotion and wellness strategies for health professional groups.

Normative ambient pressure and wideband tympanometric measures in Caucasian and Aboriginal children.

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Background: Wideband acoustic immittance (WAI) measures such as absorbance at ambient (WBA) and tympanometric peak pressure (WBT) are more sensitive than standard tests in identifying middle ear pathology in children. Despite high prevalence of middle ear disease in Aboriginal children, there are no normative studies that have compared their WAI measures with Caucasian children. It is not known whether single set of normative data can be used with both groups. **Method:** WAI measures were obtained under ambient and tympanometric conditions in 235 ears from 170 Caucasian children (mean age = 7.2 years, SD = 5.3 years) and 137 ears from 87 Aboriginal children (mean age = 8.1 years, SD = 4.8 years) with normal middle ear function as determined by pass in a test battery. **Results:** There was no ear effect on all of the seven WAI measures for both groups of children. Small, but significant gender effect was present across four frequencies for WBT in both groups. There was a significant effect of ethnicity only for WBA and WBT at 3, 4 and 8 kHz,



with Caucasian children demonstrating 6 to 7% higher absorbance than Aboriginal children. Nevertheless, the effect size was small and standard deviations were larger at these frequencies. **Conclusions:** Normative WBA and WBT data have been generated for Caucasian and Aboriginal children between the ages of 7 and 8 years. In view of similarity across most measures and small effect size and large variations in high frequencies with WBA and WBT, it was concluded that ethnic specific norms were not necessary to evaluate middle ear status in these two groups of children.

Stroke recovery in rural and remote Australia: A review of the stroke survivors' perspective

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Background: Stroke is a leading cause of disability with more than 400,000 Australians living with its effects. Research into improving stroke recovery is often conducted in metropolitan areas and may not address challenges faced by rural and remote stroke survivors, despite one-third of survivors living outside metropolitan areas with less access to health services. This review aimed to explore stroke survivors' perspectives on the impact of rurality on recovery and functioning in rural and remote Australia. The findings will be used to improve the recovery journey for rural and remote stroke survivors. **Method:** A systematic, mixed studies review was used to synthesise information gathered from a limited body of research varying in methodological design and quality (Prospero ID CRD42017064990). Studies were identified by searching electronic databases and screened using inclusion and exclusion criteria. Methodological quality was assessed by two reviewers against the Mixed Methods Appraisal Tool. Findings were analysed thematically in NVivo and synthesised accordingly. **Results:** Eight studies exploring stroke survivors' perceptions and/or interventions targeting stroke survivors in rural and remote Australia were included (qualitative n = 4, quantitative n = 2 and mixed methods n = 2). Studies ranged from low to high methodological quality with none excluded from the convergent, qualitative synthesis. Themes focused on impact of rurality (e.g. geographic barriers), impact on functioning (e.g. returning to work) and application of technology (e.g. using iPads to overcome barriers) in post-stroke recovery. The review demonstrated a lack of evidence exploring stroke recovery in rural and remote Australia with limited application of technology in this context. **Conclusions:** More research is needed investigating stroke recovery in rural and remote areas, particularly from the stroke survivors' perspective given that each journey is unique. Understanding the barriers and enablers to recovery in rural and remote areas could improve the recovery journey for stroke survivors.

Outcomes and impact of an ICU admission for severe maternal complications during pregnancy or birth: A case study.

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Background: Pregnancy and childbirth is a sacred time in a woman's life, experienced as a physiological event for most women. Alterations to a woman's physiology during pregnancy means that an admission to an intensive care unit (ICU) during pregnancy or birth is likely to represent an episode of severe maternal morbidity. The aim of this study is to explore the health and wellbeing of women who experience an ICU admission for severe maternal complications during pregnancy or birth. **Method:** Multiple methods are employed to collect qualitative and quantitative data from pregnant and postnatal women who had received care in the ICU of an Australian regional tertiary hospital. Quantitative data was analysed using SPSS V22. Qualitative data underwent thematic analysis. Case study methodology is applied to describe the outcomes and impact of an ICU admission during pregnancy or birth. **Results:** Outcomes include that at six weeks after birth, women who received care in the ICU during pregnancy or birth are more limited in their physical ability to conduct daily activities and, are more anxious when compared to healthy women who had a normal vaginal birth. However, there was no difference between the two groups in postnatal depression, sleep quality or bonding with their baby. Three themes emerged to reflect the women's experience: 1) Responding to the situation: being anxious, managing anxiety, moving on 2) Being separated from the baby: physical isolation, emotional concerns 3) Being a supportive partner: being present, being a protector. **Conclusions:** Women who are admitted to the ICU during pregnancy and birth are affected by their experience when compared to healthy women. They are more anxious and experience pain that negatively impacts on their physical being throughout the first six weeks after the birth of their baby. But these women are not depressed and exhibit a strong desire to move past their experience to become successful mothers. While they are appreciative of the care they received from hospital staff around the time of their ICU admission, it is their partner who they see as their main support. However, the women in this study are concerned for the health and wellbeing of their partner as the partner is largely invisible to health care staff and is excluded from the decision making related to care.

Poster Abstracts

Topic	Author
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Occupational Therapists role to minimise seclusion and restrain in adult acute mental health settings: a literature review	Luciana Theodoro de Freitas
Relationships between tobacco smoking and alcohol consumption during chemoradiation for head and neck cancer with voice and swallowing outcomes during and post treatment	Amy Ahsley
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Palliative care in the neonatal unit: neonatal nursing staff perceptions of facilitators and barriers in a regional tertiary nursery

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Background: Neonatology has made significant advances in the last 30 years. Despite the advances in treatments, not all neonates survive and a palliative care model is required within the neonatal context. Previous research has focused on the barriers of palliative care provision. A holistic approach to enhancing palliative care provision should include identifying both facilitators and barriers. A strengths-based approach would allow barriers to be addressed while also enhancing facilitators. The current study qualitatively explored perceptions of neonatal nurses about facilitators and barriers to delivery of palliative care and also the impact of the regional location of the unit. **Method:** The study was conducted at the Townsville Hospital, which is the only regional tertiary neonatal unit in Australia. Semi-structured interviews were conducted with a purposive sample of eight neonatal nurses. Thematic analysis of the data was conducted within a phenomenological framework. **Results:** Six themes emerged regarding family support and staff factors that were perceived to support the provision of palliative care of a high quality. Staff factors included leadership, clinical knowledge, and morals, values, and beliefs. Family support factors included emotional support, communication, and practices within the unit. Five themes emerged from the data that were perceived to be barriers to providing quality palliative care. Staff perceived education, lack of privacy, isolation, staff characteristics and systemic (policy, and procedure) factors to impact upon palliative care provision. The regional location of the unit also presented unique facilitators and barriers to care. **Conclusions:** This study identified and explored facilitators and barriers in the delivery of quality palliative care for neonates in a regional tertiary setting. Themes identified suggested that a strengths-approach, which engages and amplifies facilitating factors while identified barriers are addressed or minimized, would be successful in supporting quality palliative care provision in the neonatal care setting. Study findings will be used to inform clinical education and practice.



The role of telemedicine in providing Family Centred Care for premature babies and their families from regional and remote Queensland.

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Background: Family Centred Care (FCC) is the delivery of health care based on partnerships between patients, families and all those involved in the care of the infant and family. FCC is valuable in helping families, whose infants require hospitalization, cope with the stress, fear, and altered parenting roles that may accompany their baby's condition and hospitalization. In the last 10 years, approximately 900 very low birth weight and premature babies (birth weight <1500g gestation < 37 weeks) were treated in the Townsville Hospital Neonatal Intensive Care Unit (NICU). About a third of these babies were from other regional and remote areas of North. Premature babies from such areas often have to stay for months until they are mature enough to go back home. Often families cannot stay during these months and are temporarily separated from their baby. As parent-infant attachment is enhanced through proximity, this separation may have implications upon the long term relationships within these families. This study aims to explore the impact of the use of telemedicine in the NICU upon parent-infant attachment. **Method:** Babies/families in the intervention group will be randomly allocated to a cot with, or without, a web camera installed by the cot side. Live streaming of the infant will be available and parents will have access to the stream via individual login and password protected details. Parents will be provided with a tablet that has a dedicated application installed for access to the video stream. The families will receive training on how to access the live streaming. Babies /families in the control group will receive standard care. All parents will be invited via email to complete measures of bonding and wellbeing at enrolment in the study [T1]. Parents in the treatment group will repeat these measures 1 week after enrolment [T2], 2 weeks after enrolment [T3], and 3 months post discharge from NICU [T4]. Parents in the standard care group (TAU) will be invited to repeat the measures at [T1] and [T4]. Parents who used the cameras will be invited to complete a questionnaire asking about their satisfaction with using the cameras. This questionnaire will be available via online survey software. Staff will be invited via email to complete the Staff Questionnaire regarding perceptions of webcam technology use in the NICU prior to camera installation [T1] and again 6 months after camera installation [T4]. **Results:** It is anticipated that the following data will be analysed - parents' scores on the wellbeing and bonding measures and perceptions of camera use in will be measured by open and close questions and compared across time points and groups (camera, no camera); staff perceptions of using the camera in the NICU will be quantitatively compared across two time points. Data will also be gathered to describe parents' usage of the cameras, including how many times they logged on, log on minutes, and total viewing time. **Conclusions:** The Townsville Hospital Neonatal Unit was redeveloped and expanded during 2011-2012 to accommodate almost double its previous capacity. As the only tertiary hospital outside of Brisbane, some families accessing services are required to travel large distances. Further, patient/family travel is economically and socially costly. More importantly, these families are often socially isolated from their support networks when required to remain with their infants for long periods of time. These economic and social costs may be reduced via the introduction of web-based technology that provides up-to-date feedback to families who cannot be with their infants. Establishing early secure relationships between parents and their infant provides a solid foundation for positive health and wellbeing for the infant into adulthood.

A patient journey: Application of optimal care pathways for head and neck cancer

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Background: The pathway for cancer patients is complex and providing care to those from rural and remote areas more so. Head and neck cancer requires treatment at tertiary cancer centers and patients from regional, rural and remote areas may need to travel to undergo treatment. Head and neck cancers account for only a small percentage of all cancers (3.4%)¹ however, their cancer journey can be complex and treatment can result in long term survivorship issues. Tumor and treatment related symptoms may range from physical issues and psychosocial issues. With survival rates for head and neck cancer patients improving^{1, 2} early detection and management of these late side effects of cancer treatment is imperative. Optimal care pathways (OCPs) for head and neck cancer patients aim to guide the delivery of consistent, safe, high-quality and evidence based care across the cancer care journey to reduce acute and late effects of therapy and their impact on survivorship. This poster will explore the application of two head and neck optimal care pathways against one patient's head and neck cancer journey. **Methods:** A retrospective, single case review of a rural patient diagnosed and treated for head and neck cancer was conducted. Comparisons were made against the recommendations of the national optimal care pathway for head and neck cancer³ and the statewide allied health regional pathway for head and neck cancer patients⁴. Audit of paper based and electronic medical records (MOSAIC and iMR) was performed. Episodes of care were used to create a chronologically ordered list of events and are visually represented in a process map. **Results:** Results showed nine different medical specialists and seven different streams of allied health were involved in patient care. Allied health provided ninety outpatient occasions of service highlighting the significant role allied health have in managing residual side effects of treatment. Care provided at the local health centre was limited. Multidisciplinary team meetings occurred on a documented thirteen occasions. Explicit communication and involvement with the patient's General Practitioner



was documented on one occasion. Reviewing location and episodes of care data, it is estimated the patient travelled over 22,000 kms. Use of telehealth was documented on one occasion. **Conclusions:** Optimal care pathways acknowledge the requirement for patient travel to receive tertiary level care, however telehealth is recommended in OCPs to provide a supportive model of care in the local community. This patient's journey did not reflect this model of care. This single case review highlighted the complexity of coordinating rural and remote patient care. Current OCPs exist for head and neck patients and should be used to guide care. Mapping multiple patient journeys against recommended pathways may identify areas for further improvement to optimise patient care and enhance the patient journey.

Occupational Therapists role to minimise seclusion and restrain in adult acute mental health settings: a literature review

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Background: This literature review identifies the Occupational Therapist (OT) role in the reduction of seclusion and restraint in acute psychiatric settings. Seclusion and restraint are controversial but common practices used in inpatient mental health services to control aggression or self-harm. Restrictive practices can be traumatic and cause physical injuries to services users and staff members. However, there is limited evidence on how OT supports the multidisciplinary team to minimise seclusion and restraint. Therefore, this review summarises key elements to reduce harmful interventions and the role of OT in adult acute mental health settings. **Method:** Five databases (CINAHL, Cochrane, OT seeker, PsycINFO and Medline) were reviewed using the following key words and/or subject term: mental health or psychiat*, restraint or seclusion and occupational therap*. Studies including pharmaceutical interventions, disciplines other than OT or settings other than mental health were excluded. **Results:** Two studies out of twelve were OT specific and included in this review. Common themes for the reduction of seclusion and restraint were sensory approaches, sensory interventions, physical environment changes (including sensory rooms), multidisciplinary approach, formal risk assessment and professional education on sensory and trauma informed care. **Conclusions:** Alternative practices to reduce seclusion and restraint are increasing. However, further evidence is required to identify the best way to minimise seclusion and restraint in acute mental health settings. Sensory approaches, sensory rooms and environment modifications appear to be effective and safe for service users' self-regulation. OTs are well placed to assist in providing these alternative interventions whilst working in a multidisciplinary approach.

Relationships between tobacco smoking and alcohol consumption during chemoradiation for head and neck cancer with voice and swallowing outcomes during and post treatment

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Background: The aim of this pilot study is to compare toxicities that affect swallowing for patients who continue to both smoke and consume alcohol (group 1), smoke (group 2), consume alcohol (group 3) with controls that neither smoke nor consume alcohol (group 4) during chemoradiation treatment (CRT) for head and neck cancer, and up to six months post CRT. This will determine if a larger scale study is feasible. **Methods:** This project is a retrospective cohort study of 96 patients. Common Terminology Criteria for Adverse Events (CTCAE) scores documented weekly during patient's CRT and at each follow up appointment post CRT were analysed. **Results:** During CRT group 1 ($p=0.008$), group 2 ($p<0.001$) and group 3 ($p=0.018$) all had statistically higher CTCAE scores of toxicities than the group 4 controls. When individual symptoms were analysed mucositis ($p=0.016$) and thick secretions ($p=0.03$) were worst in group 2 during treatment and odynophagia was worst in group 1 ($p=0.001$) and remained so ($p=0.01$) at three months post CRT. Post CRT group 1 had higher ongoing CTCAE scores for odynophagia, oral pain and oedema. Whereas group 2 suffered higher incidences of mucositis, thick saliva, xerostomia and dysgeusia than the other groups post CRT. **Conclusion:** Overall patients who smoked and/or consumed alcohol had consistently higher CTCAE scores both during and post treatment than the control group. When symptoms were analysed individually patterns emerged which showed specific symptoms affecting certain groups more than others at different stages during and post CRT.

Genomic literacy of registered nurses and midwives in Australia: A cross-sectional survey

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Background: Registered nurses and midwives require a degree of genomic literacy if they are to adequately communicate with other healthcare professionals and provide optimal nursing and midwifery care to patients and their families. Several international studies have shown that the genomic literacy of registered nurses and midwives is poor or at best moderate, however the genomic literacy of Australian registered nurses and midwives has not been investigated. The aim of this study was to measure the genomic literacy of Australian registered nurses and midwives. The findings may be used to provide direction for the improved uptake of genomics in nursing and midwifery practice. **Method:** This was an online cross-sectional survey using the Genomic Nursing Concept Inventory (GNCI[®]), a 31-item instrument designed to measure understanding of the genetic and genomic concepts most critical to nursing practice. Registered nurses and midwives were recruited via the Australian Nursing and Midwifery Federation (ANMF) and Australian College of Nursing (ACN). A total of 253 valid responses were recorded. Data were analysed using descriptive and inferential statistics. **Results:** Most respondents worked as a clinician (71.4%) in a hospital and hospital based setting (61.8%). Many respondents (38.5%) reported that genomics was very relevant or extremely relevant to nursing and/or midwifery practice, however 41.7% reported that their knowledge of genomics was poor/limited. The GNCI[®] mean score was 13.3/31 $\pm$ 4.559 (42.9%) indicating that genomic literacy is low. There was a significant difference between genomic knowledge scores and education/training level ($p=0.036$). There was no significant difference between genomic knowledge scores and other demographic characteristics. **Conclusions:** The genomic literacy of registered nurses and midwives in Australia is low. This indicates that Australian registered nurses and midwives do not have a clear understanding of the genomic concepts most critical to nursing and midwifery practice. More must be done to improve the genomic literacy of Australian registered nurses and midwives to allow them to provide optimal nursing and midwifery care.

Tackling fish allergy in Australians - A molecular and immunological assessment of skin prick test preparations for in vivo diagnosis

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Background: Over 500 million people worldwide suffer from food allergy, with fish allergy affecting up to 2% of Australians for a life-time and being one of the most common causes of life-threatening anaphylaxis. Currently available diagnostic methods such as Skin Prick Testing (SPT) do not reflect the wide diversity of over 1,000 fish species consumed worldwide. While SPT preparations are commercially available for about 25 species, only 4 species are relevant for Australia. Furthermore, available appropriate species-specific preparations are understood as not well standardised regarding protein and allergen content, significantly impacting the diagnostic value (quality and reproducibility) of clinical evaluation of SPT results. We aimed to evaluate commercial SPT preparations on a molecular and immunological level by determining (a) the presence and concentration of fish allergens and other proteins and (b) the pattern of *in vitro* Immunoglobulin E (IgE) reactivity of patients with confirmed clinical allergy to fish. **Method:** Twenty five SPT preparations for 13 fish species from 5 different manufacturers were analysed in this study. The protein concentrations were estimated and differences in protein composition were analysed by SDS-PAGE. Mono- and poly-clonal antibodies specific to fish allergens (aldolase A, β -enolase, and parvalbumin), as well as serum of patients with confirmed fish allergy were used in immunological assays. IgE-reactive proteins and the general protein composition were further analysed by mass spectrometry after tryptic digestion. Special focus was given to the species cod, salmon, and tuna. **Results:** The total protein and fish allergen concentration varied more than 10-fold and great variations in electrophoretic profiles and protein composition were observed. Only about a quarter of the analysed SPTs contained a comprehensive panel of fish allergens in a reasonable concentration. Besides expected species-specific antibody recognition and allergenicity patterns, we found a great variance between SPT preparations for the same species from different manufacturers. **Conclusions:** Commercial SPT preparations showed great variations in protein and allergen content resulting in considerable differences in IgE antibody reactivity. This demonstrates that diagnostics for fish allergy are not only limited by the availability of SPT preparations for fish species consumed in Australia, but also by their quality. Hence the diagnostic value of SPT is very limited and the Oral Food Challenge remains the Gold Standard. Subsequently, there is an urgent need for region-specific, standardised allergen preparations leading to component resolved *in vivo* and *in vitro* diagnosis. We are currently identifying and characterising the allergens from over 60 fish species commonly consumed in Australia using serum from over 100 fish allergic children.

Wednesday, 6th September 2017 Program

Abstracts from Medical Service Group, Rural Hospital Service Group Et Al

Time	Topic	Speaker
11:00	Lunch Starts Serving in Robert Douglas Auditorium Foyer – All Welcome	
12:00	Keynote Speaker	Dr Rosalie Boyce
12:45	Nasal high flow therapy for infants with bronchiolitis – a multicentre randomized controlled trial: a paediatric acute respiratory intervention study (PARIS) from PREDICT and PCCRG.	Jeremy Furyk
1:00	Telehealth: New Horizon in Management of Diabetic Foot Ulcer in Rural/Remote Areas of North Queensland	Usman Malabu
1:05	Shockwave: Novel Technology for Treatment of Diabetic Foot Ulcer –TTH Experience	Usman Malabu
1:20	Endoscopic Ultrasound: A regional experience	Wai See Ma
1:25	Extended Duration Infusion Temperatures in the Tropics: 2 (EDITT2)	Stephen Perks
1:40	Graves' disease in North Queensland: the Townsville Hospital experience	Amy Hsieh
1:45	Green Fingers Gardening Group: evaluating a novel approach to interdisciplinary group therapy	Felicity Dick
2:00	The effect of interventions in decreasing the incidence of diabetic ketoacidosis at diagnosis of type 1 diabetes: a systematic review	Radhika Patwardhan
2:05	Allergenomic discovery pipeline for allergenic proteins complemented by large-scale genomic and proteomic resources	Roni Nugraha
2:20	Managing Medical Emergencies in Rural North Queensland: Training needs and the role of Tele-training	Tarsh Pandit
2:35	Microbial drug resistance reduced by targeting the biofilm with Aspirin	Peter Mulvey
2:50	AFTERNOON TEA AND POSTER VIEWING	
3:05	Use of Traditional Medicinal Plants by Individuals with Type 2 Diabetes Mellitus at the National Diabetes Centre, Suva, Fiji	Anveet Avitesh Nand
3:10	Perceptions of Visual Cigarette Stick Attributes: A Systematic Review	Aaron Drovandi
3:25	Evaluation of the uptake and usage of Telehealth Emergency Management Support Unit (TEMSU)	Marie Du Toit
3:40	A Cost Analysis of Non-urgent Paediatric Emergency Department Presentation	Faith Osaretin Alele
3:55	Efficacy of Smartphone Applications in High Risk Pigmented Lesions	Alexander Ngoo
4:10	Deshelling the Prawn Genome: Identifying Allergens using Bioinformatics and Molecular Approaches	Shayma Karnaneedi
4:25	Innovation Abstracts and Presentation	

Abstracts

Nasal high flow therapy for infants with bronchiolitis – a multicentre randomized controlled trial: a paediatric acute respiratory intervention study (PARIS) from PREDICT and PCCRG.

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Background: Bronchiolitis represents the most common cause for nonelective hospital admission in infants. Nasal High Flow (NHF) therapy has achieved high uptake of use in infants with bronchiolitis despite limited high-quality evidence. The efficacy and safety of NHF therapy in infants with bronchiolitis outside intensive care remains unknown. Objective: To demonstrate if the early use of NHF therapy reduces the need to escalate the level of care in infants with bronchiolitis. **Design/Methods:** Open-labelled randomized controlled trial using delayed consent, occurring in 17 emergency departments and general pediatric wards of tertiary pediatric and secondary hospitals in Australia and New Zealand, comparing NHF therapy (2L/kg/min) vs. standard oxygen therapy (SOT) via nasal cannula (0-2L/min) in infants <12 months admitted with bronchiolitis and hypoxia (SpO₂ <92%/94%, threshold dependent on hospital guideline). Primary outcome was treatment failure during hospital admission requiring escalation of respiratory support and/or intensive care admission. Escalation of therapy occurred if ≥3 out of 4 criteria were met: persistent tachycardia, tachypnea, hypoxemia, and/or hospital early warning tool activated. Secondary outcomes were length of oxygen therapy (LoO₂T) and serious adverse events. **Results:** 1,476 patients were randomized over 3 years (Figure 1). Baseline characteristics were similar between groups (Table 1). Mean (SD) age in SOT was 6.1 (3.4) months and in NHF therapy 5.8 (3.5) months. Escalation of care was required in 89/745 (12%) of infants on NHF therapy vs. 167/731 (23%) of infants on SOT (risk difference 10.9%, 95% CI 7.1-14.7, p<0.001) (Table 2). Median LoO₂T for NHF therapy was 1.24 (IQR 1.81) days, and SOT was 1.23 (IQR 1.82) (p=0.218). Other than one (0.1%) pneumothorax in each study arm there were no serious adverse events. **Conclusion(s):** In infants with bronchiolitis with an oxygen requirement NHF therapy had a significantly lower treatment failure rate than SOT with a number to treat is 9. NHF therapy appears safe in a large data set when delivered to infants with bronchiolitis in the emergency department and general paediatric ward.

Telehealth: New Horizon in Management of Diabetic Foot Ulcer in Rural/Remote Areas of North Queensland

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Background: Diabetic foot ulcer is a serious complication of diabetes that leads to >90% of lower limb amputations. Although a number of health disparities exist between rural and urban areas in Australia, management of diabetic foot ranks as one of the most significant health concerns. Compared to Australian major cities, rural/remote areas experience 10-fold higher rate of diabetic limb amputation due to poor access to healthcare. Despite high prevalence of diabetic foot complications in these areas, surprisingly no special programs aimed at reducing the burden of the disease. Objectives: the aim of the study was to assess effectiveness of telehealth in management of diabetic foot ulcers in rural/remotes areas of North Queensland. **Method:** Fifty diabetic ulcer subjects from rural areas were randomised to receive either face-to-face treatment (n=25) at TTH by podiatrist or via Telehealth (n=25) from rural hospitals by a trained local nurse. Subjects were reviewed fortnightly for 12 weeks. Wound healing was assessed clinically and by using 3-D camera images compared with serum inflammatory markers. **Results:** details of our findings will be discussed at the conference. **Conclusions:** lessons learned from our study will be presented.



Shockwave: Novel Technology for Treatment of Diabetic Foot Ulcer –TTH Experience

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Background: Diabetic foot wound is the most common cause of prolonged hospitalisation with high cost of care, gloomy outcome leading to limb amputation and death. Sadly, management of diabetic foot ulcers is difficult and frustrating due to lack of universally satisfactory standard of care. Shockwave therapy by delivering high-energy pressure waves enriches the ulcer with adequate blood supply for wound healing. This new technology has not been trialled in Australia. **Objectives:** The aim of the study was to assess the effectiveness of shockwave therapy for diabetic foot ulcer at The Townsville Hospital (TTH). **Method:** Fifty patients with diabetic foot ulcer were randomised (1:1) to receive a series of fortnightly shockwave treatments over 6 weeks in combination with standard care or standard care alone and then crossed over for another 6 weeks with a total duration of 12 weeks. Wound healing was assessed clinically and by using 3-D camera images compared with serum inflammatory markers. **Results:** details of our findings will be discussed at the conference. **Conclusions:** lessons learned from our study will be presented.

Endoscopic Ultrasound: A Regional Experience

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Background: To review the experience of EUS of a single Australian tertiary hospital in regional North Queensland following its introduction. **Method:** Data for all EUS procedures performed between February 2010 and February 2014 were collected retrospectively. 255 procedures were conducted in total. Patient demographics, indications, findings, fine needle aspiration (FNA) results, procedure complications, follow up plans and final diagnoses were extracted from the data. **Results:** 138 (54%) of the subjects were female. Average age was 57.2 years (range 16-83 years). Indications for EUS included: 1. Deranged LFTs (n=16), 2. Dilated ducts on imaging (n=18), 3. Pancreatic investigations (n=110) and successful pseudocyst drainage (n=5), 4. Lymphadenopathy (n=18; 13 mediastinal and 5 abdominal), 5. Submucosal lesions (n=68), and 6. Further evaluation of abnormal imaging (n=20). EUS guided FNA were carried out in 84 (33%) of the 255 procedures. The majority (n=71; 84%) of samples taken with FNA were adequate for diagnosis. 6 (5.5%) cases were associated with complications, with pain being the most frequent finding (n=4). All of these were managed as outpatients and did not require readmission. Other complications include pancreatitis (n=1) and infected cyst (n=1). Of the pancreatic indications (n=115), five underwent successful pseudocyst drainage. Excluding the pseudocyst drainage, 54 had FNA; 29 were cystic lesions, in all of which fluid was obtained for tumour markers. Of the 25 which were carried out for solid lesions, cytology was adequate for diagnosis in 23 (92%). Of the remaining 56 that did not have FNA, reasons for not performing FNA included anatomy or poor visualisation (n=9), cystic lesions with benign appearance or <1cm where FNA would not be indicated (n=21), no lesions seen on EUS (n=21), direct referral for surgical intervention (n=3), multiple co-morbidities (n=1), and reasons not stated (n=1). In the lymphadenopathy group (n=18), 14 (78%) were well visualised on EUS. All of these underwent FNA; 11 (78%) were deemed adequate for diagnosis. Of the remainder, no lymph nodes were visualised (n=2), suboptimal views (n=1), and procedure abandoned due to an oesophageal stricture preventing passage of endoscope (n=1). Of those with submucosal lesions (n=68), FNA was attempted in 16, the remainder were too small for FNA, obviously benign (ie lipoma) or performed to monitor size. FNA was successfully carried out in 15; a definite diagnosis was reached in 8 (53%). Of those who required follow up (n=60), the majority of patients were followed up locally (n=55). 18 required surgery, 5 repeat EUS, 5 ERCP, 11 chemoradiotherapy and 16 for active surveillance. Four patients were followed up in Brisbane; 3 required Whipple's procedure, 1 underwent resection of metastatic renal cell carcinoma. One patient opted to be managed in Cairns due to geographical constraints. **Conclusion:** Introduction of EUS in a regional centre is a safe and invaluable tool in the evaluation of pancreaticobiliary disease, lymphadenopathy and submucosal lesions. EUS has the advantage of avoiding the need for other invasive diagnostic tests, with the added therapeutic benefit of pseudocyst drainage.

Extended Duration Infusion Temperatures in the Tropics: 2 (EDITT2)

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Background: Stability data tested at 25°C may not be suitable for use in the tropics in the Home-IV setting. A 24h Solution temperature profile is needed to appropriately investigate medication stability in this setting. **Method:** Volunteer patients from Home-IV clinics at 2 tropical cities were recruited to wear the LV10 elastomeric device for 24 hour periods over the summer months. Temperature devices



were inserted logging actual solution temperature. **Results:** Temperatures were above 25°C 79.8% of the time. Mean time to inflection (temperature stops rising and begins to fluctuate) was 9.4h (95%CI:8.6-10.2); with a maximum inflection point of 14.5h. The mean temp at and post-inflection was 30.6°C, (CI:29.8-31.5) and 29.5°C (CI:29.3-29.6) respectively; 90th percentile after inflection was 32.5°C. ANOVA revealed a 3.1°C difference between non air-conditioned and air-conditioned data to be statistically significant, $F(1,28)=13.06$, $p=0.001$. The 90th percentile temperature post-inflection for non-air-conditioning was 33.1°C. **Conclusions:** Using a 'room temperature' of 25°C for stability studies does not apply to tropical regions. Authors postulate the cause of the higher temperatures are based on the contributing factors; body temperature, and the ambient room temperature in a warmer climate. Authors recommend the following testing conditions in three parts: a) Refrigerated for 7 days, b) Steady increase from refrigerated to 34°C over 9 hours, c) Maintain 34°C for remaining 15 hours. Authors also concluded that Home IV patients should be encouraged to remain in air-conditioning or at least in doors over the summer month to decrease the risk of antibiotic degradation.

Graves' disease in North Queensland: the Townsville Hospital experience

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Background: Graves' disease (GD) is a common autoimmune thyroid disease. The prevalence and clinical profile of the disease vary in different regions of world influenced by a host of environmental and inherent factors such as level of Iodine intake and ethnicity. Despite this, current clinical practice and existing medical literature of GD is largely extrapolated from North American and European populations, which is vastly different from the local population at the Townsville hospital. As far as we are aware, there is no dedicated characterizing study on GD in the unique population of Townsville and regional Queensland that is serviced by the Townsville health district. To address this gap in clinical knowledge, we will conduct retrospective audit of all patients with the diagnosis of GD who accessed the Endocrine service over a 10-year period [1st December 2006 to 1st December 2016] at The Townsville Hospital (TTH). **Objective:** This study aims to determine if clinical and treatment profile of GD in the local Townsville and wider North Queensland population is different from what is reported in the existing literature. Study outcome may further identify prognostic markers unique to the local population and contribute to improvement in standard of care of GD at TTH. **Method:** Cases of GD will be identified by search through health records, laboratory and radiological database and pharmacy dispensary record at TTH. Chart reviews will be performed to extract data on clinical characteristics, investigation results, and treatment outcomes of GD. Data will be de-identified and aggregated for statistical analysis, with assistance from statistician and specific program (SPSS 22). Correlation and relationship between various factors and outcome measures will be assessed with appropriate statistical tests (chi-square and unpaired t-test, depending on the nature of variables). **Results:** An estimated 600 cases of GD will be retrieved over a 10-year period at TTH. Patient characteristics, clinical/biochemical/radiological profile, disease or treatment related complications, and treatment outcomes of GD managed over the pre-defined period will be collected and analysed. Results will be presented and discussed at the Townsville Health research week. **Conclusions:** Impact of the study outcome will be presented at the conference.

Green Fingers Gardening Group: evaluating a novel approach to interdisciplinary group therapy

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Background: Horticultural Therapy (HT) encompasses the utilisation of fruits, vegetables and plants¹, and can be used to target cognitive, physical, social and emotional health outcomes in rehabilitation, mental health, elderly and dementia patient populations². Gardening with edible plants has also been shown to raise awareness of nutrition, and improve access to nutritious foods in populations at risk of food insecurity³ and malnutrition⁴ including the elderly. Green Fingers Gardening Group at the Townsville Hospital Sub-Acute Unit (SACU) was established in January 2016 as an interdisciplinary therapy between Occupational Therapy and Dietetics, to enable patients to practice functional tasks in an enjoyable social setting, whilst improving experience, access and confidence in growing and cooking healthy food at home. Evaluation of Green Fingers Gardening Group was undertaken to determine therapeutic relevance of HT on quality of life (QOL) and nutrition behaviour outcomes in patients in an Australian multidisciplinary sub-acute facility, to inform and develop future practice. **Method:** SACU Green Fingers Gardening Group evaluation is a quantitative study using observational data from therapist observation, activity diaries and questionnaires with gardening group participants. Questionnaires were conducted pre and post participation in two gardening groups by the SACU Nutrition Assistant, and included a non-validated nutrition behaviour researcher generated tool and the validated EQ5D QOL tool. SACU participants comprised of both rehabilitation and geriatric populations with a median age greater than 65 years old. Descriptive statistics were utilised to determine perceived effect from participation in gardening. **Results:** Twenty-one groups were held with 41 patients attending gardening between January and November in 2016. A total of eight patients attended the group on two occasions and were therefore eligible to complete pre and post evaluation surveys. A further 8 patients attended the group for one session only, and were therefore ineligible to complete post evaluation surveys. Twenty five patients were lost to follow up due to logistical challenges in survey collection, last minute group changes, and caseload demands of the Nutrition Assistant. Group size ranged from 1 - 4 participants, and included both males and females. Activities completed included watering, weeding, pruning, picking,



identifying produce, garden maintenance, discussion related to recipe use, and composting. Results from the researcher generated questionnaires revealed gardening group positively influenced participants in their beliefs towards healthy foods and intended intake. Seventy five percent of participants either agreed or strongly agreed that gardening was an activity that provided them with joy and fulfillment, and improved their confidence in participating in concurrent therapy activities. All participants agreed or strongly agreed that gardening had improved their stay at SACU. The EQ5D questionnaire reported improvements in QOL domains including self care, usual activities, pain and discomfort, anxiety and depression and overall health; including a 13% reported improvement in ability to participate in usual activities, a 12.5% improvement in self care ability, a 12.5% reduction in reported anxiety and depression ratings and a 25% improvement in perceived pain and discomfort. Deterioration in perceived mobility however was reported by 25% of participants. A significant improvement on participant reported overall health rating pre and post gardening participation was observed (mean pre-gardening: 56.87; mean post-gardening: 68.37; $p < 0.05$). **Conclusions:** Literature supports the use of HT as a method by which to improve QOL, with evaluation results supporting this concept in the SACU patient population. Limitations to this study include small sample size, poor participant re-attendance rates, lack of control group and concurrent confounding therapies. The lack of re-attendance may be due to factors such as age of participants, fatigue, heat, timing of group, preference for other activities (anecdotally physiotherapy) and lack of interest. Through limiting gardening group activities to the cooler months, incorporating physiotherapy activities, surveying participants unwilling to attend a second group on their experiences, and providing flexible opportunities for individual patient gardening therapy, attendance may improve. Evaluation surveys are also unable to differentiate between QOL effects of confounding therapies; therefore it is difficult to attribute benefits or detriments derived in QOL directly to gardening group intervention without a control group. Despite limited numbers surveyed, gardening at SACU appears to be a worthwhile activity which may improve the rehabilitation experience of patients at the unit. Gardening provides participants with additional 'self-help' opportunities to practice activities of daily living and learn about practical applications for improving health through diet. Gardening does not cause harm to participants, and is enjoyed by those who choose to take part. As such, gardening should continue to be included as part of regular therapy in either a group or individual format to improve patient outcomes. Further research involving a control group in the SACU patient setting would continue to build on current literature.

The effect of interventions in decreasing the incidence of diabetic ketoacidosis at diagnosis of type 1 diabetes: a systematic review

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Background: The incidence of type 1 diabetes is increasing worldwide at a rate of 3-5% per annum. Diabetic ketoacidosis (DKA) is a life threatening preventable complication of type 1 diabetes, which is associated with significant morbidity and mortality. This systematic review aims to analyse the effectiveness of interventions in decreasing the frequency of DKA at type 1 diabetes onset in children less than 18 years of age. **Method:** The literature search explored MEDLINE, CINAHL and INFORMIT databases. Studies fulfilling the following criteria were included in the systematic review: 1) the study examined the incidence of DKA at first presentation of the diagnosis of type 1 diabetes; 2) the study population was < 18 years of age; 3) the study displayed evidence of an interventional strategy that acts to increase awareness of type 1 diabetes symptoms and therefore decrease DKA incidence at diagnosis of type 1 diabetes. Reference lists of full text articles were searched to identify additional studies. **Results:** Eight out of 693 articles met the inclusion and exclusion criteria. Five of the eight prospective studies utilised educational campaigns consisting of poster distribution to child care centres, primary and secondary schools and general practitioner (GP) clinics. Three prospective studies utilised a combination of screening and follow up of at risk individuals. Six of these studies achieved a decrease in the incidence of DKA, at diagnosis of type 1 diabetes. **Conclusions:** Education campaigns and screening protocols have been shown to be effective in decreasing the incidence of DKA at diagnosis of type 1 diabetes. Education campaigns appear to be cost effective, whilst screening protocols appear to be resource exhaustive.

Allergenomic discovery pipeline for allergenic proteins complemented by large-scale genomic and proteomic resources

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Background: Despite recent technological advances, novel allergen discovery is limited by the low abundance of particular allergenic



proteins, the large diversity of allergen sources, and the high variability in patient IgE antibody reactivity due to study specific populations. **Method:** Here we describe a comprehensive discovery pipeline for allergenic proteins that accounts for biological and molecular variability using allergenomics, high-throughput screening of genomic databases and high-resolution mass spectrometry. **Results:** When we applied this approach to the oyster proteome, we detected 24 hidden allergens from over 25,000 proteins, validated by patient antibodies. **Conclusions:** This rapid discovery of allergenic proteins will have significant impact on the current management of patients and the development of new strategies for immunotherapeutics.

Managing Medical Emergencies in Rural North Queensland: Training needs and the role of Tele-training

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Background: Over the past few years significant changes have been made into the training of rural doctors who manage emergencies. However studies into this area are over a decade old. With the developments in the rural generalist program, as well as the changes in rural clinical practice, alongside the availabilities of new technologies, the current training needs of rural doctors needs to be evaluated to improve care to rural patients, improve rural clinician autonomy as well as improve rural medical services. Furthermore, with the developments of videoconference technologies and increasing clinician familiarity with these modalities the feasibility of using tele-training as a potential avenue to meet training needs should be assessed. **Method:** Employing a descriptive qualitative approach data were collected from 20 semi structured interviews with a mixture of: Emergency Medicine specialists, senior rural generalists, rural general practice registrars, and junior rural doctors, working in North Queensland. Interviews were transcribed and uploaded to NVivo data management software. Data were coded line by line then categorised into themes. **Results:** Rural doctors generally feel confident managing emergency situations provided there is adequate supervision available. Training needs mentioned by doctors included region specific emergencies, understanding logistics of the rural town, and leadership roles. Rural doctors wanted more access to in-house simulations, to meet training needs. Most participants had some sort of experience with Tele-training and believed it to be a feasible mode of education delivery. Relieving professional isolation was mentioned as a key benefit of Tele-training by doctors practicing in more remote locations. Some negative aspects of Tele-training included relevance of presentations to current practice, lack of interactive sessions and finding time to attend sessions. Overall the opinion was tele-training has the potential to be a great training resource for rural doctors if utilised correctly by presenters and if technical issues were resolved. **Conclusions:** Rural doctors have some unmet training needs with regards to managing emergencies. Tele-training is already being utilised by many rural sites, but further research is required to improve its potential to be used alongside other training modalities to meet ongoing emergency training needs.

Microbial drug resistance reduced by targeting the biofilm with Aspirin

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Background: Biofilms are a thin layer of mucilage that are involved in up to 80% of all microbial infections in the body. Biofilms develop on medical devices and are critical for chronic infections because they increase bacterial tolerance to antibiotics and antimicrobial chemicals. These drug resistant infections cost US\$20 billion in direct costs and another US\$35 billion in lost productivity. Thus, a targeted approach must be made to degrade biofilm in the body to allow antibiotics to target the underlying bacteria. **Method:** To target the biofilm, our study used aspirin, a FDA-approved cheap, safe and effective analgesic. Aspirin reduced biofilm formed by bacterial pathogens isolated from clinical samples. The isolates, *Klebsiella pneumonia* and *Proteus Mirabilis*, were each exposed to 1.25mg of Aspirin for 24 hours. Aspirin significantly ($p < 0.05$) reduced the biofilm formed by both bacterial isolates, which enhanced microbial sensitivity to the antibiotic gentamycin by 1-log. Whether Aspirin can degrade the biofilm formed by other clinical isolates is currently being investigated. **Results:** Our results suggest by degrading the biofilm with Aspirin, the underlying pathogen becomes exposed to antimicrobial treatments that were unable to penetrate the biofilm. **Conclusions:** With more annual deaths predicted by 2050 from antibiotic-resistant infections than cancer, we urgently need an effective alternative to combat the crisis. By retooling the clinically approved drug Aspirin to target the biofilm, we could enhance bacterial susceptibility to antibiotic treatment thereby reducing antibiotic resistance.

Use of Traditional Medicinal plants by Individuals with Type 2 Diabetes Mellitus at the National Diabetes Centre, Suva, Fiji

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Background: T2DM is the leading cause of mortality in Fiji. This increase may pose challenges in the management of the disease. Modern medicines are recommended for the management of elevated blood glucose however, evidence shows that traditional medicinal plants are also used to manage T2DM in many parts of the world. Such information is lacking in Fiji. This study investigated the use of TMPs by individuals with T2DM towards the use of TMPs. **Method:** This was a descriptive cross sectional study conducted at the National Diabetes Center, Suva, Fiji from July 26th to August 19th 2016. Individuals with Type 2 Diabetes aged 18 years and above were interviewed using a structured questionnaire. Categorical variables were summarized as frequencies and percentages and Chi-Square analysis was used to test relationships between variables. **Results:** A total of 140 individuals with T2DM were interviewed. Over half, 53.6% (n=75) were female with a mean age of 54.3 (± 11) years. About 28% (n=39) of the participants used TMPs. Of this, 92% (n=36) took TMPs concurrently with modern medicines. Common TMPs used included; Momordica charantia and Mikania micrantha HBK. Asteraceae, Citrus aurantiifolia, Zingiber zerumbet (L.) Sm. Zingiberaceae and Annona muricata. Some factors contributing to use of TMPs included; female gender (χ^2 -test, $p=0.001$), Age 51–60 (χ^2 -test, $p=0.04$), having family history (χ^2 -test, $p=0.03$), believe TMPs are effective (χ^2 -test, $p=0.001$), believe TMPs are not harmful (χ^2 -test, $p=0.05$), believe that using TMPs simultaneously with modern medicines is not harmful (χ^2 -test, $p=0.02$) and believe that TMPs can treat T2DM. **Conclusions:** It can be concluded that most individuals with T2DM who visit NDC use TMPs for the management of their condition. More research is needed to further investigate the plants used.

Perceptions of Visual Cigarette Stick Attributes: A Systematic Review

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Background: The implementation of plain packaging and graphic images on tobacco products have shown significant efficacy in reducing smoking prevalence within Australia. However, further interventions are needed to address tobacco use and smoking-attributable morbidity and mortality. The inclusion of distasteful colourations or health warnings on to cigarette sticks is a potential new anti-tobacco intervention, though little research has been done in this area. This review intends to identify effective cigarette stick modifications which may lead to public health benefits. **Method:** A systematic review was performed, with PubMed, CINAHL, PsycINFO, Google Scholar, and Web of Science searched to identify eligible articles. Database searches were conducted up to May 2017, using several keyword combinations of iterations of; tobacco, stick, label, packaging, and warning. Articles were included if they evaluated the perceptions of participants of any smoking status towards visual cigarette attributes. Quitting intentions, cigarette appeal, perceptions of taste, perceptions of cigarette harm, and the likelihood of smoking uptake were recorded. **Results:** Of the 950 identified non-duplicating records, nine were found to match the eligibility criteria. Data were grouped into categories; those of cigarette physical design changes, and those involving the implementation of health messages on cigarette sticks. Slim, lighter coloured, and branded cigarettes were favoured over larger or darker coloured cigarettes, and those without any branding or simple imagery. Written health warnings, including 'minutes of life lost', 'Smoking Kills', and the names of carcinogenic constituents in cigarettes were seen as not as attractive as control cigarettes, and increased quitting intentions amongst participants. **Conclusions:** Dissuasive cigarette stick visual attributes, such as larger dimensions, dark colouration, and the inclusion of health warnings may serve as an effective tobacco control method, potentially leading to a reduction in tobacco use. Further research gathering the perceptions of larger participant populations is needed, to identify effective modifications to cigarette attributes to reduce smoking prevalence. Legal considerations for the governmental implementation of these interventions are also needed.

Evaluation of the uptake and usage of Telehealth Emergency Management Support Unit (TEMSU)

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Background: Telehealth Emergency Management Support Unit (TEMSU) was established in December 2013 with the aim of complementing services provided by Retrieval Services Queensland (RSQ). It was hoped TEMSU would reduce unnecessary retrievals by providing clinical support through telehealth to assist rural and remote emergency departments in Queensland with the management of non-critical emergency presentations. **Method:** Data relating to TEMSU were collated and coded within an Excel datasheet and subsequently imported into SPSS for analysis. Descriptive statistics were used to determine uptake and usage of TEMSU services. Significant levels were set at $p<0.05$ and tested using Bonferroni probability. **Results:** Within a 3-year period, 823 entries were added to the TEMSU database. Six-hundred-and-ninety unique patient encounters remained following removal of entries referred to RSQ. Uptake increased over time and calls occurred more frequently during non-business hours (61.6%) compared to business hours (Monday-Friday, 08:00-17:00, 38.4%), with a slight predominance of male patients (male 53.5% vs female 46.5%). The majority of calls related to the general population aged between 18 and 64 (47.2%), but 37.3% related to paediatric patients aged below 17 and 15.6% to patients over 65. TEMSU uptake generally increased with increasing distance of the hospital from the nearest regional, or tertiary hospital and Mackay Hospital and Health Service had the largest uptake (26.2%). Calls were most frequently made by nurses 78.7% for emergency medical



support (74.9%). In most cases patients were locally admitted or observed (28.8%). Patients were discharged in 22.2% and transferred in 16.5% of encounters. Conclusions: TEMSU is a valuable telehealth program to provide support in managing non-critical emergency presentations in rural Queensland. The majority of teleconsultations facilitated patient management within their respective communities, avoiding unnecessary patient transfer and improving local health service provision.

A Cost Analysis of Non-urgent Paediatric Emergency Department Presentation

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Background: The increasing use of the Emergency Department (ED) for non-urgent presentations has been associated with escalating cost of care and overcrowding of the EDs. The aim of this study is to estimate proportion and cost of non-urgent ED presentations in children aged 0-5 years presenting to the ED by socioeconomic status. **Method:** This is a retrospective analysis of Emergency Department Information System data (descriptive and analytical cross-sectional study) of children ≤ 5 years between 2010 and 2013. The study setting is one of Australia's regional public hospitals in North Queensland, Australia. The primary outcome was the rate of non-urgent Emergency Department utilization per child. A multivariate logistic regression model was constructed to assess the odds ratio of presenting for a non-urgent illness for children of high SES compared to children of low SES adjusting for child's age, sex and access time. **Results:** A total of 23,340 children were included in the study of whom 56.7% were male. The mean age of the participants was 1.4 ± 0.5 years. The proportion of non-urgent visit in the study was 32.4%. Multivariate logistic models showed that older children (OR 1.65; 95% CI 1.54-1.78 and OR 1.17; 95% CI 1.10 - 1.25) and high SES were associated with non-urgent ED presentations (OR 1.92; 95% CI, 1.73-2.13). Non-urgent ED presentations cost the health care system an excess of A\$ 890,000 to A\$1,115,000 per year. **Conclusions:** The findings of the study demonstrates a high proportion and high cost of non-urgent ED visit. Age and high SES were associated with non-urgent ED presentations.

Efficacy of Smartphone Applications in High Risk Pigmented Lesions

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Background: Melanoma apps are smartphone applications that assess risk of pigmented lesions using a smartphone camera and underlying algorithm. Previous studies have demonstrated that they were of limited efficacy however were limited in that they were not contemporaneous and often not trialled on patients themselves. We aimed to assess the capability of melanoma smartphone applications (apps) in making clinical decisions about risk, compared with lesion assessment by specialist trained dermatologists. **Method:** A prospective study of 3 melanoma apps was conducted between 2015 and 2016, recruiting 30 patients with 57 pigmented lesions. Risk categories assigned by the apps were compared with the clinical decisions of two consultant dermatologists classifying lesions as 'suspicious' or 'benign'. Sensitivity and specificity were calculated using McNemar's test for two by two tables. Level of agreement between a clinician assessment and the apps tested was determined using Kappa Statistics. **Results:** 30 patients with 57 pigmented lesions were recruited; Participants ranged from 28-86 years, 43% were male, 1 patient was filipino while all others were Caucasian. Of the 42 lesions deemed clinically suspicious to a dermatologist, from 9 to 26 were classified as suspicious by the apps; of the 15 clinically benign lesions 3 to 15 were correctly classified as benign by the apps. The apps' sensitivity and specificity ranged from 21 to 72% and 27 to 100.0%, respectively, when compared with the specialists' decisions. Two apps were unable to analyse 14 and 18% of lesions submitted, respectively. Interrater agreement between dermatologists and apps was poor ($k = 0.01$ SE = 0.16; $P = 0.97$) to slight ($k = 0.16$ SE = 0.09; $P = 0.12$). **Conclusions:** There is not high enough agreement between melanoma apps and the study dermatologists' decisions to be considered a substitute for clinicians' review at this stage. Importantly, the apps do not appear to provide benefit to users in addition to that of unaided Skin Self Examination. Clearly, users should be aware of the risks of these applications as it appears they are not yet accurate enough to serve as a diagnostic aid for patients hoping to monitor and screen themselves for melanoma.

Deshelling the Prawn Genome: Identifying Allergens using Bioinformatics and Molecular Approaches

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Background: Shellfish allergy affects up to 2% of the world's population with a much higher prevalence observed in areas with high seafood consumption. Allergy to shellfish species can cause some of the most severe allergic reactions including anaphylaxis and therefore presents a serious health risk to the individuals affected. This project aims to identify and characterise the different proteins which can cause allergic reactions in five of the most commonly consumed prawn species in Australia. **Method:** The genes of five commonly consumed prawn species were screened for allergens by assembling their transcriptome de novo using the Trinity Assembly system. These transcriptomes were analysed to identify the well-defined major allergens in prawn species, as well as other allergens which are known to exist in other allergy-inducing species but have not yet been identified in prawns. The analysis based on amino acid sequence was performed using data of known allergenic proteins using several allergen databases. In order to characterise the allergens at a molecular level, raw and heated proteins extracts from the five prawn species were analysed by gel-electrophoresis and immunoblotting. Cross-reactivity between different prawn species were determined by measuring the binding levels of monoclonal antibodies, generated against *Litopenaeus vannamei* prawn's heat stable allergens. **Results:** The transcriptome analyses revealed amino acid sequences of potentially allergenic proteins previously not identified in all analysed prawn species. Cross-reactivity studies revealed binding of the monoclonal antibodies to allergens in not just the *L. vannamei* prawn, but also the other four prawn species. **Conclusions:** The identification of yet, unidentified potential allergens in five different prawn species will path the way for further molecular characterisation studies and evaluation of their clinical allergenicity. Molecular and clinical knowledge of these prawn allergens provides a basis for the diagnostic and therapeutic translation and helps construct preventative strategies to avoid fatal reactions in patients who are sensitised to prawn allergens.

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Stepping back to move forwards: Increasing staff's confidence with literature searches through an educational intervention

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Background: The nurse researcher and librarians needed a strategy for staff to acquire literature searching skills, in place of conducting entire literature searches on the staffs' behalf. **Method:** The nurse researcher and librarians designed a succinct, purposeful, joint demonstration of the essential steps to conducting literature searches with CINAHL. A short 5-item multiple choice test was developed to be administered pre/post the education sessions. **Results:** Seven sessions were held during February 2017, with 23 attendees (18 nurses



and 5 allied health staff). Average test scores increased from 2.8/5 to 3.9/5; the range of correct scores correspondingly decreased after the education. The largest individual increase in correct scores was 3. The question with most gains was about combining searches; this relates to an essential component of effective searching. **Conclusions:** Improved test scores and positive verbal feedback indicated that the session was pitched at the appropriate level and attendees were more confident to attempt their own literature searches. A handout was provided to attendees at the end of the session as an aide-memoire when they conduct their own searches via CINAHL. Within the following 2 months, 3 staff attended the Effective Literature Searching, 3 attended EndNote and 2 enrolled in the Novice Researcher course. Attendees have been better prepared when discussing research plans with research support personnel, and the librarians' time and expertise is better spent on assisting with difficult searches for clinical or research questions.

Improving Medication Scanning Compliance in the Townsville Hospital & Health Service (THHS).

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Background: Barcode scanning of dispensed medications has been shown to reduce and prevent errors associated with incorrect product selection or incorrectly labelling final products. Standard 4.10.2 of the National Safety and Quality Health Service Standards requires that "action is taken to reduce the risks associated with storage and distribution of medicines". A key strategy to achieve this includes the use of barcode scanners for scanning dispensed medications in Pharmacy departments. Barcode scanning is a technology that is considered to be a significant patient safety initiative in reducing dispensing errors. Scanning compliance within the THHS district was sitting below the THHS nominated minimum benchmark of 90% compliance. The aim of this project was to investigate barriers to achieving this target and develop strategies to overcome any found barriers. **Method:** A review of the current medication scanning procedure was undertaken in January 2017 as well as a review of the availability of scanners and any previously known barriers to facilitating medication barcode scanning within the THHS. Targeted education and engagement sessions were held during Medication Safety Month (February 2017) with weekly progress emails sent to all Pharmacy staff members to encourage staff to complete medication barcode scanning. Tips and hints were also sent in the emails to overcome some of the identified obstacles and barriers to achieving the target of >90% compliance. Additional scanners were also purchased to increase timely accessibility to a scanner (NB scanners did not arrive until March 2). **Results:** The interventions saw scanning compliance improve at all sites within THHS. **Conclusions:** The target of >90% compliance was still not achieved at some sites, but ALL sites made improvements in scanning compliance as a result of the targeted education and engagement. Further investigation into reasons behind individual medication scanning non-compliance is now required. The interventions were shown to be effective in the short term, further investigation into long-term strategies and education/training are still required.

Pregabalin and Gabapentin prospective clinical trial for the treatment of sciatica: a randomised, double-blind and cross-over study protocol.

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Background: There is currently an absence of high grade evidence regarding the treatment of chronic sciatica (CS). Whilst gabapentin (GBP) and pregabalin (PGB) are both currently used to treat CS, equipoise exists regarding their individual use. In particular, no head-to-head study of GBP and PGB in CS exists. Despite equipoise, most countries' formulary regulation authorities typically favour one drug for subsidy over the other: this hinders interchange wherever the favoured drug is either ineffective or not tolerated. This novel study will assess GBP and PGB head-to-head in degenerative CS. **Method:** Prospective, randomised, double-blind, double-dummy cross-over study. Included patients will be over 18 years, and suffer unilateral CS with radiological confirmation of corresponding neural compression/irritation. Pregnant women, those with major organ disease, creatinine clearance <60ml/min or other neuropathy will be excluded. Patients will continue their current pain medication at study onset conditional upon dosage consistency during the prior 30 days. No drug changes or other pain interventions will be permitted throughout the period of study. Each drug will be titrated up to target dose (GBP: 400-800mg tds, PGB: 150-300mg bd) and taken for 8 weeks. The first drug will then be ceased: however, cross-over will be deferred pending a 1-week washout period. Drug efficacy will be assessed by the visual analogue scale, Oswestry Disability Index and Health Locus of Control Scale scores. Side effects and psychological functioning will also be assessed. Assuming the hypothesis that PGB will display a superior effect, the sample size required is n=38 with 80% power and 5% type 1 error rate. Results will be analysed via intention-to-treat methodology. **Discussion:** This study will establish the efficacy of PGB compared with GBP in reducing pain for people with sciatica and lead to greater understanding of the treatment options available.



High Rate of Diabetes Lower Limb Amputation in Indigenous Australians: An Emerging Health Crisis

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Background: Existing studies have identified presence of microvascular complications as contributing factor to poor diabetic foot ulcer outcomes worldwide; however there is currently limited Australian evidence supporting this in Aboriginal and Torres Strait Islanders (ATSI). Furthermore data on the burden of limb amputation in ATSI with diabetic foot ulcer have not been conclusively elucidated despite having 3-4 times at higher risk of diabetes. **Objective:** The aim of the study was to evaluate prevalence of and risk factors for lower limb amputation in a specialist foot clinic populated by Australian indigenous and non-indigenous diabetes patients. **Method:** A retrospective case-controlled study was conducted, using clinical and biochemical profiles of diabetic foot ulcer patients attending the High Risk Foot Clinic at The Townsville Hospital Australia between 1st January 2011 and 31st December 2013. **Results:** The total study sample included 129 subjects, comprising 81 males, 48 females with M: F ratio of 2: 1. Twenty-three subjects were Indigenous Australians, representing 17.8% of the study population. The average age of the cohort was 63.4 years $\pm$ 14.1 years [CI 90.98-65.89]. Lower limb amputation was identified as a common and significant outcome (n=44), occurring in 34.1%, more commonly amongst the Indigenous Australians (56.5% vs 29.2%). **Conclusions:** We have documented high prevalence of lower limb amputation in our study population linked to ethnicity in subjects with diabetic foot ulcer. Reason for this is not obvious however extended research in the local area is encouraged to study factors leading to selectively higher amputation rate in the indigenous population.

Telehealth: An Innovative Technology for Diabetic Foot Ulcer Treatment –a systematic review

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Background: Diabetic foot ulcer is a leading cause of hospitalisation and lower limb amputation worldwide particularly amongst people living in rural/remote areas due to poor access to healthcare. In spite of this, only few publications are known on role of telehealth in management of diabetic foot ulcer. **Objectives:** To review the use of telehealth in subjects with diabetic foot ulcer; evaluating its clinical outcomes, diagnostic accuracy, cost-effectiveness and behavioural perceptions. **Methods:** Systematic review. 948 identified studies were evaluated against the inclusion criteria. Patients with diabetic foot ulcer on telehealth-guided management were reviewed. Telehealth systems were evaluated against at least one of the following: clinical implications on ulcer healing and disease prognosis; diagnostic accuracy; cost-effectiveness; behavioural perceptions amongst health professionals or patients. **Results:** 11 eligible studies were included for review. Studies that evaluated telehealth against clinical outcomes were underpowered by study design, sample sizes, and short duration follow-up. Telehealth systems demonstrated good intra- and inter-observer reproducibility, high diagnostic accuracy and agreement with live assessments. Authors rationalised the cost-effectiveness of their respective telehealth systems, but could not support this with long-term cost analysis. Both patient and health professionals responded positively towards telehealth in surveys and face-to-face interviews. **Conclusion:** Telehealth yields high diagnostic accuracy, reproducibility and positive behavioural perceptions with prospects for its use in rural/remote areas. However, it is not clear if telehealth use in diabetic foot management has favourable clinical and economic outcomes. More long-term prospective controlled trials on larger populations are needed to further characterize our findings.

Diabetes and Urbanisation in Papua New Guinea: A Wake-up Call

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Background: Papua New Guinea, like other low and middle-income countries in economic transition, is experiencing enormous burden of lifestyle-related non-communicable diseases due in part to rapid urbanisation. Kimbe, the provincial capital of West New Britain is the fastest growing city in the South Pacific subcontinent yet its impact on diabetes mellitus (DM) is not known. **Objective:** To determine pattern of DM diagnosed on hospital admission on subjects who reside in Kimbe urban compared to those who live in rural areas. **Method:** This was a retrospective review of medical wards admission data contained in Kimbe General Hospital register from January 2009 to December 2012. The study was conducted on subjects who were prior to admission not known to have diabetes. **Result:** Over a period of 4 years, 125 patients were diagnosed with type 2 diabetes with female: male ratio of 1: 1.1. Majority of the patients were of young population aged <50 years representing 72 % of the cohort. Almost 3/4th of the newly diagnosed diabetic population were based in



Kimbe urban with only 32 subject (25.6%) identified as rural residents; Odds Ratio (OR) 25.5, 95% CI 17.0-38.2, $p < 0.0001$. The number of patients diagnosed with DM over the study period progressively increased: 16, 22, 38 and 49 in 2009, 2010, 2011 and 2012 respectively; $p < 0.05$. **Conclusion:** This study suggests that subjects living in area of rapid urbanisation are at higher risk of diabetes compared to residents of rural areas. It highlights the need for adequate health planning and education as part of urbanisation program in the DM-prone Asia-Pacific population. Further prospective studies are needed to verify our findings.

Building an exceptional workforce: The contribution of internationally qualified nurses

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Background: Internationally qualified nurses make up approximately 20 percent of the Australian nursing workforce. While some work has been done on the experiences of international nurses integrating into the Australian healthcare system less is known on the contribution internationally qualified nurses make. An understanding of the value internationally qualified registered nurses contribute to Australia can inform policy direction, resource allocation and assist forward planning. Demand for nurses is expected to increase worldwide as population numbers increase, life expectancy continues to rise, rates of chronic disease presentation increase and the predicted impacts of an aging health workforce prevail (Health Workforce Australia, 2014). There is a global shortage of nurses particularly in developing countries (World Health Organisation, 2016). Nurse migration flows however are primarily from developing to developed nations (International Centre on Nurse Migration (ICNM), 2015). Australia, a developed nation has increased recruitment and in-migration of internationally qualified registered nurses from both developed and developing nations to meet workforce shortfall for experienced clinicians (Australian Institute of Health and Welfare, 2014). **Aim:** The aim of this study is to explore the contribution of internationally qualified registered nurses working in the Australian healthcare system. **Method:** A link to an online survey using Survey Monkey was disseminated to registered nurses (RNs) via nursing organisations. The survey design informed by expert peer review comprised eight open-ended questions and 22 multiple choice demographic questions. Participation was voluntary and all responses remain anonymous. Data analysis was conducted using the qualitative method of comparative thematic analysis. **Results:** Responses from the survey ($n=181$) included both Australian qualified registered nurses ($n=129$) and internationally qualified registered nurses ($n=52$) who had worked in the Australian healthcare system as a registered nurse. **Conclusion:** Results demonstrate the contribution international nurses make in areas of geographic need or to meet demand in specialty areas of practice. Respondents highlighted the skills and experience international nurses bring to practice, while lack of English language proficiency for RNs from a Non English Speaking Background (NESB) or Culturally and Linguistically Diverse (CaLD) background created challenges. However an understanding of the value international nurses contribute requires further study at the local and ward level to ensure the skill set international nurses bring are used to full effect. Recommendations to implement ongoing cultural responsiveness education for all nurses is warranted. Safe, sustainable and effective provision of health care to meet the requirements of individuals, families and communities is the ultimate goal of nursing practice, regardless of the place of origin of the practitioner.

The health economics of Vectorborne disease in Australia

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Background: Vectorborne disease rates within Australia may increase in the future due to factors such as climate change and increased ease of international travel. The cost of vectorborne diseases to the Australian healthcare system should be identified in order to effectively allocate resources for treatments and biosecurity. The aim of this research was to conduct a brief review of papers that have identified the costs relating to vectorborne disease cases in Australia. This research is important because, by identifying the current and future costs of vectorborne diseases to the healthcare system, an economic argument can be made for increased biosecurity measures and further tropical disease research in an attempt to minimize the cases, and thus the cost to the healthcare system, of vectorborne diseases in Australia. **Method:** A literature search using the PubMed and Google Scholar databases was conducted, with search terms relating to vectorborne diseases and associated costs in Australia used in this search. There was no date restriction placed on articles. Articles were excluded if they were not conducted using an Australian sample. **Results:** The initial search produced 121 articles related to the cost of vectorborne diseases. Thirty-four articles were removed due to being duplicates. After the reading the abstracts from the remaining 87 articles, a further 55 were removed due to not be relevant to the topic of interest. Of the remaining 32 articles, only four (2 on dengue, 2 on Ross River virus) were considered to take an economic approach to examining vectorborne diseases in Australia, thus being relevant to the current study. **Conclusions:** There is a dearth of research examining the costs of vectorborne diseases to the Australian healthcare system. Research which has been conducted has used different methodologies and are from different years, making the costs associated with vectorborne diseases within Australia difficult to interpret. Future research needs to explore this issue further in order to assist decision-making regarding the allocation of funds within the Australian healthcare system.



Antiemetics in the pre-hospital setting: A systematic review of efficacy and safety

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Background: Antiemetics are very common medications used in the pre-hospital setting. Recent evidence has shown that antiemetics are ineffective in reducing undifferentiated nausea scores and vomiting rates. **Objectives:** The aim of this study is to determine the efficacy and safety of antiemetics when administered in the pre-hospital setting. **Methods:** This is a systematic review of all trials, including Randomised Controlled Trials and prospective trials that investigate the use of antiemetics in the pre-hospital setting. PRISMA guidelines were followed for conducting the review. Nausea scores, vomiting rates and rates of adverse effects among other variables were summarised. **Results:** The authors were able to identify 7 full text articles through searches performed in PUDMED, MEDLINE, CINAHL and Informit. Trials that investigated the efficacy of all antiemetics in the pre-hospital setting were included. Overall, it was found on initial impression that antiemetics are effective in reducing nausea and vomiting rates in the pre-hospital setting. However, further examination of the quality of the studies found that all studies were of poor quality and hence the efficacy of antiemetics in this situation is questionable. All antiemetics were associated with insignificant or self-limiting side effects. **Conclusion:** There is insufficient evidence to establish the efficacy of antiemetics in the pre-hospital setting despite their safety. Further studies, preferably those that are randomised and double blinded will be required to establish the efficacy of antiemetics in the pre-hospital setting. It is suggested that antiemetics be reserved for severe nausea and intractable vomiting in the pre-hospital setting.

An Evaluation of the Usage and Place in Therapy of Danaparoid at a Regional Hospital

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Background: Danaparoid, an anticoagulant that does not have a specific reversal agent, is considered a high-risk drug. This drug usage evaluation (DUE) aimed to determine whether the current usage of danaparoid at the Townsville Hospital (TTH) is comparable with recommended guidelines. **Method:** The case notes and charts of adult inpatients for whom at least one treatment dose of danaparoid was prescribed since the introduction of ieMR were retrospectively audited. The prescribed regimens were compared with current recommendations to identify any divergence in terms of dosing, administration or associated monitoring. **Results:** A therapeutic danaparoid infusion was initiated 12 times for the treatment of six different patients. The infusion concentrations differed from the recommendations of the accepted guidelines in 50.0% (6/12) of cases, while divergent dosing (associated with bolus and/or maintenance regimens) was detected in 91.7% (11/12). Associated anti-Xa monitoring was divergent in 100% (12/12) of cases. Concordant maintenance infusion regimens were most commonly prescribed for the treatment of VTE in patients with a history of heparin-induced thrombocytopenia (HITs). **Conclusions:** The use of danaparoid at TTH may be significantly improved following the implementation of local guidelines and educational initiatives. Another, post-intervention DUE should be used to monitor any potential changes in prescribing practices that result from these interventions.

The first population-based questionnaire survey on the prevalence of food allergy in Vietnam

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Background: Food allergy affected about 2% adults and 8% children worldwide. The food allergic reactions manifest from mild symptoms to life threatening reactions. Few studies investigated the prevalence of different food allergies in Asian populations, however, none have been conducted in Vietnam. **Method:** We conducted a nationwide, cross-sectional, population-based study to evaluate the current prevalence of food allergy and the distribution of offending food groups in urban and rural regions, divided into two different age groups: 2-6 years old children and 16-50 years old adults. A structured, anonymous questionnaire was distributed to parents/guardians of target children and to adult participants. **Results:** A total of 17,659 responses was collected from 8,620 children and 9,039 adults (response rate, 69.9%). 53.6% of participants reported experiences of adverse reactions due to food consumption, only half of them sought medical services for diagnosis. The prevalence of self-reported food allergy is 13.1%, doctor-diagnosed food allergy is 6.2%. The most common



food allergy are crustacean (3.6%; 95% CI, 3.3-3.9), followed by fish (1.5%; 95% CI, 1.3-1.7), mollusk (1.3%; 95% CI, 1.1-1.5) and beef (1.0%; 95% CI, 0.8-1.1). Prevalence of food allergies was not different among children and adults, but between urban and rural regions. Atopic family history was a significant predictor for food allergy in children (odds ratio 7.7; 95% CI, 5.9-10.0) and adults (odds ratio 7.3; 95% CI, 5.7-9.2). **Conclusions:** This is the first ever study investigated the prevalence of different food allergies in Vietnamese population. In this study, seafood allergy is predominant, followed by beef, egg and milk, while peanut, soy and tree nuts allergy are much less frequent. Populations in rural regions have significantly less food allergy, the protective environmental factors have yet to be identified.

The Townsville Hospital and Health Service Medication Safety and Security Multidisciplinary Audit – the prescribers' aspect

Diane Quach¹, Lori Mackay¹, Jenny Walsh², Alexandra Ryan², Sabe Sabesan^{1,2}, Rebecca Coxon¹, Muriel Soden^{1,2}

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²Townsville Hospital and Health Service, Townsville, Australia

Background: Medication errors remain an important patient safety issue requiring attention. The THHS Medication Safety and Security Multidisciplinary Audit evaluates several aspects of practice. JCU Year 6 Medical students have been recruited as auditors focussing on evaluating the prescribers' aspect of adherence to medication safety guidelines. **Method:** Students audit at least 5 charts per term and gain Continuing Professional Development (CPD) points for their participation. The tool used is a questionnaire based on the CHART SAFER principles. Students informally feedback to their team (upon assessing the charts) about the findings and discuss means of improving. The audit data are also collected centrally via an online database and then analysed to provide useful feedback and continuing improvement targets. **Results:** We present preliminary data only. At the time of analysis there were 10 weeks of data available. This included 130 chart audits completed by 26 medical students. Collectively, areas of $\geq 90\%$ compliance included: patient identification, signature for STAT orders within 24 hours, legibility of handwriting, recording of allergies, preventative venous thromboembolism (VTE) prescription in the designated area, prescribed dose omission and record of 'no stock'. Areas requiring improvement with $\leq 50\%$ compliance included: use of Paediatric Inpatient Charts for children under the age of 12, itemising the nature and time frame of adverse drug reactions, patient education for Warfarin prescription and evidence of a Pharmaceutical Review. Areas requiring significant improvement with $\leq 15\%$ compliance included: correct cessation of drug orders and documentation of indication for prescribed drugs. Several critical errors were identified, including the inappropriate use of adult medication charts for paediatric patients (33.4% compliance), the use of unapproved abbreviations (62.3% compliance), absence of patient identification information (46.9% compliance) and absence of VTE assessment (59.5% compliance). Verbal feedback given to the medical teams at the time of data collection was noted to be a useful tool to prompt team discussions, increase prescriber awareness about standards and promote safer prescribing practices. **Conclusions:** This audit provides a snapshot evaluation of current adherence to national medication safety guidelines in the Townsville Hospital Health Service. Areas of good and poor compliance have been identified. The successful implementation of the audit thus far also demonstrates the feasibility of using Medical Students as assessors and facilitators of safe prescribing strategies. The collective results of the broader audit will be used to direct strategies to ensure safe prescribing and establish a baseline for monitoring future performance.

The Incidence of diabetic ketoacidosis at first presentation of type 1 diabetes at a regional hospital

Radhika Patwardhan¹, Jason Yates², Venkat N Vangaveti¹, Susan Gorton¹

¹James Cook University, Townsville, Australia

²The Townsville Hospital, Townsville, Australia

Background: Diabetic Ketoacidosis (DKA) is an acute life threatening preventable complication of type 1 diabetes which has major biopsychosocial effects on the patients and their families, and is resource intensive. The incidence of DKA has been studied nationally and internationally in metropolitan centres in the paediatric population. This study analysed the incidence of DKA at first presentation of type 1 diabetes at Townsville Hospital before and after an educational intervention. This is the first study of its kind in a regional centre in Australia. **Method:** We retrospectively analysed data from January 2006 to December 2016. GP education sessions were delivered by a paediatric endocrinologist during 2015 and 2016. The inclusion criteria consisted of paediatric patients less than 18 years of age, diagnosed with type 1 diabetes at Townsville Hospital. Data was collected from ieMR and chart records of patients. Quantitative analysis was conducted using SPSS version 24. **Results:** 106 patients met the inclusion and exclusion criteria, and were included in this study for further analysis. Of these patients, 48.1 % identified as male and 51.9% as female. The incidence of DKA at first presentation of type 1 diabetes was 48.1% compared to 31.8% in Brisbane. 27.5% presented in mild, 25.5% in moderate and 47.1% presented in severe DKA. The DKA incidence at diagnosis decreased in the intervention period to 25%. **Conclusions:** The incidence of DKA at first presentation of type 1 diabetes is higher than that reported by other studies conducted in metropolitan settings in Australia. A decrease in incidence of DKA has occurred since the delivery of GP education sessions by a paediatric endocrinologist. Interventions to increase community awareness of type 1 diabetes should also be trialled.



Seeking Advice and Explanation: People with Diabetes Learning about their Disease

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³University of Gadjah Mada, Yogyakarta, Indonesia

Background: Diabetes education is an important part of diabetes management, but the process of how people living with diabetes learning with the disease is unknown. This study aimed to theorize a process of how people with diabetes learn about their disease. **Method:** A grounded theory methodology which is influenced by constructivism and symbolic interactionism was used to answer the research question. This study involved participants consisting of people with diabetes, health care professionals and non-health care professionals. Data were collected through semi-structured interviews in West Kalimantan, Indonesia. **Results:** Twenty four participants were interviewed in this study. Preliminary findings identified “Exploring diabetes care” is a core category from this study. People with diabetes seeking advice and explanation from different sources of information was one of the five major categories that consolidates the process of people with diabetes learning about the disease. **Conclusions:** People with diabetes learn about their disease from a diversity of sources. Having access to correct information that they can understand to inform diabetes self-management is fundamental to their quality of life.

Addressing Varenicline Adherence through Repackaging in a Dose Administration Aid

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Background: Ensuring adherence to prescribed smoking cessation medications, such as varenicline, is essential during a quit attempt as non-adherence can significantly reduce the likelihood of achieving prolonged smoking abstinence. The use of dose administration aids may improve adherence, though medication stability on repackaging is not guaranteed, due to a lack of available data from manufacturers supporting this practice. The purpose of this research was to determine the suitability for repackaging varenicline tartrate tablets into a dose administration aid, by assessing its physical and chemical stability after being repackaged and stored at ambient conditions for six weeks. **Method:** 1.0mg varenicline tartrate tablets were repackaged into commercially available Webster-paks® and stored for 42 days at ambient conditions characteristic of a Zone IVB climate ($30 \pm 2^\circ\text{C}$ and $75 \pm 5\%$ relative humidity) according to the World Health Organisation guidelines on pharmaceutical stability testing. Physical and chemical tests were performed on the repackaged and control tablets, including an assessment of: tablet thickness, hardness, weight uniformity, friability, dissolution, disintegration, and content uniformity after exposure to ambient conditions and light according to ICH Guideline Q1B. **Results:** Weight, friability, and thickness of the tablets complied with compendial standards. A validated HPLC method was used to confirm that after exposure to light, and repackaging at $30^\circ\text{C}/75\%\text{RH}$, the tablets remained within the required 95-105% of the stated drug content. However, tablet hardness and disintegration decreased over time, with tablets becoming softer and undergoing more rapid disintegration in water. **Conclusions:** Repackaging 1.0mg varenicline tartrate (Champix®) tablets into a dose administration can be undertaken to improve adherence rates and therefore smoking abstinence rates. This can be performed without compromising either the physical or chemical stability of the tablets.

Understanding *in vivo* Modelling Paradigms of Food Allergies: A Systematic Review and Meta-Analysis.

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Background: Food allergy is an increasing health concern, resulting in a substantial burden on the socioeconomic status and quality of life among affected individuals. In the past decade, there has been a significant increase in the incidences of food allergic reactions. Clinical trials provide less evidence behind the mechanism and pathology involved in food allergies. Hence, non-human models are being developed for investigating the underlying mechanism of various food allergies. Our review focusses on non-human models for food allergies, discussing possible data based evidence extracted from included study to understand the manifestation of clinical evidence discussed by various studies. **Method:** We conducted a broad yet sensitively designed search strategy for published literature based on non-human animal models developed for several food allergies. An extensive search using international biomedical databases (Medline (OVID), Web of Sciences, PubMed, Scopus, and Embase) was carried out. Duplicates from various databases were removed from the study. Studies remaining after duplicate removal were analyzed based on specific inclusion and exclusion criteria designed for non-human animal models based on food allergies. Specific inclusion and exclusion criteria were set so as to provide an unbiased overview of existing clinical evidence in data extracted from published literature. The risk of bias/quality of reporting and intervention(s)



were assessed for better understanding of patterns in food allergy models. Meta-analysis of extracted data from included studies was performed. **Results:** A total of 475 studies were extracted after searching the databases. A total of 250 studies were identified as duplicate and were removed. Out of 250 studies, 60 studies were identified as valid studies screened using set inclusion and exclusion criteria. This systematic review indicated a specific trend in the use of specific mouse strains and treatments regimens for developing non-human food allergy model. **Conclusions:** This systematic review provides an in-depth insight for non-human based food allergy models for the development and characterisation of possible therapeutic interventions which can be used for future clinical trials for immunotherapeutic strategies for food allergies.

A Drug Usage Evaluation of Alprostadil Prescribing and Administration at the Townsville Hospital

Marten E¹

¹The Townsville Hospital

Background: Alprostadil or PGE₁, is a naturally occurring Prostaglandin which can have profound vasodilatory effect, thus close monitoring is required. Its prescribing and use should be standardised as best as possible to reduce the risk for patients. This Drug Use Evaluation (DUE) will evaluate the current prescribing of inpatients at TTH and compare with the current recommended guidelines. **Method:** A retrospective audit was performed at TTH for patients receiving an alprostadil infusion in the last two years (June-15/June-17). Patients were identified via the dispensing history in iPharmacy and patient notes were then retrieved from ieMR. Other patient specific data was collected along with the administration charts and any other information regarding ceased or restarted. This information was compared to the relevant preferred guidelines. **Results:** 13 patients met criteria. The prominent indication for use was Reynaud's disease with 69.2% of patients having this diagnosis. 23.1% of patients did not receive alprostadil infused correctly in the first 7 hours compared to preferred guidelines. 69.23% were infused for less than the recommended 72 hours, 23.1% were infused for longer than 72 hours and 23.1% were infused for the appropriate 72-hour duration. 15.4% of infusions were ceased due to MET call and 7.6% of infusions were MET call criteria but no MET call was made. Infusions with unclear charting had varied infusion rates which had potential to affect patient outcomes, this issue arose in 15.4% of infusions. **Conclusions:** After evaluation, it is certain that clear charting is vital for effective administration of alprostadil. The local protocol is being used in most cases; however there is room for improvement with the implementation of an updated protocol. This may include a calculator which patient specific data could be inputted to promote efficiency in prescribing for the health service.

Use of telehealth in the management of non-critical emergencies in rural and remote emergency departments - a systematic review.

du Toit M¹, Malau-Aduli B¹, Vangaveti V¹, Sabesan S^{1,2}, Ray R¹

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²Townsville Hospital, Townsville

Background: Telehealth has been used extensively in Emergency Departments (EDs) to improve healthcare provision. However, its impact in the management of non-critical emergency presentations within rural and remote EDs has not been adequately explored. The objective of this systematic review is to identify how telehealth has been used to assist with non-critical emergency presentations in rural and remote EDs and outcomes. **Method:** Articles were identified through searches of CINAHL, Cochrane, MEDLINE (OVID), Informit and SCOPUS databases, as well as screening relevant article reference and citation lists. To determine how telehealth can assist in the management of non-critical emergencies, information was extracted relating to telehealth program model, the scope of service and participating health professionals. The outcomes of telehealth programs were determined by analysing the uptake and usage of telehealth, the impact on altering diagnosis or management plan as well as patient disposition including patient transfer, discharge, local hospital admission and rates of discharge against medical advice. **Results:** Of the 2532 identified records, fifteen were found to match the eligibility criteria and were included in the review. Uptake and usage increased for telehealth programs predominantly utilised by nursing staff with limited local medical support. Tele-consultation conservatively altered patient diagnosis or management in 18-66% of consultations. Although teleconsultation was associated with increased patient transfer rates, unnecessary transfers were reduced. Simultaneously, an increase in local hospital admission was noted and less patients were discharged home. Discharge against medical advice rates were low at 0.9-1.1%. **Conclusions:** The most widely implemented hub-and-spoke model could be incorporated into existing referral frameworks. Telehealth programs may assist in reducing secondary overtriage, while increasing the capacity of ED staff to diagnose and manage patients locally, which may translate into increased local hospital admissions and reduced discharge rates following teleconsultation.



Managing Medical Emergencies in Rural Australia: A systematic review of the training need

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Background: Previous research has shown that rural doctors treat and manage acutely unwell patients. However critical patients present sporadically, making it difficult for rural doctors to maintain advanced emergency skills from day to day practice. Furthermore these rural doctors have variable levels of experiences, thus may have gaps in their knowledge. This review aimed to explore the currently available evidence about the the training needs of doctors managing emergencies in rural and remote Australia. **Method:** A systematic review of Australian articles retrieved from MEDLINE (OVID) and INFORMIT online databases and published between 1990-2016 was performed using a modified version of PRISMA guidelines. The search terms included “Rural Health”, “Emergency Medicine”, “Emergency Medical Services”, “Education, Medical, Continuing” and “Family Practice.” Only Peer-reviewed articles, available in full-text that focused on the training needs of rural doctors were reviewed. Data was extracted using pre-defined fields such as date of data collection, number of participants, characteristics of participants, location and study findings. **Results:** A total of eight studies published from 1998-2006 were found to be suitable for inclusion in the analysis. Six studies cited the results of self-reported questionnaires and surveys, one used a telephone survey on a hypothetical patient and one utilised a theoretical exam. The studies found a significant proportion of participants wanted more emergency training. Junior rural doctors were found to have deficiencies in knowledge about stroke, while other doctors wanted more training in specific skills like emergency ultrasound, paediatric/neonatal procedures and cricothyroidotomy. However many of the studies were performed by training providers which may have biased the results. **Conclusions:** Given that the entirety of the data was over 10 years old and that advances have been made in knowledge, training opportunities and technology; the implications for current training needs of rural doctors in Australia could not be accurately assessed. Thus there is a need for further research to identify current training needs.

Impact of Telehealth on Diabetes Management in Rural Areas: The Townsville Hospital Experience

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Background: North Queensland’s rural/remote areas have limited access to health care services due to a range of barriers including living a considerable distance from tertiary health services or having restricted mobility. Telediabetes clinic has been introduced at The Townsville Hospital (TTH) five years ago as an alternative approach to deliver health care services to rural areas using information technology. Yet its role in management of diabetes at the hospital has not been evaluated. Objective: The aim of the study was to determine usefulness of telediabetes specialist clinic at TTH. **Method:** All subjects diagnosed to have diabetes aged >18 years who lived in rural/remote areas of Townsville Health District from 2011 to 2017 were retrospectively studied. They were divided into two cohorts – one who received Telehealth (TH) consultations from the rural hospitals and the other who travelled to TTH for Face-to-Face (FTF) consultations for the management of diabetes. **Results:** Clinical profile of diabetes –haemoglobin A1c, lipids, blood pressure, anthropometry, macro- and microvascular complications for the 2 groups will be compared and discussed at the conference. **Conclusions:** Lessons learned from the study will be presented at the meeting.

The impact of 12 month continuous subcutaneous insulin infusion therapy on glycaemic control in adults with type 1 diabetes at the Townsville hospital - A retrospective quality assurance study.

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¹Internal Medicine Department, Townsville Hospital

²Endocrine Department, Townsville Hospital

³Endocrine Department, Townsville Hospital

Background: Since private health insurance is a prerequisite for continuous subcutaneous insulin infusion therapy (CSII), the current model of care for most type 1 diabetes patients in Australia is multiple daily dose insulin as opposed to continuous subcutaneous insulin infusion. Multiple studies have looked at the efficacy of continuous subcutaneous insulin infusion (CSII) on glycaemic control and have shown improvement in HbA1c levels and decreased hypoglycaemia. The aim of this study is to assess the glycaemic outcomes, total daily dose of insulin and weight of type 1 diabetes patients on CSII therapy and identify the predictive factors for good response to treatment. This study will provide guidance for efficient and effective patient selection criteria, implementing local guidelines or recommendations for safe and sustainable service and optimise existing patient management. **Method:** This was a 14-



year retrospective quality assurance single centre study of subjects with type 1 diabetes on CSII for 12 months. A total of 105 patients on CSII therapy were identified of whom; only 52 patients had sufficient data to be included in the study. The HbA_{1c} levels, total daily dose of insulin, weight, episodes of diabetic ketoacidosis (DKA) and severe hypoglycaemia were collected 3 months before initiation and both at 4 months and 12 months after initiation of CSII therapy. Patients demographic details, variables related to disease, treatment and follow up were also recorded. Clinically significant improvement in glycaemic control was defined as a reduction of HbA_{1c} of $\geq 0.5\%$ from the baseline. Descriptive statistics were used for all variables (median, frequencies, and cumulative percentages). Comparison were made using Wilcoxon's signed rank test as these are repeated – measured variables. We considered a p value of < 0.05 to be statistically significant and < 0.01 to be highly significant. **Results:** Among the 52 patients analysed, 34.6% were males. The base line median HbA_{1c} for females and males were 8.5% and 8.6% respectively. The median duration of diabetes at the time of CSII therapy initiation was similar in both males and females (12 years). The median age at initiation was 31 in females and 29 in males. A significant reduction in baseline median HbA_{1c} (8.6%) was noted both at 4 months {0.6%, (p=0.035)} and 12 months {0.7% (p=0.001)} of continuous subcutaneous insulin infusion therapy (CSII). The statistically significant reduction in HbA_{1c} at 4 months was maintained at 12 months (p=0.025). Only those who had a median HbA_{1c} of $\geq 8\%$ prior to initiation of CSII therapy had an HbA_{1c} reduction of $\geq 0.5\%$ at 4 months. The greatest reduction (1.1%) was observed in those who had a base line HbA_{1c} of $\geq 10\%$. At 12 months of CSII therapy a median HbA_{1c} level of 7.7% was noted in those more than thirty years and 8.6% in less than 30 years of age and the median HbA_{1c} was 7.8% in those had diabetes for 10 years and 8% in less than 10 years. The median HbA_{1c} was 7.8% in females and 7.9% in males at 12months of CSII therapy. There was no reduction in median HbA_{1c} noted from 4 months (10%) to 12 months (10%) in those, HbA_{1c} was $\geq 10\%$ prior to commencement of CSII therapy. A significant reduction in baseline median total daily dose (TDD) of insulin (57 units) noted both at 4 months (29.9 units (p<0.001) and 12 months (25u (p<0.001) of CSII therapy. There was no significant variation noted in the weight over 12 months. The number of diabetic ketoacidosis and hypoglycaemic episodes were very few therefore this data was not analysed. **Conclusions:** This study adds to the existing literature that CSII therapy significantly improves glycaemic control, reduced the total daily dose of insulin and had no effect on weight over 12 months. In our study age < 30 years and HbA_{1c} of $\geq 10\%$ prior to commencement of therapy are predictors of poor glycaemic outcomes at 12 months of therapy. Duration of diabetes and sex did not influence the glycaemic outcomes at 12 months. Even though there was statistically significant reduction in median HbA_{1c} noted from 4 months to 12 months it was not clinically significant (0.1%). This study identifies the need for defined eligibility criteria for CSII therapy and the need to intensify follow up and education after 4 months. This study did not objectively look at the patient disease management behaviour which is one of the important predictors of glycaemic outcomes. A prospective quality assurance study is needed to reanalyse the outcomes once necessary changes are implemented.

THHS Innovation Grant Recipients

Teleaudiology Pilot Project – Closing the Gap

Venkatesh AITHAL¹

¹Audiology, Surgical Service Group, Townsville Hospital and Health Service

Project Description: Studies have shown that one of the major causes of academic failure in children is undiagnosed hearing loss. Many clients from rural and remote sites have difficulty attending audiology clinic appointments due to time, distance and cost factor. This project will be a first for Queensland Health; offering a specialist teleaudiology clinic, which will be piloted in Charters Towers, Richmond and Hughenden. If successful, the innovation will be extended to other sites such as Palm Island, Ingham and Ayr. The innovation is a cost effective way of improving the patient journey.

Online staff engagement tool

Billy Bragg¹

¹Corporate Services, Townsville Hospital and Health Service

Project Description: Studies have shown that top management in an organisation are only aware of 4% of frontline problems within an organisation. Having a mechanism in place to readily inform Senior managers and executive of frontline issues is imperative. This project will involve developing an internal website where staff can register frontline issues and suggestions for solutions. Any issue generating at least 50 'votes' will be escalated to management for attention. It is anticipated the innovation will lead to a more engaged and advanced organisational structure.



Improving staff engagement via the use of an audience response system

Salli-Ann Buttigieg¹

¹Indigenous Health Service Group, Townsville Hospital and Health Service

Project Description: The Townsville Hospital and Health Service is spread across a large geographical area. This makes it difficult to effectively engage staff across the HHS, even with the use of videoconferencing, as many staff feel reluctant in 'speaking up' in large groups. This project will involve the purchase of software which can be used during meetings to post live and anonymous input into the meeting. It is anticipated this project will enhance engagement and input from staff who would otherwise be reluctant to provide input at meetings; thereby building on the ICARE values.

Video remote interpreter (VRI) project

Twyan Grace¹

¹Facility, Infrastructure and Support Services, Townsville Hospital and Health Service

Project Description: Due to Townsville Hospital and Health Service's regional setting availability and access to onsite (face to face) interpreters is extremely limited. When onsite interpreters are unavailable video remote interpreter services are used. Currently, the video services are restricted to fixed telehealth / computer facilities. This project will involve the purchase of a portable video remote interpreter bundle; enabling the display to be positioned in any position. This is particularly important for patients undergoing procedures where the patient may be in restrictive movement position, such as a dental procedure. The project will be piloted at oral health services and if successful extended across the HHS. It is anticipated this innovation will be cost effective and lead to a more positive patient experience.

Design of an MRI geometric accuracy phantom for use in the implementation of image guided brachytherapy for cervical cancer

Lynsey Hamlett¹

¹Medical Service Group, Townsville Hospital and Health Service

Project Description: Aligned with international best practice, THHS is working towards the implementation of image guided brachytherapy for cervical cancer. To enable this practice to be implemented a 'phantom' (model) needs to be built to carry out tests, to ensure high quality assurance procedures are met. This project will engage with University of Queensland to design a suitable phantom, which will be used to determine and adjust as required the geometric accuracy of the protocol to be used for the cervical brachytherapy imaging. This innovation will ensure THHS patients are receiving best practice care aligned with industry standard international guidelines.

Developing and implementation of holistic breast cancer pathway integrating multiple providers impacts outcomes

Abhishek Joshi¹

¹Medical Service Group, Townsville Hospital and Health Service

Project Description: Breast cancer is a global health burden. In Australia, breast cancer is the 3rd most common diagnosed cancer and the 4th most common cause of death from cancer. In Townsville, significant gaps exist within the pathways of treatment for breast cancer. These lead to a burden on healthcare systems e.g increased surgical waiting times due to unnecessary referrals and increased time from diagnosis to presentation to specialist. With input from multi-specialists (GPs, hospital and private specialists and diagnostic radiology services), this project will involve designing and implementing a new breast cancer care pathway. This project aims to improve outcomes for breast cancer patients and reduce costs by streamlining services.

Improving oral health outcomes by improving health literacy through the use of modern technology

Terri McIntosh¹

¹Oral Health, Health and Wellbeing Service Group, Townsville Hospital and Health Service

Project Description: To maintain optimal oral health and manage disease when it occurs individuals must be able to understand, interpret and act on health information provided. For individuals with limited literary skills much of the printed information available is not written at a level that people with limited literary skills can understand. Research has found that the use of mobile technology by health care providers



can improve patient understanding and promotion of oral hygiene. This project will involve the purchase of an 'ipad' with intra oral camera attachments which can be used directly with the patient at the 'chair side' to explain and demonstrate the patient's condition and enhance oral hygiene by the use of health education and promotional apps. It is anticipated this innovation will lead to ongoing improvements in patient understanding and compliance with health care requirements, effectively leading to a decrease in future disease.

Auto-titration Positive Airway Trial (APAP)

Stephen Reeves¹

¹Medical Service Group, Townsville Hospital and Health Service

Project Description: There is currently a large waiting list for access to the THHS Respiratory and Sleep Unit for a diagnostic sleep test for obstructive sleep apnoea (OSA) or a continuous positive airway pressure study for prescription. This is predominately due to the THHS not only covering the Townsville area but also Central West, Mackay and the North West area, and the availability of only 2 hospital based sleep beds for patient sleep studies. In 2016, to assist with the management of patients diagnosed with OSA, a nurse lead auto-titration positive airways pressure clinic was established. This innovation builds on the previous initiative and will involve the purchase of devices with advanced algorithms which can measure the needs / preferences of each individual patient. It is anticipated this innovation may assist with patient compliance, thereby reducing the long term consequences of OSA, which include hypertension, heart disease and stroke.

MDT for advanced care planning before high risk surgery

Siva Senthuran¹

¹Surgical Service Group, Townsville Hospital and Health Service

Project Description: At THHS, patients who are frail, have a terminal illness or have multiple comorbidities and who are due to undergo high-risk surgery do not have a multi-disciplinary advanced care plan developed and initiated. This fragmented care model may lead to adverse events and client dissatisfaction. This project is the implementation of weekly multidisciplinary team meetings to discuss, devise and implement advance care plans for high risk patients being considered for surgery. It is anticipated this innovation will not only improve the patient experience but also patient outcomes.

Video training series for food service staff

Susan Tench¹

¹Health and Wellbeing Service Group, Townsville Hospital and Health Service

Project Description: Poor food service knowledge and practices, through lack of staff training and education, can put a patient's safety and clinical outcomes at risk. As part of a dietetic student project an educational training package Diabetes was developed and implemented. This project builds on the previous work undertaken by the student dietitian and will develop and implement five further training videos for use by food service staff on menu modification; correct serve sizes; renal diet; texture modified diets and malnutrition. It is anticipated this innovation will improve the quality of food services, thus improving health care outcomes and reducing rates of malnutrition in the hospital setting.

Reaching out to the disadvantaged DNW (Did not Wait) in the Emergency Department

Karthik Velusamy¹

¹Medical Service Group, Townsville Hospital and Health Service

Project Description: Townsville Hospital Emergency Department sees around 79 000 patients per annum. Of these, around 4.3% will not wait for an assessment and treatment. A proportion of these patients will subsequently require hospital admission at a later date. There are no effective mechanisms in place to follow up these clients who 'do not wait' who may be at risk of harm due to a delay in obtaining medical attention and treatment. This project will implement a process whereby an experienced nurse will attempt phone contact with all DNW patients (or caregivers) in the following categories:

1. Paediatric patients <18 years of age
2. Elderly patients > 65 years of age
3. Patients with known mental health issues

It is anticipated this innovation will reduce the rate of emergency department revisits and hospitalisations and increase consumer trust and confidence in our health care system.

JCU Science Research Festival

Thursday, 7th September	Time and Venue
Division of Tropical Health & Medicine – So you think you can research? – Oral Competition	Robert Douglas Auditorium – Townsville Hospital 8:30am – 1:00pm
Science Research Poster Presentations	The Science Place JCU 1:00pm -5:00pm
Division Finals – 3 Minute Thesis Competition – DTHM	The Science Place JCU 1:00pm -3:00pm
Division Finals – 3 Minute Thesis Competition – DTES	The Science Place JCU 3:00pm – 5:00pm
LF Power Memorial Lecture BBQ and Drinks	The Science Place JCU 5:00pm
Friday, 8th September	Time and Venue
Research Short Talks	The Science Place JCU

RESEARCH EDUCATION PROGRAM

Research Submission Workshops

No need to book, just turn up on the day

11.30am – 12.30pm, Cannington Lecture Theatre – Palliative Care Building

*Protocol essentials, and HREC submission
and review process*

Wednesday, 13th September 2017
Wednesday, 11th October 2017

RG submission and review process

Thursday, 14th September 2017
Thursday, 12th October 2017

Workshops

Workshop reservations contact (07) 4433 2459 or TSV-Research-Week@health.qld.gov.au

Monday, 4 September 2017,
8.30 - 11.30am

*Use of economic evidence
for decision making.*

Dr Emily Callander

Tuesday, 5 September 2017

WORKSHOP A - 8.30 - 11.30am

Grounded Theory

Professor Melanie Birks

WORKSHOP B - 9.00 - 11.30am

Statistics for Research

Associate Professor Kerriane Watt

Wednesday, 6 September
2017, 8.30 - 11.30am

Writing for publication

Dr Liz Tynan

2-Day Researcher Course - 7-8 November 2017

Two day condensed education workshops designed to enhance knowledge and understanding of research design, methodologies, and approvals. Open to all – experienced and novice.

Course reservations contact (07) 4433 2459 or TSV-ResearchSupportUnit@health.qld.gov.au

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