

Alfred Health Week Research Poster Display

23 – 27 October 2017

The Alfred Hospital

ABSTRACT BOOK



ALFRED HEALTH WEEK

RESEARCH POSTER DISPLAY

23 – 27 OCTOBER 2017

RESEARCH DAY

Tuesday, 24 October 2016, 12:00 PM – 1:00 PM

AMREP Lecture Theatre

2017 KEYNOTE SPEAKER:

The Hon. John Brumby AO

Former Premier of Victoria, Chair, Foundation Committee, Global Health Alliance Melbourne; Faculty of Business and Economics, University of Melbourne

“To the Bedside and Beyond: Medical Research and Victoria’s Future”

POSTER PRIZES

Michael J Hall Memorial Prize for Respiratory Physiology

Professor Daniel Czarny Prize for Allergy, Asthma and Clinical Immunology Research

Lucy Battistel Prize for Allied Health Research

Henrietta Law Memorial Prize for Allied Health Research

Burnet Institute Prize for Infectious Diseases Research

Monash Comprehensive Cancer Consortium Prize for Cancer Research

Noel and Imelda Foster Prize for Cardiovascular Research

Baker Heart and Diabetes Institute Prize for Cardiovascular Research

Baker Heart and Diabetes Institute Prize for Diabetes Research

Senior Medical Staff Prize for Basic Science/Laboratory-Based Research

Senior Medical Staff Prizes for Clinical/Public Health Research

Tony Charlton Prize for Cardiac Surgical Research

Monash Alfred Psychiatry Research Centre Prize for Psychiatry Research

The Greg Barclay Nursing Research Award

The Senior Medical Staff Award

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1. HOW DO THE PROXIMAL AND PERIPHERAL ASTHMATIC AIRWAYS RESPOND WHEN PROVOKED DIRECTLY AND INDIRECTLY?

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Bronchoconstriction is a typical response when the asthmatic airways are provoked. However, little is known about how other physiological features of the airways change in parallel, specifically in the proximal and peripheral airways.

AIM: To determine how airway resistance (AR), ventilation heterogeneity (VH) and nitric oxide activity (NO) changes in the same proximal and peripheral airways when provoked by direct and indirect means.

METHODS: Newly diagnosed (untreated) patients with atopic Asthma were recruited for the study (n=9). All subjects demonstrated a clinically positive test based on Spirometry to both direct (Methacholine) and indirect (Mannitol) provocation tests on separate visits, ~7days apart. On another visit, a placebo provocation was also performed. Before and immediately after each provocation test, the following measures were made; AR using the Forced Oscillation Technique, VH using the Multiple Breath Nitrogen Washout technique and NO using the Multiple Exhalation Flow technique.

RESULTS: There was no significant change ($p>0.05$) in lung volumes measures (FRC, RV and TLC) from the washout technique after any of the provocation tests. All other changes are tabulated below (mean \pm SEM). * $p<0.05$ with respect to placebo change.

	Measures		Units	Absolute Change After Provocation		
				Placebo	Direct	Indirect
Proximal Airways	AR	R16	hPa/(L/sec)	+0.094 \pm 0.156	+0.990 \pm 0.266*	+0.713 \pm 0.160*
	VH	Scond	1/L	-0.003 \pm 0.003	+0.024 \pm 0.006*	+0.025 \pm 0.004*
	NO	NO-Flux	nL/sec	-0.394 \pm 0.097	-0.654 \pm 0.193	-2.075 \pm 0.521*
Peripheral Airways	AR	R4-R16	hPa/(L/sec)	+0.261 \pm 0.166	+2.703 \pm 0.506*	+2.260 \pm 0.611*
	VH	Sacin	1/L	+0.013 \pm 0.013	+0.041 \pm 0.008	+0.054 \pm 0.010
	NO	CANO	Ppb	+1.225 \pm 0.842	-0.942 \pm 0.342	-3.083 \pm 1.781*

CONCLUSION: In asthma, when the proximal airways were provoked directly and indirectly, both AR and VH increased in response. However, NO decreased only when the airways were provoked indirectly. When the peripheral airways were provoked directly and indirectly, VH remained unchanged while AR increased in response. However, NO decreased only when the airways were provoked indirectly. Overall, provoking the airways resulted in more physiological changes in the proximal airways than the peripheral airways. All these physiological changes were demonstrated in the absence of any change in lung volumes or gas trapping.

2. ACINAR VENTILATION HETEROGENEITY IS INCREASED IN IDIOPATHIC PULMONARY FIBROSIS (IPF) AND COMBINED PULMONARY FIBROSIS AND EMPHYSEMA (CPFE)

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Ventilation heterogeneity is well described in obstructive airway diseases such as asthma, emphysema and bronchiolitis obliterans. What has yet to be investigated is the effect of interstitial lung diseases on the distribution of ventilation.

AIM: to quantify the degree of ventilation heterogeneity caused by Idiopathic Pulmonary Fibrosis (IPF) & Combined Pulmonary Fibrosis and Emphysema (CPFE) when compared to reference data. We hypothesise that any ventilation heterogeneity is likely to originate in the acinar zone of the lung.

METHOD: Spirometry, TLCO and Multi-Breath Nitrogen Washout (MNBW) measurements were collected on patients with IPF (n=14) and CPFE (n=10). Diagnosis was determined by an ILD multi-disciplinary team.

RESULTS:

	FEV1 % (SD)	FVC % (SD)	FER (SD)	TLCO % (SD)	Scond L ⁻¹ (SD)	Sacin L ⁻¹ (SD)	LCi2% (SD)
IPF	82 (+/-18.6)	72 (+/-18.8)	85 (+/-4.9)	52 (+/-15.3)	0.007 (+/-0.013)	0.301 (+/-0.114)	10.4 (2.4)
CPFE	83 (+/-14.3)	81 (+/-11.8)	76 (+/-7.3)	40 (+/-16.9)	0.006 (+/-0.03)	0.490 (+/-0.14)	11.9 (+/-1.86)
P value	NS	NS	0.003	NS	NS	0.0024	NS
			Upper limit of normal		0.062	0.168	7.26

CONCLUSION: We have demonstrated for the first time that there is significant ventilation maldistribution in patients with IPF. As expected, the ventilation heterogeneity originates wholly in the acinar region and is further increased with emphysema.

Key Words: Ventilation heterogeneity, Multi Breath Washout (MBW)

3. MEDICATION- RELATED ANAPHYLAXIS: NON-ANTIMICROBIAL DRUGS IMPLICATED, PATIENT OUTCOMES AND MANAGEMENT LESSONS

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Medication-related anaphylaxis fatalities and admissions are increasing in Australia. As there are limited Australian patient level studies describing medication-induced anaphylaxis, our aim was to determine causative agents, extent of documentation and patient outcomes in patients diagnosed with non-antimicrobial medication-related anaphylaxis.

METHODS: Patients diagnosed with anaphylaxis to medications from January 2010 to December 2015 were identified using ICD-10 diagnosis code T88.6 (Anaphylactic reaction due to adverse effect of correct drug or medicament properly administered), and cross-referenced with the hospital Adverse Drug Reaction (ADR) database. Medical records were reviewed to extract patient demographics, implicated medication/s, treatment, outcomes and follow-up.

RESULTS: Of 196 patients identified, 80 (40.8 %) had anaphylaxis due to non-antimicrobial agents. Forty-two (52.5 %) patients had a history of a prior medication allergy and 12 (15%) had a previous reaction to the same drug or drug group. In 51 (63.8%) patients, anaphylaxis occurred during inpatient stay, with 31 reactions occurring peri-operatively. Eighty-five medications were implicated. Neuromuscular blocking agents were the most common class (31, 36.5 %) followed by non-steroidal anti-inflammatory agents. Glucocorticoids were administered in 71 (88.8%) cases, adrenaline in 69 (86.3%) and anti-histamines in 56 (70.0 %). Of the eighty patients, 57 (71.3 %) had at least one tryptase level taken and 32 (56.1 %) had elevated levels (>15.0ug/L). There was no mortality attributed to anaphylaxis. Fifty-three (66.3%) patients were further assessed in allergy clinics. One in ten cases did not have the reaction documented in the discharge summary. An ADR report was received for 38 patients (47.5%).

CONCLUSION: Ideally, ADR management includes early identification, reporting with causality assessment, and patient referral for testing. To prevent recurrence, information for patients and carers and follow up is essential. To improve ADR management, electronic ADR reporting systems are being implemented. Ultimately accurate documentation and communication will ensure optimal patient outcomes.

4. PRESEASONAL ORALAIR® IN AT RISK INDIVIDUALS CONFERS PROTECTION FROM EPIDEMIC THUNDERSTORM ASTHMA

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Susceptibility to thunderstorm asthma is conferred by ryegrass pollen (RGP) allergy, which affects >20% of people in south-east Australia. Asthma risk correlates with the elevation of specific IgE in serum. Last November, a springtime thunderstorm in Melbourne triggered the most devastating recorded thunderstorm asthma event worldwide. In a city of 4.5 million, ~20,000 Victorians were affected. Nine people died.

OBJECTIVES: From 2014-2016, we performed an investigator-initiated study (NCT02014623) of sublingual desensitisation for seasonal allergic rhinitis (SAR) in RGP allergic patients using a commercial five-grass tablet, Oralair®. Our aim was to determine efficacy of a four-month (June-September) pre-seasonal regimen, with the short duration to improve adherence. Treatments were concluded before the RGP season (October-December) to reduce risk under local conditions of sudden and extreme pollen loads augmented by local wind patterns. Twenty-one participants completed 2-3 years of treatment prior to November 2016. This provided a serendipitous experiment to examine the protective role of prior immunotherapy in the face of extreme thunderstorm asthma.

RESULTS: Treatment reduced SAR symptoms (Visual Analogue Score 78 to 34 mm, p<0.001) with consistent changes of immunological efficacy: specific serum IgG₄ rise (mean 0.49 mg_A/L to 1.6 mg_A/L, p<0.0001) and increased *in vitro* proportions of RGP-specific CD4+CD25+Foxp3+ (3.5% to 5.7%, p<0.001) and CD4+CD45RA-Foxp3+ (3.4% to 5.5%, p<0.01) Treg cells after treatment. Control SAR patients on medical therapy showed no change. During and after the thunderstorm event, 5/17 desensitised patients who were exposed to the event described mild asthma symptoms requiring reliever only, but none experienced an asthma exacerbation (emergency/GP presentation and corticosteroids). This was despite elevated mean RGP-specific serum IgE (48.6±36.7 IU), and 5/17 having pre-diagnosed asthma.

CONCLUSION: Pre-seasonal immunotherapy in high-risk individuals protects from unpredictable epidemic thunderstorm asthma. This has profound public health implications for such devastating events which are likely to increase with climate change.

5. A RANDOMIZED AND CONTROLLED STUDY COMPARING INTRA-OPERATIVE PATIENT CONTROLLED SEDATION VERSUS RADIOLOGIST CONTROLLED SEDATION USING MIDAZOLAM AND FENTANYL, FOR PATIENTS UNDERGOING INSERTION OF A CENTRAL VENOUS LINE

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Mild sedation with analgesia (midazolam and fentanyl) is administered during interventional radiology (IR) procedures to alleviate patient anxiety and discomfort and to reduce unwanted movements. Patient-Controlled-Sedation (PCS) has been emerging in other procedural settings and has the potential to reduce under-dosing, over-dosing and enhance patient satisfaction.

AIM: To compare PCS to Radiologist Controlled Sedation (RCS)

METHODS: Patients for central-venous-line insertion fulfilling the study criteria were consented and randomised. For the RCS arm, medications were administered by the radiologist as per routine practice. For the PCS arm, the Cardinal-IVAC-PCAM-syringe-pump-system[®] was programmed to deliver 1mg midazolam and 25ug fentanyl on each button press, with a 3-minute-lockout. Patients were instructed to demand boluses as required. Validated instruments were used for sedation scores (SS), amnesic effect, pain scores, patient satisfaction and safety. SS were measured at five time points (T1-T5). Procedure-time, cumulative-medication-dose, and time-to-discharge were recorded.

RESULTS: Forty patients were recruited, 20 in each arm. There was no difference between the groups, PCS-vs-RCS mean age (54.4±14.3 vs 53.3±13.6 years), gender (M:F 17:3 vs 14:6), ASA score (2.4±0.6 vs 2.2±0.9), underlying oncological disorder or type of line inserted. At T2, (skin-preparation) the PCS group had a significantly lower mean SS (0.3±0.6 vs 0.6±0.5; Wilcoxon-rank-test=0.047). There was no difference in SS at other time points or in amnesic effect. The average cumulative dose of each medication was higher in the PCS group but the differences were not statistically significant. All patients had low pain scores, mean<1/10 and expressed high satisfaction with the procedure and degree of sedation, mean>9.5/10. There was a more mixed response in both groups regarding the importance of being in control, overall mean=7.4/10. There were no adverse events and all patients were discharge ready two hours post-procedure.

CONCLUSION: In this first study of PCS in IR, PCS was found to be safe; SS in the PCS arm were found to be lower in the preparatory part of the procedure suggesting that patients were able to suitably control their requirements. Higher medication doses were used in the PCS arm suggesting that there may be a tendency to under-dose patients and that there is scope to improve patient satisfaction with the use of PCS.

6. SUBCONJUNCTIVAL DEXAMETHASONE FOR THE PREVENTION OF CYSTOID MACULAR OEDEMA IN ROUTINE CATARACT SURGERY: A RANDOMISED, CONTROLLED TRIAL

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Cystoid macular oedema (CMO) is a common complication causing visual loss following cataract surgery. Subconjunctival dexamethasone is used in patients at high risk of developing CMO, however its role in patients with no risk factors for CMO development has not been evaluated.

AIM: to test the hypothesis that injection of intraoperative subconjunctival dexamethasone prevents the development of CMO following routine uncomplicated cataract surgery.

METHODS: Prospective, randomised, controlled, investigator-masked, single centre clinical trial. Eyes of patients scheduled to undergo cataract surgery with no known risk factors for development of CMO were randomised to receive either the current standard of care (control group; n=91), or the current standard of care plus a single subconjunctival depot injection of dexamethasone at the conclusion of cataract surgery (dexamethasone group; n=118). All patients received steroid eyedrops post-operatively.

RESULTS: Mean change in CMT was similar between the two groups (1.9±20.0 µm in the control group compared to 1.7±13.5 µm in the dexamethasone group; P=0.931). Clinical CMO was present in 2 eyes (2.2%) in the control group and 1 eye (0.8%) in the dexamethasone group (P=0.581). BCVA at 1 week was 0.09±0.14 logMAR in the control group and 0.09±0.18 logMAR in the dexamethasone group (P=0.630). There were no statistically significant differences between the groups in the level of post-operative intraocular inflammation (P=0.693), change in intraocular pressure (P=0.944) or frequency of adverse events (P=0.828).

CONCLUSION: Subconjunctival dexamethasone was not efficacious in preventing CMO or reducing intraocular inflammation following routine cataract surgery. It was not associated with an increase in post-operative complications or adverse effects.

7. COMPLICATIONS WITH OSSEOINTEGRATION IN TRANSHUMERAL AMPUTEES

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BACKGROUND AND AIM(S): Upper extremity amputees often experience problems such as restriction of range of motion, skin irritation and prosthesis retention with traditional socket prosthesis. Transhumeral osseointegration offers direct bone anchorage of the prosthesis and has been shown to increase quality of life and function. As it is a relatively novel technique, this study aims to review complications in patients whom underwent transhumeral.

METHOD: A retrospective review of all patients who underwent transhumeral osseointegration through the Osseointegration Prosthesis for the Rehabilitation of Amputees (O.P.R.A) at the Alfred Hospital, Victoria, Australia was conducted. The review period was between January 2009 and December 2016. Patients were excluded if they were less than 18-years-old and if the clinical notes were incomplete.

RESULT(S): A total of 8 upper limbs in 7 patients underwent transhumeral osseointegration during the study period. Three patients experienced at least one complication. The most common post-operative complication was soft tissue infection requiring oral antibiotics in two upper limbs (25%). Only one patient (12.5%) failed to achieve osseointegration and required the entire implanted mechanism to be removed. Patient factors that showed statistical significance was active smoking ($p < 0.05$) and non-compliance with rehabilitative process ($p = 0.008$).

CONCLUSION(S): Failure to osseointegrate in transhumeral amputees is an uncommon but devastating complication. Following the post-operative rehabilitation protocol is vital in achieving osseointegration.

8. VALIDATION OF DAYS AT HOME AS AN OUTCOME MEASURE AFTER SURGERY: A PROSPECTIVE COHORT STUDY IN AUSTRALIA

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OBJECTIVE: To evaluate 'days at home up to 30 days after surgery' (DAH30) as a patient-centred outcome measure.

DESIGN: Prospective cohort study Data source: Using clinical trial data (seven trials, 2109 patients) we calculated DAH30 from length of stay, readmission, discharge destination and death up to 30 days after surgery.

MAIN OUTCOME: The association between DAH30 and serious complications after surgery.

RESULTS: One or more complications occurred in 263 of 1846 (14.2%) patients, including 19 (1.0%) deaths within 30 days of surgery; 245 (11.6%) patients were discharged to a rehabilitation facility and 150 (7.1%) were readmitted to hospital within 30 days of surgery. The median DAH30 was significantly less in older patients ($p < 0.001$), those with poorer physical functioning ($p < 0.001$) and in those undergoing longer operations ($p < 0.001$). Patients with serious complications had less days at home than patients without serious complications (20.5 (95% CI 19.1 to 21.9) vs 23.9 (95% CI 23.8 to 23.9) $p < 0.001$), and had higher rates of readmission (16.0% vs 5.9%; $p < 0.001$). After adjusting for patient age, sex, physical status and duration of surgery, the occurrence of postoperative complications was associated with fewer days at home after surgery (difference 3.0(95% CI 2.1 to 4.0) days; $p < 0.001$).

CONCLUSIONS: DAH30 has construct validity and is a readily obtainable generic patient-centred outcome measure. It is a pragmatic outcome measure for perioperative clinical trials.

9. THE IMPORTANCE OF INDIRECT CALORIMETRY IN THE MANAGEMENT OF NUTRITION IN MAJOR BURNS: A RETROSPECTIVE STUDY

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Early and appropriate nutrition is a key component in the management of burns-induced hypermetabolism. The current gold standard to measure energy expenditure is using indirect calorimetry (IC). However, the role of indirect calorimetry in clinical practice is still limited, and many burns centres continue to use predictive energy equations despite recognised limitations.

AIMS: To compare measured energy expenditure via indirect calorimetry with predicted energy requirements via four prediction energy equations. To correlate measured energy expenditure with clinical parameters to identify associations with the degree of hypermetabolism.

METHODS: 29 intensive care burns patients were retrospectively studied between 2013-2015, with mean (\pm standard deviation) age 46 ± 18 years and mean burn size 35 ± 17 %TBSA. Indirect calorimetry was performed on patients on 1-4 occasions ($n=46$ measurements). Predicted energy requirements were calculated using modified Schofield, modified Harris-Benedict, Ireton-Jones and Curreri equations. Bland-Altman Analyses were performed to assess the level of agreement. Spearman's correlation coefficients were calculated to assess the relationship between clinical parameters and degree of hypermetabolism.

RESULTS: Mean measured energy expenditure was 9752 ± 2089 kJ/day. Bland-Altman Analyses displayed substantial variability between measured energy expenditure and predicted energy requirements for all equations. Mean bias and limits of agreement were 54 ± 2373 kJ/day (limits of agreement -4692 to 4802 kJ/day) for modified Schofield; -1728 ± 2784 kJ/day (limits of agreement -7296 to 3839 kJ/day) for modified Harris-Benedict; -1276 ± 2092 kJ/day (limits of agreement -5460 to 2907 kJ/day) for Ireton-Jones; and -4476 ± 3402 kJ/day (limits of agreement -11280 to 2327 kJ/day) for Curreri. Spearman's correlation analysis demonstrated a significant and positive correlation between degree of hypermetabolism and day post-burn ($r=0.35$, $p=0.016$), and number of surgeries prior to indirect calorimetry measurement ($r=0.34$, $p=0.02$).

CONCLUSION: This study has shown clinically significant discrepancies between measured energy expenditure and predicted energy requirements. Overall, this study emphasises the increasing importance of indirect calorimetry as standard practice in major burns patients to ensure appropriate nutrition.

10. TUMOR MUTATION STATUS AND SITES OF METASTASIS IN PATIENTS WITH CUTANEOUS MELANOMA

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BACKGROUND: Cutaneous melanoma can metastasize haematogenously and/or lymphogenously to form satellite/in-transit, lymph node or distant metastasis. An improved understanding of the pathways of metastatic disease, including the clinicopathological and mutational factors that influence these pathways, is important to improve surveillance strategies and to individualize follow-up of high risk patients. This study aimed to determine if *BRAF* and *NRAS* mutant and wild-type tumours differ in their site of first tumour metastasis and anatomical metastatic pathway.

METHODS: Prospective cohort of patients with a histologically confirmed primary cutaneous melanoma at three tertiary referral centres in Melbourne, Australia from 2010-2015. Multinomial regression determined clinical, histological and mutational factors associated with the site of first metastasis and metastatic pathway.

RESULTS: Of 1,048 patients, 306 (29%) developed metastasis over a median 4.7 year follow-up period. 73 (24%), 192 (63%) and 41 (13%) developed distant, regional lymph node and satellite/in-transit metastasis as the first site of metastasis, respectively. *BRAF* mutation was associated lymph node metastasis (adjusted RRR 2.46 95%CI 1.07-5.69, $p=0.04$) and sentinel lymph node positivity (adjusted odds ratio [aOR] OR 1.55, 95%CI 1.14-2.10, $p=0.005$). *BRAF* mutation and *NRAS* mutation were associated with increased odds of developing liver metastasis (aOR 3.09, 95%CI 1.49-6.42, $p=0.003$; aOR 3.17, 95%CI 1.32-7.58, $p=0.01$) and central nervous system (CNS) metastasis (aOR 4.65, 95%CI 2.23-9.69, $p<0.001$; aOR 4.03, 95%CI 1.72-9.44, $p=0.001$). *NRAS* mutation was associated with lung metastasis (aOR 2.44, 95%CI 1.21-4.93, $p=0.01$).

CONCLUSION: *BRAF* mutation was found to be associated with lymph node metastasis as the site of first metastasis and sentinel lymph node positivity. *BRAF* and *NRAS* mutations were associated with CNS and liver metastasis and *NRAS* mutation with lung metastasis. If these findings are validated in additional prospective studies, a role for heightened visceral organ surveillance may be warranted in patients with tumours harboring these somatic mutations.

11. NEUTROPHIL TO LYMPHOCYTE RATIO (NLR) AS AN INDEPENDENT PROGNOSTIC MEASURE IN PATIENTS RECEIVING TARGETED THERAPY OR IMMUNOTHERAPY FOR STAGE IV MELANOMA

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BACKGROUND: Treatment of metastatic melanoma has rapidly evolved with the introduction of targeted and immunotherapies over the past decade. An elevated NLR (neutrophil-lymphocyte ratio) has been shown to be an independent marker of poor prognosis in malignancies including melanoma. Here we assess the utility of NLR as a marker of prognosis in patients with metastatic melanoma receiving targeted and immunotherapy.

METHODS: We identified all patients with stage 4 melanoma who received systemic therapy with either targeted therapy (BRAF +/- MEK inhibitor) or immunotherapy (Anti-CTLA-4 or Anti-PD-1) at our institution. We retrospectively reviewed all medical records and collected data on baseline demographics, prognostic factors (stage, LDH, CNS and Liver metastases), treatments received, pre-treatment NLR and outcomes. Overall survival (OS) was measured from date of first dose received.

RESULTS: 174 patients were treated between August 2010 to November 2016, 74 received targeting therapy with the remaining 100 receiving immunotherapy.

Median OS for patients with NLR < 5 was 11.7 months compared to 4.8 months in NLR >5 (HR 0.45, 95% C.I. 0.31-0.67, p=0.00007), this was seen in patients treated with both targeted therapies (HR 0.48, p=0.012) and immunotherapies (HR 0.40, p=0.0009). Multivariate analysis including age, sex, M stage, baseline LDH and CNS/Liver metastases, demonstrated NLR was the strongest predictor of OS (HR 0.39 95% C.I. 0.25-0.60, p=0.00002).

CONCLUSION: NLR >5 is a strong, independent prognostic factor in patients with metastatic melanoma regardless of targeted or immunotherapy. NLR may assist selection of initial therapy, for example, an unfavourable ratio may indicate need for more aggressive combination therapy in the first line setting.

12. EPIDEMIOLOGY OF PRIMARY INTRAOCULAR AND PRIMARY CENTRAL NERVOUS SYSTEM LYMPHOMA IN VICTORIA

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Primary intraocular lymphoma (PIOL) is a rare subtype of primary central nervous system lymphoma (PCNSL). Few studies have examined the epidemiology of PIOL, with its true incidence and natural history not well established.

AIM: To describe the demographics, incidence and survival in patients with PIOL and PCNSL in Victoria, Australia.

METHODS: Retrospective study of cases of PIOL and PCNSL reported to the Victorian Cancer Registry from 1 January 1996 to 31 December 2015. Cases were included where a histological diagnosis of primary lymphoma was confirmed on brain biopsy, vitreoretinal biopsy or CSF cytology. Incidence rate was calculated using a dynamic population model.

RESULTS: 13 cases of PIOL and 422 cases of PCNSL were identified over the 20-year study period. Incidence rates were 1.26 cases per 1,000,000 person-years, and 40.87 cases per 1,000,000 person-years, respectively. The incidence of PIOL appeared to increase over time. Mean age at diagnosis was 65 years. 48% of patients were female. 85% of cases were diagnosed as diffuse large B-cell lymphoma. Overall median survival was 22 months over the study period. Patients with PCNSL had improved survival with a later year of diagnosis.

CONCLUSION: This first registry-wide study of PIOL and PCNSL in an Australian population demonstrates a similar incidence and survival to that reported in international studies. PIOL remains a rare disease with poor prognosis, however a diagnosis of PCNSL survival in later years improved survival. This may be due to advances in treatment and increasing awareness of its rising incidence.

13. RESULTS FROM THE UPPER GASTROINTESTINAL CANCER REGISTRY PANCREATIC CANCER MODULE PILOT

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AIM: The Upper Gastrointestinal Cancer Registry (UGICR) is a multi-modular clinical quality registry based at Monash University. The aim of the registry is to identify unwarranted variation in treatment and outcomes for people with upper gastrointestinal cancers; and, to provide timely risk-adjusted benchmarked reports of quality of care to participating hospitals. The pancreatic cancer module pilot was conducted to establish registry processes, develop pancreatic cancer clinical quality indicators (QIs) and to trial data collection methodology.

METHODS: A working party of clinical experts reviewed guidelines and developed a set of QIs which measure performance against agreed 'best-practice' in pancreatic cancer care. Participants were recruited using an opt-out approach from four metropolitan health services in Victoria including the Alfred Hospital, from April to December in 2016. Data were abstracted from patient medical records by Monash University data collectors. Rudimentary statistical analyses were performed on the pilot data with a focus on data completeness and availability. The QIs were then revised by the working party.

RESULTS: A total of 15 QIs were developed by the clinical working party and data were collected on 115 eligible participants. Data item completeness varied significantly with 'clinical stage at time of diagnosis', a necessary risk adjustment variable, recorded for only 23 out of the 115 participants (20%).

DISCUSSION: Due to limitations associated with the use of medical records as source data, some data items had a completion rate which would impair the measurement of some QIs and/or adjustment of QI results for casemix.

CONCLUSION: The pancreatic module of the UGICR has been piloted at four Victorian sites. A set of QIs were developed for the pancreatic cancer module but these required further revision, after pilot results illustrated limitations associated with collection of some key data items.

14. A 7-YEAR REVIEW OF PAPILLARY THYROID CARCINOMA PATIENTS WITH COMPARTMENTAL LYMPH NODE DISSECTION

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INTRODUCTION: The best management approach for cervical metastases in papillary thyroid cancer (PTC) continues to evolve.

AIM: To characterise the pattern of lymph node metastases in patient with PTC.

METHOD: A retrospective review of patients with PTC larger than 10mm who underwent a compartmental lymph node (LN) dissection at our institution from 2009 to 2016.

RESULTS: All of the 349 patients (256 females, 93 males) underwent prophylactic central LN dissection. Of these, 58 patients had therapeutic lateral lymph node dissection (LLND), 291 only had central LN dissection (CLND). 41.6% had cervical lymph node metastases. Tumour size was larger in the LLND group at 29.5 mm compared to 24.6 mm in the CLND only ($p = 0.01$). Expectedly, the lymph node yield was higher in the LLND group (33.5 compared to 5.1, $p < 0.001$), however the lymph node ratio (number of positive lymph node compared to lymph node yield) was higher in the CLND group (0.55 compared to 0.43, $p = 0.04$). Looking at the pattern of lateral lymph node metastases, upper lobe tumours always metastasised to level II, middle lobe tumour to level III and IV and lower lobe tumours always to level III and IV. However, there is significant crossover to other levels and 4 patients had skip metastases.

CONCLUSION: 41.6% of PTC patients developed lymph node metastases. Although there was a tendency for stepwise progression of LN metastases, there were cases of skip metastases and multilevel involvement in the lateral neck; hence we recommend a comprehensive, compartment oriented LN dissection.

15. TOWARD DEFINING CELLS-OF-ORIGIN AND GENETIC ABERRATIONS IN MELANOCYTE TRANSFORMATION

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In human or mouse, the hair follicle bulge is a major stem cell niche for melanocytes in hairy skin, while the secretory portion of the eccrine sweat gland is proposed to be such a niche in glabrous skin. Melanocyte stem cells are amelanotic and thought to regenerate functional melanotic melanocytes in a hierarchical manner. Genetic or epigenetic changes in melanocytes can cause dysfunction of the hierarchy, leading to pathophysiological skin conditions including melanoma which clinically and genetically develop distinctly according to anatomical origin. For this reason, understanding the developmental lineage of melanocytes is important. In comparison to other cell systems, the molecular mechanisms by which melanocytic development is controlled are not well characterized because of limited methods to prospectively isolate phenotypically and functionally distinct melanocytes. Here we show a novel method to purify melanocytes directly from hairy skin and glabrous skin by using the melanocyte-associated marker c-kit. In mice, we utilized side (SSC)- and near infra-red (IR)-scattering of light to detect by flow cytometry intracellular melanin pigment, the canonical marker of melanocytic differentiation. We found that pigmented cells (SSC^{high}IR^{high}) within unfractionated melanocyte subpopulations have decreased clonogenic activity and differentiation potential compared to non-pigmented cells that was dependent on anatomical site, culture conditions and the presence of underlying perturbations in NRas signaling. These findings enable understanding of the biology of melanocytes, the cells-of-origin of melanoma, in far greater detail than currently possible. In turn, this will lead to improved prevention as well as treatment of melanoma and other diseases of the pigmented system.

16. SCREENING FOR PSYCHOSOCIAL DISTRESS IN LUNG CANCER: DEFINING THE UNMET GAPS

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OBJECTIVE: The evaluation of supportive care needs in lung cancer patients may be enhanced by engaging systematic screening using a validated distress screening tool, the distress thermometer (DT). We aimed to identify the extent of use of the screening tool, levels of distress and psychosocial problems identified by the tool and to determine associations with distress and the impacts of distress screening on patient outcomes in an Australian university teaching hospital.

METHODS: We recruited all new lung cancer diagnoses recruited via the Victorian Lung Cancer Registry at the Alfred Hospital, Melbourne, Australia, during the period 14 July 2011 to 24 September 2016. We evaluated the presence of documented supportive care screening using the distress thermometer and demographic, clinical, treatment and outcome measures.

RESULTS: Levels of screening were very low (15.2%) amongst this cohort and yet 49.2% respondents described high levels of distress (median DT 3.5; IQR 1-6). High levels of distress (DT≥4) were associated with higher levels of practical, family, emotional and physical problems. Patients reporting higher levels of distress experienced an accelerated rate of decline in physical component of quality of life and had increased risk of death.

CONCLUSIONS: The identification of the supportive care needs for lung cancer patients may be augmented by the use of a systematic screening tool. This study identifies significant gap in supportive care screening, high levels of distress amongst screened subjects and poorer patient related outcomes for distressed patients. This study provides an important platform for institutional supportive care screening strategy planning.

17. RUPTURED HEPATOCELLULAR CARCINOMA: DEMOGRAPHICS, PREDICTORS AND CLINICAL OUTCOMES IN AN AUSTRALIAN TERTIARY CENTER

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BACKGROUND: Rupture of hepatocellular carcinoma (HCC) is a rare but dramatic complication of primary liver cancer. The prognostic influence of HCC rupture on the short and long term patients' outcomes is still controversial.

AIMS: To assess the management of HCC rupture and examine the survival outcomes of patients with ruptured HCC in an Australian tertiary center and to compare survival with those of patients with non-ruptured HCC.

METHODS: Data on all patients diagnosed with HCC between January 1997 to January 2017 at the Alfred Health were extracted from medical records. Patients with HCC rupture were matched with HCC patients without rupture, according to their baseline demographics (age, sex) and Barcelona clinic liver cancer (BCLC) stage. A Cox proportional hazards model was used to study the survival of patients in the two cohorts after adjusting for age, sex, BCLC stage and the Model of End-stage Liver Disease (MELD) score.

RESULTS: A total of 9 patients with HCC rupture were identified during the study period. The baseline demographics of patients with ruptured HCC and the matched controls are presented in Table 1. Thirty-three percent of rupture cases had hepatitis C cirrhosis, 22% had non-alcoholic steatohepatitis, and the remainder had alcohol related cirrhosis, hepatitis B cirrhosis or a combination of different aetiologies. There was a single case of sporadic HCC. Tumour rupture was the initial presentation of HCC in 44% of cases, with the presenting complaint being abdominal pain. The site of HCC rupture was at the right and left lobes of the liver in 66.7% and 33.3%, respectively. Treatments used include surgical resection (n=1), CT embolization (n=1), transcatheter arterial chemoembolization (n=1) and a combination of the previous treatments mentioned (n=3). Thirty-three percent of the rupture group were managed conservatively. None of the patients died within 30 days from the rupture.

The median follow-up time for the HCC rupture cases and controls was 1.71 years (range 0.09-4.40) and 1.82 years (range 0.05-14.7), respectively. The median survival in the HCC rupture group was 2.4 years (range 0.1-6.9). The Kaplan Meier curve showed comparable survival in the two groups in the first 3 years (log-rank p-value=0.2), but significantly lower survival in the HCC ruptured cohort when the whole study period was analysed (log-rank p-value =0.007). The Cox proportional hazards model showed that the HCC rupture was significantly associated with lower overall survival (Hazards ratio 4.7, 95% CI 1.11-20.0).

	HCC rupture (n=9)	HCC non-rupture (n=35)
Median age (range), years	61 (49-77)	61 (42-83)
Sex, female n,%	1 (11)	7 (20)
BCLC stage		
B, n(%)	1 (11)	1 (2.9)
C, n(%)	8 (89)	34 (37.1)
Model of End-stage Liver Disease score, median	14	8

CONCLUSION: Although survival rate in the HCC rupture group was lower, these patients survived for a considerable time after the HCC rupture, and with similar survival rate in the first 2 years to the non-rupture group. Further analysis with a larger dataset would be beneficial to further identify outcome predictors and demonstrate the impact of HCC rupture on overall survival in HCC patients, therefore guiding future management.

18. TARGETING ACTIVATED PLATELETS: A UNIQUE AND POTENTIALLY UNIVERSAL APPROACH FOR CANCER IMAGING

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INTRODUCTION: The early detection of primary tumours and metastatic disease is vital for successful therapy and is contingent upon highly specific molecular markers and sensitive, non-invasive imaging techniques. Activated platelets are shown to be present and abundant in the tumour microenvironment. Therefore, we aim to determine if a single chain antibody (scFv) which targets the integrin GPIIb/IIIa present on activated platelets can be utilized as a novel biotechnological tool for molecular imaging of cancer.

METHODS: The scFv_{GPIIb/IIIa} was conjugated to either Cy7, ⁶⁴Cu or ultrasound-enhancing microbubbles. Molecular imaging via fluorescence imaging, PET and ultrasound was performed in mice bearing human tumour xenograft using the scFv_{GPIIb/IIIa}-Cy7, scFv_{GPIIb/IIIa}-⁶⁴Cu and scFv_{GPIIb/IIIa}-microbubbles, respectively, to confirm specific targeting of scFv_{GPIIb/IIIa} to activated platelets in the tumour stroma.

RESULTS: Using scFv_{GPIIb/IIIa} we successfully showed specific targeting of activated platelets within the microenvironment of human tumour xenografts models via three different molecular imaging modalities. The presence of platelets within the tumour microenvironment, and as such their relevance as a molecular target epitope in cancer was further confirmed via immunofluorescence of human tumour sections of various cancer types, thus validating the translational importance of our novel approach to human disease.

CONCLUSIONS: Our study provides proof of concept for imaging and localization of tumours by molecular targeting of activated platelets. These findings warrant further development of this activated platelet specific scFv_{GPIIb/IIIa}, potentially as a universal marker for cancer diagnosis and ultimately for drug delivery in an innovative theranostic approach.

19. EVOLVING AUSTRALIAN TRENDS IN PROCEDURAL CHARACTERISTICS AND CLINICAL OUTCOMES IN PATIENTS UNDERGOING PERCUTANEOUS CORONARY INTERVENTION FOR ST-ELEVATION MYOCARDIAL INFARCTION

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BACKGROUND: Over the last decade, systems of care for ST-elevation myocardial infarction (STEMI) have evolved to try to improve outcomes and timely access to percutaneous coronary intervention (PCI). There have also been advances in PCI techniques and adjunctive pharmacotherapies.

AIM: To determine temporal changes in practices and clinical outcomes of PCI in STEMI patients.

METHODS: We prospectively collected data on 8,412 consecutive patients undergoing STEMI PCI between 2005 and 2016 in the multi-centre Melbourne Interventional Group registry. Data were divided by year of PCI for trends analysis. The primary endpoint was 30-day mortality.

RESULTS: Patient demographics and comorbidities including smoking and diabetes have remained stable. The volume of primary PCI performed within 12 hours of symptom onset has significantly risen (65.7% to 80.1%, p<0.01). The proportion of patients achieving the recommended door-to-balloon time ≤90 minutes has also risen (37.6% to 59.0%, p<0.01). Patient complexity has also increased with more STEMI patients post out-of-hospital cardiac arrest now being treated with PCI (2.6% to 9.1%, p<0.01). A shift from mainly femoral to radial access and from bare-metal to drug-eluting stent use was seen. Glycoprotein IIb/IIIa inhibitors are being used less frequently with increasing use of newer antiplatelet agents. Thirty-day mortality has remained low throughout the study period at 6.5% overall.

CONCLUSION: While timely access to primary PCI has improved, mortality rates have remained unchanged, but remain low and compare favourably to international data. Australian PCI practice has overall evolved in response to evidence and emergence of new adjunctive device and pharmacotherapies.

20. MODIC CHANGES ON MRI, AND SMOKING PREDICT VASCULAR ADHERENCE DURING ANTERIOR LUMBAR EXPOSURE

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INTRODUCTION: The anterior approach for lumbar disc surgery is increasing but it carries the inherent risk of major vascular injury and significant bleeding. We aimed to identify predictive factors for vascular adherence to allow pre-operative planning and technique modification.

METHODS: Retrospective analysis was performed of a prospectively collected database of consecutive patients undergoing anterior retroperitoneal exposure for lumbar disc surgery. The data collected included demographic factors, smoking status, MRI findings including modic changes at the operative level, operative parameters including level(s) exposed, and difficulty of dissection due to vascular adherence (routine or standard). Smokers were defined as those patients who were currently smoking or had only ceased smoking within 6 months of the operation. Exclusion criteria were morbid obesity, previous laparoscopic hernia repair, previous anterior spine surgery and previous abdominal/pelvic radiotherapy.

RESULTS: We analyzed 246 patients (mean age 42.5 years (21-81), male 50%).

A multivariate regression analysis of the risks for a difficult dissection demonstrated two statistically significant risk factors - modic 2 changes on MRI ($p = 0.009$) and smoking status ($p=0.007$). 57 patients had modic 2 changes at the operative level of which 16 had a difficult dissection due to vascular adherence (28%). Of the 189 patients without modic 2 changes at the operative level, 25 patients had a difficult dissection (13%) ($p=0.014$). Patients with modic 2 changes were 2.1 times more likely to have a difficult dissection.

Of the 125 non-smoking patients, 13 had a difficult dissection (10%). Of the 83 ex-smokers, 19 had a difficult dissection (23%) and of the 38 current smokers, 9 had a difficult dissection (24%). Overall, of the 121 smokers (ex and current), 28 had a difficult dissection (23%). Patients with any smoking history are 2.2 times more likely to have had a difficult dissection. ($p= 0.01$).

CONCLUSION: Modic 2 changes on MRI predicted adherence of the large vessels to the anterior annulus of the lumbar intervertebral disc leading to a more difficult dissection to expose the target disc. Any smoking history also predicted vascular adherence and difficult dissection. These two predictors should alert the surgeon undertaking anterior exposure for lumbar disc procedures of the potential for a challenging dissection and major vascular injury.

21. INTERDISCIPLINARY APPROACHES TO CHRONIC DISEASE: COPD AND HEART FAILURE

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Exacerbations of Chronic Obstructive Pulmonary Disease (COPD) and Heart Failure (HF) are common reasons for admission to Alfred Health. Marked variation in care existed between “silos” of Alfred Health services, units and providers. Outcomes of care, particularly post-hospital discharge, were difficult to characterise.

AIM: Design, test and refine an agreed, sustainable model of care across Alfred Health services, units and providers for COPD and HF patients that integrates the various components of the patient journey to improve patient experience and outcomes.

METHODS: Two parallel interdisciplinary steering groups with representatives of all relevant disciplines and clinical areas (General Medicine, Cardiology, Respiratory Medicine, Emergency Medicine, HARP (Hospital Admission Reduction Program) and subacute services) were established to govern the review of the COPD and HF models of care. A structured redesign methodology (establishment, diagnostics, solution design, implementation, evaluation, sustain) was followed by both and learnings shared throughout.

RESULTS: Wide variation in models of care was identified across the organisation, including approaches to medical management, patient education, and transition to community care. A structured review process identified gaps in care, and new models of care were proposed, with an agreed, evidence-based approach to care for COPD and HF established. Multiple solutions were implemented, including: integrated IT solutions such as care bundles for COPD and HF (in Cerner PowerChart), tailored education packages for patients, emergency medication packs & oxygen alert cards (for COPD), early follow-up clinic (for HF) and a coordinated transition to community and primary care which included HARP services. Results are now monitored via a real-time dashboard with key outcome measures including re-admission rate and length of stay. Good relationships between disciplines and services has resulted in participants committing to ongoing continuous improvement of care for each condition.

CONCLUSION: Establishing a mechanism to foster collaborative interdisciplinary agreement is important to reduce variability in service delivery and improve overall patient outcomes. A redesign methodology provides a structured tool to facilitate the identification of appropriate solutions and the implementation of the innovations into business as usual. This approach could be scaled and spread to support other business units across the organisation.

22. A SYSTEMS-BIOLOGY APPROACH TO IDENTIFYING AND CHARACTERISING A NOVEL REGULATOR OF LIPID METABOLISM

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Utilising a cutting-edge discovery platform, we identified many potential novel regulators of lipid metabolism. One such novel target we named proteosomal associated protein (PAP) was strongly correlated with hepatic diacylglycerol (DAG) species across 107 strains of mice. Utilising two hepatic cells lines Hep3B and HepG2 we sought to validate PAP as a regulator of lipid metabolism, through manipulation of free fatty acids (FFAs). Furthermore, we examined the effect of acutely over expressing PAP in C57Bl/6J and DBA/2J mice subjected to a normal chow diet via adenoviral expression. PAP overexpression in Hep3B/HepG2 cells resulted in a reduction in DGAT2 mRNA expression, which is involved in triacylglycerol synthesis, and an increase CGI-58 which is involved in DAG hydrolysis. Overexpression of PAP also led to an increase in mRNA expression of the marker of ER stress, CHOP, and an increase in mRNA expression of TNF- α , a marker of cellular inflammation. Moreover, chow-fed C57Bl/6J mice over expressing PAP result in a 75% reduction ($p=0.035$) in hormone sensitive lipase compared to control mice. Further studies overexpressing PAP in both C57Bl/6J and DBA/2J showed that PAP was driving changes in lipid species composition in both plasma and liver. Our findings demonstrate that PAP plays a role in FA metabolism with possible effects on ER stress and inflammation due to increased levels of toxic lipid intermediaries. Furthermore, it validates the discovery platform to identify novel regulators of lipid metabolism.

23. NON-OPERATIVE MANAGEMENT OF CAVAL INJURY FOLLOWING COMPLICATED INFERIOR VENA CAVA FILTER RETRIEVAL.

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Inferior vena cava (IVC) filters are used to reduce the risk of life-threatening pulmonary embolism in patients with deep venous thrombosis and a contraindication to anticoagulation. Complications related to filter retrieval are uncommon, but are being increasingly recognised especially with prolonged filter dwell times.

AIM: To describe two rare cases of vena cava dissection following IVC filter removal and perform a literature review on the topic.

METHODS: We present a case series of two challenging IVC filter retrievals that were complicated by filter strut penetration into the caval wall. Both cases had filters in-situ for prolonged periods requiring advanced retrieval techniques, and ultimately resulted in localised trauma to the caval wall with contrast extravasation. Clinical findings at time of injury and follow-up visits were reviewed.

RESULTS: Case 1 involved a 70-year-old female who underwent removal of an IVC filter that was placed six months prior for an unprovoked pulmonary embolus with a contraindication to anticoagulation. Case 2 involved a 35-year-old male who presented 18 months after filter placement following a C2/3 fracture-dislocation with epidural haematoma after a motorbike accident. Loop-snare and hangman techniques were utilised to retrieve the filters. Retrievals were complicated by caval intimal dissection and pseudoaneurysm formation. Endovascular intervention with an occlusion balloon was an effective method to control contrast extravasation, without the need for surgical intervention within the first 12 months. A period of therapeutic anticoagulation was prescribed in both cases.

CONCLUSION: Caval dissections are a rare but potentially life-threatening injury. With a growing number of filter insertions and few established follow-up protocols, interventionalists should be wary of an increase in the number of referrals for more complex filter retrievals and the potential associated complications. Intimal injury to the IVC during filter retrieval may be initially managed with balloon tamponade if the patient remains clinically stable.

24. ABNORMAL DIASTOLY PREDICTS LONG TERM FUNCTIONAL OUTCOME AND RE-HOSPITALISATION IN PATIENTS UNDERGOING TRANSCATHETER AORTIC VALVE IMPLANTATION

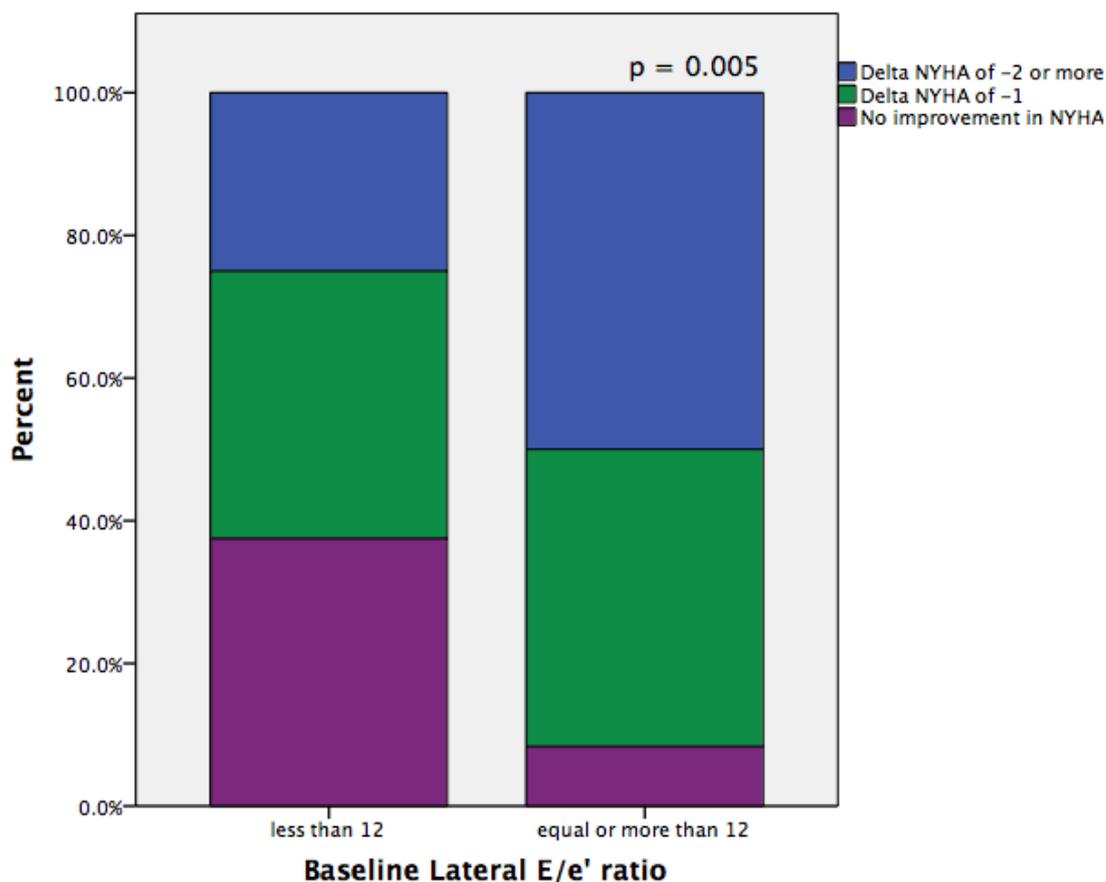
Mundisugih J, Kaye D, Duffy S, Walton T, Nanayakkara S
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BACKGROUND: Transcatheter aortic valve implantation (TAVI) is an alternative treatment for severe symptomatic aortic stenosis (AS) in patients at high surgical risk. Aortic stenosis induces significant structural alterations to the left ventricle (LV) that lead to elevated filling pressure. We sought to assess the impact of elevated filling pressure on functional outcomes following TAVI.

METHODS: We conducted a retrospective review of all TAVI in our institution between January 2008 and June 2016. Symptoms and functional status was recorded prior to TAVI and at 12 months post-procedure, graded according to New York Heart Association (NYHA) classification. Patients were assigned to cohorts based on their baseline left ventricular filling pressure assessed by the lateral E/e' ratio. LV filling pressure was considered elevated if lateral E/e' ratio ≥ 12 . The primary end-point was improvement in symptoms and functional status expressed as delta NYHA between prior to TAVI and at 12 months.

RESULTS: Over the study period, 100 patients with high-surgical risk underwent TAVI, of which 84 patients had E/e' ≥ 12 and 16 patients with E/e' < 12 . The percentage of patients who had greater improvement in NYHA was higher in the elevated LV filling pressure group, with 42/84 patients (50%) had delta NYHA of -2 or more, and 35/84 patients (42%) had delta NYHA of -1. In contrast, the normal LV filling pressure group had 4/16 patients (25%), and 6/16 patients (38%) with delta NYHA of -2 or more, and -1, respectively. (p=0.005, chi-square test)

CONCLUSIONS: Baseline LV filling pressure predicts functional outcome in high surgical risk patients with severe symptomatic AS undergoing TAVI. Patients with lateral E/e' ratio ≥ 12 were more likely to have greater improvement in NYHA functional class at 12 months.



25. TARGETED THROMBOLYSIS: NOVEL, INNOVATIVE, RISK-FREE AND SITE SPECIFIC DELIVERY OF AN ANTI-THROMBOTIC THERAPEUTIC

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Myocardial infarction and ischaemic stroke remain the leading cause of mortality both in Australia and worldwide. Whilst therapeutic advances have been made to address these statistics, widespread use of these pharmaceutical therapies within the clinics has been hampered due to associated bleeding risk and complications.

AIM: To develop a targeted anti-thrombotic therapy to deliver a therapeutic payload directly to the site of the thrombus.

METHODS: A recombinant fusion protein was designed, Targ-TAP, containing a single-chain antibody targeted towards the activated platelet GPIIb/IIIa integrin, scFV_{Targ}, as well as the potent therapeutic inhibitor of Factor Xa, tick anticoagulant peptide (TAP). Using *in vitro* assays, as well as an *in vivo* model of thrombosis, the specificity and functionality of Targ-TAP as a novel thrombolytic therapeutic was assessed.

RESULTS: Flow cytometry assays using both human and mouse blood demonstrated the specific binding of SCE5-TAP to ADP activated platelets. The specificity of Targ-TAP toward the GPIIb/IIIa integrin was demonstrated via a competitive assay, whereby the addition of Targ-TAP significantly inhibited anti-fibrinogen antibody binding. Flow chamber assays using bright field microscopy demonstrated the potent thrombolytic capacity of Targ-TAP as well as its specificity toward aggregated platelets. Further, using a FeCl₃-induced mouse model of arterial thrombosis, Targ-TAP significantly delayed arterial occlusion and importantly, tail-bleeding assays determined SCE5-TAP had no effect upon bleeding time or blood volume loss.

CONCLUSION: Targ-TAP allows for a high concentration of the thrombolytic drug to be delivered directly to the thrombus, whilst ensuring low systemic concentrations. Targ-TAP demonstrates a novel therapeutic toward a safe, bleeding complication free treatment of thrombosis related diseases.

26. GARCINIA KOLA – AFRICAN ETHNO MEDICATION WITH ANTI-ATHEROSCLEROTIC EFFECTS?

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The plant *Garcinia kola* is used in African ethno medicine to treat various diseases. Anti-inflammatory effects are one of the several beneficial properties described for this plant. We hypothesized that garcinoic acid (GA), as one of the phytochemicals isolated from *Garcinia kola*, is responsible for these effects.

AIM: We investigated the capacity of GA to block the inflammatory response in lipopolysaccharide (LPS) -activated murine macrophages and in atherosclerosis, which is considered to be an inflammatory disease.

METHODS: For cell culture-based experiments RAW264.7 macrophages have been activated using LPS to determine the effect of GA on inflammatory pathways on gene level (RT-qPCR), protein level (Western blot) and secretion level of respective signaling molecules, such as prostaglandins (UPLC-MS/MS) and nitric oxide (Griess assay). For the analysis of plaque development *in vivo*, we used the atherosclerotic mouse model of *ApoE*^{-/-} all fed with high-fat Western-type diet (HFD) providing histology and immunohistochemistry staining.

RESULTS: We found that that LPS induced upregulation of iNos and Cox2 expression and the formation of respective signaling molecules nitric oxide, thromboxanes and prostaglandins. All these characteristic parameters were significantly reduced by GA. Further, application of GA (1 mg/kg, i.p.) affected the composition, but not the size of developed atherosclerotic plaques in aortic roots of *ApoE*^{-/-} mice fed with HFD. In brief, stability of the plaques was improved by increased collagen content and smaller necrotic core size under GA treatment. Based on these data we predict that GA blocks the inflammatory response and plays a pivotal role in the formation of atherosclerotic plaques, in particular, affecting plaque (in)stability.

CONCLUSION: If the proposed anti-atherosclerotic properties of GA are supported by further studies, this compound is a promising new therapeutic lead molecule for the treatment of unstable, rupture-prone atherosclerotic plaques and their complications.

27. VCP979, A NOVEL P38MAPK INHIBITOR, ATTENUATES INFLAMMATORY RESPONSE AND IMPROVE CARDIAC FUNCTION POST-MYOCARDIAL INFARCTION

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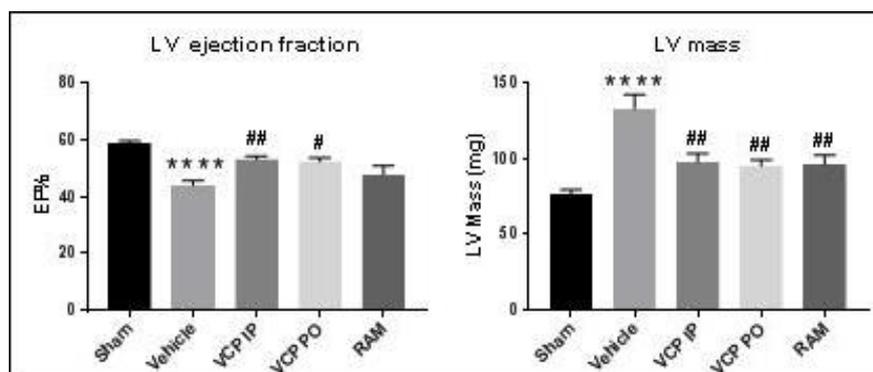
BACKGROUND: Following myocardial infarction (MI), a localised inflammatory response occurs and progressive myocardium structural changes leading to left ventricular (LV) dysfunction. Evidence indicates that p38 mitogen-activated protein kinase (p38 MAPK) may be a common intracellular signalling pathway involved in cardiac remodelling and maladaptive processes post-MI.

Purpose: The aim of this study was to determine the anti-hypertrophy, anti-fibrosis and anti-inflammatory effects of a novel p38MAPK inhibitor, VCP979, and its in vivo efficacy in post-MI.

METHODS: Cultured rat neonatal cardiac myocyte (NCM) hypertrophy stimulated with angiotensin II (AngII 100nM, 60hrs; IL-1 β & TNF α , 10ng/ml, 48hrs) and fibroblast (NCF) collagen synthesis (stimulated by AngII, 100nM & TGF β , 10ng/ml, 48hrs) were determined by [³H]-leucine and [³H]-proline incorporation, respectively. Lipopolysaccharides (LPS, 500ng/ml, 18hrs) stimulated THP-1 cell inflammatory cytokine (IL-6, IL-1 β and TNF α) gene expression were determined by q-PCR. Cells were pre-treated with VCP979 (0.1 to 3 μ M) for 1 hour before stimulation and analysis performed as previous reported protocols. MI was introduced by left anterior descending coronary artery in C57BL/6 mouse (6-8 weeks age, ~20grams) followed by treatment with VCP979 (50mg/kg/day, IP or PO) started 1 week after surgery for 4 weeks using Ramipril as positive control. Echocardiography performed at baseline and endpoint and tissues harvested for protein and gene expression assays.

RESULTS: VCP979 dose-dependently inhibit AngII, IL-1 β & TNF α stimulated NCM hypertrophy, AngII & TGF β stimulated NCF collagen synthesis, and LPS stimulated IL-6, IL-1 β and TNF α gene expression. VCP979 significantly improved cardiac function and reduced hypertrophy (Figure).

CONCLUSION: This study has demonstrated that the novel p38MAPK inhibitor, VCP979, can reduce cardiac hypertrophy and fibrosis in vitro and in vivo. Together with its anti-inflammatory effect, VCP979 is likely to be a novel therapeutic agent for the management of heart failure post-MI.



28. IMPACT OF PRE-PROCEDURAL BLOOD PRESSURE ON LONG-TERM OUTCOMES FOLLOWING PERCUTANEOUS CORONARY INTERVENTION

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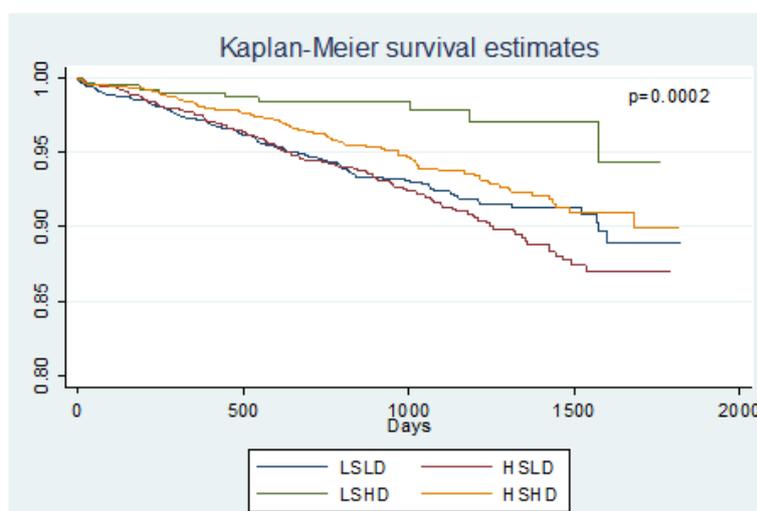
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BACKGROUND: Lowering diastolic blood pressure (BP) may lead to impaired coronary perfusion and result in myocardial ischaemia. Wide pulse pressure (high systolic, low diastolic; HSLD) may also be a predictor of adverse cardiovascular events.

METHODS: We studied consecutive patients from the Melbourne Interventional Group registry undergoing percutaneous coronary intervention (PCI) with pre-procedural BP recorded. We excluded patients with STEMI, cardiogenic shock and out-of-hospital cardiac arrest. Patients were divided into four groups according to systolic BP (high ≥ 120 mmHg, low < 120 mmHg) and diastolic BP (high > 70 mmHg, low ≤ 70 mmHg).

RESULTS: We assessed 10,876 patients across six hospitals between August 2009 and December 2016. Mean systolic BP was 130.2mmHg, mean diastolic BP was 70.4mmHg and mean pulse pressure was 59.7mmHg. Patients with HSLD were older, more frequently female and hypertensive with increased rates of hypercholesterolaemia, renal impairment, diabetes and previous coronary artery disease ($p < 0.0001$). HSLD had more multi-vessel and left main disease on angiogram ($p < 0.0001$). There was no difference in 30-day outcomes, but at 12 months the HSLD group had more MI and stroke. National death index linked analysis revealed mortality was highest for HSLD (7.9%) and lowest for low systolic, high diastolic (LSHD; narrow pulse pressure) at 2.1% ($p = 0.0002$). Cox regression analysis showed that having LSHD predicted lower long-term mortality (HR 0.50, 99% CI 0.25-0.98, $p = 0.04$).

CONCLUSIONS: Pulse pressure at the time of presentation is associated with long-term outcomes following PCI.



29. PATTERNS OF STRUCTURAL REMODELLING IN ADULTS RECEIVING AXIAL VERSUS CENTRIFUGAL MECHANICAL ASSIST DEVICES

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Left-ventricular assist devices (LVADs) are an important line of therapy in end-stage Heart Failure. These devices feature one of two commonly used pump mechanisms: axial and centrifugal. Which pump mechanism is superior in promoting structural remodelling is unclear.

AIM: To compare patterns in LV unloading and structural remodelling in patients receiving axial versus centrifugal VADs.

METHODS: Data was retrospectively collected for 113 patients who underwent LVAD implantation at single Australian tertiary health service since 2010. Patients who received biventricular devices, multiple LVADs and those supported for less than 3 months were excluded from further analysis. Transthoracic echocardiogram (TTE) data was collected for 20 patients receiving axial VADs and 79 patients receiving centrifugal VADs. Several timepoints of interest were identified: prior to device implantation, during the first 14 days post device implantation (immediately post-VAD), and at 1, 3 and 6 months post VAD implantation. Various parameters of structural remodelling at each timepoint were compared between the axial and centrifugal cohorts, including LV end-diastolic diameter (LVEDD), LV mass index (LVMI), left atrial volume index (LAVI) and right ventricular systolic pressure (RVSP).

RESULTS: In patients receiving axial devices, LVEDD index reduced from 38.2 ± 1.38 mm/m² pre-VAD to 31.5 ± 1.56 mm/m² Immediately post-VAD ($p=0.003$) and to 32.8 ± 1.11 mm/m² at 6 months post-VAD ($p=0.004$). In patients receiving centrifugal devices, LVEDD index reduced from 36.9 ± 0.63 mm/m² pre-VAD to 29.1 ± 0.84 mm/m² Immediately post-VAD ($p < 0.0001$) and to 32.4 ± 0.72 mm/m² at 6 months ($P < 0.0001$). There was no significant difference in LVEDD index between axial and centrifugal VADs pre-implant ($p=0.34$), immediately post-VAD ($p=0.16$) and at 6 months ($p=0.76$). Similarly, both axial and centrifugal VADs significantly reduced LVMI, LAVI and RVSP at each timepoint without significant difference between the two VAD types.

CONCLUSION: Axial and centrifugal VADs are equivalently effective in unloading the left ventricle and promoting structural remodelling both early after VAD implantation and at 6 months.

30. MOLECULAR TARGETING OF INFLAMMATION FOR DIAGNOSIS AND THERAPY

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Inflammation contributes to development of many chronic diseases such as autoimmune and cardiovascular diseases. Mac-1 is expressed on polymorphonuclear leukocytes such as monocytes and contributes to inflammation. DARPinF7 (Designed Ankyrin Repeat Protein F7) is a novel binding protein that specially binds to the ligand binding domain, α -I domain of Mac-1, that is exposed upon activation.

AIM: To develop targeted diagnostic and therapeutic agent for inflammation using DARPinF7.

METHODS: Three phage panning rounds of DARPin phage libraries against purified mouse α -I domain were performed to select targeted DARPin specific for α -I domain of Mac-1. Targeted DARPinF7 and non-targeted negative control DARPinE3_5 were then cloned into pMPAG-128 expression vector to be produced and purified. Enzyme-linked immunosorbent assay (ELISA) was performed to determine binding of DARPinF7 to both purified mouse and human α -I domain. To determine binding of DARPinF7 to activated monocytes, flow cytometry was performed on mouse immortalised RAW264.7 macrophages, mouse fresh monocytes, human immortalised THP-1 macrophages, and human fresh monocytes that were activated by Phorbol 12-Myristate 13-Acetate (PMA).

RESULTS: DARPinF7 was selected based on ELISA on its binding to mouse α -I domain. A non-targeted DARPinE3_5 that does not bind to any biological antigen was also obtained. Further sub-cloning was performed into expression vector then allowed production of DARPinF7 and DARPinE3_5 with high purity. ELISA showed significantly higher binding of DARPinF7 to purified mouse α -I domain ($p<0.0001$) and human α -I domain ($p<0.0001$) than DARPinE3_5. Flow cytometry also demonstrated greater binding of DARPinF7 than DARPinE3_5 to activated mouse RAW264.7 cells, mouse fresh monocytes, human THP-1 cells, and human fresh monocytes, as shown by higher fluorescence detection.

CONCLUSION: DARPinF7 specifically binds to activated Mac-1 on both mouse and human monocytes. It shows promising results for a novel targeting protein as a diagnostic and therapeutic agent to combat inflammatory diseases such as atherosclerosis and arthritis.

31. GENE THERAPY TARGETING THE HEXOSAMINE BIOSYNTHESIS PATHWAY (HBP) ATTENUATES MARKERS OF DIABETIC CARDIOMYOPATHY IN A MODEL OF TYPE-2 DIABETES (T2D)

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Diabetic cardiomyopathy is characterized by diastolic dysfunction, and cardiac remodelling. The nutrient-sensing HBP is implicated in diabetic cardiomyopathy. The final product of the HBP, 'O-GlcNAc' glycosylates proteins via the enzyme O-GlcNAc transferase (OGT), altering their function. O-GlcNAcylation is reversed by O-GlcNAcase (OGA). Sustained O-GlcNAcylation in diabetes impairs cardiac function.

AIM: To determine if rAAV6-human-OGA (hOGA) gene therapy improves diabetic cardiomyopathy in mice with T2D *in vivo*

METHODS: 6-week-old male FVB/N mice were randomised into citrate vehicle control, or T2D induced by low-dose streptozotocin (STZ, 3x55mg/kg, i.p) and high-fat-diet (HFD, n=22). After 18-weeks untreated diabetes rAAV6-hOGA or null-vector-rAAV6 (2x10¹¹ vector genomes, i.v.) was administered to diabetic mice (n=11/group). Citrate controls received null-vector (CIT-Null, n=5). Diastolic function was measured by Doppler echocardiography at 6, 24, and 32-weeks-of-age and blood glucose levels measured fortnightly. Eight-weeks after gene therapy, mice were euthanised and tissues collected.

RESULTS: Blood glucose, HbA1c, bodyweight and fat mass of diabetic mice were elevated compared to citrate controls (P<0.05). Echocardiography indicated a reduction in E/A ratio at 18-weeks of diabetes (P<0.05), however this was not improved 8-weeks post hOGA-rAAV6 therapy. LV collagen deposition (picro-sirius red) was increased in STZ-HFD-Null mice (P<0.05) and was attenuated by hOGA (P=0.05). This was accompanied by increased CTGF expression in STZ-HFD-Null. hOGA-rAAV6 reduced OGT expression (P<0.0001) and endogenous OGA expression. No changes in cardiomyocyte hypertrophy or ROS-generation were observed between groups.

CONCLUSION: hOGA-rAAV6 gene therapy reduces fibrosis associated with diabetic cardiomyopathy in T2D, but cardiomyocyte hypertrophy, ROS-generation, or cardiovascular function *in vivo* were not protected.

32. IMPROVING SKELETAL MUSCLE MITOCHONDRIAL TURNOVER TO COMBAT INSULIN RESISTANCE

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INTRODUCTION: Diabetes is a leading cause of morbidity and mortality, worldwide, and is strongly associated with skeletal muscle mitochondrial dysfunction. Exercise has been recognized to improve diabetic outcomes by enhancing muscle mitochondrial turnover and insulin sensitivity. However, compliance to set exercise regimes is a major hurdle. Our laboratory has identified a novel protein, trim28 (T28), as a potential target for manipulating mitochondrial turnover and improving mitochondrial function.

OBJECTIVES: This research aimed to characterize the effect of muscle-specific trim28 knockout (T28KO) on mitochondrial function and glucose tolerance in a high fat fed, insulin resistant model.

METHODS: T28KO mice were developed using the cre/lox system with developmentally expressed MCK-cre. Muscle-specific knockout of trim28 was confirmed via western blot. The effect of T28KO was characterized over a 16 week high fat diet regime by EchoMRI, oral glucose tolerance test (oGTT), intraperitoneal insulin tolerance test (ipITT), the comprehensive laboratory animal monitoring system (CLAMS) and Oroboros O2k analysis.

RESULTS: At baseline, 4, 8 and 12 weeks post-diet, there were no significant differences between genotypes in total body, lean or fat mass. Neither glucose nor insulin tolerance was significantly different between the groups at these time points. T28 deletion did not affect whole-body oxygen consumption, energy expenditure or substrate preference at 3 and 7 weeks post-diet, though T28KO animals displayed a significant reduction in daytime activity 7 weeks post-diet (p=0.04). At 16 weeks post-diet, respiratory measurements in red gastrocnemius, as determined by a substrate-uncoupler-inhibitor titration protocol, did not differ between groups.

CONCLUSIONS: Whilst the current study failed to identify a metabolic consequence of T28 deletion, the possibility exists that this developmental knockout model underwent compensatory mechanisms during development. Hence, the potential for trim28 knockout to improve mitochondrial function and insulin sensitivity will be tested in an inducible cre mouse model, currently breeding in our laboratory.

33. LOWERING OXIDATIVE STRESS AND NLRP3-INFLAMMASOME ACTIVITY BY NRF2 ACTIVATORS LESSENS MACROPHAGE CYTOKINE PRODUCTION AND IMPROVES DIABETES-ASSOCIATED ATHEROSCLEROSIS: A NOVEL THERAPEUTIC STRATEGY FOR DIABETIC VASCULAR COMPLICATIONS

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Sterile inflammation, driven in part by the NLRP3-inflammasome, and oxidative stress are two significant drivers of diabetes-associated atherosclerosis. It is now recognized that these mediators are inextricably linked, and pharmacotherapies aimed at lessening both could afford greater protection than previous non-focused antioxidant therapies.

AIM: To investigate whether Nrf2 activators, the master regulator of oxidative stress, can inhibit inflammation by modulating the NLRP3 inflammasome.

METHODS: In vitro studies were performed in C57/Bl6 bone marrow derived macrophages (BMDM) stimulated with LPS (1µg/ml) for 19h. The Nrf2 activators, dh404 (25, 50nM) and DMFO (5, 50µM) were added to primed macrophages for 18hr. Cells were harvested for gene expression by RT-PCR. Oxidative stress was measured using DCF-DA. Additionally, cells were activated with ATP and/or nigericin enabling ELISA as well as Western blot analysis of cleaved IL-1β and caspase-1. In vivo studies included treatment of ApoE^{-/-} mice with dh404 at 3 and 10mg/kg for 18 weeks.

RESULTS: In vitro treatment of BMDMs with LPS resulted in significant increases in IL-1β, NLRP3 and caspase-1 gene expression. Dh404 significantly attenuated IL-1β but had no effect on NLRP3 and caspase-1 gene expression. Similarly, DMFO significantly and dose-dependently attenuated IL-1β expression. Dh404 caused significant reductions in secreted caspase-1 as detected by WB and ELISA. In vivo administration of dh404 significantly attenuated inflammatory markers and atherosclerosis in diabetic ApoE^{-/-} mice.

CONCLUSION: Nrf2 activators not only lessened oxidative stress but additionally lessened the priming and activation of the NLRP3 inflammasome in cultured BMDMs. One of the activators, dh404, lessened diabetes-associated atherosclerosis in the diabetic ApoE^{-/-} mouse via reductions in inflammation. These studies suggest that a targeted approach that lessens both oxidative stress, via upregulation of antioxidant defences, together with inhibition of the priming and activation of the NLRP3 inflammasome, holds promise as a novel therapeutic strategy to lessen diabetic vascular complications.

34. RESISTANT STARCH AMELIORATES ADVANCED GLYCATION ENDPRODUCT-INDUCED ALBUMINURIA IN A MOUSE MODEL OF TYPE 2 DIABETES

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Heat treating foods leads to the formation of advanced glycation endproducts (AGEs) which contribute to chronic renal injury. Recent research implicates gut dysbiosis in the progression of diabetic nephropathy.

AIM: This study investigates whether excess consumption of dietary AGEs causes gut dysbiosis, exacerbating renal injury in a type 2 diabetes mouse model.

METHODS: Six week old diabetic (db/db) and non-diabetic (db/h) mice were randomised (n=12/group) to receive a low AGE (LAGE, unbaked rodent chow) or a high AGE diet (HAGE, baked at 160°C for 1 hour), with or without resistant starch (RS) for 10 weeks. 24-hour urine was collected and albuminuria was measured. Intestinal permeability was assessed *in vivo* by the clearance of FITC-labelled dextran (500mg/kg body weight). Statistical differences were assessed by one-way ANOVA.

RESULTS: The high AGE diet exacerbated albuminuria in db/db mice (874.4±154.8 vs 536.2±96.5µg/24h, P<0.05, db/db HAGE vs db/db LAGE), and RS attenuated this AGE-induced increase (874.4±154.8 vs 515.5±71.9µg/24h, P<0.05, db/db HAGE vs db/db HAGE+RS). Db/db mice had greater gut permeability compared to db/h mice (2.38±0.32 vs 1.05±0.11µg/ml, P<0.01, db/db LAGE vs db/h LAGE). Db/db-HAGE-fed mice trended towards increased gut permeability (3.43±0.43 vs 2.38±0.32µg/ml, P=0.06, db/db HAGE vs db/db LAGE), an effect not observed in RS-fed db/db mice.

CONCLUSION: Heat-treated diets led to increased intestinal permeability and worsening albuminuria in db/db mice. RS was protective against high AGE-induced albuminuria in db/db mice. These preliminary studies support the notion that dietary AGEs contribute to renal disease via alterations in gut homeostasis.

35. NOVEL THERAPEUTIC USE OF ANNEXIN-A1 MIMETICS TO TREAT DIABETIC CARDIOMYOPATHY

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Inflammation plays an important role in the progression of many diabetic complications, including diabetic cardiomyopathy. We have previously demonstrated that the small molecule mimetic of an anti-inflammatory protein Annexin-A1 (ANX-A1), Compound17b, reduces cardiac injury after an acute cardiac insult. Its effectiveness in chronic inflammation has not been investigated. This project aimed to test the hypothesis that Compound17b attenuates markers of diabetic cardiomyopathy in Type 1 Diabetes (T1D). Diabetes was induced in 6wk-old male mice using streptozotocin (55mg/kg i.p./day, 5 days). Eight weeks after the induction of diabetes, mice were randomly allocated to receive either Compound17b or its vehicle (10% DMSO/0.8%Tween 80) (50mg/kg/day i.p) for 8 weeks. As shown below, Compound17b reduced left ventricle (LV) expression of Pro-Collagen 3, a marker of cardiac fibrosis. Cmpd17b, may be potential intervention for the treatment of fibrosis in diabetic cardiomyopathy in T1D.

Results (mean±SEM)	Non-diabetic	Diabetic + Vehicle	Diabetic + Cmpd17b
Systemic			
Body weight (g)	30.20 ± 0.57	22.9 ± 1.2*	22.1 ± 0.8
Blood Glucose (mM)	8.7 ± 0.4	31.7 ± 0.7*	32.1 ± 0.8
HbA1c (%)	4.79 ± 0.1	12.5 ± 0.4*	12.2 ± 0.5
Cardiac			
Heart weight/Tibia (mg/mm)	8.1 ± 0.2	6.5 ± 0.4*	6.0 ± 0.2
LV/Tibia (mg/mm)	5.4 ± 0.2	4.5 ± 0.3*	4.0 ± 0.2
Hypertrophy: LV β-MHC (fold)	1.0 ± 0.2	6.6 ± 1.6*	3.8 ± 0.7
Fibrosis: LV Pro-collagen 3 (fold)	1.0 ± 0.9	0.9 ± 0.2	0.4 ± 0.05#
Total Collagen 1 and 3(%)	0.2 ± 0.04	0.6 ± 0.2*	0.3 ± 0.1
Inflammation: LV IL-10 (fold)	1.0 ± 0.5	5.0 ± 1.5*	2.5 ± 0.8
Function: Deceleration time (msec)	24.6 ± 0.7	29.18 ± 1.3*	25.8 ± 1.1

Table 1: *p<0.05 versus non diabetic sham; #p<0.05 versus diabetic + vehicle. One way ANOVA with Dunnet's *post hoc* test. **β-MHC**: beta-myosin heavy chain; **CD68**: Cluster differentiation protein 68; **IL-10**: Interleukin 10.

36. SYSTEMIC AND CARDIAC-SELECTIVE TARGETING OF THE HDAC4 PATHWAY TO LIMIT DIABETES-INDUCED CARDIOMYOPATHY

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Diabetic cardiomyopathy is characterised by left ventricular (LV) diastolic dysfunction and structural changes, including cardiomyocyte hypertrophy and interstitial fibrosis. Epigenetic modifications, such as histone deacetylation, have been implicated in the molecular pathways that drive structural changes in this setting. Histone deacetylase 4 (HDAC4) is associated with the pathological cardiac remodelling observed in diabetic cardiomyopathy.

AIM: To determine whether inhibiting HDAC4 via a cardiac-selective approach (Aim 1) or globally (Aim 2) will ameliorate diabetic cardiomyopathy in a murine model of T1DM.

METHODS: 6-week-old male FVB/N mice were administered streptozotocin (55mg/kg/d or vehicle, i.p.) to induce T1DM. Echocardiography was performed at 6 (baseline), 14 (pre-treatment), and 22 (endpoint) weeks of age. In Aim 1, a cardiac-selective gene therapy using rAAV6-dnHDAC4 (2x10¹¹ vector genomes or null vector) was administered after 8 weeks of diabetes. In Aim 2, a pharmacological approach using tasquinimod (10mg/kg/d or vehicle, i.p.) was administered daily commencing at 8 weeks of diabetes. Both treatment strategies had a follow-up period of 8 weeks. Blood glucose levels were measured fortnightly.

RESULTS: Blood glucose and HbA1c were increased with diabetes (P<0.0001). Diabetes reduced heart mass, however rAAV6-dnHDAC4 increased LV mass compared to untreated diabetes (P<0.05). The presence of diastolic dysfunction in diabetes was demonstrated via a decrease in E/A ratio (P<0.01). IVRT was increased with diabetes (P<0.01), and was attenuated with rAAV6-dnHDAC4 (P=0.08). This was supported by reductions in LV CTGF gene expression (P<0.05) in T1DM mice treated with the gene therapy compared to untreated diabetes. rAAV6-dnHDAC4 also reduced cardiac hypertrophic markers BNP and β -MHC (P<0.05). Treatment with tasquinimod exhibited similar results, reducing LV BNP expression (P<0.05). Superoxide was also decreased in T1DM mice treated with tasquinimod compared to untreated diabetic mice (P<0.05).

CONCLUSION: Inhibition of HDAC4 attenuated cardiomyocyte hypertrophy, fibrosis and ROS production, characteristic of diabetic cardiomyopathy, in a model of T1DM.

37. ROUTINE PRE-THYROIDECTOMY LARYNGOSCOPY IS NOT NECESSARY IN THE ERA OF INTRAOPERATIVE NEUROMONITORING

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BACKGROUND: Routine pre-operative vocal cord (VC) assessment in thyroidectomy patients is performed at the Alfred. In this study, we aimed to determine the rate of pre-operative vocal cord palsy (VCP) and the associated risk factors; and therefore, build a case for a selective approach to pre-operative laryngoscopic VC assessment in the era of intraoperative neuromonitoring (IONM).

METHODS: This retrospective study recruited patients from the Monash University Endocrine Surgery Unit database from 2000 to 2016. Patients who had a VC assessment by fiberoptic laryngoscopy prior to thyroid surgery were included. Case files were reviewed for clinical indicators of VCP, including hoarseness and other symptoms, previous neck surgery, largest nodule dimension, and history of head and neck irradiation.

RESULTS: Of the 5,279 included patients, 36 (0.68%) patients were found to have a VCP. Of these, 16 had a nodule \geq 3.5 cm, 15 had a hoarse voice, 12 had previous neck surgery, and 5 had a malignant cytology. More than one risk factor was present in 11 of these patients. The first 3 of these features would account for all 36 patients with pre-operative VCP. Pre-operative knowledge of malignancy was not an independent indicator of potential palsy. Approximately two-thirds of the included patients had none of these 3 features and also did not have a VCP. Therefore, using these 3 pre-operative factors, these patients could do without a pre-operative laryngoscopy and no palsy would have been missed.

CONCLUSIONS: Using this large dataset, we have established that a VCP is extremely unlikely in the absence of previous neck surgery, hoarseness, or a large nodule. Therefore, in the era of intraoperative neuromonitoring, where the recurrent laryngeal nerve can be directly assessed, we support a selective approach to pre-operative laryngoscopy. This practice change has the potential for significant cost savings.

38. RISK FACTORS AFFECTING RECURRENCE-FREE SURVIVAL IN FOLLICULAR THYROID CARCINOMA PATIENTS: A 15-YEAR REVIEW

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OBJECTIVE: To identify risk factors related to follicular thyroid carcinoma (FTC) recurrence post thyroidectomy in our institution and assess how these compare to the American Thyroid Association (ATA) 2015 risk stratification guidelines for FTC.

METHODS: We reviewed 117 patient files with histologically diagnosed FTC who underwent thyroidectomy by the Monash University Endocrine Surgery Unit between 2002 and 2016 inclusive. Recurrence was defined as new thyroglobulin rise, new uptake on radioactive iodine (RAI) scan or biopsy proven disease.

RESULTS: Patient cohort included 27 men and 90 women with mean age of 58 vs 52 years. The majority of patients underwent total thyroidectomy (95%) and adjuvant RAI (89%). 76% of FTCs were classified as minimally invasive compared to 24% widely invasive. While the mean size of tumour was 39mm, this was significantly larger in men than women (54.8mm vs 34.2mm, $p < 0.001$). Median length of follow-up was 34 months. There were 9 (7.7%) cases of recurrence with a median time of 27 months. There were 5 (4.2%) deaths related to FTC. Kaplan-Meier curve for 1, 2, 5 and 10 year recurrence-free survival was 97.8%, 95%, 88.2% and 81.9% respectively. Univariate analysis showed that widely invasive FTC ($p = 0.001$), the presence of vascular invasion ($p = 0.02$), extrathyroidal extension ($p < 0.001$) and lymph node involvement ($p = 0.001$) were associated with increased risk of recurrence. Size of tumour was of borderline significance ($p = 0.05$). Mean age, male gender and capsular invasion were not found to be significant.

CONCLUSION: WIFTC, tumour size, vascular invasion, extrathyroidal extension and lymph node metastases were associated with higher risk of recurrence. This was concordant with the ATA 2015 risk stratification guidelines and shows that they are applicable to our cohort.

39. THYROIDECTOMY THEN AND NOW – A 50-YEAR AUSTRALIAN PERSPECTIVE

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Over the last century, the modern thyroidectomy has transformed from a procedure associated with high mortality to near zero mortality. Nonetheless, surgeons must strive to improve patient care and outcomes.

AIM: This study aimed to compare the practice and outcomes of thyroid surgery at a tertiary institution during two periods, 50 years apart, using historical records and contemporary data.

METHODS: "The Alfred Hospital Clinical Reports" recorded all cases of surgically managed thyroid disease from 1946-59 (14-year period). These historical cases were compared to contemporary cases of total thyroidectomy at the Alfred Hospital from 2007-16 (10-year period). Cases were compared for surgery indication and post-operative outcomes including rates of nerve palsy, infection, haemorrhage and mortality.

RESULTS: There were 746 patients in the historical cohort (mean age 53, 87% female) and 787 patients in the contemporary cohort (mean age 52, 80% female). The most common indication for thyroidectomy in both groups was non-toxic nodular goitre (56% historical cases, 35% contemporary cases). A higher proportion of patients in the contemporary group were diagnosed with thyroid malignancy (27% vs. 8%; $p < 0.001$). The historical data documented 36 (5.3%) cases of recurrent laryngeal nerve palsy compared to 27 (3.4%) cases in the contemporary group ($p = 0.09$). Permanent nerve palsy was noted to be higher in the historical group (4.6% vs. 0.6%, $p < 0.001$), which also had a higher rate of bilateral palsy (8 vs. 3 cases; $p = 0.13$). There were no mortalities in the contemporary cohort. The historical data detailed three deaths (0.44%); two due to thyrotoxic crisis, and one from post-operative respiratory complications.

CONCLUSIONS: This study uniquely compares thyroid surgery in two cohorts separated by a 50-year period. As expected, morbidity and mortality after thyroidectomy has improved as thyroid surgery has progressed. Notably, there were fewer cases of death, permanent palsy and bilateral palsy in the contemporary group.

40. THE UTILITY OF SERUM ZONULIN, THE “LEAKY GUT” PROTEIN, AS A MARKER OF GASTROINTESTINAL DYSFUNCTION

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BACKGROUND: Dysregulation of the zonulin pathway has been linked to a “leaky gut” due to the protein zonulin’s putative role as a modulator of intestinal epithelial tight junctions. Zonulin is a proposed contributor of non-coeliac gluten sensitivity/IBS (NCGS), coeliac disease (CD) and inflammatory bowel disease (IBD) pathogenesis. However, controversy lies in zonulin’s utility as a serum biomarker of disease and in the assays used for its assessment.

AIMS: To characterize serum zonulin levels amongst patients with gastrointestinal conditions and healthy individuals and verify commercially-available assays for zonulin quantification.

METHODS: Serum zonulin was measured in patients with NCGS (n=36), CD (n=37), and IBD (n=20), as well as healthy subjects (n=49) by CUSABIO ELISA. Zonulin non-producers were determined by western blot-based haptoglobin phenotyping. Zonulin levels in selected sera were compared with those determined by another commercially-available assay (Immundiagnostik) and both assays were spiked with recombinant zonulin for verification.

RESULTS: 32 of 36 patients with NCGS, 34 of 37 with untreated CD, 19 of 20 with IBD, and 46 of 49 healthy subjects were zonulin producers. Compared with healthy subjects (median 0.00 ng/mL, IQR 0.00 ng/mL), patients with NCGS (0.32, 0.90), CD (0.07, 1.27), and IBD (1.73, 2.17; all $p < 0.0001$) had elevated serum zonulin. Levels in IBD were higher than those in NCGS ($p = 0.004$) and CD ($p = 0.005$) with no differences between NCGS and CD. However, non-producers had protein levels detected by CUSABIO assay, recombinant zonulin was not detected by either assay, and there was poor correlation between the results of both assays (n=28; $r = 0.29$; $p = 0.14$).

CONCLUSION: Serum zonulin levels measured through CUSABIO assay are elevated in patients with gastrointestinal conditions, though there was poor verification for both commercial assays. Rather than support a role for zonulin in intestinal disease pathogenesis, the current results cast doubt upon the validity of commercially-available zonulin assays.

41. LONG-TERM OUTCOMES OF PRIMARY SCLEROSING CHOLANGITIS: AN AUSTRALIAN TERTIARY HOSPITAL PERSPECTIVE

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Primary sclerosing cholangitis (PSC) is an immunologically-mediated chronic cholestatic liver disease characterised by intra- and/or extra-hepatic bile duct inflammation and destruction. In the absence of effective therapy, the clinical course is variable with cirrhosis, hepatic failure, and cholangiocarcinoma noted but not invariable sequelae.

AIM: To describe the natural history of PSC in an Australian population via a retrospective audit of patients managed at The Alfred Hospital.

METHODS: Patients with PSC managed since 2005 were identified by searching hospital records and databases. Clinical and demographic data were analysed from diagnosis until liver transplantation, death or December 31, 2014. Primary outcomes were transplantation and death, with survival rates calculated by the Kaplan-Meier method. Secondary outcomes included cholangiocarcinoma, development of cirrhosis, liver decompensation, cholangitis requiring admission and development of dominant strictures requiring dilatation.

RESULTS: We identified 39 patients with a median follow-up time of 63 months (range 5-289). Median age at diagnosis was 45 years (range 10-81) with 27 (69.2%) patients being male. 29 (74.4%) patients had concurrent IBD, including 17 (43.6%) with ulcerative colitis. Five (12.8%) patients had small-duct PSC and 6 (15.4%) had an overlap syndrome. The 5, 10 and 20 year survival rates for the cohort were 86.5% (95% CI 67.5-94.8%), 77.4% (95% CI 55.6-89.4%), and 68.8% (95% CI 42.1-85%) respectively. Only 1 (2.6%) patient underwent liver transplantation and there were 7 (17.9%) deaths. Cholangiocarcinoma was found in 3 (7.7%) patients. Cirrhosis was present in 5 (12.8%) patients at diagnosis while 10 (25.6%) developed cirrhosis after a median of 53.5 months (range 12-276) and 7 (17.9%) developed liver decompensation.

CONCLUSION: While the PSC population in this Australian cohort appears typical of the disease, rates of liver decompensation are relatively low and the overall transplant-free survival appears better than that reported in overseas cohorts, where median estimated survival ranges from 9.3 to 21.3 years.

42. A MODEL TO IDENTIFY PATIENTS AT INCREASED RISK OF LIVER FIBROSIS IN NON-ALCOHOLIC FATTY LIVER DISEASE

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INTRODUCTION: Non-Alcoholic Fatty Liver Disease (NALFD) is a leading cause of liver disease worldwide. In NAFLD the presence of liver fibrosis is the most important prognostic determinant for liver related outcomes. Transient Elastography is now widely used to assess and monitor for progression of liver fibrosis non-invasively.

AIMS: To determine the baseline characteristics of patients who would best benefit from screening with Transient Elastography (TE) for the development of liver fibrosis in NAFLD.

METHODS: Consecutive patients referred for TE for the assessment of NAFLD at a tertiary Hospital from Aug 2015–Apr 2016 were included. Patient demographics, diabetes and co-morbid illnesses, alcohol consumption and caffeine consumption were assessed prior to TE. Patients were excluded if they had concurrent viral or alcoholic liver disease, history of excess alcohol use, and if incomplete TE data was available. Univariate and multivariate analysis was performed with patients grouped based on median LSM (kPa): ≤7 Group 1, 7.1–13.5 Group 2, >13.6 Group 3.

RESULTS: Of the 1896 patients undergoing TE assessment over the study period 544 (F:M 308:236, BMI 32.7, Age 52.4) met the inclusion criteria including 361 in Group 1, 123 in Group 2 and 60 in Group 3. On multivariate analysis, age, gender, diabetes, BMI and caffeine consumption were significantly different ($p < 0.0005$) across the three groups. On univariate analysis age ($p < 0.005$), diabetes ($p < 0.0005$), BMI ($p < 0.0005$), total tea ($p = 0.03$) and total caffeine ($p < 0.05$) consumption were significantly associated with LSM. Between groups the prevalence of diabetes increased incrementally; Group 1 14%, Group 2 34 % and Group 3 65%, BMI was significantly lower in Group 1 compared to Groups 2 and 3 ($p < 0.0005$, $p = 0.002$ respectively). A binary logistic regression was performed on this data specifically looking at NAFLD without fibrosis (LSM<7) and NAFLD with fibrosis (LSM>7.1), The model for the detection of LSM ≥ 7.1 kPa had a sensitivity of 48%, specificity of 88%, positive predictive value of 66% and negative predictive value of 77%. In this model increasing age (odds ratio[OR] 1.02, 95%CI 1.01 – 1.046) and BMI (OR 1.12, 95%CI 1.09 – 1.160), and presence of diabetes (OR 4.08, 95%CI 2.55– 6.52) were predictive of increased fibrosis.

CONCLUSION: Our study identified age, BMI and the presence of diabetes as being independently predictive of higher LSM in a NAFLD cohort. While prospective validation of these results is needed, the findings may be useful in identifying suitable patients for clinical trials of new therapeutic agents for NAFLD that target liver fibrosis.

	Total	Group 1	Group 2	Group 3	p-value
Total	544	361	123	60	
Age*	52.4	51.1	54.3	56.4	0.003
Female	308	211	61	36	0.198
Diabetes [^]	132	51 (14%)	42 (34%)	39 (65%)	<0.0001
BMI [†]	32.7	31.2	35.8	35.1	<0.0001
Total Coffee	1.57	1.58	1.51	1.65	0.821
Total Tea [‡]	1.20	1.21	0.96	1.58	0.033
Total Caffeine ^Ω	2.77	2.80	2.47	3.23	0.046

* group 1 vs. group 2 $p = 0.049$

* group 1 vs. group 3 $p = 0.028$

[^] group 1 vs. group 2 $p < 0.0001$

[^] group 2 vs. group 3 $p < 0.0001$

[^] group 1 vs. group 3 $p < 0.0001$

[†] group 1 vs. group 2 $p < 0.0001$

[†] group 1 vs. group 3 $p = 0.002$

[‡] group 2 vs. group 3 $p = 0.037$

^Ω group 2 vs. group 3 $p = 0.050$

43. OUTCOME OF PATIENTS WITH CARDIAC HEPATOPATHY UNDERGOING HEART TRANSPLANTATION – PRELIMINARY ANALYSIS

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BACKGROUND & AIMS: “Cardiac hepatopathy” describes liver dysfunction in patients with heart failure, which can progress to cirrhosis. There is limited evidence assessing the influence of cardiac hepatopathy on the outcomes of patients after orthotopic heart transplantation (OTx). The objective of this analysis is to assess baseline characteristics of a population prior to a future analysis with matched non-cirrhotic controls.

METHODS: A retrospective analysis of patients undergoing OTx from 2009-2016, at the Alfred Hospital was performed. Cirrhosis was established by histology and/or radiological evidence prior to, or within the 2 months following OTx. Exclusions were; alternative cause of liver disease, requirement for cardiac assist devices, transplanted prior to 2009 or without documented cirrhosis.

RESULTS: Eleven patients with cirrhosis undergoing OTx were included. The baseline characteristics are presented in table 1. The median age was 50 years, and 27% were females. The median (range) duration of stay in intensive care unit and the total hospital stay after OTx was 7 (5-11) days and 22 (15-55) days, respectively. Seven patients developed acute kidney injury after OTx. Other observed complications were sepsis (n=1), bleeding (n=1), re-intervention (n=1) and encephalopathy (n=1). Two participants died at 3 weeks and 6 months after transplant and the remainder were living as of May 2017. Therefore 1 year, 3 year and overall survival at 8 years in this small cohort of patient with cirrhosis was 82% (Fig 1)

CONCLUSIONS: Mortality rate in patients with congestive hepatopathy after OHTx is low and appears to plateau within the first year after transplant. Further analysis using matched controls will be undertaken in order to assess both improvement in liver function and graft survival following heart transplantation.

44. APPLICATION OF A NOVEL HAEMOCOMPATIBILITY PROFILING APPROACH FOR THE DEVELOPMENT OF BLOOD HANDLING MICRO-VALVES FOR LAB-ON-CHIP DIAGNOSTICS

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Microfluidic diagnostic devices have the potential for greater accuracy, faster processing times and better control than present macrodiagnostics. Microvalves can be integrated into microfluidic devices to precisely manipulate samples, and must demonstrate reliability and the capacity to cause complete cessation of fluid flow. No hemocompatible microvalves have been detailed in the literature, and as such there has been little application of microfluidics to blood-based diagnostics.

AIM: To characterise elastomeric microvalve haemocompatibility to inform microvalve design, improve blood sample control and allow application of microfluidics to blood analysis. We define a haemocompatibility profiling approach that considers mechanical strain rate gradients, platelet and erythrocyte function, and blood plasma protein interactions.

METHODS: Whole blood samples from healthy adults aged 18-65 years were perfused through a series of straight and v-shaped valve manifolds with well-defined geometries. Resulting aggregate size was monitored in real-time using high-speed epifluorescence microscopy. Platelet activation was assessed through visualisation of calcium flux using dual-dye ratiometric microimaging and FACS analysis of expression of biochemical markers of platelet activation. Strain rate effects on VWF antigen and multimer composition was assessed through comparison of the concentration of plasma protein von Willebrand Factor in blood samples pre- and post-valve processing. Erythrocyte damage was assessed by determination of haemolysis, echinocyte and rouleaux formation.

RESULTS: Using this haemocompatibility profiling approach we identified a v-shaped valve architecture that minimally impacts blood sample integrity and function. The v-shaped valve manifold demonstrated superior platelet, red blood cell and protein handling when compared to traditional straight valve designs, and larger valve sizes demonstrated higher degrees of haemocompatibility.

CONCLUSION: We define a detailed haemocompatibility profiling approach that successfully identified a 600 μm^2 v-shaped valve design with superior haemocompatibility that has the potential to be integrated into a range of microfluidic point-of-care diagnostics.

45. DEVELOPMENT OF ELASTOMERIC SUBSTRATES TO INVESTIGATE THE IMPACT OF SUBENDOTHELIAL EXTRACELLULAR MATRIX STIFFNESS ON PLATELET FUNCTION

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Platelets are key mediators of haemostasis and thrombosis. Platelets are exposed to a range of micro-environmental cues including, clot retraction, shear stress, and changes to extracellular matrix elastic modulus (EM), due to aging and disease. *In vitro* investigations of platelet mechanotransduction have utilised polyacrylamide (PAAm) hydrogels of varying EM, however this approach suffers from limitations including, changes in surface roughness, water content, and surface chemistry as a function of crosslinking ratio. The limited control over these parameters means that true decoupling of EM from materials properties has not been achieved. Given that surface composition may affect platelet function it is imperative that substrates used control for these parameters. We hypothesise that substrates fabricated from mixed Sylgard 527 and 184 Polydimethylsiloxane (PDMS) represent a more controlled approach to investigate substrate EM on platelet mechanotransduction.

AIM: To develop elastomeric substrates of varying elastic modulus with unvarying surface characteristics that mimic the vascular stiffness found in normal and cardiovascular disease states, and to demonstrate their use in platelet function studies.

METHODS: Substrates were fabricated by combining differing ratios of Sylgard 527 and 184 representing EM values from 5kPa-1.72MPa. Amide chemistry was used to couple human fibrinogen to substrates. Isolated platelets were allowed to adhere to substrates for 1hr. Platelet adhesion and morphology were assessed.

RESULTS: We outline a method for the fabrication of PDMS substrates with an EM ranging from 5kPa-1.72MPa and demonstrate that across this range, parameters such as surface roughness and water contact angle do not vary in comparison to PAAm substrates.

CONCLUSIONS: Future work will harness these more controlled elastomeric substrates to investigate the effect of substrate elastic modulus on platelet adhesion, morphological transitions, and mechanotransduction. In addition, the interplay between substrate elastic modulus and the mechanical effects of blood flow shear will be studied.

46. HHEX INDUCES PROMYELOCYTE SELF-RENEWAL AND COOPERATES WITH GROWTH FACTOR INDEPENDENCE TO CAUSE PROMYELOCYTIC LEUKEMIA IN MICE

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The Hematopoietically-expressed homeobox (Hhex) transcription factor is overexpressed in human myeloid leukemias. Conditional knockout models of murine acute myeloid leukemia (AML) indicate *Hhex* maintains leukemia stem cell self-renewal by enabling epigenetic repression of the *Cdkn2a* tumor suppressor locus in the context of MLL-ENL overexpression. However, whether *Hhex* overexpression also affects hematopoietic differentiation is unknown. To study this, we retrovirally overexpressed *Hhex* in hematopoietic progenitors. This enabled serial replating of myeloid progenitors, leading to the rapid establishment of IL-3-dependent promyelocytic cell lines. Use of a Hhex-ERT2 fusion protein demonstrated that continuous nuclear Hhex is required for viability and growth, and structure function analysis demonstrated a requirement of the DNA binding and N-terminal repressive domains of Hhex for promyelocytic transformation. This included the N-terminal Pml protein interaction domain, although deletion of Pml *in vitro* failed to prevent *Hhex*-induced promyelocyte transformation suggesting epigenetic repression of other genes by *Hhex* was required for transformation. Transcriptome analysis showed that *Hhex* overexpression indeed resulted in repression of several myeloid developmental genes. To test potential for *Hhex* overexpression to contribute to leukaemic transformation, *Hhex*-transformed promyelocyte lines were rendered growth factor-independent using a constitutively active IL-3 receptor common β subunit (β cV449E). The resultant cell lines resulted in a rapid promyelocytic leukemia when transplanted into sublethally irradiated recipients. Thus in addition to its role in repressing *Cdkn2a* tumour suppressor pathways in MLL-ENL overexpressing acute myeloid leukemias, overexpression of *Hhex* causes a differentiation blockade and aberrant progenitor self-renewal, which cooperatively with activated IL-3 signal transduction, was sufficient for leukaemogenesis. As such, *Hhex* overexpression may contribute to human myeloid leukemias via multiple pathways.

47. AML INDUCTION OUTCOMES IN TWO DIFFERENT ERAS: ANALYSIS OF ALLG AMLM7 AND AMLM12 STUDIES

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AML M7 and AML M12 between 1995-2000 and 2003-2010 using the same induction chemotherapy backbone – ICE (idarubicin 9 mg/m² d1-3, cytarabine 3 g/m² d1,3,5,7, and etoposide 75 mg/m² d1-7).

AIM: To explore the outcome differences after from ALLG AMLM7 and AMLM12 studies.

METHODS: AML with favourable karyotype was excluded from this analysis. 256 patients from AMLM7 were matched 1:1 to AMLM12 using propensity score matching. Time-to-event analyses were censored for allogeneic transplant or lost to follow-up. Logistic regression was used to identify predictors of 30-day mortality. Analyses were performed using R version 3.3.2.

RESULTS: Baseline characteristics are shown in Table. Survivors from AMLM7 and AMLM12 were followed for a median of 42.8 and 49.3 months, respectively, with similar leukaemia-free survival (median 12.8 vs 12.6 months). Overall survival (OS) for patients in AMLM12 was better than those in AMLM7 (median not reached vs 53.6 months, $p=0.006$) (Figure). However, the OS was similar after limiting the analyses to patients who underwent randomisation to consolidation chemotherapy. To explain the discrepancy, 30-day mortality was examined, revealing significantly higher early deaths in AMLM7 than AMLM12 (11.3% vs 3.5%, $p=0.001$). After multivariate analysis, participation in the AMLM7 cohort remained the most significant risk factor for 30-day mortality (OR 3.14), whereas other significant risk factors were balanced between the cohorts: age (OR 1.08 for each additional year), ECOG >0 (OR 1.77) and WCC (OR 1.06 for each additional 10 x 10⁹/L). Aspects of supportive care were examined: mould-active antifungal prophylaxis became available in AMLM12, whereas transfusion support (both red blood cells and platelets) and infection rates (both clinical and microbiological) were similar.

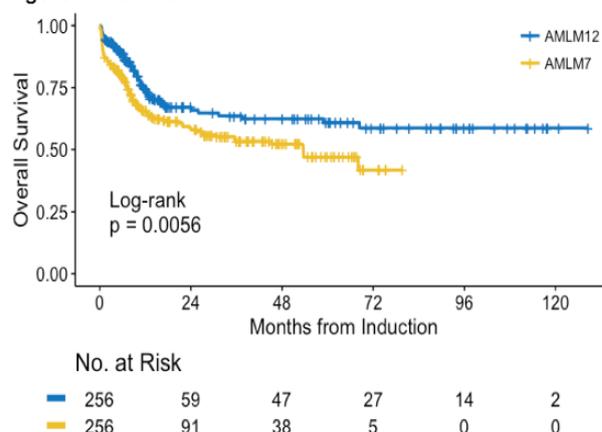
CONCLUSION: Better supportive care with a reduction in early mortality has allowed the ICE induction regimen to be safely administered to AML patients in the modern era.

Table. Summary of patient and disease characteristics

	M7 (n=256)	M12 (n=256) ^a	P
Age, median (IQR)	43.4 (31.6–51.6)	44.5 (32.9–53.5)	.4
Male gender (%)	55.1	54.3	.9
ECOG PS > 0 (%)	50.0	56.3	.2
Cytogenetics, N (%)			.9
Intermediate	201 (78.5)	205 (80.1)	
Adverse	39 (15.2)	37 (14.5)	
Unknown	16 (6.3)	14 (5.5)	
WCC, x 10 ⁹ /L, median	10.7	15.6	.3
Febrile (%)	30.1	30.5	1
Bleeding (%)	22.3	14.5	.03
DIC (%)	4.7	3.9	.8
G-CSF (%)	80.1	97.3	< .001
>1 induction cycle (%)	7.4	8.6	.7
CR – after 1 cycle (%)	75.4	76.6	.8
CR – total (%)	79.7	82.4	.5
30-day mortality	11.3	3.9	.002
60-day mortality	13.7	5.9	.004
90-day mortality	15.6	6.6	.002

^a Propensity score matching for age, gender, ECOG, WCC.

Figure. Overall survival in AMLM7 and AMLM12



48. NURSES' EXPERIENCES AND PERCEPTIONS OF ESCALATING DETERIORATION TO TREATING TEAMS USING PRE-MET URGENT REVIEW CRITERIA

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AIM: The ability to trigger a treating medical team to urgently review ward patients on the basis of pre-determined early warning physiological indicators is a recent advancement in rapid response systems internationally. This study aims to describe nurses' experiences and perceptions of escalating a deteriorating patient to the treating medical team using early warning urgent review criteria.

METHODS: This descriptive exploratory qualitative study used individual in-depth interviews with nurses from a quaternary referral teaching hospital in Melbourne, Australia. A purposive sample of 30 registered nurses from 10 surgical and medical wards were interviewed using a semi-structured interview guide. An inductive thematic content analysis was used to identify overall themes.

RESULTS: Three themes emerged from the data: (1) Recognition of early warning signs and consequences of failure to recognise, (2) Accountability for nursing practice in response to early warning signs, in particular articulation of a sense of ownership of the problem when deterioration occurs, (3) Contextual enablers and barriers to nursing practice

CONCLUSION: Our study is among the first to explore the actual experience of nurses escalating deterioration to the treating medical team using single parameter 'pre-MET' escalation values. Previous work describes nurses concerns with activation to an external MET team. However, perceptions of pre-MET escalation and management by nurses reveal a more complex interplay of factors across both Nursing and Medicine which can either enable or inhibit escalation depending on the context.

49. MINIMISING RISK: THE INTRODUCTION OF A TRANSPORT CLINICAL NURSE CONSULTANT IN A LARGE METROPOLITAN ICU

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Transporting critically unwell ICU patients out of the safety of the unit carries several risks: Risks to the patient, to the staff involved and to the equipment utilised. The Alfred Hospital is a large metropolitan hospital providing state services for trauma and burns, and regional services for transplant, ECMO, general medical, oncology and cardiac surgery. Caring for this patient population is associated with a large number of patient transports off the unit for radiological investigations. The introduction of a Transport Clinical Nurse Consultant (CNC) in February 2017 has supported individual transports as well as evaluating current practice, facilitated education practices to minimise risk during transport and conduct research projects evaluating the role.

AIM: To evaluate the impact of the introduction of the Transport CNC on the transport process and associated risks within an Australian metropolitan ICU.

METHOD: This paper reports the experiences of an innovative Transport CNC position within a metropolitan ICU. The case study reports the experiences over a six-month period following the introduction of the Transport CNC role. Findings are reported for outcome such as the number of transport assists totalling 84, including 3 ECMO CT and 21 MRI transports, staff education, policy and procedure change, equipment reviews as well as the implementation of research and evaluation pertaining to the role. Results include descriptive statistics as well as narrative discussions of the role.

RESULTS: Transports have been optimised by the Transport CNC and in one case stopped on the basis of patient instability thus minimising the risk and potential for adverse incidents. Transport equipment has been evaluated and change implemented where required. Staff report feeling more supported by the role in terms of individual transports.

CONCLUSION: The 6 months following the introduction of the Transport CNC have seen radical changes to practice both at the bedside and at a larger unit wide level.

50. MOVING FROM ACTIVE MEDICAL TREATMENT TO COMFORT CARE

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Research has suggested that patients and families sometimes fear abandonment by their clinicians as they transition from active medical treatment to comfort care. Enabling medical and nursing staff to support and care for patients and families at this time was identified as critical to improving end of life care at our hospital.

AIM: To improve the management of patient symptoms in the last days of life.

METHODS: The Symptom Observation Chart (SOC) was developed (with clinician and consumer input) and piloted in four wards across the hospital. Staff surveys and forums were completed post pilot and an audit of the charts. Feedback included experience of using the chart and the engagement with patients and families when using the SOC.

RESULTS: Overall there was positive feedback and strong endorsement for the SOC to be rolled out across the organisation. 35 SOC's were completed during the pilot. 97% (n=34) had observations charted for all symptoms and 56% (n=19) had observations documented every four hours. On average the SOC was being completed 25 hours before death. Over 85% (n= 24) of clinicians surveyed supported continued use of the SOC. Feedback included that the SOC had been a great communication tool for both families and other staff.

CONCLUSION: Managing patients as they transition from active management to comfort care can be a challenging task for all involved. The SOC has shown to assist with this shift and provide a framework to support and care for patients and families through the dying process. Having a visual means for recording and monitoring a patient's symptoms has been beneficial for the clinicians and reportedly well accepted by patients and their families.

51. INCORPORATING CARDIOPULMONARY RESUSCITATION TRAINING INTO CARDIAC REHABILITATION: A FEASIBILITY STUDY

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BACKGROUND AND AIM: Patients with a cardiac history are at future risk of cardiac events, including out-of-hospital cardiac arrest. Targeting cardiopulmonary resuscitation (CPR) training to family members of cardiac patients has long been advocated, but is an area in need of contemporary research evidence. We investigated the feasibility of providing CPR training in a cardiac rehabilitation program to cardiac patients and their family members.

METHODS: A prospective before and after study design was used. CPR training was delivered using video self-instruction (VSI) CPR training kits, facilitated by a cardiac nurse. Data was collected pre-training, post-training and at one month.

RESULTS: Cardiac patient participation rates in CPR classes were high (n = 56, 72.7% of eligible patients) with a further 27 family members attending training. Patients were predominantly male (60.2%), family members were predominantly female (81.5%), both with a mean age of 65 years. Less than half (45.8%) of all participants had previously undertaken CPR training, however this training was not recent with 68.4% of participants trained more than five years ago. Confidence to perform CPR and willingness to use skills significantly increased post-training (both $p < 0.001$). Post training, participants demonstrated a mean chest compression rate of 112 beats per minute and a mean depth of 48 millimetres. Training reach was doubled as participants shared the VSI kit with a further 87 people. Patients, family members and cardiac rehabilitation staff had positive feedback about the training, with some participants stating they "had been meaning to do it [CPR training] for years".

CONCLUSION: We demonstrated that cardiac rehabilitation is an effective and feasible environment to provide CPR training. Using VSI CPR training kits enabled further training reach to the target population. Future large scale studies are now needed to assess whether this training is suitable in different types of cardiac rehabilitation programs.

52. HIV “IN- REACH” MODEL OF CARE IN A TERTIARY HOSPITAL: A NOVEL APPROACH TO IMPROVING IN-PATIENT HIV MANAGEMENT AND OPTIMISING ENGAGEMENT IN HIV CARE

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BACKGROUND: Many people living with HIV (PLHIV) present to tertiary hospitals with issues unrelated to HIV, and may not be reviewed by an HIV specialist during that admission. However, PLHIV may benefit from an in-patient review by an HIV specialist to assess engagement in routine care and monitoring.

ANALYSIS: Whilst ART has helped transition HIV to a chronic illness largely well-managed in an ambulatory setting, not all PLHIV are linked to care or on ART. Admission data from the financial year 2015- 2016 for The Alfred, revealed that 659 (62%) of the 1068 admissions of PLHIV, occurred in units other than Infectious Diseases. This may represent a missed opportunity to identify gaps in care. Admission to hospital presents an opportunity to ensure PLHIV are engaged in appropriate care, taking ART and have had other recommended health screening e.g. sexually transmitted infection (STI) screening. In addition to addressing health gaps in PLHIV, the “in-reach” model provides capacity for early recognition of hospital errors regarding ART prescribing and drug interactions. Finally this model enables interventions at the time of discharge, including the introduction of additional community supports to improve engagement and reduce the risk of readmission.

OUTCOME: The ‘In- Reach’ model of care was developed whereby an HIV specialist nurse performs a routine assessment (opt out basis) on all patients with HIV admitted to units other than Infectious Diseases. The model was piloted in the period March 2017- September 2017. Preliminary data will be presented demonstrating favourable outcomes from this novel intervention in improving patient outcomes and facilitating greater awareness of HIV management across the acute hospital setting.

CONCLUSIONS: Hospital admission provides an opportunity to optimise HIV ambulatory care that has thus far been underutilised.

53. PATIENT SATISFACTION WITH FACIAL AND NECK BURN REHABILITATION

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INTRODUCTION: Individuals with significant facial and neck burn injuries can experience difficulty with working, driving, eating, facial expression and oral hygiene. Facial and neck burn victims also experience psychosocial issues due to disfigurement following their burn injury. Speech Pathologists at The Alfred provide facial and neck scar rehabilitation following burn injury to ensure maximum range of movement of the face and neck as well as to improve the appearance of raised, discoloured and inflexible scars that can develop following burn injuries. Facial and neck burn patients are required to participate in intensive scar management programs for up to two years post burn injury to minimise the effect of their scars on aesthetics and function. Studies have been conducted to investigate patients’ overall perceived health and quality of life post burn injury and satisfaction with pain management and medical/nursing intervention following burns however patients’ satisfaction with their burn therapy has not been investigated in great detail. Patients’ experience with Speech Pathology and/or facial and neck burn therapy has not been discussed in Burns literature.

AIM: To identify patient satisfaction with facial and neck burn rehabilitation provided by Speech Pathology at the Victorian Adult Burns Service, The Alfred.

METHOD: A survey was developed and undertaken with patients either face to face, over the phone or completed via a postal survey. Questions pertaining to education provided, frequency of therapy, interventions, barriers to participation, perceived severity and impact of burns and satisfaction with care were included. Patients recruited were at least three months post burn and had sustained partial thickness to full thickness facial and/or neck burns.

RESULTS: 14 patients completed the survey. Overall satisfaction with the service was high and patients strongly agreed that contact with the Speech Pathologist was sufficient. A third of the patients experienced barriers to participating, mostly relating to pain, motivation and anxiety. Patients accurately reported receiving a wide range of interventions and perceived these interventions to be useful. While all patients received written education as part of their facial and/or neck burn rehabilitation program, almost 40% reported not receiving this. Incidentally, the participants’ self-rating of their burn severity was found to be inconsistent with the Speech Pathologists’ expert rating. Furthermore, self-reported facial and neck burn impact ratings in relation to movement, pain and appearance were highly variable within individual participants.

CONCLUSION: Barriers to participation such as pain, motivation and anxiety need to be considered and addressed when prescribing therapy programs for facial and/or neck burn patients to ensure optimal scar outcomes. Consideration also needs to be given to how facial and neck burn patients receive education to ensure the information provided is accessible and meets their needs. Furthermore, exploration of the differences in patient perception of burn severity compared with expert clinician ratings is required as this may impact on patients’ understanding of their long term outcomes and the importance of early, intensive rehabilitation.

54. AUDIT HIGHLIGHTS THE IMPORTANCE OF SUPPORTIVE END OF LIFE CARE FOR NON-TRANSPLANTED ADULTS (NTXA) WITH CYSTIC FIBROSIS (CF)

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AIM: To trial the SPICT™ as a tool to identify unmet supportive / palliative care (PC) needs in a retrospective audit of end phase illness in NTxA with CF.

METHODS: A review of medical records of the terminal phase of illness of long-term, NTxA with CF at The Alfred, was undertaken. Demographic, physiological and event specific data were collected including cause, site, comorbidities and treatments for all patients who died since 2000. A SPICT™ score was assigned based on symptoms recorded in the final year.

RESULTS: Since 1974, 572/742 adults with CF received long-term care at The Alfred. Two hundred and ten died, 130/210 had not undergone lung transplantation. Lung transplantation was available from 1990. Forty eight (37%) deaths occurred after 1999. Males accounted for 31/48(65%). Respiratory failure (RF) in 30(63%), was the most frequent cause of death. Two died post-surgery, 4 of metastatic bowel cancer, 7 of multi-organ failure, 4 died of non-CF related causes, 3 vehicle accidents and 1 unknown. Ten of the 48 died suddenly. The most common site of death was hospital 31(65%), 12 in ICU, 2 in hospitals overseas. Eleven died at home. All 14/48 patients who had PC involvement, had a SPICT™ >2; 4 with cancer and 4/7 with multi-organ failure, only 6 of RF group. Fourteen people had a SPICT™ scores >2 but no evidence of formal PC involvement. Medical records cited distressing pre-terminal symptoms in 8 cases, all these died of respiratory failure.

CONCLUSIONS: PC referral was accurately predicted by SPICT™ scores >2. Research is required to determine the prospective utility of the SPICT™, however, closer collaboration with Palliative Care Services is recommended.

Unintended outcomes included improved Patient Safety: Protocols for CF & overseas travel, bowel obstruction management and early screening for bowel cancer have been developed.

Institutional Ethics Approval: Alfred Health.

55. OCCUPATIONAL RADIATION EXPOSURE TO THE LENS OF THE EYE IN INTERVENTIONAL RADIOLOGY

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AIM: To measure the radiation exposure to the lens of the eyes of Interventional Radiologists (IRs) and the staff and to compare against the yearly dose limits set by the International Common on Radiation Protection (ICRP) standards in 2013. In addition, to calculate the estimated lifetime accumulated dose to the lens of the eye and measure the effectiveness of lead glasses.

METHODS: This 12-month prospective study included five pairs of radiation protective lead glasses with ThermoLuminescent Dosimeters (TLD) placed outside and behind the lead glasses worn by various interventional radiology staff. Radiation exposure (Hp3) was measured over a 12-month period with a control TLD placed in the storage area of the glasses when not being utilised. Radiation levels were compared against ICRP recommendations and a 'working lifetime' accumulated dose was calculated.

RESULTS: The yearly dose for IRs was between 12.1 - 31.2 mSv on the outside of the glasses and inside the glasses 2.14 - 9.76 mSv. The average reduction in radiation dose using lead glasses (0.035 mm Pb equivalent) was 76.3%. When results were extrapolated per days in the angiography suite, all IRs working three days or more would exceed the lifetime dose limit of 500 mSv if glasses were not worn. IRs working four days a week or more would exceed the yearly dose limit of 20 mSv/year. If glasses were worn, no IR would exceed the yearly or lifetime limit even if working five days/week in the angiography suite. The IR nursing staff/radiographers did not exceed radiation dose limits. Splash incidents were found for all glasses.

CONCLUSION: Yearly and lifetime dose limits to the eyes would be exceeded in some IRs depending on workloads. Lead glasses should be worn by some IRs to reduce the radiation dose to their eyes with an added benefit of splash protection.

56. REDESIGNING THE ALFRED HEART FAILURE MODEL OF CARE

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Heart failure (HF) admissions have increased at the Alfred Hospital over the last three years. The Victorian Cardiac Clinical Network provided funding for a project to redesign the HF model of care.

AIM: To design a model of care to maximise time HF patients spend well in the community by delivering best practice guidelines to reduce variation in care and improve overall outcomes.

METHODS: We undertook a quality improvement project using a data-driven methodology described in the HF Toolkit that focussed on identifying and reducing variation in process measures of care in HF. Alfred Health redesign service assisted.

RESULTS: We brought together interested stakeholders to define perceived problems in HF care. Acute and ambulatory working groups were established, executive sponsor secured, and steering committee established. Project aims and scope were agreed upon. Variation in care was identified using hospital discharge data, VCOR HF snapshot data, and through a detailed mapping of the HF patient journey with multi-disciplinary teams from acute care, outpatient clinics and community services. A gap analysis was undertaken and potential solutions identified, using the three pillars outlined in the HF toolkit, including HF specialty input, education and transitions. These informed the HF model of care redesign, which includes electronic HF care bundles, 4-page HF patient education pack, rolling education program for staff, HF nurse availability for all units in office hours, a transitional safety net with a 72-hour phone call by the HARP service, and early post-discharge follow up which includes a nurse-pharmacist early follow-up clinic. Outcome measures included readmission and process measures.

CONCLUSION: A data driven methodology was used to identify variation in care for HF patients, and a model of care designed to reduce it. The HF model of care has been implemented, and final outcomes will be assessed at one year.

57. NURSING EMERGENCY EXTERNAL TRAUMA PROGRAMME

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BACKGROUND: Emergency nurses working in non-Major Trauma Service (non-MTS) facilities face the challenge of providing immediate care to seriously injured patients, despite infrequent presentations at their workplace. A one-day education programme endorsed by the Australian College of Nursing was developed to provide contemporary trauma education for nurses. The aim of this study was to report participants' perceptions of their experience of this programme.

METHODS: Peer reviewed lesson plans were developed to guide educational activities. Of 32 participants, 24 consented to and completed pre and post-programme surveys. Thematic analysis and descriptive statistics were used to report study findings.

RESULTS: Most participants were nurses with greater than two years' experience in Emergency Nursing (92%). Trauma patient transfers each year from a non-MTS to a Major Trauma Service occurred infrequently; eight nurses (33.3%) reported greater than 10 trauma transfers per year. Participant expectations of the programme included personal growth, knowledge acquisition, increased confidence and a focus on technical skills. Participants reported the day to be worthwhile and valuable; improved confidence, increased knowledge, and the opportunity to discuss current evidence based practice were highly regarded. Recommendations for future programmes included extending to two days and include burns and more complex pathophysiology.

CONCLUSIONS: With centralisation of trauma care to major trauma services, frequent and continuing education of nurses is essential. Nurses from non-Major Trauma Service facilities in Victoria found this programme worthwhile as they gained knowledge and skills and increased confidence to care for trauma patients.

58. NURSE MANAGER RISK INFORMATION MANAGEMENT FOR DECISION-MAKING: A QUALITATIVE ANALYSIS

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Nurse managers hold pivotal positions in clinical settings, linking strategic and operational patient safety goals. Despite being key users of electronic risk management and incident reporting systems, little knowledge exists on nurse managers' use and communication of information derived from these systems.

AIM: This qualitative study aimed to explore nurse manager information requirements, risk management practices, and influences on decision making when interacting with an electronic risk management and incident reporting system.

METHODS: Focus groups with eight nurse managers were conducted at a teaching hospital in Melbourne, Australia. A demographic questionnaire was also distributed. Inductive analysis of focus group data involved content analysis consisting of open coding, axial coding, and categorisation.

RESULTS: Three themes were identified: navigating the system, relying on data, and communication and feedback. Nurse managers applied the data contained within the system to assess ward performance and make decisions around corresponding changes to practice. Decision making and information management approaches varied depending on whether the nurse manager investigated a single incident report or viewed summarised incident reports. NM utilisation of electronic incident reporting and risk management software was influenced by a range of factors, including data inaccuracy impacting on information quality, lack of formalised user training, workarounds, and lack of organisational feedback. Our study responses revealed that none of the NM participants perceived themselves as possessing advanced computer skills. Interestingly, perceived confidence with using information technology did not increase with experience. There was also a lack of formal training on the incident reporting and risk management system specifically developed for NMs.

CONCLUSION: Formalised, structured software and information system training is recommended to improve system user confidence and informatics skills and fulfil nurse manager information requirements. The findings from this study will assist nursing and health care administrators in identifying ineffective practice and meeting nurse manager information requirements.

59. EVIDENCE-BASED REHABILITATION INTERVENTIONS FOR ADULTS WITH ACQUIRED BRAIN INJURY: A SYSTEMATIC REVIEW OF CLINICAL PRACTICE GUIDELINES AND APPRAISAL OF THEIR QUALITY

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Clinical practice guidelines (CPGs) contain recommendation statements aimed at clinicians to optimise patient care. In the area of acquired brain injury (ABI) rehabilitation there are a number of CPGs, however less is known about how similar they are nor about which guidelines to implement into practice.

OBJECTIVES: This study aimed to determine the quality, scope and consistency of clinical practice guideline recommendations for ABI rehabilitation.

METHOD: Systematic review which included CPG for inpatient rehabilitation and / or community rehabilitation for adults with an ABI diagnosis (stroke, traumatic or other brain injury). Electronic databases (n=2), guideline organisations (n=4), and websites of professional societies (n=17) were searched up to March 2016. The Appraisal of Guidelines for Research and Evaluation (AGREE) II instrument and textual synthesis were used to appraise and compare recommendations.

RESULTS: From 411 papers, 20 papers comprising of 19 guidelines met the inclusion criteria. Only three guidelines rated high (>75%) across all domains of AGREE-II. Preliminary analysis shows that 'scope and purpose' and 'clarity' domains rate highest (87%, SD 9.7 and 73.5%, SD 23.4 respectively) with 'applicability' domain rating the lowest (35%, SD 32.5). Recommendations on assessment and motor therapies were fairly consistent, guidelines varied in the level of detail and breadth of rehabilitation.

CONCLUSION: ABI guidelines were consistent in scope, but were variable with respect to recommendations, methodological quality and applicability. Given that CPGs varied in quality, implementing the "wrong" guideline might not lead to less variation of care or improve patient outcomes.

60. OUT OF HOURS EFFECT ON EMERGENCY DEPARTMENT PRESENTATION FOR PATIENTS WITH ACUTE STROKE

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Research investigating how people with acute stroke access emergency departments during weekends or after business working-hours is limited. Rapid presentation is critical as hyper-acute stroke therapy outcomes are time sensitive.

AIM: To evaluate acute stroke patient presentation times, and determine if "Out of Hours" presentations are associated with ambulance use or prolong pre-hospital time delays.

METHOD: A three-year retrospective assessment of emergency department records was undertaken for patients diagnosed with ischemic stroke presenting <6-hours from symptom-onset to one of three hospitals in Melbourne.

RESULTS: 1,976 patient case presentations met the inclusion criteria. Subgroup analysis indicated: (i) 746 presented on Weekdays in-hours, with 80% (598) arriving by ambulance and a mean time-delay of 1:44 minutes (1:30 IQR); (ii) 581 presented on Weekday after-hours, with 83% (488) arriving by ambulance and a mean time-delay of 1:42 minutes (1:30 IQR); (iii) 340 presented on Weekends in-hours, with 77% (265) arriving by ambulance and a mean time-delay of 1:49 minutes (1:30 IQR); and, (iv) 310 presented on Weekends after-hours, with 79% (164) arriving by ambulance and a mean time-delay of 1:40 minutes (1:30 IQR). Oneway-ANOVAs found no significant differences between groups in arrival by ambulance ($p = 0.10$), or time-delay in time of arrival ($p = 0.98$).

CONCLUSION: These results are encouraging, suggesting neither 'weekend effect' nor 'after hours effect' impact on arrival by ambulance or time delays to hospital presentation for patients with ischemic stroke presenting <6-hours. This study further identifies the clinical need for providing 24-hour 7-day a week emergency hyper-acute stroke services.

61. A RETROSPECTIVE COST ANALYSIS OF ANGIOPLASTY COMPARED TO BYPASS SURGERY FOR LOWER LIMB ARTERIAL DISEASE IN AN AUSTRALIAN TERTIARY HEALTH SERVICE

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Percutaneous transluminal angioplasty (PTA) and surgical bypass (BYP) are treatment options for symptomatic peripheral arterial disease (PAD). PTA and BYP have different clinical outcomes and cost implications.

AIM: To compare hospital-related costs of PTA and BYP for PAD of the lower limbs in an Australian health service.

METHODS: A retrospective cost analysis using clinical and financial data from an urban, tertiary hospital was performed. Patient cohorts were matched to existing published studies and 3-year findings were calculated. Outcomes measured were mean initial admission cost; mean bed stay; mean complication rate; mean cost of re-intervention at 12 months and extrapolated mean cost at 3 years.

RESULTS: The mean total admission costs for PTA compared to BYP were \$8758 vs. \$27,849 ($p < 0.001$). Patients undergoing BYP were admitted for 10.25 vs. 3.77 nights ($p < 0.001$). The complication rate was greater in the BYP group for infection only. Re-intervention was required by 13% of the PTA group and 16% of the BYP group, at a mean cost of \$11,798 and \$14,728 respectively ($p = 0.453$). The extrapolated total mean cost at 3 years was higher in the BYP group for patients with both intermittent claudication (\$26,764 vs. \$11,402) and critical limb ischaemia (\$27,719 vs. \$12,655).

CONCLUSIONS: In this cohort PTA is a favourable alternative to BYP for PAD of the lower limbs as it is less costly and is associated with superior clinical outcomes. This cost difference persists at three years. Given the limitations of this retrospective analysis, a prospective cost-effectiveness analysis is recommended.

62. SAFETY OF CT-GUIDED CERVICAL TRANSFORAMINAL CORTICOSTEROID INJECTIONS

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CT-guided transforaminal cervical corticosteroid injection is a commonly performed procedure for cervical radiculopathy. There is some hesitation to perform this procedure in smaller practices due to potential complications which have been reported such as vertebral artery injury and posterior circulation stroke, however these have been documented only with older fluoroscopic-guided methods. Quantifying the risk profile of a procedure is essential for informed patient consent and there is little data on the safety of newer CT-guided methods.

AIM: To quantify the risks of major and minor complications from transforaminal cervical nerve root corticosteroid injection using CT-guidance.

METHODS: Approval was granted from the Alfred Human Research and Ethics Committee. 110 patients who underwent cervical nerve root injection were identified. The procedure was examined and data collected about the technique. Patient follow up was then reviewed, either via outpatient clinics or by phone.

RESULTS: 73 procedures were performed by registrars or fellows, and 37 by consultants. The most common procedure technique was an anterolateral approach with a 25-gauge needle injecting dexamethasone, confirming the extravascular location of the needle tip by CT position and aspiration. There were no major complications following any procedure, specifically there were no episodes of permanent neurological deficit (stroke). There were a very small number of immediate complications (temporary numbness in a cervical dermatome, n=1; acute transient severe cervical radiculopathy, n=1) and 1 non-immediate complication (transient episode of vertigo), overall rate of 2.7%.

CONCLUSION: The overall recorded complication rate of CT-guided transforaminal nerve root injection is low (2.7%) and no major complications were encountered in our series. This review shows that the procedure is safe and able to be performed outside of a tertiary centre. To our knowledge this is the first data out of this country to show the safety of newer CT-guided methods for transforaminal cervical spine injection.

63. ADRENAL INCIDENTALOMA FOLLOW-UP IS INFLUENCED BY PATIENT, RADIOLOGICAL AND MEDICAL PROVIDER FACTORS

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The majority of adrenal incidentalomas (AI) are benign, although some are large, functional or malignant, and may require surgery. Therefore, all require follow-up.

AIM: This study aims to determine the pattern of AI follow-up in a level 1 trauma centre, focussing on the factors that influence whether follow-up is facilitated.

METHODS: Patients with CT-detected AIs between January 2010 and September 2015 were included. A key word search identified case files, which were reviewed for demographics, managing unit, CT indication and findings, and follow-up arrangements. Statistical analysis using t-test, Chi-squared test and logistic regression was performed using Stata SE v14, with a p-value of < 0.05 set as significant.

RESULTS: A total of 38 848 chest and abdominal CTs were performed in the study period, revealing 804 patients with AIs who met inclusion criteria (mean age 65, 58 % male). The mean size of AI was 23 mm. Follow-up was organised in 30 % of cases, and was more likely to occur in younger patients (mean age 62 vs 66, $p < 0.001$); in larger lesions (mean size 26 mm vs 21 mm, $p < 0.001$); if the CT suggested follow-up ($p < 0.001$); or if the CT report suggested a diagnosis ($p < 0.001$). Follow-up arrangements were most likely to be made by the trauma unit (39 %, $p = 0.01$), possibly due to the introduction of a dedicated adrenal lesion protocol.

CONCLUSIONS: This study highlights that AI follow-up is often overlooked, and that follow-up is influenced by patient, radiological and medical provider factors. An adrenal lesion follow-up protocol may improve follow-up rates, but requires further analysis.

64. PROTOCOL FOR NURSE LED PATHOLOGY IN AN URBAN EMERGENCY DEPARTMENT- BLOOD + PROTOCOL INITIATING NURSES (B+PIN)

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AIM: The aim of a nurse led protocol is to improve our delivery of timely quality care to our ED patients by:

- Expediting pathology collection and analysis as an aide early clinical decision making
- Targeting education aimed at rational investigation selection
- Reducing the incidence of mismatched pathology specimens

Using a pre-defined protocol, Blood+Protocol Initiating Nurses (B-PIN) will be able to electronically order pathology investigations prior to the patient being assessed by a medical officer or nurse practitioner.

BACKGROUND: The process of requesting and ordering pathology investigations is commonly undertaken when patients present to the Emergency Department. Nurse initiated pathology has shown to have decreased waiting times and length of stay for ED patients, improved patient satisfaction, reduced inappropriate test ordering and reduced pathology order/ mismatch. Delay in the collection of samples or inaccuracy during collection can impact patient flow and quality of care. Investigations are essential for screening, diagnosis and monitoring of disease and inform patient management. The wide variation in test-ordering, particularly when tests are used for diagnostic purposes, suggest that some tests are unnecessary or ordered inappropriately. As investigations account for a significant proportion of total healthcare costs, unnecessary tests are also a waste of resources and an excessive cost to the health service.

DISCUSSION: Nurse-initiated pathology protocols are not a new innovation to the ED. Until the introduction of the B+PIN in March 2017, solely medical officers or nurse practitioners had undertaken pathology ordering. The implementation of a nurse initiated pathology protocol required a rigorous education plan and assessment to ensure that safe and efficient ordering and collection of pathology occurred. Key stakeholder engagement, working party involvement, education program development, online training and the credentialing assessments will be detailed.

CONCLUSIONS: Emergency nurse led protocols have been shown to improve patient clinical outcomes. The B+PIN expansion for current registered nurses will empower them to be able to offer improved timeliness of pathology collection, make clinical decisions more efficient and may reduce mismatching of specimens.

65. DEPRESCRIBING: A FEASIBILITY STUDY FOR A PHYSICIAN-PHARMACIST PARTNERSHIP (PPP) DEPRESCRIBING MODEL OF CARE

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INTRODUCTION: Polypharmacy is the strongest predictor of adverse drug events (ADEs) in the elderly. Deprescribing reduces unnecessary medications but faces several barriers. An acute inpatient (IP) admission presents a collaborative opportunity for physicians and pharmacists to undertake deprescribing, and outpatient (OP) follow-up (FU) may benefit this patient-centered process.

AIMS:

- Define the need for deprescribing during an acute IP General Medicine admission
- Explore factors associated with and barriers to successful deprescribing
- Use the data to design a PPP-care-model spanning IP-to-OP care

METHODS: Patients aged >65yrs, taking ≥ 5 regular medications, admitted to the Alfred Hospital General Medical Unit over 6 weeks from August to September 2016, were prospectively included. Patients receiving end-of-life care and who were unable to attend OP FU were excluded. A deprescribing team, consisting of the individual-medical-team pharmacists and a supervising (non-treating) physician, identified medications for deprescribing (termed deprescribing instances) based on 4 rationales*. Patient demographics, clinical variables, potential barriers to deprescribing (need to seek external clinical details, number of prescribers) admission medications and medications to be deprescribed were recorded.

RESULTS: Of 494 patients admitted 129 (26%) patients met inclusion criteria (52% female, age 83±7 years). Median number of regular medications was 9 (IQR 7-12). 92 medications were deemed suitable for deprescribing. The commonest medication classes were PPIs (21%), anti-hypertensives (19%) and opioids (13.8%). On a per medication basis 'harm-outweighing-benefit' was the commonest rationale (43.47%). For 28 (30%) medications, more clinical information was needed prior to decision-making. In 39 (42%) instances, OP clinic follow-up would be beneficial to monitor the effects of medication cessation.

CONCLUSION: Among General Medical inpatients, polypharmacy remains prevalent and approximately one quarter may benefit from deprescribing. Deprescribing opportunities can be identified during inpatient care through pharmacist-physician partnership model. In certain circumstances, OP-monitoring will ensure safe patient care and adherence to recommendations.

66. DEVELOPING A TRAUMA REGISTRY AIS CODING DECISION SUPPORT ALGORITHM FOR ACCURATELY CODING PELVIC INJURY SEVERITY – PHASE 1.

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Each year The Alfred Trauma Registry codes over 300 patients with a pelvic fracture diagnosis using the Abbreviated Injury Scale (AIS). This anatomically based, consensus derived global scoring system, provides a coding nomenclature for injury diagnosis with a risk to life severity index. Furthermore, the AIS codes forms the basis for injury severity scoring that indicates whole body injury burden. The AIS coding manual provides instructions for pelvic trauma coding that are difficult for coders to apply.

Pelvic injuries range from mild to severe and have been classified by mechanism of injury by Young and Burgess, anatomy by the AO foundation and by pelvic rotational and vertical stability by Tile. Despite this work, there is variability between Orthopaedic Surgeons when classifying pelvic injuries so it is not surprising that lay coders have difficulty.

The aim of this work was to design a coding decision support algorithm that can be easily followed by lay coders and medical staff alike aiming to eliminate bias and allow accurate recording of pelvic trauma injuries.

The current AIS 2005 (2008 update) coding nomenclature was used to derive a simple flow diagram which was then peer reviewed by Alfred Health credentialed pelvic surgeons which is presented here in this poster.

Phase 2 of the project will entail validation of this tool including accuracy testing and interrater reliability assessments.

67. PATIENT PERSPECTIVES OF BARRIERS TO SELF CARE STRATEGIES IN MANAGING HEART FAILURE

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INTRODUCTION: Heart failure (HF) is a major cause of morbidity and mortality in Australia. Advances in early symptom recognition, identifying barriers and implementing a multidisciplinary approach have translated into a decline in mortality, however patient engagement is critical.

AIM: Describe the pattern of self-care measures and adherence to heart failure management strategies.

METHOD: 31 patients with HF completed a custom self-care focused questionnaire in an outpatient tertiary advanced heart failure centre.

RESULTS: Mean age was 50 ± 14 years (80% male; mean left ventricular ejection fraction (LVEF) 36% ± 13; NYHA I-II 52% vs NYHA III 48%), mean duration of HF 8 years (± 9 years). HF aetiology was predominantly non-ischaemic (68% vs 32%). 55% of the cohort recorded their weight daily; of those 12% sought advice for weight gain. Participants sought advice for symptomatic heart failure more frequently than for weight gain (52% vs 29%). Fatigue was the predominant symptom (51%) followed by breathlessness (17%). 62% of patients routinely recorded weight and fluid intake; 20% utilised a HF diary, while 42% used an electronic platform. 78% of patients with a HF diary either forgot to bring their diary to their appointment or found it difficult to routinely record information. All participants were interested in utilising a mobile heart failure application.

CONCLUSION: Larger studies are required to further define limitations of self-care. Utilising electronic platforms may promote self-care by enhancing and simplifying recording of heart failure metrics.

68. IMPROVING METHODS FOR THE IDENTIFICATION OF MALNUTRITION IN CULTURALLY AND LINGUISTICALLY DIVERSE PATIENTS

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Cancer-related malnutrition is common and is associated with increased morbidity and mortality and higher healthcare costs. Evidence suggests that timely malnutrition screening and early nutrition intervention improves patient outcomes. Victoria is Australia's most culturally diverse state with residents born in over 230 nations and speaking over 200 languages. The Malnutrition Screening Tool is only available in English and there is little information about the completion of screening in culturally and linguistically diverse (CALD) patients.

AIMS:

1. Ascertain current practice in the administration of malnutrition screening for CALD patients.
2. Identify priority languages for the cultural adaptation of screening tools in 17 Victorian cancer services.

METHODS: Online questionnaires were distributed to Dietitians and Health Professionals conducting malnutrition screening at 17 Victorian cancer services. Data from the Victorian Admitted Episode Dataset were analysed to determine the top 10 preferred languages other than English.

RESULTS: Dietitians perceive malnutrition screening is routinely completed in only one third (31%) of CALD patients. For those patients who are screened, almost all health professionals (93%) report using an interpreter for less than one quarter of all patients seen. The majority (80%) of respondents report using a family member most of the time to assist with completion of malnutrition screening. Language, time constraints and access to interpreters were reported as barriers for effective malnutrition screening and enablers include the presence of interpreters, family members and bilingual colleagues.

The top 10 languages spoken across the 17 cancer services were identified. These languages apply to 77% of all admissions with a preferred language other than English.

CONCLUSION: Practices relating to malnutrition screening appear to be suboptimal in CALD patients. The cultural adaptation of malnutrition screening tools is required to better support the nutritional needs of CALD patients.

69. ADVERSE DRUG REACTIONS REPORTING: EVALUATING CURRENT EFFICIENCY PRIOR TO INTRODUCTION OF ELECTRONIC REPORTING SYSTEM

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AIM: To evaluate the time taken to report an adverse drug reaction (ADR) by healthcare professionals (HCPs), the characteristics of reported ADRs and factors associated with delays in reporting, prior to introduction of electronic ADR-reporting in 2018.

METHODS: Paper-based ADR reports submitted to the ADR Review Committee of Alfred Hospital over a two-year period (2015-2016) were retrospectively reviewed. Date of ADR onset and report submission, characteristics of the ADR and HCP vocation were extracted and analysed.

RESULTS: Of 555 reports submitted, multiple agents were implicated in 165 (29.7%), while 390 (70.3%) were hospital-onset. 471 (84.8%) were reported by pharmacists, 52 (9.4%) by medical doctors and 32 (5.7%) by other HCPs. Antimicrobials (304 of 640 medications, 47.5%) were most frequently implicated. The overall median time to reporting an ADR was 3 (IQR 1-10) days from time of ADR onset. Differences in reporting times were noted between pharmacists, doctors and others (median 4 vs. 1 vs. 0 days, $p < 0.0001$). There was a longer time to reporting when multiple agents were implicated ($p = 0.01$) or for delayed hypersensitivity reactions ($p < 0.0001$). Severe cutaneous adverse reactions were associated with the longest time to report, compared to reactions involving single organ system and non-severe cutaneous reactions (median 12 vs. 9 vs. 4 days, $p < 0.0001$).

CONCLUSION: Evaluating the efficiency of current paper-based ADR reporting process matters, as this triggers a multidisciplinary assessment for causality and risk mitigation measures for patients. Submission of the current paper-based ADR report was found to take a longer time for more complex cases, and when multiple medications were implicated. Process measures will be re-evaluated when electronic ADR-reporting is implemented in 2018. This is to ensure that the review process is efficient, to reduce unnecessary delays, and thus translate to safer patient care.

70. EVALUATION OF POST-DISCHARGE PHARMACIST-ONLY REVIEW IN A GENERAL MEDICINE AMBULATORY CARE SETTING

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AIM: To determine whether pharmacists undertaking independent post-discharge review of general medicine patients is feasible, effective and safe.

METHODS: A retrospective cohort study was conducted between April and September 2016 within the General Medicine Unit (GMU) at a major tertiary referral centre. Patients referred for review in the GMU post-discharge clinic were included. Reviews were undertaken via telephone or face-to-face appointment, with a pharmacist-only, a doctor-only or pharmacist plus doctor, according to each patient's follow-up requirements. Patients reviewed by a pharmacist-only could be escalated to a medical review if required, as determined by the pharmacist. Pharmacist activity, frequency of escalation, and outcomes, including 30-day readmission rates were evaluated.

RESULTS: 861 patients were referred for post-discharge review, 123 (14.3%) for pharmacist-only review and 738 (85.7%) for doctor-only or partnered review. Excluding failures to attend, 89 of 586 patients (15.2%) underwent independent pharmacist review. Of the 89 patients, 85 (95.5%, 95% CI 91.2-99.8%) were successfully reviewed without unplanned escalation to a doctor. Four patients (4.5%, 95% CI 0.2-8.8%) required escalation, three due to unanticipated clinical symptoms and one for a medication-related problem. A greater proportion of patients required escalation in the face-to-face group, compared with the telephone group (3/9 versus 1/80; $p=0.003$). There was no difference in 30-day readmission rates between the groups (9% for pharmacist-only group versus 8.2% for all other patients, $p=0.84$).

CONCLUSION: Pharmacist-only post-discharge review of appropriately selected GMU patients is feasible, effective and safe. In this novel service model, pharmacists reviewed 15% of all patients, and only a minority (4.5%) of these patients required escalation to an unplanned medical review. Thirty-day readmission rates did not differ between the groups. This study provides the first evidence that pharmacists working in a GMU outpatient service have the potential to improve workforce distribution while maintaining quality of clinical care.

71. APPROPRIATENESS OF OSTEOPOROSIS MANAGEMENT FOLLOWING LOW-IMPACT FRACTURE

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Low-impact fractures are a strong indicator of osteoporosis and are the single biggest risk factor for future fractures. Anti-resorptive therapy reduces risk of subsequent fractures, however evidence shows that osteoporosis is under-recognised and under-treated.

AIM: To assess current management of patients admitted to hospital with low-impact fractures.

METHODS: This retrospective cohort study included patients >50 years old admitted to a major tertiary hospital with a primary diagnosis of fracture in 2015. Patients were identified by admission coding, screened for fracture type (high vs low-impact) and included if they experienced a low-impact fracture. Data collection included inpatient and discharge management, bone mineral density testing (DXA-scan) and use of anti-resorptive agents.

RESULTS: 1355 patients were admitted in 2015 with a diagnosis of fracture. 805 (60%) were screened, identifying 273 (34%) with low-impact fractures. Median age was 83-years; primary fracture locations were hip, pelvis and femur (41%). 68 patients (25%) had a pre-existing diagnosis of osteoporosis, with 44 (15.4%) prescribed anti-resorptives previously. 103 patients (37%) underwent surgery, and 136 (49%) required inpatient rehabilitation. Few patients received inpatient DXA-scanning ($n=18$, 6.6%) or anti-resorptive therapy, with 41 (15%) treatment-naïve patients commencing therapy. Denosumab was most frequently prescribed ($n=36$, 88%). Thirty-five patients (12.8%) had recommendations for anti-resorptive therapy in their discharge summary, and 21 patients (7.7%) had outpatient DXA-scans planned. Patients transferred to rehabilitation were more likely to receive DXA scanning (OR: 19.4; $p=0.0042$) and anti-resorptive therapy (OR: 58.6; $p=0.0001$), or have recommendations/plans for outpatient DXA scans (OR: 2.7; $p=0.046$) or anti-resorptive therapy (OR: 11.2; $p<0.0001$), than patients discharged directly from acute care.

CONCLUSION: These results support evidence that osteoporosis is under-treated. Patients admitted to rehabilitation were more likely to receive care consistent with guidelines. Clinical pharmacists are well-placed to advocate for osteoporosis screening and recommend appropriate pharmacotherapy within this vulnerable population.

72. DEVELOPING AND TESTING THE ALFRED STEP TEST EXERCISE PROTOCOL (A-STEP) IN ADULTS WITH CF

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BACKGROUND: Annual testing of exercise capacity is recommended in CF. We have identified the need for a sensitive, specific test for the CF population that has potential to identify health decline and reduce morbidity.

AIMS:

- 1) To develop a simple, clinically driven, maximal exercise capacity test for use in adults with CF across the age and disease spectrum,
- 2) To test its safety and feasibility.

METHODS: A new standardised incremental step test to assess exercise capacity was developed (the A-STEP). The test is externally paced, incorporating up to 15 levels on a 20cm step, measuring cardiovascular (HR and BP) and respiratory parameters (SpO₂ and shortness of breath (SOB)) and leg fatigue (LEGS) (both on visual analogue scales). Adults with stable CF were screened for suitability, completing the Alfred Wellness Score (AweScore) and A-STEP after outpatient lung function testing.

RESULTS: To date, 27 of planned 40 subjects have been tested. Results reported as mean (and range). 27 adults (16 male) Age: 29.7yrs (22-48); FEV₁% pred. 59% (27-98%); Height: 167.2cm (146 cm-185.5); AweScore: 68.3% (52-96%); A-STEP: 3 completed all test levels, 24 between 6 and 13. Peak exercise SpO₂: 92.6% (80-98%), ↓ 5.4% (0 to 15%), HR: 165 bpm (118-190), ↑ 88 bpm (42-118), Systolic BP: 147mmHg (109-196), ↑ 33 (3-82). 26 reported maximal for either SOB(23)/LEGS(21) or both (18), (considered maximal if ≥8/10). Recovery SpO₂: 25 <5 mins, HR: 1 <5 mins, 18 in 5-10mins, 8 >10mins. BP: 24 <10 mins.

CONCLUSIONS: The A-STEP pushed participants to a self-reported maximal level. In the absence of adverse events, the test was completed by all participants regardless of FEV₁ or age. The test is safe and feasible in adults with stable CF. Future research aims to validate the tool against the gold standard cardiopulmonary exercise test.

73. APPROPRIATENESS OF PROTON PUMP INHIBITOR USE IN PATIENTS ADMITTED UNDER THE GENERAL MEDICAL UNIT

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AIM: To identify the proportion of General Medical Unit (GMU) inpatients receiving proton pump inhibitors (PPI) on admission and evaluate the appropriateness of PPI use.

METHODS: This prospective observational cohort study was conducted at a tertiary teaching hospital in Melbourne, from 6th June to 11th July 2016. Consecutive patients admitted to the GMU were screened for PPI use on admission until 200 PPI-users were identified. Clinical pharmacists recorded dose, indication and duration of PPI use on the patient's medical reconciliation form. Appropriateness of PPI use was evaluated by: (1) comparing use to Australian Therapeutic Guidelines and National Prescribing Service (NPS) Guidelines on PPI use in gastro-oesophageal reflux disease (GORD); (2) assessment of indication, dose and treatment duration by a multidisciplinary panel consisting of two general physicians and one senior pharmacist. The primary outcome was the proportion of patients assessed as having inappropriate PPI use on admission.

RESULTS: Among 442 consecutive GMU patients, 45.2% were taking a PPI on admission. Inappropriate duration, dose or PPI indication, considering patients' individual co-morbidities and co-medications, was observed in 66.2% of PPI-users. The highest contributor to PPI inappropriate use was excessive duration of use (43%), followed by inappropriate indication (15%). For patients prescribed PPIs for treatment of GORD (n=131), use was deemed inappropriate in 67.2% of cases. Evaluation of co-morbidities associated with long-term PPI use, between PPI-users compared to non-users, demonstrated that PPI-users had higher prevalence of osteoporosis and/or history of fracture (42.9 vs 27.2%, p<0.001), hypomagnesaemia (10.6 vs 3.4%, p=0.003) and vitamin B12 deficiency (8.1 vs 4.3%, p=0.109).

CONCLUSION: Inappropriate use of PPIs is frequent among GMU patients. Given the potential for associated side effects, unnecessary health expenditure and pill burden, clinicians should implement closer evaluation of the underlying clinical conditions and consider de-prescribing in situations where continued prescribing may no longer be warranted.

74. IMPROVED DIAGNOSIS OF ACTIVE SYPHILIS AT POINT-OF-CARE FOR THE ELIMINATION OF CONGENITAL SYPHILIS

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BACKGROUND: Congenital syphilis affects more newborns than any other infection including HIV and tetanus. Syphilis is easily treated with penicillin but diagnosis requires specialised tests and trained staff. Rapid point-of-care tests (RPOCT) for syphilis are available however they cannot distinguish between active (current) syphilis and past or treated infections. As a result, these tests have limited utility in syphilis control programs.

We have developed a RPOCT that detects IgA antibody to syphilis (IgA Confirm), and can differentiate active syphilis from past treated infections.

AIM: To undertake a laboratory evaluation of the prototype syphilis IgA confirm test and assess its ability to identify active syphilis from a population of syphilis antibody positive and negative serum samples.

METHOD: The IgA Confirm RPOCT was evaluated at the National Center for Sexually Transmitted Disease Control, Nanjing, China in a 'blinded' study using (n=458) stored serum samples classified by rapid plasma reagin (RPR) and *Treponema pallidum* Haemagglutination (TPHA) serology as active syphilis (TPHA positive +RPR titre ≥ 8), past/treated syphilis (TPHA positive, RPR negative) and no evidence of syphilis (TPHA and RPR negative).

RESULTS: The IgA Confirm test demonstrated a sensitivity of 96.1% (148/154) for the active syphilis samples, and 84.7% specificity with patients previously infected or treated for syphilis (71.3% specific, 107/150), or no evidence of syphilis (98% specific, 148/151). Three samples gave indeterminate results and could not be classified in the rapid test

CONCLUSION: This independent evaluation of the IgA Confirm RPOCT has demonstrated that detection of treponemal-specific IgA has the ability to accurately identify active syphilis infections using serum samples classified with the laboratory TPHA and RPR reference tests. The IgA Confirm RPOCT could result in immediate access to diagnosis and significantly increased syphilis treatment uptake, improving maternal and neonatal health outcomes.

75. DEVELOPMENT OF A NATIONAL AUDIT TOOL FOR SURGICAL ANTIMICROBIAL PROPHYLAXIS PRESCRIBING

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Surgical antimicrobial prophylaxis (SAP) is the most common indication (15.5%) for antimicrobial use in Australian hospitals and 40% of SAP usage is deemed inappropriate. Inappropriate use can lead to patient harm and further increase the risk of antimicrobial resistance (AMR).

AIM: To develop a national audit tool to evaluate surgical antimicrobial prophylaxis prescribing. To evaluate antimicrobial usage and patient outcomes in a broad-range of surgical procedures.

METHODS: The Surgical National Antimicrobial Prescribing Survey (SNAPS) was developed following literature review and engagement of stakeholders. A paper pilot tool was trialled at 11 Australian hospitals (May 2015), including public and private sectors. Surveyors included infectious diseases physicians, pharmacists and infection control practitioners, who were provided with online training and resources. A period prevalence cohort design was utilised to support flexibility for prospective or retrospective use. SNAPS supports assessment of SAP appropriateness according to the Australian Therapeutic: Antibiotic Surgical Prophylaxis guidelines or a hospitals locally developed guidelines. It was designed to examine peri- and post-operative prescribing practices, dosing, timing and duration of SAP and patient outcomes including length of stay, readmissions and surgical site and *Clostridium difficile* infections. It also captured data regarding the surgeon, anaesthetist, microbiology, allergy status and operation type.

RESULTS: A total of 592 antimicrobial prescriptions, documented for 668 procedures was collected. 180 procedures had no antimicrobials prescribed. Overall, 27% of pre-operative and 55% of post-operative prescriptions were deemed to be inappropriate. The most common reason for inappropriateness was the use of prophylaxis when not indicated (11% pre-operative, 46% post-operative inappropriate prescriptions).

CONCLUSIONS: SNAPS identified key areas of inappropriate SAP prescribing. This paper trial has since supported the ongoing development of an electronic online SNAPS. Ongoing audits will facilitate nationwide data collection, longitudinal analysis, benchmarking for inter-hospital comparisons and guide future AMS interventions, practice and policy.

76. SIMULTANEOUS DETERMINATION OF VORICONAZOLE, POSACONAZOLE, ITRACONAZOLE AND HYDROXY-ITRACONAZOLE IN PLASMA USING LCMS/MS

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INTRODUCTION: Invasive fungal infections are an increasing cause of mortality and morbidity in high risk patient populations such as those on immunosuppressive therapy. Triazole antifungals are recommended for the prevention and treatment of such infections. The aim of this study was to develop and validate a simple, sensitive and robust LCMS/MS method for the simultaneous analysis in human plasma of three frequently used antifungal drugs and one metabolite; voriconazole, posaconazole, itraconazole and its active metabolite hydroxy-itraconazole.

METHODS: Precipitation reagent containing deuterated internal standards is added to 50µL of plasma. The vials are vortexed before centrifugation at 13,000rpm. The organic supernatant is transferred to a polypropylene vial and 1 µL is injected into the Waters Acquity UPLC/TQD tandem mass spectrometer for mass spectrometric analysis. Total run time is less than 5 minutes between injections.

RESULTS: The evaluation of the LCMS/MS triazole method showed good precision, with intra-assay CVs below 6.7%, and inter-assay CVs under 8.3%.

The lower limit of quantitation for all antifungal triazoles tested was 0.10mg/L.

Voriconazole (n=50) and posaconazole (n=50) samples were analysed and the Passing Bablok comparisons showed a good correlation with the current HPLC method (Voriconazole LCMS=0.94(HPLC) + 0.03, $r^2=0.90$; Posaconazole LCMS=1.18(HPLC) - 0.01, $r^2=0.95$).

Itraconazole and hydroxy-itraconazole (n=18) samples were analysed and the Passing Bablok comparisons showed good agreement with an external referral laboratory's antifungal LCMS/MS method (Itraconazole LCMS=1.00(referral lab) + 0.01, $r^2=0.99$; OH-Itraconazole LCMS=1.05(referral lab) + 0.04, $r^2=0.99$).

External quality assurance samples for posaconazole and voriconazole (n= 12, UK NEQAS Antifungal Pilot Panel) were assayed 'blind' and results were in good agreement with consensus mean values (both $r^2=0.99$).

CONCLUSION The rapid pre-analytical sample preparation procedure, short chromatographic time, limit of quantitation and linear range make this LC-MS/MS method suitable for determination of plasma voriconazole, posaconazole, itraconazole and hydroxy-itraconazole levels in a high throughput laboratory.

77. PHARMACIST REVIEW OF MEDICATIONS FOR HIV-POSITIVE PEOPLE SEEN IN GENERAL PRACTICE (PROM-GP)

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OBJECTIVES: As the HIV-positive population grows older on effective antiretroviral therapy (ART), increasing co-morbidities, and resultant poly-pharmacy play a significant role in the complexity of holistic patient care. A clinical pharmacist with HIV-experience can have significant impact on the management of medication related problems (MRPs), for example, drug interactions, adverse effects, or co-morbidity management. The aim of the study is to evaluate the effectiveness of a HIV specialist pharmacist providing a single face-to-face patient consultation within HIV high caseload general practice clinics.

METHODS: The GP or practice nurse refers eligible patients: those currently prescribed ART with ≥ 1 risk factor for MRPs, for example polypharmacy or age ≥ 50 years in this ongoing prospective study. A single patient/pharmacist consultation occurs within the clinic and a report outlining MRPs and recommendations are provided to the GP. Adherence (self-report and pharmacy pick-up) and patient satisfaction (validated survey) are also measured. Medical notes are reviewed at 3 to 4 months to assess resolution of MRPs.

RESULTS: Between February and August 2016, 100 HIV-positive patients completed the pharmacist consultation, across three Melbourne clinics (median age 58 years, 98% male, median co-medications, 7). 542 MRPs were identified (27 high, 235 moderate and 280 low risk using a validated risk-assessment model), representing a median of 2 (IQR 1,3) high or moderate risk MRPs per patient. The most common MRPs were drug interactions (23%) and additional requirement for monitoring (29%); most monitoring MRPs (70%) were low risk. At follow-up, 60% of MRPs were resolved. Patient satisfaction was high.

CONCLUSION: In the setting of an ageing HIV population, a multidisciplinary team-based approach will be increasingly helpful to assist with management of co-morbidities, and prevention of adverse outcomes associated with polypharmacy. This work is ongoing with plans to recruit a further 400 patients, as part of a larger national multi-site study.

78. SHINING NEW LIGHT: INFRARED SPECTROSCOPY FOR THE DETECTION OF BLOODSTREAM INFECTION

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Bloodstream infection is a serious cause of morbidity and mortality in the hospital which can be challenging to identify using conventional culture techniques. Infrared spectroscopy is an emerging tool for the rapid, point-of-care detection of bloodstream infection without the need for culture.

AIM: To test the feasibility of infrared spectroscopy for the detection of bloodstream infection and the identification of causative organisms.

METHODS: In this work, we used a bench-top instrument to test the feasibility of detection of bloodstream pathogens directly from infected fluid. A linear model was used to determine the instrumental lower limit of detection and the ability to distinguish Gram-positive, Gram-negative and fungal species.

RESULTS: The lower limit of detection for six common bloodstream pathogens (5 bacteria and 1 fungus) were determined. We found that infrared spectroscopy detected the presence of bacteria and fungi in water at a mean organism density of 2.7×10^7 and 2.0×10^6 colony forming units per milliliter respectively. Differentiation of organisms by Gram stain category was possible at higher concentrations (greater than 10^7 colony forming units per milliliter) for bacteria but unreliable below this level.

CONCLUSION: This work demonstrates that infrared spectroscopy is a promising candidate for point-of-care detection of bloodstream infection. However, further instrumental optimisation is needed for detection standards to reach the very low organism densities encountered in real-world bloodstream infection.

79. EXPERIENCES AND EXPECTATIONS OF PARTICIPANTS COMPLETING HIV CURE FOCUSED CLINICAL TRIALS

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Understanding expectations and experiences of people with HIV participating in 'cure-focused' clinical trials will improve the design of future studies and the process of informed consent. We have previously reported on participants completing one cure focused trial and this study extends that work to a group completing 3 trials.

METHODS: Participants were receiving antiretroviral therapy (ART) and had completed a HIV cure-focused trials. Two trials examined the effects of Vorinostat or Disulfiram on latent HIV, and the third how Dolutegravir impacts residual replication. Participants completed a paper survey on trial satisfaction and desirability of two HIV cure scenarios: 1) Being completely cured, able to stop ART and visits for HIV care, and, 2) HIV still present, doctor visits required, but ART could be ceased without rebound viremia. Participants also ranked the importance of five cure scenarios: stopping ART, stopping doctor visits, not being able to transmit HIV, unable to be re-infected with HIV, and being considered someone not infected with HIV. Responses were compared by Wilcoxon signed-rank (sterilizing vs. functional cure) and Kruskal-Wallis (five potential benefits) tests

RESULTS: Sixty-eight participants (96% male, mean age 48 years) completed the survey, all had viral load <50 copies/mL for a minimum of 3 years and CD4 counts >350 (20 Vorinostat, 10 Disulfiram, 38 Dolutegravir). For potential cure scenarios, 96% rated scenario 1 very desirable compared to 58% for scenario 2 ($p < .01$) (Image 1). When ranking five potential benefits of cure, greatest importance was placed on stopping HIV transmission (46% 'most important', 3% 'least important') and least importance on stopping doctor visits to monitor HIV (3% 'most important', 44% 'least important') ($p < .01$ comparing all five scenarios) (image 2). On a 0-100 scale (Not satisfied-Extremely satisfied) median (IQR) overall satisfaction was 90 (90-100).

CONCLUSION: The overwhelming majority of participants in cure-focused studies rated a 'complete' or 'sterilizing' cure as more desirable than a scenario of HIV remission. The potential benefits of not transmitting HIV was considered most important. Understanding participant expectations in this field of research allows investigators to more clearly discuss the rationale for these studies and potentially improve study design.

80. INCREASING PREVALENCE AND RISK OF CHRONIC KIDNEY DISEASE IN HIV-POSITIVE PATIENTS: CHANGING DEMOGRAPHICS OVER A SIX-YEAR PERIOD

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AIM: To assess changes in prevalence of chronic kidney disease (CKD), risk factors and risk scores in HIV-positive patients from 2009 to 2015.

METHODS: A retrospective cohort study of HIV-positive patients attending the Alfred Hospital, Melbourne, Australia. Patients were included if at least two eGFR measurements were performed in 2009 (n=838) or 2015 (n=910). Five-year risk of developing CKD was estimated for patients with eGFR \geq 60 using risk scores proposed by the Data Collection on Adverse Events of Anti-HIV Drugs (D:A:D) study. Prevalence of and risk factors for CKD, as well as 5-year risk scores were compared between 2009 and 2015.

RESULTS: Prevalence of CKD (eGFR $<$ 60) was more than two-times higher in 2015 compared to 2009 (9.3% vs 4.2%, p $<$ 0.001). There were higher rates of CKD risk factors in 2015, including older age (49.4 vs 46.4 years, p $<$ 0.0001), hypertension (34.1% vs 28.6%, p=0.02), greater weight (77.8 vs 75.3kg, p=0.0016), and use of potentially nephrotoxic agents (21.8% vs 15.3%, p=0.001). Patients with eGFR \geq 60 in 2015 also had higher CKD risk scores using the short D:A:D risk calculator (1.74 vs 0.21, p $<$ 0.001).

CONCLUSION: Over a six-year period, the demographics of HIV-positive patients have changed to reflect an ageing population with higher rates of established CKD, as well as higher risk of developing CKD in those with normal or borderline eGFR. Our study highlights the growing burden of CKD in the aging HIV population and the importance of ongoing surveillance of kidney function in routine care.

81. RELATIVE AND TOTAL LEVELS OF CD64 AND NEUTROPHIL ELASTASE AS BIOMARKERS FOR DETECTION OF SEPSIS

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INTRODUCTION: Improved biomarkers are required for the detection of sepsis at the point of care (POC). Upregulation of surface CD64 expression (the neutrophil CD64 index, nCD64i) has been extensively studied as a sepsis biomarker, but such assays are not amenable to use at POC. We hypothesised that simultaneous measurement of neutrophil CD64 and a neutrophil-specific protein in whole blood could yield a surrogate of the nCD64i that would be feasible for development of a simple immunoassay-based POC test. To test this hypothesis, we evaluated the relative levels of total CD64 and neutrophil elastase in whole blood of healthy controls and patients with clinically diagnosed sepsis.

METHODS: We are recruiting adult ICU patients (n=50) with clinically suspected sepsis (Alfred hospital ICU, Melbourne) and healthy individuals (n=50). Levels of a selected neutrophil specific marker, neutrophil elastase (NE), and neutrophil activation marker (CD64) are measured by commercial sandwich ELISA kits in detergent lysed whole blood. Samples were also tested using the Leuko64™ assay (Trillium Diagnostics) (surface CD64), and total (surface and intracellular) expression of CD64 was confirmed by flow cytometry staining, and microscopy.

RESULTS: A strong correlation between total (whole blood) CD64 and NE was observed in healthy individuals (n=30, $R^2=0.7$, $p=0.0029$, figure 1). Surprisingly, the total amount of CD64 reached a threshold at NE levels of only 4 $\mu\text{g/ml}$ (figure 1). We established assay cutoffs (mean + 2SD) for CD64 and NE as well as a “gating” strategy for healthy levels of CD64/NE (figure 1). In sepsis patients analysed to date (n=19), the Leuko64™ kit was positive in 15/19 patients. Conversely, total CD64 and/or NE was highly elevated in all except two sepsis patient (17/19 positive, CD64 $p<0.0001$, NE $p<0.0001$ relative to healthy controls), suggesting that the expected upregulation of neutrophil-CD64 during sepsis includes intracellular CD64 that is detected by ELISA, but not by the Leuko64™ assay. Flow cytometry also demonstrated high levels of intracellular CD64 in selected samples that were negative by Leuko64™.

CONCLUSION: We observed saturated levels of CD64 with moderate levels of NE in controls, compared with the presence of large amounts of total CD64 (including intracellular CD64) and/or NE in whole blood of sepsis patients. Our results suggest that measurement of both total CD64 and NE levels in whole blood has promise as an improved candidate biomarker for diagnosis of sepsis.

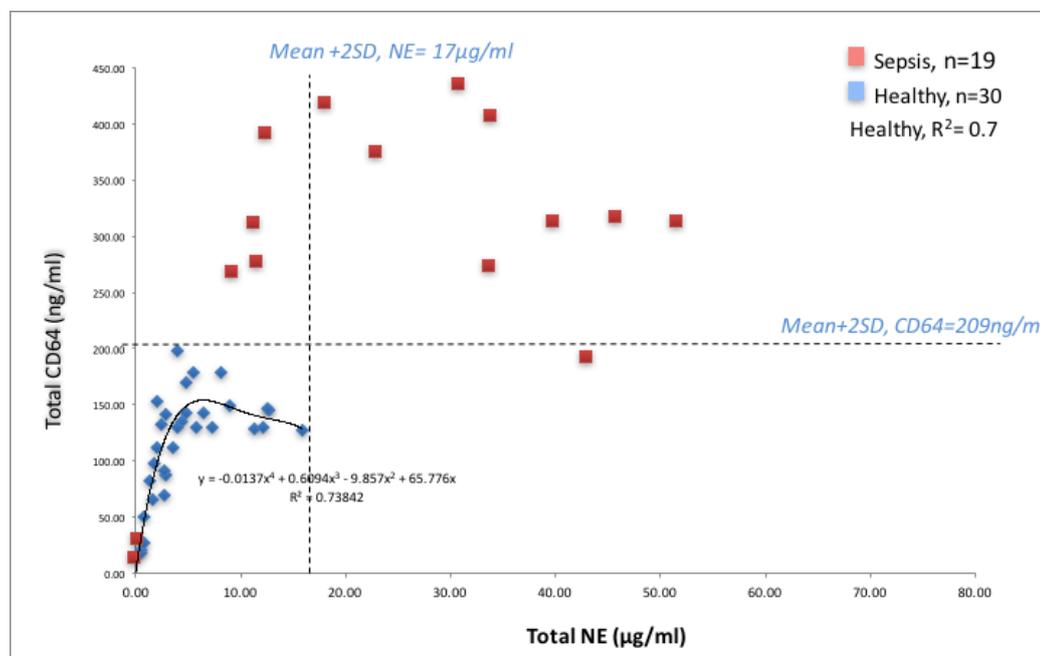


Figure 1. Combination of NE and CD64 is highly sensitive for the diagnosis of sepsis

82. AN IMMUNOCHROMATOGRAPHIC TEST FOR MEASUREMENT OF ALANINE AMINOTRANSFERASE (ALT) AT POINT-OF-CARE

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BACKGROUND: Alanine Aminotransferase (ALT) is widely used for detection and management of liver disease, but current ALT tests rely on laboratory instruments, limiting their availability especially for patients in resource-poor settings who represent the majority of the global burden of chronic HBV and HCV as well as metabolic liver disease. We have developed a rapid, point-of-care test (POCT) that provides a visual, semi-quantitative measure of ALT protein in plasma or whole blood in 20 minutes with potential for full quantitation of ALT levels using an optional instrument.

METHODS: We determined the correlation between the ALT POCT and "gold standard" enzymatic ALT activity using coded plasma samples from the Alfred Hospital, Melbourne (n=44; range: 5-361 ALT U/L).

RESULTS: ALT levels measured in plasma using the ALT POCT showed high levels of correlation with standard clinical laboratory enzymatic ALT ($R^2=0.88$ $p<0.0001$). The ALT POCT also showed surprisingly good correlation with AST-platelet ratio index (APRI) scores ($R^2 = 0.61$, $p<0.0001$).

CONCLUSION: An in-house laboratory evaluation of the ALT POCT on clinical samples demonstrates high correlation with standard enzymatic ALT across the relevant clinical ranges. The measurement of ALT protein provides a robust and accurate POCT that is not temperature or instrument dependent, can be deployed in the field and be useful in expanded efforts to improve management of liver disease worldwide. This novel approach using protein detection of enzymes or cell associated molecules has potential for improved direct measurement of APRI following modification to detect AST and incorporating platelet count by detecting platelet specific cell surface molecules.

83. ARE WE IMPLEMENTING SAFETY RECOMMENDATIONS FOR MOBILITY IN INTENSIVE CARE?

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International best practice guidelines recommend that patients in intensive care (ICU) are managed with ABCDE bundle of care, including awake, breathing spontaneously and with early mobilization. However studies in Australia show few mechanically ventilated (MV) patients are actively mobilized in ICU. An expert consensus group compiled and published recommendations on safety criteria to promote active mobilisation of MV patients. These recommendations indicated physiological and environmental criteria for low, potential and significant risk of an adverse event.

AIM: The aim was to establish whether current practice aligns with published consensus recommendations and to determine the reported barriers to mobilisation.

METHODS: A prospective observational study of critically ill adult patients requiring MV for greater than 24 hours. Data were collected daily for up to five days during MV.

RESULTS: There were 100 patients enrolled (median age 55.5; 73% males). Patients had a median APACHE II of 17 (IQR 12–21) and median duration of MV of 4 days (IQR 2-9). In 280 physiotherapy-patient interactions the main reported barrier to mobilization was sedation (66%). Of the patients who mobilized out of bed, potential risks were reported in only 2% of physiotherapy-patient interactions. Of the patients who were not mobilized 77% had a significant risk and 25% had a potential risk of an adverse event.

CONCLUSION: Current practice is safe but is potentially still too conservative and it may be possible to safely mobilize more patients during MV. Early mobilisation occurred in patients who had minimal risk of adverse events. Future work is required to determine parameters for safe mobilization of patients in higher risk groups. It may be possible to safely mobilise more patients during MV, particularly patients with a potential risk of an adverse event.

84. ORGAN DONATION WITHIN THE INTENSIVE CARE UNIT: A RETROSPECTIVE AUDIT

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BACKGROUND: Many Australians support organ donation. Yet posthumous donation rates remain amongst the lowest in the developed world, with demand far exceeding supply. To address low consent rates at the Alfred Hospital, organisational changes such as streamlining processes and a collaborative request model have been implemented. However, little is known about the impact of these changes, the reasons for consent failure and the influences on family decision-making.

OBJECTIVE: To describe the patient, family and health professional/s characteristics, influences and outcome of organ donation consent processes in ICU.

METHODS: A retrospective audit was used to investigate electronic medical records of 280 prospective organ donors aged 18-80 years, admitted into ICU between 1st July 2012 and 30th June 2016. Electronic records were extracted from three separate databases and amalgamated for further statistical analysis.

RESULTS: There were 280 organ donation conversations that occurred between July 2012 and June 2016. Of the 280 conversations, 182 (65%) families consented to donation on behalf of their relative and 98 (35%) declined. From the 182 patients who were consented, 116 (63.7%) resulted in a donation. The typical donor was younger by 4.9 years ($p = 0.020$), Australian-born ($p = 0.031$) and had a shorter length of ICU stay by 64.9 hours ($p = 0.002$). The most common donated organs were kidneys (103, 88.8%), lungs (59, 50.9%) and liver (52, 44.8%). A large number of individual organs were not medically suitable including hearts (63, 54.3%), pancreas (80, 69%), lungs (51, 44%) and livers (57, 49.1%). Reasons for non-donation were, patient medically unsuitable (23, 34.8%), and death did not occur within desired timeframes required for donation (16, 24%). The most common consenting relative was a spouse (65, 35.7%). The collaborative request model had no definitive effect on the number of conversations resulting in consent.

CONCLUSION: This descriptive exploratory study has provided insight into the patient, family and health professional/s characteristics, influences and outcomes of organ donation consent processes in ICU. The Alfred Hospital continues to lead national posthumous organ donation rates, reporting the highest number of donors during 2015. Further research is required to investigate long stay hospital patients and the degree of family engagement needed to optimise family conversation outcome resulting in consent. Family consent to donate on behalf of their relative and failure to proceed with donation as well as reasons for family declines provide a basis for further research.

85. UTILITY OF ARTERIAL BLOOD GAS IN PREDICTING MORTALITY AFTER EXTRACORPOREAL CARDIOPULMONARY RESUSCITATION

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INTRODUCTION: The role of arterial blood gas (ABG) during extra-corporeal membrane oxygenation assisted cardiopulmonary resuscitation (E-CPR) in predicting mortality is unclear. The study aim was to determine this relationship for the ABG values of pH, base excess and lactate.

METHODS: All patients admitted to Alfred hospital, Melbourne, following E-CPR, between January 2012 and April 2017, who had ABG analysis performed during E-CPR were included. A retrospective chart review was performed for CPR, ECMO, E-CPR ABG values and mortality data. The study was approved by the local human research ethics committee. Univariate and multivariate logistic regressions were conducted to identify ABG values associated with in-hospital mortality. Statistical analyses were performed using STATA 11.2 (StataCorp, Tx).

RESULTS: Amongst 60 patients who met inclusion criteria, median (IQR) age was 50.5(38-59) years, 49(82%) were males, 33(55%) had out-of-hospital cardiac arrest, 31(52%) had acute myocardial infarction, 35(58%) had initial shockable rhythm and median (IQR) time to ECMO after cardiac arrest was 87(40-127) minutes. The mean (SD) pH, base excess and lactate were 6.87(0.25), -20(8.4) and 11.1(4.87) mmol/L, respectively. 18 (30%) patients were alive at the time of hospital discharge and all had a cerebral performance category score of 1 or 2. On univariate analysis, arterial pH (unadjusted OR 0.04, 95% CI: 0.003-0.44) and lactate (unadjusted OR 1.22, 95% CI: 1.05-1.43) were associated with mortality. On multivariate analysis, after adjusting for covariates, the association between pH and mortality remained significant (adjusted OR 0.00001, 95% CI: 0.00-0.58, p-value=0.04).

CONCLUSION: Amongst ABG values during E-CPR, lower pH was associated with in-hospital mortality.

86. A SURVEY ON PUPILLOMETER UPTAKE AND USE IN THE INTENSIVE CARE UNIT

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Traumatic brain injury (TBI) is a significant public health issue. Assessing pupil reactivity is a crucial aspect of its management and the pupillometer has been shown to be a more objective tool compared to the standard penlight. Its use, however, is not widespread.

OBJECTIVE: To investigate the paucity in uptake, we examined the frequency of use of pupillometers (NeuroOptics®NPI-100™) amongst Intensive Care Unit (ICU) doctors and nurses, evaluated its user-friendliness and explored barriers to its use.

DESIGN: An online cross-sectional survey.

METHODS: Surveys were distributed five months after the introduction of pupillometers (in May 2015) to ICU doctors and nurses working in the Alfred Hospital (Melbourne, Australia), a quaternary referral centre providing state services for trauma. The survey included sections on: questions on demographics and experience, methods of conventional pupillary assessment in patients with TBI, experience of using the pupillometer, and questions on barriers to its use. Responses were collated as discrete variables and summarised using counts and proportions. Comparisons among proportions were undertaken using the chi-squared test and reported with 95% confidence intervals.

RESULTS: A total of 79 responses were recorded, predominantly 94.9% (n=75) from nursing staff. A total of 50 (63.3%) responders were using the pupillometers, with a mean frequency-of-use rating of 4.67 out of 10 and a mean user-friendliness rating of 6.28 out of 10. There was no association between frequency of use and user-friendliness (p=0.36). The main identified barriers to its use included a lack of education with regards to its use, a perceived lack of clinical significance, a lack of standardisation of documenting findings, and difficulties with access to disposable patient shields (Smartguards).

CONCLUSIONS: There was good adoption of the technology in the early phases of ICU implementation with user-friendliness rated favourably. In this paper we identify barriers to use and discuss possible solutions to increase clinical utility.

87. USING FRAILITY TO PREDICT MORTALITY IN AUSTRALIAN ICU PATIENTS FOLLOWING TRAUMA: A PROSPECTIVE OBSERVATIONAL STUDY COMPARING TWO FRAILITY MEASURES

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INTRODUCTION: There is increased interest in the impact of frailty on outcomes post critical illness, with numerous tools available.

AIM: To determine which of two frailty measures is more effective at predicting mortality in critically ill patients admitted following trauma.

METHODS: A prospectively observational study of patients aged ≥ 50 , admitted to ICU following trauma. Frailty was determined using the Frailty Phenotype (FP) and Clinical Frailty Score (CFS).

RESULTS: One hundred patients were enrolled; mean age 66.2 ± 10.4 , APACHE II 14.7 ± 5.7 and ISS 22.3 ± 9.9 . Twenty-two patients were identified as frail on the FP and 13 on the CFS. The two frailty measures were strongly correlated, $r = 0.77$, 95% CI 0.66-0.85. The FP identified frailty in 11 patients as a result of pre-existing comorbidities that was not detected on the CFS.

Patients who were frail on the FP had higher mortality in ICU and hospital compared to patients without frailty (22% v 4%, $p = 0.01$ and 36% v 6%, $p < 0.001$ respectively), whilst frailty on the CFS was associated with higher hospital mortality (31% v 9%, $p = 0.05$). Patients who were frail on both measures had significantly more limits of care in place and were less likely to receive operative management.

Frailty on the FP was independently associated with mortality at ICU and hospital discharge (OR 5.67, 95% CI 1.04-31.02 and OR 21.03, 95% CI 3.64-121.46, respectively). The CFS was not independently associated with mortality.

CONCLUSION: Frailty is prevalent and easily measured in an ICU trauma population. There was excellent correlation between the measures, however they identified different patient characteristics. The FP appeared to identify physical frailty associated with co-morbidity and is an independent predictor of mortality. Measuring frailty in the ICU trauma population is warranted, and it may be clinically useful to collect multiple frailty measures.

88. BORDERLINE PERSONALITY DISORDER AND THE EFFECT OF EARLY LIFE TRAUMA ON COGNITION AND EMOTION REGULATION

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Borderline Personality Disorder (BPD) is a severe psychiatric disorder, characterised by disturbed cognitive and emotional functioning, leading to interpersonal and behavioural difficulties. Neuroimaging studies have revealed evidence of dysfunctional neuronal networks, which may mediate these deficits. Up to 90% of individuals with BPD report having experienced some form of childhood trauma and it has recently been reported that the effect of trauma may depend on the stage of neurodevelopmental period at which it transpires.

AIM: To explore the impact of type and timing of childhood trauma on adult cognition and emotion regulation in BPD.

METHODS: Thirteen adults with BPD (aged 20 to 57) and sixteen controls (aged 20 to 36) were administered a series of measures over two sessions. BPD symptom severity was determined using the Diagnostic Interview for Borderline Personality Disorder, Borderline Personality Disorder Severity Index, and Borderline Estimation Severity Over Time scale. Participants also completed two retrospective self-report measures exploring their lifetime experience of potentially traumatic events: the Maltreatment and Abuse Chronology of Exposure Scale and Life Events Checklist. Emotional function in adulthood was measured with the self-reported Difficulties in Emotion Regulation Scale as well as a computer-administered empathy task (Multifaceted Empathy Test). Cognitive function was assessed using a battery of computer-administered tasks (Cogstate) and an antisaccadic eye movement tracking task.

RESULTS: Results from preliminary analyses will be presented.

CONCLUSION: It is anticipated that this project will further our understanding of the cognitive deficits associated with BPD, in turn expanding our understanding of the aetiology and pathophysiology of this disease. This will help identify future research directions to that novel treatment pathways can be investigated.

89. CLINICIANS' PERSPECTIVE ON THE USE OF THE 'MY MEDICINES AND ME' SIDE EFFECT QUESTIONNAIRE IN COMMUNITY PSYCHIATRY

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The 'My Medicines and Me' Questionnaire (M3Q) was developed to facilitate communication between clinicians and psychiatry outpatients about medication side effects.

AIMS: To assess clinician views on use of the M3Q in an adult community psychiatry program, assess if communication between clinicians and clients about side effects was improved by the tool, and determine if the M3Q impacted therapy management decisions.

METHODS: In April 2016, a major metropolitan Psychiatry Department implemented the M3Q within the organisation's Community Psychiatry Services. Medical staff, case managers, and clozapine co-ordinator were given a two-page survey about their experience using the tool. Surveys were distributed in August 2016, with follow-up completed 7 weeks later.

RESULTS: Sixty-seven surveys were distributed to community psychiatry clinicians; 42 surveys (63%) returned. Nine respondents were medical staff and 33 were case managers. Fourteen respondents (33%) had not offered the M3Q to their clients, and six had no clients complete the M3Q despite offering it. Of the 23 respondents who had clients complete the M3Q, 78% (n=18) reported the M3Q gave them new insight into clients' side effects, at least sometimes. All respondents who used the M3Q reported that it prompted better discussion about medication side effects; 74% (n=17) found that the M3Q led to useful discussion of topics other than medication side effects, and 78% (n=18) reported the M3Q had influenced clinical decisions.

CONCLUSION: Clinician views of the M3Q in community psychiatry were divided; one-third of respondents failed to offer the tool, however those who did reported better communication about medication side effects with clients. The M3Q provided new insight into medication side effects and impacted therapy management decisions for the majority of clinicians who used it. Staffing changes may have contributed to failure to offer the tool. Continuing clinician education is required to embed the M3Q into practice.

90. THE ROLE OF AN ENDOCRINOLOGIST IN A WOMEN'S MENTAL HEALTH CLINIC

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BACKGROUND: The Monash Alfred Women's Mental Health Clinic (WMHC) provides tertiary level consultations for women experiencing mental ill health and related hormonal issues. Patients are seen by a psychiatrist and endocrinologist, either together or sequentially. Women with Premenstrual Dysphoric Disorder (PMDD), Perimenopausal Depression, depression related to exogenous contraception, Polycystic Ovary Syndrome (PCOS) and other conditions are provided with detailed, integrated psychoneuroendocrine management plans. Endocrine treatment strategies include oestrogen and progestogen treatment for premenstrual and perimenopausal mood disorders; management of thyroid abnormalities, comprehensive approaches for PCOS, plus treatment of metabolic consequences of psychotropic medications.

METHODS: Data were collected from sequential new patients in the first year of this endocrinologist attending WMHC. Included are demographic details, clinical diagnoses, integrated psychiatric and endocrine history, physical examination, anthropomorphic data and laboratory investigations. Quantitative and qualitative methods were used to analyse this data plus patient feedback data.

RESULTS: Data from 78 sequential new patients were analysed. The age range was 17 to 72 years. Diagnoses include: Perimenopausal mood and anxiety disorders (31%) and PMDD (28%). Early life trauma in 44% of women resulted in complex Post Traumatic Stress Disorder. Fifty-seven per cent of patients are obese with BMI >30, exacerbated by the side effects of psychotropic medication. PCOS also develops as a consequence of obesity and early life trauma and is present in 15 % of patients. Patient feedback for the joint specialty approach taken in the Clinic has been excellent (87% excellent rating). Specific treatments and the endocrinologist's role will be discussed.

CONCLUSIONS: Combining endocrinology and psychiatry expertise provides a holistic approach for women with mental illnesses. This exciting new clinical model promises to improve mental health outcomes for many women.

91. MEMORY GUIDED SACCADE PERFORMANCE ACROSS THE SCHIZOPHRENIA CONTINUUM

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Saccadic (ocular motor) deficits are one of the most replicated findings in schizophrenia. However, less research has been conducted investigating the broader schizophrenia continuum. Recent research suggests that the personality characteristics and symptoms observed in schizophrenia lie on a continuum with subclinical symptoms, known as schizotypy, observed in the non-clinical population. Schizotypy is considered a suitable model for investigating schizophrenia as it mirrors the symptoms, albeit in a more subtle manner. As saccadic deficits are a cognitive hallmark of schizophrenia, it is believed that saccadic deficit may be associated with higher schizotypy.

AIM: To investigate saccadic performance across the schizophrenia continuum using the memory guided (MG) saccade paradigm as no studies to date have investigated MG performance in schizotypy.

METHOD: 136 adults (43 patients with schizophrenia/schizoaffective disorder and 93 healthy controls) completed the MG saccade task, which engages spatial working memory and inhibition processes. Schizotypy was assessed using the Oxford-Liverpool Inventory of Feelings and Experiences (O-LIFE) questionnaire, which measures the four schizotypy factors: unusual experiences (UnEx), introverted anhedonia (InAn), cognitive disorganisation (CogDis) and impulsive nonconformity (ImpNon).

RESULTS: MG latency and error rate were significantly different between patients and controls ($p < 0.001$). Looking across the schizophrenia continuum, there were significant correlations between MG latency and UnEx ($p < 0.001$), InAn ($p = 0.047$) and CogDis ($p = 0.001$), as well as with the O-LIFE total score ($p < 0.001$). There was also a non-significant trend between MG error and O-LIFE total score ($p = 0.086$), though no significant correlations were observed with any schizotypy factor scores.

CONCLUSION: This is the first study to investigate and demonstrate the relationship between higher schizotypy and impaired MG performance, supporting the use of schizotypy as a model for schizophrenia. The findings also support the theory of schizotypy and a broader schizophrenia continuum.

92. CARER READINESS TO SUPPORT ADULTS WITH DEMENTIA TO RETURN HOME FROM INPATIENT SETTINGS: A SYSTEMATIC REVIEW

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INTRODUCTION: Approximately 200,000 Australians provide informal assistance to people with dementia at home. Research highlights the psychosocial impact on carers including increased levels of anxiety, depression, social isolation and reduced quality of life. Physical and cognitive changes of the person with dementia are common following hospitalisation. Carers often struggle with this adjustment which has implications on length of stay, discharge planning and destination. Occupational therapy involves optimisation of daily function and adaptation of the home environment. This requires close liaison with the carer, however there is limited evidence regarding the best way to provide support.

AIM: This systematic review explores the educational needs and skills required by carers of people with dementia to increase readiness for successful discharge home.

METHODS: A systematic search was conducted over six databases to find relevant peer-reviewed papers and grey literature (English only). Key MeSH terms used: dementia, adults, inpatient, carers, and discharge home. There was no restriction on the type of study or timeframes. Titles and abstracts were screened by two independent reviewers to identify relevant studies. Full text papers were reviewed against inclusion criteria. Disagreements were adjudicated by a third author. Data relating to carer demographics, psychosocial functioning and types of interventions were extracted. Quality was assessed using the PEDro scale and a thematic analysis was completed.

RESULTS: 1554 studies were identified and 14 met the inclusion criteria. Study designs varied from randomised controlled trials/experimental (n=8), to qualitative/exploratory (n=6). Factors contributing to carer readiness, the degree of carer burden and impact on quality of life will be presented.

CONCLUSION: The level of carer readiness is important for a successful return home of a person with dementia. Health professionals need to consider carer burden, the carer's level of understanding of the person's functional status, and the support required for a safe and effective discharge.

93. MODULATION OF CORTICAL PLASTICITY AND OSCILLATORY ACTIVITY FOLLOWING NETWORK-ORIENTED HIGH-DEFINITION TRANSCRANIAL DIRECT CURRENT STIMULATION (HD-tDCS)

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Transcranial direct current stimulation (tDCS) provides a means of non-invasively altering cortical activity through the delivery of weak electric currents to the brain. Although tDCS has traditionally targeted single brain regions, there is a growing consensus that complex cognitive functions such as working memory (WM) strongly rely on activations across a number of distributed neural networks.

AIM: We utilised a focal 'high-definition' form of tDCS (HD-tDCS) to modulate two important nodes within the fronto-parietal WM network using a sham-controlled crossover design.

METHODS: Sixteen healthy adults received anodal stimulation (1.5mA, 15min) over either the dorsolateral prefrontal cortex (DLPFC) alone, the DLPFC in combination with the parietal cortex (DLPFC+PC), or sham stimulation. Concurrent transcranial magnetic stimulation and electroencephalography (TMS-EEG) was used to probe cortical reactivity via TMS-evoked potential (TEP) amplitudes both before as well as five and 30 minutes following HD-tDCS in order to investigate short-term changes in cortical plasticity. Changes in WM performance were also examined, while oscillatory power was measured via EEG

RESULTS: Both the DLPFC and combined DLPFC+PC stimulation conditions potentiated the P60 TEP, while N100 TEP amplitudes were reduced, relative to baseline, following DLPFC+PC stimulation only, indicative of putative changes to excitation and inhibition, respectively. Task-related increases in theta and gamma EEG power were also observed following DLPFC+PC stimulation compared to baseline. Nevertheless, despite these neurophysiological alterations, WM performance remained unaffected at the group level. However, an association was observed between WM performance and N100 amplitude changes.

CONCLUSION: The novel multimodal approach utilised here enabled the successful recording and quantification of neurophysiological responses to stimulation over two important brain regions involved in WM. Overall, HD-tDCS induced robust plasticity-related changes in cortical excitability with the most pronounced changes observed when stimulation was applied using a network-oriented approach. Future studies utilising additional cognitive measures might help capture further behavioural correlates.

94. CALPAIN-3 STABILITY FOLLOWING DELAYS IN FREEZING SKELETAL MUSCLE BIOPSY SAMPLES – ESTABLISHING AN OPTIMAL TIME FRAME FOR ACCURATE INTERPRETATION?

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Calpain-3 is a 94 kDa protein which autolyses in the presence of slight increases in Ca²⁺, to give 60, 58 and 55 kDa autolytic products. Homeostasis of Ca²⁺ during excitation contraction coupling is highly regulated. Calpain-3 may be involved in the proteolysis of some of the proteins involved with this process. Diagnostic muscle samples can experience delays in delivery to the laboratory, potentially leading to artefactual loss of enzymatic protein and incorrect interpretation of Calpain-3. We examined the implications of delays in freezing muscle for diagnosis of LGMD2A. Three groups (n = 6) at 2, 5 & 15 hours delay were assessed. Sections (4x8µm=5mg w/w) were cut and placed into a pre-cooled tube and EGTA buffer added to give [1mg/100uL]. Ten microlitres from each sample were mixed and loaded as a 5 point standard curve on SDS-PAGE followed by western blotting. Total protein was visualised following UV activation of the gel prior to transfer to PVDF membrane. Following blocking & washes, membranes were incubated with calpain-3 antibodies 2C4 & 12A2 overnight at 4°C. When comparing the total calpain-3 (i.e. the full-length and autolysis bands), there were no differences in the calpain-3 abundances between 2 and 5 hours (p>0.05), although less total calpain-3 was detected at 15 hours compared with 2 hours (p=0.05, 1-way ANOVA, Dunnet's post-hoc test). Whilst minimal calpain-3 autolysis was seen in the sample collected at 2 hours (0.4 ±0.4%), samples with 5 and 15 hour delays before freezing showed increased autolysis, 23 ±15% and 20 ±14%, respectively (p≤0.05, 1-way ANOVA), and these were not significantly different from each other. Findings support optimal detection of total calpain-3 in samples frozen within 2 hours of laboratory arrival, despite a slight increase in autolysis.

95. CHRONIC FLUOXETINE TREATMENT FACILITATES KINDLING EPILEPTOGENESIS IN MICE INDEPENDENTLY OF 5-HT_{2A} RECEPTOR SIGNALLING

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OBJECTIVES: Severe cerebral insults can have epileptogenic consequences which subsequently trigger the onset of temporal lobe epilepsy. However, the precise mechanisms underlying these epileptogenic processes remain unclear. Cerebral insults are also often associated with psychiatric burdens, for which selective serotonin reuptake inhibitor (SSRI) antidepressant drugs are typically prescribed to manage. However, experimental findings report SSRI treatment to adversely promote epileptogenesis in rats. This study investigated the underlying mechanisms driving the effects of SSRIs on epileptogenesis, focussing specifically on 5-HT_{2A} receptor signalling.

METHODS: We used the amygdala kindling mouse model of epilepsy. The effect of continuous fluoxetine treatment (10mg/kg/day s.c. for 28 days) versus vehicle treatment on amygdala kindling outcomes was assessed in male homozygous 5-HT_{2A}-knockout mice and their littermate wildtype controls (N = 9-14/group).

RESULTS: Fluoxetine treatment accelerated kindling epileptogenesis when compared to vehicle-treated controls (p = 0.01), but there was no effect of genotype (p = 0.75) and no treatment x genotype interaction (p = 0.90) on kindling epileptogenesis observed. Interestingly, fluoxetine treatment increased seizure thresholds when compared to vehicle treatment (p = 0.007). Seizure duration was not influenced by treatment (p = 0.64) or genotype (p = 0.87).

CONCLUSIONS: We have replicated previous findings, demonstrating that chronic treatment with the SSRI fluoxetine promotes epileptogenesis in mice, and now demonstrate that 5-HT_{2A} signalling is not required for this pro-epileptogenic effect. We conclude that other 5-HT receptors mediate the effects of SSRIs on epileptogenesis, effects which may accelerate the onset of epilepsy in patients who have experienced potentially-epileptogenic cerebral insults.

96. CHARACTERISATION OF AN ALZHEIMER'S DISEASE MOUSE MODEL EXPRESSING AMYLOID IN THE PRESENCE OF TAU: AN EXTENDED REPLICATION STUDY

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Alzheimer's disease (AD) in Australia is the second leading cause of death; affecting over 300,000 patients with 1.2 million people involved in their care. Current research into therapies and treatments have been hampered by the availability of an appropriate and physiologically accurate mouse model of AD.

AIMS: To investigate the effects of tau accumulation in the presence of amyloid pathology, which closely resembles human AD.

METHODS: Accordingly, to characterise the AD model developed by Heraud and colleagues, we crossed 5xFAD (overexpressing human APP and Presenilin-1) and Tg30 (overexpressing tau) mice to create the double transgenic 5xFAD*Tg30. From 3 months of age, we performed a comprehensive battery of behavioural and physiological tests to characterise the model's phenotype against WT littermates, including cognitive decline.

RESULTS: In agreement with Heraud and colleagues we observed a decline in Rotarod performance at 7 months of age compared to wildtype. This corresponded with a 40% decrease in survival rates by 10 months. While we noted a decrease in Morris Water Maze performance at 8 months, Y-maze, large open field and novel object recognition tests were not yet significantly affected at this time point. Additionally, body weight was lower in the 5xFAD*Tg30 animals, with a significant difference in *tibialis anterior* skeletal muscle weight and tibia length.

CONCLUSION: Our results successfully reproduced many aspects of the 2014 Heraud paper, while adding further additional characterisation of the model. This initial characterisation study suggests that the model contains many aspects associated with frailty as well as the potential initiation of cognitive decline. Further characterisation is warranted to study the cognitive function in these mice with alternative tests and time points.

97. CHRONIC EPILEPSY CAUSING AN ACQUIRED CARDIAC CHANNELOPATHY WITH ALTERED EXPRESSION OF BOTH T-TYPE CALCIUM CHANNELS AND HCN CHANNELS

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Cardiac electrophysiological dysfunction is common in people with epilepsy. As a result people with epilepsy can suffer from serious cardiac arrhythmias, which could contribute to their substantially increased risk of Sudden Unexpected Death in Epilepsy (SUDEP). Recent research from our laboratory has found in rat models of genetic (Genetic Absence Rats from Strasbourg, GAERS) and acquired epilepsy (post-status epilepticus, post-SE) that heart function was detrimentally altered and there was decreased expression of hyperpolarization-activated cyclic nucleotide-gated (HCN) channels.

AIM: We investigated whether expression of another group of ion channels that contributes to cardiac automaticity and excitability, T-type calcium channels was altered.

METHODS: Hearts were collected from chronically epileptic post-SE rats, GAERS, and non-epileptic control rats (NEC). The right atrial appendage was collected from epilepsy and control patients undergoing open heart surgery. Human and rat T-type calcium channel (Ca_v3.1 and Ca_v3.2) and HCN channel (HCN2 and HCN4) mRNA expression was measured using qPCR.

RESULTS: Ca_v3.1 and Ca_v3.2 mRNA expression was significantly increased in the left (Ca_v3.1 p=0.08; Ca_v3.2 p<0.05) and right ventricles (Ca_v3.1 & Ca_v3.2 p<0.05) of post-SE rats (n=8) compared to controls (n=11). Similarly, Ca_v3.2 mRNA expression was significantly increased in the left (Ca_v3.2 p<0.001) and right ventricles (Ca_v3.2 p<0.001) of GAERS (n=8) compared to NEC (n=8). Decreases in HCN2 and HCN4 mRNA expression in epileptic rats was found, consistent with the findings from our previous study. In concordance with the rat data; HCN2 mRNA expression was decreased (p=0.0519) and Ca_v3.2 mRNA expression was increased (p<0.05) in the atrial appendage of patients with chronic epilepsy.

CONCLUSION: Altered expression of T-type calcium and HCN channels are found in chronically epileptic rats and patients with epilepsy. These results demonstrate that chronic epilepsy can result in complex cardiac channelopathies, which may have relevance for the pathophysiology of cardiac dysfunction in patients with epilepsy.

98. ANTIEPILEPTOGENIC EFFECTS OF LEVETIRACETAM, LACOSAMIDE AND BRIVARACETAM ON A NOVEL ALZHEIMER'S DISEASE-ACQUIRED EPILEPSY MODEL

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Alzheimer's disease (AD) is considered a risk factor for acquired epilepsy. Patients with AD have increased incidence of unprovoked seizures, which may lead to faster progression of AD and greater cognitive impairments. Previous studies showed that aged Tg2576 mice, a well-studied AD model that overexpresses human amyloid precursor protein (APP), are vulnerable to acquired epileptogenesis.

AIM: To assess the effects of three antiepileptic drugs on the epileptogenic process induced by amygdala kindling in these animals.

METHODS: Aged Tg2576 mice (n=5-7/group) were treated with either lacosamide (LAC, 5 mg/kg/day), brivaracetam (BRV, 10 mg/kg/day), levetiracetam (LEV, 150 mg/kg/day) or vehicle (VEH, 0.9% sodium chloride). Treatment was delivered via subcutaneously implanted osmotic pumps for 30 days prior to and during kindling. One daily stimulation was given until mice had 3 consecutive class 5 seizures. Number of stimulations to first class 5 seizure, afterdischarge threshold value (ADT), seizure duration and death during kindling were compared between treatment groups. APP and A β peptide expression was measured in amygdala, hippocampus and cortex by western blot.

RESULTS: There was no difference in ADT between the treatment groups. A slower progression of seizure severity was observed after treatment with BRV and LEV compared to VEH ($p < 0.0001$ and $p < 0.05$). Animals treated with BRV required significantly more stimulations to reach the first class V seizure. 50% of mice in the VEH group died immediately after kindled seizures compared to none in the BRV group. There was no difference in APP or A β expression between the groups.

CONCLUSION: These results show that treatment with BRV, and to a lesser extent, LEV, may be antiepileptogenic in AD mice without affecting APP or A β expression. Further investigations on the mechanisms of action behind this effect are necessary to better understand the potential of BRV and LEV as disease-modifying drugs in the AD context.

99. THE E3 UBIQUITIN LIGASE MARCH5 IS A PPAR γ TARGET GENE THAT REGULATES MITOCHONDRIAL FUNCTION IN WHITE ADIPOCYTES

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Obesity can lead to lipid accumulation in non-adipose tissues leading to health complications including insulin resistance, T2D and NAFLD. These complications are caused in part by peripheral lipid deposition that occurs in lieu of adipose tissue becoming saturated and unable to store excess lipid. Thus, by redirecting fat from non-adipose tissues back into adipose tissue, complications associated with obesity may be alleviated. Recent studies have shown that activating adipogenesis, or enhancing healthy WAT expansion, can reduce obesity induced complications and results in a metabolically healthy phenotype.

Mitochondria are well known organelles that generate energy in the form of ATP but also play a role in whole body energy homeostasis and cell division. Mitochondrial dynamics is the process of fusion, fission, mitophagy, and biogenesis, which has been shown to be important for maintaining mitochondrial health and recently implicated in healthy WAT expansion. Here, we demonstrate that expression of the E3 ligase March5 is reduced in *ob/ob* mice, is negatively correlated with fat mass in a panel of genetic diverse mouse strains (HMDP), and reduced with visceral adiposity in men. We also demonstrate in the HMDP, in cells and in ChIP-Seq data, that March5 is a bona fide PPAR γ target gene in adipocytes. March5 has been shown to ubiquitinate and thus act as an upstream regulator of the mitochondrial dynamics proteins mitofusin2 (Mfn2), and Dynamin-1-like protein. Accordingly, we demonstrate that March5 knockdown using shRNA in 3T3-L1 differentiated cells increases Mfn2 protein levels, suggesting a reduction in fission and an increase in fusion, which leads to increased mitochondrial respiration as measured by the Seahorse flux analyser.

Collectively, these data suggest that altering March5 expression could be a potential mechanism to increase mitochondrial activity in WAT, which might subsequently allow for increased adipogenesis and greater capacity to store lipid in the setting of obesity.

100. ESTABLISHMENT OF A BARIATRIC SURGERY CLINICAL REGISTRY

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Bariatric surgery is offered as a means of providing predictable and sustainable weight loss for patients with obesity. A clinical quality registry began in 2012 to track the safety, efficacy and outcomes of bariatric surgery.

AIM: To record the immediate and study longitudinally the safety of bariatric surgery in Australia and New Zealand, and track key health changes following bariatric surgery.

METHODS: Submission of data to the registry was done online or by hard copy. Data collected included patient demographics, patient weight, diabetes status and treatment, the type of bariatric procedure, devices used, surgical complications, and mortality status. Patients who did not opt out after receiving explanatory statements were considered to be participants of the study. Their outcome measures recorded peri-operatively (20-90 days post-operation) and annually thereafter. Data collected was only from Australian surgeons as full approval for the research to be conducted in New Zealand had not yet been obtained.

RESULTS: As of 30 June 2017, 30,473 bariatric procedures (performed on 28,264 patients) were captured. The mean age during this period was 43.9 years and mostly female (80%). During this period, defined adverse events were recorded in 2.4% of primary procedures and 7.3% of revision procedures. At one year follow-up, mean excess weight loss (EWL) of 62.8% and mean total weight loss (TWL) of 25% were reported. The mean EWL and TWL of the 887 patients with three year follow-up were 49.8% and 19.7%, respectively. Follow-up data collected showed that of those diabetes at baseline, 46% required no medication after one year and those requiring insulin dropped from 23% to 7%. However, this follow-up data field was under-reported

CONCLUSION: Bariatric surgery continues to show evidence of being a safe and effective treatment for obesity but cannot be determined conclusively until a more complete dataset is captured.

101. PIOGLITAZONE DECREASES COLD-INDUCED BROWN FAT ACTIVATION IN HUMANS

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Increasing energy expenditure via brown adipose tissue (BAT) thermogenesis is a possible therapeutic strategy to treat obesity and associated co-morbidities. TZD drugs increase BAT differentiation in pre-clinical experimental models, therefore may increase BAT thermogenic capacity *in vivo* in humans. Thus, the aim of this study was to determine if pioglitazone (Pio) treatment for 28d increases BAT activity in response to acute cold exposure in humans. In a double-blinded, placebo-controlled, parallel trial, 14 lean males aged 21±0.6 years were randomised to receive either placebo (Pla, n=7) or pioglitazone (Pio, 45mg/day; n=7) for 28d. BAT activity in response to cold was assessed before and after the drug intervention by measuring glucose uptake with ¹⁸F-FDG PET/CT in supraclavicular adipose tissue. Energy expenditure, cardiovascular responses, core temperature, blood metabolites and hormones were measured basally and in response to acute cold exposure along with body composition before and after the intervention. BAT activity decreased significantly after Pio compared to Pla (-57±6% vs -12±18% respectively, p<0.05). Total (2±0.6% vs 0.0±0.7%, p<0.05) and lean (2±0.6% vs -0.2±0.6%, p<0.05) body mass significantly increased in Pio vs Pla, respectively. No other changes in response to Pio were detected. The inhibition of BAT function by pioglitazone in humans is discordant with pre-clinical models and argues against pursuit of TZD pathways for BAT-targeted therapeutics. These data may have implications for patients with type 2 diabetes since chronic Pio treatment may exacerbate BAT dysfunction associated with obesity and contribute to weight gain in these individuals.

102. DIET QUALITY IN OBESE PREGNANT WOMEN – COULD THERE BE EFFECTS ON GESTATIONAL DIABETES INDEPENDENT OF WEIGHT GAIN?

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BACKGROUND: Obesity, excess gestational weight gain and poor diet quality during pregnancy are associated with increased risk of both maternal and fetal complications, including GDM. Yet in Australia, routine antenatal care does not include nutritional intervention for obese pregnant women. A gap in the literature was identified in terms of intervention studies to improve diet quality and related outcomes for obese pregnant women. Whilst not statistically significant, a positive trend to lower rates of GDM was seen following dietetic intervention in early pregnancy for obese pregnant women, as detailed by Opie et al 2016 (see table below). Gestational weight gain was similar between groups, posing the question of whether diet quality improvements could be an influential factor in the lower rates of GDM development.

		Dietary Intervention Group		Control Group		P [‡]
		n	Frequency % (n)	n	Frequency % (n)	
GDM, yes	Total Cohort	92	6.5% (6)	119	19.3% (23)	*
	Non-Asian	82	4.9% (4)	71	5.6% (4)	ns
	Asian women	10	20.0% (2)	48	39.6% (19)	ns
		n	Mean (SD)	n	Mean (SD)	P [‡]
Weight gain (kg)	Total Cohort	82	10.00 (4.78)	52	9.72 (5.51)	ns

AIMS: To create a Diet Quality Score to further investigate dietary quality changes during a behavioural nutrition intervention, individually tailored for obese pregnant women in early pregnancy.

METHODS: A Diet Quality Score was devised to map intake of food group serves, and variety and quality within each food group aligned to Australian Guide to Healthy Eating recommendations for pregnancy. The Diet Quality Score was scored out of 100; and participants had dietary intake analysed at baseline in early pregnancy (before 20 weeks), and at 36 weeks gestation.

RESULTS: From the dietary intervention study participants, 43 women were analysed using the Diet Quality Score at both time points.

35 women (81%) showed Diet Quality Score improvement from baseline, with an average improvement of 34.0%.

8 women (19%) had a reduced Diet Quality Score, with an average deterioration of 5.6%.

Diet Quality Score analysis (n = 43)	n	Average Change in Score	Range %
- Improvement	35	+ 34.03 %	+0.94 to +190.2%
- Deterioration	8	-5.61%	-0.2 to -9.7%

A Spearman correlation was utilised to assess the strength of the relationship between score and the Australian Guide to Healthy Eating as these were non parametric. The relationship was found to be strong ($r=0.816$), with p value 0.000. Further validation of the score using a food database supported alignment between a high Diet Quality Score and improved macro and micronutrient intake.

DISCUSSION: A limitation to the study was being unable to capture all women for diet analysis at both time points, with many women unavailable in later pregnancy. This limited any extrapolation to compare to GDM incidence between women with improved or deteriorated scores. However, it was seen that most women showed improved diet quality using the score. Although there was no diet information available for comparison in the control group, there is evidence to suggest that overweight and obese women consume diets of poor quality during pregnancy and research has suggested that diet quality deteriorates across pregnancy. Whilst acknowledging that weight change during pregnancy influences outcomes, especially when excessive, we speculate that diet quality is of significant importance rather than weight status alone when considering maternal and fetal outcomes. The exact aetiology of diet quality influence is not well understood. Poor diet quality could be linked directly with nutritional deficiencies such as folate-deficiency and neural tube defects, or nutrient excesses such as high glycaemic load and carbohydrate intake predisposing to impaired glucose tolerance and GDM. For the offspring, the nutritional environment during gestation has been thought to further influence health in adulthood through epigenetic factors. Additional validation and extrapolation to a wider cohort of obese pregnant women is necessary before explicit conclusions can be drawn. However, the positive trend to lower rates of GDM seen in the intervention group, independent of weight change, may suggest an influence from diet quality improvements seen using the Diet Quality Score. The study supports the need for wider research, whilst immediately considering the implementation of routine antenatal nutrition intervention for these high risk obese women.

103. DEVELOPING A TRULY PATIENT-DERIVED OUTCOME MEASURE FOR CARDIAC PROCEDURES

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AIM: To develop and validate a new PROM for Percutaneous Coronary Intervention patients using patient-centred methods.

METHODS:

Phase 1: Literature review to identify existing cardiac PROMS and identify if patients were involved in the development.

Phase 2: A qualitative study with patients to identify new outcomes.

Phase 3: Discrete choice experiment (DCE) survey of PCI patients to test patient preferences and trade-offs of outcomes.

Phase 4: Telephone-based survey for PCI patients to validate the outcomes via Rasch analysis.

RESULTS:

Phase 1: Only 9 of the 26 studies involved patients in the development of PROM items.

Phase 2: 32 patients participated in either a focus group or interview. Patients identified reductions in physical and psychological symptoms and the ability to perform usual activities as important outcomes. Confidence to return to usual activities and the importance of patient communication were also highlighted. Based on these findings, a 10 item PROM was developed for phase 3.

Phase 3: 138 patients completed the DCE survey. "Never feeling unhappy" was the most important outcome following PCI followed by "never lacking confidence to do my daily activities". An 8 item PROM was developed for phase 4.

Phase 4: The 8 item PROM was administered to 200 patients at 30 days follow up via 5 hospitals participating in the Victorian Cardiac Outcomes Registry. Rasch analysis indicated that the number of items could be reduced from 8 to 5. The 5 item PROM could be summed to provide an overall score.

CONCLUSION: Patients who participated reported a wide range of outcomes post-PCI including physical symptoms, psychological wellbeing, functional ability and evaluation of support and quality of care. The outcomes are not adequately captured in existing cardiac PROMS. The use of genuine patient input is an important component of tailoring patient-centred care and in the development of future PROMs.

104. COST OF GASTROENTERITIS IN AUSTRALIA: A HEALTHCARE PERSPECTIVE

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Acute gastroenteritis illness (AGI) is a common illness that causes considerable morbidity, but current estimates of the burden to the Australian healthcare system are unknown.

AIM: To estimate the current healthcare utilisation and direct public healthcare system costs attributable to AGI in Australia.

METHODS: This is a prevalence-based cost-of-illness study focused on quantifying direct health care costs using a bottom-up approach. Data on general practitioner (GP) consultations, prescribed medications, diagnostic tests, specialist consultations, emergency department (ED) visits and hospital admissions were collected from national reports.

RESULTS: Using 2016 prices, the estimated overall economic burden in Australia was AUD\$1.5 million per 100,000 people. The major contributors to this cost were hospital admissions, GP consultations, and ED visits. Despite high per capita rates of AGI among children under five years of age, older adults (age 65 and older) accounted for a substantial proportion of the overall economic burden attributable to AGI.

CONCLUSION: Although chronic diseases comprise a large cost burden on the healthcare system, acute illnesses, including AGI, also impose substantial direct healthcare system costs. Providing data on current cost estimates is useful for prioritizing public health interventions.

105. "SPLEEN-IE APP" – A MOBILE APP FOR PATIENTS WITHOUT A FUNCTIONING SPLEEN

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Patients with a non-functioning spleen or undergone a splenectomy have a lifetime risk of overwhelming post-splenectomy infection (OPSI). The risk of OPSI is around 5% and has a 50-60% mortality rate with hospital costs around \$50-100K. Survivors of OPSI may be left with significant morbidities such as limb amputation.

Spleen Australia is a clinical service for people with non-functioning spleens with 5,148 registered patients. Educating patients and keeping them up to date with their vaccines are core functions of this service, for which the Spleen-IE App ('I' for immunisations and 'E' for education) was developed.

AIM: Our objective was to evaluate whether the addition of mobile application was useful in terms of self-monitoring of vaccines, increasing accountability for self-management of health issues, and increasing personal awareness and assisting in ownership of health behaviours to help individuals make active attempts to stay healthy

METHODS: New registrants to the Spleen Australia registry since mid-October 2015 were asked if they possessed an Apple device, and if so, were informed of and encouraged to both use and rate the App. People identified as having used the App but not having rated it were contacted by telephone.

RESULTS: From October 2015 to May 2016, 625 people were registered with Spleen Australia, of whom 115 were identified on the database as having used the App. 81 people who had used the App and had not rated it were contacted. Users were from across Victoria, Queensland and Tasmania with ages ranged from 3 to 77. The star rating range was from 1-5 with 1 being the lowest score.

CONCLUSION: Participants described the personal impact of the App as improving the management of their condition, reducing the need for phone-calls and visits to their doctor to chase vaccination dates and medication information, recognition of the educational component of the app as being vital to infection prevention.

106. ANTISEPTIC MOUTHWASH AGAINST PHARYNGEAL *NEISSERIA GONORRHOEAE*: A RANDOMISED CONTROLLED TRIAL AND AN IN VITRO STUDY

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Gonorrhoea cases among men who have sex with men (MSM) are increasing.

AIM: To determine whether Listerine® mouthwash has an inhibitory effect against *Neisseria gonorrhoeae* in a randomised controlled trial (RCT) and an in-vitro study, and therefore may be a potentially useful agent for gonorrhoea control.

METHODS: In-vitro: a suspension of ~10⁸ colony forming units per mL (CFU/mL) of *N.gonorrhoeae* was added to a serial of dilutions (up to 1:32) of alcohol-containing Listerine mouthwashes (Cool Mint and Total Care) for 1 min. A 10mL aliquot was spread over the surface of a gonococcal agar plate and the number of *N.gonorrhoeae* colonies present at each dilution was calculated. The phosphate buffered saline (PBS) was used as a control. RCT: we recruited MSM with pharyngeal gonorrhoea who returned for treatment at the Melbourne Sexual Health Centre between May 2015 and February 2016. Untreated men were randomised to rinse and gargle either Listerine Cool Mint or saline for 1 min. Pharyngeal swabs were taken before and after rinsing and gargling for culture of *N.gonorrhoeae*. The analysis included only men who were culture positive for *N.gonorrhoeae* before using the allocated solution on the day of recruitment.

RESULTS: In-vitro: Listerine mouthwashes at dilutions of up to 1:4 for 1 min resulted in significant reduction of total *N.gonorrhoeae* counts but PBS has no inhibitory effect against *N.gonorrhoeae*. RCT: a total of 196 MSM were recruited, 58 (30%) were culture positive before using the solution. After gargling the allocated solution, men in the Listerine group were significantly less likely to be culture positive on the pharyngeal surface (52%) compared with men in the PBS group (84%) (p=0.013).

CONCLUSION: This suggests Listerine significantly reduces the amount of *N.gonorrhoeae* on the pharyngeal surface. With daily use it may increase gonococcal clearance and have important implications for prevention strategies.

107.A CLOSE SHAVE: TRENDS IN BIOPSY METHODS USED TO DIAGNOSE MELANOMA

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INTRODUCTION: The diagnostic biopsy is the first step in identifying melanoma accurately and providing information to appropriately plan therapy. The gold standard is complete excision with a 2mm margin. Partial biopsy methods (shave, punch, curette, incisional), however are suspected to be increasingly used, which could impair assessment of tumour depth and microstaging.

AIM: 1) Determine if partial biopsies have been increasingly used over time to diagnose melanoma 2) Assess the frequency of tumour base transection when shave biopsies are used.

METHOD: Retrospective review of all histologically diagnosed melanoma in 2010 and 2015 was conducted through the Victorian Cancer Registry (VCR). A random sample of 400 patients for each year, stratified by tumour thickness was obtained. Chi-squared test (χ^2) was used to compare proportion of partial biopsies in 2010 and 2015.

RESULTS: A total of 2691 and 3067 patients were diagnosed with invasive melanoma in 2010 and 2015 respectively. Overall, there was an increased number of all partial biopsy types to diagnose melanomas in 2015: 967 (32%) compared to 564 (21%) in 2010 [$p < 0.001$]. Similarly, the proportion of all partial biopsy types significantly increased for thin, intermediate and thick melanomas between 2010 (25.4%, 20.3% and 12.8% respectively) and 2015 (36.7%, 27.4% and 23.4% respectively) [$p < 0.01$ for each]. Sub-analysis of 400 patients from each year showed that shave biopsies consisted of 14% (54/400) and 20% (80/400) of biopsies conducted in 2010 and 2015 respectively. Of the shave biopsies, tumour base transection rates were similar in 2010 [56% (30/54)] and 2015 [56% (45/80)].

CONCLUSION: Our study suggests increased use of all partial biopsy types to diagnose melanoma between 2010 and 2015. The results also suggest a 6% increase in shave biopsies in this time, with over half of these tumours transected at the base and therefore unable to be accurately microstaged.

108.STOP BEFORE THE OP- QUIT RATES AFTER A PERIOPERATIVE PHARMACIST-LED SMOKING CESSATION INTERVENTION

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Most people who smoke report that they want to quit, yet success rates in the absence of interventions are low. Little is known about how many smokers make a quit attempt before surgery in Australia. Links between smoking and perioperative complications are well established. Even short-term perioperative smoking cessation interventions can reduce complications.

AIM: To compare smoking rates, quit attempts and reduction in number of cigarettes smoked prior to surgery before and after the implementation of a pharmacist-led smoking cessation intervention in a pre-admission clinic (PAC).

METHOD: A retrospective case review was conducted of all patients who smoke and were seen by a clinical pharmacist in PAC and on day of surgery. The control group (January to December 2013), received usual care: smoking cessation advice provided in an ad-hoc manner at the discretion of the PAC multidisciplinary team members. The intervention group (April 2016 to March 2017), received a smoking cessation brief intervention by the PAC pharmacist, including quit advice, provision of combination nicotine replacement therapy (NRT) and linkage to support services (e.g. Quitline®). Patients were followed-up on day of surgery. Statistical differences between the groups were compared using Fisher's exact test (two-tailed).

RESULTS: The control group included 292 patients and the intervention group 181 patients. In the intervention group 23.2% of patients were smoke-free on the day of surgery, compared to 7.9% of the control group (23/292 vs 42/181, $p < 0.0001$). The intervention group patients also had significantly higher rates of quit attempts (32/292 vs 97/181, $p < 0.0001$) and reduced cigarettes per day (21/269 vs 63/139, $p < 0.0001$).

CONCLUSION: A pharmacist-led smoking cessation intervention including provision of NRT delivered in PAC resulted in patients being four times more likely to make a quit attempt and almost three times as likely to be smokefree on the day of surgery.

109.A QUALITATIVE INVESTIGATION OF BARRIERS TO ADEQUATE NUTRITION INTAKE FOR CYSTIC FIBROSIS (CF) INPATIENTS

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CF inpatients are a unique population within the larger acute hospital system. They are younger with more frequent hospital admissions, longer length of stay (LOS) than other patient groups, and have high nutrition requirements. The CF standards of care require the food service system meet these unique needs. Investigations have identified CF inpatients have access to adequate nutrition through hospital food service, however there is high hospital food wastage, resulting in significant outsourcing for food intake.

AIM: To investigate the barriers to adequate nutritional intake from hospital food in an adult CF population.

METHODS: A convenience sample of 15 CF inpatients (4 male, Mean(\pm SD) age was 36 \pm 13 years, BMI 19.7 \pm 2.7 kg/m², and LOS 11 \pm 6 days). Interviews were conducted using a validated tool¹.

RESULTS: The menu was understood and had adequate information to choose appropriate foods. Ten participants reported menu selections which aligned with their food preference, however often did not want the food ordered once it arrived. The majority of participants were dissatisfied with taste(60%), smell(53%), appearance(73%), temperature(73%) and portion size(53%) (too small) of meals. All but one reported having visitors bring in food because they were hungry. Six reported being hungry at times, but having no food available to eat. Eleven stated meals were served at appropriate times, although over half reported missing meals because they were not available at the times meals were served (eg. Interruptions by staff members and procedures). Many participants stated loss of appetite, sickness and tiredness as barrier to eating at meal times.

CONCLUSION: Multiple system and patient factors contribute to CF inpatients not meeting their nutrition requirements from the hospital food. Further investigation of these factors, and the exploration of alternative, more flexible food service models is required.

110.BLOOD DNA METHYLATION AS A POTENTIAL BIOMARKER OF DEMENTIA: A SYSTEMATIC REVIEW

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Dementia is a major public health issue with rising prevalence rates, but many individuals remain undiagnosed. Accurate and timely diagnosis is key for the optimal targeting of interventions. A non-invasive, easily measurable peripheral biomarker would have greatest utility in population-wide diagnostic screening. Epigenetics, including DNA methylation, is implicated in dementia, however it's unclear whether epigenetic changes can be detected in peripheral tissue.

AIM: To systematically review the evidence for an association between dementia and peripheral DNA methylation.

METHODS: A systematic search of MEDLINE and EMBASE electronic databases identified 375 articles. After comprehensive screening, 48 publications were retained that fulfilled the inclusion criteria, being studies that measured DNA methylation in peripheral blood, compared between individuals with and without dementia. Studies included were critically appraised using the well-established Joanna Briggs Institute Critical Appraisal tools to enable an unbiased evaluation of the quality of evidence.

RESULTS: Of the 48 studies within this review, 90% were published in the last 6 years, and 67% reported significant associations. Across all studies a total 5689 participants were assessed. However, the average sample size of studies was relatively small, limiting analytical power. The majority of studies (36) looked at Alzheimer's Disease, ranging between 2 and 283 participants, with a mean of 91. When critically evaluated, it was seen that most studies used validated tools to measure DNA methylation (93%) and assessed dementia by clear and accepted methods (86%). However, many studies (n=32) did not use the same criteria for the identification of dementia cases and controls, and confounding factors were not adjusted for in 70% of studies.

CONCLUSION: We emphasise the need for future longitudinal studies on large well-characterised populations, measuring epigenetic patterns in asymptomatic individuals. A biomarker detectable in the preclinical stages of the disease would have the greatest utility in future intervention and treatment trials.

111. MEN'S FERTILITY-RELATED KNOWLEDGE AND ATTITUDES, AND CHILDBEARING DESIRES, EXPECTATIONS AND OUTCOMES: FINDINGS FROM THE UNDERSTANDING FERTILITY MANAGEMENT IN CONTEMPORARY AUSTRALIA SURVEY

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Parenthood is a life goal for most people. Existing research about childbearing focuses mostly on women. Little is known about men's childbearing aspirations and the factors that influence them.

AIM: To investigate fertility-related knowledge and attitudes, and the factors that influence childbearing desires, expectations, and outcomes among Australian men of reproductive age.

METHODS: A sample of 18–50-year-old men (N =1,104), randomly selected from the Australian Electoral Roll in 2013, completed a self-administered, anonymous questionnaire. Data were weighted to reduce non-response bias. Factors associated with fertility and childbearing were identified in multivariable analyses.

RESULTS: Most respondents (90.0%) wanted at least two children and thought it was acceptable for men older than 50 years to be fathers (61.6%). They underestimated the effect of age on fertility with most unaware that women's fertility starts to decline in their early thirties (68.7%) and men's by their mid-forties (54.5%). They also overestimated the ability of assisted reproductive technology (ART) such as IVF to overcome age-related fertility decline (59.5%). These outcomes were associated with men's sociodemographic characteristics. Poorer understanding about the relationship between age and fertility and fertility treatment outcomes appeared to be associated with socioeconomic disadvantage. Greater acceptance of older fatherhood was related to circumstances including being older, childless, unpartnered, and more educated.

CONCLUSION: In order to optimise their chance of becoming fathers, men need to be aware of the factors that influence their own and their partner's fertility, including age. Targeted interventions to increase men's knowledge of the limitations of fertility are recommended.

112. SUDDEN REDUCTION IN MEDICATION BLOOD LEVELS POST-ALLOGENEIC STEM CELL TRANSPLANT AS PREDICTORS OF HOSPITAL READMISSION

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Outpatient pharmacists at a major metropolitan hospital observed that sudden reductions in blood levels of immunosuppressants and antifungals post-allogeneic stem cell transplantation (aHSCT) appeared to precede hospital readmissions.

AIM: To investigate whether a sudden reduction in blood levels of both azole antifungals and cyclosporin post-aHSCT was predictive of readmission to hospital

METHOD: A retrospective cohort study examined patients undergoing aHSCT from 2014 to 2015. Blood levels and doses of immunosuppressant and antifungal therapy, from Days 0-100 post-aHSCT, as well as patient readmissions and readmission reasons were collected. Levels were analysed in context of sample timing and dosage changes. Primary outcome was the proportion of patients whose levels of both cyclosporin and azole antifungal dropped by $\geq 10\%$, and who were subsequently readmitted to hospital.

RESULTS: 33 patients were included, with a median age of 47 and primary indication of leukaemia (57%). There were 37 readmissions for 24 patients (73%) within 100 days post-aHSCT; the most common diagnosis was infection (48%). A reduction in stable blood levels of cyclosporin and azole antifungal of $\geq 10\%$ was not associated with hospital readmission ($p=0.25$). There were also no associations between dropping cyclosporin levels and readmission ($p=0.80$), or azole antifungal levels and readmission ($p=1.00$). However, an unanticipated absence of documentation including missing dosing records, and inappropriate and inconsistent weekly blood level monitoring, meant that of 271 levels collected, only 139 were appropriate for analysis (51.3%).

CONCLUSION: There appeared to be no association between a sudden reduction of cyclosporin and azole antifungal levels and hospital readmission risk in this study. However, results were affected by inadequate records and inconsistent monitoring, highlighting a clear need for improvement of therapeutic drug monitoring (TDM) in this population. Outpatient clinical pharmacists are well placed to drive change by leading TDM of immunosuppressants and azole antifungals in this vulnerable patient group.

113.A REGISTRY FOR PATIENTS WITH ASPLENIA/HYPOSPLENISM REDUCES THE RISK OF INFECTIONS WITH ENCAPSULATED ORGANISMS: TIME FOR A NATIONAL REGISTRY?

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INTRODUCTION: Overwhelming post-splenectomy infection is a serious complication of asplenia, and associated with significant morbidity and mortality. Awareness and adherence to preventative measures have generally been found to be poor.

METHODS: We reviewed data from the Victorian Spleen Registry and linked data on invasive pneumococcal disease (IPD), invasive meningococcal disease (IMD) and *Haemophilus influenzae* type b (Hib) from the Victorian Public Health Events Surveillance System between 2000 and 2014. The risk reduction post-registration was estimated using a poisson regression.

RESULTS: In 3221 Victorian participants, the median age at splenectomy was 38 years (IQR 21. 58 years) and the age of registrants in April 2014 was 59 (IQR 49-70 years). In registrants on the VSR, there were 28 notifications, including 27 of IPD and 1 of IMD. No cases of Hib were reported. The rate of IPD/IMD was 150 per 100,000 patient years prior to registration and 36 per 100,000 patient years after registration; registration with the VSR was associated with a 69% reduction in the risk of infection (incidence rate ratio 0.31, 95% CI: 0.12, 0.83, p=0.019).

CONCLUSION: Infections due to vaccine preventable, encapsulated bacteria, particularly *S. pneumoniae*, occurs at a much higher incidence in this patient group than in the general population. We have previously shown good adherence to measures to prevent infection in registrants. A patient registry for patients with asplenia/hyposplenism that provides education, clinical advice and health promotion reminders was associated with a significant reduction in the risk of infection with encapsulated bacteria.

114.RURAL ISOLATION: A SUB-STUDY OF VMAX: UNDERSTANDING METHAMPHETAMINE USE IN VICTORIA

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Recently methamphetamine use in Victoria has received extensive media coverage, and been the focus of several government reports and inquiries. Some information is available about methamphetamine use in Melbourne, but little is known about use outside of this region. This is cause for concern as there have been recent indications of increases in methamphetamine-related harms. This project aimed to describe the population of methamphetamine users in Victoria, and compare use and harms experienced between metropolitan and rural sites.

METHODS: This cross-sectional observational study involved 531 methamphetamine users from four main areas: Melbourne, Loddon-Mallee, Gippsland, and Hume. A face-to-face structured questionnaire was administered, covering domains including socio-demographics, use patterns, service access and experience of harms. Statistical analysis was conducted using *Stata 14*, with a significance at $p < 0.05$. Descriptive and multivariable logistic regression analyses allowed a description of participant characteristics, and examination of differences in key characteristics between metropolitan and rural populations.

RESULTS: The majority of participants lived in rural areas and used crystal methamphetamine by non-injecting methods at least four times/week. There were variations in patterns of use across all regions after adjustment. A lower frequency of use was reported in Loddon-Mallee compared to Melbourne (aOR 0.582), whilst there were no differences reported across the other two sites. Similarly, there was variation in experiences of harm. Participants from Hume were less likely to report having a methamphetamine-related ambulance attendance than Melbourne (aOR 0.115), with a similar finding evident in Loddon-Mallee (aOR 0.301). Most importantly, participants from all rural regions were significantly more likely to report arrest in the past year, and less likely to report experiencing methamphetamine-related work/study problems (aOR 0.305-0.506), compared to Melbourne.

CONCLUSION: This data is the first available for regional Victoria which shows there are differences in use patterns and harm. These have implications for future service delivery.

115. ACUTE EFFECTS OF HOURLY PARTICULATE MATTERS ON THE 24-HOUR AMBULATORY BLOOD PRESSURE IN CHINESE ELDERLY: A PROSPECTIVE PANEL STUDY

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The association between hourly exposure to air pollution and blood pressure and its threshold effect are unclear.

AIM: To examine the associations between hourly PM_{2.5} and PM₁₀ and 24-hour ambulatory blood pressure among a panel of Chinese elderly.

METHODS: We recruited 261 subjects (66.9±5.8 years of age; 44.1% women) from Kailuan community in Tangshan City, China during 01-Jan – 31-Dec, 2013. We monitored 24-hour ambulatory systolic blood pressure (SBP) and diastolic blood pressure (DBP) for each participant. Hourly concentrations of PM_{2.5} and PM₁₀ were obtained from Tangshan Environmental Monitoring Centre, and hourly temperature and dew point temperature from Chinese Meteorology Sharing System. Generalized additive mixed models were used to examine the effects of hourly PM_{2.5} and PM₁₀ on hourly SBP, DSP, and pulse-pressure difference (PPD), controlling for potential confounders. Written consents were obtained from participants.

RESULTS: Concentrations of hourly PM_{2.5} and PM₁₀ were 128.3±113.9µg/m³ and 208.1±154.1µg/m³, respectively. Effects of hourly PM_{2.5} and PM₁₀ on 24-hour ambulatory SBP, DBP, and PPD were non-linear, with thresholds at 120µg/m³ for PM_{2.5} and 190µg/m³ for PM₁₀. Increases in PM_{2.5} and PM₁₀ above thresholds associated with increased levels of SBP, DBP, and PPD. The effects lasted for 3 hours. Results were robust when controlling for hourly NO₂, SO₂, O₃ and hourly temperature and dew point temperature.

CONCLUSION: Acute increases in ambient particulate matters above certain concentrations increase blood pressure among Chinese elderly. Avoiding exposure to high concentrations of ambient air pollution may be suggested to protect elderly health.

116. PLANNING FOR DRINKING EVENTS: EXPECTATIONS VERSUS BEHAVIOUR

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INTRODUCTION: Drinking plans are associated with behaviour and consumption. We conducted real-time assessments of plans and actual behaviours before and after a night out.

METHOD: As part of a trial among high-risk drinkers, 47 young adults (55% female) reported 193 drinking events in brief SMS-initiated surveys before (6pm) and after (11am) a drinking night of their choice.

KEY FINDINGS: The mean number of drinks planned at the beginning of the night was 6.0, actual mean consumption was 6.1. On 31% of occasions, participants drank the amount intended, on 36% they drank less (by mean 2.4 drinks), and on 33% they drank more (by mean 2.8 drinks). On average, participants planned to spend \$47 and actually spent \$46. Participants planned to come home at 12am but actually came home at 1am. Preliminary analysis showed that drinking more than planned was associated with male gender, planning to drink and spend more at the start of the night, having drinks bought for you, buying drinks for others, experiencing harm during the event, greater perceived hangover, having more fun, spending more than planned, coming home later than planned, and going out (as opposed to staying home).

DISCUSSIONS AND CONCLUSIONS: Young people were fairly accurate in predicting their behaviours and sticking to planned limits. On average this group were high risk drinkers; both plans and behaviour exceeded recommended guidelines. While most nights went roughly as planned there were a subset of nights (particularly among young men) where plans were exceeded, resulting in more negative consequences.

117.A PATIENT REPORTED OUTCOME MEASURE FOR THE AUSTRALIAN BREAST DEVICE REGISTRY: AN ACCEPTABILITY AND FEASIBILITY STUDY

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OBJECTIVE: To examine the acceptability and feasibility of a Patient Reported Outcome Measure (PROM) for the Australian Breast Device Registry (ABDR) that assesses the experience and performance of breast implants used in reconstructive and cosmetic surgery.

METHOD: The 5-question PROM survey (BREAST-Q Implant Surveillance: BREAST-Q IS) was shown to breast implant recipients, who were sought using community networks, social media and advertisements in surgeons' rooms. Using structured interviews via telephone and email, recipients were asked their opinion on the PROM, which assesses breast appearance, sensation and pain. Surgeons contributing to the ABDR were invited to participate and asked to reflect on the BREAST-Q IS by telephone. The qualitative data were analysed thematically.

RESULTS: 21 recipients (10 implant reconstruction, 11 breast augmentation) and 10 surgeons (five plastic, two cosmetic, three breast) were interviewed. Five themes were identified: Overall impression, Emotional response to the BREAST-Q IS, Follow up method, Suggested improvements, and Group variation. Overall, recipients and surgeons accepted the BREAST-Q IS. Both groups strongly supported receiving follow up from ABDR, with a convergent view that email is the preferred method. Recipients reported that restricted movement, barriers to intimacy, and support are important. Some surgeons said that answers to the PROM would be too subjective and varied; they were concerned that the subjective responses might affect surgical outcome and carry reputational risks.

CONCLUSION: The results from this study provides support for the acceptability and feasibility of BREAST-Q IS as a PROM for recipients of breast implants. They revealed some convergent and some divergent opinions held by recipients and surgeons. PROMs are designed to capture patients' subjective experiences; as surgeons become more familiar with their use, concern about subjectivity may be allayed. The ABDR is committed to combining objective surgical assessment and recipient reports to ensure comprehensive and appropriate assessment of outcomes.

118.POINT OF SALE LABELLING INFLUENCES CONSUMER PURCHASES IN THE CAFÉ OF A LARGE AUSTRALIAN METROPOLITAN HOSPITAL: AN OBSERVATIONAL COHORT STUDY

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Obesity has become a global epidemic with increasing consumption of calorie dense and nutrient poor foods. There is a need for environmental cues that nudge consumers towards healthier foods that can be implemented on a large scale.

AIM: To evaluate the effect of point of sale traffic light nudge communication on consumer purchases.

METHODS: Traffic light point of sale communications with accompanying nudge statements were developed and implemented in a large metropolitan hospital café. In an observational cohort study, cafe purchases over lunch were observed and coded as green, amber or red for ten days prior to the intervention and twenty days during the intervention, using the Victorian Healthy Choices Guidelines. The availability of green, amber and red foods on each day was also collected. Independent samples t-tests were conducted to compare daily food purchases according to the traffic light guidelines before and after the intervention.

RESULTS: Overall, there was no significant difference in the number of food items purchased before (M=1097.8, SD=105.5) or after (M=1116.6, SD=67.9) the intervention, $t(28)=-0.59$, $p=0.56$. Following the intervention, significantly more green food items were purchased (M=404.6, SD=42.5) than before (M=321.7, SD=36.7), $t(28)=-5.25$, $p<0.001$. There was also a significant reduction in the purchase of red food items after the intervention (M=415.5, SD=47.0) compared to before (M=499.7, SD=48.6), $t(28)=4.57$, $p<0.001$. The number of amber food items purchased did not differ significantly before (M=276.4, SD=46.1) and after (M=296.5, SD=41.8) the intervention, $t(28)=-1.20$, $p=0.24$.

CONCLUSION: Point of sale traffic light nudge communications are effective in reducing red and increasing green food purchases, without affecting total sales. This improves the nutritional quality of consumer choices in retail settings. This novel public health strategy may have promise in reducing obesity and should be investigated in a variety of settings.

119. SEROSURVEILLANCE TO INFORM MALARIA ELIMINATION PROGRAMS IN SOUTH-EAST MYANMAR

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Malaria prevalence in Myanmar has declined dramatically over the past decade. *Plasmodium* cases, however, are still highest in Myanmar compared to other countries within the Greater Mekong Sub-region. The presence of established reservoirs of artemisinin-resistant *P. falciparum* in the region prompted a greater commitment from the WHO and National Malaria Control Programs to strive for malaria elimination by 2030. Accurate surveillance of *Plasmodium* transmission in Myanmar is therefore imperative to achieving this goal. The objective of this study was to explore the use of serosurveillance to identify populations at high risk of infection in Southeast Myanmar, and to longitudinally observe changes in the immune response to *Plasmodium* spp. in a region that has recently achieved a marked decline in malaria transmission (by as much as 90% reduction in disease incidence between 2005 - 2014 in some provinces).

We performed a longitudinal study of 114 villages across South-Eastern Myanmar from April 2015 to June 2016. Rapid diagnostic tests and serological measurements by ELISA were performed on participant samples from more than 15,000 dried blood spots to determine current infection and exposure levels. Prevalence of *Plasmodium* spp. infection by RDT was extremely low (<1%), however serology revealed high levels of IgG specific for *P. falciparum* schizont extract. IgG seroprevalence was greater in high-risk populations (migrant workers (41%) and forest dwellers (50%)) compared to village residents (36%). IgG responses were sustained (>40% seroprevalence) throughout the 14 months of the study, peaking in high malaria transmission season each year despite the extremely low incidence of infection.

Through measuring serological responses to malaria in this longitudinal study, we have revealed that antibodies are being maintained in a pre-elimination setting of South-East Myanmar despite recent large-scale reductions in malaria incidence. Antibodies were also capable of identifying high-risk populations, and the maintenance of high IgG levels over time may be indicative of an undetected parasite reservoir in the region. Combined with molecular diagnosis, serosurveillance could prove to be an important surveillance tool to inform the ambitious target of malaria elimination by 2030 in the Greater Mekong Sub-region.

120. INFORMED CONSENT IN CLINICAL RESEARCH: COMPARING TWO METHODS FOR DELIVERING THE PICF ON TRIAL RECRUITMENT INVOLVING OLDER PERSONS; MAIL VERSUS IN PERSON

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BACKGROUND: A key aspect of the informed consent process is being provided with a written clinical trial information document, the Participant Information and Consent Form (PICF; also known as a Plain Language Statement) and having an opportunity to discuss the information provided with the researcher. Yet there are no guidelines on the most appropriate method for delivering the PICF to older persons and whether the delivery mode alters the engagement and willingness to participate.

OBJECTIVE: To examine the effects of two different delivery modes for receiving a Participant Information and Consent Form (PICF) on recruitment, refusal to continue and randomisation rates into a clinical trial involving older adults. Secondly, to identify the reasons older persons provide for considering clinical trial participation.

METHODS: In a matched cohort study, participants were allocated into two groups by age, gender and attending practice location, to either receive the PICF in the mail prior to the first screening appointment (Method 1) or in person at the baseline appointment (Method 2). At the baseline appointment, all participants were guided through an informed consent process. Recruitment, refusal and randomisation rates were compared between groups along with time taken to administer the informed consent procedure. Factors that influence willingness to participate were also identified.

RESULTS: From 1651 participants who had a successful phone screen, 520 participants were able to be matched and assigned to either Method 1 (n = 260) or Method 2 (n = 260) for this study. There was a statistically significant trend toward fewer eligible persons deciding to discontinue study participation with Method 2 (mail) compared with Method 1 (in person) (12% difference in refusal to continue rate; RR 0.65, P=0.08, 95% CI 0.41-1.05). As expected, the median time in minutes to conduct the informed consent procedure was significantly longer with Method 2 (20, Interquartile Range (IQR): 16-25) compared with Method 1 (15, IQR: 11-19) (P<0.01). Overall the randomisation rates were similar across method groups (RR 0.99, P=0.92, 95% CI 0.87-1.13). Altruism, or the desire to contribute to the wider community without expecting a direct benefit to themselves, was cited by the majority of participants (41.4%) as the main reason for considering participating in this particular clinical research trial.

CONCLUSIONS: Delivering the PICF at the visit promotes the opportunity for a balanced discussion on the risks versus the benefits of clinical trial involvement and therefore may lead to an increase in willingness of older persons to participate in clinical trials.

121. MEASURING INDIVIDUAL-LEVEL NEEDLE AND SYRINGE COVERAGE AMONG PEOPLE WHO INJECT DRUGS (PWID) IN MYANMAR: RISK PREDICTORS AND OUTCOMES

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INTRODUCTION: Myanmar has prioritised people who inject drugs (PWID) as a target population for HIV reduction efforts. However, reporting on needle and syringe program coverage, a key evaluative parameter, remains at the population level. Research suggests this overestimates coverage and fails to adequately capture the most at-risk PWID. To address this gap we estimated individual-level coverage, defined as the percentage of PWID's injecting episodes that utilise a sterile syringe.

METHODS: We recruited 512 PWID through three urban sites in Myanmar via the Burnet Institute Harm Reduction drop-in-centres in Yangon, Mandalay and Pyin Oo Lwin. Participants completed a quantitative questionnaire covering five domains: demographics, drug use, treatment and coverage, injecting risk behaviour and sexual risk behaviour.

We recorded data to calculate past fortnight individual-level syringe coverage, estimating levels of sufficient ($\geq 100\%$ of injecting episodes that utilise a sterile syringe) and insufficient ($< 100\%$) coverage, and testing predictors of insufficient coverage via logistic regression.

RESULTS: Our sample was predominately male (97%), employed (76%), and single (70%), with a median age of 27. All participants reported heroin as the drug most frequently injected, with a median past fortnight injecting frequency of 27.

For the two weeks prior to interview, 19% of participants reported insufficient coverage. Insufficient coverage was significantly associated with the re-use of participants' own unsterile syringes, the main source of syringe acquisition and recruitment site.

DISCUSSION AND CONCLUSIONS: This is the first study to measure syringe coverage in Myanmar at the individual level. Study results will inform the planning of donor driven harm reduction services for PWIDs in Myanmar and throughout the region.

122. THE AUSTRALIAN BREAST DEVICE REGISTRY AS A MODEL FOR MONITORING HIGH RISK DEVICES

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Systematically collected data on high risk medical devices is crucial for ensuring the safety of device recipients. Breast devices, including silicone breast implants and tissue expanders, are classified as high risk medical devices by the TGA. The Australian Breast Device Registry (ABDR) is a Commonwealth funded quality and safety registry to monitor the use of breast devices.

AIM: To report on the progress of the national roll out of the ABDR.

METHOD: The guiding document for the ABDR is the 'Operating Principles and Technical Standards for Australian Clinical Quality Registries'. Plastic, cosmetic and breast surgeons collaborate on the ABDR, contributing data from all of their patients, with endorsement by all societies. The registry employs an opt-out model, in which data from all patients is contributed and patients can choose to remove their data from the registry. A two page minimum dataset is completed at the time of surgery and sent to the ABDR. Quality indicators will be examined.

RESULTS: At August 2017, the ABDR had engaged 392 surgeons representing 240 sites (61% of all eligible sites). Contributing surgeons were predominantly plastic surgeons (70%), with the greatest representation from NSW, Victoria and Queensland (72%). A total of 17671 patients have data recorded in the ABDR encompassing 20112 procedures (86% bilateral, 14% unilateral). Recorded at the individual breast level, 73% of the procedures were cosmetic, 21% reconstruction and 3% due to congenital deformity (3% not stated).

CONCLUSION: The ABDR is a model for post-market surveillance for high risk medical devices.

123. "I ASPIRE TO LOOK AND FEEL HEALTHY LIKE THE POSTS CONVEY": PERCEIVED INFLUENCE OF SOCIAL MEDIA 'FITSPIRATION' ON USERS' HEALTH AND WELLBEING

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'Fitspiration' is a popular social media trend where users post images, quotes and advice designed to motivate others to be fit and healthy. Emerging evidence suggests that fitspiration may actually negatively affect body image, mental health and health behaviours due to the promotion of strict eating and exercise practices and an idealised body type.

AIM: To understand the perceived influence of the fitspiration trend on the health and wellbeing of individuals who access this content.

METHODS: Online survey containing open-ended questions to capture the perceived impact of this social media trend on participants' health beliefs and behaviours. Responses from 155 participants (85% female, aged 16-60 years) who self-reported engaging with fitspiration content were analysed for key themes using an iterative process of open, axial and thematic coding.

RESULTS: The influence of fitspiration on participants' health beliefs and behaviours was explained through four key themes: 1) Setting the 'healthy ideal', 2) Failure to achieve the 'ideal', 3) Being part of a community, and 4) Access to reliable information. The majority of participants reported benefits of fitspiration, including access to diet and exercise ideas and being part of an online community. However, a minority of participants reported experiencing negative impacts which often related to feeling inadequate, failing to achieve their body or exercise goals, or accessing unreliable information.

CONCLUSION: While many participants perceived benefits of fitspiration for increasing social support and motivation, fitspiration may also contribute unreliable health information and endorse unrealistic appearance-related goals. These findings have implications for informing future interventions which may focus on media literacy or challenging nutritional/fitness myths. The presence of both positive and negative experiences suggests that future research should explore factors that may place some individuals at greater risk of harm associated with fitspiration.

124. APPLICATIONS OF NEXT GENERATION SEQUENCING IN HEALTHY AGEING

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ASPIrin in Reducing Events in the Elderly (ASPREE) is Australia's largest clinical trial and longitudinal study of healthy ageing. The ASPREE population is comprised of 16,703 Australians aged over 70 years and 2,411 Americans aged over 65 years - all recruited and randomized to either daily low-dose aspirin or placebo to examine the preventative benefit of aspirin on a range of clinical endpoints. Approximately 15,000 ASPREE participants provided biospecimens for research including consent for genetic studies through the ASPREE Healthy Ageing Biobank. To date, 5756 APSREE participants have been sequenced using a targeted 'super panel' covering > 750 genes used commonly in clinical testing, including familial cardiovascular, neurological and cancer genes. Preliminary data analyses have involved clustering by principal component analysis (PCA) and evaluation of genetic variations/mutation were performed using PLINK version 1.9. Sequencing coverage has been >97% for bases across all genes, with an average read depth of >200. Here we present genotyping results for the *Apolipoprotein E (APOE)* gene, a known genetic risk factor for Alzheimer's disease and cardiovascular disease in the elderly. We stratify the ASPREE population based on *APOE* genotype and correlate baseline phenotypic characteristics. A total of 78 (1.35%) ASPREE individuals sequenced thus far have been identified as *APOE* ε4/ε4 homozygotes (rs429358 and rs7412), despite having normal cognition function (3MS >77) and absence of cardiovascular disease at baseline, they average 73 years of age. Given the reduced risk, or delayed onset, of disease observed for these individuals, despite carrying a known genetic risk factor of high effect size, suggests a possibility of modifiers or protective genetic factors carried in their genome that may contribute to protection against Alzheimer's disease. Further studies are being planned to discover such factors

125.A NATIONAL ADVANCE CARE PLANNING PREVALENCE STUDY

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Advance Care Planning (ACP) is important in delivery of quality person-centred care across settings, and helps align the person's preferences for care with care received. Currently there are no Australian standardised national data regarding ACP uptake or advance care directive (ACD) completion. Thus evaluation of impact of implementation strategies is difficult.

AIM: To determine the prevalence of ACP/ACDs in hospitals, aged care facilities and general practices, and to explore people's views regarding ACP/ACDs.

METHODS: A national (all jurisdictions) multicentre cross-sectional study consisting of file audit and surveys of persons >65 years in 3 healthcare sectors will occur. 48 participating organizations (30-50 participants each) will be included. The primary outcome will be the number of people who have documentation of ACP and/ or ACDs that can be located in records within 15 mins. Other outcomes will include demographics, specific details of documentation, and findings from patient/client surveys regarding self-reported involvement in and views on ACP/ACDs.

RESULTS: This 12-month project is being conducted in 2017. Audit tools and consumer surveys have been developed with advice from a national advisory group, and the recruitment processes are currently underway. The tools and learnings from development of these tools will be presented. Early results will be presented, and discussed, including contrast and comparison across settings and jurisdictions.

CONCLUSION: Study results will inform future steps toward improved ACP implementation strategies and evaluation processes. This study will also influence further development of tools for national ACP/ACD prevalence datasets.

126.THE TEST OF TIME: AN INTERRUPTED TIME SERIES ANALYSIS OF HIV TESTING FOLLOWING SERVICE CHANGES AT A COMMUNITY-BASED RAPID HIV TESTING SERVICE IN MELBOURNE, AUSTRALIA

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BACKGROUND: PRONTO!, a peer-led community-based rapid HIV testing service, was established in Melbourne, Australia in 2013 to increase testing frequency among gay and bisexual men (GBM). In response to evaluation data attributing low return-testing rates to the lack of integrated STI testing, STI (gonorrhoea, chlamydia, syphilis) testing and SMS reminders were implemented. Using a quasi-experimental design, we quantified changes to return-testing following these service-level interventions.

METHODS: Implementation of STI testing and SMS reminders occurred in February 2016. Return HIV testing rates were compared between pre-intervention (January2015-January2016) and post-intervention (February2016-December2016) periods. All HIV tests between 01July2014 and 31December2016 were included in analyses (2014 tests allowed six months of lead time to assess returning). Using monthly aggregate data a segmented linear regression assessed changes in the percentage of tests per month with a previous test within 91 days (3m return testing) and 182 days (6m return testing). We report regression coefficients: percentage of 3m and 6m return tests at baseline (January2015, β_0), return-testing trend (pre-intervention slope, β_1), and return-testing trend from pre- to post-intervention (change in slope, β_3). A change in slope (β_3) $p<0.05$ was considered a significant change in return testing.

RESULTS: Over 24 months, 4959 HIV tests were conducted among 3339 individuals (median tests/month=201, range 178-243). Post-intervention, ~100 SMS reminders were sent per month and 60% of clients accessed STI testing. Overall, 3m and 6m return testing increased by approximately 50% in the ten months post-intervention. At baseline, 3m return testing was estimated at 12% (β_0), decreasing by 0.4% per month (β_1) during the pre-intervention period. Post-intervention, 3m return testing increased an average of 0.8% per month (β_3 , 95%CI:0.3-1.3, $p<0.01$), from 7% to 15%. Baseline 6m return testing was estimated at 23% (β_0), remaining stable pre-intervention ($\beta_1=-0.2\%$). Post- intervention, 6m return testing increased an average of 1.1% per month (β_3 , 95%CI:0.7-1.6, $p<0.01$), from 22% to 35%.

CONCLUSION: Implementation of STI testing and SMS reminders increased frequent testing. However, less than one in five clients were testing quarterly post-intervention, well below recommended frequencies. Despite improved convenience in this client-centred testing service, compliance with high frequency risk-based HIV testing guidelines remains a significant challenge.

127. BLOOD METHYLATION LEVELS OF BRAIN DERIVED NEUROTROPHIC FACTOR (BDNF): A PERIPHERAL EPIGENETIC SIGNATURE OF DEMENTIA

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BACKGROUND: Recent research suggests the involvement of epigenetic processes, such as DNA methylation, in dementia. Epigenetics also provides a promising new class of biomarkers with potential clinical utility for early diagnosis.

AIM: to determine whether blood DNA methylation of brain-derived neurotrophic factor (BDNF) was associated with the prevalence and incidence of dementia. BDNF is an important regulator of neuronal activity and neurogenesis, and lower serum BDNF levels have been reported in individuals with dementia.

METHODS: 1024 participants aged ≥ 65 years were recruited as part of a longitudinal study of psychiatric disorders in France (the ESPRIT study). Dementia was diagnosed at baseline and follow-up according to the DSM-IV revised criteria by a panel of independent neurologists who reviewed the results of neuropsychological examinations, imaging and detailed medical information. BDNF promoter I methylation was measured using the SEQUENOM MassARRAY platform.

RESULTS: BDNF methylation at baseline was associated with both prevalent dementia and incident dementia over the 12 year follow-up period. Among participants without dementia, BDNF methylation was also associated with baseline scores on the Mini-Mental State Examination (MMSE), and the decline in MMSE scores over time. No effect modification (interactions) were observed with sex or the *ApoE-e4* allele, and all associations remained after adjustment for age.

CONCLUSION: Our findings highlight the potential for blood BDNF methylation to be a biomarker of dementia, however further large studies and which incorporate genetic data are now needed. The ASPREE study (SPHPM, Monash) involving more than 15,000 elderly with baseline and follow-up DNA samples, will provide a crucial resource for advancing research in this area.

128. QUANTITATIVE ANALYSIS OF FOOD WASTAGE AND ADEQUACY OF THE HOSPITAL DIET FOR THE CF POPULATION

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INTRODUCTION: Standards of Care for Cystic Fibrosis (CF) in Australia instruct that a nutritionally sufficient hospital diet for CF inpatients must be provided. There are few data on inpatient dietary intakes in CF. This study aimed to investigate nutritional adequacy and wastage of hospital food.

METHOD: Data from a convenience sample of 34 CF inpatients (68% female, 15% on supplementary enteral nutrition (EN)) were analysed. Intake was calculated by recording food, oral nutrition support (ONS) and drinks delivered to each inpatient for a 24-hour period and subtracting wastage. Food sourced from elsewhere was not quantified. Estimated energy (EER) and protein (EPR) requirements were calculated and compared with intakes from food, drinks, ONS and EN. Ethics was obtained.

RESULTS: Overall plate waste was 51% (breakfast, 55% \pm 45, morning tea, 27% \pm 40, lunch, 56% \pm 37, afternoon tea 53% \pm 56 & dinner, 37% \pm 47). ONS was more likely to be consumed at mid meals than main meals. Most consumed menu items included supplemental menu items, mid-meal snacks and sandwiches (79%, 79% and 70% respectively). Least consumed items included salad, vegetables and fruit (9%, 30% and 35% respectively). Males had an EER 10.3 \pm 1.2MJ & EPR 75 \pm 13g and were provided with 9.3 \pm 2.1MJ & 109 \pm 36g protein. Females had an EER 8.6 \pm 0.8MJ & EPR 64 \pm 8.2g and were provided with 10.1 \pm 4.0MJ / 123 \pm 42g protein. Patients consumed 61%EER and 94%EPR, inclusive of EN, hospital food and ONS.

DISCUSSION: CF patients have access to adequate nutrition, however half the hospital food is wasted. This risks a decline in nutritional status, high reliance on ONS and sourcing food from elsewhere to meet preferences. CF inpatient food patterns reflect those observed in habitual diets¹. This study underscores the importance of strategies to optimise intake, minimise nutritional decline during hospitalisation and improve overall patient meal experience.

129. INFORMED CONSENT IN PRAGMATIC CLINICAL RESEARCH: COMPARING TWO VERSIONS OF A PRINTED PICF ON TRIAL RECRUITMENT INVOLVING OLDER PERSONS

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BACKGROUND: Few clinical trials involve healthy older persons despite an exponential increase in the proportion of people living beyond their seventh decade. Offering older persons the opportunity to participate in clinical trials is imperative to support effective healthcare interventions favouring disability free survival. As such, we explored one aspect of informing older persons about research as part of the informed consent process and sought to examine if this was a facilitator or barrier for older adults considering clinical trial participation.

OBJECTIVE: To compare the effects of two versions of delivering the Participant Information and Consent Form (PICF) on recruitment, refusal, and randomisation rates in a community-based public good clinical trial.

METHODS: Using a prospective design, participants were consecutively allocated into two groups based on enrolment period and received either the PICF in an extended version or the PICF in a shortened version. Both groups received the PICF in the mail prior to a baseline visit where a face-to-face discussion of trial information took place as part of a thorough informed consent process. Recruitment, refusal and randomisation rates were compared between groups adjusting for demographic factors.

RESULTS: From 2462 individuals who expressed interest in the trial, 1194 passed phone screening and were eligible to take part in this study, mean age 76.9 ± 5.5 and 53.6% were female. Of these, 283 participants received the extended PICF version and 911 received the shortened PICF version. Participants who received the shortened PICF version were 26% less likely to refuse to participate, or decide not to continue in the clinical trial, compared with those receiving the extended PICF version (RR 0.74, $P=0.02$, 95% CI 0.61-0.89). Accounting for demographic factors across groups, participants who were male, younger and had a higher education level were less likely to refuse to participate and therefore be more willing to continue in the trial and proceed to randomisation.

CONCLUSIONS: Revising our PICF to present a more balanced and concise description of the potential benefits and risks of trial participation, led to approximately an additional 1 in 4 eligible older adults continuing in the trial during the screening phase and proceeding to randomisation. Avoiding lengthy and complex PICF documents may lead to an increase in willingness of older persons to participate in clinical research trials, especially when coupled with an effective informed consent discussion.

130. EFFECTIVENES OF PSYCHOSOCIAL AND VOCATIONAL INTERVENTIONS FOR IMPROVING RETURN TO WORK RATES IN PEOPLE POST MYOCARDIAL INFARCTION: A SYSTEMATIC REVIEW

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Returning to work can play a significant part in social readjustment after a coronary event. Cardiac rehabilitation programs focusing on aerobic and strengthening exercise can assist this transition, however interventions that address vocational and psychosocial barriers to work may be equally important. At present, the effectiveness of these interventions in the early phase of recovery from acute myocardial infarction is unknown.

AIM: To examine the effects of psychosocial and vocational interventions delivered in the first three months following AMI compared with other interventions are effective for improving work outcomes.

METHOD: A search was completed for English language publications up to March 2016 across 4 electronic databases and gray literature. Studies were independently screened by two reviewers and assessing for risk of bias. A narrative synthesis and meta-analysis of the included studies was undertaken.

RESULTS: Eighteen studies of varying quality were analysed. Individually delivered psychosocial and vocational interventions may improve work rates at 3 months (RR= 1.17; $p = 0.05$) when compared to usual care but there was no difference at 6 or 12 months. People receiving group or individual psychological / vocational counselling returned to work 6.33 days sooner than those who received usual care (95% CI -7.18 to -5.49; $p<0.001$).

CONCLUSIONS: Although psychosocial and vocational interventions show promise in people within three months of AMI, compelling evidence is still limited. There is a need for more detailed, high-quality studies with valid comparison groups and adequate follow-up.

131. EVIDENCE FOR THE POTENTIAL ROLE OF ASPIRIN IN THE PREVENTION OF FRAILTY

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The interaction between aspirin and frailty is of interest, in particular because of growing use of aspirin by older populations. Aspirin may dampen systemic inflammation associated with frailty development, as well as reduce the incidence, and thus cumulative burden, of age-related diseases. Conversely frailty may increase the risk of aspirin-associated adverse events. The ASPREE primary prevention trial measures self-reported physical activity, and weight annually, and grip strength and 3 metre gait speed at baseline and even years post randomization to low dose aspirin or placebo. At baseline, average gait speed and grip strength were respectively 1.0 ± 0.3 m/s and 28.5 ± 10.2 kg in 65-74 age group ($n=11163$), 0.9 ± 0.3 m/s and 24.9 ± 9.3 kg in 75-84 age group ($n=7219$) and 0.8 ± 0.3 m/s and 21.0 ± 8.4 kg in the 85+ age group ($n=732$). These combined measures will facilitate an analysis of a differential effect of aspirin in frail participants, as well as measurement of the effects of aspirin on frailty outcomes.

132. PALIFERMIN, ADMINISTERED FOR 3 DOSES, MINIMISES MUCOSITIS IN STEM CELL TRANSPLANTATION PATIENTS CONDITIONED WITH CHEMORADIOTHERAPY.

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Palifermin, a recombinant human keratinocyte growth factor with proven efficacy in mitigating mucositis in patients receiving chemoradiotherapy conditioning before haematopoietic stem cell transplantation (HSCT), is usually administered intravenously, 60mcg/kg/day, for 3 days before and after conditioning (total 6 doses).

AIM: To evaluate the effectiveness of palifermin administered for 3 doses only before chemoradiotherapy in patients undergoing HSCT as measured by the duration of parenteral nutrition (PN) and parenteral analgesia (PA) required in this group, compared with a similar cohort described in the published literature who received a total of 6 doses.

METHODS: Patients receiving total body irradiation (TBI) and chemotherapy conditioning for HSCT within a single institution were eligible to receive 3 doses of palifermin. Medical records and dispensing histories were retrospectively reviewed over a two year period from June 2015 to May 2017. Effectiveness was assessed by measuring required durations of parenteral nutrition (PN) and parenteral analgesia (PA). Results were compared with a published retrospective study of 77 patients who received 6 doses of palifermin and TBI-based conditioning.

RESULTS: Thirty-three patients with a median age of 39 years were included. The most common diagnosis was acute leukaemia in 29 patients. All patients received TBI, with 31 receiving a cyclophosphamide based regimen. Methotrexate, as graft versus host disease prophylaxis, was administered to 26 patients. PN was required by 25 patients (75%) and PA by 16 patients (48%). The mean (SD) duration of days on PN was 13 days (6.3) in the study group and 13 days (7) in the literature cohort ($p=1.0$). The mean (SD) duration of PA in the study group was 8.4 days (4.1) compared to 7 days (9) in the literature group ($p=0.34$).

CONCLUSIONS: Palifermin 60mcg/kg/day, intravenously administered for 3 days before chemoradiotherapy conditioning for HSCT, is effective in minimising mucositis as indicated by duration of PN and PA.

133. SHORT, MEDIUM AND LONG-TERM FOLLOW-UP FOR PERCUTANEOUS, MINIMALLY INVASIVE IRREVERSIBLE ELECTROPORATION (IRE) OF RENAL TUMOURS: A PROSPECTIVE SINGLE CENTRE STUDY

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IRE, a non-thermal nephron-sparing technique offers an alternative treatment for renal tumours not suitable for other therapies. For patients with a solitary kidney and conditions such as Von Hippel-Lindau disease nephron-sparing treatment may help prolong the time to dialysis.

AIM: To evaluate the safety and efficacy of IRE for the treatment of renal tumours and to report on short, medium and long term follow-up data.

METHODS: Ethics approval was obtained for a prospective non-randomised trial to investigate treatment safety in IRE of solid tumours. 19 patients with renal tumours deemed surgically unresectable and unsuitable for thermal ablation were treated between December 2008 and October 2015. 2 to 6 needle electrodes were inserted under anaesthesia with neuromuscular blockade and pulse delivery synchronised to cardiac rhythm. Patients were followed up clinically and with CT for adverse events and recurrence-free survival.

RESULTS: 19 patients underwent 29 episodes of ablation for 27 tumours. 84% (n=16) were treated for renal cell carcinoma, 42% (n=8) had a solitary kidney and 94% (n=18) had lesions adjacent to thermally-sensitive structures. One patient with Von Hippel-Lindau disease had five year recurrence free survival and returned for treatment of new tumours. Success was highly correlated to tumour size, with 94% of lesions initially measuring <3 cm (15/16) successfully ablated after ≤2 rounds of IRE versus 63% in lesions ≥3cm in diameter (7/11).

Stratification by follow-up duration showed complete ablation post ≤2 rounds of IRE in 100% of short and medium term patients and 58% of long term patients. Partial ureteric stenosis was seen post-IRE in 1 patient, thought to be related to previous thermal ablation of the same tumour. No other major complications were observed.

CONCLUSION: Renal IRE is a safe alternative treatment for renal tumours. Better results are seen in tumours <3cm, with ablation rates comparable to thermal ablation.

134. KEEPING ABREAST OF CLEAN SKIN – EXPERIENCES OF ELIMINATING ALL SKIN MARKS FOR PATIENTS UNDERGOING BREAST RADIATION THERAPY

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Surface guided radiation therapy (SGRT) has been employed at Alfred Health Radiation Oncology (AHRO) since 2009, using an optical monitoring system (AlignRT®). Initially SGRT was utilised as a set up aid for torso sites. Further enhancements have enabled AHRO to use SGRT for patient monitoring and as an efficient and highly accurate markerless deep inspiration breath hold technique. AHRO ceased tattooing breast patients twenty years ago because of the permanent and sometimes unsightly nature of tattoos, choosing to use marker pens instead. As AHRO has become increasingly reliant on SGRT as an integral tool for providing high quality care, it was proposed that elimination of all skin marks could be reasonably achieved for breast patients, without compromising accuracy or efficiency. The rationale for this was to eliminate the need to remark fading lines and avoid placing surgical tapes on sensitive skin.

Implementing this has been highly effective. Accuracy of breast treatment has been well maintained, with SGRT continuing to show that it is comparable to skin marks for positioning patients. Manual manipulation of the patients has also decreased. Breast patients no longer have to be concerned about with maintaining skin marks during treatment and also have no permanent reminder of their treatment once finished.

SGRT has been an invaluable tool at AHRO for patient setup, monitoring and treatment techniques. The successful elimination of all skin marks for breast patients has provided scope to expand this approach to other treatment sites.

135. UNDERSTANDING THE RISK OF URETHRAL STRICTURES FOR PROSTATE PATIENTS TREATED WITH HDR BRACHYTHERAPY

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PURPOSE/OBJECTIVE: High-Dose-Rate brachytherapy (HDRB) is widely used as an effective combination with external beam radiotherapy in the treatment of prostate cancer. Urethral strictures are associated with HDRB, but due to the variety of dose-fractionation regimes used, there is no clear consensus on the dose limits associated with urethral strictures.

The aim of the work has been to fit a well-characterised radiobiological model of normal tissue side-effect—the Lyman-Kutcher-Burman Normal Tissue Complication Probability (LKB NTCP) model—to clinical outcome on urethral strictures data collected at a single institution.

MATERIAL AND METHODS: Dose-volume histograms and clinical records of 258 patients were reviewed. The patients had follow-up at 6, 12, 18 and 24 months and then every year until 10 years after the treatment. Clinical and toxicity data were collected prospectively. The end-point was the time-to-first-urethrotomy, a follow-up cut-off time of 4 years was chosen and the average stricture rate was about 12.6%. The LKB NTCP model was fitted using the maximum likelihood method and used simulated annealing to find a stable solution. Since the patients were treated with 3 different fractionation regimes (18 Gy in 3, 19 Gy in 2 and 17 Gy in 2 fractions) doses were converted into radiobiologically-equivalent doses at 2 Gy per fraction (EQD2) (with a radiobiological sensitivity constant α/β assumed 5 Gy) and this was used for the Equivalent Uniform Dose (EUD) in the model.

RESULTS: The risk of urethra stricture was modelled as a smooth function of EUD (see Fig 1). Using the LKB model the risk of complication could be represented by a TD50 of 70.7 Gy, a steepness parameter m of 0.37 and a volume-effect parameter n of 0.3. The fitted model showed good correlation with the observed toxicity rates with the largest deviation shown at higher doses.

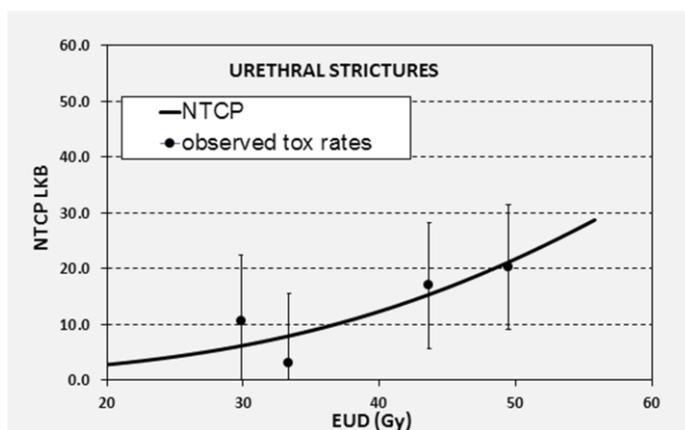


Fig1: Dose-volume response curve obtained with the best estimated parameters for the LKB model for urethral stricture. Solid circles represent the observed toxicity rates.

CONCLUSION: We fitted the LKB model urethral strictures data for patients treated with HDRB at a single institution. The results show that the fitted model provides a good representation of the observed data, however further analysis and independent validation are necessary to confirm its behaviour and parameters. This model has the potential to guide dose prescription protocols in HRDB treatment to limit risks of stricture formation.

136. RESTORING IMPAIRED L-ARGININE TRANSPORT CAN ATTENUATE RENAL FIBROSIS AND INFLAMMATION IN A MOUSE MODEL OF DILATED CARDIOMYOPATHY

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Heart failure (HF) affects more than 28 million people worldwide. Approximately 45% of these patients develop renal dysfunction, and this is associated with higher morbidity and mortality. Impaired L-arginine transport occurs in cardiac and renal failure. This augments nitric oxide (NO) production, which can induce development of fibrosis.

HYPOTHESIS: Restoring L-arginine transport by increasing expression of its transporter (cationic amino acid transporter 1; CAT1) can attenuate renal fibrosis in mice with HF.

METHODS: Eighteen-week-old WT mice (n=8), transgenic mice with dilated cardiomyopathy (DCM;n=8), and double transgenic mice with DCM and endothelial-specific overexpression of *Cat1* (HFCAT1;n=8) were used. Plasma nitrate/nitrite levels, cardiac and renal fibrosis, gene expression, structure and function were assessed in all mice.

RESULTS: Plasma nitrate/nitrite was 78% less in DCM mice than WT (P<0.05). This was restored in HFCAT1 mice to levels observed in WT. Cardiac interstitial and perivascular fibrosis were 89% and 45% greater respectively in DCM mice than WT (P<0.001). Tubulointerstitial and glomerular fibrosis were 89% and 76% greater respectively in DCM mice than WT (P<0.05). Cardiac and renal fibrosis were significantly attenuated in HFCAT1 mice compared to DCM mice (P<0.05). Consistent with this, renal mRNA expression of *Il6* and *Il1β* were less in HFCAT1 mice than DCM (P<0.05). Renal mRNA expression of *Il10* and *Cat1* were 57% and 23% less in DCM mice than WT and these were restored in HFCAT1 mice (P<0.05). Cardiac mRNA expression of *Il6* was 92% greater in DCM mice than WT and this was normalised in HFCAT1 mice (P<0.01). Mean LV wall thickness and ejection fraction were 23% and 33% less respectively in DCM mice compared to WT (P<0.01). Endothelial-specific overexpression of *Cat1* in DCM mice had no effect on mean LV wall thickness and ejection fraction (P>0.24). Endothelial-specific overexpression of *Cat1* in DCM mice also had no effect on renal function (P>0.98).

CONCLUSION: Augmenting L-arginine transport by increasing expression of *Cat1* can attenuate renal fibrosis and inflammation in the setting of HF.

137. REVIEW OF TACROLIMUS DOSING POST RENAL TRANSPLANT: A RETROSPECTIVE COHORT STUDY

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BACKGROUND: Appropriate dosing and close monitoring of immunosuppressant therapy, including calcineurin inhibitors, is fundamental in determining the success of organ transplants. Recent trends at our institution have indicated that significantly higher plasma concentrations of tacrolimus have been experienced in new renal transplant patients than the institution's target of 8-10microg/L.

AIMS: To compare initial doses and subsequent plasma trough concentrations (C₀) of tacrolimus with those one-month post-transplant, to inform future guidelines and improve patient outcomes.

METHODS: This retrospective, single-centre cohort study examined new renal transplant patients prescribed tacrolimus as part of their post-transplant immunosuppression regimen between January 2013 and December 2016. Initial tacrolimus doses (mg/kg/day) were directly compared to one month post-transplant doses, alongside subsequent C₀ levels.

RESULTS: 109 patients were identified, an interim analysis of the first twenty-three new renal transplant recipients is included [mean age 51.4 ± 13.9 years; 74% male; 61% deceased donor transplant]. The initial mean dose (± SD) of tacrolimus received was 0.126 ± 0.029mg/kg/day, compared to 0.090 ± 0.060mg/kg/day at 1-month post-transplant [p= 0.017]. Mean tacrolimus C₀ levels were 16.5 ± 9.1µg/L immediately and 8.3 ± 2.3µg/L one-month post-transplant. The average difference in dose was 0.036mg/kg/day [95% CI=0.007 to 0.065].

CONCLUSION: These early results suggest that tacrolimus is being initiated at doses higher than necessary to reach the recommended therapeutic range, supporting lower starting doses which may reduce the risk of toxicity and improve graft functional recovery.

138. RISK OF PROGRESSION OF NON-ALBUMINURIC KIDNEY DISEASE TO END-STAGE RENAL DISEASE IN PEOPLE WITH DIABETES: THE CRIC STUDY

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BACKGROUND: Although reduced glomerular filtration rate (GFR) in the absence of albuminuria is common in diabetes, the frequency with which it progresses to end-stage renal disease (ESRD) is unknown. We aimed to measure the magnitude of the risk of progression to ESRD at different levels of albuminuria among individuals with diabetes and chronic kidney disease (CKD).

METHODS: We included 1,908 participants with diabetes enrolled in the Chronic Renal Insufficiency Cohort (CRIC) Study, a multicentre prospective study of patients with CKD in the United States. ESRD was ascertained by self-report and by linkage to the US Renal Data System. We used Cox proportional hazards modelling to estimate the association of albuminuria and proteinuria with incident ESRD and with CKD progression (ESRD or $\geq 50\%$ reduction in eGFR from baseline) and linear mixed-effects models to assess differences in eGFR slopes among those with and without albuminuria.

RESULTS: Normal 24-hr urinary albumin excretion (<30 mg/day) at baseline was present in 28% of participants, but in only 5% of those progressing to ESRD. For those with baseline normoalbuminuria, microalbuminuria (30-299 mg/day), macroalbuminuria (300-999 mg/day), and higher levels of albuminuria (≥ 1000 mg/day), the crude rates of ESRD were 7.4, 34.8, 78.7, and 178.7 per 1,000 person-yrs, respectively, and CKD progression rates were 17.0, 61.4, 130.5, 295.1 per 1,000 person-yrs, respectively. Those with baseline normoalbuminuria had significantly lower annual rates of eGFR decline (-0.19 ml/min/1.73 m²) than those with microalbuminuria (-1.38 ml/min/1.73 m²), macroalbuminuria (-2.78 ml/min/1.73 m²) or heavy albuminuria (-5.25 ml/min/1.73 m²).

CONCLUSIONS: In people with diabetes, the risk of ESRD, CKD progression or rapid decline in eGFR is very low among patients with CKD who do not have baseline albuminuria or proteinuria compared to those with albuminuria or proteinuria.

139. EMERGENCY PHYSICIAN PERFORMANCE FOR HYDRONEPHROSIS DIAGNOSIS AND GRADING COMPARED WITH RADIOLOGIST ASSESSMENT IN RENAL COLIC (THE EPHYDRA STUDY).

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Emergency physicians (EP) ability to identify hydronephrosis on point-of-care ultrasound (POCUS) has been assessed in the past using CT scan as the reference standard.

AIM: To assess EP interpretation of POCUS to identify and grade hydronephrosis in a direct comparison with the consensus-interpretation of POCUS by radiologists, and also to compare EP and radiologist performance using CT scan as the criterion standard.

METHODS: Using data from a POCUS databank, a prospective interpretation study was conducted at an urban academic emergency department. All POCUS exams were performed on patients presenting with renal colic to the ED.

RESULTS: A total of 651 patients were included, with paired sets of renal POCUS video clips and the CT scan performed at the same ED visit. Hydronephrosis was reported in 69.6% of POCUS exams by radiologists and 72.7% of CT scans ($p=0.22$). The κ for consensus-interpretation of POCUS between the radiologists to detect hydronephrosis was 0.77 (0.72 to 0.82) and weighted κ for grading the hydronephrosis was 0.82 (0.72 to 0.90). Testing for a report of moderate or high degree of hydronephrosis, specificity of EP was 94.6% (95% CI: 93.7% to 95.4%) and to 99.2% (95% CI: 98.9% to 99.5%) for identifying severe hydronephrosis alone.

CONCLUSION: EP POCUS interpretations were comparable to the radiologists for identifying moderate to severe hydronephrosis using CT scan results as the criterion standard. Among patients with moderate or high pre-test probability of ureteric calculi, as calculated by the STONE-score, the presence of moderate to severe (+LR 6.3 and -LR 0.69) or severe hydronephrosis (+LR 54.4 and -LR 0.57) was highly diagnostic of stone disease. Low dose CT is indicated in such patients for evaluation of stone size and location.

140. RELIABILITY OF THE ALFRED WELLNESS SCORE (AWESCORE) FOR USE IN ADULTS WITH CF

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The need for a reliable domain-based user-friendly (short, quick and easy) wellness score for use in the clinical and research settings for adults with CF was identified.

AIM: To test the reliability of the recently developed Awescore in adults with CF in the inpatient and outpatient settings during stable periods and exacerbations.

METHODS: The Awescore was developed with multi-disciplinary team (MDT) input including medical, physiotherapy, nursing, nutrition and psychosocial clinicians in response to the Physiotherapy Department requiring an outcome measure to evaluate CF patient outcomes. The 5 domains include 2 questions each. Respiratory: day and nocturnal cough, sputum volume; Physical: energy and exercise participation; Nutritional: appetite, targeted weight; Psychosocial: mood, anxiety; General Well-being: sleep amount/quality and general health. Each question is scored by circling a number on a visual analogue scale with anchors from 0 (least state of wellness) to 10 (maximum wellness) with a total score possible of 100%. The reliability was tested in the inpatient and outpatient settings with each patient completing 2 questionnaires in a 24 hour period.

RESULTS: Forty adults (19 male) with CF mean age(SD): 32.8[9.6] (range 19-56) years; FEV1 % 54.2[19.2] (28-105)%; FVC 71.5[16.1] (41-104)% BMI 23.08[6.5] (17.5-26.8) participated. The reliability of the Total Score intraclass correlation was 0.989 (95% confidence interval (CI) 0.979 to 0.994) with a mean difference between scores of -0.200 (CI -0.971 to 0.571) and limits of agreement -5.019 to 4.619. The ICC domain scores ranged from 0.972 to 0.874 for all the individual domains. The lower bound of the 95% confidence interval exceeded 0.8 for all the domains except mood which was 0.775 to 0.931. The AweScore took an average of one minute to complete and patients reported that it was appealing to undertake and they valued the MDT focus on wellness.

CONCLUSION: The AweScore is a reliable tool for measurement of multi-dimensional wellness in adults with CF that focuses on perceptions of wellness (or lack thereof) rather than symptoms and limitations. Patients reported that this indicated to them that the MDT was listening to them. They also commented that completing the Awescore was quick and easy.

141. MATRIX METALLOPROTEINASE-7 IS A POTENTIAL MARKER OF EARLY CHRONIC LUNG ALLOGRAFT DYSFUNCTION

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INTRODUCTION/AIM: Lung transplantation is the best option for patients with end-stage lung diseases. More than half of all lung transplant recipients experience chronic rejection but early in the course of disease few symptoms are clinically apparent. The aim of this study was to investigate the use of matrix metalloproteinase-7 (MMP7) as a biomarker of early chronic lung rejection.

METHODS: One hundred adult lung transplantation patients at The Alfred had blood collected and lung function measured at 4 time points; pre-transplantation, 3-, 12- and 24 months post-transplant. Plasma and lung tissue MMP7 levels were measured using sandwich immunoassay and immunohistochemistry. Clinical variables including age, history of smoking/acute graft rejection were also recorded. Multivariate analyses assessed the clinical variables associated with plasma MMP7 levels. The utility of MMP7 as a biomarker of disease progression was assessed by receiver-operating characteristic curve analysis. Disease progression was defined as a greater than 5% fall in percent predicted Forced Expiratory Volume in 1 second (FEV1%) between the 12 and 24 month time points.

RESULTS: In a pilot dataset, seventeen of 40 patients experienced a decline in lung function between 12 and 24 months post-operation. Tissue MMP7 levels appeared elevated and co-localized with alpha-smooth muscle actin, a marker of myofibroblasts (Figure 1), in lungs of patients with chronic lung allograft dysfunction. Patients who experienced disease progression had higher levels of plasma MMP7 at 12 months post-transplant than those who remained stable (mean 1.1 pg/mL vs 0.6 pg/mL; p<0.001). Increased levels of MMP7 predicted disease progression (area under the curve = 0.8, p=0.003).

CONCLUSION: MMP7 is a biomarker of disease progression in idiopathic pulmonary fibrosis, a fibrotic lung disease with shared mechanisms of pathogenesis to chronic rejection, such as increased myofibroblasts. Elevated MMP7 levels may be detectable prior to clinical manifestation of lung function decline. MMP7 levels may be a biomarker of disease progression in chronic lung rejection.

142. IMPACT OF LUMACAFTOR-IVACAFTOR ON BODY COMPOSITION IN ADULTS WITH SEVERE CYSTIC FIBROSIS LUNG DISEASE

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Ivacaftor is associated with weight gain, including fat mass gain in cystic fibrosis (CF) patients with the CFTR-G551D mutation. Lumacaftor-ivacaftor is associated with reduced hospitalisation and intravenous antibiotic use, but its impact on body composition is not yet widely studied.

AIM: To evaluate changes in body composition in adults with CF with FEV₁<40% predicted over six months of treatment with Lumacaftor-ivacaftor.

METHODS: Data were analysed on 20 adults with CF (10 female, mean±SD age 34.1±8.9 years, baseline mean±SD FEV₁ 33.3±6.1% predicted, mean±SD BMI 19.8±2.2kg/m²), who received Lumacaftor-ivacaftor for six months, and had body composition measured using Multifrequency bioelectrical impedance analysis (mBCA, SECA, Germany) at baseline and 6 months. Changes(Δ) in weight, total body water (TBW), extra-and intracellular water (ECW, ICW), FFM and fat mass (FM) were determined. Paired *t*-tests, Pearson's correlations and multiple regression were undertaken.

RESULTS: six months, mean weight and fat mass significantly increased: (2.2±3.9kg (p=0.02) and 2.1±2.6kg (p=0.02) respectively). No significant changes were observed in FFM (mean ±SD change +0.5±2.3kg), TBW (+0.4±1.7kg), ECW (0±0.7kg) or ICW (+0.4±1.2kg). Gender, age and baseline FEV₁% were not associated with body composition changes. Lower baseline BMI was correlated with greater gains in weight (r= -0.60, p=0.005) and FFM (r= -0.46, p=0.04). Of the seven adults with BMI<18.5kg/m² at baseline, only one remained below BMI 18.5kg/m² and six months. In multiple regression, Δfat mass(p<0.0001) and ΔICW(p=0.002), but not ΔECW, were significant predictors of Δweight.

CONCLUSIONS: Monitoring body composition permits more specific evaluation of the tissue composition of weight changes in CF patients on Ivacaftor-Lumacaftor. The independent association of ΔICW, but not ΔECW, with Δweight suggests increases in BCM rather than extravascular fluid retention explain changes in FFM. The mechanisms underlying body composition changes require further investigation, including mediation via improved exercise tolerance and/or appetite and amelioration of catabolism related to reduced exacerbations.

143. CONTINUOUS INFUSION VERSUS INTERMITTENT ANTI-PSEUDOMONAL B-LACTAM ANTIBIOTICS FOR ACUTE PULMONARY EXACERBATIONS OF CYSTIC FIBROSIS

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Acute pulmonary exacerbations (PEX) of cystic fibrosis (CF) in patients infected with *Pseudomonas aeruginosa* are treated with intravenous anti-pseudomonal β-lactam and aminoglycoside therapy. *In vitro* and modelling data suggest that administration of β-lactams by a continuous infusion (CI) can increase bacterial killing when compared to standard intermittent (SI) administration. However, there are few prospective clinical studies which compare the clinical efficacy of these two approaches in PEX or the impact of CI β-lactam antibiotics on the microbiome.

METHODS: We performed a prospective, randomized, cross-over study comparing SI versus CI intravenous antipseudomonal β-lactam therapy (cefepime, ceftazidime, piperacillin-tazobactam, ticarcillin-clavulanate or meropenem) in combination with tobramycin for treatment of PEX in adult CF patients with *P. aeruginosa*.

RESULTS: Fifty-six patients (SI: 32 patients, CI 24 patients) received at least seven days of antibiotic therapy. There was no significant difference in the primary outcome, change in respiratory symptoms (CFQ-R respiratory domain score) from baseline to day 14, between the groups (1.4, 95% CI -6.9 – 9.6, P = 0.741). There was also no significant differences in changes in FEV₁% predicted (-2.2, 95% CI -5.1 – 0.7, P = 0.136), inflammatory markers or three-minute-step test between the groups after 7 days of therapy. The time to readmission did not differ significantly between SI and CI treated patients (HR 1.46, 95% CI 0.75-2.81, P = 0.264). A subgroup of patients (SI: 18, CI: 22) had culture independent microbial analysis of sputa. There were no significant differences in either total bacterial (P = 0.697) or pseudomonal load (P = 0.989) between the SI and CI groups at day 7. The microbiota composition also did not differ significantly between the groups (P = 0.178).

CONCLUSIONS: CI intravenous anti-pseudomonal β-lactam therapy had similar clinical efficacy and impact on the microbiome when compared to SI treatment for treatment of PEX in adult CF patients with *P. aeruginosa*.

144. THE PULMONARY REHABILITATION ADAPTED INDEX OF SELF-EFFICACY (PRAISE) TOOL PREDICTS IMPROVEMENTS IN PHYSICAL ACTIVITY FOLLOWING PULMONARY REHABILITATION IN PEOPLE WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD)

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The PRAISE tool measures both general and task specific self-efficacy, factors believed to be essential for successful outcomes from pulmonary rehabilitation.

AIM: To explore the measurement properties of PRAISE particularly predictive validity, the Minimal Important Difference (MID) and responsiveness.

METHODS: The study used existing data from the HomeBase trial of home vs centre-based pulmonary rehabilitation in COPD (n = 166 participants) including objective measures of physical activity using the Sensewear Armband (n = 56). Predictive validity of PRAISE was examined by assessing the relationship of baseline PRAISE to changes in physical activity following pulmonary rehabilitation. The MID was examined using anchor-based methods, using a global rating of change score (GRCS) and the Chronic Respiratory Disease (CRD) Mastery domain as anchors. The responsiveness of the PRAISE tool was examined using effect size and standard error of measure.

RESULTS: Higher baseline PRAISE was associated with reductions in daily time spent sedentary (r = -0.26, p = 0.05) and less time spent in sedentary bouts of at least 10 minutes (r = 0.27, p = 0.04) after pulmonary rehabilitation. Stepwise regression showed that a higher baseline PRAISE was an independent predictor of reduction in overall time spent sedentary (standardized beta -0.273, p = 0.033) and time spent in sedentary bouts (standardized beta -0.349, p = 0.011). Anchor-based estimates of the MID were 0.5 to 1.5 points for GRCS and CRQ Mastery respectively; however sensitivity and specificity were modest (area under the curve 0.69 and 0.67). Change in PRAISE following pulmonary rehabilitation had an effect size of 0.21 and standard error of the measure of 0.7.

CONCLUSION: The PRAISE has predictive validity and may be a useful screening tool for self-efficacy prior to commencing pulmonary rehabilitation. The small effect size suggests that the PRAISE is not responsive to changes with pulmonary rehabilitation and may not be useful as an outcome measure.

145. ANTIFIBROTIC DRUG TARGET PROTEIN (RXFP1) IS EXPRESSED IN IDIOPATHIC PULMONARY FIBROSIS LUNGS

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BACKGROUND AND AIMS: Idiopathic pulmonary fibrosis (IPF) is a progressive fibrotic disease of the lungs of unknown aetiology. Once diagnosed, it is usually fatal within 2.5-3.5 years. There is no effective treatment apart from lung transplantation and even then there is a 40% chance of rejection (chronic lung allograft dysfunction; CLAD). This too is characterized by fibrosis, especially around the airways in the transplanted lung. Due to its potent anti-fibrotic effects the relaxin / RXFP1 (relaxin receptor) system has been mooted as a possible therapeutic target for IPF. RXFP1 is expressed in normal mammalian lung but for a relaxin-based therapy to be effective it is important to ascertain whether RXFP1 protein is expressed in diseased IPF lung tissue.

METHODS: Formalin-fixed paraffin-embedded unused donor (n=10) and IPF lung tissue (n=10) was obtained from the Alfred Lung Biobank and stained for RXFP1 (H-160, Santa Cruz) and fibrotic markers by immunohistochemistry. Staining was quantified with the positive pixel count algorithm, Leica Aperio Imagescope.

RESULTS: RXFP1 protein was strongly expressed in both donor lung tissue and in that from the IPF patients. The receptor was located to most resident lung cell types especially in the airways and was also expressed in IPF usual interstitial pneumonia fibrotic lesions. There are no significant difference in expression between the two groups.

CONCLUSIONS: This is the first study to examine RXFP1 protein expression using this primary antibody with specificity validated by Western blot. The result will be further validated using a mass spectrometry approach that can be applied to RXFP1 measurement in bronchoalveolar lavage fluid. This study may have positive implications if relaxin-based therapies for IPF and CLAD are to be developed.

146. COMPUTED TOMOGRAPHY APPEARANCE OF PNEUMONIC-TYPE ADENOCARCINOMA OF THE LUNG

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Pneumonic-type adenocarcinoma of the lung (PTACL) is a rare form of pulmonary malignancy that carries a poor prognosis. Diagnosis is often delayed due to generalised symptoms that can be interpreted as infectious pneumonia.

AIM: While the pathological criteria of PTACL have been well defined, we aim to report on significant radiological signs on computed tomography (CT) that may improve early diagnosis of PTACL.

METHODS: We identified four patients with histologically-proven PTACL who underwent some part of their care at Alfred Health. We reviewed all available chest CT examination performed for these patients to describe the radiological features of PTACL in this series.

RESULTS: Our patients had varied clinical courses and a spectrum of time between first presentation and tissue diagnosis from 2 months to 2 years. Final histopathology included a variety of genetic mutations including KRAS and EGFR mutations. Radiological features included multifocal consolidation; ground-glass opacity, either geographic or nodular; and often a superimposed mass-like focus containing bubbly lucencies ("pseudocavitation"), a typical radiological feature of classic lung adenocarcinoma. Progression despite antimicrobial therapy was a consistent finding.

CONCLUSION: We describe the radiological appearance in four cases of histologically-proven PTACL. Key features include the presence of a superimposed lesion with characteristics of classic lung adenocarcinoma as well as progression despite antimicrobial therapy. These two findings should alert the radiologist to the possibility of malignancy and prompt further investigation to facilitate timely diagnosis.

147. INTRA-OPERATIVE PROTECTIVE MECHANICAL VENTILATION IN LUNG TRANSPLANTATION: A RANDOMISED CONTROLLED TRIAL

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Primary graft dysfunction occurs in up to 25% of patients after lung transplantation. Contributing factors include ventilator-induced lung injury, cardiopulmonary bypass, ischaemia-reperfusion injury, and excessive intravenous fluid administration.

AIM: To evaluate the feasibility, safety and efficacy of an open-lung protective ventilation strategy aimed at reducing ventilator-induced lung injury.

METHODS: We enrolled adult patients scheduled to undergo bilateral sequential lung transplantation, and randomly assigned them to either a: (i) protective ventilation group consisting of pressure-controlled ventilation set at 16 cmH₂O with positive end-expiratory pressure (PEEP), 10 cmH₂O, and regular stepwise PEEP-based alveolar recruitment manoeuvres; or (ii) control group consisting of volume-controlled ventilation with PEEP, 5 cmH₂O, with low tidal volumes (two-lung ventilation 6 ml/kg, one-lung ventilation 4 ml/kg). Ventilation strategies were commenced from first lung allograft reperfusion and continued for the duration of surgery. Regular PaO₂/FiO₂ ratios were calculated and venous blood samples collected for inflammatory marker evaluation during the procedure and for the first 24 hours of intensive care unit admission. The primary endpoint was the PaO₂/FiO₂ ratio at 24 hours after first lung reperfusion.

RESULTS: Thirty patients were recruited. The primary outcome was not different between groups (mean (SD) PaO₂/FIO₂ ratio control group 340 (111) vs. alveolar recruitment group 404 (153); adjusted $p = 0.26$). Patients in the control group had poorer mean (SD) PaO₂/FIO₂ ratios at the end of the surgical procedure and a longer median (IQR) time to tracheal extubation compared with the alveolar recruitment group (308 (144) vs. 402 (154) ($p = 0.03$) and 18 hours (10–27) vs. 15 hours (11–36) ($p = 0.01$), respectively). There was no difference in ICU (6 vs. 4 days ($p = 0.46$)) or hospital length of stay (28 vs. 21 days ($p = 0.26$)).

CONCLUSION: An open-lung protective ventilation strategy during lung transplantation surgery is feasible, safe and achieves favourable ventilation parameters.

148. STRAIGHT LEG ELEVATION TO RULE OUT PELVIC INJURY

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The Alfred

OBJECTIVE: Pelvic x-ray is frequently used as a screening tool during initial assessment of injured patients. However routine use in the awake and alert blunt trauma patient may be questioned due to low yield. We propose a clinical tool that may avoid unnecessary imaging by examining whether the ability to straight leg raise, without pain can rule out pelvic injury.

METHODS: We conducted a prospective cohort study with the exposure variables of ability to straight leg raise and presence of pain on doing so, and presence of pelvic fracture on x-ray as the primary outcome variable.

RESULTS: Of the 328 participants, 35 had pelvic fractures, and of these 32 were either unable to straight leg raise, or had pain on doing so, with a sensitivity of 91.43% (95% CI: 76.94 – 98.2%) and a negative predictive value of 98.57% (95% CI: 95.88 – 99.70%). The 3 participants with a pelvic fracture who could straight leg raise with no pain, all had a GCS of less than 15, and therefore, among the sub-group of patients with GCS15, a 100% sensitivity and 100% negative predictive value for straight leg raise with no pain to rule out pelvic fracture was demonstrated.

CONCLUSION: Among awake, alert patients, painless straight leg raise can exclude pelvic fractures and be incorporated into initial examination during reception and resuscitation of injured patients.

149. CERVICAL SPINE TRAUMATIC EPIDURAL HAEMATOMAS: INCIDENCE AND CHARACTERISTICS

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BACKGROUND: Cervical spine traumatic epidural haematomas (CSTEh) can cause potentially devastating neurological deficits if not promptly identified.

OBJECTIVE: Study aims were to determine the incidence, characteristics and outcomes for patients with CSTEh.

METHODS: A retrospective study was performed at a tertiary hospital with a level 1 trauma centre on all consecutive patients diagnosed with CSTEh over a four year period. Medical record review was undertaken for all patients with the diagnoses of CSTEh to identify patient characteristics including age, mechanism of injury and comorbid conditions. Additional data was extracted regarding radiology interpretation, surgical interventions, thromboembolic chemoprophylaxis use, discharge disposition and neurological outcomes.

RESULTS: 27,888 patients were admitted with traumatic injuries between 1st July 2010 and 30th June 2014, of which 1916 patients sustained cervical spine injuries. The incidence of CSTEh was 0.6% among all trauma patients and 9.1% among patients with any cervical spine injury. Of those with CSTEh, 89 patients (50.9%) had neurological deficits consistent with the anatomical location of the epidural haematoma. MRI diagnosed CSTEh in 132 patients (75.4%), of whom 23 patients (13.1%) had normal CT Cervical spine imaging. Among the patients diagnosed with CSTEh 13 (7.4%) died and 78 (44.6%) required cervical spine surgical decompressions.

CONCLUSION: This study shows a high incidence of CSTEh among trauma patients. CSTEh is associated with significant morbidity and mortality. High clinical vigilance is required to allow the request and acquisition of urgent MRI imaging to diagnose CSTEh as the entity is often not evident on initial cervical spine CT investigations.

150. INDIAN TRAUMA REGISTRY: RESULTS OF THE FIRST YEAR

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A key component of trauma systems are trauma registries - databases that collect and analyse information about trauma patients, their management, and their injury outcomes. Trauma registries are important for informing future improvements to health services and reducing the number of preventable deaths.

AIM: To establish a registry data platform for the collection of AITSC intervention data and lay the foundations of a national trauma registry in India. The AITSC Trauma Registry is a subproject of the Australia-India Trauma Systems Collaboration funded by the Australian and Indian Governments to reduce the burden of injury in Australia and India.

METHODS: The AITSC developed a Trauma Registry which is used to collect data on all trauma patients presenting to four Indian trauma hospitals. 81 data items make up the minimum and intervention dataset. The AITSC Trauma Registry has been live and collecting patient data since May 2016. The first year report of project data is due for completion in October 2017.

RESULTS AND CONCLUSION: 5312 trauma patients across four sites have been collected in the registry. Ongoing challenges regarding collecting directly observed data, however, data completion rate is at 99.8%. Key findings from first year data include, 82% of trauma admissions are male, the average age range is 20-34 years old, and half of all admissions were road traffic accident related. Demonstrated feasibility of developing a multi-centre Trauma Registry and successful introduction of study interventions has been achieved. The minimum dataset and learnings are transferrable on a national and international level and will aid future projects.

151. MAJOR TRAUMA IN THE ELDERLY: PRE-INTERVENTION ADHERENCE TO PROPOSED ELDERLY TRAUMA EARLY MANAGEMENT GUIDELINES

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BACKGROUND: In an increasingly ageing society, older patients (≥ 70 years) comprise one of the largest groups seen with physical injury. Older patients more frequently present following a fall and can sustain substantial injuries due to comorbidities and frailty. While it is understood that older trauma patients have a higher mortality risk, there is limited evidence for specific assessment and management strategies for older injured patients. The London Major Trauma Service (LMTS) released a specific guideline to assist clinicians in managing major trauma in older patients. One of these strategies detailed four interventions to be completed within the first 24 hours, including a multidisciplinary team meeting (MDT), tertiary survey, medication reconciliation and the recording of a resuscitation plan.

AIM: To assess the compliance of a Victorian adult major trauma centre with the LMTS checklist and the association between the four interventions with hospital outcomes.

METHODS: Data from the Alfred Trauma Registry were extracted retrospectively on patients aged 70 years and over who presented between July 1st 2012 to June 30th 2013, and July 1st 2015 and June 30th 2016. Exclusion criteria included death within 24 hours after admission and an Injury Severity Score (ISS) of 12 or below. Completeness of this checklist, demographics, clinical data and outcomes were compared.

RESULTS: Of 745 patients, 676 met criteria for inclusion, with a mean age of 82 years (SD 8) and median injury severity score (ISS) of 17 (IQR 14-25). Falls from 1 metre or less constituted the most common injury cause (49.4%). The mortality rate over both time periods was 14.2%. All four items on the checklist criteria were completed within 24 hours for 3/329 patients in 2012/13 and 15/347 in 2015/16 ($p=0.007$). The frequency of MDT and Medication Reconciliation within 24 hours ($p<0.001$) demonstrated improvements, while documentation of tertiary survey and recording a resuscitation plan were identified as other areas requiring improvement.

CONCLUSION: Components of the LMTS guidelines for assessment of older trauma patients were uncommonly followed in this period when no focused training towards this checklist was provided. Further education on specific assessment and management strategies for older injured patients has the potential to improve patient experience and outcomes.

152.A NOVEL APPROACH TO IMPROVING THE INTERPRETATION OF CT BRAIN IN TRAUMA

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BACKGROUND: Computed tomography of the brain (CTB) has a fundamental role in the diagnosis and management of traumatic brain injury (TBI). There may be substantial discordance between initial CTB interpretation by emergency clinicians and the final radiology report. This study aimed to assess the utility of a structured reporting template in improving the accuracy of CTB interpretation by emergency clinicians.

METHOD: A prospective pre- and post-intervention cohort study was undertaken using a study population of emergency medicine trainees. The CTB reporting template was created with consultation from radiology, emergency medicine and trauma specialists. Participants reported on a set of randomly selected trauma CTBs first without, and then with, the reporting template. Each case was independently assessed for concordance with the radiology report by two blinded assessors (including a radiologist) and the proportion of concordant reports in each phase calculated.

RESULTS: There were 26 participants recruited to the study who reported on a total of 320 CTBs. In the pre-intervention phase, 121 (76%) cases were concordant with the radiology report compared to 147 (92%) post-intervention ($p < 0.01$). The AUROC was 0.84 (95% CI: 0.78-0.89) pre-intervention and improved to 0.94 (95% CI: 0.88-0.99) with the intervention ($p = 0.01$). A higher level of baseline accuracy was observed in advanced trainees (78%) compared to basic trainees (72%), but both improved to a similar level of 92% with the use of the CTB reporting template. There was a marked reduction in false negative errors, with increased identification of critical diagnoses such as cerebral herniation and diffuse axonal injury.

CONCLUSION: The use of the CTB reporting template significantly increased the accuracy of emergency medicine trainees and reduced the number of missed critical diagnoses. Reporting templates may represent an effective strategy to improve CTB interpretation and enhance the initial care of head injured patients.

153.THE UTILITY OF TROPONIN AND OTHER INVESTIGATIONS IN THE ASSESSMENT OF PATIENTS PRESENTING TO THE EMERGENCY DEPARTMENT WITH SUPRAVENTRICULAR TACHYCARDIA

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Current guidelines for the management of patients presenting with supraventricular tachycardia (SVT) do not explicitly inform the use of adjunct investigations.

AIM: To describe adjunct investigations in otherwise healthy patients presenting with SVT and whether the results of such investigations influenced clinical management in the ED.

METHODS: A retrospective cohort study was conducted via explicit chart review including all patients presenting with SVT to a level IV adult emergency department over a 3 year period. Exposure variables included full blood examination (FBE), thyroid function tests (TFT), serum electrolytes (sodium, potassium, magnesium, calcium), troponin assays and chest x-rays (CXR). Primary outcome variables were abnormalities among investigation results. Secondary outcome result was a change in clinical management based on investigation results.

RESULTS: There were 226 patients included in this study. Laboratory investigations were common: troponin 116 (51.3% of patients), full blood examination 210 (92.9%), thyroid function 104 (46%), CXR 74 (32.7%), sodium 210 (92.9%), potassium 208 (92%), calcium 109 (48.2%) and magnesium 184 (81.4%). Abnormal results were also common: troponin 35/116 (30.2%), haemoglobin 25/210 (11.9%), white cell count 24/210 (11.4%), thyroid function 6/104 (5.8%), CXR 23/74 (31.1%), sodium 21/210 (10%), potassium 25/208 (12.0%), calcium 20/109 (18.3%) and magnesium 10/184 (5.4%). Magnesium and potassium testing were the only investigations to alter clinical management in significant numbers: 28 (13.5%) patients who had potassium requested received potassium supplementation, 31(16.8%) patients who had magnesium requested received magnesium supplementation. Additionally, two troponin findings, one thyroid function result and one white cell count altered clinical management.

CONCLUSION: Among patients presenting to ED with SVT, only anomalies serum potassium and serum magnesium may alter clinical management. Acute myocardial infarctions were uncommonly diagnosed and only in the setting of risk factors for cardiovascular disease. These findings suggest a more selective approach to pathology testing in this patient population.

154.EFFECTIVENESS OF THE TRAUMA RECEPTION & RESUSCITATION (TRR©) COMPUTERISED DECISION SUPPORT SYSTEM TO IMPROVE PATIENT CARE IN INDIA

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The TRR© System, developed in Melbourne, Australia, provides hospital trauma teams with access to computerised decision support for the first 30 minutes of trauma management. The system depends on evidence-based medical algorithms. Patient data including vital signs, confirmed and/or unconfirmed diagnoses and treatments are entered into the TRR© System directly from a monitor or by the Trauma Nurse Leader.

AIM & OBJECTIVE: A prospective pseudo-RCT to determine the effectiveness of the TRR© system, to improve patient care in a trauma centre in India. The primary purpose of this study was to demonstrate that the TRR © system, once installed in a Level 1 Trauma Centre in India, would improve real-time data capture and documentation.

This trial is a subproject of the Australia-India Trauma Systems Collaboration funded by the Australian and Indian Governments to reduce the burden of injury in India and Australia.

METHODS: Site: A localised version of the TRR© system was deployed at JPNATC, AIIMS, New Delhi

Study population: Trauma patients enrolled in RED area and in trauma bays 1 & 2 out of six. Matching control data from bay 1 was entered using online REDCap™ database. TRR Data (bay 2) was extracted automatically from the TRR system. The extracted data (TRR and non-TRR) included date and time, anonymized patient details, vital signs, diagnoses and treatments administered.

RESULTS and CONCLUSION: A total of 123 patients were randomised to a bed with the TRR© system (N=82) or to the adjoining bed without the system (N=41). Overall, more data were recorded using the TRR system including, greater neurological observations. Interventions such as chest x-rays were performed much quicker when TRR system was in use. On May 29th 2017 the system was demonstrated as part of the Victorian Health Minister, Hon. Jill Hennessy's visit to JPN Apex Trauma Centre at AIIMS.

155.EFFECT OF THE PREVENT ALCOHOL AND RISK-RELATED TRAUMA IN YOUTH (P.A.R.T.Y.) PROGRAM AMONG SENIOR SCHOOL STUDENTS

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OBJECTIVE: The Prevent Alcohol and Risk-Related Trauma in Youth (P.A.R.T.Y.) program at The Alfred uses vivid clinical reality to build resilience and prevent injury by following a trauma patient's journey through hospital. This study aims to analyse the effect of P.A.R.T.Y. on safety perceptions of driving after alcohol, seat-belt use and risk-taking activities.

METHOD: Pre-program, immediately post-program and 3-5 months post-program surveys with questions focused on the program aims were distributed to all consented participants.

RESULTS: There were 2502 participants during the study period and 1315 (53%) responses were received. The mean age was 16.2 (SD 0.8) years, 724 (56%) were female and 892 (68%) possessed a learner's permit for driving. Pre-program, 1130 (86%) participants reported "definitely not" likely to drive after drinking alcohol, that improved to 1231 (94%) immediately post-program and 1215 (93%) at 3-5 months post-program (p<0.01). Designating a safe driver after drinking was reported by 1275 (97%) pre-program, 1295 (98%) immediately post-program and 1286 (98.2%) 3-5 months post-program (p=0.02). The perception of sustaining "definite" injury after a motor vehicle crash without a seatbelt increased from 780 (60%) pre-program to 1051 (80%) immediately post-program and 886 (69%) 3-5 months post-program (p<0.01). The possibility of sustaining "definite" injury after risk-taking activities was reported by 158 (12%) pre-program, 467 (36%) post-program and 306 (23%) 3-5 months post-program (p<0.01).

CONCLUSION: The P.A.R.T.Y. program at The Alfred engaged substantial numbers of youths and achieved significant improvements among key outcome measures. Objectives were sustained at 3-5 months post-program, but demonstrated decay, highlighting the importance of continual reinforcement.

156. EVALUATION OF INTERNAL CONSTRUCT VALIDITY AND UNIDIMENSIONALITY OF THE BRACHIAL ASSESSMENT TOOL (BRAT), A NEW PATIENT-REPORTED OUTCOME MEASURE FOR BRACHIAL PLEXUS INJURY

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People with Brachial Plexus Injury (BPI) form a very heterogeneous group, with a wide spectrum of ability. While a number of patient-reported outcome measures have been used to assess outcome following adult traumatic BPI, none has been developed or psychometrically evaluated for this population.

AIM: To evaluate the internal construct validity and dimensionality of a new patient-reported outcome measure for people with traumatic BPI based on the ICF definition of activity.

METHODS: Adults with confirmed traumatic BPI completed a 51 item 5-response questionnaire. Responses were analyzed in 4 phases: missing responses, item correlations, exploratory factor analysis and Rasch analysis to evaluate the properties of fit to the Rasch model, threshold response, local dependency, dimensionality, Differential Item Functioning and targeting to the sample.

RESULTS: 106 adults (age range 18-82) were recruited from five outpatient clinics across Australia. Six of the 51 items were deleted for missing responses and items rescored to 4 responses. Ten items were deleted for high inter-item correlations >0.81. The remaining 35 items, while demonstrating fit to the Rasch model, showed evidence of local dependency and multidimensionality. Items were divided into three subscales: dressing and grooming activities, whole arm and hand activities, and no hand activities. Following removal of four items all three subscales demonstrated fit to the model with no local dependency, minimal disordered thresholds, no unidimensionality with no DIF for age, time post injury or self-selected dominance. The subscales were combined into 3-testlets and achieved overall fit to the model, no misfit and unidimensionality allowing calculation of a summary score.

CONCLUSION: This preliminary analysis of the BrAT supports the internal construct validity of the BrAT a unidimensional targeted 4-response patient-reported outcome measure designed to solely assess activity following traumatic BPI regardless of level of injury, age at recruitment, premorbid limb dominance and time post injury.

157. THE REPAIR TRIAL: STANDARD POST TRAUMA REHABILITATION IN INDIA FOR ADULTS WITH LOWER LIMB INJURIES

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Studies of medium- to long-term recovery have shown that patients who survive to hospital discharge are substantially influenced by post-hospital treatments, care and support. In India, the resources are often unavailable, or are piecemeal, poorly organised, and difficult to access.

AIM: The aim of the RePAIR Observational study was to establish standard care for adults with lower limb fractures following trauma in three Indian trauma hospital sites ahead of a planned RCT of a paper-based in-hospital and post-discharge physiotherapy rehabilitation program. RePAIR is a subproject of the Australia-India Trauma Systems Collaboration funded by the Australian and Indian Governments to reduce the burden of injury in Australia and India.

METHODS: Eligible patients aged 18 years of age or over with a diagnosis of lower limb fracture as well as amputees due to trauma or a fall, admitted to the hospital for at least 24 hours and within 48 hours of injury. Data collected at baseline, 6 and 12 weeks post discharge. Tools - pre and post injury health related quality of life (EQ-5D-3L); and the Lower extremity functional scale (LEFS).

RESULTS AND CONCLUSION: 262 patients across three sites were recruited and followed prospectively for 12 weeks to ascertain access to rehabilitation and patient outcomes 75% were male, 65% were married, 49% were transport related injuries and 47% were from falls. Of the patients 74% had isolated fractures, mostly long bone fractures (femur & tibia), approximately 90% as closed fractures and same treated operatively. At follow-up interviews, 45% had received physiotherapy, mainly as hospital outpatients. EQ-5D-3L scores and lower extremity function improved over time for all age-groups and fracture types but both remained relatively poor after 12 weeks. The results of this trial have informed the Rehabilitation Prescription Allowing Improved Injury Recovery RCT that commenced in July 2017, and also an android smartphone application.

158.RESULTS OF A PROTOCOL FOR A NURSE LED ANALGESIA INTERVENTION IN AN URBAN EMERGENCY DEPARTMENT – PAIN-PROTOCOL INITIATING NURSES (P-PIN) - A RETROSPECTIVE REVIEW

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BACKGROUND. Nurse led analgesia programs have been found to be safe and effective in reducing time to analgesia and improve the quality of pain assessment and treatment. A pre-implementation study demonstrated poor compliance with the national target of patients receiving analgesia within 30 minutes (26.6%: 95% CI: 19.1-35.1), prolonged times for first doses of analgesia (median time 60.5 (IQR 30-87) mins and poor documentation of pain scores (PS; 52.3%). Pain protocol initiating nurses (P-PIN) in the emergency department (ED) of a busy urban hospital was introduced in December 2016 to standardise the approach to nurse led analgesia, reduce time to analgesia, improve pain score documentation and improve efficiency of pain control. The aim of this study was to evaluate safety and effectiveness of this protocol.

METHODS. A retrospective explicit review of the medical records of all patients receiving P-PIN analgesia was conducted at one-month intervals. Data extracted included patient demographics, compliance with the national standard of analgesia within 30minutes, time to first dose of analgesia, pain score documentation and protocol violations.

RESULTS. There were 48 patients that received nurse led analgesia during the first 3 months of the protocol intervention. Compliance with the national target of patients receiving analgesia within 30 minutes was 91%. The median time to first dose of analgesia was 16 (IQR 10.5-26) mins. There were no adverse errors reported and documentation of PS was 100%. There was one protocol violation for nurse led analgesia being given to a patient with chest pain, which is an exclusion criterion.

DISCUSSION. Pain protocols have been shown to improve the incidence, accuracy and documentation of pain assessment and treatment efficiency. Translation of these findings into clinical nursing practice helps to reduce the gap in translational of research to clinical practice. A thorough implementation strategy and education program with close evaluation focusing on patient safety has been used to optimise outcomes for patients presenting with pain to the ED.

159.EFFICACY OF ENVIRONMENTAL CUES TO REDUCE LENGTH OF POST-TRAUMATIC AMNESIA AFTER BRAIN INJURY: A PILOT RANDOMISED CONTROLLED TRIAL

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Post-traumatic amnesia (PTA) is common after traumatic brain injury (TBI) and has been linked to eventual outcome post-TBI. Reorientation programs that aim to improve orientation, encourage appropriate interactions and decrease the duration of PTA have been described but, to date, few studies have investigated their effectiveness.

AIM: To test the efficacy of an environmental reorientation program on time to emergence from PTA in adults with PTA after TBI in an acute care hospital setting.

METHODS: Randomized controlled trial of n=40 adults who were recruited on admission to The Alfred; allocation was concealed. The control group received usual care (inconsistent verbal orientation) and the intervention group received a standardised environmental reorientation program led by an occupational therapist aimed at improving orientation to person (signage, photographs and familiar items), place (signage and cueing) and time (calendar clock and cueing to environment). Outcome of time to emergence from PTA was measured on the Westmead Post-Traumatic Amnesia Scale (WPTAS) administered daily.

RESULTS: Participants who received the environmental reorientation program spent fewer days in PTA (median 11 days (95% confidence interval (CI) 6.84 – 15.16)) when compared to the control group (median 23 days (95% CI 10.77 – 35.23)). These findings were supported by the Kaplan-Meier survival curve which showed that experimental participants emerged from amnesia earlier on average after the intervention. There were no adverse responses to the environmental orientation program.

CONCLUSION: The occupational therapy environmental re-orientation program received good acceptance from patients, families and staff, and showed early efficacy. While findings are limited by the small sample size, given the implications on length of stay, providing standardised reorientation during acute hospitalisation may prove cost-effective. Reorientation within a busy acute hospital setting remains difficult, modification of the physical environment along with family education warrants further testing in a larger, multi-site trial.

160. ANATOMIC SYMMETRY OF ANTEROLATERAL THIGH FLAP PERFORATORS – A COMPUTED TOMOGRAPHY ANGIOGRAPHIC STUDY

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The anterolateral thigh (ALT) free flap has become a workhorse flap in reconstructive surgery due to low donor site morbidity and versatility in design. The vascular supply to the flap can be variable, however, and there is often discussion regarding exploration of the contralateral thigh if the initial limb does not yield sufficient perforators.

AIM: To assess the symmetry of lower limb vascular anatomy between both sides of the body using computed tomographic angiography (CTA), and relate the findings to the operative plan when planning for anterolateral thigh free flap harvest.

METHODS: A retrospective qualitative analysis of twenty bilateral lower limb CTAs was performed at a major trauma centre in Melbourne, Victoria. Each limb was assessed for number, site, course (septocutaneous vs musculocutaneous), calibre and source of perforators. Only perforators >0.5mm in size at origin were considered clinically significant and recorded. Each limb was then compared to the contralateral limb and assessed for symmetry based on the above variables.

RESULTS: Each limb had at least 1 perforator vessel, and the mean number of vessels on each limb was 3.58. 55% of patients had the same number of perforators in both legs, and 90% of patients had either the same number or varied by 1 perforator. When divided into segments (proximal, middle or distal thirds), 85% had the same number of perforators on the same segment in both thighs. Only 35% of patients had perforators that showed similar courses in both legs.

CONCLUSION: Initial results suggest that the number of ALT perforator vessels show a significant degree of symmetry when comparing both sides of the body. This may contraindicate surgical exploration of the contralateral limb when perforators cannot be found initially during ALT free flap harvest. The course of perforator vessels do not appear to share significant symmetry.

161. INTRODUCTION OF PRE-HOSPITAL NOTIFICATION OF INJURED PATIENTS PRESENTING TO TRAUMA CENTRES IN INDIA

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Prehospital notification is the communication by emergency service personnel to a receiving hospital of the impending arrival of a patient requiring emergency care. It is an integral component of an advanced prehospital care system associated with reduced mortality in trauma centres. There is currently no standard system for pre-hospital notification in India.

AIM: To develop and introduce a system for prehospital notification in four major trauma hospitals and three major ambulance service providers in Delhi, Mumbai and Ahmedabad.

METHODS: An environmental scan of the emergency departments, pre-hospital services, and associated systems and processes was undertaken to determine the best system to develop and introduce in India. The use of a dedicated phone in the ED was discounted due to current infrastructure and overcrowding. An android app (Suchana) was developed to facilitate the notification of major trauma cases from the ambulance to emergency department. Simple patient data is entered in the app by an emergency medical technician, generating a trauma triage flag in a corresponding app on duty mobile phone held by a designated person in the ED. ED's are notified of "red" major trauma patients only. Once notification is received, the receiving app can then send out a Trauma Team Activation to notify all other trauma team members for early preparation and readiness to receive the patient.

RESULTS AND CONCLUSION: Pre-hospital notification using the Suchana app commenced in Mumbai and Ahmedabad in May 2017. Notification numbers are low but increasing due to the rate at which patients are brought by ambulance to hospital. In Mumbai, there have been 40 pre-hospital notifications, resulting in 25 Trauma Team Activations.

162. TIMELY LIFE-SAVING INTERVENTIONS FOR TRAUMATIC HAEMORRHAGIC SHOCK

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Early control of haemorrhage and optimisation of physiology are guiding principles of resuscitation after injury.

AIM: To assess the association between timely multiple life-saving interventions (LSI) and outcomes.

METHODS: A retrospective cohort study was undertaken of injured patients with haemorrhagic shock who presented to hospital. LSIs studied included chest decompression, control of external haemorrhage, pelvic binder application, transfusion of red cells and coagulation products and surgical control of bleeding through angio-embolization or operative intervention. The primary exposure variable was timely initiation of $\geq 50\%$ of the indicated interventions. The association with the primary outcome variable of death at hospital discharge was adjusted for potential confounders using multivariable logistic regression analysis. The association between total pre-hospital times and pre-hospital care times (time from ambulance at scene to trauma centre), in-hospital mortality and timely initiation of $\geq 50\%$ of the indicated interventions were assessed.

RESULTS: Of the 168 patients, 54 (32.1%) patients had $\geq 50\%$ of indicated LSI completed within the specified time-period. Timely delivery of LSI was independently associated with improved survival to hospital discharge (adjusted OR for in-hospital death 0.22; 95% CI: 0.02-0.83; $p=0.03$). This association was independent of patient age, sex, injury severity, initial serum lactate levels, coagulopathy and number of interventions performed. Among patients with prehospital time of ≥ 2 hours, 2 (3.6%) received timely LSIs. Pre-hospital care times of ≥ 2 hours was associated with delayed LSIs and with in-hospital death (unadjusted OR 4.3; 95% CI: 1.4-13.0).

CONCLUSION: Timely completion of LSI when indicated was completed in a small proportion of patients. Timely care that included a high proportion of life-saving interventions was associated with improved outcomes among patients presenting with haemorrhagic shock after injury. Provision of LSIs in the pre-hospital phase of trauma care has the potential to improve outcomes.

163. INCREASING WORKPLACE VIOLENCE IN AN AUSTRALIAN ADULT EMERGENCY DEPARTMENT

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Workplace violence (WPV) is an increasingly concerning occupational hazard within the emergency department (ED).

AIM: To identify the incidence and characteristics of WPV in an adult ED.

METHODS: A retrospective cohort study was conducted to identify the incidence of WPV in an adult metropolitan ED. Data were obtained from the activity records of security staff from January 1st 2013 to December 31st 2015 for all incidents of patient-perpetrated violence. Data on patients identified from these records as requiring security staff intervention for violence in the ED were extracted through an explicit chart review. Data on patient illicit drug or alcohol exposure and acute psychiatric diagnoses were also extracted.

RESULTS: There were 1853 episodes of patient-perpetrated WPV identified over the study period. The incidence of WPV over the 3 years was 103 per 10,000 of the presenting population (95% CI: 98-108), with a significant increase from 2013 to 2015 (IRR 1.07; 95% CI: 1.04-1.10; $p<0.01$). Drug and/or alcohol exposure was found in 1145 (62%) patients. Of the drug-and/or alcohol-affected violent population, 840 (73.4%) did not have a concurrent psychiatric diagnosis.

CONCLUSION: The rate of WPV was increasing within this Australian ED during the study period. The majority of violent patients were affected by drugs and/or alcohol in the absence of a psychiatric diagnosis. Interventions to reduce access to and misuse of alcohol and illicit drugs could have a substantial impact on the concerning increase of violence in the ED.

164. MANAGEMENT OF PATIENTS WHEN BLOOD IS NOT AN OPTION (BNAO): A RETROSPECTIVE REVIEW OF JEHOVAH'S WITNESS TRAUMA PATIENTS

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Management of major haemorrhage as a result of trauma is particularly challenging when blood is not an option (BNAO). Evidence on therapeutic strategies in this situation is limited.

AIM: The aim of this study was to evaluate the management and outcomes of patients who identified themselves as Jehovah's Witnesses (who usually refuse blood products) with traumatic haemorrhage at an Australian major trauma centre

METHODS: A retrospective review of patients from The Alfred Trauma Registry was conducted, including patients who were Jehovah's Witnesses presenting between January 2010 and January 2017. We examined demographics, injury characteristics, clinical progress, therapeutic interventions and outcomes at hospital discharge.

RESULTS: There were 34 patients meeting inclusion criteria, with 50% suffering major trauma. Anaemia was a clinical problem for 13 (38.2%) patients, with haemoglobin levels reaching a nadir of 69.7 g/L (95% CI: 56.7 – 82.7) on average 5.1 days (95% CI: 2.5 – 7.7) post-admission. Various strategies were employed to reduce blood loss including 6 (46.2%) patients receiving tranexamic acid, 9 (29.2%) patients receiving oral or intravenous iron and 5 (38.5%) receiving erythropoietin. Three patients receive packed red blood cells and two patients received synthetic haemoglobin-based oxygen carriers (HBOC).

CONCLUSION: Numerous therapeutic strategies were employed inconsistently in this unique population of patients. Augmenting circulatory volume with an oxygen carrier acceptable to JW patients presents a novel approach to be considered in adjunct to other strategies. A national resource centre to assist clinicians faced with this scenario is warranted.

165. IMPLEMENTATION OF A CREDENTIALING PROGRAM FOR EARLY INVOLVEMENT OF EMERGENCY MEDICINE PHARMACISTS IN SEPSIS ALERTS

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INTRODUCTION: Early initiation of antimicrobial has been associated with improved outcomes among patients with severe sepsis or septic shock presenting to the Emergency Department (ED). International guidelines recommend the following interventions within one hour of a sepsis diagnosis: i) administration of broad spectrum antibiotics; ii) serum lactate measurement; iii) blood cultures prior to antibiotic administration; iv) crystalloid fluid administration. A sepsis alert system was developed and implemented in the ED of a major tertiary referral hospital in February 2016 to improve the uptake of the sepsis bundle

AIM: To implement a credentialing program enabling early involvement of Emergency Medicine (EM) pharmacists in sepsis alerts.

METHODS: In January 2016 a sepsis alert credentialing program was developed by senior pharmacists in consultation with relevant senior medical staff. EM pharmacists who met key prerequisites, including completion of other local credentialing programs such as partnered pharmacist charting, stroke callouts and aminoglycoside/vancomycin TDM, were eligible to complete the sepsis credentialing using the Moodle online learning platform. Pharmacists were assessed on their understanding of the sepsis bundle of care and ability to make decisions on empiric antimicrobials. Credentialed pharmacists attending sepsis alerts in the ED facilitate rapid decision-making and charting of single doses of empiric antimicrobials, and assist in administration. Other components of the sepsis bundle are also expedited.

RESULTS: By June 2017, 29 pharmacists completed the sepsis alert credentialing program. All pharmacists regularly rostered in the ED are credentialed to respond to sepsis alerts. Between February 2016 and June 2017, EM Pharmacists attended 601 out of 713 sepsis alerts, and involved in 99 patients out of 158 that were admitted to the ICU with suspected sepsis.

CONCLUSION: Implementation of a sepsis alert credentialing program enabled early EM pharmacist involvement in sepsis presentations to facilitate rapid empiric antimicrobial administration and other components of the sepsis bundle.

166. MILD TRAUMATIC BRAIN INJURY DURING ADOLESCENCE PROTECTS AGAINST SUBSEQUENT SKULL FRACTURE, BUT DOES NOT WORSEN NEUROBEHAVIOURAL OUTCOMES AFTER A SECOND BRAIN INJURY AT ADULTHOOD

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While mild traumatic brain injuries (mTBI) are common in adolescence, the long-term consequences of such injuries are unclear. Here, we used a closed-skull, weight-drop model of mTBI in mice at adolescence (postnatal day 35; P35) and/or at adulthood (P70), to test the hypothesis that an adolescent mTBI would predispose towards poorer outcomes after a subsequent injury at adulthood. Mice were randomised into 6 groups: sham surgery at P35 only; mTBI at P35 only; mTBI at P35 + sham at P70; sham at P35 + mTBI at P70; mTBI at P35+P70; or sham at P35+P70 (n=15-19/group). Behavioural tests investigating cognitive, psychosocial, and sensorimotor function, were conducted over one week after the P35 or P70 surgery, then brain tissue was collected for immunohistochemical analysis. Acute measures of righting reflex and length of apnoea confirmed a mTBI at P35 and/or P70. None of the injury groups showed neurobehavioural deficits compared to sham controls. Mice injured at P70 developed a robust increase in GFAP+ astrocytes and Iba1+ microglial reactivity in the ipsilateral cortex and hippocampus. Contrary to our hypothesis, a single mTBI to the adolescence mouse brain did not exacerbate the effect of a subsequent mTBI in adulthood. This may be attributed to the sub-concussive nature of the insult - below the threshold to induce neurobehavioural deficits - or the extended time period between repeated injuries. Surprisingly, 63% of mice injured at P70 only exhibited a skull fracture at impact, compared to 13% of P35+P70 injured mice. Micro-computed tomography found that mTBI at P35 increased parietal skull bone volume and rigidity compared to sham, indicative of bone remodelling that may account for differences in fracture likelihood and associated neuroinflammatory response. Together, these findings have implications for youth exposed to mTBI, and support future investigation into the consequences of mTBI on bone structure and integrity.

167. UTILITY OF TROPONIN AFTER SYNCOPE

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INTRODUCTION: There is currently conflicting evidence of the role of serum troponin testing in patients presenting to the Emergency Department (ED) after syncope. This study aims to assess the yield and utility of plasmin troponin I testing during assessment of patients presenting to the ED after syncope.

METHODS: A retrospective cohort study was conducted at a single adult tertiary referral hospital. All adult patients presenting after syncope during a three-year period from 1 January 2014 to 31 December 2016 were included. Patients were excluded if the syncopal episode was not a complete loss of consciousness (LOC), prolonged LOC (>5 min), severe trauma, seizure like activity, hypoglycaemia, persistent change from baseline mental status, syncope in the setting of alcohol or drug use, syncope as an inpatient or delayed presentation to ED (>24hrs). Troponin I, baseline demographics, vital signs, relevant clinical variables, length of stay and departure status were extracted using explicit chart review.

RESULTS: 3334 patients presented after syncope during the study period. Of these patients, 1706 (51.2%) had serum troponin I tested and recorded, and thus were eligible for inclusion in this study. In the final analysis, 881 patients were included reporting a mean age of 65 years (range: 16-98) and 487 (55.3%) were male.

Of the 881 patients presenting to ED after syncope with troponin measured, serum troponin I was positive in 108 (11.7%) patients. A history of structural heart disease (adjusted OR 2.75; 95% CI: 1.75-4.31; p<0.01) was independently associated with an elevated troponin result.

Of those with a raised troponin, 19 (17.6%) were discharged with a cardiac diagnosis, 16 (14.8%) with 'syncope', 14 (13%) with vasovagal syncope and 12 (11%) were discharged with 'unconscious collapse'.

CONCLUSION: Troponin I was commonly tested among patients presenting with syncope. The test was likely to be positive among patients with a history of structural heart disease. When positive, syncope was attributed to a cardiac cause after investigations. Among patients presenting to the ED after syncope, we recommend clinicians consider troponin testing, particularly among patients with history of structural heart disease.

168. TREATMENT WITH AN INTERLEUKIN-1 RECEPTOR ANTAGONIST MITIGATES NEUROINFLAMMATION AND BRAIN DAMAGE AFTER MULTITRAUMA

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INTRODUCTION: Multitrauma involves injury to at least two body regions, and is prevalent worldwide. Traumatic brain injury (TBI) and bone fracture are two of the most common components of multitrauma. We recently demonstrated that this injury combination in mice results in worse TBI-related outcomes than an isolated TBI, and that this occurred in the presence of an exacerbated neuroinflammatory response involving significantly elevated levels of interleukin-1 β (IL-1 β). Accordingly, here we aimed to determine if treatment with an IL-1 receptor antagonist (IL-1ra) would reduce neuroinflammation and improve outcomes in mice given multitrauma.

METHODS: Yang adult male C57Bl/6 mice were randomly allocated to sham (SHAM) or multitrauma (weight-drop TBI and tibial fracture; MULTI) groups. Mice received subcutaneous injection of either 100 mg/kg of the IL-1ra or vehicle (VEH) at 1-, 6-, 24-hours and then once daily for 1 week post-injury. 7-8 mice/group were euthanized at 48 hours post-injury. 12-16 mice/group underwent behavioral testing at 12 weeks post-injury and MRI at 14 weeks post-injury before being euthanized at 16 weeks post-injury.

RESULTS: At 48 hours post-injury, markers for activated microglia and astrocytes, as well as neutrophils and edema, were decreased in multitrauma mice treated with IL-1ra compared to multitrauma mice treated with vehicle. At 14 weeks post-injury, MRI analysis demonstrated that IL-1ra treatment after multitrauma reduced volumetric loss in the injured cortex and mitigated track-weighted MRI markers for axonal injury.

CONCLUSION: IL-1ra treatment reduced neuroinflammation, edema, and brain damage in mice given multitrauma. As IL-1ra (Anakinra) is approved for human use, it may represent a promising therapy in multitrauma cases involving TBI and fracture.

169. TRANSFUSION REQUIREMENTS IN EXTRA-CAPSULAR FEMUR FRACTURES: A RETROSPECTIVE REVIEW

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Blood loss estimation after trauma and early identification of potential sources of bleeding are important. Femoral shaft fracture (FSF) is a frequent injury with a reported annual incidence ranging from 9.5-18.9 per 100,000. Anecdotally blood loss in femoral fractures has been estimated to be up to 2200mls.

AIM: To assess rates and amounts of blood transfusion in the setting of isolated extra-capsular femur fractures and to determine variables associated with the need for transfusion within the first 48 hours of admission.

METHODS: A retrospective cohort study records of all patients with the diagnosis of an isolated extra capsular femur fracture admitted to The Alfred Hospital between January 2010 and July 2016 were reviewed. Variables associated with blood transfusion within 48 hours were assessed included age, sex, open or closed injury, mechanism of injury, initial haemoglobin, initial international normalised ratio (INR), initial platelet count, use of antiplatelet or anticoagulation medications, initial systolic blood pressure (SBP) and initial heart rate (HR), type of operation (Intramedullary nail vs plate osteosynthesis) and time to operation. The primary outcome variable was the transfusion of blood products within 48 hours of arrival to hospital.

RESULTS: Multivariable logistic regression analysis of 300 patients, adjusting for potential confounders, admission Hb (AOR 0.93; 95%CI 0.91 – 0.95, p<0.01) and FSF (AOR 2.19; 95%CI 1.06 – 4.54, p=0.03) were found to be statistically significant risk factors for blood transfusion within the first 48 hours of hospital admission. Overall thirty-five percent of patients received a blood transfusion during their admission with only 20.3% of patients receiving blood within 48 hours.

CONCLUSION: Long bone fractures are often said to account for significant blood loss requiring blood transfusion, however there remains little literature to support this position. Bleeding from femur fractures may not be a significant source to consider in the initial periods following injury.

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