The Joseph Epstein Centre
for Emergency Medicine Research

10th Anniversary Report 2011
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10th Anniversary Report

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Executive Summary

The Joseph Epstein Centre for Emergency Medicine Research is located at Sunshine Hospital in St Albans, Melbourne, Australia.

The aim of the Centre is translating evidence into better health care by:

- **Performing** high quality clinical research in the areas of emergency medicine and prehospital care
- **Developing** partnerships for research, both across regions (national and international) and across disciplines (ambulance, medical, nursing and community)
- **Providing** education and support to workers in prehospital care and emergency medicine in order to develop research that will improve outcomes for patients and
- **Demonstrating** the translation of evidence into improved practice

**History**

The Joseph Epstein Centre for Emergency Medicine Research was established by Western Health in 2001 and opened by the then Health Minister, the Hon. John Thwaites on 13 February 2001. The Centre focuses on clinical research directly related to improving clinical practice in emergency departments. Our approaches are multi-disciplinary and collaborative and our projects address questions in prehospital, nursing, emergency medical and critical care domains.

The Centre works closely with the Department of Emergency Medicine of Western Health, which has three emergency department campuses located in the western suburbs of Melbourne treating in excess of 125,000 patients annually; 25% of them children.

With a permanent staff of three (average 1.5 EFT, comprising a director, research manager and research officer) supplemented by research students and a small but dedicated band of casual research officers and clinical staff, the Centre has developed a national and international reputation from both the quality and volume of its research output. Since its inception, 139 papers have been published in refereed journals and staff have contributed 20 book chapters.

The team have spoken at conferences in Europe, North America and Asia as well as Australasia. The Centre has the distinction of being the only non-North American group to have their work selected for presentation at the prestigious and highly competitive Society for Academic Emergency Medicine (US) Annual Scientific Meeting every year since the Centre’s inception.
Highlights

- Co-supervised 2 completed PhD
- Edited 2 books
- Contributed 20 books chapters
- Contributed 11 editorials or position statements
- Published 25 review articles
- Published 103 original research papers

- Supervised 22 Advanced Medical Science/ Bachelor of Medical Science students from The University of Melbourne and Monash University; resulting in 18 publications in scientific journals.

- Supervised 23 completed research projects by Emergency Medicine registrars.


Clinical excellence is always built on the pillars of quality clinical service, dedicated research and enthusiastic educational activities. Outstanding clinical leadership not only recognises this, but understands the importance of nurturing key clinicians, developing departments and infrastructure and enshrining excellence in the systems that support activities now and into the future.

As the General Manager of Western Hospital it was an honour to work with Professor Epstein. He was (and is) an outstanding leader in Emergency Medicine who delivered clinical excellence and aspired to ensure that the ongoing benefits would flourish at his hospital, within his profession and integrated into the University and Health Care systems. His vision was to ensure that clinical excellence would always be embedded on sound clinically focused research and a commitment to educational strengths. The establishment of the Joseph Epstein Centre for Emergency Medicine Research progressed this vision and was fittingly named in his honour.

Looking at the achievements of the Centre after ten years, it is impressive that his vision has survived and flourished and the Centre has grown not only in capacity but as an internationally recognised centre of excellence. Well done to the team and all the best for ongoing success.

- David Hills

The staff who founded and shaped the JECEMR for the last ten years have been committed to the notion that emergency medicine will only finally take its place in the “house of medicine” when it can lay claim to sustained, quality intellectual productivity that reflects the unique opportunities afforded to emergency medicine in the chain of care provided to patients who need and deserve quality emergency medical care. I was delighted when it was first suggested to me that my name be attached to the Centre and I have watched it develop and produce under the stewardship of Professor Kelly with admiration, profound pride and respect.

It was imagined that the JECEMR would provide a home for those interested in furthering research in Emergency Medicine and that these people could team up with each other and form the vanguard of emergency medicine research in the Western suburbs of Melbourne. The Centre has also made a special effort of participating in collaborative research – this has been a success story!

Yet, in common with other research institutions, funding remains a challenge – this continues to present a special challenge in building on the excitement and energy that people feel when they first contemplate undertaking research in this specialty. Ironically, although our colleagues in other specialties understand the potential of emergency medicine research the Joseph Epstein Centre for Emergency Medicine Research has had to face the reality that clinical research is a competitive enterprise and there will always be competition for funding and support from other specialties and from research workers in our own specialty – this reality both energises and frustrates – in this regard ‘twas ever thus’.

In the end intellectual productivity stands or falls on its intellectual output. The paths chosen by the Centre have not always been trouble free but the Centre’s achievements have, considering the resources available, been truly impressive. I congratulate Professor Kelly and her staff on a genuinely prodigious achievement.

- Joseph Epstein

Messages

Joseph Epstein AM FIFEM
Senior Consultant and Former Director

Department of Emergency Medicine, Western Hospital; Executive Manager, Field Emergency Medical Officer Program, Health Displan Victoria and Former President, Australasian College for Emergency Medicine

David Hills
Former General Manager Western Hospital

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Research is inseparable from quality clinical care. Finding new and better ways to manage patients and their illness improves patient care and the efficiency of health services.

This year the Joseph Epstein Centre for Emergency Medicine Research celebrates its tenth anniversary. This initiative of Western Health recognised the importance of good emergency care to the outcomes of patients and the passion and talents of the Emergency Medicine academic team. Western Health’s investment has had excellent returns. The Centre’s research has changed clinical practice not just within our hospitals but around the world. It is recognised as a world leader in several areas of research, attracting considerable research funding and visiting academic fellows.

Congratulations to the Centre’s team on their achievements and good wishes for its continued success.

- Kathryn Cook

It is with great pleasure that I congratulate the Joseph Epstein Centre for Emergency Medicine Research on the occasion of their 10th Anniversary. This comes at an auspicious time when the physical location of the Centre is about to be upgraded and enhanced with its rest ing in the new Western Health Centre for Health Education and Research at Sunshine Hospital planned for June 2011.

Over the last ten years, the aims of the Centre in translating evidence into better health care have been attained by performing high quality clinical research in the areas of emergency medicine and acute hospital care. In the Centre’s key areas of particular research interest, it has been highly productive with 71 publications in peer-reviewed journals over the last five years. The Centre has also provided educational opportunities and support in research methods to those involved in pre-hospital care and emergency medicine. Additionally, the Centre has fostered research by the University of Melbourne Advanced Medical Science students, who have clearly benefitted from their exposure to critical thinking in clinical research methods and clinical trial interpretation. Finally and most importantly, Professor Anne-Maree Kelly is to be congratulated for the continuing success of the Centre and its enviable high national and international profile in Emergency Medicine research over the last decade.

- Peter Ebeling

I wish the Joseph Epstein Centre for Emergency Medicine Research continuing success over the next 10 years in its new location in the Western Health Centre for Health Education and Research at Sunshine Hospital.

- Peter Ebeling

It has been a privilege to lead the Joseph Epstein Centre for Emergency Medicine Research over the last ten years. With a focus on issues directly relevant to emergency care, we have worked across a range of themes in response to evolving clinical questions. This flexibility and responsiveness is one of the strengths of the Centre’s research model. It is particularly pleasing to see the changes in practice that have resulted, not just in local emergency departments but around the world. I would like to thank the researchers who have worked in our team, the organizations with whom we have collaborated and the doctors and nurses of Western Health’s emergency departments for their commitment to advancing emergency care through research. Thanks also to the Board and executive of Western Health for their vision in establishing the centre and their ongoing support. With their continued support, the Centre will continue to go from strength to strength.

- Anne-Maree Kelly
Staff

Current Staff

Director
Professor Anne-Maree Kelly (2001-)
Professional Fellow,
The University of Melbourne
Adjunct Professor,
Queensland University of Technology
Senior Clinical Advisor,
Emergency Care Improvement and
Innovation Clinical Network,
Dept of Health (Victoria)

MBBS Melbourne 1983
MClinEd UNSW 1996
MD Melbourne 1999
FACEM 1990
FCCP 2010

Sharon Klim (2009-)
Research Manager

BN
Grad Dip Acute Care Nursing
Cert Nursing Management

Kerrie Russell (2003-)
Research and Administration Officer

Dip Health Science Nursing
Cert Critical Care Nursing

Honorary Fellows
David Krieser FRACP (Western Health)
Tony Walker ASM (Ambulance Victoria)

Past Staff
Debra Kerr Research Officer/Research Manager 2001-9
Megan Clooney Research Officer 2004-8
Karen Enno Research Officer 2009-10

Visiting International Research Fellow
Stephen Goodacre School of Health and Related Research, University of Sheffield, United Kingdom
Beng Leong Lim Tan Tock Seng Hospital, Singapore
Collaborations

The Centre has been highly successful in its aim of developing partnerships for research; bringing together organisations and health services across Australia to work on important clinical questions.

Organisations

Ambulance Victoria
Australian National University
Accident and Emergency Medicine Academic Unit
Chinese University of Hong Kong
CSIRO
Heart Foundation
London School of Hygiene and Tropical Medicine
Ottawa Health Research Institute/ University of Ottawa, Canada
The Burnett Institute
The University of Sheffield, United Kingdom
Turning Point Drug and Alcohol Service

Health Services

Albury Hospital
Alice Springs Hospital
Auburn Hospital
Austin Hospital
Bankstown-Lidcombe Hospital
Ballarat Hospital
Bendigo Hospital
Box Hill Hospital
Caboolture Hospital
Calvary Hospital
Canberra Hospital
Canterbury Hospital
Coff’s Harbour Hospital
Dandenong Hospital
Epworth Hospital
Finders Medical Centre
Fremantle Hospital
Gold Coast Hospital
Goulburn Valley Health Service
Hornsby-Ku-Ring-Gai Hospital
Ipswich Hospital
Joondalup Hospital
Launceston Hospital
Lismore Hospital
Logan Hospital
Lyell McEwin Health Service
Mackay Hospital
Maroondah Hospital
Mater Misericordiae Hospital
Mater Children’s Hospital
Monash Medical Centre
Mona vale Hospital
Newcastle Hospital
Port Macquarie Hospital
Queen Elizabeth Hospital
Rockhampton Hospital
Rockingham-Kwinana Hospital
Royal Adelaide Hospital
Royal Brisbane and Women’s Hospital
Royal Children’s Hospital (Qld)
Royal Children’s Hospital (Vic)
Royal Darwin Hospital
Royal Melbourne Hospital
Royal Prince Alfred Hospital
Shell Harbour Hospital
Sir Charles Gairdner Hospital
St Vincent’s Hospital, Melbourne
St Vincent’s Hospital, Sydney
Sunshine Hospital
Sutherland Hospital
Sydney Children’s Hospital
Tamworth Base Hospital
Townsville Hospital
Tweed Hospital
Wagga Wagga Hospital
Western Hospital
Wimmera Hospital
Wollongong Hospital
Women’s and Children’s Hospital (SA)
Blood Gas Analysis

Blood gas analysis is an important tool for the assessment of acid-base status and ventilatory function. Traditionally, arterial samples were used, but they are painful and carry a risk of serious complications. Venous samples were an alternative, however little was known about agreement between arterial and venous values of key parameters. Through a series of studies, beginning in 2001, we have established how venous and arterial values relate to one another in a variety of clinical conditions. Current work is looking at whether changes in venous pH and carbon dioxide tension accurately reflect changes in the arterial values in patients undergoing non-invasive ventilatory support. This research has changed clinical practice internationally with many arterial punctures replaced by venous samples with less discomfort for patients, less exposure to complications and improved staff safety.

Intranasal Naloxone for Heroin Overdose

Heroin overdose is potentially fatal. Reversal of heroin’s effects with the antidote, naloxone, is life-saving. Previously naloxone was given by injection, either into a vein or muscle. However, as those needing help may be in confined spaces and commonly carry viruses (such as hepatitis C or HIV), administration by injection was awkward and carried risks for rescuers. This research program, much of it forming Debra Kerr’s PhD thesis, found that administration into the nose via an atomiser was effective and a viable alternative to injection. This work has changed practice in a number of ambulance services around the world. It was a winner of a Victorian Public Healthcare Award in 2008.

Estimating Children’s Weight in Emergencies

Drug doses in children are usually weight-based. In emergency situations it is not always practical to weigh a child in order to calculate the correct dose. There have been several formulae proposed to estimate a child’s weight in these circumstances but they had not been validated on Australian children. This series of work, principally by Kevin Nguyen (a research student from The University of Melbourne) and Dr. David Krieser, has examined the available formulae, establishing which is most accurate in Australian children. They also explored parents’ accuracy in weight estimation finding that it was more accurate than any of the formulae. This work has changed practice in paediatric emergency departments and recommendations in clinical guidelines about estimation of children’s weight in emergencies.
Joseph Epstein Centre for Emergency Medicine Research has broad research interests, but our over-arch-ing aim is the translation of research into better clinical care. These are some examples of how that aim is being achieved.

**Pain Management**

Pain management is a key quality indicator in emergency departments, as most patients present with pain as part of their symptom complex. Through a series of studies starting in 2001, we have researched pain measurement, processes for improving the delivery of pain relief and the impact of workload on pain management. Our work in processes facilitating nurse-initiated pain treatment has been widely disseminated and changed practice both in Australia and throughout the world. The protocols and educational materials developed by the team have been requested by, and shared with, countries in North America, Asia and Europe.

**Implementation of the Canadian C-spine rule**

With any significant accident there is the risk of an injury to the cervical spine. Ambulance services place patients at risk in hard collars to protect their spine until a fracture can be ruled out. These collars are however very uncomfortable and many patients were spending long periods in them awaiting x-rays. Work emanating from Canada established a process to safely and rapidly clear cervical spines in selected patients. Through a series of studies, co-ordinated by Luke Bradshaw (a research student from The University of Melbourne) we were able to report successful implementation of the rapid rule-out process in Australia with lower x-ray rates and less time spent in hard collars. Luke’s work was also the first to report successful implementation of the process by nurses.

**Research Students**

Joseph Epstein Centre for Emergency Medicine Research has:

- **Co-supervised two completed PhD**
  - 2006-9: Debra Kerr.  
    *Intranasal naloxone for the treatment of acute opioid overdose in the prehospital setting.*  
    Monash University.
  - 2005-8: Kean Soon.  
    *The role of multi-slice CT in the investigation of coronary arteries.*  
    The University of Melbourne.

- **Supervised 22 Advanced Medical Science/Bachelor of Medical Science students from The University of Melbourne and Monash University; resulting in 18 publications in refereed scientific journals.**

- **Supervised 23 completed research projects fulfilling the research component of specialist training for the Australasian College for Emergency Medicine.**
Grants and Awards

Selected Grants

Joseph Epstein Centre for Emergency Medicine Research is lead agency unless otherwise stated.

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<th>Granting Body</th>
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<tr>
<td>Medical Research Council [UK].</td>
<td>The DAVROS Study: Development and Validation of Risk-adjusted Outcomes for Systems of emergency care</td>
<td>£951,554</td>
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<td>Lead agency: MCRU, ScHARR, University of Sheffield</td>
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| Commonwealth Department of Health and A
gen/ ACEM | Improving asthma discharge from Emergency departments | AUD$310,866 |
| National Health and Medical Research Council. Lead agency: Ambulance Victoria | Randomised trial of core cooling versus surface cooling in comatose survivors of prehospital cardiac arrest. | AUD$295,000 |
| Department of Human Services (Victoria). | Intranasal naloxone for suspected opiate overdose. | AUD$141,000 |
| MBF Trusts                          | Improving call-to-needle times for thrombolysis of eligible acute myocardial infarcts in Victoria: Pilot projects. | AUD$80,000  |
| University of Melbourne-CSIRO Collaboration Grant. | Is there a relationship between local concentrations of PM2.5, PM10, SO2, O3 and NO2 and the frequency of emergency department presentations for asthma in children? | AUD$25,000  |
| Perpetual Trustees Philanthropic Trust. | Improved identification of osteoporosis in elderly patients with fractures. | AUD$21,000  |
| William Buckland Foundation.        | Intranasal versus intramuscular naloxone for the treatment of acute opiate overdose in the prehospital setting. | AUD$15,000  |
| Morson Taylor Research Award, Australasian College for Emergency Medicine. | Determining the value of intermediate troponin values with respect to short and medium term prognosis. | AUD$10,000  |

Prizes and Awards


2008: Morson Taylor Research Award, Australasian College for Emergency Medicine. Determining the value of intermediate troponin values with respect to short and medium term prognosis.


2007: Best Poster Prize, Paediatric and Child Health Section, RACP Annual Congress. Parental weight estimation of their child’s weight is more accurate than other weight estimation methods for determining children’s weight in an emergency department.

2002: Best free paper by a Fellow, Australasian College foe Emergency Medicine Annual Scientific Meeting, Sydney, November 2002. Is severity assessment after one hour of treatment better than initial assessment at predicting the requirement for hospital admission for acute asthma?
Since the inception of The Joseph Epstein Centre for Emergency Medicine Research, staff have:

- Edited 2 books;
- Contributed 20 books chapters;
- Contributed 11 editorials or position statements;
- Published 25 review articles and
- Published 103 original research papers

### Acute Cardiology and Resuscitation

Acute Cardiology and Resuscitation (cont)


Asthma


Blood Gas Analysis


Clinical Decisions Rules and Risk Scores


Clinical Decisions Rules and Risk Scores (cont)


Education


Estimating Children’s Weight in Emergencies


Headache and Migraine


Intranasal Naloxone for Heroin Overdose


Pain Management


Pneumothorax


Pneumothorax (cont)


Other

5. Le-Kim L, Kerr D, Kelly AM. Are patients on warfarin with high INR being treated according to published guidelines? Internet Journal Hematology http://www.ispub.com/journal/the_internet_journal_of_hematology/volume_5_number_1_44/article/ are_patients_on_warfarin_with_high_inr_treated_according_to_published_guidelines.html
Contact Us
Joseph Epstein Centre for Emergency Medicine Research
Sunshine Hospital
Furlong Road, St Albans 3021 Vic AUSTRALIA
Telephone: +61 (0)3 8345 1017
Fax: +61 (0)3 8345 1019
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