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 and the Royal Perth Hospital Medical Research Foundation.

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 preparation.

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.

CCREM staff and associates, 2013

Royal Perth Hospital

Clinical Academics
Professor Simon Brown MBBS PhD FACEM, Program Director
Professor Daniel Fatovich MBBS PhD FACEM
Associate Professor Glenn Arendts MBBS MMed FACEM

Research Registrars
Dr Christopher Armstrong MBChB
Dr David McCutcheon MBBS FACEM

Research management and administration
Ellen MacDonald RN, Clinical Nurse Manager
Cathy Read RN, National Coordinator PSP Study
Sophie Damianopoulos, Administrative Officer
Sarah Fitzhardinge BSc MBA, Research Assistant

Laboratory
Assistant Professor Shelley Stone BSc PhD, Research Fellow
Dr Pauline van Eeden BSc PhD, Research Associate
Ms Claire Cotterell BSc, Research Assistant
Ms Leah Stone BSc, Research Assistant
Ms Helen O’Donoghue BSc, Research Assistant
Research Nurses
Helen Hamersley RN, Jen Wurmel RN, Clare Nash RN, Naomi Sweeting RN, Dianne Catapang RN, Diana Khoo RN, Jessica Peel RN

PhD Students
Dr Craig Ellis MBChB FACEM, Associate Professor Stephen Macdonald BSc MBChB DCH MRCP FACEM, Ms Abbie Creamer BSc

Fremantle Hospital
Clinical Academic
Professor Yusuf Nagree MBBS FACEM MBA

Research management and administration
Karen Shakespeare RN, Research Coordinator
Vanessa Camarda, Administrative Officer

Research Registrar
Dr Bahati Mosetti, MBBS

Research Nurses
Sarah Gow RN, Maree Masters RN, Sue Burns RN, Madeline Barker RN

Armadale Kelmscott Memorial Hospital
Clinical Academic
Associate Professor Stephen Macdonald BSc MBChB DCH MRCP FACEM

Research Nurses
Alysee Pownall RN, Shiree Walker RN

South West Area Health Service
Clinical Academic
Dr Hugh Mitenko FACEM

Research Nurse
Marie Draper RN
Notable New Funding For 2013


Assessment and Management of the Cognitively Impaired Older Person Presenting to Emergency Departments with Musculoskeletal Conditions or Injuries. Emergency Care Institute NSW. Fry M, Arendts G, Chenoweth L. 2013-14 $158,890


Ongoing Funding For 2013

Modelling community preferences for health policy: how choice experiments can inform the organisation of acute health services for older Australians. Australian Research Council Discovery Project. Howard K, Arendts G, Jan S, Quine S. 2012-2014 $172,197


A randomised trial of patient centred intervention to reduce re-presentations of older people at risk after discharge from the emergency department. WA State Health Research Advisory Council 2012-14 Arendts G. $200,000

Granzyme B in acute ischaemic stroke. Royal Perth Hospital Medical Research Foundation Grant. Van Eeden P, Armstrong C, Stone S, Brown S, Fatovich D and Hankey G. $17,500 + 0.5FTE for a Research Assistant.


New Investigations

(1) Coordinated by CCREM
Assessing Risk in Sepsis using Tissue Oxygen Saturations (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.

Inflammation and acute stroke study
A study of patients presenting to the ED with acute stroke, investigating early immunological markers.

Microcirculation in Acute Atrial Fibrillation
An observational study of the effects of atrial fibrillation on the microcirculation using dynamic near infrared spectroscopy.

(2) Collaborations - patient recruitment at CCREM sites, but coordinated by other centres or units
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).

Target Pain Study
A multi-Emergency Department study testing if the adoption of a pain score target will increase patient satisfaction with their pain management in the ED. (Prof D Taylor, Austin Health)

Ongoing Investigations

(1) Coordinated by CCREM
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, septic shock, traumatic brain injury and post-cardiac arrest.

Clinical Associations with Acute Decompensated Diastolic Heart Failure in the Elderly (DHF Study)
A multicentre, prospective observational study following elderly patients with established DHF over a period of time by comparing their baseline characteristics when they are well to when they present unwell to the Emergency Department.

Emergency Department Complex Needs Coordination Team (ED CoNeCT)
A randomised trial of patient centred intervention to reduce re-presentations of older people at risk after discharge from the emergency department.
Jack Jumper Ant Venom Immunotherapy (JJA VIT) Trials

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.

Residential Aged Care Facility Study
A randomised controlled trial to reduce emergency department transfers and improve quality of life in residential aged care facilities.

Sepsis/Saline Trial
A pilot randomised trial of hypertonic saline versus normal saline as the initial bolus fluid in patients with infectious systemic inflammatory response syndrome.

Emergency Department Anaphylaxis Studies (EDA II and III)
(i) A randomised controlled trial of intramuscular versus intravenous adrenaline during anaphylaxis (ii) A study of gene activation and biochemical mediators of anaphylaxis.

Chest Pain Registry
The chest pain registry is a longitudinal study of patients presenting to the Emergency Department with chest pain and is looking at medium term outcomes of these patients. Co-ordinated by CCREM partner, Fremantle Hospital Emergency Medicine Research

Use of BNP in Syncope
This study is examining whether the use of a simple blood test (BNP) can improve diagnostic accuracy of patients presenting to the Emergency Department with syncope. Co-ordinated by CCREM partner, Fremantle Hospital Emergency Medicine Research

(2) Collaborations - patient recruitment at CCREM sites, but coordinated by other centres or units

Australasian Resuscitation in Sepsis Evaluation (ARISE Study).
A multi-centre, randomised controlled trial of early goal-directed therapy in patients presenting to the emergency department with severe sepsis in Australasia (ANZICS Clinical Trials Group)

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 (ANZICS Clinical Trials Group).

Australian Snakebite Project and Fresh Frozen Plasma Study (ASP-FFP)
A national multicentre prospective cohort study of snake envenoming in Australia (Dr G Isbister, University of Newcastle, Calvary Mater Hospital).
Redback Antivenom Evaluation (RAVE) II Study
Randomised controlled trial of intravenous antivenom versus placebo in the treatment of redback spider bite. Completed April 2013 (Dr G Isbister, University of Newcastle, Calvary Mater Hospital).

Evidence-based paramedic models of care to reduce unnecessary emergency department attendance: feasibility and safety.
Development and validation of clinical protocols for extended care paramedics (Prof I Jacobs, Curtin University).

Functional status of survivors of out-of-hospital cardiac arrest (OCHA) in Perth
A retrospective observational study to determine the functional/neurological outcome of OHCA survivors discharged from hospital and to estimate the uptake of post-resuscitation practices such as therapeutic hypothermia and coronary reperfusion (Prof I Jacobs, Curtin University).

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 WA. (Dr A Cheng, Infectious Diseases Unit, Alfred Hospital).

Emergency Department Pulmonary Embolism Diagnosis (EDPED)
Early discharge of patients diagnosed with low risk pulmonary embolism from the emergency department (Dr T Ercleve, Sir Charles Gairdner Hospital)

Quantifying alcohol-related harm presenting to Emergency Departments in Australasia
To determine the proportion of alcohol-related presentations to emergency departments in Australia and New Zealand, at a single time point on a weekend night shift (Dr Diana Egerton-Warburton, ACEM)

Publications 2013


Gillman L, Fatovich D, Jacobs I. Mortality of interhospital transfers originating from an Emergency Department in Perth, Western Australia. Aust Emerg Nurs J. 2013 16:144-151


Conferences including Proceedings, Papers, Posters

**International**

Brown S. Anaphylaxis: clinical features and evidence for a mast cell-leukocyte cytokine cascade in humans. Annual Society for Academic Emergency Medicine (SAEM) Scientific Meeting, Atlanta, Georgia, USA, May 2013

Brown S. Management of ant venom allergy. EAACI-WAO World Allergy and Asthma Congress, Milan, Italy, June 2013

**National**

Arendts G. Do we need geriatric emergency physicians? Emergency Care and Population Ageing Summit, Melbourne, March 2013

Arendts G. Care Coordination Teams. Emergency Care and Population Ageing Summit, Melbourne, March 2013

Arendts G. What makes people from nursing homes come to hospital, and what makes them not: The evidence. 3rd Annual RBWH Aged Care Conference, Brisbane, May 2013

Arendts G. Transitional Care for the Older Person Discharged from ED. 30th Australasian College for Emergency Medicine Annual Scientific Meeting. Adelaide, November 2013

Brown S. Immune mediator changes in snake envenoming and after antivenom. Toxicology and Poisons Network Australasia (TAPNA), Newcastle, April 2013

Brown S. Convene/run a 1.5 hour workshop on Sting and Drug Anaphylaxis. Toxicology and Poisons Network Australasia (TAPNA), Newcastle, April 2013

Brown S. Venom immunotherapy: established cure or work in progress? 24th Annual Scientific Meeting of the Australasian Society of Clinical Immunology and Allergy (ASCIA). Perth, September 2013


Nagree Y. High sensitivity troponins. Australasian College for Emergency Medicine Winter Symposium Broome, June 2013

Nagree Y. Ambulance ramping (delayed off-stretcher) is caused by admitted patients. Australasian College for Emergency Medicine Annual Scientific Meeting. Adelaide, November 2013
Nagree Y. Some patients can be safely discharged after a single troponin on arrival. Australasian College for Emergency Medicine Annual Scientific Meeting. Adelaide, November 2013

Stone S. New insights into pathogenesis of anaphylaxis. 24th Annual Scientific Meeting of the Australasian Society of Clinical Immunology and Allergy (ASCIA). Perth, September 2013

**Local**
Stone S. Anaphylaxis to snake antivenoms: How a bad day can get so much worse. School of Pathology and Laboratory Medicine, University of Western Australia, Perth, May 2013.

Stone S. Anaphylaxis to snake antivenoms: How a bad day can get so much worse. Western Australian Institute of Medical Research Seminar Series, Perth, June 2013

Stone S. Anaphylaxis: Clinical patterns, mediator release and severity. UWA School of Medicine and Pharmacology Seminar Series. Perth, September 2013

**Annual Research Symposium**

**Why do sepsis research in the ED?**
Arendts G, Associate Professor, Emergency Medicine, University of Western Australia and Emergency Physician, Royal Perth Hospital.

**Early diagnosis of sepsis and bacterial resistance**
Iredell J, Professor of Medicine and Microbiology at University of Sydney, Director - Centre for Research Excellence in Critical Infection and Director – Infectious Diseases at Westmead Hospital, Sydney.

**Prognostic modelling in sepsis**
Macdonald S, Associate Professor, Emergency Medicine, University of Western Australia and Emergency Physician, Armadale Health Service, Perth.

**Acute inflammatory response in sepsis**
Stone S, Research Assistant Professor, Emergency Medicine, University of Western Australia.

**Tension pneumothorax – what is it and does it exist?**
Simpson G, Thoracic and General Physician, Cairns Base Hospital, Queensland.

**Primary spontaneous pneumothorax**
Ball E, Respiratory Medicine Fellow, Sir Charles Gairdner Hospital, Perth.

**Pulmonary embolism**
Keijzers G, Emergency Physician, Gold Coast Hospital, Queensland.

**High flow nasal cannula therapy in respiratory emergencies**
Kinnear F, Emergency Physician and Research Co-ordinator, Emergency Medical and Children’s Services, The Prince Charles Hospital, Queensland.

**Acute asthma in the pre-hospital and emergency environment**
Ellis C, Emergency Physician and Deputy Medical Director, St John Ambulance, New Zealand.
Awards for research excellence

2013 Best Paper Award (selected from abstract) at the Annual Society for Academic Emergency Medicine (SAEM) Scientific Meeting, Atlanta, Georgia, USA (out of 834 papers selected for presentation at the conference). (Brown SGA, Stone SF, Fatovich DM, Burrows SA, Holdgate A, Celenza A, Coulson A, Hartnett L, Nagree Y, Cotterell C, Isbister GK; Anaphylaxis: clinical features and mediator release patterns)

Outcomes of Patients with Cardiac Arrest as predicted by Clinical and Laboratory Markers collected within hours of ED admission. Robert Vandongen Vacation Scholarship for Medical Students 2013. Medical Research Foundation. Brookes D (supervisor D Fatovich).