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Abstracts for the RACP Future Directions in Health Congress 2014

18–21 May 2014

Auckland Convention Centre

Auckland, New Zealand

## INTERNAL MEDICINE JOURNAL

# Abstracts for the RACP Future Directions in Health Congress 2014

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# Plenary Speaker Abstracts

SUNDAY 18 MAY 2014

## SCIENCE AND PUBLIC POLICY – RECONCILING TWO CULTURES

Peter Gluckman

Chief Science Advisor to the Prime Minister of New Zealand and  
Liggins Institute, University of Auckland, New Zealand

Science and technology are central to addressing many of the major issues confronting governments – from issues such as climate change, food, energy and water security to those emerging from major demographic and sociological changes. Yet whereas science is often perceived of as an endeavour creating certainty and some scientists have a tendency to minimize the limits of knowledge, what is sometimes called ‘post-modern science’ is dealing with increasingly complex areas where policy decisions are urgent, facts are uncertain, high public interest and there are important values components. Some scientists and professionals are confused by the apparent lack of trust of, and consideration, of the evidence within the policy process, but policy is rarely determined by evidence alone. The confusion of scientific roles between advocacy and knowledge brokerage can create further tension and engender mistrust. Conversely science can be used as a proxy for debates that are really about values – for example in the climate change debate. There is an emerging understanding that science is a critical and potentially privileged input into the policy process but that requires an understanding of presenting objective knowledge in an as ‘values-free’ way as possible and acknowledging the inferential gap between what is known and what is not. The role of the knowledge broker is to assist both the public and policy maker to better understandings of what we know and what we do not know. It is for the policy maker and politician to place values ranging from public opinion to fiscal and diplomatic considerations upon that knowledge – that is their role within a participatory democracy. Public policy will better served by greater scientific literacy on one hand and a greater understanding of the dangers of scientific hubris on the other. Only then will science be better employed to address the challenges that our societies face.

MONDAY 19 MAY 2014

## Priscilla-Kincaid Smith Oration

## EVIDENCE BASED INTRODUCTION OF HEALTH TECHNOLOGY AND DISINVESTMENT – TWO SIDES OF THE SAME COIN

Richard King AM

Over the past decade there has been an increase in health technology spending that has been estimated to be 25% of the increase in health costs, which cannot continued to be funded. In addition there has been an increased focus on patient safety. This talk will discuss our role, as a profession, in the safe, effective and affordable introduction of health technology and clinical procedures, and provide a framework as to how this might be done.

There is a groundswell of activity at international, national and institutional levels to do what is called

Disinvestment. There is a need to identify those procedures and technologies for which there is little or no evidence of efficacy or safety. There also a need to consider the concepts of Return on Investment (ROI) and Substitutional Reinvestment, as ways of not only funding new technology, but choosing something that is not only more effective, but costs less. The ability to do this at an institutional level is one of the challenges. The value of “Low Value” lists and their place will be explored. Finally, a series of examples of success and failure and the reasons for both will be discussed, as will the potential role of the College going into the future.

TUESDAY 20 MAY 2014

## Howard Williams Oration

## THE LIFE-LONG LEGACIES OF PERINATAL MANAGEMENT

Jane Harding

Liggins Institute, University of Auckland, Auckland, New Zealand

Liggins and Liley, both working in Auckland in the 1960s, first developed new ways to treat babies before birth and markedly improved their chances of survival. We now know that fetal adaptations to the intrauterine environment have life-long implications for future health, but the longer-term health effects of specific therapeutic interventions have been more difficult to determine. New evidence about the long-term consequences of antenatal corticosteroid treatment and intrauterine transfusion for Rhesus haemolytic disease has important implications for how we treat babies today, and for their life-long health. Our research aims to incorporate these understandings into developing the best treatments for vulnerable babies both before and after birth.

## FERGUSON-GLASS ORATION

Heron, Richard JL – 823

ABSTRACT NOT AVAILABLE AT THIS TIME

WEDNESDAY 21 MAY 2014

## Redfern Oration

## DECOLONISING MEDICAL EDUCATION AND PRACTICE TO ADVANCE INDIGENOUS HEALTH

Rhys Jones

University of Auckland

Health professionals are faced with an uncomfortable truth: our work predominantly serves to perpetuate social and ethnic inequalities in health. This tends to happen despite our best intentions and efforts, and is the result of a complex interplay of factors at different levels. In settler societies such as Australia and New Zealand, health and education systems are founded on colonial values, ideologies and practices; as a result health care serves to reinforce European privilege and Indigenous disadvantage.

In response to these disparities, elements of cultural competence and Indigenous health have been incorporated into educational curricula and health care environments. However these approaches will be ineffective unless professional and organisational cultures are also addressed. There is a need to fundamentally transform the way we educate and train doctors, the way we practice, and the systems in which we provide health care. Suggested approaches to ‘decolonise’ medical education and practice will be discussed with a view to improving Indigenous health and advancing equity.

## THE DEATH OF DIAGNOSIS?

Rod Jackson

University of Auckland

Diagnosis is generally practiced as a binary process; patients either have a condition/disease or not. However most clinical conditions are neither completely present nor completely absent so binary diagnoses seldom reflect biology. Aside from death, certain infections and some injuries, almost all diseases, including most cancers are ‘measured’ on a continuous scale. Moreover the diagnoses of diseases like diabetes, atherosclerosis, mental disorders and most cancers are not only based on somewhat arbitrary thresholds levels of a measurement but there are often significant errors in the measurements.

These fundamental flaws in diagnostic practice are further compounded by the many other factors influencing a person’s risk of disease. For example, the risk of symptomatic cardiovascular (CVD) events in people diagnosed with binary conditions like diabetes, hypertension, or hyperlipidaemia, can vary more than ten or twenty-fold depending on age, gender and the presence of other CVD risk factors.

The alternative approach to diagnosis is individual risk prediction. Firstly, continuous risk better reflects the biology of most diseases and secondly, it

reduces the need for choosing arbitrary thresholds because the patient, advised by their health practitioners, would ideally make the decision on whether the risk-benefit-harm balance justifies the type and intensity of treatment proposed. For example at what level of CVD risk would you agree to take statins every day for the rest of your life, or what level of symptomatic prostate cancer risk justifies a prostatectomy? In fact it is impossible for a patient and a practitioner to have an informed discussion about the implications of a diagnosis without information on the individual's pre-treatment risk in addition to the benefits and harms of interventions.

There are however numerous challenges to using a risk prediction alternative to binary diagnoses. The two major ones are generating the necessary data for developing accurate patient-specific risk prediction and then com-

municating this information to patients. Addressing the data problem is becoming easier in the era of big data with the increasing ability to individually link health data on millions of people. The second problem of communicating risk to patients will be a greater challenge because most health professionals don't understand enough about risk themselves, let alone have the confidence or competence to communicate this with patients.

**References:**

1. Vickers A, Basch E, Kattan M. Against Diagnosis. *Ann Intern Med.* 2008;149:200–3.
2. Moynihan R. A new deal on disease definition. *BMJ.* 2011;342:d2548 doi: 10.1136/bmj.d2548.

# Physicians as Advocates Oral Abstracts

## ADDICTION AND ALCOHOL POLICY

### OVERVIEW OF WORK DONE BY ALCOHOL WORKING PARTY

Paul Haber – \*\*

ABSTRACT NOT AVAILABLE AT THIS TIME

### 'BIG PICTURE' OVERVIEW OF RECENT NZ LIQUOR LAW REFORMS

Robinson, Geoffrey – 912

ABSTRACT NOT AVAILABLE AT THIS TIME

### PERSONAL REFLECTIONS OF A PHYSICIAN-ADVOCATE ON NZ LIQUOR LAWS

McBride, Samuel – 1522

ABSTRACT NOT AVAILABLE AT THIS TIME

### ANOTHER KIND OF ADDICTION – GAMBLING ADDICTION AND ITS COMORBIDITIES

Philip Townshend

Victorian Responsible Gambling Foundation

Historically, models of addiction concentrated on the effects of substances on substance users. However, the DSM5 changed this with the inclusion of a new disorder- Disordered Gambling in the manual's new substance related and addictions section. Including an addiction section, (previously substance use disorders), and defining gambling as a behavioural addiction, (previously an impulse control disorder), were new for the DSM. This reflects the similarity between substance use and gambling disorders and responds to an underlying neuropsychological explanation of addiction embodied in the American Society for Addiction Medicine definition of addiction as '... a primary, chronic disease of brain reward, motivation, memory and related circuitry'.

This paper defines gambling disorder and explores the overlap between gambling and substance use disorders through an examination of their common co-morbidities. This leads to a discussion of the neuropsychological explanations of gambling and addiction and presents a counter-anthropocentric explanation of addiction based on an ecological model.

### FASD – A NZ PERSPECTIVE

Zoe McLaren

FASD – a NZ Perspective. Fetal Alcohol Syndrome (FAS) has been discussed in New Zealand since its initial identification in the 1970's, but the first published case of a NZ born child with FAS was not until 1995. At that time, the Paediatric Surveillance Unit Survey identified 63 cases of FAS in paediatric care. In the intervening almost twenty years, no other study has been undertaken to ascertain the prevalence of FAS in the general population, let alone FASD. FASD is an umbrella term that incorporates the diagnoses of FAS, partial FAS, Alcohol Related Neurodevelopmental Disorder (ARND), and Alcohol Related Birth Defects (ARBD). The spectrum is diagnosed by strict criteria, and in NZ existing multidisciplinary FASD teams use the Canadian guidelines. Neuropsychology assessment is necessary to make a diagnosis of ARND. However, multidisciplinary teams in NZ are still few and far between, and clinical experts working in the field believe that FASD is woefully under-diagnosed and under supported. This presentation will discuss current opportunities available that may lead to identifying the true prevalence of FASD in NZ, and the implications of that. It will also discuss relevant NZ policy developments, and what can be improved in terms of clinical policy frameworks.

### OVERVIEW OF RECENT RESEARCH ON FASD

Elliott, Elizabeth – 1525

ABSTRACT NOT AVAILABLE AT THIS TIME

## ADOLESCENT AND YOUNG ADULT MEDICINE

### TBC

Moloney, Susan – 1456

ABSTRACT NOT AVAILABLE AT THIS TIME

### THE SPECIALIST YOUTH HEALTH APPROACH

Bridget Farrant

Adolescence is a dynamic and exciting time of development with specific opportunities and challenges. Professionals working with young people need specific skills and approaches to help achieve the best outcomes for young people. Some young people and their families will need specialist youth health support. Some services working with young people and their families will need specialist youth health support for service development to assist clinicians in taking a developmentally appropriate approach when working with young people.

An adolescent and young adult medicine specialist is a generalist with specialist skills in working with young people. They have expertise in engaging with young people, helping identifying the needs and developing management plans within a youth development framework.

This presentation centres around a case of a young person with a chronic health condition who developed complicated and debilitating somatic symptoms. The challenge and opportunities of working with the young person, family and other professionals, and assisting in meeting this young person's developmental needs will be highlighted.

### TBC

Denny, Simon – 1528

ABSTRACT NOT AVAILABLE AT THIS TIME

### THE FIVE DOMAINS OF END OF LIFE CARE

### TBA

Vora, Rohan – 1529

ABSTRACT NOT AVAILABLE AT THIS TIME

### TBA

McAllum, Carol – 1531

ABSTRACT NOT AVAILABLE AT THIS TIME

### TBA

McCallum, Prudence Lawrie – 446

ABSTRACT NOT AVAILABLE AT THIS TIME

### TBA

Hunt, Murray – 1530

ABSTRACT NOT AVAILABLE AT THIS TIME

## PROTECTING CHILDREN AND CHILD POVERTY

### POVERTY AND THE IMPACT ON CHILD HEALTH

Jean Simpson

NZ Child & Youth Epidemiology Service, Department of Women's and Children's Health, University of Otago

Regardless of the measure used, disparities in child health status in New Zealand are of grave concern. In particular, Maori and Pacific children and those living in more deprived areas bear the greatest burden of mortality and morbidity. Examining factors that reflect these disparities, a number of health outcomes have been shown to be significantly higher for children from more deprived areas, for example, infant mortality and Sudden Unexpected Death in Infancy, and hospital admission for many infectious and respiratory diseases.

The previously published Children's Social Health Monitor was expanded in 2013 to become the Child Poverty Monitor. This Technical Report

incorporates some of the recommendations on monitoring child poverty proposed by the Children's Commissioner's Expert Advisory Group on solutions to child poverty. Based on the new Child Poverty Monitor Technical Report, this paper presents data on the three sets of indicators used in that report. One set is about child poverty based on measures of income, experience of material hardship, and poverty severity and persistence. The second set comprises economic indicators including GDP, income inequality, unemployment rates, and children reliant on benefit recipients, while the third set is health and wellbeing indicators that include mortality and hospital admissions for conditions with a social gradient, infant mortality, and the assault and maltreatment of children.

Data on their own cannot be expected to reduce child poverty. The data presented in the Child Poverty Monitor, however, highlight associations between macro-economics and child poverty and child health that require attention. In addition, these data also provide a necessary benchmark. This is where New Zealand was in 2012 and hopefully we can utilise these indicators to measure our improvements in child health and wellbeing in the future.

#### **EAG SOLUTIONS TO CHILD POVERTY REPORT AND PROGRESS THUS FAR**

*Wills, Russell – 816*

ABSTRACT NOT AVAILABLE AT THIS TIME

#### **WIDER ISSUES BEHIND CHILD POVERTY**

*Archie Kerr, FRACP, Paediatrician*

The current level and some of the effects of child poverty in New Zealand has been described.

The wider picture includes significant changes in our society and economy over the last three decades which have led to a growing gap between the very well off and those who have not gained any benefit from these changes. This

increasing inequality has a direct effect on health and a number of social issues that damage our well-being.

The answers are political and the policies of the main Parties will be reviewed. What role and responsibility should the RACP adopt?

#### **TBC: TRAINING AND EDUCATION FOR END OF LIFE CARE**

##### **ADVANCE CARE PLANNING FOR CHILDREN/YOUNG PEOPLE – CHANGING THE LANGUAGE**

*Ross Drake*

Advance care planning (ACP) has been a focus of paediatric palliative care for around 10 years.

It has been increasingly used in the adult sector and is not purely the domain of palliative care, being very applicable to both generalist and specialty practice.

This presentation will use a case study to emphasize ACP as a straightforward process where language is the key to successful communication.

##### **'NGĀ ROIMATA Ō RANGINUI' – CULTURAL AWARENESS AND SENSITIVITIES: MĀORI PERSPECTIVES ON DEATH AND DYING**

*Curtis Walker*

*Wellington Hospital, New Zealand*

Māori are the indigenous people of Aotearoa/New Zealand. We settled here between 900AD and 1300AD, and over the centuries prior to European contact developed common cultural perspectives and customary practices surrounding māuiui (illness), mate (death) and whakahemohemo (dying). Although modern day beliefs and practices are plural, diverse and flexible, there are commonalities which many Māori adhere to in times of loss and bereavement. Improved understanding of these beliefs and practices enables services and individual practitioners to significantly enhance their interactions with Māori patients and their whānau (families).

# Physicians as Educators Oral Abstracts

## EXCELLENCE IN MEDICAL EDUCATION

### PHYSICIAN TRAINING IN THE PROFESSIONAL QUALITIES DOMAINS: TIME FOR A STRUCTURED APPROACH?

*Felix Tan<sup>1</sup>, Danika Coates<sup>2</sup>, Kevin Forsyth<sup>1</sup>*

<sup>1</sup>Flinders University, Bedford Park, South Australia, Australia,

<sup>2</sup>Women's and Children's Hospital, Adelaide, South Australia, Australia

**Background:** Recently specialist physician training in Australia underwent substantial changes from a time and rotation-based process to an educational-based framework with a defined curriculum, supervision, and formative assessments. A professional qualities curriculum (PQC) encompassing components such as communication, teamwork and ethics was introduced into the training program<sup>1</sup>.

**Aims/Objectives:** Current physician training is largely hospital-based with a focus on attaining medical (specialty) expertise. It is our hypotheses that (i) trainees do not receive adequate training in PQC domains, and (ii) a more structured training program that includes learning modules would be positively considered by trainees.

**Methods:** Two focus groups comprising basic and advanced paediatric trainees, and senior paediatric consultants were interviewed using structured questions and discussion around themes. Qualitative data on their perception of the attributes of a competent paediatrician, and how their training programs prepare them for consultant practice, was analysed thematically.

**Results:** Both groups agree on the importance of possessing clinical specialty expertise. Whilst there was a high degree of congruence between the 2 groups as to the value of many PQC domains such as communication and teamwork, there was also dissonance found within domains including teaching, research, and health systems knowledge. Both groups perceive their training in PQC domains to be largely "on the job". Modelling their practice on respected, expert clinician mentors was the primary method of learning. Neither group perceived PQC training to be adequate. Both groups considered that a more structured training program including the availability of learning modules in the PQC domains would enable improved preparation for consultant specialist practice.

**Findings/Conclusions:** Trainees and consultants showed a difference in their perception of competent practice in the PQC domains. A greater focus on these domains along with a more structured teaching and learning program including learning modules is recommended.

#### Reference

1. Professional Qualities Curriculum, RACP. <https://www.racp.edu.au/page/curricula/professional-qualities>

### POSTGRADUATE PAEDIATRIC TRAINING IN DILI, TIMOR-LESTE: challenges and lessons learned

*David Brewster<sup>1</sup>, Ingrid Bucens<sup>2</sup>*

<sup>1</sup>RACS ATLASS Project, Timor-Leste, <sup>2</sup>National Hospital, Dili, Timor-Leste

**Background:** Timor gained independence from Indonesia in 1999, when it had only 12 local doctors and no specialists. Since 2004, Cuba has trained 750 doctors both in Cuba and in Dili. The Ministry of Health has expressed concerns about the quality of these doctors, in terms of both clinical skills and medical knowledge. The Royal Australian College of Surgeons has had expatriate surgeons and anaesthetists at the National Hospital since 2001, and established a postgraduate training programme in surgery, obstetrics, anaesthesia and paediatrics in 2012. Four paediatric trainees commenced in Feb 2013 and another 6 in Aug 2013, who had already spent 2 years at a Community Health Centre since graduation. The programme has been evaluated prospectively for 12 months.

**Results:** A MCQ examination on entry based upon Fiji final year MBBS confirmed the low level of medical knowledge, as all failed (mean 41%). The training involved morning handovers with discussion, daily ward rounds, twice-weekly supervised outpatients, twice-monthly mortality meetings, twice-weekly tutorials, supervised emergency department consultations and on call and English classes (3 hours/week) since none had studied in English until now.

Attendance, motivation and feedback were evaluated as excellent, but punctuality was poor. Four trainees were assessed for the Diploma at PNG and Fiji standards by an external examiner. One gained distinction, one credit, one pass and one failed. The examiner confirmed the great wealth of fascinating clinical problems in Timor. The main challenges of training were to develop good diagnostic clinical skills and change from the practice of polypharmacy to more evidence-based treatments.

**Conclusions:** It is possible to transform paediatric practice within a year in a developing country, but it demands intensive clinical supervision, bedside teaching and problem-based tutorials with a minimum of lectures and courses.



# Physicians as Medical Experts – AMD Oral Abstracts

## BEST OF GRAND ROUNDS

### FINDING THE ZEBRA WHILST HIGH ON COCAINE: A HYPERTENSIVE EMERGENCY

**Trainee name:** Alexander Dashwood

**Supervisor name:** Anne Rudden

*Hospital Goldcoast University Hospital*

**Description of Case:** Hypertensive crises are categorised as either urgencies or, with concomitant evidence of end organ damage, an emergency. The latter requires urgent treatment due to its life threatening nature. Here I discuss a 24-year-old gentleman who presented in a hypertensive emergency and whose management in the initial 72 hours was confounded by multiple possible pathologies; cocaine intoxicification, adrenal haemorrhage and the rare but seldom forgotten pheochromocytoma. The case highlights the importance of a thorough history and examination and how basic knowledge of physiology can guide your choice of anti-hypertensives to prevent possible deleterious adverse reactions. The case also shows the importance of the potential reactions to investigations and having the forward thinking to be prepared. Our patient developed acute onset pulmonary oedema following a contrast CT scan as a result of his diagnosis, a pheochromocytoma. Finally following the establishment of the likely diagnosis, we have captured real time bedside echo videos showing the effects of acute onset supra-systolic levels on the dynamics of the heart and how alterations of his pharmacological management improve his cardiac function.

**Issues of Interest in the Case:** Hypertensive emergency

Physiology of blood pressure and effects of certain medications

Bedside echo

### KHAT-ASSOCIATED HEPATITIS

**Trainee Name:** Malcolm Forbes

**Supervisor name:** Ashok Raj

*Hospital: Townsville Hospital / Princess Alexandra Hospital*

**Description of Case:** We describe a case of a 32 year old Somali man with no prior medical history who presented to the emergency department with a one week history of dark urine, pruritus and jaundice, on a background of malaise and reduced appetite. He had no stigmata of chronic liver disease. He had a history of chewing khat leaves. Liver function testing confirmed an acute hepatitis. Extensive laboratory investigation and imaging, including viral serological tests, ultrasonography and computed tomography were unremarkable. A test for antinuclear antibody was positive but tests for other autoimmune liver markers were negative. A percutaneous liver biopsy showed features suggestive of a drug-induced hepatitis. He was treated with supportive management and advised to completely abstain from further khat use. Over the next 12 months, the patient had two identical, but less severe, presentations with unexplained hepatitis. Given the temporal relationship between khat use and hepatitis, and the exclusion of alternative diagnoses, the patient was diagnosed with khat-associated hepatitis (KAH). This is the first case of KAH identified in Australia.

Khat (*Catha edulis*) is a plant native to areas in East Africa and the Arabian Peninsula. The plant has stimulant properties which make chewing the leaves of khat popular in Yemen and East African countries. In Australia, the practice has become more prevalent with increased immigration, ease of transportation and decreased cost. Since the first report in 2006, evidence has emerged to support an association between khat use and hepatotoxicity in humans. Three case series from the United Kingdom and Netherlands describe 19 patients who presented with severe liver injury attributed to khat use. While the exact mechanism of KAH is unknown, evidence from animal studies suggests a direct toxic effect from reactive khat metabolites or an immuno-allergic reaction to these. The natural history of KAH is uncertain.

**Issues of Interest in the Case**

- Novel cause of hepatitis
- Mechanisms of drug-induced hepatitis

- Discussion around whether this is strictly a drug-induced hepatitis or a drug induced autoimmune hepatitis, and discussion around the evidence behind this
- Pertinence of being aware of this entity given the growing refugee population from East Africa in Australia

## CHEST PAIN IN A YOUNG MOTHER

**Trainee name:** Dr Tom Ford

**Supervisor name:** Dr Greg Cranney

*Hospital: Prince of Wales Public Hospital (Presented on 17/7/2013)*

**Description of Case:** We present a 27-year-old mother (four weeks post partum) who attended for medical review with exertional chest pain and breathlessness. Clinical examination was unrevealing and initial ECG was normal; however the high-sensitivity troponin T (hsTnT) was modestly elevated at 26ng/L. Medical therapy for acute coronary syndrome was initiated before striking ECG changes developed with biphasic T waves in leads V1-4. The patient experienced further chest pain and underwent invasive coronary angiography where a large spontaneous coronary artery dissection flap in the proximal LAD was diagnosed. No percutaneous intervention or revascularisation was performed but the patient was carefully observed with intensive beta blockade and anticoagulation. She made a full recovery with no recurrence of disease and preserved left ventricular function. The enigmatic clinical entity of spontaneous coronary artery dissection is discussed together with new literature discussing the aetiology of SCAD.

**Issues of Interest in the Case**

1. Spontaneous coronary dissection (SCAD) is an increasingly recognised cause of ACS
2. Prognostic importance of the eponymous Wellen's sign (biphasic T waves in anterior precordial chest leads) suggesting significant left anterior descending (LAD) coronary ischaemia
3. There is topical research linking SCAD with fibromuscular dysplasia in non-coronary vasculature
4. Conservative medical treatment is preferable due to the difficulties of revascularisation in SCAD
5. Exemplifies the application of novel intracoronary imaging techniques and noninvasive CT coronary angiography in the diagnosis and follow up of patients with coronary disease.

## HAMPERED BY HISTORICAL PARADIGMS: ECHINOCANDINS AND THE TREATMENT OF CANDIDA ENDOCARDITIS

**Trainee name:** Bradley Gardiner

**Supervisor name:** Rhonda Stuart

*Hospital Monash Health*

**Description of Case**

A 56 year old man with a history of intravenous heroin use presented following one week of fevers and night sweats. Physical examination revealed a purpuric rash. *Candida parapsilosis* was isolated from multiple blood cultures. Intravenous anidulafungin 200mg was commenced. Echocardiography revealed bi-leaflet mitral valve endocarditis. Severe pulmonary hypertension (83mmHg) was also present and despite extensive investigation a secondary cause could not be identified. Due to the high perioperative risk from the newly diagnosed pulmonary hypertension, cardiac surgery was deferred. Testing revealed susceptibility fluconazole, anidulafungin, amphotericin B, and 5-flucytosine. In accordance with guideline recommendations the antifungal regimen was changed to liposomal amphotericin B 400mg daily (5mg/kg) plus 5-flucytosine 500mg orally qid.

Renal impairment developed, presumed to be secondary to amphotericin B. *C. parapsilosis* continued to be isolated from blood cultures for 19 days and repeat susceptibility testing did not reveal development of resistance. Because of concerns regarding possible toxicity and apparent lack of efficacy, the antifungal regime was changed on day 21 to anidulafungin 200mg iv daily plus fluconazole 800mg iv daily and a decision was made to proceed to surgery despite the risks. However the candidaemia had actually cleared one day prior to the antifungal change and in view of this and ongoing pulmonary hypertension, anidulafungin (200mg iv daily for 6 weeks), and ongoing oral fluconazole 800mg daily was continued. The antifungal regimen was well tolerated, renal function recovered and blood cultures remained negative. Despite a plan for oral fluconazole to continue, the



patient failed to attend for further review and on subsequent phone contact reported having stopped fluconazole but remaining well with no fevers. He could not be convinced to recommence fluconazole or attend the clinic and on day 149 was found dead from a heroin overdose. Post-mortem examination revealed no evidence of fungal endocarditis.

#### Issues of Interest in the Case

- *Candida* endocarditis is a rare but serious disease with a high mortality rate
- The prevailing treatment paradigm is that *Candida* endocarditis is an absolute surgical indication, ie. medical cure cannot be achieved
- The optimal antifungal choice has been thought to be amphotericin +/- 5-flucytosine however toxicity is common and efficacy historically poor
- We have demonstrated a case where medical cure was achieved with anidulafungin and fluconazole alone, without surgery
- A comprehensive but concise literature review refuting these two principles of therapy and detailing the promising new data on the echinocandins will be presented

#### TB OR NOT TB: THE CLINICAL AND DIAGNOSTIC CHALLENGE OF SUSPECTED PERICARDIAL TB

**Trainee name:** Dr Victoria Hall

**Supervisor name:** Dr Douglas Johnson

**Hospital:** ROYAL MELBOURNE HOSPITAL

**Description of Case:** A 61-year-old Vietnamese-born male presented to an inner-city tertiary hospital after urgent medi-vac retrieval from Vietnam.

On arrival, he was dyspnoeic at rest, visibly jaundiced with a raised jugular venous pressure, severely oedematous, and noted to be in a delirium. He was afebrile.

On history, he had been living in Australia but was visiting family in Vietnam, where his holiday had been cut short when he developed progressive exertional dyspnoea and peripheral oedema. He had been hospitalised in Vietnam for one month. His only significant past medical history was of atrial fibrillation and hypertension.

The working diagnosis of biventricular failure of unclear aetiology was made. Shortly after admission he rapidly deteriorated and received a MET call for hypotension. A large pericardial effusion with signs of cardiac tamponade was seen on bedside echocardiogram. After urgent pericardiocentesis, where over one litre of blood-stained fluid was drained, he was transferred to the Intensive Care Unit (ICU) for further investigation and inotropic support.

Despite thorough investigation, a unifying diagnosis was not found. There was a high suspicion for pericardial TB. All diagnostic measures, however, including analysis of pericardial fluid and biopsy, were negative. Autoimmune screen, parasitic and viral serology including HIV were also unremarkable. Formal TTE showed moderate global dysfunction, mild left ventricular hypertrophy. A CT of the chest, abdomen and pelvis only revealed re-accumulated pericardial and pleural effusions. There was no evidence of malignancy.

He was commenced on standard anti-TB therapy and high dose prednisolone, along with broad-spectrum anti-microbials; however there was no clinical improvement. He required maximal ICU support, with ongoing haemodynamic instability and multi-organ failure. A full heart study was performed, which was inconclusive for constrictive or restrictive cardiomyopathy. A pericardectomy was not recommended. After five weeks in the ICU, a decision was made to cease active management.

#### Issues of Interest in the Case

1. The clinical presentation of pericardial TB
2. Diagnostic challenge of pericardial TB – low sensitivity of acid-fast bacilli stain, cultures; requiring invasive diagnostic measures.
3. New diagnostic tools for pericardial TB – adenosine deaminase, pericardial interferon gamma (T.SPOT TB Assay)
4. The management of pericardial TB – only two studies pre-HIV era for adjunctive corticosteroids, currently being investigated in “A Trial of Adjunctive Prednisolone and Mycobacterium w Immunotherapy in Tuberculous Pericarditis (IMPD)” due for completion June 2014
5. The role for pericardectomy – appropriate surgical candidacy and ideal timing

#### A CHALLENGING CASE OF SYSTEMIC GRANULOMATOUS DISEASE

**Trainee name:** Elita Santosaputri

**Supervisor name:** Sureshkumar Nagiah

**Hospital:** Flinders Medical Centre, Adelaide, South Australia, Australia

**Description of Case:** A 51-year old woman was referred to hospital after an incidental finding of abnormal liver function, acute renal impairment, and elevated globulin level. Past history included resistant hypertension and chronic macrocytic anaemia. Physical examination revealed hepatomegaly, two small nodules on the neck and flank, and a large plaque exhibiting koebner phenomenon over her knee replacement scar. Initial imaging was suggestive of liver metastases, however subsequent malignancy screen was negative.

Biopsies of the liver, neck, and flank lesions demonstrated necrotizing granulomas suggestive of mycobacterium infection despite negative Ziehl-Neelsen stain. Thorough investigations for causes of systemic granulomatous disease were performed. Infective causes such as histoplasmosis, brucellosis, and mycobacterial infections were ruled out after negative results from extensive serologies, cultures, and tuberculosis PCR. Sarcoidosis was thought unlikely given atypical histology, low ACE concentration, and the absence of hilar lymphadenopathy. Autoimmune and vasculitic screen demonstrated low titre ANA and type 1 cryoglobulinaemia. Multiple myeloma screen was performed given anaemia, renal impairment, elevated globulin, and hypercalcaemia. Finding of paraproteinaemia led to a bone marrow biopsy with subsequent diagnosis of MGUS.

The liver and skin biopsies were reviewed for the second time. Touton giant cells and areas of necrobiosis with needle-shaped cholesterol clefts were seen. Given the clinical history, associated MGUS, and characteristic histology, the lesions are in keeping with the diagnosis of necrobiotic xanthogranuloma (NXG).

NXG is a rare, chronic, and progressive systemic granulomatous disorder. They usually manifest as characteristic cutaneous plaques and may involve a number of internal organs. To our knowledge this is the first described liver involvement of NXG. It has a strong association with paraproteinaemia, which may assist in diagnosis when skin features are not characteristic and histological features are subtle. Vigorous surveillance is recommended for potential development of haematological malignancy. This case illustrates the complexity of diagnosing systemic necrobiotic xanthogranuloma.

#### Issues of Interest in the Case

1. Differential diagnoses of systemic granulomatous disease
2. Necrobiotic xanthogranuloma as a rare systemic granulomatous disease with unusual presentation – overview of clinical features, hypotheses on aetiology, and treatment
3. This is the first reported case of NXG involving the liver
4. The importance of paraproteinaemia in NXG and the potential development of haematological malignancies

#### COMPLEX CUSHING'S – A THOROUGH REVIEW OF INVESTIGATING AND MANAGING CUSHINGS SYNDROME

**Trainee name:** Dr Sonia Saxena

**Supervisor name:** Dr Kirsten Murray

**Hospital:** John Hunter Hospital New Lambton Newcastle NSW Australia

#### Description of Case

**Presentation:** A 66-year old male reported a 6-month history of fullness of his face, central adiposity, skin tears and proximal myopathy. On reviewing old photographs it was evident the cushingoid features may have started almost 5 years prior.

**Investigations:** 24-hour Urine free cortisol measurements were elevated to 5 times the upper limit of normal. Cushing's syndrome was confirmed with a low-dose dexamethasone suppression test and elevated midnight salivary cortisol levels. The ACTH was elevated to 20pmol/L (normal range <11) suggesting ACTH-dependant Cushing's syndrome.

A high-dose dexamethasone suppression test (HDDST) showed >90% reduction in UFC suggesting a pituitary source for Cushing's syndrome however the pituitary-MRI did not identify an adenoma. Inferior petrosal

sinus sampling (IPSS) contrary to the HDDST, did not result in a gradient and thus suggested an ectopic source. No ectopic lesions were identified on CT scanning, Octreotide scan or 18-FDG PET scan.

A peripheral-CRH study showed a 4-fold rise in ACTH and 70% rise in peak cortisol response again suggestive of pituitary source. Due to this result a second IPSS was performed and did reveal a 3:1 central to peripheral ACTH gradient also suggesting a pituitary source.

**Management:** Given the number of tests supporting a probable pituitary source the patient underwent transphenoidal pituitary surgery. Histology showed staining positive for ACTH. The post-pituitarysurgery cortisol levels remained elevated and therefore a full hypophysectomy was performed resulting in a reduction in both UFC and 9am cortisol levels. Thyroid hormone and testosterone replacement was required.

**Progress and Outcome:** Unfortunately within 2months ACTH-dependant Cushing's syndrome was confirmed to have persisted despite pituitary surgery. At this time Gallium 68-Ocrotate PET scanning became available and revealed a solitary lesion in the lower abdomen. On surgical exploration an intraluminal, terminal ileum tumour was found. On histology, confirmed to be a low-grade ectopic carcinoid tumour with positive staining for ACTH with mesenteric metastasis.

**Issues of Interest in the Case:** Issue 1 What can explain such discordant tests results?

Most probably co-secretion of CRH and ACTH by the ectopic tumour -THE CARCINOID TUMOUR WAS SUBSEQUENTLY FOUND TO STAIN POSITIVE FOR CRH AS WELL! with review of the literature

Issue 2 Why did the pituitary histology show positive staining for ACTH if an Ectopic source was found?

In the context of a co-secreting tumour the smaller than expected number of pituitary cells staining positive for ACTH may be due to hyperplasia secondary to CRH stimulation from the ectopic tumour with review of the literature

Issue 3 This Case maybe complex and rare but it covers the investigations of Cushing's Syndrome thoroughly and systematically.

## CLINICAL UPDATES IN ADULT MEDICINE

### MAST CELL INSTABILITY – UNDERSTANDING URTICARIA, ANGIOEDEMA AND ANAPHYLAXIS

Andrew Baker

Auckland, New Zealand

When urticaria, angioedema or anaphylaxis occur, immediate precipitants will often be closely examined. While IgE-mediated immediate hypersensitivity is often diagnosed, in fact this only causes about 30% of urticaria in adults. As a result IgE-mediated allergy is overdiagnosed, and other causes are missed.

Traditionally, allergy has been considered a one dimensional system involving a small amount of allergen which will reliably precipitate a significant reaction in a sensitized individual. A second model, involves physical and pharmacological precipitants for mast cell degranulation independent of IgE, and is more dose dependent.

Emerging evidence has led to new insights into an interaction between IgE-mediated allergy and physical, chemical, biological, social, and emotional factors and the distinction between models has become more blurred.

Having an understanding of these interactions leads to practical tips in history taking and examination, helps determine the cause of mast cell instability, and to avoid the pitfalls in diagnosis and management.

### THE PHYSICIAN RESEARCHER- WHAT CAN BE DONE TO PREVENT THIS SPECIES BECOMING EXTINCT?

Martin Delatycki<sup>1,2,3</sup>

<sup>1</sup>Clinical Genetics, Austin Health, Heidelberg, Victoria, Australia,

<sup>2</sup>Bruce Lefroy Centre, Murdoch Childrens Research Institute,

<sup>3</sup>Australian Society for Medical Research

There are countless examples that highlight the role that physicians have played in key discoveries that have made a huge impact on human health. What is less well known is that the number of clinicians doing research has diminished considerably. This talk will outline key discoveries made by

Australasian researchers and explore reasons why the number of physician researcher is diminishing and some possible solutions.

### GENE PANELS AND EXOME SEQUENCING – A PRACTICAL GUIDE; PRESENTED BY HGSA

Hayes, Ian – 838

ABSTRACT NOT AVAILABLE AT THIS TIME

### COELIAC DISEASE – AN UPDATE

Alan Fraser

Department of Medicine, University of Auckland, Auckland, New Zealand

Coeliac disease (CD) is common with a prevalence of <1:100 based on population screening using serology but probably less than of the CD population have been identified. Liberal use of serology in general practice on higher risk groups will help identify more cases. Tissue transglutaminase is the preferred serology test. Deaminated anti-gliadin has a limited role. HLA DQ2 and DQ8 testing is useful mainly to exclude CD in specific situations but has no role in screening or as a primary diagnostic test. Duodenal biopsies should be taken either routine or having a low threshold for suspicion of CD. Gluten-free diet (GFD) is the only current treatment. There are advantages of a GFD beyond resolution of GI symptoms. Regular follow-up clinic visits and follow-up duodenal biopsy at 2 years is helpful for encouraging compliance to GFD and for identifying non-responders. Persisting symptoms after starting a GFD can be from a wide range of causes. There remain many controversial issues in CD management. For example, is there an increased risk of malignancy, are there any detrimental effects of a GFD, and what actually is a GFD.

### TBC; PRESENTED BY THSANZ

O'Carroll, Mark – 1287

ABSTRACT NOT AVAILABLE AT THIS TIME

### UPDATE ON GOUT TREATMENT: STRATEGIES FOR IMPROVED OUTCOMES

Nicola Dalbeth

Auckland, New Zealand

Gout is a chronic disease of monosodium urate (MSU) crystal deposition. This condition is the most common form of inflammatory arthritis, and prevalence is increasing internationally. Māori and Pacific people in Aotearoa New Zealand have the highest rates of gout worldwide. Gout causes severe pain, musculoskeletal disability and joint damage. The central strategy to effective gout management is long term urate-lowering therapy (ULT), with a serum urate concentration <0.36mmol/L. Although the therapeutic target for gout prevention is well established, gout management is frequently poor with low rates of ULT use and infrequent serum urate monitoring. There are a number of strategies for improved gout management, including more effective use of existing drugs (particularly allopurinol) and increased availability of new ULT drugs. In addition, approaches to address both practitioner and community perceptions of gout as self-inflicted due to lifestyle indiscretions and requiring only acute management are essential. This talk will describe a coordinated strategy to improve gout management by clinicians, researchers and health advocates in Aotearoa New Zealand.

### HEALTH CARE NEEDS OF CANCER SURVIVORS

Bogda Koczwara

Medical Oncology Group of Australia

Numbers of cancer survivors are steadily increasing, and amount to over 800,000 in Australia today, with majority being older than 65 yrs. Despite steadily improving long term cancer outcomes and excellent quality of life for some, cancer survivors overall have worse health status than cancer free controls and are more likely to suffer from chronic diseases other than cancer. These include cardiovascular and metabolic illness which impact on quality of life and survival. Survivors of childhood cancer are particularly at risk of long term effects of cancer and its treatment.

Effective care of cancer survivors requires input not only from oncology but many other health disciplines including general and specialised medicine,

psychology, rehabilitation and primary care. Novel models of care delivery incorporating self-management strategies are needed to provide tailored support to survivors that are achievable within the constraints of the existing health care resources. This presentation will review the most common health concerns of cancer survivors in Australia and potential approaches to addressing them from the perspective of chronic disease management and will examine the role of a general physician in the care of cancer survivors.

#### MEETING THE NEEDS OF FUTURE MEDICAL INPATIENTS

John Gommans

Hawkes Bay District Health Board, Hastings, New Zealand

As a direct consequence of both changing population demographics and medical practice, those responsible for care of hospital inpatients face several challenges. Younger patients with single organ illnesses are increasingly managed as outpatients or day cases so those who require hospital inpatient care are older and frailer. Already 2/3 of all inpatients are aged over 65 years; 1/4 of all bed days are occupied by those over 80 years old, 1/4 of admissions have dementia and more than half of all deaths now occur in hospital, largely under the care of physicians. Admissions with acute exacerbations of numerous chronic diseases are the norm.

An understanding of frailty is essential, particularly its association with disproportionate reduction in health and functional status and poor recovery in response to health stressors let alone the increased risk of adverse outcomes with therapeutic interventions. A key skill will be assisting patients and families to make properly informed choices when patients have multi-morbidity and associated poly-pharmacy but most available guidance is single disease specific and based on trials recruiting younger fitter patient, and ignores life expectancy and potential burdens of treatments. Expertise in just one of the patient's problems will be insufficient when a holistic view of the patient and their predicament is required. Skills in deprescribing, avoidance of iatrogenic complications of hospitalisation and advanced care planning will be importance. Our surgical colleagues are increasingly likely to need Physician support for their inpatients and good relationships with primary care will be essential for safe patient transitions out of hospital.

Physicians attempting to meet the different needs of these future inpatients can draw from the skills and experience of their Generalist, Geriatric and Palliative colleagues, and the wider multi-disciplinary team.

#### REFERRAL TO SPECIALIST PALLIATIVE CARE; PRESENTED BY ANZSPM

Amanda Landers

Christchurch, New Zealand

Palliative care is everyone's business. The World Health Organisation defines palliative care as "an approach that improves the quality of life of individuals and their families facing the problems associated with life-threatening illness." Palliative medicine is a specialty that focusses on those with **complex** need, whether it be physical, psychosocial or spiritual. Specialist services ideally work collaboratively with the health professionals already involved, with episodic input at points of need and timely advice and support 24/7. Looking wider, the hub and spoke model encourages larger services to commit resources across regions, with the flow of energy and ideas going bi-directionally. Education and research are key roles for specialist providers. The ideal outcome is for the patient to receive quality care that is person-centred, timely, and seamless – no matter the location – no matter the diagnosis.

#### TBC; PRESENTED BY ANZSBT

Charlewood, Richard – 1470

ABSTRACT NOT AVAILABLE AT THIS TIME

#### SYPHILIS – CHRISTCHURCH CASE STUDY; PRESENTED BY ASHA

Edward Coughlan<sup>1</sup>

<sup>1</sup>Christchurch Sexual Health, Canterbury District Health Board, Christchurch, New Zealand

Syphilis, "the great imitator", decreased in prevalence in the 1940s with the advent of penicillin but has once again returned in the 1990s. This has been around the worldwide but particularly in Sydney, Amsterdam, San Francisco, London etc and concentrated among men who have sex with man

(MSM) especially if HIV positive. Increases had been noted in NZ[1] but in 2012 there was a dramatic increase in cases of early infectious syphilis seen in Christchurch with 26 cases as opposed to 8 in 2011. All of those infected were male and were principally MSM although some cross over to the heterosexual population occurred. A key difference from 2011 was a decrease in average age from 46 to 26 years in 2012. An outbreak team was formed in response to this. Features of this outbreak will be presented along with a summary of response activities undertaken. A brief review of syphilis will be done including new data on pathogenesis.

#### Reference

1. Psutka, R., et al., *Enhanced surveillance of infectious syphilis in New Zealand sexual health clinics*. Int J STD AIDS 2013. 24(10): p. 791 – 798.

#### RECENT ADVANCES IN SLEEP MEDICINE; PRESENTED BY ASA

Hlavac, Michael – 843

ABSTRACT NOT AVAILABLE AT THIS TIME

#### CALCIUM AND VITAMIN D: AN UPDATE

Mark Bolland

University of Auckland, Auckland, New Zealand

Meta-analyses of randomised controlled trials (RCTs) report that calcium supplements (with or without vitamin D) reduce the relative risk of total fractures by about 10–13%. For populations at low-moderate fracture risk, this translates into very small absolute risk reductions of <1%. These small benefits are outweighed by the moderate risk of minor side-effects (constipation, gastrointestinal symptoms) and the small risk of significant side-effects (kidney stones, myocardial infarction, stroke). Effects of bisphosphonates on bone density are similar whether calcium/vitamin D are co-prescribed or not, and it is not proven that fracture prevention is enhanced by co-administration of calcium and/or vitamin D. In a meta-analysis of RCTs, calcium supplements did not alter total, breast, or colorectal cancer incidence.

Recent meta-analyses of RCTs report that vitamin D supplements (without calcium) do not have clinically important effects on bone density, and do not prevent total or hip fractures. Similarly, vitamin D (with or without calcium) does not prevent falls. However, vitamin D with calcium prevented hip fractures in two RCTs of frail elderly women living in residential care with baseline 25OHD ~20nmol/L.

Although numerous observational studies have reported associations between low 25OHD and poor health outcomes, recent systematic reviews reported that vitamin D supplements do not improve health and that further similar trials are unlikely to alter that conclusion, suggesting that low vitamin D status is a marker of ill health.

In summary, calcium and vitamin D supplements have a limited role in improving the health of community-dwelling people. Vitamin D supplements are recommended for adults at risk of osteomalacia from low 25OHD (ie frail elderly, active avoidance of sun exposure, and deeply pigmented skin).

#### NOVEL THERAPIES IN OSTEOPOROSIS; PRESENTED BY ANZBMS

Andrew Grey

University of Auckland, Auckland, New Zealand

Several pharmacological agents have been demonstrated to reduce fracture risk over 3 years in populations with low bone mineral density (BMD) and/or prevalent fracture. The most effective treatments reduce vertebral fracture risk by 70%, hip fracture by 40%, non-vertebral fractures by 20–35% and all clinical fractures by about 33%. Thus, at present, a lot of the population "fracture burden" is not preventable. We do not know whether any of the currently available treatments is better than the others, as comparative efficacy trials with fracture endpoints have not been conducted.

New agents undergoing clinical trials at present include odanacatib, an inhibitor of cathepsin K, an enzyme required for osteoclastic bone resorption. Trials with surrogate endpoints indicate increases in BMD, and moderate anti-resorptive activity. The results of the phase III trial have not yet been published. Romosozumab is a monoclonal antibody that binds to and inhibits sclerostin, an osteocyte-derived inhibitor of bone formation. Phase II trial data demonstrate that the drug transiently but substantially increases bone formation and decreases bone resorption, and increases BMD at hip

and spine over 12 months. The BMD changes exceeded those observed in response to alendronate or teriparatide. No fracture data are yet available.

Annual intravenous zoledronate infusion decreases fracture risk. However, less frequent administration might be effective. A single treatment produces substantial reductions in bone turnover and increases in BMD that persist for at least 5 years. Post hoc analyses from the zoledronate phase III programme report equivalent anti-fracture efficacy 3 years after a single infusion to that achieved after 3 annual infusions. Clinical trials are needed to determine the optimal dosing interval for fracture risk reduction of zoledronate.

Trials of combination therapy with anti-resorptive agents and teriparatide have demonstrated small benefits on BMD compared to the individuals agents administered singly. No fracture data are available.

Absolute fracture risk calculators indicate that many individuals with "osteoporosis" are at low-moderate medium term fracture risk (10y risk <20%). Patients might reasonably decide that this level of risk, together with the modest absolute benefit derived from current treatments, is not high enough to justify pharmacological intervention.

# **NEWER ORAL ANTICOAGULANTS: BENEFITS AND PITFALLS; PRESENTED BY HSANZ**

*Paul Harper*

ABSTRACT NOT AVAILABLE AT THIS TIME

# **RESIDENTIAL AGED CARE – AVOIDABLE HOSPITALIZATIONS; PRESENTED BY ANZSGM**

*Martin Connolly*

Professor Connolly will begin by outlining the epidemiology of ageing and the demand this is making and will make on acute and long-term care services. He will then, drawing on recent work from his own department, examine 20-year time trends in provision of residential aged care in New Zealand with emphasis on recent demographics of dependency and of medical acuity. This will lead on to a detailed discussion of the results of the first randomised controlled trial of a multidisciplinary intervention aimed to reduce acute hospital admissions of residential aged care residents. Finally, Professor Connolly will examine national and international demographics of location of death in older people (acute hospital vs. residential aged care facility vs. 'own home') and the implications this may have both for care transitions associated with a person's entry into residential aged care and the role of residential aged care facilities in end-of-life care.

# **TBA; presented by CSANZ**

*David Heaven*

ABSTRACT NOT AVAILABLE AT THIS TIME

# **Recent Advances in Antiviral Treatment in HCV; presented by TSANZ**

*Edward Gane*

ABSTRACT NOT AVAILABLE AT THIS TIME

# **RESIDENTIAL AGED CARE – AVOIDABLE HOSPITALIZATIONS; PRESENTED BY ANZSGM**

*Connolly, Martin – 1472*

ABSTRACT NOT AVAILABLE AT THIS TIME

# **HISTORY OF MEDICINE LIBRARY: CENTENARY OF THE GREAT WAR ORAL ABSTRACTS**

## **THE CASUALTY CLEARING STATION – New Systems of Casualty Evacuation and Diagnosis in the Great War**

*John Pearn*

*Royal Children's Hospital, Brisbane, Australia*

**Introduction:** In the Anglo-Boer War of 1899–1902 a new unit was added to the Order of Battle of national armies within the British Commonwealth. The Casualty Clearing Station was a newly-conceived medical unit, raised to blend features of the both a field ambulance and a stationary hospital. At the outbreak of World War I (4 August 1914) however, the still-evolving Medical Corps of both the Australian Army and the New Zealand

Army had establishments for combat zone units only up to Field Ambulance level.

**Methods:** Archival research at the Australian War Memorial. The War Diary of 1 Australian Casualty Clearing Station.

**Results:** With great urgency, in October 1914, the No.1 Australian Casualty Clearing Station was raised as a volunteer force in Hobart. After seven weeks training, the unit embarked for Egypt and landed at Gallipoli on 25 April 1915. It treated and evacuated 2731 surviving wounded soldiers in the first seven days of the ANZAC campaign. The CCS was the most forward unit in the casualty evacuation chain where emergency surgery, radiology, pathology, dentistry and skilled nursing care was available. Both Australian and New Zealand nurses trained as anaesthetists and served in British Casualty Clearing Stations. The CCS had some mobility but had a theoretical maximum 'Holding Policy' of 14 days. Australia raised three Casualty Clearing Stations in World War I. These and New Zealand Casualty Clearing Stations also served in World War II. They were removed from the Order of Battle in 1976.

**Conclusion:** The Casualty Clearing Station became a focus for new systems of casualty management; and a platform for new diagnostic modalities on operational service. Their history encapsulates a snapshot of six decades of service in the continuous evolution of military medicine.

## **FROM STUDENTS TO PENSIONERS: NEW ZEALAND DOCTORS ON ACTIVE SERVICE IN WW1<sup>1,2</sup>**

*Derek Dow*

<sup>1</sup>University of Auckland, Auckland, New Zealand, <sup>2</sup>Australian and New Zealand Society of the History of Medicine

Almost 400 doctors, more than half of the total based in New Zealand at the time, saw active service during World War One. There is now a general consensus that the Gallipoli campaign in 1915 created and fostered the sense of nationhood for both Australia and New Zealand. Over 60 doctors domiciled in New Zealand were part of the Dardanelles offensive in 1915. Analysis of their backgrounds, and of those who took part in other theatres of war between 1914 and 1918, will be used to test the relevance of this hypothesis of nationhood.

Factors to be examined include birthplace, family background, medical education, the branch which they served in (New Zealand Medical Corps, Australian Army Medical Corps, or Royal Army Medical Corps) and the impact upon their practices, their long-term health, and their future careers.

One of the features to emerge from this study is the richness and diversity of the medical profession in New Zealand. While there was no such thing as a 'typical' New Zealand doctor, certain patterns and trends can be discerned from the experiences of the war doctors which will be explored in this talk.

## **COLLEGE FELLOWS IN THE GREAT WAR**

*Paul Lancaster FRACP FAFPHM*

*Menzies Centre for Health Policy, School of Public Health, University of Sydney*

Among more than 150 College Fellows and Members who served in the Great War, two-thirds graduated in medicine from the University of Melbourne (37 per cent) or the University of Sydney (29 per cent), while others graduated from medical schools in Adelaide (8 per cent), Dunedin/Otago (7 per cent), Scotland (14 per cent) and England (5 per cent). About one in 6 of all these specialists had either interrupted their medical course or had occasionally enrolled as medical students after the war, enlisting as stretcher-bearers or gunners.

Biographical sketches illustrate their highly varied war experiences and subsequent professional careers. Many were in general practice before beginning specialty practice as general physicians, cardiologists, psychiatrists, fledgling paediatricians, or in treating the scourge of tuberculosis. Before other professional colleges evolved during the 20<sup>th</sup> century, specialists in disciplines such as dermatology, pathology and bacteriology, and radiology initially gained their specialist status through the FRACP or MRACP.

Six of the first twelve College Presidents served in the Great War. Many others achieved significant leadership positions within their profession and in the wider community in all Australian states, New Zealand, and sometimes in other countries. Almost half of all who had College qualifications



gained an MD, either before or after their war service. Some then took advantage of burgeoning academic opportunities in established and new medical schools. As most who served in the Great War were still relatively young then, many of them volunteered again for service in the Second World War. Some tragically lost their lives in that conflict.

While many professional and community groups display memorials, plaques and honour rolls to commemorate those who served in the Great War, our College lacks any such recognition of those who volunteered and often served with great distinction. Our College should commemorate their service by developing an appropriate honour roll. We should also ensure that the RACP Roll, an invaluable historical source, is constantly maintained and updated.

#### JOHN SNOW SCHOLARSHIP ORAL ABSTRACTS

##### GREAT AND TERRIBLE MOMENTS OF PUBLIC HEALTH HISTORY – TUBERCULOSIS: NEW YORK CITY'S EPIDEMIC IN THE 1980S

Duo Wang

University of New South Wales, Sydney, Australia

**Background:** Tuberculosis (TB) is a leading cause of mortality and morbidity worldwide. Contrary to popular belief, TB is not limited to disadvantaged third world areas. The outbreak of TB in New York City (NYC) during the late 20<sup>th</sup> century saw major changes in the management of TB. In particular, directly observed therapy (DOT) became the preferred method for administering pharmacotherapy.

**Aim:** To provide a review of NYC's TB outbreak and discuss the ethical issues associated with the implementation of DOT.

**Methods:** A literature review was conducted using the Medline database. Search terms included but were not limited to 'tuberculosis', 'New York City', 'epidemic', 'directly observed therapy' and 'ethics'. A timeline and overview of the causes behind NYC's TB outbreak was constructed. Causative factors behind the outbreak were reflected upon. Then the ethical issues associated with DOT was reflected upon with reference to the question of whether or not the same DOT methods introduced in New York are still should an outbreak of TB occur in Australia.

**Findings and conclusions:** After several years of steady decrease, there was a sharp rise in the incidence of TB between 1978 and 1995. At the peak of the epidemic in 1992, the incidence of TB was almost 4 times what it had been in 1978. Major contributing factors to the outbreak include funding cuts to public TB services, overcrowding and displacement of infected populations and the concurrent outbreak of HIV/AIDS. DOT undoubtedly impinges individual freedoms, but can be ethically justified when considered from a context of care perspective. Nevertheless, recent evidence challenges the assumed superiority of DOT over traditional methods of administering pharmacotherapy in terms of rates of cure, relapse, therapy failure or acquired drug resistance. Therefore the effectiveness of DOT should be vigilantly evaluated from both public health and ethical perspectives.

##### CAN PRACTICING DENTISTRY IN A LOW SOCIOECONOMIC AREA LEAD TO DEPRESSION- A COHORT STUDY

Thomas Ding

University of Otago, Dunedin, New Zealand

**Background/Issue:** Dentists have an increased risk of developing depressive symptoms due to the stress and intensity of their profession. There is little evidence to show whether the socioeconomic area in which they work influences this risk.

**Objective:** To analyse whether practicing dentistry in low socioeconomic areas in New Zealand (NZ) increases the risk of developing depression, as opposed to doing so in other socioeconomic areas.

**Design:** Prospective cohort study.

**Setting:** New Zealand dental practices.

**Participants:** General dentists working in NZ dental practices between 2014 and 2019, whom have worked for at least 5 years since graduating, and whom are registered under the NZ Dental Association (NZDA).

**Exposure and measures:** Socioeconomic area in which the practice is located, as per the NZDep2006 Index of Deprivation. **Outcome and measures:** A standardized questionnaire, the Becks Depression Inventory<sup>1</sup>

for Primary Care, which will be used to 'score' or measure the risk of developing depression.

**Time:** Participants will be followed for a period of 5 years. Scores will be taken at baseline and at the conclusion of the study (5 years). This will give a total of 2 scores per participant.

1. Steer RA, Cavalieri TA, Leonard DM, et al. Use of the Beck Depression Inventory for Primary Care to screen for major depression disorders. *General Hospital Psychiatry*. 1999; 21: 106–111.

##### CULTURAL CONTEXTS AND MASS COMMUNICATION: PERSPECTIVES ON ANTI-SMOKING CAMPAIGNS IN INDIGENOUS POPULATIONS

Ridhwan Shams

University of Queensland, Brisbane, Queensland, Australia

The practice of health communication has contributed to the dissemination of health messages through public education campaigns that seek to change the social climate to encourage healthy behaviours, create awareness, change attitudes, and motivate individuals to adopt recommended behaviours. Well-designed health communication activities help individuals better understand their own and their communities' needs so that they can take appropriate actions to maximise health such as quitting smoking.

Research indicates that effective health promotion and communication initiatives adopt an audience-centred perspective, such that promotion and communication activities reflect audiences' preferred formats, channels, and contexts (1). These considerations are particularly relevant for racial and ethnic populations, who may have different languages and sources of information. In these cases, public education campaigns must be conceptualised and developed by individuals with specific knowledge of the cultural characteristics, media habits, and language preferences of intended audiences.

This presentation will examine the utilisation of mass communication campaigns to spread anti-smoking messages amongst the Australian Indigenous population. The determinants of smoking behaviour in Indigenous populations will be explored. Previous attempts at using mass media campaigns on the Indigenous population will be analysed. Finally, Indigenous perspectives on improving anti-smoking campaigns in the future will be discussed.

##### Reference:

1. Maibach E, Parrott RL. *Designing Health Messages*. Thousand Oaks, CA: Sage Publications, 1995.

##### PATIENT DELIVERED PARTNER THERAPY FOR CHLAMYDIA IN VICTORIA

Sarah Lynne

Monash University, Melbourne, Victoria, Australia

**Background:** Chlamydia trachomatis is the most common sexually transmitted infection (STI) in Australia, and infection rates are continually increasing.<sup>1</sup> Patient Delivered Partner Therapy (PDPT) is a strategy where treatment is provided for both the index patient and their sexual partner/s, encouraging and expediting partner therapy. PDPT is widely used in the USA and supported by the Australasian Chapter of Sexual Health Medicine of the Royal Australasian College of Physicians (RACP). In recent years, the RACP has petitioned the state governments of Australia to review the unfavourable legal position of PDPT.

**Objectives:** To evaluate the rationale and evidence behind PDPT, and its value as a chlamydia management strategy in Victoria.

**Methods:** In collaboration with the Sexual Health and Viral Hepatitis division of the Department of Health Victoria, the author reviewed Australian STI surveillance data, Department reports, and literature regarding STI management and PDPT.

**Findings:** Chlamydia is effectively treated with a single oral dose of azithromycin. PDPT increases partner notification and treatment, reduces persistent or recurrent chlamydia infection in the index patient, and reduces sequelae of infection.<sup>2</sup> There are concerns regarding the medical, legal and professional risks of treating an unseen patient.

**Conclusions:** PDPT is a safe, cost-effective, and useful strategy for the treatment of chlamydia in sexual partners who are unlikely or unable to consult health services. By increasing treatment rates, PDPT may reduce

the prevalence and transmission of infection. Enacting PDPT will require further discussion regarding appropriate legal provisions, prescribing arrangements and clinician support tools. STI education, screening and retesting should also be encouraged.

#### References:

1. Australia's notifiable disease status, 2010: Annual report of the National Notifiable Diseases Surveillance System. Commun Dis Intell 2012 Mar; 36(1).
2. Trelle S, Shang A, Nartey L, Cassell JA, Low N. Improved effectiveness of partner notification for patients with sexually transmitted infections: systematic review. BMJ. 2007 Feb 17;334(7589):354.

### SIT LESS: MOVE MORE – THE SILENT DANGERS OF PROLONGED SITTING TIMES

Shahab Pathan

University of Tasmania, Tasmania, Australia

There is no doubting the immense burden of cardiovascular disease in Australia, a problem that will only worsen in the future. The vast majority of individuals are aware of commonly publicized risk factors such as obesity, poor nutrition, smoking and inactivity. There is however another important yet little known cardiovascular risk factor; prolonged sitting times.

Everyday millions of Australians spend a large portion of their day sitting continuously for long periods of time. Many children, adolescents and adults sit for prolonged periods whether it is at school, university or at the office. The vast majority is however oblivious to the damage it is causing to their health. It is a risk factor that many individuals are completely unaware of and one that can no longer be ignored.

'Sit Less: Move More' is a public health campaign that was originally researched and delivered by four third year medical students at the University of Tasmania. The task was to devise a public health campaign that was not only relevant but also feasible in its approach. Initially developed for the Primary Care Research and Health promotion project at university, this project was selected as one of the winning projects across the year and will now be presented at the conference.

As per the original presentation, there are two key objectives. The first is to shed light on the detrimental impact of prolonged sitting times on cardiovascular health based on important research. The second is to look at simple yet effective ideas that allow individuals to interrupt prolonged periods of sitting with physical activity. Raising awareness is meaningless without empowering individuals to make healthy changes themselves.

Sitting less and moving more, its time for all Australians to make the change.

Supervisor: Dr Sue Pearson (University of Tasmania)

### WORKING TOGETHER TO DEVELOP SUCCESSFUL ABORIGINAL HEALTH INTERVENTIONS: WHAT HAVE WE LEARNT?

Siaavash Maghami

University of Western Australia, Crawley, Western Australia, Australia

There has been a lengthy history of interventions, driven from both outside and within the Aboriginal Australian population, to improve the health of Aboriginal Australians. Although these attempts date back more than a century, to this day we are still not able to consistently implement successful

Aboriginal health interventions. To this end, I carried out a review to identify characteristics of successful Aboriginal health interventions. This review developed my understanding of learning objective 2.1.6 as set out by the Australasian Faculty of Public Health Medicine: 'Establish effective cross-cultural partnerships to achieve improved public health outcomes'. I will be sharing the lessons I learnt from my review, the correlations with AFPHM learning objective 2.1.6 and discuss how it influenced my work with Aboriginal students in rural WA.

### REFLECTIONS ON A VALUABLE EPIDEMIOLOGICAL RESEARCH EXPERIENCE INVESTIGATING HEALTH LITERACY AND OBSTRUCTIVE SLEEP APNOEA

Joule Li

University of Adelaide, Adelaide, South Australia, Australia

**Background:** In March-April 2013, I completed a six-week Research Elective rotation during MBBS Year 4 under Professor Robert Adams (University of Adelaide) to investigate the association between functional health literacy (FHL) and obstructive sleep apnoea (OSA).<sup>1</sup> Poor FHL is independently associated with poor health outcomes in diabetes, HIV, and asthma. However, there was no previous data on any association between FHL and OSA.

**Aims/Objectives:** To present my reflections on undertaking this epidemiological research experience.

**Methods:** Data from the Men Androgen Inflammation Lifestyle Environment and Stress (MAILES) Study was used. Previously diagnosed OSA was determined by self-report while previously undiagnosed OSA was determined using full in-home unattended polysomnography (Embletta X100) by the 2007 American Academy of Sleep Medicine (alternative) criteria. The Newest Vital Sign measured FHL. Demographic, risk factor and comorbidity data were self-reported.

**Findings/Reflections:** Inadequate FHL was independently associated with OSA, a lack of previous OSA diagnosis, risk factors (sedentary lifestyle and current smoking) and comorbidities (depression and cardiovascular disease).<sup>1</sup> This epidemiological research experience and the subsequent publication<sup>1</sup> strongly developed my understanding of public health research, in particular AFPHM Competency Element 3.2.4. Drafting the research proposal taught me to define specific hypotheses and propose suitable statistical methods. Data analysis using SPSS taught me both descriptive analyses and multivariate analyses such as logistic regression. Using cross-sectional data taught me its limitations such as the inability to infer causality. Through this experience, I have also realised we must consider health on a population scale, not only the scale of individual patients. Public campaigns, for example the campaign to improve health literacy,<sup>2</sup> in particular play a vital role in improving health for all Australians.

**Conclusions:** This highly valuable research experience consolidated my desire to pursue epidemiology. Future goals include learning advanced statistical techniques and other statistical software (e.g. SAS, Stata).

#### References:

1. Li JJ, Appleton SL, Wittert GA, et al. The relationship between functional health literacy and obstructive sleep apnea and its related risk factors and comorbidities in a population cohort of men. Sleep. 2014 (*in press*).
2. National Health and Hospitals Reform Commission. A healthier future for all Australians – final report 2009. Commonwealth of Australia 2009.



# Physicians as Professionals Oral Abstracts

## WORKING TOWARDS PERFORMANCE, SUPPORTING PHYSICIAN PROFESSIONALISM

### COACHING PROGRAMME INTRODUCED FOR FINAL YEAR TRAINEES AT SYDNEY CHILDREN'S HOSPITAL NETWORK ENHANCES CONSULTANTS' COACHING KNOWLEDGE, SKILLS AND CONFIDENCE

Brown T<sup>1</sup>, Dalton S<sup>2</sup>, Yu Nickolas<sup>3</sup>, Johnson A<sup>4</sup>

<sup>1,2</sup>Sydney Children's Hospital Network, NSW, Australia, <sup>3</sup>Prince of Wales Hospital, NSW, Australia, <sup>4</sup>University of Sydney, NSW, Australia

**Background:** Coaching is 'the art of facilitating the performance, learning and development of another'. Coaching remains a relatively new phenomenon in healthcare and has been recommended for doctors to facilitate professional development<sup>1</sup>. A novel coaching programme was introduced at the Sydney Children's Hospital Network (SCHN) to offer senior trainees support at a crucial transition point in their careers.

**Objective:** To introduce a pilot coaching programme for final year trainees at SCHN. To determine if the program improved coaching skills of Consultants. To collect data regarding wellbeing, resilience and goal-focus of trainees for future analysis.

**Methods:** Ten Paediatric Consultants received training in coaching skills by qualified workplace coaches. Consultants were matched with two final year trainees, to deliver goal-focused coaching over a 6-month period.

A validated goal-focused coaching skills questionnaire<sup>2</sup> was used to assess coaching skills of Consultants. Coaching knowledge and experience items were also developed for the study and included. Data was collected at multiple time points. Analysis included descriptive statistics and paired samples t-tests to determine if significant change in the measures took place as a result of coaching.

**Results:** Feedback from participants was overwhelmingly positive. Statistical analysis before and after the coaching workshop demonstrated a 10% increase in Consultants' self-assessed coaching skills ( $p = 0.02$ ) and a 43% increase in coaching knowledge and confidence ( $p = 0.00$ ). This trend of improvement continued after the workshop until completion of the coaching program.

**Conclusions:** The results demonstrate that training in coaching improves consultant's knowledge, skills, and confidence in their roles as coaches. This pilot supports introducing coaching for doctors on a larger scale, and presents many opportunities for further developing this innovative programme. Determining the impact of consultants' coaching skills on trainees' performance and wellbeing is currently under evaluation in this cohort.

#### References:

1. <http://mentoring.londondeanery.ac.uk/>
2. Grant A, Cavanagh M (2007). The Goal-Focussed Coaching Skills Questionnaire: Preliminary Findings. *Social Behaviour and Personality* 35(6) 751-760.

## UNPACKING PATIENT-CENTREDNESS

Joyner BE

Centre for Values Ethics and Law in Medicine, University of Sydney

Patient-centredness has permeated the language of professional practice – the lexicons of professionalism, and safety and quality in health care. While most physicians have their own understanding of the term, it is a complex and multilayered concept.

Firstly, patient-centredness is an ethical and professional way of being. The person with the disease is the focus of our attention, not the disease per se. It is conveyed to the person through the doctor-patient relationship. It is experienced by the person through this relationship and the care that is received.

This identifies the importance of patient-centred communication, which includes relationship building, active listening and responding empathically. This communication is essential if the person is to be heard.

Thirdly, patient-centred care and care planning requires the sharing of agendas and mutual agreement on the problems, goals and roles. This includes the sharing of decision making.

While patient-centredness is an internalised professional value, it is enacted through communication and the provision of care. This paper further describes each of these aspects of patient-centredness. While there is an emphasis on a physician's demonstrated, hence assessable skills in patient-centredness, it is important that the underpinning value is understood and regularly reaffirmed by the profession.

## PERFORMANCE APPRAISALS-ARE THEY GOOD ENOUGH? LESSONS FROM OVERSEAS TRAINED PHYSICIAN ASSESSMENTS

Paul M, Sipski ML, Jelbart M

SA Brain Injury Rehabilitation Services, Central Adelaide Local Health Network, Adelaide, SA, Australia

**Introduction:** Peer review of Overseas Trained Physicians (OTP's) for competency in the Australian health service may be seen as an arduous process. The current tools for assessing the OTP could be perceived as being very subjective; making it an uncomfortable and unscientific experience for both the reviewer and the person being reviewed.

We assessed the meaningfulness and objectivity of using the 'Performance appraisal' framework<sup>1</sup> similar to UK and some health services within Australia for peer assessments of fellow doctors. We also used the SPPP (Supporting Physicians' Professionalism and Performance)<sup>2</sup> guide to develop a scorecard for feedback from colleagues on the doctors' professional qualities.

**Methods:** 1. Adopt the performance appraisal framework to draw up personal development objectives

2. Trial use of SPPP scorecard to obtain feedback from colleagues on doctor's professionalism

**Results:** When approached in a collegial, collaborative and supportive manner, the above tools work very well to objectify the assessment process. It supports doctors in identifying their strengths and areas for further development and may also encourage self-reflective practice in the reviewer.

**Conclusion:** Our experience has shown that Performance appraisals and SPPP scorecard are effective methods of judging doctors' fitness to practice. These could form the foundation of Revalidation in the absence of formal exams.

#### Reference:

1. The Good Medical Practice framework for appraisal and revalidation 2012.GMC,U.K
2. Supporting Physicians' Professionalism and Performance-A Guide for Physicians in Australia and New Zealand 2012. RACP

## CAREER DECISIONS: FACTORS THAT INFLUENCE MĀORI DOCTORS

Lucas C<sup>1</sup>, Edmonds L<sup>2</sup>, LeRoy J<sup>3</sup>, Reith D<sup>4</sup>

<sup>1</sup>University of Otago, Dunedin, New Zealand, <sup>2,4</sup>Women and Children's Health, Dunedin School of Medicine, University of Otago, New Zealand, <sup>3</sup>Te Whare o Ngati Kahu Hauora, New Zealand

**Introduction:** Māori have known health disparities which may be addressed through increasing the cultural competency of New Zealand's medical workforce. There is a paucity of Māori health professionals choosing paediatrics or adult medicine as a career and the factors influencing their career decision is yet to be explored. This study aims to differentiate factors influencing the medical career choice of non-Māori paediatricians and physicians, Māori paediatricians and physicians and other Māori doctors. Secondly, to identify ways in which Māori doctors may be encouraged to choose paediatricians or adult medicine.

**Methods:** A questionnaire was distributed by email to NZ physicians and paediatricians and to Māori doctors. Questions included demographic information, a matrix rating table and open-ended questions.

**Results:** Altogether 199 people accessed the questionnaire. Response rates were 9% (n = 118) for non-Māori paediatricians and physicians, 70% (n = 19) for Māori paediatricians and physicians and 31% (n = 62) for other Māori doctors. Māori paediatricians and physicians highlighted

mentoring as having significant impact on career choice. Non-Māori paediatricians and physicians regarded interest as having the most influence on career choice ( $p < 0.01$ ). Lifestyle factors influenced other Māori doctors ( $p < 0.001$ ).

**Conclusion:** Mentoring provides an opportunity to attract Māori into paediatric and adult physician training. The use of existing mentoring programmes could facilitate in expanding Māori RACP workforce development. This extended Māori workforce would have benefits for the health of New Zealand as a whole.

## CAN PHARMAC POLICY IMPROVE ACCESS TO HOSPITAL MEDICINES?

Winter P<sup>1</sup>, Wyeth JW<sup>2</sup>

<sup>1</sup>University of Otago, Wellington, New Zealand, <sup>2</sup>PHARMAC, Wellington, New Zealand

**Background:** Infiximab has proven efficacy in managing inflammatory bowel disease (IBD). Surveys in 2007 and 2009 had indicated infiximab access for IBD within New Zealand varies significantly according to District Health Board (DHB)<sup>1</sup>. The Hospital Medicines List (HML), implemented on 1 July 2013, was intended to achieve nationally consistent prescribing and equitable access to medicines between DHBs.

**Aim:** To assess whether introduction of the HML led to equitable access and use of infiximab for IBD in NZ.

**Methods:** Survey of heads of service and prescribers, and crude incidence of infiximab dispensings in DHB adult and paediatric populations for Crohn's disease (fistulising and non-fistulising) and Ulcerative Colitis before and after 1 July 2013.

**Results:** 12 DHBs responded to the survey. Non-responder DHBs represented smaller populations and did not all have dedicated Gastroenterology services. Of responders, per capita access to infiximab for IBD patients occurred in all, both before (inter-DHB range 1.9 to 11.0 per 100000 population) and after (4.7 to 13.0 per 100000) HML introduction. Use of infiximab following HML increased in most responding DHBs, with no decrease in use recorded overall. Previously-identified low prescribing DHBs had increased use. The low response rate did not allow fuller analysis of differences in infiximab use between DHBs, and unknown prevalences of IBD within individual DHBs make it difficult to solely attribute increased infiximab access to HML introduction.

**Conclusion:** The survey suggests that implementation of the HML by PHARMAC has led to increased and more equitable access to infiximab for IBD patients.

## Reference:

Griffiths B, Wyeth J. Use of biologic therapy in inflammatory bowel disease: a survey of New Zealand DHBs. Poster presentation at NZSG ASM, 2009.

## HEALTH AND RESOURCE MANAGEMENT: CHOOSING WISELY/DIFFICULT DECISIONS: EVIDENCE, ETHICS AND BUDGETS IN THE 21ST CENTURY – THE CLINICIAN PERSPECTIVE

Scott IA

Internal Medicine and Clinical Epidemiology, Princess Alexandra Hospital, Ipswich Road Woolloongabba, Brisbane

**Background:** Healthcare in Australia consumes more than \$110 billion per year. While Australian healthcare is good by international standards, systemic problems persist including marked variations in care, suboptimal safety and reliability, and substantial overuse, underuse, and misuse of clinical interventions. Such inefficiency and waste need to be tackled if care is to remain affordable and equitable. A new ethics is needed which sees physicians adopt a systems perspective in choosing what care to deliver and how.

**Aims:** This workshop aims to illustrate the skills required of the 'systems physician' using several clinical scenarios and to discuss how such skills can be acquired, assessed and maintained within physician training and professional development programs. Experience of other jurisdictions in fostering system skills and the pedagogical principles common to all will be considered.

## TBA

Murdock, Nicki – 1001

ABSTRACT NOT AVAILABLE AT THIS TIME

## SIMULATION AND PROFESSIONALISM

### SIMULATION AND PHYSICIAN PROFESSIONALISM

Gibb, Katy – 850

ABSTRACT NOT AVAILABLE AT THIS TIME

### SIMULATION IN THE PHYSICIAN SETTING

van Dijk, Julian – 851

ABSTRACT NOT AVAILABLE AT THIS TIME

## LEARNING PROFESSIONALISM

### TEACHING THE PROFESSIONAL QUALITIES CURRICULUM

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<sup>1</sup>Sydney Children's Hospital, <sup>2</sup>The University of New South Wales,

<sup>3</sup>The Children's Hospital at Westmead, <sup>4</sup>The University of Sydney

**Background:** Medical professionalism is an extremely important aspect of training for junior doctors. Until recently, the teaching of medical professionalism has been a part of the unstated medical curricula relying on observation and modelling from tutors, clinical supervisors and other colleagues, or learning through 'osmosis' in the clinical environment.

In recent years, The Royal Australasian College of Physician (RACP) developed the Professional Qualities Curriculum (PQC). The PQC outlines a range of knowledge, skills, attitudes and behaviours required of, and commonly used by, all physicians and paediatricians regardless of specialty or area of expertise. (1)

It comprises of nine domains:

- Communication
- Quality and Safety
- Teaching and Learning (Scholar)
- Cultural Competency
- Ethics
- Clinical Decision Making
- Leadership and Management
- Health Advocacy
- The Broader Context of Health

**Aims/Objectives:** The purpose of this educational initiative is to design and evaluate a Professional Qualities Education Series for Paediatric Advanced trainees.

**Methods:** The educational series comprises of 6 full day workshops encompassing key areas of the nine domains. It is intended to repeat the series annually allowing trainees to attend the entire 6 workshops over the duration of their 3 year advanced training period. The workshops are taught by senior doctors; allied health professionals and stakeholders from the community. Further resources complementing workshop teaching will be made available online.

A trainee working group was established and was central to the development and implementation of the program and also provided further mentorship and hands on experience in domains of the professional qualities curriculum for involved trainees.

## References

1. Physicians RACP. Physician and Paediatrician Training Program Professional Qualities Curriculum 2009.

## THE RACP AND NSW CLINICAL EXCELLENCE COMMISSION: TEACHING CLINICAL PRACTICE IMPROVEMENT TO ADVANCED TRAINEES

Dalton S<sup>1,2</sup>

<sup>1</sup>Clinical Excellence Commission, <sup>2</sup>Royal Australasian College of Physicians

**Introduction:** There is wide agreement that engaging Doctors in practice improvement is a high priority for healthcare organisations. Traditional training programs in Medical Schools and professional Colleges have pro-

vided little emphasis on these important aspects of professional practice. The Royal Australasian College of Physicians (RACP) and the Clinical Excellence Commission (CEC) commenced a pilot program in 2012 for Advanced Trainees to undertake Clinical Practice Improvement Training (CPI).

**Methods:** The pilot CPI program ran over a 12 month period and included pre-reading, a two day face to face workshop and required the completion of an improvement project. Trainees were connected with local quality experts within their Local Health Districts. At six months a midpoint review was held for participants to discuss barriers and existing challenges. The program concluded with presentation of the improvement project to a panel of experts.

**Results:** In 2012 twelve participants completed all compulsory components of the pilot program. Those who completed the program achieved significant improvements in patient outcomes. Outcomes included decreasing avoidable admissions in paediatric patients with pneumonia by 74%, reducing hypoglycaemic episodes in patients with diabetes by 87% and reducing mislabelled specimens in an Emergency Department by 80%.

**Conclusion:** Providing trainees with the tools to alter patient outcomes has led to significant improvements in patient care and increased individual capability to lead systems improvement. Participants have presented projects at both national and international conferences and prepared articles for publication. Developing skills in quality and safety is of primary importance to RACP trainees and the program has been continued with further refinements in 2014.

## USING CPD TO SUPPORT PHYSICIANS PERFORMANCE

**Matthew Links**

*St George Cancer Centre, Redfern, NSW, Australia*

Physicians invest time in learning to provide quality care but there is good evidence that most Continuing Professional Development (CPD) activities do not translate into better practice. This raises the question what changes in CPD are required to more effectively link learning with excellence? Relevant areas include:

1. Learning model
2. CPD framework and rewards
3. Tools
4. Usability
5. Feedback
6. Integrating individual and organisational quality assurance
7. A CPD system that continuously improves
8. Advocacy and positive models
9. Investment
10. Leadership

There are a number of developments in each of these areas which will be discussed. These changes are in line with international changes in the theory and application of CPD.

**Conclusions:** Using CPD to link learning with improving practice requires broad ranging changes in the way we think about learning, in the system that documents and rewards CPD, as well as the culture of clinical practice. These changes are required to live up to the College banner that we really are striving for excellence in health and medical care through lifelong learning, quality performance and advocacy.

## REVALIDATION 1

**TBA**

*Paterson, Ron – 852*

ABSTRACT NOT AVAILABLE AT THIS TIME

## WHO IS RESPONSIBLE FOR PROTECTING PATIENTS FROM HARM? HOW CAN WE IDENTIFY 'HIGH-RISK' DOCTORS?

**Marie Bismark**

**Background:** Patients and the public want to know that practising doctors are competent and safe to practice. Without ready access to meaningful information on an individual doctors' performance, they must rely on 'the system' to provide that assurance.

**Aims:** This presentation will:

- (a) compare the roles of education providers, employers, regulatory boards, health complaints commissioners, and professional Colleges in protecting patients from harm; and
- (b) consider the value of patients' complaints, mandatory notifications by peers, and other sources of performance data in identifying 'high-risk' practitioners.

**Methods:** Review of relevant regulatory literature; retrospective analysis of patient complaints lodged with health services commissioners<sup>1</sup> and mandatory notifications lodged with the Australian Health Practitioner Regulation Agency.<sup>2</sup>

**Conclusions:** Adopting a 'one size fits all' approach to revalidation is likely to be disproportionately burdensome for some practitioners, while failing to adequately identify concerns or lift performance among others. A more evidence-based approach would target 'high-risk practitioners', using data on population-level risk factors and individual past performance to identify those doctors requiring more intensive scrutiny and support. Such an approach should be complemented by an ongoing commitment to improving patient care and professionalism among the broader profession.

## References

- 1 Bismark, MM., Spittal, MJ., Gurrin, LC., Ward, M., & Studdert, DM. (2013). Identification of doctors at risk of recurrent complaints: a national study of healthcare complaints in Australia. *BMJ quality & safety*, 22(7), 532-540.
- 2 Bismark MM, Spittal MJ, Plueckhahn TM, Studdert DM. (2014) Health practitioners' reports of concerns about the health, competence and conduct of colleagues under a mandatory reporting regime. Submitted for publication

## TITLE TBA

**John Kolbe**

In this presentation, the proposed developments in RACP Continuing Professional Development (CPD) will be presented in the context of professionalism in the 21<sup>st</sup> century. The relevance of any changes to CPD to recertification in New Zealand and possible revalidation in Australia will be discussed.

## REVALIDATION 2

**TBA**

*Doherty, Richard – 895*

ABSTRACT NOT AVAILABLE AT THIS TIME

**TBA**

*Scott, Tony – 896*

ABSTRACT NOT AVAILABLE AT THIS TIME

**TBA**

*Phelps, Grant – 831*

ABSTRACT NOT AVAILABLE AT THIS TIME

# RACP Foundation Oral Abstracts

## EXCELLENCE IN RESEARCH: SUSMAN SYMPOSIUM

### EVOLUTION OF THE GENETICS REVOLUTION IN FAMILIAL CARDIOMYOPATHIES

Diane Fatkin<sup>1,2,3</sup>

<sup>1</sup>Victor Chang Cardiac Research Institute, Sydney, NSW, Australia,  
<sup>2</sup>St Vincent's Hospital, Sydney, NSW, Australia, <sup>3</sup>Faculty of Medicine, University of New South Wales, NSW, Australia

Familial cardiomyopathies are a diverse group of primary myocardial and arrhythmic disorders, including hypertrophic cardiomyopathy (HCM), dilated cardiomyopathy (DCM) and arrhythmogenic right ventricular cardiomyopathy, that are associated with high rates of heart failure, stroke, and sudden death. Elucidation of the underlying causes of familial cardiomyopathies has enormous potential to improve patient outcomes by providing novel approaches to diagnosis, treatment, and prevention. It is nearly 25 years since the first genetic cause of a familial cardiomyopathy was identified, with mutations in the beta-myosin heavy chain gene found in patients with HCM. Since then, research groups worldwide have used a variety of methods, including linkage analysis, sequencing of candidate genes, *in vitro* studies and animal models, to identify new disease genes and pathogenic variants in families, with all the cardiomyopathies proving to be genetically-heterogeneous. These findings led the way to commercial genetic testing using panels of selected disease genes. Issues such as low yield (e.g. 20–30% in DCM) and cost have limited the implementation of genetic testing into routine clinical practice. Recent advancements in sequencing technologies now enable rapid, cost-effective, genome-wide approaches for detecting DNA variants and are revolutionising genetics studies of human disease. Some surprising breakthrough discoveries have already been made, such as the key role of truncating variants in *TTN*, that encodes the giant sarcomeric protein, titin, in familial DCM. With genomic sequence data becoming readily available and affordable, the new rate-limiting step is data interpretation, with every individual harboring many thousands of genetic variants in protein-coding regions alone. Detailed functional assessment of selected likely-pathogenic variants is worthwhile and may result in fundamental mechanistic insights and tractable treatment targets. The combined efforts of geneticists, bioinformaticians, basic science and clinical researchers will be needed to develop frameworks for informed interpretation of genetics results and introduction of 'personal genomes' into the clinic.

### IMMUNITY TO HIV AND INFLUENZA

Stephen Kent

University of Melbourne, Melbourne, Victoria, Australia

HIV remains a global scourge with no effective vaccine or cure. There has however been one phase III trial of a HIV vaccine that showed partial (31%,

$p = 0.04$ ) efficacy in preventing HIV. Curiously, post hoc analyses of this trial showed a type of antibody that kills HIV infected cells called 'ADCC' correlates with protective immunity. This is exciting, since ADCC antibodies may not be hard to induce by improved vaccine regimens. Indeed most HIV infected people have very robust and broadly recognizing ADCC antibodies particularly those people that progress more slowly.

Similarly, influenza takes a large toll on human health and the current yearly vaccine is rather poorly efficacious, hard to deliver widely and only works against the 3 or 4 strains chosen each year. A vaccine that could induce broader immunity is needed. In an interesting twist, we recently found that ADCC antibodies that kill influenza infected cells correlated with protection from the 2009 H1N1 swine flu virus. Further, many people already have ADCC antibodies that recognize diverse flu strains, even bird flu strains like H5N1 and H7N9. Inducing or boosting these ADCC antibodies might be a pathway towards much improved protection against influenza.

## RACP TRAINEE RESEARCH AWARDS FOR EXCELLENCE – PAEDIATRICS SESSION

### ORAL VS INTRAVENOUS ANTIBIOTICS IN LOW RISK PAEDIATRIC FEBRILE NEUTROPENIA: A META-ANALYSIS OF RANDOMISED CONTROLLED TRIALS

A Vedi, RJ Cohn

Kids Cancer Centre, Sydney Children's Hospital, Randwick

**Background:** Sepsis is a major cause of morbidity and mortality in paediatric oncology patients, particularly during periods of neutropenia, which is a well-recognised complication of immunosuppressive therapy. Stratification of patients into low and high-risk categories has facilitated a new tailored approach to empiric therapy. The availability of oral antimicrobial drugs with broad-spectrum activity against common pathogens may provide an attractive alternative.

**Aims/Objectives:** To determine whether, in low-risk febrile neutropenic paediatric populations, oral antibiotics are as effective as intravenous antibiotics in obtaining resolution of the febrile neutropenic episode.

**Methods:** A comprehensive literature search of MEDLINE, EMBASE and CENTRAL identified prospective, randomised controlled trials comparing oral antibiotics to intravenous antibiotics in the treatment of febrile neutropenic episodes in low-risk paediatric oncology patients. Outcomes assessed were mortality, rate of treatment failure, length of the febrile neutropenic episode and adverse events. The random effects model was used to calculate risk ratios (RR) for dichotomous data and mean difference with standard deviation for continuous data.

**Results:** Seven trials were included in the overall analysis, which included 934 episodes of febrile neutropenia in 676 patients aged between 9 months and 20 years. The overall treatment failure rates were not significantly different between oral and intravenous antibiotics (RR: 1.02, 95% CI 0.78 to 1.32,  $p = 0.91$ ).

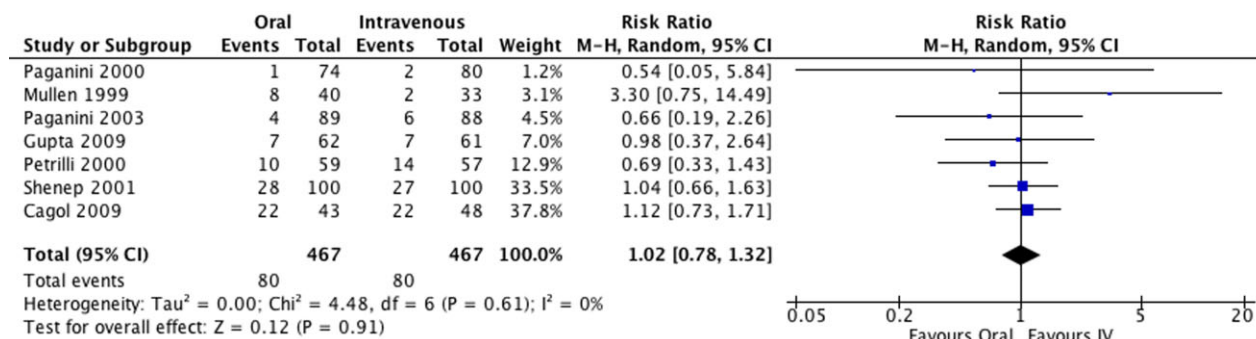


Figure. Overall treatment failure



**Conclusions:** In carefully selected low-risk febrile neutropenic children, empiric treatment with oral antibiotics is a safe and effective alternative to intravenous antibiotics, as they lower the cost of treatment, and psychosocial burden on these children and their families.

#### Reference:

1. Buchanan GR. Approach to treatment of the febrile cancer patient with low-risk neutropenia. *Hematol Oncol Clin North Am* 1993;7:919–35.
2. Paganini HR, Sarkis CM, De Martino MG, et al. Oral administration of cefixime to lower risk febrile neutropenic children with cancer. *Cancer* 2000;88:2848–52.

#### GASTRIC EMPTYING IN CHILDREN WITH TYPE ONE DIABETES MELLITUS

Porter, Jody – 1009

ABSTRACT NOT AVAILABLE AT THIS TIME

#### IRON DEFICIENCY AND ITS TREATMENT DO NOT PREDISPOSE THE INDIGENOUS CHILDREN OF CENTRAL AUSTRALIA TO BACTERIAL INFECTIONS. A RETROSPECTIVE REVIEW

Keshan Satharasinghe

NT Health, Alice Springs Hospital, Alice Springs, Northern Territory, Australia

Intramuscular iron(Fe) is regularly administered to Indigenous children in Central Australia to treat presumed Fe deficiency and this route is used in preference to other therapeutic Fe forms primarily for reasons of adherence and safety. However, there have been reports of therapeutic Fe increasing rates of bacterial infection through a multitude of mechanisms. This paper explores this potential risk and the effectiveness of the current practice at Alice Springs Hospital of using intramuscular Fe.

**Design:** Retrospective chart review of 1176 admissions from 413 patients.

**Outcomes:** The primary outcome of this retrospective study was to establish the association between Fe deficiency and bacterial infections in a region of Australia where both have a higher prevalence than other regions. The study was performed specifically to determine if intramuscular Fe administration in hospital pre-disposes recipients to a bacterial infection within 6 months of dosing and also to ascertain if Fe deficiency predisposes children to bacterial.

Secondary outcomes were to determine the effectiveness of completion of intramuscular iron dosing in hospital.

#### Results:

- 1) There was no observed association between administration of Fe and an increase in proven bacterial infection within 6 months of administration.
- 2) There is no association between admission for bacterial infection and a concurrent Fe deficient state. An Fe deficient state was associated with a significantly decreased rate of infections involving skin and lymph nodes. ( $p < 0.001$ )
- 3) Completing courses of treatment in hospital is superior to initiating treatments in hospital with planned completion in the community ( $p < 0.02$ ) in cases where Fe deficiency, where mean corpuscular volume(MCV), was less than 72.5fL. However, even patients who completed treatment remained Fe deficient more than 40% of the time.

#### Conclusions:

- 1) Intramuscular iron injections as currently administered in Alice Springs Hospital do not pre-dispose recipients to re-admission for bacterial infection within 6 months of administration.
- 2) Fe deficiency does not predispose children to bacterial infection. Conversely, there is evidence that Fe deficiency may in fact protect children from infections involving the skin and lymph nodes.
- 3) In more severe cases of Fe deficiency, it is more effective to complete Fe dosing in hospital than to initiate a course of treatment with recommendations to complete in community.

#### FEBRILE SEIZURES: VIRUSES AND THEIR ETIOLOGIC ROLE (FEVER)

Francis J<sup>1,2</sup>, Robins, C<sup>3</sup>, Lindsay K<sup>4</sup>, Levy A<sup>4</sup>, Richmond P<sup>2,3,5</sup>, Effler P<sup>6</sup>, Borland M<sup>5,7</sup>, Blyth C<sup>2-5</sup>

<sup>1</sup>Department of Paediatrics, Royal Darwin Hospital, Darwin, NT;

<sup>2</sup>Department of Paediatric and Adolescent Medicine, Princess

Margaret Hospital, Perth, WA; <sup>3</sup>Telethon Institute of Child Health

Research, Perth, WA; <sup>4</sup>PathWest Laboratory Medicine, Perth, WA;

<sup>5</sup>School of Paediatrics and Child Health, University of Western

Australia, Perth, WA; <sup>6</sup>Communicable Disease Control, Perth, WA;

<sup>7</sup>Emergency Department, Princess Margaret Hospital, Perth, WA

**Introduction:** Febrile seizures (FS) occur in 3–5% of children. Annual peaks in FS incidence mirror increased respiratory virus activity during winter. Limited virological data are available using modern diagnostic techniques for children with FS.

**Objective:** The FEVER study was established to determine the incidence of specific viral pathogens in children with FS, and to describe risk factors and clinical features associated with specific pathogens.

**Methods:** Children aged 6 months to 5 years presenting to the Princess Margaret Hospital Emergency Department (ED) with FS were enrolled between March 2012 and October 2013. Demographic and clinical data were collected, and per-nasal +/- rectal samples collected for virological studies.

**Results:** 152 patients (73 female; mean age 1.9y; range 6.5m–4.8y) were enrolled. Admission to hospital occurred in 72/152 (47.4%). FS were simple in 94/152 (61.8%). Complex FS, characterised by multiple seizures (38/152, 25.0%) and/or seizures longer than 15min (16/152, 10.5%), were associated with increased rates of hospital admission (simple: 31/94, 33.0%; multiple: 28/38, 73.7%,  $p < 0.001$ ; prolonged: 14/16, 87.5%,  $p < 0.001$ ).

Virological testing was completed for 144/152 (94.7%). At least one virus was detected in 103/144 (71.5%). The most commonly identified were rhinovirus (34/144, 23.6%), enterovirus (33/144, 22.9%), adenovirus (30/144, 20.8%), influenza (20/144, 13.9%) and HHV6 (17/144, 11.8%). More than one virus was found in 47/144 (32.6%).

Cases with an identified virus were not more likely to have simple FS (63/103, 61.2% vs 27/41, 65.9%;  $p =$ ), or to be admitted (47/103, 45.6% vs 19/41, 46.3%;  $p =$ ). Those with viral co-infections were more frequently admitted (26/47, 55.3% vs 21/56, 37.5%;  $p =$ ).

**Conclusion:** High rates of hospital admission and complex FS were observed, probably influenced by recruitment challenges in the ED setting. At least one virus was detected in over two thirds of cases tested (commonly influenza, adenovirus and picornaviruses). Viral co-infections were frequently identified.

#### THE ROLE OF ROUTINE REPEAT HEAD IMAGING IN PAEDIATRIC TRAUMATIC BRAIN INJURY

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**Background:** Paediatric traumatic brain injuries (TBI) remain a leading cause of morbidity and mortality in Australia. There are clear guidelines on head imaging for children with TBI, but there is conflicting evidence on the role of routine repeat head computed tomography (CT) scan. This study aims to determine whether routine repeat head CT scans in paediatric TBI alter surgical or medical management.

**Methods:** A retrospective study was performed at a Level 1 tertiary paediatric trauma centre between January 2002 and July 2012. Patients with TBI who were admitted with acute intracranial injury and at least one repeat head CT scan were included. Mechanism of injury, severity of TBI, Glasgow Coma Score (GCS), use of intracranial pressure (ICP) monitoring, and operative procedures were listed. The need for operative management was compared for routine and clinically indicated head scans.

**Results:** Routine head CT scan was done in 36 out of 71 patients (51%). None from this group required craniotomy, but 2 children (6%) needed delayed ICP monitoring. Three patients with moderate to severe TBI required ICP monitor or external ventricular drain insertion based on a clinically indicated repeat head CT.

**Conclusions:** Repeat head imaging is more likely to alter management of children with moderate to severe TBI. There is no role for routine repeat CT scan on mild TBI. Results of repeat cranial imaging should be correlated with the clinical status of the patient.

#### CAN COELIAC SEROLOGY ALONE BE USED AS A MARKER OF DUODENAL MUCOSAL RECOVERY IN CHILDREN WITH COELIAC DISEASE ON A GLUTEN-FREE DIET?

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**Background & Aims:** Assessment of treatment response in children with Coeliac Disease (CD) after commencing a strict gluten-free diet (GFD) is generally based on resolution of clinical features and normalization of serology. Recent adult studies have shown that serologic markers do not correlate with mucosal recovery. Aims: 1. To determine whether anti-tissue transglutaminase IgA (tTG) and anti-deamidated gliadin peptide IgG (DGP) antibodies are sensitive and specific markers of mucosal recovery in children with CD on a GFD and 2. To determine whether a validated dietary questionnaire of compliance can identify patients with mucosal recovery.

**Methods:** 150 children with biopsy proven CD were prospectively evaluated with duodenal biopsies at  $\geq 12$  months on GFD, paired with repeat tTG and DGP serology. The biopsies were reviewed in a blinded fashion by 2 histopathologists and graded by Marsh criteria. A validated questionnaire of dietary compliance was also administered.

**Results:** Of 150 children recruited, 27 (18%) had positive serology, 97 (65%) had negative serology and 26 (17%) had negative equivocal serology. Of the 97 children with negative serology, none had Marsh type 3 enteropathy. Of the 27 patients with positive serology, only 6 had Marsh type 3 changes. The sensitivity and specificity of serology as a marker of significant mucosal pathology was 75% and 85% respectively, with a positive predictive value of 22% but a negative predictive value of 98%. Of the 129 (86%) questionnaires completed, 88% reported good or excellent compliance with a GFD (negative predictive value 97%).

**Conclusions:** This study suggests that follow up using 2 serological tests in children with CD on a GFD may obviate the need for repeat mucosal biopsy in the majority of patients. A standardized dietary questionnaire maybe useful in identifying patients who require further evaluation.

#### CAN INSULIN PUMPS WITH PREDICTIVE LOW GLUCOSE MANAGEMENT SYSTEM PREVENT EXERCISE INDUCED HYPOGLYCAEMIA IN INDIVIDUALS WITH TYPE 1 DIABETES?

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**Background:** Exercise is one of the major factors contributing to hypoglycaemia in type 1 diabetes (T1DM). A major improvement in management would be in the ability to predict imminent hypoglycaemia and adjust continuous subcutaneous insulin infusion (CSII) to avert hypoglycaemia.

**Aim:** The aim of the study was to determine if Predictive Low Glucose Management (PLGM) system can prevent exercise-induced hypoglycaemia in individuals with T1DM. The primary outcome was the glucose nadir in participants following moderate-intensity exercise with and without PLGM.

**Methods:** PLGM system consists of a Medtronic Veo pump, Enlite glucose sensor, MiniLink REAL-Time transmitter, Bluetooth-RF translator and

PLGM algorithm operating from a Blackberry smartphone. PLGM suspends basal insulin delivery when the preset hypoglycaemia threshold is predicted to be reached in 30 minutes. Insulin delivery resumes after a maximum 2 hour suspend period or when auto resumption parameters are met.

Participants with T1DM performed 30–60 minutes of moderate-intensity exercise (55% V<sub>O<sub>2</sub>peak</sub>) following a glucose stabilisation (5 to 6 mmol/L) period on basal CSII on 2 separate days; randomised to a control day with PLGM off and an intervention day with PLGM on. On both days, participants were observed until plasma glucose dropped to 2.8mmol/L or were symptomatic below 3.3mmol/L.

**Results:** 22 participants have been studied. PLGM suspended basal insulin in 18 and did not suspend in 4 participants as hypoglycaemia did not occur. Plasma glucose nadir with PLGM on was higher than with PLGM off in only 3 of the 10 participants when the set hypoglycaemia threshold of 3.9mmol/L was predicted to be reached in 30 minutes. However, with a hypoglycaemia threshold changed to 4.4mmol/L, the plasma glucose nadir was higher in 5 of the 8 participants with PLGM on.

**Conclusion:** Post exercise hypoglycaemia was prevented in 60% of the participants with the hypoglycaemia threshold of 4.4mmol/L.

#### FINDINGS FROM COMPREHENSIVE HEALTH SCREENING OF CHILDREN IN OUT-OF-HOME CARE: THE HEALTH OF 4-6YEAR OLDS IN SOUTHERN TASMANIA COMPARED TO PEERS

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**Introduction:** Children in out of home care (OOHC) have poorer physical, mental health, and education outcomes than peers<sup>1-9</sup>. To improve outcomes for children in OOHC a comprehensive health assessment clinic commenced in 2011 for children in OOHC in Southern Tasmania. This was as part of an interagency collaboration project entitled HEARTS.

**Methods:** This prospective study of 4–6 year olds in OOHC in Southern Tasmania (at 30/8/11) included demographic, health, and education information and a Paediatric clinic based assessment. Data was compared to age matched Tasmanian and Australian peers.

**Results:** 109 of 129 children were included for analysis. They had been in OOHC an average 3.2 years.

Antenatal exposure to Cigarettes (79%), and Illicit substances (71%), were many times the reported state average and alcohol exposure (51%) premature birth (19%) and congenital malformations (9%) more than twice. Vertically acquired Hepatitis C was found in 2% with 33% exposed.

Immunisation completion was 78% compared to 92.9% of Tasmanian 5 year olds. Obesity (13%), asthma (33%), Vision impairment (18%), hearing impairment (7%), and hospitalisation due to injury were twice as common as peers and 61% had Dental caries.

Significant developmental delay was seen in 47%.

The Strength and Difficulties Questionnaire showed high risk of a DSM-IV diagnosis in 46%. 23% had sleep disturbance, and 7% reactive attachment disorder. Only 10% had accessed specialist neurodevelopmental trauma services.

**Conclusions:** This, the largest Tasmanian study of health in children in OOHC found a substantial gap compared to peers in health, development, and mental health outcomes. After an average 3 years in OOHC many needs remained unrecognised partly due to incomplete health histories and barriers to accessing health care.

This study has informed changes to health service planning, child protection data linkage, and a universal pathway for post-natal Hepatitis C screening for exposed infants. The highest service priority going forward is improved support for mental health and wellbeing.

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## RACP TRAINEE RESEARCH AWARDS FOR EXCELLENCE: ADULT MEDICINE SESSION

### INHERITED NON-SYNDROMAL THORACIC AORTIC ANEURYSM AND DISSECTION – AN UNRECOGNISED THREAT

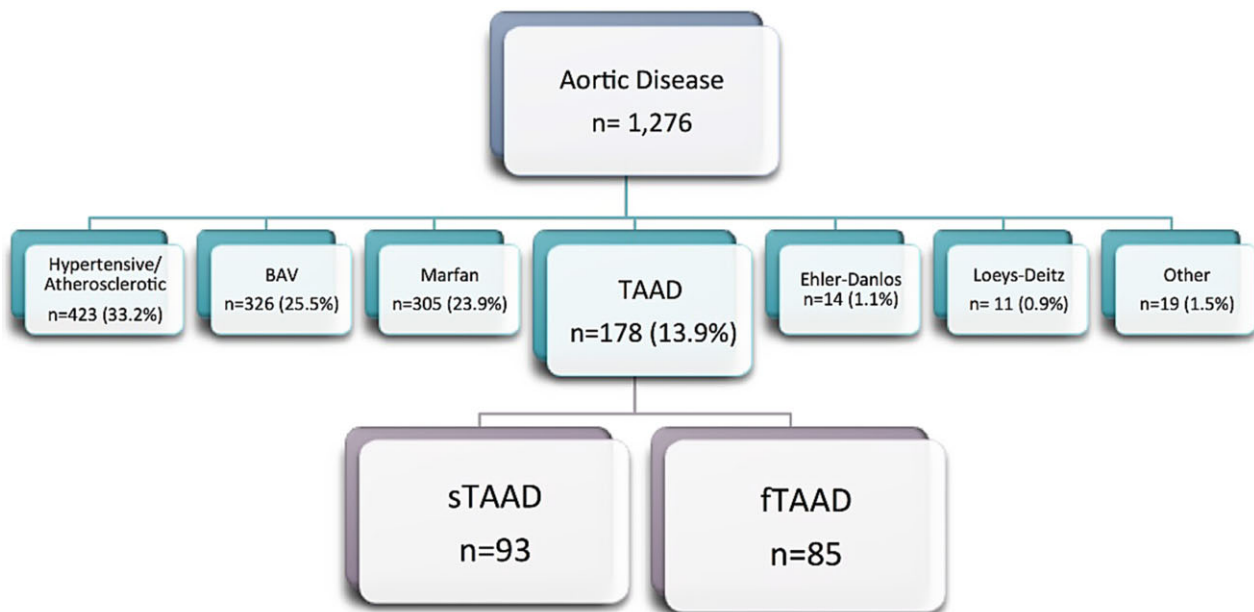
*E Robertson, R Jeremy*

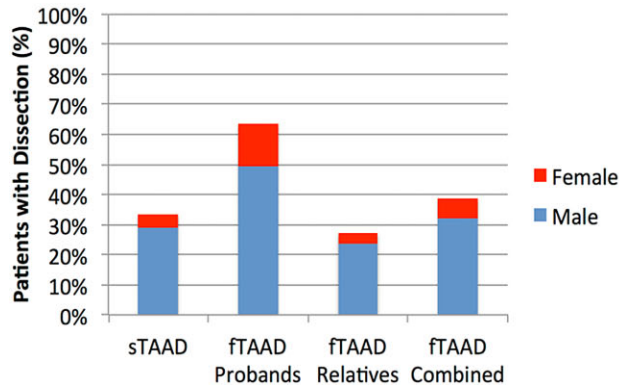
**Background:** Family studies have described an inherited disorder that is characterized by thoracic aortic aneurysm and dissection (TAAD) without external clinical features. Due to the limitations in diagnosing a syndrome that has no clinical features, the actual burden of familial TAAD (fTAAD) in the broader population is uncertain.

**Aim:** To determine the incidence of fTAAD amongst those presenting with thoracic aortic disease, and characterize the demographics and clinical outcomes of these patients.

**Methods:** All patients with aortic disease presenting to a comprehensive acute referral service between 2002 and 2012 were prospectively registered in a dedicated database. All patients diagnosed with non-syndromal TAAD were screened for affected first-degree relatives. Aortic geometry was documented by 2D echocardiography at diagnosis and follow up ( $4.9 \pm 4.5$  years).

**Results:** Of 1,276 patients registered, 178 (13.9%) were diagnosed with TAAD, of whom 85 (48%) had at least 1 affected first-degree relative (fTAAD). Screening of relatives identified an average of 2 additional affected people per proband. Mean age at diagnosis was 44 years, with significant male predominance (79.8%). The mean rate of aortic dilatation was 0.5 mm/year and did not differ significantly between probands with sporadic TAAD (sTAAD) or fTAAD or the affected family members. Aortic dissection occurred in all groups, with highest rate among the fTAAD probands (67%), compared to sTAAD (33%), and affected fTAAD relatives (27%). Death from dissection was 75% in fTAAD, compared to only 15% in sTAAD.





**Conclusions:** Approximately 1 in 7 patients presenting with aortic disease satisfies diagnostic criteria for TAAD, of whom half have fTAAD. fTAAD predominantly affects males, and confers a high rate of thoracic aortic dissection, which is often fatal. If a diagnosis of TAAD is made, screening of first-degree relatives is warranted. Lifelong surveillance of at-risk individuals is required and consideration should be given to the establishment of prospective patient recall and review systems.

#### INHIBITION OF 5 $\alpha$ -REDUCTASE TYPE 1 WITH DUTASTERIDE IN MEN INCREASES BODY FAT AND IMPAIRS INSULIN SENSITIVITY

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**Introduction:** 5 $\alpha$ -Reductase (5 $\alpha$ R) inhibitors decrease prostatic dihydrotestosterone in benign prostatic hyperplasia (BPH) treatment; finasteride inhibits 5 $\alpha$ R2, dutasteride inhibits 5 $\alpha$ R1 and 5 $\alpha$ R2. 5 $\alpha$ Rs, especially 5 $\alpha$ R1, are also expressed in metabolic tissues where they regulate local androgen and glucocorticoid action.

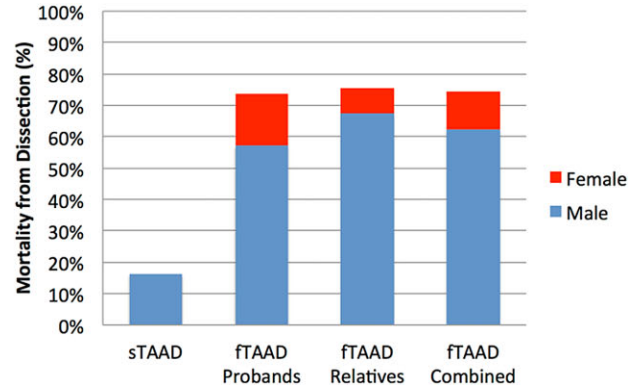
**Hypothesis:** 5 $\alpha$ R1 inhibition with dutasteride induces metabolic dysfunction in humans.

**Methods:** In a double-blind randomised controlled design, 46 men (aged 20–85 years) were studied before and after 3 months of dutasteride (0.5 mg daily; n = 16), finasteride (5 mg daily; n = 16) or control (tamsulosin MR; 0.4 mg daily; n = 14).

**Primary outcome:** Insulin-mediated glucose disposal, measured during a two-step (10;40mU/m<sup>2</sup>/min) hyperinsulinaemic euglycaemic clamp, with d2-glucose and d5-glycerol tracers. Data are mean (SEM) change from baseline, compared by one-way ANOVA with LSD post-hoc tests.

**Results:** Dutasteride, but not finasteride or tamsulosin, decreased insulin-stimulated peripheral glucose uptake (dutasteride -5.7 (3.2)  $\mu$ mol/kg fat-free mass/min compared to finasteride +7.2 (3.0) and tamsulosin +7.0 (2.0), p = 0.003); consistent with impaired peripheral insulin sensitivity. Furthermore, following dutasteride, fasting C-peptide (+76 (26) pmol/L, p = 0.02) and HOMA-IR (+0.39 (0.15), p = 0.01) increased, and tracer infusion alone induced hyperinsulinaemia (+6 (3) pmol/L, p = 0.008). Glucose production and lipolysis during low-dose insulin infusion were unchanged. Although subcutaneous adipose mRNAs, post-treatment visceral:subcutaneous adipose (MRI; L4/5), and hepatic fat (<sup>1</sup>H spectroscopy) were unchanged, insulin suppression of free fatty acids was impaired (+60 (30)  $\mu$ mol/L, p = 0.01) and body fat increased by 1.7% (0.6; p = 0.003) with dutasteride only.

**Conclusion:** 5 $\alpha$ R inhibition with dutasteride, but not finasteride, increases body fat and impairs peripheral insulin sensitivity. This highlights 5 $\alpha$ R1 as a novel determinant of metabolism and suggests dual 5 $\alpha$ R inhibitors should be re-evaluated in BPH treatment.



#### REAL LIFE EXPERIENCE WITH NEW TREATMENT FOR HEPATITIS C

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**Background:** The addition of a protease inhibitor (Boceprevir) to pegylated interferon and ribavirin represents a new era in the treatment of genotype 1 chronic hepatitis C (CHC). Landmark studies<sup>1,2</sup> with Boceprevir significantly improved sustained virological response (SVR) rates in both treatment naive (65% vs. 38%) and treatment experienced (59% vs. 21%) patients. To date no studies have examined the Australian experience with Boceprevir.

**Aims:** The aims of this study are to examine response rates and complication rates of Boceprevir-based therapy in an Australian cohort of patients.

**Methods:** Data was studied from patients who commenced Boceprevir-based therapy at The Townsville Hospital (TTH) and the Royal Brisbane and Women's Hospital (RBWH).

**Results:** 48 patients were treated (TTH = 33, RBWH = 15). Majority were male (77%), non-cirrhotic (77%) and treatment naive (71%). To date, 33 (69%) patients have either completed the intended duration of treatment or are still undergoing treatment. Treatment in 3 patients (6%) was stopped according to protocol and in 12 (25%) due to adverse events.

SVR rates (61%) are comparable to landmark studies. However there were higher rates of severe neutropenia (42%) and thrombocytopenia (16%). Pre-treatment serum albumin  $\leq$  35 g/L (p = 0.049) and pre treatment platelet count  $\leq$  90 x 10<sup>9</sup>/L (p = 0.049) were associated with an inability to complete treatment.

**Conclusion:** This is the first real world data on an Australian cohort of patients undergoing boceprevir-based triple therapy for CHC. Low albumin levels and platelet counts were significantly associated with early termination of treatment. Higher rates of neutropenia and thrombocytopenia were seen in this cohort. These data provide important evidence for better patient selection for triple therapy in the future.

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## DOBUTAMINE STRESS CARDIAC MRI RELIABLY PREDICTS SIGNIFICANT CORONARY DISEASE IN RENAL TRANSPLANT CANDIDATES

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**Introduction:** Coronary artery disease (CAD) accounts for half of all deaths in patients with end stage kidney disease (ESKD) after renal transplantation. In these patients, 'angiographically' significant CAD may be asymptomatic. Identification of these patients, with subsequent revascularisation, may reduce adverse cardiovascular events in the peri-transplant and post-transplant periods.

**Objectives:** We aimed to evaluate the effectiveness of diagnostic ( $\geq 85\%$  maximum age-predicted heart rate) dobutamine stress cardiac magnetic resonance (DSCMR) imaging in identifying 'angiographically' significant CAD in asymptomatic renal transplant candidates.

**Methods:** Over a five year period, 62 asymptomatic, high-risk patients with ESKD were referred to this program by their nephrologists as part of pre-renal transplant assessment. All had at least one traditional cardiovascular risk factor. 58 (94%) were on renal replacement therapy. Of the 62 enrolled patients, 43 (69%) had both a diagnostic DSCMR and an invasive coronary angiogram (ICA). DSCMR reporters were blinded to results of ICA and vice-versa. 19 patients (31%) were excluded from the analysis due to non-diagnostic DSCMR scans, with the most common reasons being insufficient augmentation in heart rate with dobutamine stress (in 8 patients) and claustrophobia (in 5 patients). Significant CAD was defined on ICA as a coronary stenosis of  $\geq 70\%$ .

**Results:** Of the 43 included patients, 12 (28%) had significant CAD, and all had evidence of inducible myocardial ischaemia on DSCMR. 3 (7.0%) patients had false positive DSCMR scans. There were no false negative scans. Of the 19 patients with non-diagnostic DSCMR scans, 7 (37%) subjects had significant CAD. In this cohort studied with a diagnostic DSCMR: sensitivity = 100%, specificity = 90%, positive predictive value = 80%, negative predictive value = 100%. 26 patients have undergone successful transplantation and 8 patients have died, all without transplantation).

**Conclusion:** When feasible, a diagnostic DSCMR reliably predicts 'angiographically' significant CAD in renal transplant candidates.

## IMPACT OF INTERPERSONAL RELATIONSHIPS AMONG PATIENTS IN IN-CENTRE DIALYSIS ON THEIR PERCEIVED QUALITY OF THEIR DIALYSIS EXPERIENCE

Stoklosa, Ted – 1053

ABSTRACT NOT AVAILABLE AT THIS TIME

## IS FOSFOMYCIN A POTENTIAL TREATMENT ALTERNATIVE FOR MULTIDRUG-RESISTANT GRAM NEGATIVE PROSTATITIS?

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**Introduction:** Multidrug resistant Gram-negative (MDR-GNB) infections of the prostate are an increasing problem worldwide, particularly complicating trans-rectal ultrasound (TRUS)-guided prostate biopsy. Fluoroquinolone-based regimens, once the mainstay of many protocols, are increasingly ineffective. Fosfomycin has reasonable *in vitro* and urinary activity (MIC breakpoint  $\leq 64\mu\text{g/mL}$ ) against MDR-GNB, but its prostatic

penetration has been uncertain, so it has not been widely recommended for the prophylaxis or treatment of MDR-GNB prostatitis.

**Methods:** In a prospective study of healthy men undergoing a transurethral resection of the prostate (TURP) for benign prostatic hyperplasia (BPH), we assessed serum, urine and prostatic tissue (transition zone [TZ] and peripheral zone [PZ]) fosfomycin concentrations using liquid chromatography tandem mass spectrometry, following a single 3g oral fosfomycin dose within 17 hours of surgery.

**Results:** Among the 26 participants, mean plasma and urinary fosfomycin levels were  $11.4 \pm 7.6\mu\text{g/mL}$  and  $571 \pm 418\mu\text{g/mL}$ ,  $565 \pm 149$  mins and  $581 \pm 150$  mins post-dose, respectively. Mean overall prostate fosfomycin levels were  $6.5 \pm 4.9\mu\text{g/g}$  (range:  $0.7\text{--}22.1\mu\text{g/g}$ ), with therapeutic concentrations detectable up to 17 hours following the dose. The mean prostate:plasma ratio was  $0.67 \pm 0.57$ . Mean concentrations within the TZ vs PZ prostate regions varied significantly (TZ  $8.3 \pm 6.6$  vs PZ  $4.4 \pm 4.1\mu\text{g/g}$ ,  $p = 0.001$ ). Only one patient had a mean prostatic FOS concentration of  $<1\mu\text{g/g}$ , while the majority (70%) had concentrations  $\geq 4\mu\text{g/g}$ .

**Conclusion:** Fosfomycin appears to achieve reasonable intra-prostatic concentrations in uninfamed prostate following a single 3g oral dose, such that it may be a potential option for prophylaxis pre-TRUS prostate biopsy and possibly for the treatment of MDR-GNB prostatitis. Formal clinical studies are now required.

## THE IMPACT OF ABNORMAL GLUCOSE REGULATION ON ARTERIAL STIFFNESS AT 3 AND 15 MONTHS AFTER KIDNEY TRANSPLANTATION

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**Background:** New onset diabetes after transplantation (NODAT) has been associated with an increased risk of cardiovascular disease (CVD) mortality following kidney transplantation, but the association between pre-diabetes (i.e. impaired fasting glucose and impaired glucose tolerance) and CVD mortality remains unclear. The aim of this study was to assess the association between abnormal glucose regulation and arterial stiffness at 3 and 15 months post-transplantation.

**Methods:** This is a single-centre prospective cohort study of 83 non-diabetic kidney transplant recipients who received a kidney transplant between 2008 and 2011. All patients underwent an oral glucose tolerance test (OGTT – categorised as normal, pre-diabetes or NODAT) and non-invasive measurements of arterial stiffness (aortic pulse wave velocity [PWV] and augmentation index [AIx]) 3 months post-transplantation. A sub-set of patients had repeat OGTT ( $n = 33$ ) and arterial stiffness measurements ( $n = 28$ ) at 15 months post-transplant.

**Results:** Of the 83 patients, 52% ( $n = 43$ ) had normal glucose regulation, 31% ( $n = 26$ ) had pre-diabetes and 17% ( $n = 14$ ) developed NODAT. Compared with recipients with normal glucose regulation, recipients with NODAT (adjusted  $\beta = 5.61$ , 95% confidence interval [CI]  $0.09$  to  $11.13$ ,  $p = 0.047$ ) but not those with pre-diabetes (adjusted  $\beta = 3.23$ , 95%CI  $-1.05$  to  $7.51$ ,  $p = 0.137$ ) had significantly higher AIx 3 months after transplantation. No association was found between glucose regulation and PWV at 3 months after transplantation. There was no association between glucose regulation at 3 or 15 months and AIx and PWV at 15 months in a subset of recipients.

**Conclusions:** Early onset NODAT is associated with increased systemic vascular stiffness (AIx) but not regional stiffness of large arteries (PWV) suggesting that small vessel dysfunction may be the earliest vascular change seen with NODAT. Thus, measurements of arterial stiffness after transplantation may assist in more accurately stratifying future CVD risk of kidney transplant recipients.

## Physicians in the Workplace

### RAMAZZINI PRESENTATIONS

#### MEDICATION UNDERSTANDING AND SOURCES OF ADVICE USED BY AIR TRAFFIC CONTROLLERS

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**Background:** Air Traffic Controllers (ATCOs) carry out complex cognitive tasks in their safety critical role. This research question arose from telephone calls to NATS ('National Air Traffic Services') Occupational Health Services regarding use of medications while controlling. There is a paucity of ATCO specific research concerning medication use, knowledge and information-seeking behaviour.

**Objectives:** This study aimed to identify the state of knowledge amongst NATS ATCOs concerning paracetamol, sedating antihistamines, codeine and antidepressants. The latter three were identified in toxicological studies of accident pilots with undeclared use. ATCOs stated information sources consulted when deciding whether it is safe to take medication while controlling aircraft.

**Methodology:** This cross-sectional descriptive study was carried out by self-administered electronic questionnaire over a 5 week period in 2013. A novel survey tool was designed and piloted in a non-operational ATCO group.

**Results:** There was a 41.6% response rate from an eligible population of 1547 operational controllers. 66.9% had taken medications within the past month. ATCOs demonstrated good understanding of all four medications regarding sedation side effects and use while controlling. NATS internal resources were the most common sources of information consulted except for paracetamol. ATCOs rated 'speaking to a doctor face-to-face' and 'aviationspecific advice' as most important factors.

**Discussion/Conclusion:** This study demonstrated that NATS ATCOs are highly motivated to seek advice from appropriate aviation-specific sources. The study population benefited from an in-house medical service, hence they may not be representative of other aviation professionals. As safety-critical workers, it is incumbent on aviation health professionals to educate ATCOs and pilots regarding medication use

#### A DESCRIPTIVE ANALYSIS OF WORKCOVER WA SHOULDER BURSITIS CLAIMS FROM 2004-2008

Yure Pavic

**Introduction:** This study shows the spectrum of injury management, cost and lost time for diagnosed shoulder bursitis in Western Australia Workers Compensation cases.

**Method:** WorkCover WA claims, 2004-2008, with the diagnosis of shoulder bursitis data was extracted and intervention strategies were statistically compared to patient outcomes in both cost and lost work days.

**Results:** The accepted claims ( $n = 626$ ) showed 45.5% of claims have significant differences in average cost depending on any involvement of legal, surgical or vocational rehabilitation ( $n = 285$ ) (\$68067 (Confidence Interval(CI)<sub>95%</sub> \$60120-\$76014) versus no involvement ( $n = 341$ ) (\$3692 (CI<sub>95%</sub> \$2560-\$4824;  $P < 0.0001$ )). Injury to workers >45 years of age ( $n = 282$ ) have increased average costs (\$43828 (CI<sub>95%</sub> \$37012-\$50644) and average lost time (105.5 days (CI<sub>95%</sub> 85.5-125.5) compared to ≤45 year olds ( $n = 344$ ) (\$24123 (CI<sub>95%</sub> \$19073-\$29174;  $P < 0.0001$ ) and lost time 59.1 days (CI<sub>95%</sub> 45.5-72.8;  $P < 0.0001$ ). Injured female workers compared to injured male workers require significantly increased use of vocational rehabilitation (Odds ratio 2.13 (CI<sub>95%</sub> 1.51 to 3.01); Chi Square  $P < 0.0001$ ). There was no significant difference in total average cost ( $P = 0.75$ ) and average lost time ( $P = 0.969$ ) from the cause of the injury.

**Discussion:** Prognosis on injury management outcome on initial diagnosis should be guarded as managing factors contributing to surgical, legal and vocational rehabilitation involvement may improve outcome with return to work, cost and lost time.

#### THE PREVALENCE OF RESPIRATORY AND SKIN DISEASE IN SPRAY PAINTERS

Dr Neil Rajanayagam

Strathfield, NSW, Australia

**Background:** This study was designed to investigate the utility and success of NSW's mandated protective equipment and processes in preventing skin and lung exposure to potentially toxic chemicals amongst an otherwise high-risk population for chronic lung disease – spray painters.

**Objectives:** To find out the prevalence of restrictive pattern decline in lung function and obstructive pattern decline in lung function amongst spray painters in comparison with that of the general population and also to compare the prevalence of dermatitis amongst spray painters with that of the general population.

**Methods:** The study involved secondary analysis of WorkCover's Hazardous Substances Medical Examination dataset from July 2012-June 2013 focusing on NSW male spray painters. A random sample of  $n = 120$  spray painters records were extracted. Data were selected from three linked sources: occupational history, clinical notes and spirometry reports.

**Results:** The subjects reported significantly higher prevalence of asthma, respiratory symptoms and dermatitis than are evident in the general Australian population. There was a strong association with each of these and the number of years employed as a spray painter. Obstructive pattern decline in lung function was significantly more common with increasing years employed in the industry with a  $p$  value  $< 0.0001$ .

**Conclusions:** The strong association of respiratory symptoms and dermatitis with length of employment demonstrates that past work practices may have failed to adequately protect workers in the course of their workplace activities.

#### SCREENING RAIL SAFETY WORKERS FOR OSA: COMPARISON BETWEEN CLINICAL RISK FACTORS AND THE ESS

Christopher Colquhoun

**Background:** The National Standard for Health Assessment of Rail Safety Workers has used the Epworth Sleepiness Score (ESS) as a marker for screening for the presence of excessive daytime sleepiness that may be related to Obstructive Sleep Apnoea (OSA). This Standard was reviewed in 2012, and updated the OSA screening risk matrix to include the clinical risk factor measures of body mass index, comorbid hypertension and type 2 diabetes as additional triggers requiring further sleep study investigation to be undertaken, irrespective of reported ESS.

**Aim:** This study aims to assess whether the additional clinical risk factor measures introduced in the National Standard for Health Assessment of Rail Safety Workers are a more effective method of screening and identifying rail safety critical workers with OSA, as compared with solely using an elevated ESS.

**Method:** A cross sectional study involving retrospective data analysis was carried out on the first 200 cases that required further investigation with sleep study since the implementation of the updated Standards. Sleep study outcomes were compared with the initial risk matrix triggers.

**Results:** Of the 200 workers investigated with a sleep study, 193 met the clinical risk factor criteria. Of these, 176 (91%) were subsequently newly diagnosed with OSA, defined as an Apnoea Hypopnoea index  $>5$ . No worker reported an elevated ESS score. Sensitivity analysis of this data indicates the relative false positive to true positive ratio is 0.19 (95% CI = 0.13 to 0.27).

**Conclusion:** The introduction of objective clinical risk factor measures has resulted in the identification of a significant number of Rail Safety Workers with Obstructive Sleep apnoea, who previously would not have been required to undergo further investigation based solely on their ESS. This study supports the ongoing use of these objective clinical risk factor measures to identify workers with Obstructive Sleep Apnoea, to further minimise the risk of accidents associated with potential excessive daytime sleepiness and other associated comorbid conditions associated with OSA.



### ISOLATED PERFUSED MOUSE KIDNEY; AN OPTIMIZED *IN VITRO* MODEL FOR INVESTIGATION OF ACUTE NEPHROTOXICITY

Majid Rahgozar

Hawthorn, East Vic, Australia

**Background:** Acute renal failure (ARF) has high mortality of approximately 30–50%. Ischaemia and/or toxic occupational exposures such as heavy metals and organic solvents can cause acute and chronic nephrotoxicity. The mechanisms by which occupational exposures induce renal injury remain poorly understood. With easier and faster processes for production and breeding of transgenic mice, experimental models using transgenic mice have become the model of choice for studying ARF.

**Objectives:** Although isolated perfused proximal tubules from mouse have been used for investigation of acute renal injury, whole kidney perfusion, in which the integrity of glomerular and tubular interaction is maintained, had never been utilised due to technical difficulties.

**Methodology:** The author first mastered the isolated perfused rat kidney (IPRK) model and used that for investigation of renal ischaemia reperfusion injury (1). In the second stage, the surgical technique was modified to suit the mouse kidney, 6–8 times smaller than the rat (IPMK). In the third stage, perfusate and experimental conditions were optimised to achieve maximum viability of isolated kidney under test conditions. In the fourth stage, transgenic mice (deleted genes of different NO synthase isozymes) were utilised to investigate the effect of deleted enzymes on renal physiology and pathophysiological processes (2).

**Results:** IPMK maintains an acceptable level of glomerular (GFR) and tubular (FENa) over a 90–120 min period.

**Conclusion:** With the availability of transgenic mice, IPMK presents a new, cheaper, easier and relevant method of investigating nephrotoxic agents. Occupational toxicology will benefit from this advance. In the future new agents may be screened for nephrotoxicity by IPMK.

### HAND DERMATITIS IN POULTRY PROCESS WORKERS

Anthony E Burgess

Hillcrest, Auckland, New Zealand

**Background:** On carrying out an injury related medical consultation on a poultry process worker there was an incidental finding of hand dermatitis. This raised the question around incidence of dermatitis amongst that particular working population.

**Objective:** To discover the prevalence of dermatitis in the working population of poultry process workers, to identify if there was a systemic work related problem causing hand dermatitis that needed to be managed.

**Methodology:** A standard questionnaire was formulated and 50 staff were selected at random from the population of 224 process workers. The staff were consented by the health and safety nurse to participate. A doctor conducted the questionnaire during a short interview and this was followed by an examination. Positive cases were then referred for investigation and review with a dermatologist.

**Results:** 100% of the 50 randomly selected staff agreed to participate in the interview and examination. A total of 3 confirmed cases of hand dermatitis were found, giving a prevalence of 6% (95% CI 0.2–11.8) of these 2 were confirmed as work related.

**Conclusion:** The prevalence of hand dermatitis in this working population of poultry processors was not significantly higher than prevalence rates from studies of the general population. Work place factors that were considered to contribute to higher rates were exposures to biological fluids, chlorine based bleaching agent, exposure to latex gloves and hand washing. Factors that were considered to reduce the prevalence included the healthy worker effect, pre-employment screening, use of cotton inner gloves, use of moisturizing agents.

### EVALUATION OF INJURIES DURING TRAINING IN POLICE RECRUITS UNDERTAKING PRE-TRAINING MULTITASK PHYSICAL ASSESSMENT OR BEEP TEST

Derek Lee

**Background:** Policing duties are physically demanding. Applicants are required to undergo physical competency testing before commencing training.

**Objectives:** This study aims to characterise injuries occurring during training in recruits undergoing pre-training physical competency testing by a multitask assessment (APSAD) versus beep test.

**Method:** Injury data was collected from medical data stored in Queensland Police Service database between 2012 and 2013.

**Results:** There were 646 eligible recruits, 263 of whom completed the APSAD (40%). There were 71 injuries in total with 47 (66%) occurring in the Beep test group. Variables collected were age, gender, injury type, injury mechanism and days injured. Independent samples t-test demonstrated no difference between groups ( $p > 0.146$ ). Bivariate correlations demonstrated significant correlations with neck injuries more likely to occur with police operations skills tactics ( $p < 0.05$ ) and lower limb injuries having a longer duration of injury ( $p < 0.01$ ). ANOVA demonstrated lower limb injuries had longer durations of injuries ( $p < 0.011$ ) and older age positively associated with duration of injury ( $p < 0.013$ ). Linear regression demonstrated that the APSAD group had shorter durations of injury compared to the beep test group ( $p < 0.006$ ).

**Conclusion:** Recruits undergoing pre-training multitask physical assessment had shorter durations of injuries. Significant associations were found demonstrating lower limb injuries and increasing age result in longer durations of injury with lower limb injuries more common with increasing age.

### FATIGUE IN AN AUSTRALIAN TELEHEALTH WORK ENVIRONMENT: A STUDY OF WORKING WEEK PATTERNS, FATIGUE AND ASSOCIATED FACTORS

Sean Low

Lilyfield, NSW, Australia

**Background:** Fatigue is a known issue in both shift work as well as call center work. Healthdirect Australia operates a Telehealth service staffed by General Practitioners. To date there have been no studies looking at fatigue and associated factors in this specific population.

**Objectives:** To evaluate the working patterns of Telehealth doctors, fatigue levels and associated factors.

**Methodology:** An online survey was used to measure fatigue levels, working week patterns, demographic characteristics and job demand factors. All 85 General Practitioners were invited to participate through internal email distribution lists; 76 (89% response rate) General Practitioners completed the survey in October 2012.

**Results:** Participants were found to engage in secondary employment working long hours with short intervals between jobs. Fatigue was found to be prevalent and significantly associated with interval between jobs, stress levels and adequate rest breaks during shifts.

**Conclusions:** Fatigue was shown to be a significant issue in this work force. Raising awareness of safe working patterns as well as further exploration of job demand factors is recommended.

### SPIROMETRY IN THE OCCUPATIONAL HEALTH SETTING. A RETROSPECTIVE DATA STUDY

Angus Forbes

**Objectives:** This study aims to analyse the conduct and interpretation of spirometry testing within medical examinations performed for Occupational Health reasons

**Methodology:** The most up to date and relevant guideline for the performance of spirometry in these tests is the ACOEM guidance statement on Spirometry in the Occupational Health setting – 2011 update. 100 medicals were reviewed and the findings analysed against the guidance statement to validate whether the screening has been both performed and interpreted accurately. The criteria selected were the acceptability and repeatability of the testing, the use of lower limits of normal (LLNs), and the correct interpretation of results.

**Results:** Only 2 out of the 100 medicals met all of the selected requirements. 26 of the 100 medicals met the criteria for acceptability, of which 19 met the criteria for repeatability. Of those 19 only 2 were assessed using LLNs, they were both correctly interpreted.

**Conclusion:** Spirometry testing in the reviewed data was rarely performed in accordance with the ACOEM guidance. A significant portion of the medicals reviewed had technical flaws. These tests may lead to inaccurate interpretations of a patients health by suggesting that normal subjects are

impaired, or vice versa. This has the potential for patients and employers to be given varied advice for the same patient at different times, and even on the same spirometry result.

**AN EVALUATION OF PERSONAL AND WORKPLACE FACTORS ASSOCIATED WITH WORK-RELATED STRESS IN THE GP CALL CENTRE ENVIRONMENT IN AUSTRALIA**

*Gia Han Thai*

**Background:** Call centre workers experience higher levels of mental health related illness and lower levels of general well-being compared to employees in other occupations. However, very little is known about general practitioners working in the call centre environment.

**Objectives:** The aim of this study was to evaluate the personal and workplace factors associated with work-related stress in general practitioners working in the call centre environment in Australia.

**Methods:** All 85 general practitioners (GPs) working for Healthdirect Australia were invited to complete an online questionnaire. The questionnaire collected data on demographic details, self-perceived stress levels and working hours. The UK Health and Safety Executives Management Standards Indicator Tool was the validated questionnaire used to assess work-related stress.

**Results:** The response rate was 89% (76 out of 85). 47% of males (18 of 38) and 82% of females (31 of 38) rated their stress levels moderate ( $n = 37$ ), high ( $n = 9$ ) or very high ( $n = 3$ ). Multiple linear regression analysis found females reported higher levels of work-related stress compared to males. The work design domains of *Control* and *Change* were identified as the two key areas requiring the most immediate action.

**Conclusion:** This study is the first to provide empirical evidence on the predictors of work-related stress in the GP call centre environment in Australia. Females reported higher levels of work-related stress than males. The two main predictors of work-related stress were low control and lack of

consultation with staff regarding change. Less important predictors included lack of peer support and manager's support

**THE DEVELOPMENTAL ORIGINS OF HEALTH AND DISEASE AND OCCUPATIONAL & ENVIRONMENTAL MEDICINE**

*Christopher Rumball*

*Australis Medical Ltd, Christchurch, New Zealand*

**Background:** The Developmental Origins of Health and Disease (DOHaD) hypothesis postulates a link between conditions in early life and the risks of a number of chronic diseases in adults. Due to a large body of human epidemiological data that relates size at birth to later disease risk, it is now widely accepted that such a link exists, and that the developmental plasticity of the fetus and child is the basis of this link. It is of considerable public and occupational health interest to clarify the vulnerabilities at different stages of development in order to manage any risks.

**Objectives:** These studies investigated the effects of maternal periconceptional undernutrition on maternal adaptation to pregnancy and fetal growth, physiology and endocrinology in late gestation in sheep.

**Methodology:** Ewes were undernourished pre-conception, post-conception or both, and surgery performed at day 110 of gestation to catheterise the fetal and maternal vessels, and put in place growth catheters and amniotic catheters. Over the next 20 days fetal growth was measured and experiments performed to assess the HPA and glucose-insulin axis, maternal blood volume, and uterine blood flow.

**Results:** Periconceptional undernutrition resulted in altered fetal and placental growth,

**Discussion:** This research adds to a body of evidence demonstrating that maternal insults around conception can have effects on fetal development, and possibly on his/her health in later life. Therefore, prevention of such insults in women of child-bearing age, including in the occupational setting, may prevent later morbidity.



## Poster Abstracts

### A CASE OF MITRAL VALVE ENDOCARDITIS CAUSED BY LACTOBACILLUS RHAMNOSUS IN AN IMMUNOCOMPETENT PATIENT

**Trainee name:** Dr. Anoushka Krishnan

**Supervisor name:** Dr. Abu Abraham

**Hospital:** Royal Perth Hospital

**Description of Case:** Infective endocarditis caused by *Lactobacillus* species is a rare entity with less than 100 reported cases in literature. It has a high mortality rate of 25%, thus necessitating early investigation and therapy. A case of *Lactobacillus* (LB) endocarditis of the mitral valve (MV) post mitral valve repair in an immunocompetent patient is reported here.

Although often considered a contaminant in blood cultures, LB can cause various infections especially in the immunosuppressed host.

Our patient, a 56 year-old man, presented with symptoms persisting for fourteen months, which began 4 months post mitral valve (MV) repair for severe mitral regurgitation. His diet included occasional consumption of probiotic drinks. Several blood cultures were positive for *Lactobacillus rhamnosus* and trans-oesophageal echocardiogram demonstrated a 2.6 cm large vegetation over the mitral valve. He was treated with two weeks of gentamicin and six weeks of benzylpenicillin intravenously. He also required MV redo annuloplasty and made a complete recovery.

The only reliable means of diagnosis is the isolation, culture and identification of the organism. Diagnosis is further confounded by the fact that *Lactobacillus* is a fastidious gram-positive rod; it may be mistaken for diphtheroids on gram stain and dismissed as a contaminant. Treatment usually includes benzylpenicillin and an aminoglycoside.

Concerns have been raised about LB bacteraemia following consumption of large amounts of probiotics as demonstrated in a study in Finland.

This case report should keep physicians vigilant to the possibility of unusual pathogens and commensals causing significant illnesses even in an immunocompetent patient.

#### Issues of Interest in the Case

- 1) *Lactobacillus* (LB) endocarditis by itself is an uncommon clinical entity in the immunosuppressed host, and even more rare in the immunocompetent host
- 2) No prior cases of LB endocarditis described in Australia
- 3) The bacterium is fastidious and needs appropriate culture media. Optimal treatment is still a debated topic; LB is noted to be resistant to vancomycin
- 4) Concerns arise regarding LB bacteraemia following consumption of large amounts of probiotic drinks

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### HAEMOPHILUS INFLUENZAE MENINGITIS IN THE POST-VACCINE ERA: A CASE SERIES OF FIVE ADULT PATIENTS AT COUNTIES MANUKAU HEALTH IN AUCKLAND, NEW ZEALAND

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**Background:** Invasive infections due to *Haemophilus influenzae* (HI) including meningitis have classically been an important cause of mortality and morbidity but have declined substantially since the widespread adop-

tion of vaccination against HI serotype B (HiB). The literature on HI meningitis in the post-HiB vaccine era is sparse.

**Aims/Objectives:** We present a retrospective case series of all adult patients treated for *Haemophilus influenzae* (HI) meningitis at Middlemore Hospital in Auckland, New Zealand between 1998 and 2013.

**Methods:** Five patients were identified via a laboratory search for HI isolated from usually sterile sites and review of clinical records to identify cases of meningitis.

**Findings:** The mean age of cases was 55 years and the female to male ratio 4:1. All HI isolates were beta-lactamase negative and none was HiB. Two patients were immunocompromised and three had significant sinus/upper respiratory tract disease predisposing to the development of HI meningitis.

**Conclusions:** Despite small case numbers this series is the largest series of HI meningitis in the post-HiB vaccine era. Our series confirms that in our setting HI meningitis in adults is rare, and the lack of serotype B disease is in line with international literature in terms of the decline of HiB disease since the widespread uptake of HiB vaccination. The rarity of HI as a cause of adult meningitis and the absence of beta lactamase production by any of our isolates casts doubt on the necessity of including ceftriaxone in empiric treatment for bacterial meningitis.

### MEDICATION RECONCILIATION IN ACUTE MEDICAL WARDS OF TWO TERTIARY REFERRAL HOSPITALS IN HUNTER NEW ENGLAND HEALTH: A DESCRIPTIVE STUDY

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<sup>1</sup>Calvary Mater Newcastle (CMN) Hospital, <sup>2</sup>University of Newcastle, <sup>3</sup>John Hunter Hospital, Newcastle

**Introduction:** Medicines reconciliation and review at hospital admission and discharge assists in medication management at critical care transitions. The Hunter New England Health Admission Medication History (AMH) form, typically completed by pharmacists, is designed to facilitate reviews and communication with medical teams.

#### Objectives

- (i) To assess extent of use and completion of the AMH in acute medical wards of two tertiary referral hospitals in Newcastle, Australia
- (ii) To assess doctors and pharmacists awareness, use and perceptions of the AMH.

**Methods:** Medical chart and records review was conducted for all patients admitted to selected medical wards of John Hunter Hospital [JHH] and Calvary Mater Hospital [CMN] during a two week period. We noted the presence and extent of AMH form completion, whether and when the medical team documented responses to pharmacists' questions and requests for medication review. All JHH and CMN doctors and pharmacists were surveyed to assess their awareness and perceptions of the AMH form.

**Results:** Records of 316 JHH and 159 CMN admissions were assessed. Inclusion of the AMH in patient records was low for both hospitals – 72/316 (24.2 %) JHH, 37/159 (22.8%) CMN. AMH completion was highest for admission (100% JHH, CMN) and lowest for reconciliation at discharge (13.9% JHH, 0% CMN).

Medication-related discrepancies identified were high (87.5%, 48.6%), mostly dose modifications and omissions. Documented responses by doctors to issues raised was low – 20% JHH, 27% CMN.

12/18 responding pharmacists indicated AMH completion was workload dependent, mostly for complex patients, polypharmacy and medication-related admissions. 57/95 responding doctors (285 surveyed) were aware of the AMH form, almost all (56/57) valued the information for patient care.

**Conclusion:** AMH forms are underutilised affected by pharmacist time and workload constraints. Doctors' contributions to medication reconciliation were low. In resource-limited settings, medication reconciliation for targeted high-risk patients should be standard care.

### MAST CELL INSTABILITY – UNDERSTANDING URTICARIA, ANGIOEDEMA AND ANAPHYLAXIS

Andrew Baker

Auckland, New Zealand

When urticaria, angioedema or anaphylaxis occur, immediate precipitants will often be closely examined. While IgE-mediated immediate hyper-

sensitivity is often diagnosed, in fact this only causes about 30% of urticaria in adults. As a result IgE-mediated allergy is overdiagnosed, and other causes are missed.

Traditionally, allergy has been considered a one dimensional system involving a small amount of allergen which will reliably precipitate a significant reaction in a sensitized individual. A second model, involves physical and pharmacological precipitants for mast cell degranulation independent of IgE, and is more dose dependent.

Emerging evidence has led to new insights into an interaction between IgE-mediated allergy and physical, chemical, biological, social, and emotional factors and the distinction between models has become more blurred.

Having an understanding of these interactions leads to practical tips in history taking and examination, helps determine the cause of mast cell instability, and to avoid the pitfalls in diagnosis and management.

#### DETERMINATION OF ASBESTOS BODIES IN BRONCHOALVEOLAR LAVAGE FLUIDS IN THAILAND

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**Introduction:** Asbestos bodies (AB) could be present in the bronchoalveolar lavage fluid (BALF) of persons exposed to asbestos. The present study was conducted to evaluate the prevalence of asbestos bodies in the BALF of workers who might possibly have been exposed to asbestos and of the general population in Thailand.

**Method:** Thirty workers in cement pipe and roof tile factories using chrysotile asbestos, and 30 patients with respiratory diseases underwent diagnostic bronchoscopy. Determination of asbestos bodies was made by the membrane filtration method, as described previously by De Vuyst et al.

**Results:** AB were detected in six workers and in one control subject (0.1–3.6 vs 0.2 AB/ml of BALF,  $p = 0.449$ )

**Discussion:** In this study, although AB were identified in more workers than in control subjects, the findings remain a mystery regarding the source of asbestos exposure; the findings in this study are similar to those of our previous study of autopsied lungs.

#### PEELING AWAY THE ONION SKIN: IN PURSUIT OF THE TRUTH

**Trainee name:** Dr Nikhita Ange

**Supervisor name:** A/Prof Marc Budge

**Hospital:** The Canberra Hospital

**Description of Case:** This case presentation follows the diagnostic journey of an 85-year-old lady, Mrs G, who initially presented to our Emergency Department with what appeared to be a simple case of a lower respiratory tract infection. Although she initially improved on empiric therapy, her subsequent lack of recovery, in particular with regard to her weak lower limbs and poor gait, raised suspicion of an alternate pathological process.

We revisited her past medical history, which included a diagnosis of Sjögrens disease 11 years prior. She suffered multiple complications of this disease, including recurrent keratitis and corneal ulceration, dental caries requiring a dental clearance, a third degree heart block requiring a permanent pacemaker (SSA positive associated) and most importantly, a severe ataxic sensory neuropathy. This was a consequence of a Sjögrens mediated vasculitis. It has a poor prognosis. Mrs G was treated with multiple immunosuppressants, including prednisone, cyclophosphamide, immunoglobulins and azathioprine over a four-year period. In 2009 she developed anaemia, thrombocytopenia and an IgG kappa monoclonal protein. Clinically she had splenomegaly. A bone marrow aspirate was performed to exclude a secondary lymphoma from Sjögrens, or a myelodysplastic syndrome from her cyclophosphamide. Ultimately it was neither. A diagnosis of Sjögrens associated immune thrombocytopenia was made.

10 Months prior to admission, her neuropathy progressed to affect her hands. Nerve conduction studies were repeated. She underwent further immunoglobulin therapy.

From day 22 of her admission Mrs G began spiking temperatures daily over 38 degrees. An escalating CRP accompanied this. The fevers remained unexplained for ten days, and a thorough approach to fever of unknown origin was worked through. A large hepatic and splenic mass was found, and when biopsied, a diagnosis of neuroendocrine tumour was made.

#### Issues of Interest in the Case:

1. Sjögrens disease: diagnosis and complications, with a particular focus on the 7 different types of neuropathy associated with this disease.
2. Diagnostic approaches to challenges faced, including neuropathy, cytopenia's and fever of unknown origin
3. Neuroendocrine tumours: what they are, how they are diagnosed and how they are treated.
4. A prior case report in the literature of a neuroendocrine tumour post cyclophosphamide therapy raises this possibility in Mrs G's case.

#### METASTATIC PROSTATE CANCER

**Trainee name:** Dr Krupali Bulsari, Dr Manan Vaishnav

**Supervisor name:** Dr Sharad Sharma

**Hospital:** Launceston General Hospital

**Description of Case:** 84 year old gentleman diagnosed with localised prostate cancer in 1998, treated with radiotherapy. His disease recurred in 2012 as castrate resistant metastatic prostate cancer leading to a series of events as described below.

In early 2012, he presented with right foot pain which was diagnosed as bone metastases in the right foot and was treated with high dose palliative radiotherapy – 39 Gy in 13 fractions in April 2012.

He developed pathological fracture of right distal tibia in mid- 2012. This was managed conservatively and he was diagnosed with further aggressive bone metastases to long bones of right leg.

He received a series of palliative radiotherapy (30 Gy in 10 fractions individually) to right knee, right femur, right pubic bone until December, 2012.

He has been managed by multidisciplinary team at Launceston General Hospital involving medical oncology, radiation oncology and orthopaedic teams.

In 2013, he was diagnosed with bone metastasis in the right great toe which was treated with 20 Gy in 5 fractions of radiotherapy. This was completed on 15/05/2013. However, his bone metastasis in the right great toe progressed relentlessly resulting into an ulcerative lesion at high risk of developing osteomyelitis and was initially being considered for surgical management with possible amputation.

Taking his overall health into consideration (ECOG stage 2, advanced age and living in a retirement village), he was commenced on palliative, dose reduced docetaxel (16/08/2013– 27/09/2013; 3 cycles).

However, his PSA continued to rise up to 334ug/L on 03/09/2013 and >400ug/L on 07/11/2013 while on reduced dose docetaxel.

At this point, his therapy was changed to abiraterone acetate 1gram per day with 5mg prednisolone 08/11/2013.

Following above therapy, he reports significant improvement in right toe. His PSA has come down to 36ug/L compared to 40 on 10/12/2013 and >400ug/L on 07/11/2013.

#### Issues of Interest in the Case

Rare case of isolated right lower limb aggressive metastatic prostate cancer

The significance of considering metastatic disease in patients with unusual site of persistent bone pain in the setting of known malignancy.

Management of patients with aggressive bone metastases and understanding mechanisms of newer available hormonal therapy

Only few case reports of aggressive prostate cancer bone metastases in foot been reported.

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Prostate Cancer Metastases to the Leg, Ankle, and Foot (JAPMA May 1, 2008 vol. 98 no. 3 242 – 245)

## BETTER AND SAFER PROCEDURES IN GENERAL MEDICINE AT WAITEMATA DHB

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<sup>1</sup>Waitemata District Health Board

**Background:** 'See one, Do one, Teach one' is an outdated concept of procedural competency. Surgical and procedural specialities have moved on to minimal numbers, specific competencies and 'life or limb' policies for overnight procedures. General Medicine lags behind in improving provision of chest drains, abdominal paracentesis and lumbar punctures.

**Aims/Objectives:** To improve the provision of procedures in general medicine at WDHB

**Methods:** To assess baseline practice through audit, discussion and observation

**Audit:**

150 procedures	- 50 abdominal paracentesis
	- 50 lumbar punctures
	- 50 chest drains

Against best practice guidelines

**Discussion:** survey about procedures of shop floor staff – nurses, junior doctors, stockists, clerks

**Observation:** through participation in patient care and procedures to identify issues

**Findings:** Findings are divided into 3 broad categories:

1. Practical problems: equipment location, stock levels, choice of equipment, access to US
2. Poor documentation: inconsistent and incomplete, failed to show care, no ongoing care plan
3. Huge variation: consent, anaesthesia, equipment, antiseptic choice, use of US, site selection, no. of attempts, post-procedural instructions

**Conclusions:** We tackled our problems on 2 levels: institutional and individual.

*Institutional Improvements – aiming to simplify and standardise*

Identify local best practice

Restrict equipment – less to learn, less to choose from

Organise equipment packs

Single source of equipment packs – single responsible ward 365 days/year

Uniform consent

Preformatted documentation for the patient notes – checklist style

Use documentation to encourage best practice

Encourage better practice – be vocal

*Individual improvements – aiming to train and supervise better*

Check competence

Offer training to all

Buy better training models

Proactive supervision by seniors

Train 'procedural champions' – junior doctors to support other junior doctors

Role model better care

Substantial improvements have been attained particularly at institutional level. Improving training and supervision has taken longer but significant progress has been made.

## SEROTONIN SYNDROME AND ACUTE HYPONATREMIA, COMPLEX OVERLAPPING SYNDROMES, A CASE REPORT AND REVIEW

Muhammad E Choudhry

Department of Geriatric Medicine, The Canberra Hospital, ACT, Australia

**Objective:** To report the first case of simultaneous serotonin syndrome and acute hyponatremia secondary to sertraline and drug interactions resulting in patients' death (Naranjo ADR probability score 7).

**Case Summary:** An 83-year-old female on sertraline for 5 years for depression was admitted for left tibial plateau fracture. She had a history of short bowel syndrome, total parenteral nutrition and CKD stage 3 secondary to vascular disease. 2 weeks post operatively, she developed difficulty concentrating, tachycardia, hyperreflexia and clonus in context of opioids and antiemetic use but was afebrile and haemodynamically stable. She also developed acute hyponatremia from 133 mmol/L to 122 mmol/L within 48 hours. Sertraline and antiemetic medications were stopped and cyproheptadine and diazepam were started to treat serotonin syndrome. She deteriorated after initial improvement and developed aspiration pneumonia and passed away in ICU.

**Discussion:** Both acute hyponatremia and serotonin syndrome share SSRIs as common etiology, which have acute onset and rapid resolution and show multiple overlapping neurological features. Hunter criteria are more accurate than Sternbach criteria due to less emphasis on mental features to diagnose serotonin syndrome in comparison with overlapping conditions with similar presentation. Hyponatremia causes muscle weakness with hyporeflexia compared to serotonin syndrome with hyperreflexia and clonus.

**Conclusion:** Clinicians should be aware of possibility of both acute hyponatremia and serotonin syndrome secondary to SSRIs interacting with opioids and ondansetron. The use of Hunter criteria would aid in prompting diagnosis and initiation of timely treatment.

## DEVELOPMENT OF A NEW METHOD FOR ASSESSING PERMANENT IMPAIRMENT IN HAND INJURIES

Steven Clarke

Western Australia, Australia

**Background:** Hand injuries are common in occupational medicine practice.

The method of assessment of permanent impairment following hand injury is specified in "American Medical Association guides to permanent Impairment" and is the basis for impairment assessment throughout Australian state-based Workers Compensation schemes.

**Aim:** To develop a system for accurately measuring the more common occupational hand injuries (digit amputation/sensory loss and digit rotation following fracture) that would reduce inter-rater variability and provide accurate, reproducible and verifiable results.

**Method:** A series of digital photographic techniques were developed that enable the use of on-screen computerised 'measuring tools' to be superimposed over the photographs allowing measurements to be made and printed for verification.

The system allows accurate measurement of the length of digit amputation, length of digit sensory loss (longitudinal or transverse) and degree of net digit rotation. Several studies were performed to assess the accuracy, inter-rater and intra-rater agreement and comparison between old and new methods.

**Results:** Net digit rotation was measured using the technique on 91 digits (both injured and uninjured). The inter rater and intra rater reliability was > 90%.

The method of measuring amputation/sensory length was compared to measures using a digital micrometer and accuracy was found to be within +/- 1 %.

Assessment of permanent impairment in amputation cases was done using the traditional method and the new method by 10 different examiners. The newly developed method reduced the inter-rater variability but by less than a statistically significant amount. Analysis of the study revealed several deficiencies in its design that could explain the findings. The study will be repeated with an improved design and will aim to demonstrate further improvement in inter-rater reliability.

**Conclusion:** The new method provides more accurate and reliable measures of permanent impairment following hand injury than the traditional methods.



UPDATE ON GOUT TREATMENT: STRATEGIES FOR IMPROVED OUTCOMES

Nicola Dalbeth  
Auckland, New Zealand

Gout is a chronic disease of monosodium urate (MSU) crystal deposition. This condition is the most common form of inflammatory arthritis, and prevalence is increasing internationally. Māori and Pacific people in Aotearoa New Zealand have the highest rates of gout worldwide. Gout causes severe pain, musculoskeletal disability and joint damage. The central strategy to effective gout management is long term urate-lowering therapy (ULT), with a serum urate concentration <0.36mmol/L. Although the therapeutic target for gout prevention is well established, gout management is frequently poor with low rates of ULT use and infrequent serum urate monitoring. There are a number of strategies for improved gout management, including more effective use of existing drugs (particularly allopurinol) and increased availability of new ULT drugs. In addition, approaches to address both practitioner and community perceptions of gout as self-inflicted due to lifestyle indiscretions and requiring only acute management are essential. This talk will describe a coordinated strategy to improve gout management by clinicians, researchers and health advocates in Aotearoa New Zealand.

THE PHYSICIAN RESEARCHER- WHAT CAN BE DONE TO PREVENT THIS SPECIES BECOMING EXTINCT?

Martin Delatycki<sup>1,2,3</sup>  
<sup>1</sup>Clinical Genetics, Austin Health, Heidelberg, Victoria, Australia,  
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<sup>3</sup>Australian Society for Medical Research

There are countless examples that highlight the role that physicians have played in key discoveries that have made a huge impact on human health. What is less well known is that the number of clinicians doing research has diminished considerably. This talk will outline key discoveries made by Australasian researchers and explore reasons why the number of physician researcher is diminishing and some possible solutions.

TIDYING UP TO MEET NEAT: SAFELY IMPROVING NEAT COMPLIANCE IN A TERTIARY HEALTH CARE SETTING

Sullivan CM<sup>1</sup>, Staib A<sup>1</sup>, Flores J<sup>1</sup>, Scanlon A<sup>1</sup>, O'Neill M<sup>1</sup>, Scott I<sup>1</sup>  
<sup>1</sup>Princess Alexandra Hospital, Ipswich Road Woolloongabba, Brisbane

**Background:** The National Emergency Access Target (proportion of patients presenting to emergency departments [ED] who are discharged or transferred to inpatient wards within 4 hours) is intended to reduce over-crowding in EDs which various studies have associated with increased in-hospital mortality. Financial penalties may apply to hospitals failing to meet stipulated NEATs. Various hospitals have instituted measures to improve NEAT but few have studied their effects on patient safety.

**Aims/Objectives:** To improve the NEAT performance in a 640-bed tertiary hospital from a baseline NEAT of 30% while maintaining patient safety.

**Methods:** Over a period of 18 months, multiple interventions were implemented including elimination of hospital bypass within the area health service, expansion of short stay wards (SSW) combined with more efficient discharge processes, direct to ward admissions from ED, regular rounding of general physicians in ED, increased after hours medical registrar cover, and institution of dedicated patient flow nurses. Critical clinical events and in-hospital mortality of patients admitted via the ED were monitored as safety indicators.

**Results:** Overall NEAT for the hospital increased from 30% to over 60%, with NEAT for patients discharged from ED rising to 80% and NEAT for inpatient admissions rising from around 10% to 30%. (Figure 1). Hospital standardised mortality rate did not change while in-hospital mortality for patients admitted from ED declined from 2.5% to 1.0% (Figure 2)

**Conclusions:** Reform of clinical processes improved NEAT compliance and was associated with a decline in mortality of patients admitted from ED. Further innovations will be necessary if NEAT is to reach desired thresholds over 80%.

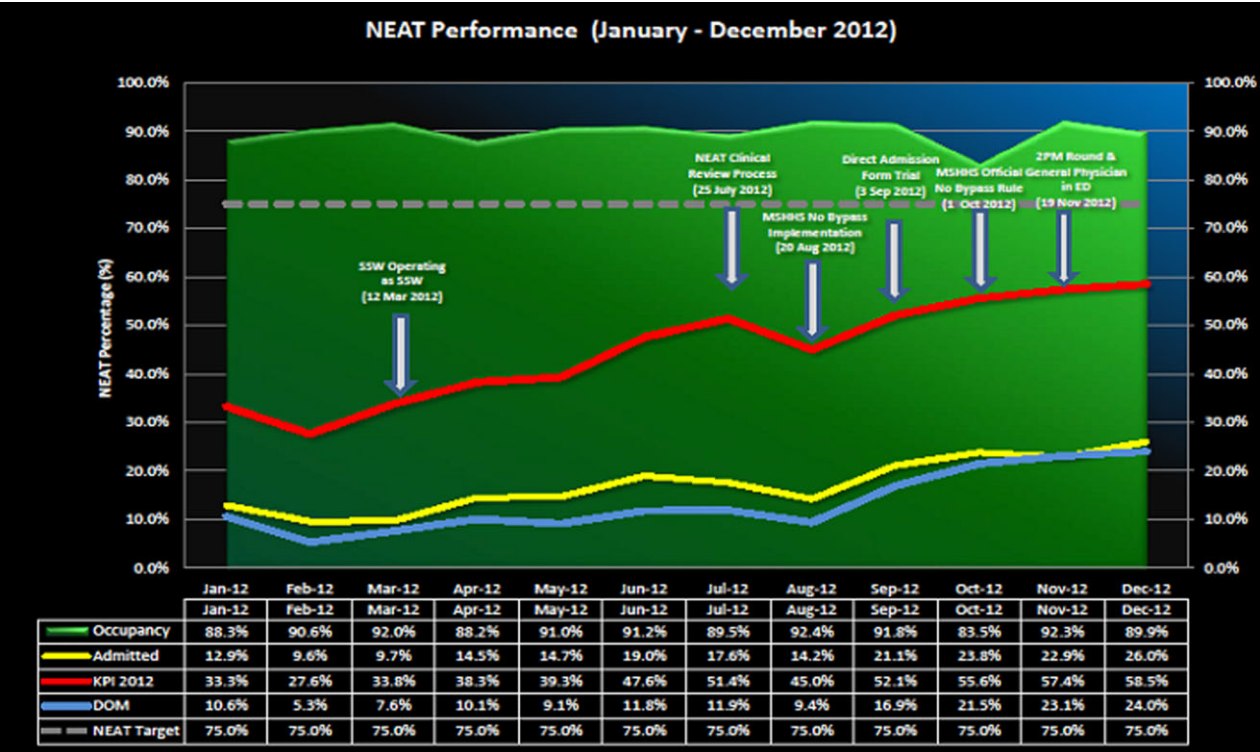


Figure 1

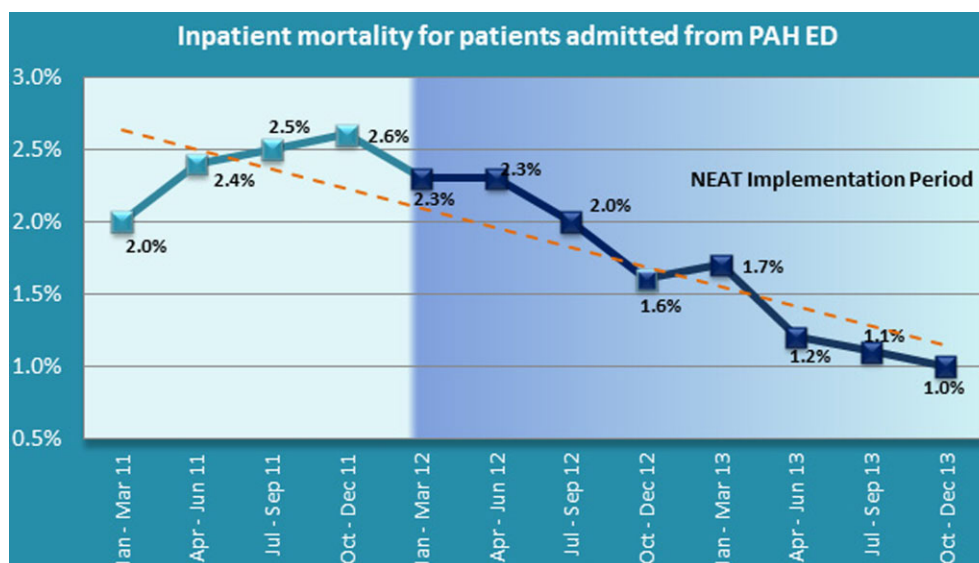


Figure 2

**"I'VE STILL GOT THIS FEVER"****Trainee name:** Dr Victoria Hall**Supervisor name:** Dr Andrew Foote / Dr David Liew*Hospital AUSTIN/NORTHERN HEALTH***Description of Case**

We describe a case of a 21-year-old obese female, BMI 34, who re-presented to our hospital with a four day history of high grade fevers, tachycardia and hypotension; on the background of a recent diagnosis of seronegative spondyloarthritis two weeks prior.

Past medical history was significant for hypothyroidism and mild intellectual impairment. Current medications: thyroxine, recently commenced prednisolone 15mg daily, meloxicam and sulfasalazine. She was a full-time student, living at home with her mother. She had not travelled outside of Australia, and had no recent sexual contact. She had no pets.

Her symptoms first started one and a half months before, with a polyarthritis affecting bilateral knees, ankles and wrists. An associated pruritic macular exanthem developed on her trunk, spreading to arms and legs, with no relief from anti-histamines. She then developed a sore throat. Her General Practitioner prescribed one week of oral amoxicillin. She did not describe any fevers. Her polyarthralgia returned and she was prescribed a short course of oral prednisolone and anti-inflammatory, with rapid improvement, however presented to our hospital when the symptoms returned on advice from her GP.

On re-presentation, she was febrile with a temperature of 39.1C, with no localising features on history or examination. The provisional diagnosis of sepsis of unclear origin was made. She was started on intravenous hydrocortisone and broad-spectrum antibiotics.

After two days, all cultures were negative. Her fever persisted, and she developed a salmon-pink, pruritic macular rash over her trunk and arms.

Her full blood picture revealed a progressive pancytopenia, with raised transaminases on liver function tests. Iron studies were performed which demonstrated a serum ferritin 30,500. Other test results: ESR 134, LDH 1800, d-dimer 30,840, fasting triglycerides 3.7, fibrinogen 1.6. Previously sent autoimmune screen, viral serology and HLAB27 genotype were negative.

The clinical diagnosis of Adult Onset Still's Disease, with reactive macrophage activation syndrome, was made. The patient was managed with high dose intravenous hydrocortisone. She remained well, and as biomarkers had started to resolve at time of diagnosis, bone marrow aspirate was not embarked upon.

**Issues of Interest in the Case**

1. The diagnosis of Adult Onset Still's disease – keeping an open mind; and the usefulness of diagnostic criteria for the clinician
2. Reactive macrophage activation syndrome – on the spectrum of Adult Onset Still's disease?
3. Treatment: depends on severity of illness. Steroids are the mainstay of treatment, best evidence for DMARD is Methotrexate. What is the role for newer biologic agents in such patients, such as tocilizumab?

**ELECTRONIC HANDOVER – A USEFUL TOOL OR AN ADDITIONAL BURDEN?***Fulforth JM<sup>1</sup>, MacGinley RJ<sup>1,2,3</sup>, Bartolo C<sup>1</sup>, Shih S<sup>1</sup>**<sup>1</sup>Eastern Health, Melbourne, Australia, <sup>2</sup>Monash University, Melbourne, Australia, <sup>3</sup>Deakin University, Melbourne, Australia*

**Introduction:** Eastern Health recently adopted a "ward-based model" for general medical care, whereby handovers of patients are a frequent necessity due to rotating staff rosters. There is growing interest in the use of electronic means to support these handovers. We assessed a 200 character electronic handover tool for its perceived usefulness and its' effect on clinical outcomes.

**Methods:** Within the current hospital medical information system (PowerChart), an electronic handover tool was devised. The acronym CHIPS (Condition, History, Investigations, Plan, Status) was used as a reminder for the information to be included. The study had three phases:

1. A voluntary uptake basis with regular staff education. The usefulness and user friendliness of the tool was then assessed by way of anonymous questionnaire.
2. Introduction of the tool as a compulsory component of medical admissions. Both Satisfaction (anonymous) and compliance (twice weekly audit) is being assessed.
3. Efficacy of the tool will be assessed regards length of stay and frequency of Medical Emergency Team (MET) calls over the 3 months prior to introduction, and the 3 months since the beginning of phase 2.

**Results:** Phase 1 found that 86% of responders considered the electronic tool useful (U) or very useful (VU) at morning handover, 79% felt it was U or VU in situations where it could be used to refresh their memory of patients issues, 71% found it to be U or VU in handing patients over to other staff and 64% felt that it was not a burden on their working schedule. Results of phase 2 and 3 will follow.

**Conclusion:** During the initial trial phase, the majority of medical officers found the electronic handover tool useful, and not a burden to their daily workload. Assessment of satisfaction and compliance during the compulsory phase and impact on clinical outcomes is being assessed at present.

## BARRIERS TO MAINTAINING A REGIONAL AND RURAL MEDICAL WORKFORCE IN QUEENSLAND, AUSTRALIA

MacKenzie A<sup>1</sup>, Gabbett M<sup>2,3,4</sup>, Loos C<sup>1</sup>, Waller M<sup>1</sup>, Kanesarajah J<sup>1</sup>, Flynn J<sup>1</sup>, Mills R<sup>5</sup>, Warfe P<sup>1</sup>, Doherty R<sup>4</sup>, Nasveld P<sup>1</sup>

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**Introduction:** The attraction and retention of a skilled physician workforce is a significant problem in Queensland, the most geographically decentralised health jurisdiction in Australasia. In 2009, Queensland's Minister for Health commissioned a taskforce to examine the issue. The taskforce recommended implementing a long term strategy focusing on vocational training in regional centres. The Queensland (Qld) State Committee (QSC) of the Royal Australasian College of Physicians (RACP) examined this issue. Given proper training can not occur in regional areas without specialists possessing requisite skills, QSC sought to explore barriers to attraction and retention of supervisors in regional centres.

**Methods:** Published and 'grey' literature was reviewed on 1) issues related to recruitment and retention of regional specialist workforce; 2) barriers to up-skilling and retention of skills in rural for regional physicians; and 3) characteristics and predicted trends of the physician and paediatric workforce. The demographic profile of current Qld RACP membership was mapped. Findings from the review formed the basis of a survey. A survey of the entire Qld RACP membership was undertaken, followed up by a subset of in-depth qualitative interviews, to explore barriers to maintaining a rural workforce.

**Results:** The literature review identified a number of professional and social barricades to medical specialist regional practice. The subsequent membership survey had a response rate of 43.5%. A number of statistically significant barriers were demonstrated including lack of prior exposure to regional areas; satisfaction with geographic location; difficulty in accessing certain types of continuing medical education for regional Fellows; and adverse work-life balance for Fellows.

**Conclusion:** This study demonstrates hurdles to retention of RACP specialists in remote centres. This data can now form the basis of a longitudinal study examining solutions to overcoming such barriers.

## RETROSPECTIVE REVIEW OF 2 YEARS OF CANDIDAEMIA FROM A SINGLE HEALTH CARE NETWORK

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**Introduction:** *Candida* sp. are the leading cause of invasive fungal infection in hospitalized patients, and represent 8–10% of all bloodstream infections. Rates of candidaemia are increasing, and associated with significant morbidity, mortality and cost. Duration and choice of therapy is influenced by sites of dissemination, most importantly to the valves and the eye. However, the frequency of endocarditis is not well described. We describe the clinical and microbiological characteristics of a cohort of patients with candidaemia.

**Methods:** Patients were identified from our microbiology database. Clinical data was collected from the medical records. Blood culture time-to-positivity was determined.

**Results:** 71 patients were included. Median age was 66 (mean 63.2 ± 17.1, range 16–94) and 41 were male. Median length of stay was 27.5 days (48.5 ± 27.5, 2–184) and 50 were admitted to intensive care. *C. albicans* was the predominant species (56%) followed by *C. glabrata* (24%). Time to positivity was available for 23 episodes, with *C. glabrata* significantly longer than others (70.6 ± 26.9 vs. 32.5 ± 14.2 hours,  $p = 0.008$ ). Transthoracic echocardiography was performed in 39 and transoesophageal echocardiography in 10 patients, with 3 cases of endocarditis identified. 41 underwent ophthalmological examination; 7 had retinal involvement and one had endophthalmitis. Mortality was 21% at 7 days, 37% at 30 days and 47% at 90 days. Only 5 patients received antifungal therapy before the blood culture flagged, with median delay to treatment 52 hours (57.8 ± 28.5,

0.5–157.4). Empiric therapy was most often an echinocandin (52%), although the majority of isolates (66%) were susceptible to fluconazole.

**Conclusion:** Antifungal therapy was delayed in most patients, likely contributing to high rates of ophthalmic complications and substantial mortality. This may represent a target to improve outcomes. Prolonged time to positivity is more likely to indicate *C. glabrata*, which could assist with targeted selection of empiric antifungal therapy.

## WORKFORCE REDESIGN TO PROVIDE 7 DAY PER WEEK CONSULTANT SERVICE, TEAM-BASED CARE AND STANDARDIZED DAILY WORK SCHEDULES FOR ACUTE GENERAL MEDICINE UNITS – A SAFE AND EFFICIENT MODEL OF CARE

Newnham E, Evans J, Nagappan R, Gilfillan C

Eastern Health, Victoria, Australia

**Introduction:** In 2013 we embarked on a redesign of our general medical service to address ongoing inefficiencies including: variation in practice in 9 separate units over 3 acute hospitals, delayed decision making forced by 2–3 consultant-led rounds per week, an existing RAMU model leading to additional handover of care during the course of admission adding a day to LOS, and a lack of a standardized assessment and documentation process.

**Methods:** Rapid Improvement Events were held and attended by lead Physicians and representatives from Allied Health, Pharmacy and Nursing to design a model of care from the ground up. Eastern Health produced a standardized ward-based model of care the key features of which were: General Medical units consolidated to 5 identically structured units over 3 hospitals (28–32 beds), physicians attending between 0800 and 1400hrs daily 7 days per week, standard daily work timetabled for all team members, standardized nursing and medical initial assessment form raising flags for other services, and standardized daily work sheet with ward round documentation.

### Results:

1. All physicians invited to reapply for their positions under different roster conditions. Despite significant changes to work practices and expectations all roster positions were filled and only 5 physicians (less than 10%) left the service.
2. During the first 6 months, the model of care has resulted in a length of stay reduction of 1.4 days, an improvement in General Medicine NEAT performance by 10%, an increased number of separations but reduced general medicine inpatient footprint (all year on year comparisons). Mortality and readmission rates have remained stable.
3. Significant improvement in physician, nursing and allied health satisfaction.

**Conclusion:** Major changes to physician work practices and expectations can be achieved with benefits for the efficient function of general medical units with minimum loss of personnel and improved physician satisfaction

## SPONTANEOUS BILATERAL MINIMAL TRAUMA HUMERAL FRACTURES: A CASE REPORT AND LITERATURE REVIEW

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<sup>1</sup>Department of Geriatric Medicine, The Canberra Hospital, Garran, ACT, <sup>2</sup>Australian National University Medical School, ACT

**Aim:** To report a case of spontaneous bilateral humeral fractures and literature review given its rarity.

**Methods:** Case report and search in PubMed and Medline (1950–2014) using the key words "bilateral humeral fractures".

**Results:** Our case: a community dwelling independent 77-year Caucasian female with bilateral humeral fractures extending to humeral heads after a mechanical fall from standing height on her outstretched hands. Her past history included generalized anxiety disorder and depression, treated with diazepam and citalopram, respectively, hysterectomy at age of 38 years for fibroid in the uterus. She did not tolerate hormone replacement therapy, and was neither a smoker, nor an alcohol over user. Her mother and two aunts had osteoporosis. On arrival, she demonstrated 25 (OH) vitamin D insufficiency (62 nmol/L) and mild secondary hyperparathyroidism (PTH 7.4 pmol/L). Bone turnover markers including serum alkaline phosphatase activity, osteocalcin, procollagen type 1 N-terminal propeptide, C-terminal collagen crosslinks as well as calcium, phosphate, and magnesium were



within normal limits. She was treated conservatively (wide arm slings) for four weeks and triple antiosteoporotic treatment (calcium supplement, vitamin D, alendronate) was started.

Of 23 cases of bilateral humeral fractures, reported in English language, 2/3 (16) occurred in males; patients' age ranged from 28 to 77 years (6 patients >60 years). Seizure was the commonest cause (13 cases) followed by high velocity trauma (4 cases) and violent muscle spasm from electrical shock (2 cases). Concurrent bilateral shoulder dislocations were found in 7 cases. Minimal trauma was reported only in one 62 year-old female with primary biliary cirrhosis. Markers related to bone biochemistry were reported in only 3 patients, and included only serum calcium, phosphate, and alkaline phosphatase.

**Conclusion:** We reported the second case of minimal trauma related simultaneous bilateral humeral fractures associated with long use of SSRI and benzodiazepine, hypovitaminosis D, and secondary hyperparathyroidism.

#### ADMITTING TEAM IMPACTS USE OF HEART FAILURE MEDICATIONS IN PATIENTS ADMITTED WITH HEART FAILURE EXACERBATION

Hawson JJ<sup>1</sup>, Eskandari M<sup>1</sup>, Saito M<sup>2</sup>, Negishi K<sup>2</sup>, Koneru S<sup>3</sup>, Moore A<sup>1</sup>, Foster S<sup>4</sup>, Power J<sup>4</sup>, Dwyer N<sup>1</sup>, Marwick TH<sup>2</sup>

<sup>1</sup>Royal Hobart Hospital, Hobart, Tasmania, Australia, <sup>2</sup>Menzies Research Institute, Tasmania, Australia, <sup>3</sup>Launceston General Hospital, Launceston, Tasmania, Australia, <sup>4</sup>Department of Health and Human Services, Tasmania, Australia

**Background:** Heart failure (HF) readmissions are a common problem for the health care system. It is recommended that patients with symptomatic heart failure should be on a beta-blocker, an angiotensin converting enzyme inhibitor (ACEI) or aldosterone receptor blocker (ARB), and an aldosterone antagonist. These medications reduce hospitalisation and mortality.

**Aims:** The aim was to evaluate if the admitting team impacted the likelihood of being discharged on HF medications.

**Methods:** 468 patients were studied (M = 251 (54%), Age 77 ± 12). All patients had an admission for HF from 2009–2012, with HF confirmed by echocardiography. Clinical data was obtained from the medical record. Patients were classified as being admitted under cardiology or other teams. Patients were followed for all-cause 30-day death or hospital readmission.

**Findings:** 451 patients had sufficient data. 116 (26%) patients were admitted under cardiology, and 335 (74%) under other teams. Patients were discharged on beta-blockers in 85 (73%) cardiology patients and 169 (50%) non-cardiology patients ( $p < 0.0001$ ). ACEI/ARBs were used in 95 (82%) cardiology patients and in 235 (70%) non-cardiology patients ( $p < 0.02$ ). Aldosterone antagonists were used in 46 (40%) cardiology patients and 80 (24%) non-cardiology patients ( $p < 0.002$ ). Patients admitted under cardiology had a mean left ventricular ejection fraction (LVEF) of 39.9%, whilst patients admitted under other teams had a mean LVEF of 47.1% ( $p < 0.0001$ ). 27 (23%) cardiology patients and 59 (18%) non-cardiology patients had 30-day death or readmission ( $p = 0.18$ ).

**Conclusion:** Patients admitted under cardiology are more likely to be discharged on HF medications, although there was no difference in 30-day death or readmission between groups. This may be a result of more advanced disease in the cardiology group.

#### APPROPRIATE USE OF THE TRANSTHORACIC ECHOCARDIOGRAM

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<sup>1</sup>Royal Hobart Hospital, Hobart, Tasmania, Australia, <sup>2</sup>Menzies Research Institute, Tasmania, Australia

**Background:** Patient selection for transthoracic echocardiography (TTE) is essential for the delivery of cost-effective care. The American College of Cardiology provides 98 appropriate use criteria (AUC) for TTE, classified as appropriate, unsure or inappropriate. Previous publications report an inappropriate request rate of 5–20%.

**Aims:** The aim was to audit the use of TTE and identify subgroups more likely to inappropriately request a TTE.

**Methods:** 389 consecutive echocardiogram requests from 2013 were reviewed by two investigators. The AUC score was determined by informa-

tion obtained from the request form and medical record. The requests were then compared according to team and according to requestor.

**Findings:** Of the 389 requests reviewed, 321 (83%) were appropriate, 15 (4%) were unsure, 49 (13%) were inappropriate and 4 (1%) were unclassifiable. Of the inappropriate requests, 27 (55%) were for unwarranted investigation of a murmur or suspected endocarditis. Amongst teams, cardiology (N = 143) had 1 (1%) inappropriate request, general medicine (N = 49) had 14 (29%), intensive care (N = 47) had 8 (17%), cardiothoracic surgery (N = 27) had 2 (7%), medical specialties (N = 57) had 10 (18%) and other teams (N = 48) had 10 (21%). Cardiology made less inappropriate requests than non-cardiology teams (1% vs. 20%,  $P < 0.0001$ ). Amongst requestors, consultants (N = 124) had 6 (5%) inappropriate requests, registrars (N = 66) had 7 (11%), residents (N = 116) had 16 (14%), interns (N = 60) had 15 (25%) and general practitioners (N = 18) had 4 (22%). Interns and residents made more inappropriate requests than registrars and consultants (18% vs. 7%,  $P < 0.002$ ).

**Conclusion:** The overall rate of inappropriate requests was comparable to previous publications. A high proportion of inappropriate requests were for suspected endocarditis or insignificant murmur. Cardiology was significantly less likely to make an inappropriate request than other teams. Junior doctors were significantly more likely to make an inappropriate request than senior staff. These results suggest further targeted education is required.

#### GENE PANELS AND EXOME SEQUENCING – A PRACTICAL GUIDE; PRESENTED BY HGSA

Hayes, Ian – 838

ABSTRACT NOT AVAILABLE AT THIS TIME

#### HARMFUL ALGAL BLOOM IN GLADSTONE HARBOUR COINCIDES WITH OUTBREAK OF TOXIC ALGAL SYMPTOMS IN 42 FISHERMEN

Andrew Jeremijenko, Matt Landos

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**Introduction:** On 16 September 2011, Fisheries Queensland closed Gladstone Harbour and the surrounding area to fishing under section 46 of the *Fisheries Act 1994* while the Queensland Government investigated a condition affecting some locally caught fish. A poorly built bund wall was leaking in the vicinity of 180 tonnes per hour of dredge spoil according to engineering reports which was contributing to poor water quality and toxic algal blooms. At that time, and contributing to the harbour closure, health issues were noted in 42 fishermen, who reported a variety of symptoms. The health department was tasked to investigate the symptoms in fishermen.

**Methods:** Fishermen were interviewed and the data available from the Gladstone Ports website, DERM, Fisheries Queensland, the Gladstone Fish Report and the Health Department was reviewed. Toxic Algal bloom data and water quality data that had been withheld from the public for over two years was included in the analysis.

**Results:** There were multiple symptoms reported in the fishermen that could be attributed to toxic algae. A case of respiratory symptoms in 2 members of a family which required ambulance transfer to hospital will be discussed. Their nets were tested and found to be heavily contaminated with *Lyngbya*. The harmful algal bloom levels peaked in August 2011 and remained at extremely high levels in September and October 2011. This coincided with the fishermen's complaints which peaked in August, September and October 2011. The experienced fishermen linked their disease with dredging.

**Discussion:** Algal toxins are well known to cause illness. The temporal association of health symptoms with high toxic algal counts, high turbidity associated with dredging and a leaking bund wall in an occupationally exposed group (fishermen) is highly suggestive of environmental exposure to toxic algae. Qld Health was not fully informed about the bund wall leak, the water quality and the toxic algal blooms which made it difficult to investigate the potential sources. The harmful algal bloom plan was not implemented as the data was hidden and the public were not notified or educated. The bund wall leak of roughly 180 tonnes per hour of dredge spoil into Gladstone harbour may have created an environment conducive to toxic algal blooms. The Gladstone harbour was reopened at a time when it was potentially unsafe for the public.

## PROTON PUMP INHIBITORS & HYPOMAGNESAEMIA – WHERE ARE WE AT? A CASE STUDY AND REVIEW OF LITERATURE

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**Background:** Proton Pump Inhibitors (PPI) remain one of the most widely used medications in the world for the management of acid related diseases including peptic ulcers, gastroesophageal reflux disease, gastritis and dyspepsia. Hypomagnesaemia is a newly emerging rare but serious complication of PPI use with potentially severe consequences.

**Aims/Objectives:** To describe the case of a 76 year old male with severe hypomagnesaemia secondary to long term PPI therapy presenting with paraesthesia and tetany. Management included IV replacement therapy and substitution with ranitidine. Key clinical findings, possible pathogenetic mechanisms and associated risks will be summarized alongside recommendations for monitoring of blood magnesium (Mg) levels and suitable alternative management.

**Findings:** Only 28 cases have been reported in literature by the end of 2010 of hypomagnesaemia secondary to PPI use. The diagnosis is likely often missed, or incorrectly attributed to another process [1]. Hypomagnesaemia is often associated with hypocalcaemia, hypokalaemia and hypoparathyroidism. Prolonged therapy and concurrent precipitating factors such as diuretics and chronic comorbidities are probable risks. Aetiology remains largely elusive but several theories including genetic mutations of the TRPM6/7 channels and PPI induced hydrochlorhydria impairing Mg solubilisation have been postulated [1].

**Conclusions:** Hypomagnesaemia secondary to PPI use is a potentially severe complication. Further study into the pathogenesis and true incidence is necessary. Simple withdrawal of PPI therapy rapidly restores homeostasis. Mg levels should be observed prior to commencing PPI therapy and in patients with other risk factors of hypomagnesaemia. Rechallenge with different PPIs was futile and substitution with a H2-receptor antagonist is likely most appropriate [2].

1. Cundy T, Mackay J. **Proton pump inhibitors and severe hypomagnesaemia.** *Curr Opin Gastroenterol* 2011; 27: 180–185.
2. Famularo G, Gasbarrone L, Minisola G. **Hypomagnesaemia and proton-pump inhibitors.** *Expert Opin Drug Saf.* 2013 Sep; 12(5): 709–16.

## YOHIMBINE FROM FOOD SUPPLEMENT TRIGGERING ATRIAL FIBRILLATION

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Dietary supplements are available over the counter from supermarkets and also to purchase on the internet. The market for these products is unregulated. The composition of these supplements should be made explicit. The industry discloses ingredients and promotes beneficial effects in a bold fashion. The complications and side effects are hardly ever highlighted. As their approval bypasses the stringent criteria that are implemented for pharmaceuticals, there is a great concern on the public health impact of these substances. The physiological action singly or in combination with other ingredients is unknown. Only a few products have if any case-control data and documented safety efficacy. Most product data includes anecdotal and personal narrations of the efficacy, safety with provocative advertisement strategies.

The number of products sold and consumed is growing at a phenomenal rate. The medical profession is traditionally taught to ask for allergies and medications while gathering history as part of the clinical encounter with any patient. With the prevailing free availability to the public, one is bound to miss a significant number of unexplained chemicals and their interactions with the patients' regular prescription medicines. The OTCs include fish oil, primrose oil, vitamins, glucosamine and Q10 to mention a few and the other products from the health shops such as Ginseng, Saw Palmetto, Sea weed (kelp – containing iodine), St. Johns Wart and muscle building substances. We report the case of a healthy young man who developed atrial fibrillation after consuming yohimbine. We treated his acute presentation and he remained in sinus rhythm after stopping its consumption.

## Learning points

Physicians should gather the OTC history that should include supplemental substances and natural products. One should probe further into the chemical composition and adverse effects.

There is an urgent need for regulating the industry producing the OTCs.

## LIGAMENTUM FLAVUM CALCIFICATION CAUSING LEG WEAKNESS

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Legs giving way is not a common cause of admission in the young. We describe a 29 years-old truck driver with leg aches, numbness and weakness in both legs for 3 days. He had no trauma, falls or weight loss. Systems review was positive for headaches and chronic low back pain. He described himself as otherwise fit and healthy. Drinks alcohol socially, does not smoke and had self-owned business without any stress. Mother had history of diabetic neuropathy. Father was a long-haul driver and suffered from low back pain. He had no allergies and takes ibuprofen prn for headaches.

Physical examination reveals healthy young man with BMI of 24, temperature 94 F, BP: 110/74 mm Hg, Pulse rate: 80/minute, regular, Saturations: 100% on room air. Neurological examination reveals normal ophthalmic fundus and cranial nerves. Sensory examination did not reveal any specific signs. Coordination of legs was impaired with ataxic and unsteady gait. There were no signs of cord compression. Motor examination was significant for exaggerated jerks and 3/5 strength in both proximal and distal muscles of lower legs. Upper limb examination was entirely unremarkable. Cardio-pulmonary and other systemic examination were normal.

Sodium 144mmol/L, Potassium 4.9mmol/L, urea 4.2mmol/L, Creatinine 108micromol/L, Chloride 108mmol/L, Bicarbonate 22mmol/L, INR=1, Calcium 2.25mmol/L, Phosphate 1.0mmol/L, Mg 0.8mmol/L; Bilirubin 0.7micromol/L, ALT 30u/L, Alkaline Phosphatase 141u/L, ESR=3/1<sup>st</sup> hr, CXR is clear, EKG: normal. In view of the unexplained findings confined to the lower limbs a CT scan of the spine was requested which showed extensive LFC in the lower thoracic and lumbar areas. He was transferred to Neuro-Surgical Centre where he underwent laminectomy with complete resolution of the symptoms and signs on review at 3 months.

**Learning points:** LFC is rare in Caucasians.

We are not aware of reports of LFC at as young an age as 29 years.

One should actively pursue the management of this condition with surgical intervention when no other condition co-exists to explain the neurological signs.

## HYPERCALCEMIA SECONDARY TO PARATHYROID CANCER

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A 57 Years old lady was referred to the Rheumatology Outpatient Department with a history of lethargy, tiredness and constipation. Systems review, vital signs and clinical examination were unremarkable except a slightly prominent right lobe of thyroid on physical examination. A routine panel of investigations showed elevated calcium with the remaining normal biochemistry. The clinical findings, biochemistry and her history prompted us for further investigations looking for hyperparathyroidism. An ultrasound of the thyroid gland showed 1.1 cmx1 cm solid nodule at the lower pole of the thyroid. No loco-regional nodes were noted clinically and on imaging studies.

Tc99m-Sesta MIBI scan of the parathyroid glands confirms an increased tracer accumulation at the lower end of the thyroid gland concluding the appearances of a parathyroid adenoma. The patient underwent a successful single gland parathyroidectomy with resolution of the symptoms. However to our surprise the histopathological findings showed mitotic activity with a diagnosis of Parathyroid Carcinoma which was completely excised.

Parathyroid Cancer is very rare and constitutes <1% of the cases of parathyroid adenomas resected. The experience with radiation and chemotherapy is limited as is with the prognosis. Recurrence is common and in the older days tumours were often detected unresectable however, modern data show smaller tumours at diagnosis with better surgical outcomes. Hypercalcaemia can be resistant to bisphosphonate treatment.

**Learning points:** Parathyroid cancer is a rare cause of hypercalcaemia.

Lack of response to conservative medical management and tumour size do not indicate benign or malignant status. Loco-regional nodes point to cancer.

#### A pilot study of CPAP therapy for excessive dynamic airway collapse during acute exacerbation of COPD

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**Background:** Excessive dynamic airway collapse (EDAC) occurs in expiration when the posterior wall of the trachea bulges forward causing  $\geq 50\%$  cross sectional area reduction. EDAC can be diagnosed with four-dimensional dynamic volume 320-slice multi-detector computed tomography (4D-CT) and has been reported to occur in 20% of patients with chronic obstructive pulmonary disease (COPD). Whether EDAC persists in stable COPD or occurs predominantly during exacerbations is unknown. Overall effectiveness of continuous positive airway pressure (CPAP) in EDAC has also not been assessed.

**Aims:** To determine whether CPAP therapy reduced EDAC in patients with acute exacerbation of COPD (AECOPD) and if EDAC persisted after recovery from AECOPD.

**Methods:** Patients with AECOPD requiring hospitalization ( $n = 11$ ) were recruited. 4D-CT of the larynx and trachea (2–4 mSv) was performed within 48 hours of admission and repeated immediately after with 10–12 cmH<sub>2</sub>O CPAP. CT was repeated at 6–8 weeks post discharge (without CPAP). EDAC was diagnosed if expiratory tracheal area was reduced by  $\geq 50\%$ .

**Results:** Of the 11 patients recruited, four had EDAC detected. EDAC severity ranged from 60–64% (median = 63.5%). EDAC resolved with CPAP in all four patients (median narrowing = 39.5% [29%–49%]). EDAC was not evident in the three patients who completed follow-up CT (one CT not done).

**Conclusions:** EDAC in AECOPD can be improved by CPAP. Larger studies are warranted to further evaluate the functional significance of EDAC and clinical benefits of CPAP treatment.

#### VENOUS THROMBOEMBOLISM IN NORTHEAST MELBOURNE, AUSTRALIA: EVALUATION OF EPIDEMIOLOGY, RISK FACTORS AND TREATMENT STRATEGIES IN THE WARFARIN ERA

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**Background/Aims:** Venous thromboembolism (VTE) is a major cause of morbidity and mortality in Australia. While most studies have analysed only certain aspects of VTE, we aim to provide a single centre evaluation of all aspects of VTE management in the warfarin era.

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

**Results:** 591 episodes were identified – 385 (64%) pulmonary embolism (PE) and 206 (35%) deep venous thrombosis (DVT) – below knee 52%, above knee 36%, iliac 8%. Median age was 64 years. Males (54%) and left limb DVT (50% vs 38%,  $p < 0.001$ ) were more common. 20% had prior VTE. 178 patients had cancer and were older (67.4 vs 62.2 years); incidental PE (17% vs 5%,  $p < 0.001$ ) and bilateral DVT (19% vs 9%,  $p < 0.001$ ) were more common and most received enoxaparin. In non-cancer patients, 67% had provoked VTE and 80% received enoxaparin initially followed by warfarin. Median treatment duration was 6 and 7 months for DVT and PE respectively. 20% continued on long-term anticoagulation (14% for non-VTE indications). End-of-treatment imaging was performed in 39% – residual clot was observed in 45% and 37% of DVT and PE respectively ( $p = 0.2$ ). Clot persistence was associated with increased recurrence ( $p = 0.0004$ ). 50 patients reported Grade III/IV bleeding (including 8 deaths) and 27 had recurrent thrombosis. Mortality rate in

the non-cancer and cancer patients was 12% and 63% respectively without statistical difference in thrombosis-related death ( $p = 0.18$ ).

**Conclusion:** VTE is associated with 12% mortality in the non-cancer population, and not without complications – bleeding rate of 8.6% and 12-month recurrence rate of 5%. Evaluation of predictive and preventive factors remains a crucial challenge in the new era of novel oral anticoagulants. This data will serve as an important baseline for future comparison.

#### CHARACTERISTICS OF ELDERLY PATIENTS SUSTAINED A SECOND HIP FRACTURE

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**Background:** The incidence, risk factors and prevention of a second HF are still not clearly identified.

**Aims:** To evaluate the incidence, clinical and biochemical profile and anti-osteoporotic therapy use in second HF.

**Methods:** In 1104 consecutive older patients (mean age 77.7±15.3[SD] years, 68.4% females) admitted with a HF (2010 – 2013), demographic, clinical, and biochemical data were analysed.

**Findings:** In the 4 year period, there were 91 (8.2%) patients with a second HF (mean age 84.0±9.6 years, 75.8% females), giving an overall incidence of 2240 per 100,000 person-years (2510 in females, 1680 in males). The second HF occurred on average 47.7±68.3 months after the initial HF (within the first 48 months in 64.8%). This group was significantly older ( $p < 0.001$ ), 53.8% were over 85 years of age, with a greater proportion of females. In this cohort compared to patients with the first HF serum vitamin D levels were higher (72.4±26.8 vs. 60.0±27.9 nmol/L,  $p = 0.001$ ), and the mean values for bone formation markers osteocalcin (5.8±3.3 vs. 7.0±4.3 ug/L) and PINP (39.9±27.5 vs. 52.0±50.0 ug/L), as well as for bone resorption marker  $\beta$ -CTX (0.44±0.28 vs. 0.58±0.39 ug/L) did not differ significantly. The second HF was associated with higher in-hospital mortality in the oldest old (12.2% vs. 4.8%). Prior to the second HF 34% of patients used a bisphosphonate, 53.8% vitamin D and 49.5% calcium supplements. Paradoxically, bisphosphonate users suffered a second HF at mean 39.1 months after the initial HF, while in nonusers at 72.6 months.

**Conclusions:** A second HF occurs approximately in one of ten older patients, on average within 4 years after prior HF, often despite of anti-osteoporotic medications use and non-deficient vitamin D levels, and is associated with high in-hospital mortality. Current secondary fracture preventive treatment is not used and/or ineffective in many patients. New effective strategies are urgently needed.

#### THE ETHICAL MEDICOLEGAL REPORT: THE SCIENCE AND THE ART AND MINIMIZING BIAS

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**Background:** Practicing in a third party environment (such as being contracted by insurers, lawyers, employers and occupational health departments) generates the potential for conflict and unethical behaviour, simply by the very nature of the practice itself. **Financial goals exhibit extrinsic factors for abuse.** There are intrinsic factors that can also result in real or perceived expert bias.

#### Aims/Objectives:

1. **Define the failings of the medical test and the legal test** in an effort to “equalize” clinicians when communicating with agencies, lawyers, employers or insurers,
2. **Identify potential for conflict of interest** when limited numbers of clinicians are available to conduct medicolegal assessments or geographic distance becomes a barrier,
3. Describe **intrinsic and extrinsic factors** impacting independence of experts,
4. Discuss **use of alternative methods to enhance communication;** such as Video Conference (“TeleHealth”), for assessment and early intervention; following the Transdisciplinary Model.

**Methods:** 15,000 independent reports prepared; 1987 – 2014, were reviewed for the purpose of identifying factors contributing to report bias.



**Findings:** A number of intrinsic factors we identified as resulting in “biased” reports. Influencing factors such as the legal principle of privileged information; resulted in clinical experts formulating opinions with limited information. In addition, opinion’s rendered and diagnoses made were influenced by the speciality of medicine practiced and determined by the institution where clinicians received their training. An acceleration deceleration injury or disabling neck pain of gradual onset might, be “labelled” whiplash by some Specialists, while “fibromyalgia” diagnosed by Rheumatologists. Neurologists may recognize thoracic outlet syndrome as pre-existing drooping shoulder syndrome, whereas Radiologists recognize the same clinical presentation as explained on the basis of a “radiologic long neck”. Physical Medicine and Rehabilitation specialists may render an opinion consistent with “post-traumatic functional thoracic syndrome”. In each case the “Medical Test”, while labelled differently, may describe the same clinical condition.

**Conclusions:** There can be a negative impact of diagnostic labels that may represent speciality bias or reflect attitudes of the institution where training was received. In turn “Legal Test” (as defined by policy) may exclude certain clinical conditions whereas; if “labelled” differently, would be recognized as compensable. Solutions to other barriers contributing to biased reporting are discussed.

#### POST PNEUMONIA SCREENING FOR LUNG MALIGNANCY, AN AUDIT OF CURRENT PRACTICE

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**Introduction:** It is common practice in New Zealand to screen patients with a repeat chest X-ray within 6–8 weeks following an admission for community acquired pneumonia. This practice is aimed to detect underlying lung malignancy, which can be difficult to identify initially when an acute infiltrate is present on X-ray. We conducted an audit of follow up chest X-rays following a hospital admission with pneumonia to determine the yield of malignancy diagnoses from this screening.

**Methods:** During the 2 years study period from January 2010 to January 2012 patients were identified if they had an admission diagnosis which included pneumonia. Admission chest X-rays were reviewed to confirm the presence of a lobar pneumonia. Patients were included if they were over the age of 50 years and had not had a previous lung malignancy.

**Results:** A total sample size of 302 patients was obtained. 53% of patients received a follow up chest X-ray in 6–12 weeks following an admission with pneumonia. A total of 6 patients (rate of 2.0%) were diagnosed with lung malignancy based on a chest X-ray following an admission with pneumonia.

**Conclusion:** The yield from a 6–12 week chest X-ray following pneumonia is low, which is consistent with previous studies findings. Clear guidelines and recommendations for particular populations to screen following pneumonia may help increase yield and minimise reactive follow up chest X-rays for all patients with pneumonia.

#### FUTURE DIRECTIONS FOR HEALTH SERVICES: THE SUSTAINABILITY AGENDA

MacLennan AO, Randerson R

OraTaiao: The New Zealand Climate and Health Council<sup>1</sup>

**Introduction:** The healthcare sector is facing unprecedented pressures from expanding workloads (eg rising numbers of patients with Non-Communicable Diseases) and limited resources (financial, materials and people). Business as usual is not sustainable in the context of increasing expectations, global resource depletion, environmental degradation, and the anticipated impacts of climate change on health demands and supply.

**Objectives:** To present the rationale behind the drive for sustainable health care; to describe ‘green’ initiatives internationally and in New Zealand health services; and to suggest how individuals and services can make a difference.

Sustainability has social, environmental and economic facets. Health services are high emitters of greenhouse gases and other pollutants, thereby contributing to environmental hazards and consequent ill health. The ethical principle, *First Do No Harm* is a major driver behind the Global Green and Healthy Hospitals movement: ‘we cannot have healthy people on a sick planet’. Unsustainable practice tends to be expensive in monetary terms too, so that following a sustainable agenda for energy use, waste

management and procurement practices for example, generally saves money as well as creating a healthier work and external environment.

Enthusiastic clinical and managerial staff across the country formed the Green Hospitals Group Aotearoa New Zealand last year, consistent with District Health Boards’ statutory obligation to consider the environmental implications of their operations. Sustainability also begets resilience, a valuable quality in the face of extreme events which damage infrastructure or disrupt services whether earthquake or climate-related.

**Conclusion:** Motivated health professionals can significantly improve sustainability of their services and thereby improve their quality of worklife, patient health, and environmental health while saving money and building resilience.

#### References:

www.forestsforhealthnz.org  
http://greenhospitals.net/

#### THE HIGH COST OF CHEAP FOOD: FEEDING NON-COMMUNICABLE DISEASES AND CLIMATE CHANGE

Anne MacLennan

OraTaiao: The New Zealand Climate and Health Council, New Zealand

**Introduction:** Globally and domestically, health services are struggling to cope with the rising tide of Non Communicable Diseases (NCDs), while Climate Change (CC) has been labelled the biggest health threat of this century. Current food systems are significant contributors to NCDs and CC.

**Objectives:** to inform, and to challenge Australasian physicians to become more involved in combatting the major health threats of our time

**Methods:** Literature-based presentation.

**Findings:** NCDs are largely due to preventable unhealthy behaviours and lifestyles. Dietary risk factors accounted for over 11% of New Zealand’s health loss in 2006, and obesity is predicted to overtake tobacco as the leading preventable cause of death in New Zealand by 2016. Climate Change impacts directly and indirectly on human health, through extreme events, changing disease patterns, and environmental damage which threatens food and water security as well as shelter and habitation. Increasingly unhealthy food and drink are now being aggressively marketed, with enormous greenhouse gas emissions from production through transport, processing, and packaging to wastage. Children, socioeconomically deprived, and indigenous populations are amongst those particularly vulnerable, thus increasing health inequities – and under-nutrition.

**Conclusion:** Medical efforts to revise current food systems can provide substantial improvements in the health of New Zealanders, as well as mitigating climate change and addressing health inequities.

#### References:

McMichael AJ, Powles JW, Butler CD, Uauy R (2007) Food, livestock production, energy, climate change, and health. *The Lancet*, 370: 1253 – 1263  
Ministry of Health (2013) Health Loss in New Zealand: A Report from the New Zealand Burden of Disease, Injuries and Risk Factors Study, 2006 – 2016. Wellington: Ministry of Health

#### WARNING: CLIMATE CHANGE CAN SERIOUSLY DAMAGE YOUR (PATIENTS’) HEALTH

MacLennan A O, Bennett H

OraTaiao: The New Zealand Climate and Health Council, New Zealand

**Introduction:** Climate change is already causing harm to human health and this will increase. Last year, the RACP called on its members to act on climate change in the interests of the health of our patients and our society.

**Objectives:** To outline direct and indirect impacts of climate change on human health and health services; to describe co-benefits to health, of actions to mitigate CC; and to discuss the actions that doctors can take.

Anthropogenic climate change directly causes morbidity and mortality such as physical and mental trauma due to extreme events, and aggravation of chronic cardiorespiratory and renal diseases by heat. Indirect impacts



include infectious diseases from food and water contamination as well as vector-borne. Food and water insecurity, stresses on agricultural production, and sea-level rise are likely to lead to population migrations and conflict with their own adverse health implications. Many actions to mitigate climate change, however, such as facilitating active transport, insulating homes, or adopting low-meat diets, have positive health outcomes. As the evidence strengthens, there have been increasingly urgent cries urging health professionals to become informed, to speak up, and to be involved in mitigation, adaptation and advocacy (eg Costello 2013). Physicians are well-placed to be role models and leaders in society.

**Conclusion:** Lets do it.

#### References:

RACP Climate Change and Health Position Statement 2013 <http://www.racp.edu.au/index.cfm?objectid=F30B227E-D741-D52C-7E5B74679D3F43BF>  
Costello A, Montgomery H, Watts N. Climate Change: the challenge for health professionals. *BMJ* 2013 347:f6060

#### ANNUAL INFLUENZA VACCINATION: UPTAKE, ENABLERS AND BARRIERS AMONG STUDENT HEALTHCARE WORKERS AT THE UNIVERSITY OF NOTRE DAME AUSTRALIA, FREMANTLE

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**Introduction:** Annual vaccination is recommended for all health care workers (HCWs), including students. However, uptake is sub-optimal in Australian HCWs, between 17 and 58% (Seale & Macintyre, 2011) and has not been quantified in student HCWs. This study sought to define the uptake, enablers and barriers to annual influenza vaccination among student HCWs at the University of Notre Dame Australia (UNDA), Fremantle.

**Methods:** An online survey was distributed to all nursing and midwifery (742), medicine (404) and physiotherapy (293) students at UNDAF to measure influenza vaccination uptake. These data were collected via Survey Monkey™ and analyzed using SPSS™ version 20. Semi-structured interviews were conducted with self-selecting key informants from the student body and academic staff to explore barriers and incentives to influenza vaccination. Interviews were recorded, transcribed and examined for key concepts in response to open-ended questions.

**Results:** 438 students responded to the survey (30.4%). Influenza vaccination rate was 36.3% (95% CI 31.8–40.8%), and varied by school (medicine 47.8%, nursing and midwifery 34.8%, physiotherapy 25%,  $p = 0.002$ ). Age over 24 years (OR 1.6, 95% CI 1.1–2.4) and employment as a healthcare worker outside of university studies (OR 1.5, 95% CI 1.0–2.2) were significantly and independently associated with increased rates of vaccination. Students recognized the importance of annual influenza vaccination and identified cost and ease of access as key factors affecting their vaccination behavior. Staff acknowledged the importance of influenza vaccination, expected the rate of uptake to be low but currently fail to promote, provide or incentivise vaccination.

**Conclusion:** Influenza vaccination uptake was 36.3%. While similar to that of Australian HCWs, it is inadequate. Improving students' access to affordable, convenient vaccination is likely to improve uptake and this responsibility should be shared between universities and student HCWs.

#### Reference:

- Seale, H., & Macintyre, C. R. (2011). Seasonal influenza vaccination in Australian hospital health care workers: a review. [Review]. *Med J Aust*, 195(6), 336–338.

#### ANTENATAL INFLUENZA VACCINE UPTAKE INCREASES BY 60% BETWEEN 2012 AND 2013

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**Background:** Although three quarters (74%) of unvaccinated Western Australian women reported that they would have influenza vaccine if their antenatal care provider recommended it, uptake has been poor.<sup>1</sup> This study compared seasonal influenza vaccination uptake among pregnant WA women in 2012 and 2013. The impact of routinely offering influenza vaccine at the time of antenatal care in hospital A and mandatory documentation of antenatal flu vaccination status in Health Service B were evaluated.

**Methods:** 831 randomly selected women who were pregnant during the 2013 influenza vaccination season were interviewed by telephone. Self-reported vaccination status was confirmed by medical record review.

**Results:** In 2013, influenza vaccination uptake in WA pregnant women was 40.9%, a 60% increase from 2012 (25.6%)<sup>1</sup>. Uptake in women aged 30+ years (46.3%) was significantly higher than that of 18–29 year olds (34.5%). No association was observed between uptake and routinely offering influenza vaccine at the time of antenatal care (Hospital A uptake = 39.1%) or mandatory documentation of antenatal flu vaccination status (Health Service B uptake = 41.3%). The proportion of pregnant mothers reporting having been recommended influenza vaccination by their antenatal care provider increased from 36 % in 2012<sup>1</sup> to 59% in 2013.

**Conclusion:** Antenatal influenza vaccine uptake is increasing and could be further improved if antenatal care providers recommend it to all pregnant mothers.

#### Reference:

- Taksdal S, Mak D, Joyce S, Tomlin S, Carcione D, Armstrong P, et al. Predictors of uptake of influenza vaccination A survey of pregnant women in Western Australia. *Australian Family Physician*. 2013; 42: 582 – 6.

#### MICRO-CIRCULATION (CAPILLARY) THEORY OF HYPERTENSION, SODIUM SENSITIVITY AND EXTRACELLULAR FLUID VOLUME (ECF) REGULATION

John B Myers<sup>1</sup>

<sup>1</sup>Wellspring's Universal Environment P/L

**Aim:** To promulgate the capillary theory of hypertension (HT) and the cardio-renal dynamic involving capillaries in ECF regulation.

**Methods and Results:** In studies in normotensive subjects, aged 3–72y, (Myers, Morgan 1983) it was found that haematocrit rose ( $n = 43$ ) in the presence of weight gain and diastolic blood pressure (DBP) rose on increasing sodium intake (from 1 to 3 mmol/kg/24h), for two weeks, or haematocrit fell or did not change ( $n = 74$ ). Plasma sodium concentration did not change in those in whom DBP rose but increased in those in whom DBP did not change. Creatinine clearance was indirectly related to DBP change,

**Discussion:** Myers (1987) proposed that with increased sodium intake membrane permeability to sodium increased in sodium sensitive subjects resulting in movement of fluid to the ECF and/or into circulating cells. Thus fluid shift occurred, resulting in increase in ECF and ECF pressure/blood volume ratio resulting in reduced venous capacitance and increase in right atrial filling pressure (RAFP), yet increase in pre-venular arteriolar resistance that controls capillary flow, systemically and pulmonary, and in the kidney, by increasing efferent arteriolar tone and thus glomerular filtration fraction (GFF) and neuro-humoral mechanisms. Atrial natriuretic peptide and sympathetic outflow (involving central neural mechanisms) which provides the cardio-renal neuro-modulated link that provides the necessary input for ECF control. An important buffer role is played by intravascular circulating cells. Recent evidence has also demonstrated cellular elements involved in the extracellular fluid that may mediate arteriolar response and thus be involved in modulating the effects of increased capillary flow. As a result of capillary involvement, cardiovascular integrity becomes affected, resulting in loss of capillaries that reduces renal function and cardiovascular reserve, resulting in organ damage and impaired ECF control.

**Conclusion:** High sodium intake induced HT depends on ARFP-pre-venular arteriolar feedback, systemic and renal, that regulates ECF.

### AGGRESSIVE RISK FACTOR REDUCTION STUDY FOR ATRIAL FIBRILLATION (ARREST-AF): IMPLICATIONS FOR ABLATION OUTCOMES

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**Background:** The long-term outcomes of atrial fibrillation (AF) ablation demonstrate progressive attrition. We hypothesise that this attrition is due to a progressive substrate promoted by traditional cardiovascular risk factors.

**Aims/Objectives:** This prospective cohort study evaluates the impact of weight and risk factor management on AF ablation outcomes.

**Methods:** Of 281 consecutive patients undergoing AF ablation, 149 (41% non-paroxysmal) with BMI  $\geq 27$  kg/m<sup>2</sup> and  $\geq 1$  cardiac risk factor were offered risk factor management (RFM). 61 opted for RFM while the remaining 88 served as controls. The RFM group were managed in a physician-led clinic directed at risk factor control in accordance with AHA/ACC guidelines. Follow up after AF ablation consisted of clinic review and 7-day Holter monitoring at 3–6 monthly intervals for 42  $\pm$  14 months. The absence of any arrhythmia  $\geq 30$  seconds and change in AF Symptom Score (frequency, duration, severity and symptom severity) were determined.

**Findings:** There were no differences in baseline characteristics, number of procedures or follow up duration between the groups ( $p = \text{NS}$ ). RFM resulted in greater reduction in weight ( $-12.1 \pm 1$  vs.  $-1.5 \pm 0.8$  kg;  $p = 0.002$ ), systolic blood pressure ( $-34 \pm 8$  vs.  $-20.5 \pm 3$  mmHg;  $p = 0.006$ ), better glycemic control ( $p = 0.001$ ) and lipid profile ( $p = 0.01$ ). At follow up, AF frequency ( $p < 0.001$ ), duration ( $p = 0.001$ ), symptom ( $p < 0.001$ ) and symptom severity ( $p < 0.001$ ), decreased more in RFM compared to controls. Single procedure drug unassisted arrhythmia free survival was greater in RFM compared to controls (KM: 32.9% vs. 9.7%;  $p < 0.001$ ). Multiple procedure  $\pm$  drug assisted arrhythmia free survival was markedly better in the RFM compared to controls (KM: 87% vs. 17.8%;  $p < 0.001$ ) with 16% of the RFM and 42.4% of controls using anti-arrhythmic drugs ( $p = 0.004$ ). On multivariate analysis, both the type of AF and RFM were independent predictors of outcome. RFM resulted in a 4.8 fold (95% CI: 2.04–11.4,  $p < 0.001$ ) greater probability of arrhythmia free survival.

**Conclusions:** Aggressive risk factor management significantly improves the long-term success of AF ablation. This study underscores the importance of therapy directed at the primary promoters of the AF substrate to facilitate rhythm control strategies.

### COST EFFECTIVENESS OF RISK FACTOR MANAGEMENT IN ATRIAL FIBRILLATION

Rajeev K. Pathak<sup>1</sup>, Michelle Evans; Melissa E. Middeldorp<sup>1</sup>; Abhinav Mehta, Rajiv Mahajan<sup>1</sup>, Darragh Twomey<sup>1</sup>, Anand N. Ganesan, Walter Abhayaratna<sup>2</sup>, Dennis H. Lau<sup>1</sup>, Prashanthan Sanders<sup>1</sup>

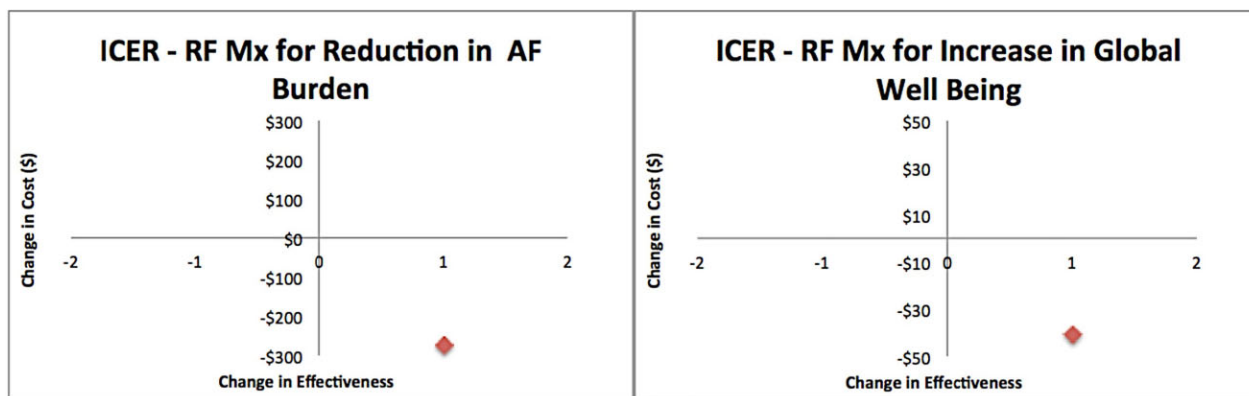
<sup>1</sup>Centre For Heart Rhythm Disorder, University Of Adelaide, Adelaide, Australia, <sup>2</sup>School Of Medicine, Australian National University, Canberra, Australia

**Introduction:** Atrial Fibrillation (AF) imposes a substantial cost burden on the healthcare system. Redo ablation increases this cost exponentially. Risk factor management (RFM) reduces the need for repeat ablation and can reduce the total cost of AF management. This study evaluates the cost-effectiveness of integrating RFM in management of AF.

**Methods:** Of 149 patients with AF, who had a BMI  $\geq 27$  kg/m<sup>2</sup> and  $\geq 1$  cardiac risk factors were offered RFM, 61 chose RFM, the remaining 88 served as controls. The RFM group were managed in a physician-led clinic in accordance with AHA/ACC guidelines. Follow up after the initial AF ablation consisted of clinic review and 7-day Holter monitoring at 6 monthly intervals for 42  $\pm$  14 months. The absence of any arrhythmia  $\geq 30$  seconds and change in AF Symptom Score (Total Burden and global well being/GWB) were determined. Bottom up costs were calculated using hospital, Medicare and Pharmaceutical Benefits data. A decision analytical model calculated the incremental cost-effectiveness ratios (ICER) of cost per Unit of GWB gained, and unit of AF Burden reduced. A Markov model projected the cost per unit of GWB gained over 20 years. Sensitivity analyses were performed.

**Results:** There were no differences in baseline characteristics or follow up duration between the groups ( $p = \text{NS}$ ). Multiple procedure  $\pm$  drug assisted arrhythmia free survival was markedly better in the RFM compared to controls (KM: 87% vs. 17.8%;  $p < 0.001$ ). At follow up, RFM group had less specialist visit (12.48 vs. 14.23,  $p = 0.02$ ), hospital admission (4.04 vs. 5.34,  $p = 0.043$ ) cardioversion (1.31 vs. 1.72,  $p = 0.03$ ) and mean number of ablation (1.56 vs. 1.75,  $p = 0.3$ ). Anti-hypertensive ( $-0.24$  vs.  $0.23$ ,  $p = 0.01$ ) and anti-arrhythmic ( $-0.71$  vs.  $-0.36$ ,  $p = 0.002$ ) use declined in RFM. RFM had an ICER of \$41 saved per unit of GWB gained, and \$273 saved per unit of AF Burden reduced. Projected over 20 years RFM has a cost per Unit of GWB gained of \$6832.

**Conclusions:** Aggressive risk factor management significantly improves the long-term success of AF ablation and decreases costs to the health care system.



### METHOD TO USE THE MICROSOFT XBOX KINECT FOR SHOULDER RANGE OF MOTION CALCULATION

Pavic Y

Faculty of Occupational Medicine and Environment

**Introduction:** Currently, motion testing of joints requires the use of goniometer in a clinical setting, however in the literature there are publications on the use of Microsoft's, entertainment system, XBox Kinect to capture large joints range of motion (Schmitz, Ye, Shapiro, Yang, &

Noehren, 2014). So the objective of this research is to demonstrate the ease of using Xbox Kinect for shoulder analysis and its comparison to a goniometer measurement.

**Methods:** Microsoft's Xbox Kinect Camera was connected to personal laptop computer via an USB and power source connector (purchased from www.EBgames.com). The camera was programmed using an open source program 'Processing 2.0 (www.processing.org)' with the 'Simple OpenNI' library to create a 3D image and skeleton of the user. The angle of the right shoulder was determined from vector subtraction from the 3D point cloud

and results printed on the screen for observation. The right shoulder joint angles were compared with baseline goniometer incremental measurements in flexion and abduction over 5 separate measurement sessions.

**Results:** The data from the measurements of the shoulder show limited accuracy and precision in the angles below 90 degrees but improved accuracy and precision over 90 degrees for abduction and flexion measurements (standard deviation of 3.4 and average error from expected was 2.26 degrees). There was overall good linear correlation with  $r$  squared value of 0.997 for abduction and 0.982 for flexion of the right shoulder.

**Conclusion:** The use of free open software and the use of relative in-expensive Microsoft Xbox Kinect Camera may produce angles of the shoulder accessible to the clinician. Newer cameras and algorithms may improve range of motion testing in the future.

#### Reference:

Schmitz, A., Ye, M., Shapiro, R., Yang, R., & Noehren, B. (2014). Accuracy and repeatability of joint angles measured using a single camera markerless motion capture system. *Journal of biomechanics*, 47(2), 587–591. doi:10.1016/j.jbiomech.2013.11.031

### AN UNUSUAL CASE OF TACHYCARDIA CARDIOMYOPATHY

**Trainee name:** Sylvia Wu

**Supervisor name:** Dr James Pemberton

*Hospital Auckland Hospital*

**Description of Case:** 25 year old female presents with symptoms attributed to lower respiratory tract infection and associated tachycardia for the past month. She has background history of several ablation procedures for a tachy-arrhythmia. When seen in emergency department she was found to be in ventricular tachycardia. She was haemodynamically stable, but going at a heart rate up to 170. ECG showed a wide, but relatively narrow QRS complex, regular, right bundle branch block, left axis deviation, fusion beats indicating posterior fascicular ventricular tachycardia. Initial management included intravenous verapamil, adenosine and 3 shocks of 200J DC cardioversion with no termination of ventricular tachycardia. She was given intravenous flecainide with development of hypotension. Echocardiogram showed tachycardia cardiomyopathy with impaired left ventricular function and apical scar as a result of previous ablations. While waiting for intracardiac echocardiogram guided radiofrequency ablation for query papillary muscle originated ventricular tachycardia, her left ventricular function deteriorated. She was taken to the electrophysiology laboratory semi-urgently with successful ablation of the ventricular tachycardia.

#### Issues of Interest in the Case

1. Recognition of posterior fascicular ventricular tachycardia given management differs; it is typically verapamil sensitive.
2. Incessant ventricular tachycardia predisposes to tachycardia cardiomyopathy of which certain anti-arrhythmic agents need to be avoided.
3. This was a difficult case of posterior fascicular ventricular tachycardia requiring semi-urgent radiofrequency ablation after failing medical therapy.
4. This lady has potential future risk of developing ventricular tachycardia arising from apical scars.

### SUBOPTIMAL DOCUMENTATION ABOUT DRIVING IN PATIENTS WITH SYNCOPE AND SEIZURE

*Samhita Penukonda, Stephen Hedger*

*Flinders Medical Centre, Adelaide, South Australia, Australia*

**Background:** Driving restrictions are very important in patients with certain medical conditions such as syncope and seizure disorders, as loss of consciousness is clearly incompatible with safe driving. It is unsure to what extent these restrictions are imposed when a patient presents to hospital with these conditions.

**Aims:** This study sought to establish the adequacy of driving advice given by health professionals to patients with syncope or seizures and to what extent driving authorities are notified.

**Methods:** This was a retrospective case note study of patients living independently who were admitted to the Acute Medical Unit at Flinders Medical Centre with diagnoses of syncope or a seizure disorder.

A predetermined list of items was used to assess each case; including age, gender, diagnosis, relevant co-morbidities, family status, documentation of

type of licence patients held, driving advice, and notification to driving authorities.

**Results:** Over a period of 6 months 100 patients were admitted with diagnoses of syncope (70) or seizure (30). Of the 70 patients with syncope, 30 were classified as unexplained syncope or cardiac syncope. Based on the documentation in the files, none of the patients was asked about the type of licence they held. Verbal driving advice was given to 19 patients. The relevant driving authority was notified for only one patient.

**Conclusion:** Overall documentation about driving advice in patients who were admitted with syncope and seizures is poor. This has important public health, ethical and medico-legal implications.

### NITROUS OXIDE-INDUCED CERVICAL MYELONEUROPATHY INVOLVING POSTERIOR COLUMN WITH NORMAL RANGE VITAMIN B12

*Sunil Rai*

*Flinders Medical Centre, Adelaide, South Australia, Australia*

A 22-year-old man with heavy use of nitrous oxide as a recreational inhalant, presented with generalized paraesthesia, sensory loss and significant gait disturbance. He had clinical as well as radiological signs of posterior column of cervical spinal cord involvement. Although, his vitamin B12 level was within normal limit, his methylmalonic acid level and homocysteine level was noted to be elevated. The thoracic part of the spinal cord is commonly affected in Vitamin B12 deficiency-related neurological syndrome however; in this case report cervical part of the spinal cord has been primarily involved. Following vitamin B12 and methionine replacement, his symptoms improved promptly.

### FATAL MUCOCUTANEOUS LESIONS: A CASE OF FULMINANT TOXIC EPIDERMAL NECROLYSIS

**Trainee name:** Dr. Subhasis S. Talapatra

**Supervisor name:** Dr. Parthasarthy Ramesh

*Hospital: South West Health Campus*

**Description of Case:** An 80 year old lady presented to the hospital following a generalised tonic clonic seizure in the context of well controlled epilepsy consequent to cerebral injury (meningitis and cerebral abscess in 1975 and subsequent neurosurgery). She was loaded with Phenytoin, in addition to her regular Sodium Valproate. She developed diffuse erythematous rash after 3 days of hospitalisation, which dramatically progressed within 48 hours to a myriad of dermatological manifestations from erythematous macules with purpuric centers, vesicles and bullae to epidermal necrolysis, desquamation (and positive Nikolsky sign), consistent with fulminant toxic epidermal necrolysis. Subsequently, she was transferred to a tertiary hospital Intensive care unit with support from specialised burns unit and dermatology services. Her dermatological manifestation progressed to 100% total body surface area epidermal necrolysis and skin loss, complicated with systemic mucosal involvement (and ocular sparing) and a fatal outcome due to uncontrollable extensive fluid losses and multi-organ failure, highlighting poor outcomes of fulminant toxic epidermal necrolysis in the elderly.

**Issues of Interest in the Case:** Pathogenesis and Manifestations

Identification and Management

SCORTEN schema and Prognostication

### CHARACTERISTICS AND BLOOD TRANSFUSION PATTERN FOR NON VARICEAL UPPER GI BLEEDING

*Ranaweera CB<sup>2,3</sup>, Ayonrinde OT<sup>1,2</sup>, Segarajasingham D<sup>3</sup>*

<sup>1</sup>School of Medicine and Pharmacology, The University of Western Australia, Perth, Western Australia, Australia, <sup>2</sup>Department of Gastroenterology, Fremantle Hospital, Fremantle, Department of Gastroenterology Sir Charles Gairdner Hospital, Nedlands, Western Australia, Australia

**Introduction:** There is strong evidence against over-Transfusing packed red cell in Upper GI bleeding (UGIB). We retrospectively looked at patient records who admitted with symptoms of UGIB without known cirrhosis or previous acute UGIB to identify blood transfusion strategies.

**Methods:** Review of medical records of patients presenting to a Tertiary hospital with acute Upper GI bleeding (UGIB) between January 2013 and



May 2013. Demographics, clinical and endoscopy data were recorded. Patients with Variceal bleeding on a background of Cirrhosis, patients with recurrent upper GI bleeding with a known pathology were excluded. The Pre Scope Rockall score and Glasgow-Blatchford Score (GBS) was calculated for each patient. Main outcome variable was Number of Blood Transfusions with patient characteristics.

**Results:** 71 patients with non-variceal acute UGIB were identified. Median age was 71 years. With 62% male predominance. 56% presented from home and 44% were transfers from secondary hospitals. Malaena was the commonest symptom (59%) followed by haematemesis or coffee ground vomiting (22%), malaena with haematemesis (19%). Only 34% had significant co-morbidities. UGIB was associated with antiplatelet therapy in 28%, NSAID (except aspirin) therapy in 32% and warfarin in 11%. The cause of bleeding was gastroduodenal ulceration in 52%, Mallory Weiss in 6%, No cause found in 14%. Other causes 28%. Number of packed red cell units were positively correlated with, GBS on admissions ( $p < 0.001$ ), Length of stay ( $p = 0.005$ ) and negatively correlated with admission Haemoglobin level ( $p < 0.001$ ).

78% were declared haemodynamically stable on admission. 35% of patients, who were haemo-dynamically stable without history of syncope due to anaemia on admission with Hb > 70, received at least 1 unit of packed red cells.

#### Conclusion

1. Non variceal upper GI bleeding is strongly associated with NSAID treatment more than traditional antiplatelet treatment.
2. Number of packed red cells unit is strongly related to GBS, length of stay and low haemoglobin on admission.
3. In spite of recent large scale study evidence of increased morbidity and mortality with blood transfusions in patients with UGI bleeding with Hb > 70, nearly 1/3 of our population was still transfused.

#### AUDITING THE QUALITY OF DEATH CERTIFICATION AT FLINDERS MEDICAL CENTRE

*Santosaputri E<sup>1</sup>, Mohan R<sup>1</sup>, Seabrook A<sup>1</sup>, Whitten M<sup>1</sup>, Russell P<sup>1</sup>, Hewage U<sup>1</sup>*

<sup>1</sup>Department of Medicine, Flinders Medical Centre, Adelaide, South Australia, Australia

**Introduction:** Accurate death certification is crucial in deriving vital statistics. Despite this, high error rates in completing death certificates have been reported.<sup>1</sup> The aim of this audit was to examine the quality of death certification at Flinders Medical Centre (FMC) using the Australian Bureau Statistics guidelines<sup>2</sup> as the gold standard.

**Methods:** We reviewed all death certificates at FMC from August 2012 to May 2013. After excluding reportable deaths and paediatric cases (<18 years old), 254 death certificates were examined. We categorised error as 'simple', such as illegible writing, abbreviations use, and incomplete duration of illness; or 'cognitive', using the types of error that we generated after reviewing previous studies. 126 certificates were examined together by the first four authors, while the remainder were done independently. Where there was uncertainty, certificates were reviewed by the four authors until consensus was reached.

**Results:** 233 death certificates (91.7%) had at least one error. Simple error included the use of abbreviations (23%); incomplete duration of illness (41%); and writing illegibly (1.5%). Cognitive error included writing multiple conflicting causes of death (30%); insufficient information on the diagnosis (13%); illogical sequence of causes of death (17%); incorrect order of sequencing (2%); and stating only mechanism of death (2%).

**Conclusion:** Our study confirmed the deficits previously reported. In addition to the simple errors noted, improper completion of death certificates might stem from a poor understanding of the published guidelines. We recommend the provision of formal education to medical practitioners in the hospital and the development of easy-access local guidelines.

#### References:

1. Lu T, Shou W, Shih T, et al. Factors associated with errors in death certificate completion: A national study in Taiwan. *J Clin Epidemiol.* 2001;54:232 – 8.
2. Information Paper Cause of Death Certification [database on the Internet]. Australian Bureau of Statistics. 2008 [cited 23 April 2013]. Avail-

able from: [http://www.ausstats.abs.gov.au/ausstats/subscriber.nsf/0/475BC02643DB45EDCA25750B000E38A4/\\$File/1205055001\\_2008.pdf](http://www.ausstats.abs.gov.au/ausstats/subscriber.nsf/0/475BC02643DB45EDCA25750B000E38A4/$File/1205055001_2008.pdf)

#### A FATAL CASE OF CARDIOMYOPATHY IN A NEONATE OF A DIABETIC MOTHER

*Sgarlata J<sup>1</sup>, Edwards M<sup>1,2</sup>, Allgood C<sup>1</sup>, Whitehall J<sup>1,2</sup>*

<sup>1</sup>Campbelltown Hospital, Campbelltown, New South Wales, Australia, <sup>2</sup>University of Western Sydney, Sydney, New South Wales, Australia

**Introduction:** Although cardiomyopathy is common in offspring of diabetic mothers, fatalities are rare. We report the death of a full term macrosomic baby which illustrates important principles.

**History:** Weighing 5.3 kg, the baby was floppy and gasping after NVD. Apgar scores of 2, 1 and 1 were assigned and cardio-pulmonary resuscitation continued until echocardiography confirmed asystole. There were no dysmorphisms, no hydrops, but the liver was palpable at 7 cm. No splenomegaly.

Echocardiography revealed gross bilateral hypertrophic cardiomyopathy, very small ventricles and a narrow aortic outlet. The narrowest cardiac walls exceeded 10 mm, the aortic valve and the arch were < 0.5 cm.

Mother was Samoan, G7 P6, 37 yrs, with weight 131kg and insulin dependent gestational diabetes. Although this had complicated previous pregnancies she did not attend ante-natal clinics other than at 25 weeks when foetal scan revealed no cardiac abnormalities. At 32 weeks, mother was admitted to ICU with respiratory failure due to asthma and was treated with ventolin and 7 days of prednisone. Her HbA1c was 8.3% and BGL reached 17 mmol/L. An ultrasound revealed no abnormalities in the baby. She did not represent for review until in labour.

**Discussion:** Although some thickening of the intra-ventricular wall occurs in 13% of diabetic pregnancies, thought to be related to excess insulin, gross hypertrophy and fatalities are rare and not entirely related to control of BGL. Ullmo reports significant cardiomyopathy even with HbA1c < 7% in 50% of a neonatal series.

The 32 week ultrasound was considered normal in this case, demonstrating that hypertrophic cardiomyopathy can develop rapidly in the third trimester, suggesting a benefit of late third trimester ultrasound and review, at least in uncontrolled diabetic mothers.

#### PITUITARY HAEMORRHAGE RELATED TO RIVAROXABAN

**Trainee name:** Dr Thinn Thinn Khine

**Supervisor name Professor:** Duncan Topliss, Dr Richard Arnott

**Hospital:** The Alfred Hospital

**Description of Case:** 84 years old gentlemen presented to emergency with a gradual onset of frontal headache, nausea, vomiting for 2 days.

He has a recent diagnosis of unprovoked left medial gastrocnemius vein thrombosis confirmed by doppler ultrasound at his GP clinic 10 days ago. He was treated with oral Rivaroxaban 15mg BD by his GP.

His past medical history includes – hypercholesterolemia and hiatus hernia and he was taking oral pantoprazole 40mg daily and atorvastatin 20mg nocte.

He has a history of pituitary macroadenoma (18mm x24mm x 19mm) as an incidental finding during CT and confirmed by the following MRI. He was managed conservatively at the Alfred hospital, as there's no focal neurological deficit with normal hormonal profile.

The CT scan at ED shows features of increased attenuation suggesting acute/subacute haemorrhage into the lesion. Subsequent MRI confirmed the findings.

Rivaroxaban was ceased and doppler ultrasound was repeated which shows no ongoing features of deep vein thrombosis.

His hormonal profile showing features of pituitary hypopexy (low cortisol, low T3, low TSH, low FSH and low LH) and hormonal replacement therapy with cortisone acetate was initiated.

The patient continues to have compressive symptoms in spite of discontinuation of anticoagulation.

He received Endoscopic Bilateral Turbinectomy/ Posterior Septoplasty and Transphenoidal Pituitary Tumor Resection with no significant neurological



complications. The histology findings show – necrotic/infarcted pituitary adenoma.

He is currently receiving hormone replacement therapy( cortisone acetate, desmopressin, thyroxine) and being followed up regularly by the endocrinology team and neurosurgical team at the Alfred hospital.

#### Issues of Interest in the Case

1. To understand the significance of urgent treatment for pituitary apoplexy.
2. To be aware of the potency and complications of the Novel Anticoagulants.
3. This is the first case of Pituitary Haemorrhage at Alfred Health in relation to the use of Rivaroxaban.

#### MOYAMOYA: THE MYSTERY OF “PUFF OF SMOKE”

Ahamed S, Tripathi P, Butt S

Lyell McEwin Hospital, Elizabeth, South Australia, Australia

**Introduction:** Moyamoya disease is a chronic, progressive occlusion of the circle of Willis arteries that leads to the development of characteristic collateral vessels seen on imaging, particularly cerebral angiography. The disease may develop in children and adults, but the clinical features differ widely. It occurs predominantly in Japanese individuals but has been found in all races with varying age distributions and clinical manifestations. As a result, this disease has been under recognized as a cause of ischemic and haemorrhagic strokes in Western countries. At this time, there is no known cure, and existing treatment options are controversial.<sup>1</sup>

**Methods:** 2 Case studies

**Results:** Case based discussion. We describe two patients presenting with different neurological symptoms who had characteristic features on cerebral imaging consistent with Moyamoya disease.

**Conclusion:** Moyamoya disease is an important diagnosis to consider in children and especially in young adults apart from people with Asian ethnicity who present with stroke.

#### Reference:

1. Janda PH, Bellew JG, Veerappan V. Moyamoya disease: Case report and literature review. *J Am Osteopath Assoc*. 2009 Oct;109(10):547–53.

#### FIRST REPORTED CASE OF VESICOVAGINAL FISTULA SECONDARY TO IgG4-RELATED DISEASE

Trainee name: Sidha Sreedharan

Supervisor name: Malcolm Turner

Hospital: Royal Hobart Hospital, Hobart, Tasmania, Australia

IgG4-related disease (IgG4-RD) is a recently defined systemic condition that can involve almost any organ. Its recognition has brought together a previously disparate range of conditions under the same pathological process. Key features include fibrosis with dense infiltration of IgG4-positive (IgG4+) plasma cells and lymphocytes.

We present a case of a 64-year-old female who was admitted with three months of severe urge incontinence and urinary leakage per vagina. This was on a background of two years of chronic pelvic pain following vaginal hysterectomy for uterine prolapse. She had two previous laparoscopies, which revealed what were thought to be postoperative pelvic abscesses. Subsequent imaging demonstrated a pancreatic lesion, multiple pelvic masses and mediastinal lymphadenopathy.

Vaginal examination under anaesthesia showed a large fistulous tract between the anterior vaginal wall and posterior bladder. Her immunoglobulin levels, in particular IgG4, were elevated. Histology from pancreatic and vaginal biopsies revealed fibrosis and lymphoplasmacytic infiltration rich in IgG4+ plasma cells. Tumour markers and investigations for haematological malignancy were negative.

She was commenced on prednisolone and methotrexate for a diagnosis of IgG4-RD, with improvement in her immunoglobulin levels and computed tomography (CT) findings at follow up. Surgical repair of her vesicovaginal fistula has been planned. We hope to raise awareness of IgG4-RD, as it is a treatable condition that is under-recognised.

#### Issues of Interest

1. To the best of our knowledge, this is the first reported case of vesicovaginal fistula secondary to IgG4-RD.

2. IgG4-RD is a diagnostic challenge because it is a newly described and uncommon condition with heterogeneous clinical manifestations.
3. Recognition of IgG4-RD is important as delay in diagnosis leads to increased morbidity.
4. IgG4-RD is readily treated with corticosteroids and immunosuppressive therapies, including novel agents like rituximab.

#### AIR TRAVEL EXACERBATED CEREBRAL ARTERIAL GAS EMBOLISM (CAGE) IN A LADY PRESENTING WITH ACCIDENTAL INGESTION OF PERM HAIR SOLUTION CONTAINING HYDROGEN PEROXIDE

Trainee name: Charitha Buddhika Ranaweera

Supervisor name: Simon Wei (FRACP)

Hospital: Sir Charles Gairdner Hospital, Hospital Avenue, Nedlands, WA.

**Description of Case:** 56 y old women had a commercial air travel after accidental ingestion of 30ml of 10% hydrogen peroxide resulting in Symptoms and signs Of Cerebral Arterial Gas Embolism (CAGE) and mild upper gastro-intestinal symptoms.

She was successfully treated with 3 sessions of hyperbaric oxygen treatment with 2.8 Atmospheric Pressure (2.8ATM), using Royal Navy Table 61, and achieving complete resolution of neurological symptoms.

So far in the literature only 35% hydrogen peroxide is reported to cause gas embolism but with this unusual circumstance where the patient is exposed to high altitude soon after ingestion, even milder preparations could cause significant cerebral arterial air embolism.

Apart from other health implications of air travel, accidental ingestion of chemical substances and their enhanced effects due to the high altitude should be considered in patients who had recent air travel and can be a point of patient education.

#### Issues of Interest in the Case

1. CAGE can be diagnosed clinically without radiological evidence.
2. Most case reports describe CAGE only with 35% or higher strength H2O2 but this is a rare case with 10%.
3. So far no case reports On Air travel exacerbated low strength H2O2 poisoning resulting in CAGE.

#### A RETROSPECTIVE STUDY OF ASPIRIN USE AND STAPHYLOCOCCUS AUREUS COLONISATION IN THE DIALYSIS POPULATION OF MIDDLEMORE HOSPITAL IN AUCKLAND, NEW ZEALAND

Edbert Weng Kit Wong<sup>1</sup>, Stephen McBride<sup>2</sup>, Christopher Hood<sup>3</sup>

<sup>1</sup>The University of Auckland, Auckland, New Zealand, <sup>2</sup>Department of Medicine, Middlemore Hospital, Counties Manukau Health, Manukau City, New Zealand, <sup>3</sup>Department of Renal Medicine, Middlemore Hospital, Counties Manukau Health, Manukau City, New Zealand

**Background.** *Staphylococcus aureus* invasive disease is common in the renal dialysis population and is associated with significant morbidity and mortality. *In vitro* studies have demonstrated aspirin to have anti-staphylococcal activity and *in vivo* studies have reported a dose-dependent protective effect of regular aspirin use. We investigated whether aspirin use was associated with *S. aureus* colonisation or disease in a renal dialysis population.

**Methods.** A retrospective analysis of all prevalent patients dialysing at Middlemore hospital on 1 November 2011 was performed and 2 year follow up data obtained from electronic medical records. The primary outcome measured was any recorded *S. aureus* colonisation. Secondary outcomes included *S. aureus* bacteraemia (central-line associated (CLAB) and non-CLAB), and other *S. aureus* sterile site infections. Aspirin use was ascertained using electronic medication records.

**Results.** A total of 506 patients were included of whom 326 patients were dispensed aspirin at any point (generally at doses  $\leq 150\text{mg}$ ) and 180 patients had no aspirin dispensed. There was no statistically significant difference in the rate of *S. aureus* colonisation between those exposed and those not exposed to aspirin (59.9% vs 58.3%,  $P = 0.777$ ). No statistically significant association was found between aspirin use and other secondary outcomes of *S. aureus* disease. These results were not significantly different after multivariate analysis.

**Conclusions.** Aspirin use was not associated with a lower rate of *S. aureus* colonisation and disease in the Middlemore hospital dialysis population. Further studies investigating a higher 300mg dosage of aspirin may be needed as previous trials have noted a dose-dependent effect.

#### ADHERENCE TO GUIDELINES RECOMMENDING MONITORING OF LIVER FUNCTION IN PATIENTS COMMENCED ON DISULFIRAM

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<sup>1</sup>The Langton Centre, South Eastern Sydney Local Health District,

<sup>2</sup>School of Public Health and Community Medicine, The University of New South Wales

**Introduction:** Disulfiram was introduced over 60 years ago as a treatment for alcohol dependence. It interferes with the metabolism of alcohol by inhibiting the enzyme aldehyde dehydrogenase. Initially prescribed in much higher doses than used today, hepatotoxic reactions were not uncommon and are well documented in the literature. Current national guidelines recommend monitoring of liver function in patients prescribed disulfiram.

This descriptive study aimed to establish whether current clinical practice reflected these guidelines.

**Methods:** All patients commenced on disulfiram between 1 January and 31 December 2013 were identified using pharmacy records of this large treatment centre and its associated teaching hospital. Data was extracted through a retrospective file audit.

**Results:** 121 patients were identified as having been supplied disulfiram during the study period. 41 were excluded as they had either commenced treatment prior to 1 January 2013 (n = 1), attended a service other than the treatment centre for follow up (n = 1), or did not commence treatment (n = 39). Of the remaining 80 patients, 24 (30%) did not have liver function tests prior to commencing treatment, and 64 (80%) did not have tests after commencing treatment.

**Conclusion:** This study revealed that a significant proportion of patients at this treatment centre did not have liver function testing prior to commencing treatment, and the majority did not have repeat testing after commencing treatment. Given the documented evidence of disulfiram-induced hepatitis at around one month after commencing treatment, clinicians should check their patients' liver function after commencing disulfiram.

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