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Centre for Clinical Research in Emergency Medicine

2016 Annual Research Report
Centre for Clinical Research in Emergency Medicine

The Centre for Clinical Research in Emergency Medicine (CCREM) is a Centre within the Harry Perkins Institute of Medical Research, established in 2008 with start up and ongoing funding from Royal Perth Hospital, the Royal Perth Hospital Medical Research Foundation, and the Discipline of Emergency Medicine, University of Western Australia. Our research involves collaboration between academic emergency physicians working in the Emergency Department (ED), a team of research nurses recruiting patients presenting to the ED with acute illnesses, and scientists analysing samples in the laboratory using immunological and molecular biological techniques. We are unique in having a wet lab within the ED, which allows for timely specimen processing.

CCREM research approaches include observational studies and laboratory work designed to uncover the mechanisms of disease, and randomised controlled trials designed to improve clinical care. We also endeavour to integrate laboratory and clinical research, using laboratory studies to help us understand the results of clinical trials.

CCREM provides opportunities for both laboratory and clinical post-graduate honours and PhD students, and research terms for Emergency Medicine Advanced Trainees at Royal Perth Hospital and Fiona Stanley Hospital.

CCREM staff and associates

Royal Perth Hospital

Clinical Academics
Professor Daniel Fatovich MBBS FACEM PhD, Program Director
A/Professor Glenn Arendts MBBS MMed PhD FACEM
Dr Stephen Macdonald BSc MBChB DCH FRCP FACEM

Research management and administration
Ellen MacDonald RN, GradDipFN, MNursing, Clinical Nurse Manager
Cathy Read RN, BSc (Hons) National Coordinator PSP Study
Sophie Damianopoulos, Administrative Officer

Laboratory
Dr Erika Bosio BSc, PhD, Research Fellow
Ms Claire Neil BSc, Research Officer

Research Nurses
Lilian Offer RN, Helen Hamersley RN, Kristy Matthews RN, Karen Ridley RN
**PhD Students**
Dr Stephen Macdonald BSc MBChB DCH MRCP FACEM  
Ms Abbie Francis BSc  
Dr Lisa Smart BVSc (Hons) DipACVECC

**Fiona Stanley Hospital**  
*Clinical Academics*  
A/Professor Yusuf Nagree MBBS GradDipCompSci FACEM MBA(E)  
Associate Professor Glenn Arendts MBBS MMed PhD FACEM

**Research Nurses**  
Alannah Cooper RN, Gemma Eckermann RN

**Armadale Health Service**  
*Clinical Academic*  
Dr David McCutcheon MBBS FACEM

**Research Nurse**  
Jonathon Burcham RN

**South West Area Health Service**  
*Clinical Academic*  
Dr Hugh Mitenko MBBS FACEM

**NHMRC Centre of Research Excellence (CRE) in Translational Venom and Antivenom Research**
Prof Simon Brown, University of Western Australia, is CI-D, with Ms Abbie Francis as a named Early Career Researcher, supervised by Dr Erika Bosio.
Notable New Funding

Arendts G. Medical and Health Research Infrastructure Fund. Funding Round 19. $13,852

Armstrong C, Bosio E, Fatovich D. Does the early miRNA profile of cardiac arrest have prognostic potential? Sophie Lewis Fellowship in Acute Cardiovascular Emergencies, Australasian College for Emergency Medicine. $60,000

Bosio E, Fatovich D. MicroRNAs in stroke. Royal Perth Hospital Medical Research Foundation. $20,000


Macdonald S, Bosio E. The role of Resistin in endothelial cell activation in human sepsis. Royal Perth Hospital Medical Research Foundation. $20,000 plus Research Assistant

Schnitker L, Beattie E, Arendts G, Carpenter C. The development and evaluation of an educational program for the care of older people with dementia in emergency departments. Alzheimer’s Australia Dementia Research Foundation. $50,000


Smart L, Ho KM, Mori T, Barden A, Bord C. The effect of 4% succinylated gelatin on acute kidney injury in patients with critical illness. Royal Perth Hospital Medical Research Foundation. $19,463

Ongoing Funding

Brown S. A randomised controlled trial of interventional versus conservative treatment of primary spontaneous pneumothorax. National Health and Medical Research Council. Project Grant APP 1084941 $401,143

Sim M, Wong M, (Arendts G. AI). Better access to home hospital for residents in aged care facilities. Western Australian Health Targeted Research Fund. $345,769

Dey I, Love J, Arendts G, Hare M. Emergency Department Delirium Initiative (EDDI): A study targeting the early identification of patients at risk of delirium. Western Australian Health Targeted Research Fund. $260,000


Fitzgerald L, Fatovich D, Pestell C. Identification of biomarkers that correlate with clinical features and outcomes following concussion. Neurotrauma Research Program. $38,925


Rosenwax L, McNamara B, Semmens J et al (Arendts G. AI). Reducing demand on emergency departments in the last year of life. National Health and Medical Research Project Grant APP 1067331. $358,835

Saw J, Lawn N, Fatovich D, Dunne J. Prognosis after first-ever seizure. Royal Perth Hospital Medical Research Foundation. $19,088

New Research Projects

**Coordinated by CCREM**

**Restricted Fluid Resuscitation in Sepsis-associated Hypotension Trial (REFRESH)**
A multicentre randomised trial of fluid restricted versus fluid liberal resuscitation in early management of sepsis.

**Western Australian Illicit Substance Evaluation (WISE)**
A single centre observational study of patients with suspected intoxication with illicit stimulant drugs.

**Collaborations - patient recruitment at CCREM sites, but coordinated by other centres or units**

**Australian Snakebite Project (ASP)**
A national multicentre observational study investigating the appropriate use, dose and safety of snake antivenoms in Australia. (Dr G Isbister, University of Newcastle, Calvary Mater Hospital).

**Knowledge Translation in Australasian Paediatric Acute Care Settings**
A multi-centre, cluster, randomised controlled trial comparing a tailored, theory informed Knowledge Translation intervention versus passive dissemination of a bronchiolitis guideline (KT bronchiolitis study). (Armadale Health Service).

Ongoing Research Projects

**Coordinated by CCREM**

**Assessing Risk in Sepsis using Tissue Oxygen Saturation (ARISTOS)**
A clinical observational study examining the use of near infrared spectroscopy derived tissue oxygen saturation at the bedside in emergency department patients with sepsis to determine the utility of this measure to predict organ dysfunction.

**Critical illness and shock study (CISS)**
A prospective study of patients presenting to the emergency department with critical illness or injury that compromise the cardiovascular and/or respiratory systems. Currently focussing on the acute immune response to anaphylaxis and septic shock.

**Emergency Department Delirium Identification (EDDI) trial**
A clinical trial of a new delirium identification tool and early warning system.

**Identification of biomarkers that correlate with clinical features and outcomes following concussion.**
Clinical data, imaging, neuropsychological testing and blood samples of patients with concussion will be correlated with outcomes. This may lead to the development of improved tools for diagnosis and prognosis.
**Primary Spontaneous Pneumothorax Study**
An Australasian randomised controlled trial of conservative management with observation only versus interventional (aspiration and/or insertion of chest drain) treatment of primary spontaneous pneumothorax.

**The RESPOND Project**
A multi-centre randomised controlled trial of the RESPOND program to reduce secondary falls in older people presenting to the emergency department with a fall (Monash University).

**Preferences for the organisation of acute health services for older people (PROSpER)**
Preferences for providing acute medical care for people living in residential aged care facilities (University of Sydney).

**Improving quality of life in residential aged care**
A randomised controlled trial to reduce emergency department transfers and improve quality of life in residential aged care facilities.

**FEM FIG BUG**
A randomised triple-blind trial of ultrasound guided femoral nerve block versus fascia iliaca block for fractured proximal femur.

**Collaborations - patient recruitment at CCREM sites, but coordinated by other centres or units**
**The prophylactic hypothermia trial to lessen traumatic brain injury (POLAR).**
This trial will investigate whether early and sustained cooling of patients with severe traumatic brain injury is associated with better survival and less disability compared to standard care in which patients are maintained at normal temperature (Australian and New Zealand Intensive Care Society Clinical Trials Group).

**The FluCAN Surveillance System**
FluCAN is the first system in Australia to collect high quality and reliable data on hospitalised acute respiratory disease and other influenza related admissions in real time. Royal Perth Hospital participates as the sentinel site for Western Australia. (Dr A Cheng, Infectious Diseases Unit, Alfred Hospital).
Publications


Published Abstracts


Smart L, MacDonald S, Burrows S, Bosio E, Arendts G, Fatovich D. Increased endothelial glycocalyx damage biomarkers in Emergency Department patients with infection, compared to trauma. Shock 2016;46(4S):42

Smart L, MacDonald S, Burrows S, Bosio E, Arendts G, Fatovich D. Associations of glycocalyx damage biomarkers with inflammation and endothelial activation in infection compared to trauma. Shock 2016;46(4S):59

Posters


Conferences

International
Arendts G. Community-based palliative care is associated with reduced emergency department use by people with dementia in their last year of life. 33rd Annual Scientific Meeting, Australasian College for Emergency Medicine, Queenstown, New Zealand.

Arendts G. Older people and the dignity of risk. 33rd Annual Scientific Meeting, Australasian College for Emergency Medicine, Queenstown, New Zealand.

Arendts G. Rates of delirium diagnosis and patient centred outcomes do not significantly improve with emergency risk screening: First results of the Emergency Department Delirium Initiative (EDDI) trial. 33rd Annual Scientific Meeting, Australasian College for Emergency Medicine, Queenstown, New Zealand.

Arendts G. Community-based palliative care is associated with reduced emergency department use by people with dementia in their last year of life. 16th International Conference on Emergency Medicine, Cape Town.

Arendts G. Bringing best practice to nursing home patients - in their home and ED. 16th International Conference on Emergency Medicine, Cape Town.

Fatovich D. The probability of probability and research truths. 33rd Annual Scientific Meeting, Australasian College for Emergency Medicine, Queenstown, New Zealand.

Fatovich D. A prospective study of Alcohol related presentations to Royal Perth Hospital Emergency Department. 33rd Annual Scientific Meeting, Australasian College for Emergency Medicine, Queenstown, New Zealand.

Fatovich D. Capturing the Art of Emergency Medicine: using film to foster reflection in medical students. 33rd Annual Scientific Meeting, Australasian College for Emergency Medicine, Queenstown, New Zealand.

Francis, A. Serial mast cell tryptase measurements: Sensitivity and specificity for a diagnosis of anaphylaxis in patients with shock and/or hypoxemia. International Congress of Immunology, Melbourne.

Smart L. Traumatic shock. 22nd International Veterinary Emergency and Critical Care Symposium, Grapevine, Texas, USA.

Smart L. Resuscitation options for the trauma patient. 22nd International Veterinary Emergency and Critical Care Symposium, Grapevine, Texas, USA.

Smart L. Glycocalyx damage in sepsis. 22nd International Veterinary Emergency and Critical Care Symposium, Grapevine, Texas, USA.
National


Arendts G. Community-based palliative care for people with dementia. Be your Best: Promoting Health and Preventing Falls in Older Adults, Melbourne.

Arendts G. Primary and Secondary Prevention of ED attendance in independently living older people. Preventing Unnecessary Hospital Emergency Department Transfers for Older People Seminar, Melbourne.

Arendts G. Sepsis in the elderly. PHEMC Geriatric Emergency Medicine Seminar, Sydney.

Burcham J. Patients who do not wait in ED, who are they and why don’t they wait? International Congress on Innovations in Nursing, Perth.

Francis, A. Neutrophil activation during human anaphylaxis. Australian Society of Clinical Immunology and Allergy Annual Symposium, Gold Coast.

Smart L. The glycocalyx: the gatekeeper to the endothelium. Australian College of Veterinary Scientists, Annual Scientific Meeting, Gold Coast

Local

Bosio, E. Distinct inflammatory responses differentiate cerebral infarct from transient ischaemic attack. Harry Perkins Institute of Medical Research Scientific Retreat.

Bosio, E. Distinct inflammatory responses differentiate cerebral infarct from transient ischaemic attack. Royal Perth Hospital Medical Research Foundation Research Day.

Francis, A. Anaphylaxis: Diagnosis and immune mechanisms. School of Primary, Aboriginal and Rural Health Care Seminar Series.

Francis, A. Gene expression networks associated with anaphylaxis. Royal Perth Hospital Medical Research Foundation Research Day.

Francis, A. Serum mast cell tryptase measurements to diagnose anaphylaxis. Royal Perth Hospital Medical Research Foundation Research Day.

Smart L. Endothelial glycocalyx damage in emergency department patients with sepsis and trauma. Royal Perth Hospital Medical Research Foundation Research Day.
Annual Research Symposium

Arendts G. Delirium Detection in ED: The results of the EDDI trial

Macdonald S. Biomarkers of Sepsis: the ED perspective

Smart L. Early glycocalyx damage and inflammation in trauma and shock

Francis A. Understanding human anaphylaxis: The RNA sno-fall before the inflammatory avalanche

McCutcheon D. Novel Psychoactive Substances

Bosio E. Distinct inflammatory responses differentiate cerebral infarct from transient ischaemic attack

Nagree Y. Using BNP to improve the San Francisco Syncope Rules

Fatovich D. Priorities in Emergency Research Studies - Patient Expectations (The PERSPEX Study)

Fatovich D. Capturing the Art of Emergency Medicine: using film to foster reflection in medical students
Awards for research excellence

Armstrong C. (Supervisors Erika Bosio and Daniel Fatovich).
Sophie Lewis Fellowship in Acute Cardiovascular Emergencies, Australasian College for Emergency Medicine.

Fatovich D. Edward Brentnall Award, Australasian College for Emergency Medicine. Made to the author of an article published in a refereed journal, the content of which made a significant contribution to public health.

Francis, A. Neutrophil activation during anaphylaxis. Paul Clarke Poster Award, Australian Society of Clinical Immunology and Allergy.

Smart L. Encouragement Award. Royal Perth Hospital Medical Research Foundation.

Sophus Falck Award. 16th International Conference on Emergency Medicine, Cape Town.
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