



## **2007-2017: 10 years of emergency medicine research funding**

Improving emergency medicine care  
through research

Delivering better patient outcomes  
and maximising the healthcare dollar



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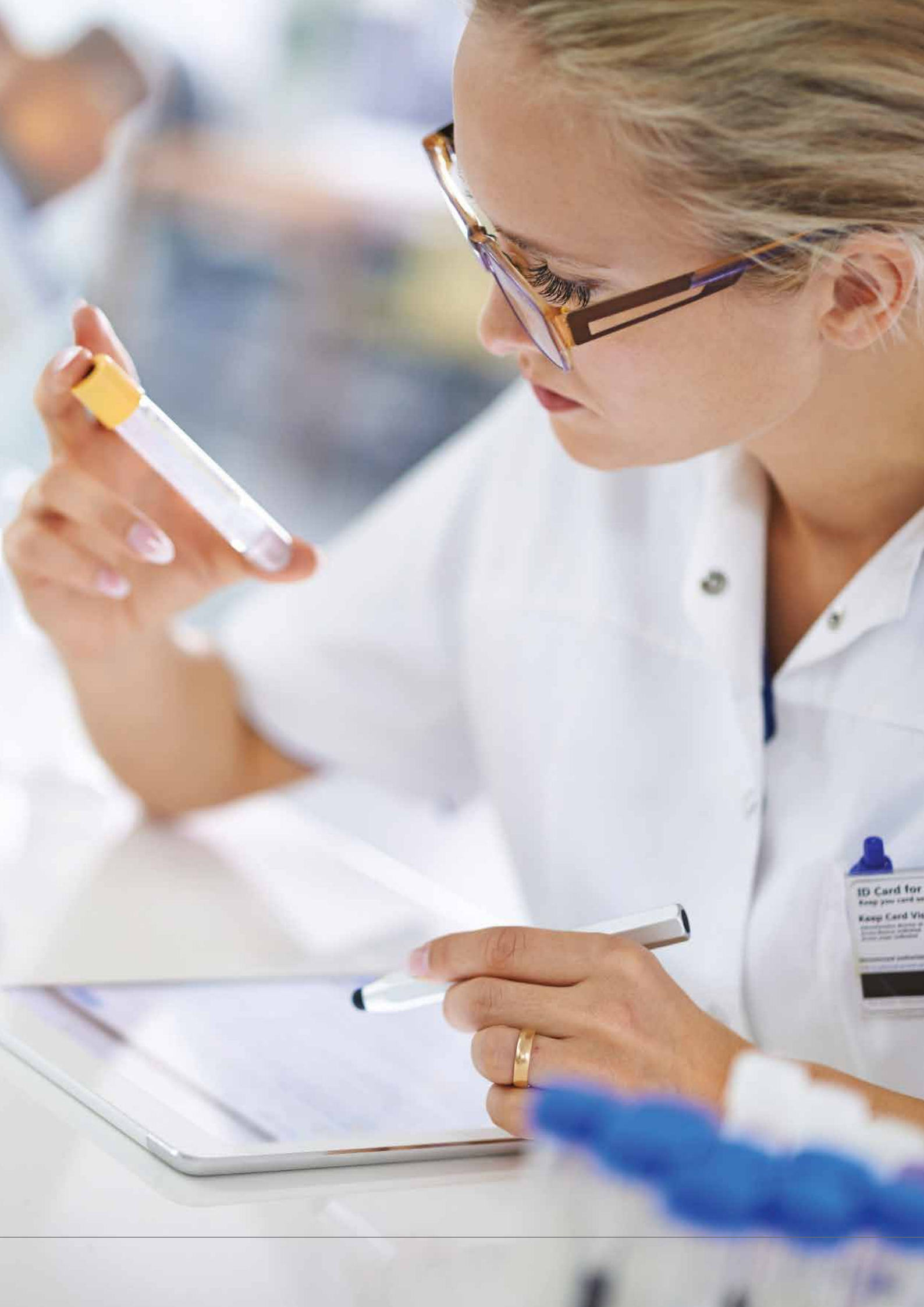
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## FOREWORD

Queensland emergency medicine specialists successfully lobbied the Queensland Government for funding to establish the Queensland Emergency Medicine Foundation (QEMRF) in 2007. QEMRF was designed to build emergency medicine research capacity and capability in Queensland; to enable those healthcare professionals to instigate and lead clinically-driven research projects. Thanks to ongoing support from the Queensland Government, the State has the only dedicated emergency medicine research fund in Australia.

Building on the success of QEMRF, the organisation launched a national body in 2014 – the Emergency Medicine Foundation (EMF). The two entities were merged in 2016 to allow for the development of multiple, dedicated emergency medicine research programs Australia-wide. At present, these include a national Rural and Remote Program and the Queensland Research Program (formerly QEMRF).

In less than 10 years, research projects funded by QEMRF/EMF are generating clinically-relevant outcomes, which are being adopted by Emergency Departments nationally as well as, in some cases, internationally. These projects are delivering significant improvements in patient care, public health and the healthcare system.

Considering EMF's modest budget, our successes are testament to the power of funding quality research with the potential to drive clinical change. We are proud of our achievements and look forward to working more closely with industry, universities and hospitals to increase the funding available to emergency medicine research. In addition, EMF also hopes to establish research programs in other Australian States and Territories – contingent on other jurisdictional Health Departments following the example set in Queensland.

This booklet was developed to mark EMF's 10th anniversary and celebrate our research outcomes. I would also like to take this opportunity to acknowledge Queensland Health's ongoing support and commitment to emergency medicine research along with the many people who have supported EMF.

Our gratitude also to the sponsors – many of whom are research collaborators – for helping make the publication of this document possible: The University of Queensland, James Cook University, Griffith University, the Queensland University of Technology, Hesta and Vocera.

I hope you enjoy reading about the EMF research projects, which are changing the way we care for Australians in a medical emergency.



**Dr Anthony Bell**




Chair – Emergency Medicine Foundation

# CONTENTS

About EMF .....	8
Our research programs .....	10
Research that is changing our Emergency Departments .....	12
Research that will change our healthcare .....	20
Developing research careers .....	26
Fostering research in hospitals .....	28
Thank you.....	34
EMF grant recipients .....	35
Research collaborators .....	36

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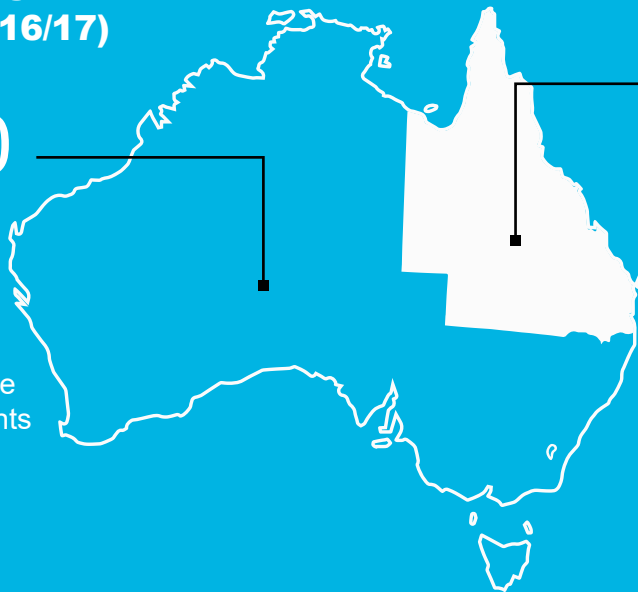
## RESEARCH INVESTMENT BY EMF (2008/09-2016/17)

**\$195,000**

+

**3**

national Rural & Remote  
Research Program grants



**\$12.95m**

+

**131**

Queensland  
Research  
Program grants

## ECONOMIC BENEFITS TO THE HEALTHCARE SYSTEM

**\$18.9m**

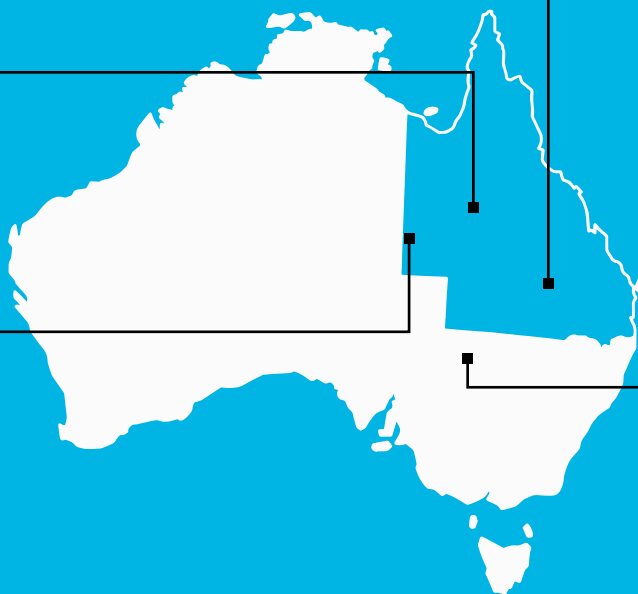
annually from

**4**

projects<sup>1</sup>

**\$43.7m**

leveraged, in-kind,  
linked and  
follow-on grants



Estimated further

**\$97m**

annually from

**1**

project<sup>2</sup> due to reduced  
patient deaths

Potential to deliver

**\$349m**

annually from

**6**

projects<sup>3</sup> if rolled out  
nationally

Total current and potential economic contribution to the  
Australia healthcare system from 6 projects funded by EMF

**\$564m**

<sup>1</sup> Patient Admission Prediction Tool (PAPT); ADAPT Protocol (chest pain); Nasal high-flow (bronchiolitis in infants); change in treatment protocol for intoxicated patients (Gold Coast only)

<sup>2</sup> PAPT (Deloitte Access Economics)

<sup>3</sup> PAPT; ImpACT Protocol (chest pain); Nasal high-flow (bronchiolitis in infants); CREDIT program; use of medical glue to hold IV lines; adoption of Tamulson to treat larger kidney stones

## ABOUT EMF

EMF is an Australian not-for-profit organisation, dedicated to emergency medicine research.

Our purpose is to support high-quality research directed at improving the care of patients in a medical emergency, and to develop emergency medicine research capacity nationally. Long-term, every Australian will benefit from our research programs.

We fund innovative, evidence-based research with the potential to improve clinical practice in the short-term as well as deliver economic benefits to the healthcare system. In addition, we also help to raise the profile of emergency medicine research and foster the transfer of research outcomes into real and practical benefits in medical emergencies.

With \$2 million dedicated funding per year from Queensland Health along with philanthropic and industry donations, this small organisation has invested more than \$13 million in emergency medicine research, with a further \$2 million invested in a Research Support Network.

### VISION

Our vision is for Australia to be regarded as an international leader in emergency medicine research.

Achieving this vision relies on us identifying and funding the current and next generation of researchers and research initiatives, which will improve patient care and emergency medicine outcomes as well as delivering tangible economic benefits for the national healthcare system.

It's a bold vision that when realised, will result in all Australians receiving better care in a medical emergency. More lives will be saved and our hospital Emergency Departments and emergency services will operate more efficiently and effectively.

## KEY ACHIEVEMENTS: OCT 2007- JUNE 30, 2017

### INITIATIVES



Began awarding grants through Queensland Research Program (formerly QEMRF) in **2008**



Launched national Rural and Remote Research Program in **2014**



Rolled out Research Support Network in Queensland in **2015** (funded initially for three years)

### RESEARCH GRANTS



Awarded **134** grants totalling **\$13.14 million**



**33** grants worth **\$2.8 million** awarded to further educate, train or build research capacity



Received **400** grant applications totalling **\$41.57 million**

### RESEARCH IMPACT



**431** journal articles, conference abstracts and articles and books and book chapters



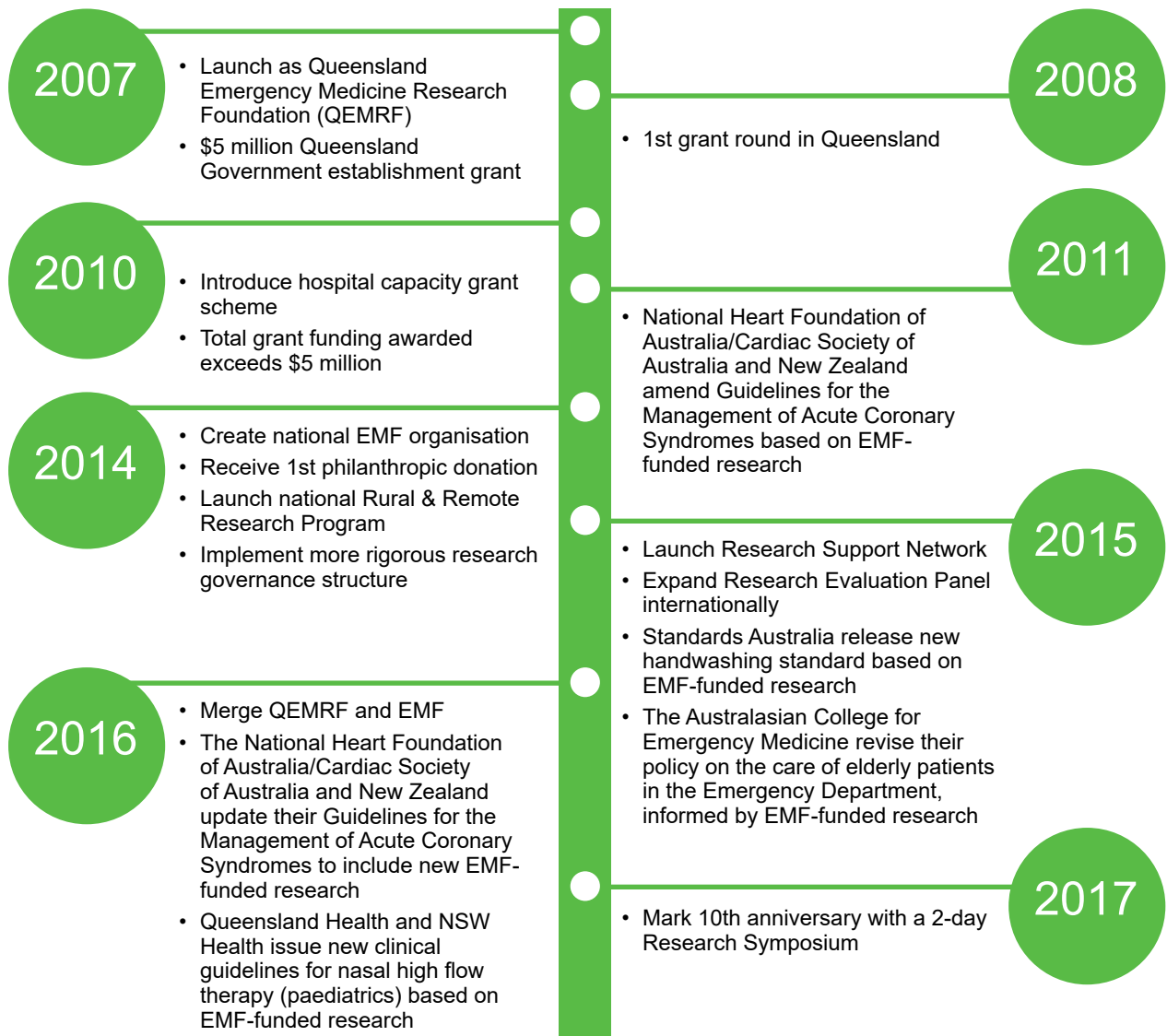
Secured **\$43.7 million** in leveraged, in-kind, linked and follow-on grants and funding



Funded **80** clinical trials, clinical studies and patient data analysis involving **218,000+** patients



## OUR HISTORY: KEY MILESTONES



### GOVERNANCE



National and international collaborations with **200+** research groups in **160+** institutions/organisations



Developed a world-class grant governance framework, which is highly-transparent, robust and rigorous



Created a grant administration platform capable of expansion to include additional grant programs



Our Research Evaluation Panel (peer reviewers) is drawn from within Australia and overseas

## OUR RESEARCH PROGRAMS

### QUEENSLAND RESEARCH PROGRAM

In 2007, the Queensland Emergency Medicine Foundation (QEMRF) was created to provide dedicated research funding to projects led by emergency medicine doctors employed by Queensland Health. The first grant round was launched in 2008.

The QEMRF grant program is now known as the EMF Queensland Research Program.

This program is fully-funded by the Queensland Government Department of Health. Between 2008/09 and 2016/17, Queensland Health had invested \$18 million in funding the program (as well as contributing a \$5 million establishment grant to QEMRF in 2007).

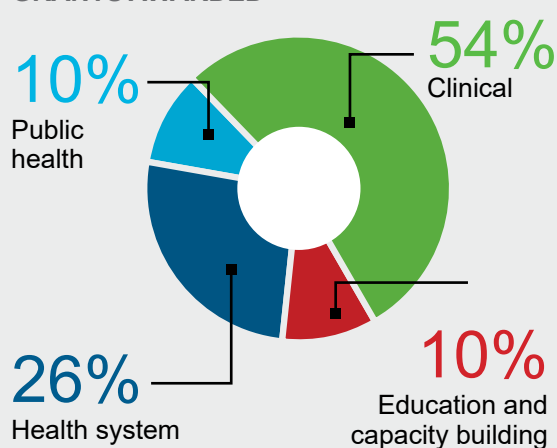
In the nine years the program has been operating, EMF has awarded 131 grants totalling \$12.95 million—having received more than double this amount in funding requests and applications.

As shown in Figure 1, about half the grants awarded in this program were for research projects directed at improving the clinical care of patients in a medical emergency. Other key areas of research funded by EMF include public health, education and improvements to healthcare delivery. The distribution of these grants, via grant type and Emergency Department type, is shown in Figures 3 and 4. The major referral Departments account for the bulk of funding applications and grants. Encouragingly, EMF is seeing increasing research activity in urban and regional and rural hospitals.

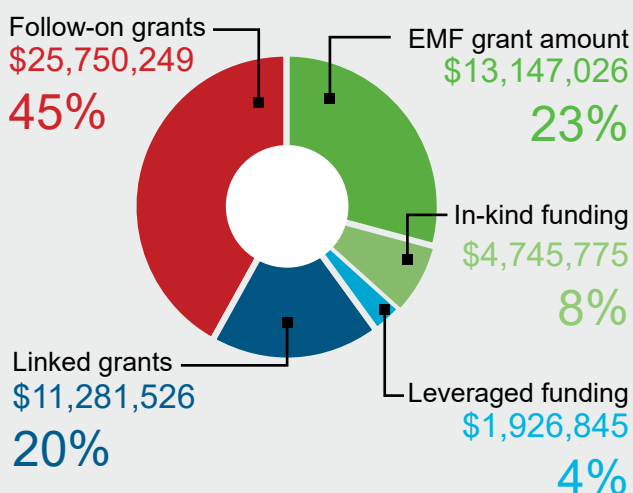
EMF collects a range of metrics to measure the success of this program. Most notably over the nine years EMF has been awarding grants, our projects have secured a further \$43 million in leveraged and in-kind funding as well as linked and follow-on grants. This funding, contributed a further 77 per cent in research money for projects associated with an EMF grant (see Figure 2). It is worth noting that EMF projects are linked to or have led to 15 grants from the Australian National Health and Medical Research Council (NHMRC) along with overseas grants from the Wellcome Trust, The Thrasher Foundation and the New Zealand Health Research Council.

EMF is also delighted to see an increasing trend in academic publication outputs associated with our projects (see Figure 5). More recently, investigators from EMF projects are being invited to present at conferences, workshops and seminars.

**FIGURE 1: AREAS OF RESEARCH EMF QUEENSLAND RESEARCH PROGRAM GRANTS AWARDED**



**FIGURE 2: SOURCES OF FUNDING FOR PROJECTS WITH EMF GRANTS (2008/09-2016/17)**



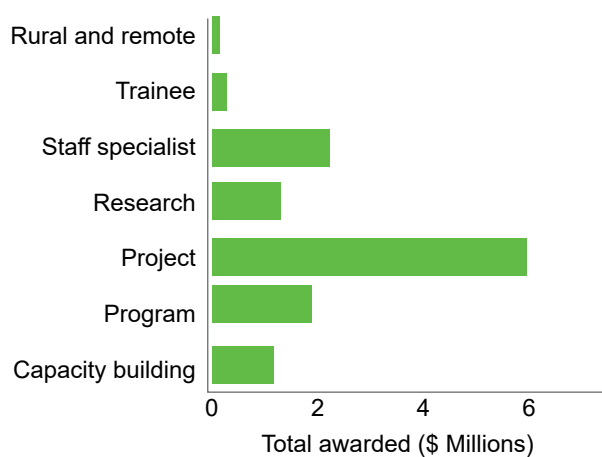
## RURAL AND REMOTE RESEARCH PROGRAM

Delivering appropriate emergency healthcare to Australia's rural and remote population is challenging, which is why EMF launched a dedicated Rural and Remote Research Program. EMF launched the Program in 2014, with philanthropic and corporate funding.

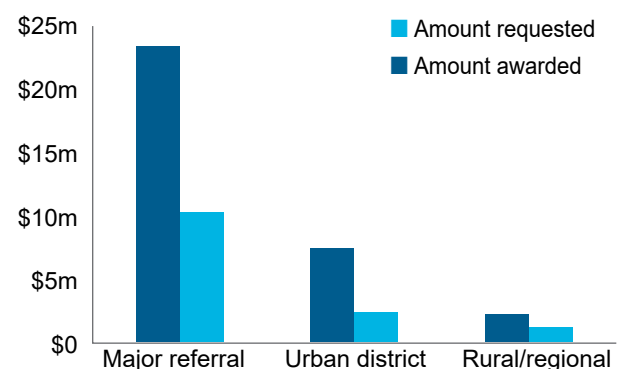
The Program has attracted 160 grant applications totalling \$11 million. Of these, 25 were invited to submit a full application and 22 were selected as fundable. To date, EMF has awarded three grants worth \$195,000.

Our team is continuing to explore targeted sponsorship and government funding opportunities to expand this program.

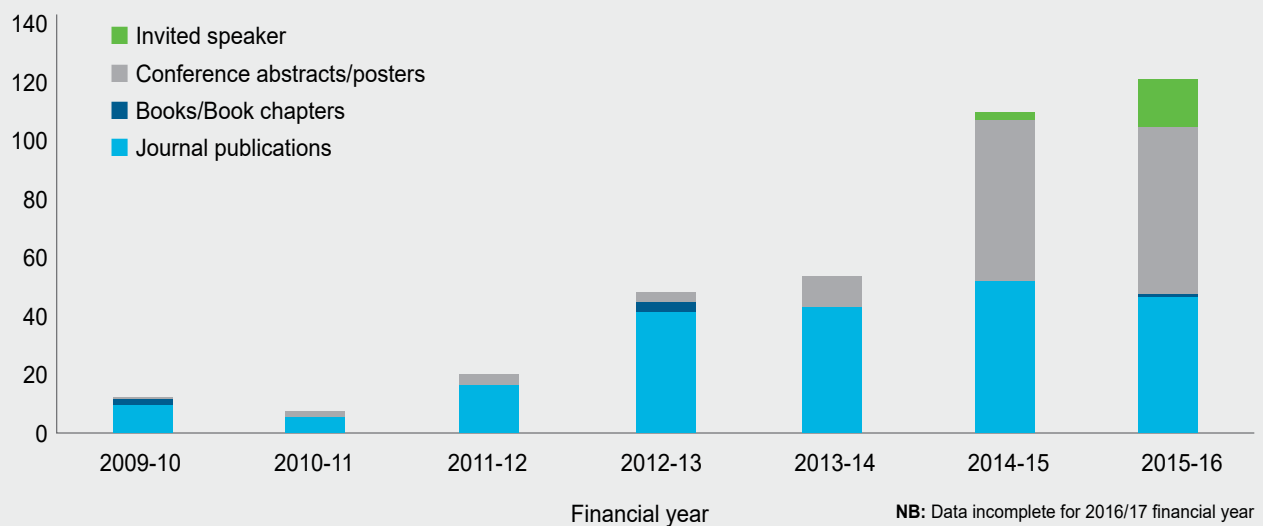
**FIGURE 3: GRANTS AWARDED BY SCHEME/ PROGRAM (2008/09-2016/17)**



**FIGURE 4: QUEENSLAND PROGRAM – AMOUNT AWARDED BY EMERGENCY DEPARTMENT TYPE (2008/9- 2016/17)**



**FIGURE 5: EMF PUBLICATION DATA (2009/10 – 2015/16)**



## RESEARCH THAT IS CHANGING OUR EMERGENCY DEPARTMENTS

With EMF funding, emergency medicine researchers are actively changing the way patients are treated in Australian and overseas Emergency Departments.

Internationally, it can take 17 years for research to reach clinical practice<sup>4</sup>. In Australia, it's generally accepted that changes to emergency medicine clinical guidelines take 15 years.

However, EMF is bucking these trends. We proactively select only high-quality research projects with the short-term potential to inform better patient care. Our unique grant selection process, along with the dedication of our researchers, is rapidly accelerating the clinical adoption of research. Patients are benefiting sooner and we're helping maximise the Queensland healthcare dollar.

Our researchers' work has led to new clinical guidelines for chest pain assessment and the treatment of babies with respiratory illness. It has also seen new national handwashing standards to reduce infection rates in hospitals and the international commercialisation of a patient prediction tool.

In addition to the case studies outlined in this booklet, EMF research projects are also contributing to a wide range of areas in the emergency care, such as the development of simulation training for resuscitating children; improved patient identification training for nurses; aeromedical and ambulance retrievals; sepsis and trauma; pain and nausea management; and end-of-life care.



The Emergency Medicine Foundation has been at the forefront of research and innovation since its establishment in 2007, leading to the translation of new ideas into clinical practice.

“The Emergency Medicine Foundation has created significant and measurable benefit to the healthcare system in Queensland and, in an era where demand on Emergency Departments continues to grow at a rapid rate, we need to ensure that the services that we offer are efficient, but more importantly treat people safely and effectively.

“The 10 year association between Queensland Health and the Emergency Medicine Foundation has led to 80 clinical trials, clinical studies and patient data analysis, with just four of the projects of the foundation now delivering over \$18 million annually in economic benefits to Queensland.

“The ongoing work of the Emergency Medicine Foundation is playing an important role in helping achieve the goal of *My health, Queensland's future: Advancing health 2026* and making Queenslanders among the healthiest people in the world.”

**The Hon. Cameron Dick MP**  
Minister for Health and  
Minister for Ambulance Services

<sup>4</sup> Morris Z. S., Wooding S., Grant J., “The answer is 17 years, what is the question: understanding time lags in translational research”, *J R Soc Med*, 2011; 104(12): 510–520 doi: 10.1258/jrsm.2011.110180





## Rapid diagnosis for patients with chest pain

Cardiac research by Royal Brisbane and Women's Hospital (RBWH) emergency physician, Professor Louise Cullen, is seeing Australians with chest pain discharged quicker from the Emergency Department.

Since 2008, EMF has invested more than \$1 million in acute cardiac research projects led by Professor Cullen. Her research has led to national clinical guideline changes, the roll out of a two new diagnostic protocols in Queensland. In addition, Professor Cullen has also published more than 100 academic publications, including a recent paper in the prestigious medical journal, *The Lancet*.

With support from Queensland Health in translation of the research into clinical practice, Professor Cullen's cardiac research is estimated to be delivering \$11.2 million annually in economic benefits to the Queensland healthcare system, with the potential for an additional \$12.4 million.

Chest pain is the second most common complaint

among patients presenting to Emergency Departments. However, only 15 per cent of these patients are actually suffering from acute coronary syndrome. According to Professor Cullen, these patients may undergo lengthy, intensive and costly assessments, which have traditionally taken between 12 and 24 hours.

To address this issue, Professor Cullen and her research team initially developed the ADAPT Protocol, which enables clinicians to accelerate the assessment of about 20 per cent of cardiac patients.

The team has since developed a second protocol known as the Improved Assessment of Chest Pain (ImpACT) protocol, which can safely accelerate the assessment of up to 70 per cent of emergency patients presenting with chest pain. Using this newer protocol, emergency physicians can identify low risk patients not at risk of heart disease within two hours of arrival in the Emergency Department and discharge them without needing ongoing testing, and more rapidly assess the majority of patients at higher risk for heart disease.



Without the support from EMF, the ability for me to rigorously investigate improvements in the clinical care of patients with chest pain would not have happened.

"What has led on from this is truly remarkable. Already we're reaping the benefits in clinical practice and improved patient care not only here in Queensland, but nationally and internationally."

**Professor Louise Cullen**

Senior Staff Specialist, Emergency & Trauma Centre  
Royal Brisbane and Women's Hospital



## On-site pathology testing keeps patients close to home while saving millions

In a research study funded by EMF through its Rural and Remote Research Program, a Flinders University research team, led by Professor Mark Shephard, assessed both the medical and cost benefits of using on-site pathology testing, or Point-of-Care-Testing (POCT), for acute medical care in six remote health clinics in the Northern Territory.

The Flinders study was one of the first projects in the world to quantitatively evaluate the benefits of POCT in a remote setting. They demonstrated that POCT is allowing Australians living in remote regions to receive effective emergency medical treatment close to home, while saving the Territory Government millions in avoided medical evacuations.

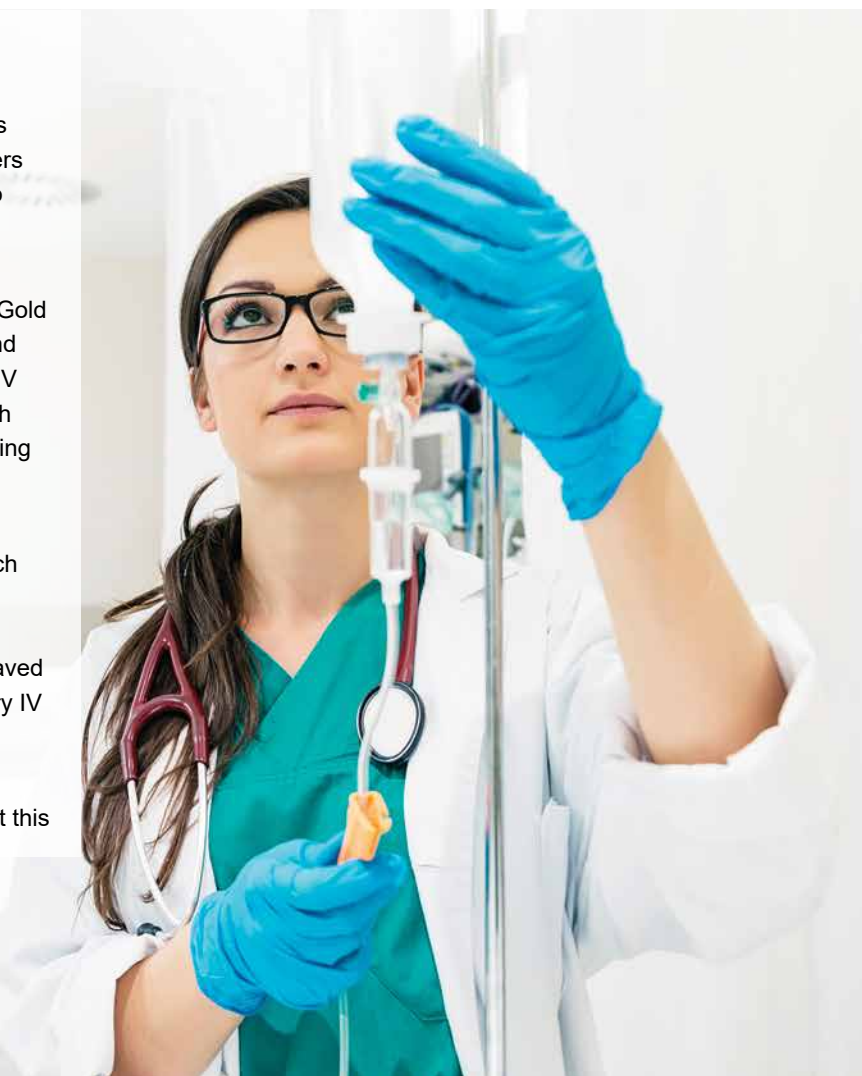
## IV drips don't sober drunks

Despite the popularity of using intravenous (IV) fluids to sober intoxicated patients, EMF-funded researchers found the standard treatment makes no difference to how quickly patients sober up.

As a result of the research outcomes, two of Queensland's largest Emergency Departments, the Gold Coast University Hospital and the Royal Brisbane and Women's Hospital, have stopped the routine use of IV fluids to treat drunken patients and emergency health specialists in Australia and overseas are also reviewing their policies.

Emergency Departments in the Gold Coast Health Service District treat more than 150,000 patients each year. Of these, about 4000 would traditionally have received IV fluids to treat intoxication. However, the research team estimated that up to \$500,000 was saved by no longer treating these patients with unnecessary IV fluids.

EMF awarded a Trainee grant to Dr Siegfried Perez, supervised by Professor Gerben Keijzers, to conduct this research.







*Gold Coast University Hospital Emergency Department. Photo courtesy of Gold Coast Health*

## Software tool predicts patient arrivals in emergency departments

Queensland public hospitals can accurately predict patient demand using a software tool developed by Gold Coast University Hospital emergency medicine clinicians, CSIRO, Griffith University and the Queensland University of Technology (QUT).

Known as the Patient Admission Prediction Tool (PAPT), the program allows hospitals to predict with more than 90 percent accuracy the number of daily Emergency Department presentations, inpatient admissions and inpatient separations.

EMF awarded a \$100,000 grant in 2008 to Gold Coast University Hospital Emergency Department Director, Associate Professor David Green to trial PAPT.

Following the successful trial, the Queensland Health Director General requested PAPT be made available State-wide. The tool is now embedded within information systems managed and operated by Queensland Health's Healthcare Improvement Unit.

More recently, CSIRO licenced the PAPT technology to US and Australian companies and the tool has been included in the sale of patient flow software to hospitals.

In 2011, Deloitte Access Economics estimated that if PAPT was rolled out nationally, it would deliver productivity gains of up to \$23 million per annum in direct cost savings from improved bed usage and reduced elective surgery cancellations and up to \$250m per annum associated with avoided mortality.

## Hospitals internationally adopting simple instruction card for urine samples

Unfortunately, urine samples collected from ill patients in the Emergency Department can be contaminated by external bacteria and skin cells.

EMF-funded researchers at the Princess Alexandra Hospital (PAH) Emergency Department found the contamination rate can be as high as 40 per cent.

However, by offering patients a simple 'How to collect your sample' pictorial guide, they reduced the urine sample contamination rate to 25 per cent.

This guide has generated interest internationally, with requests for its use coming from hospitals in Papua New Guinea, the United States and Europe.



*Dr Rob Eley with card illustrator, David Toohey, and PA Emergency Department Clinical Research Nurse, Chantelle Judge. Photo courtesy of the Princess Alexandra Hospital.*

## New handwashing guidelines to reduce hospital infection rates

Research funded by EMF led to the introduction of a new Standards Australia standard for the placement and presentation of handwashing products in Australian hospitals.

Published in November 2015, the standard – AS 1071, Placement and presentation of hand hygiene materials in health care settings – specifies requirements and provides guidance on the placement, presentation, design, maintenance and installation of hand hygiene products for use in health care settings.

The new standard was implemented following the outcomes of a research study at the Princess Alexandra Emergency Department in Brisbane led by Emergency Medicine Staff Specialist Dr Michael Sinnott.





## Keeping babies out of intensive care

EMF funding for a small pilot trial has led to international changes in the way babies with respiratory illness are treated in the Emergency Department.

Respiratory illness, specifically bronchiolitis, is the leading cause of paediatric hospital admissions in Australia.

Annually, nearly 9000 children under the age of one-year are admitted to hospital with the illness, and 10 to 20 per cent require breathing support via a mask or intubation in a paediatric intensive care unit (PICU). However, the number of PICU admissions could be almost halved thanks the use of nasal high flow (NHF) technology to treat bronchiolitic infants in the Emergency Department.

With a grant from EMF, Emergency Medicine Staff Specialist, Dr Christa Bell and Lady Cilento Children's Hospital (LCCH) Paediatric Intensive Care Staff Specialist, Associate Professor Andreas Schibler, ran a pilot study using high-flow in Emergency Departments.

This study led to an NHMRC-funded multi-centre, randomised clinical trial, which recruited 1400 infants from 17 hospitals across Australia and New Zealand.

From preliminary data, Associate Professor Schibler suspects that when high-flow is used early in bronchiolitis infants, it has the potential to reduce PICU admissions by 40 per cent and healthcare costs associated with treating bronchiolitic infants by up to half. It could also allow infants in rural and regional areas to be treated closer to home.

"Nasal highflow is a game-changer, there's no question about it," said Associate Professor Schibler.

The research has led to the adoption of NHF to treat babies in all Queensland metropolitan and regional hospital Emergency Departments, with the device being phased in for rural hospitals. While in 2016, both Queensland and New South Wales introduced new clinical guidelines for the use of NHF in paediatrics.

The LCCH team collaborated with Fisher & Paykel Healthcare during their NHF research project, with the company providing product support for the trial. The researchers were also able to provide input and insight to help refine Fisher & Paykel's breathing device for babies.

“The collaboration between Fisher & Paykel Healthcare Limited and the Lady Cilento Children's Hospital is an outstanding example of how industry and hospitals can work together to improve patient care and outcomes.

“We have worked with the clinical research team for over a decade and developed a unique and highly effective partnership. This collaboration has resulted in significant advances in product development, clinical research and clinical education.”

Michelle Muir  
Clinical Research Manager  
Fisher & Paykel Healthcare

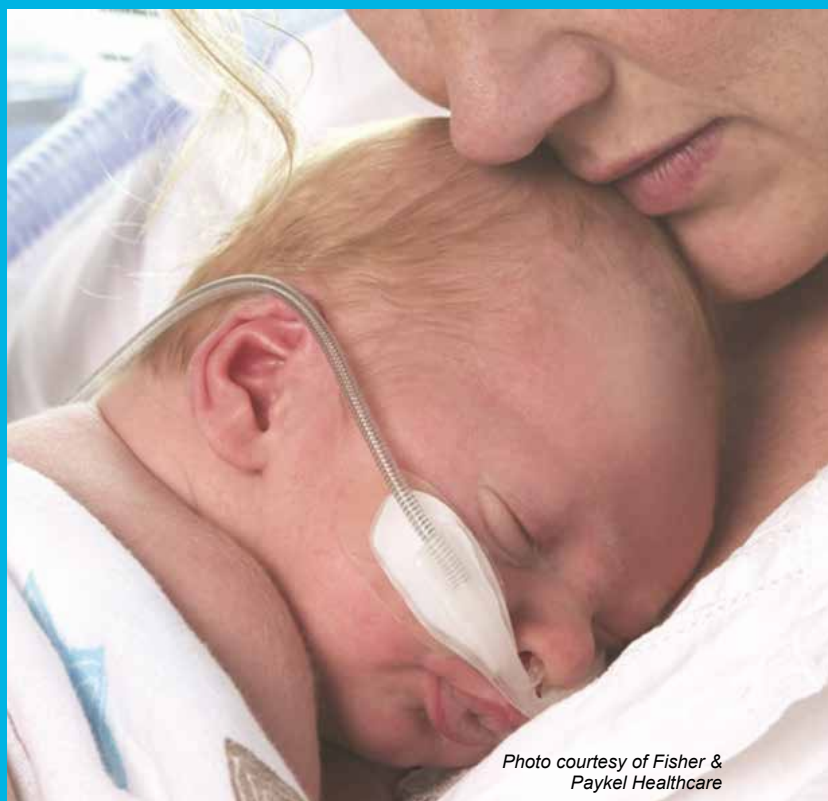


Photo courtesy of Fisher & Paykel Healthcare

\* NHF provides a supply of warm, humidified oxygen via a thin nasal tube and, because it's easy to use and comfortable for the patient, infants don't require sedation.

## Improving emergency medical care for the elderly

Australians over 65 years of age account for one in five presentations to an Emergency Department. To help improve the care of the elderly in a medical emergency, EMF has invested close to \$1 million in new research.

### CARE-PACT

In 2010, EMF awarded a \$280,539 grant to Princess Alexandra Hospital Emergency Staff Specialist, Dr Ellen Burkett, to develop a framework and quality care indicators for treating elderly patients who present at an Emergency Department.

The research contributed to informing the revised Australasian College for Emergency Medicine (ACEM) policy for care of older persons in Emergency Departments.

In addition, Dr Burkett's research also led to a \$3.7 million grant from Queensland Health in 2014 to develop and pilot the Comprehensive Aged Residents Emergency and Partners in Assessment, Care and Treatment (CARE-PACT) program. This program is helping to define best practice in the acute care of the elderly in residential facilities and has received recurrent funding.

### Hospital in Nursing Home (HiNH) Program

Backed by a \$297,846 grant from EMF, Royal Brisbane and Women's Hospital (RBWH), Senior Staff Specialist, Dr Bill Lukin, led an evaluation of the 'Hospital in the

Nursing Home' (HiNH) program implemented by the Metro North Hospital and Health Service (HHS).

The HiNH program provides clinicians in aged-care facilities with further support so that they can better manage the acute care of their residents in-house.

Dr Lukin and his research team found the HiNH program was effectively reducing Emergency Department presentations for aged care residents by almost 20 per cent and in the process saving the Metro North HHS millions of dollars annually in released capacity.

### Lung ultrasound improving the diagnosis of breathlessness in the elderly

Shortness of breath can be a symptom of heart failure or chronic lung disease in the elderly. The sooner emergency doctors can correctly diagnose the cause of the breathing difficulty, the sooner they can start the right treatment.

Ipswich Hospital Emergency Department Senior Medical Officer, Dr Kylie Baker, is pioneering the use of lung ultrasound to diagnose and treat elderly Australians who present to the Emergency Department with breathing



difficulties.

"Unfortunately, in up to 25 per cent of cases, elderly patients with breathlessness are initially incorrectly diagnosed with lung disease which is thought to be heart failure or the other way around," Dr Baker said.

"Doctors usually need several tests to diagnose heart failure, including blood tests, electrocardiograph and chest x-ray. However, using lung ultrasound we can diagnose heart failure within minutes of a patient arriving at hospital. It is a quick, simple, accurate, cheap and less-invasive procedure that can save time, money and lives. In the Emergency Department every second counts."

Dr Baker also said the technology could prove to be just as beneficial for rural, remote and pre-hospital services as it is for larger Emergency Departments.

EMF funded both a pilot study and a four-year \$200,000 multi-site clinical trial. While the results from the trial are yet to be published, it has already led to Australian Emergency Departments adopting lung ultrasound.

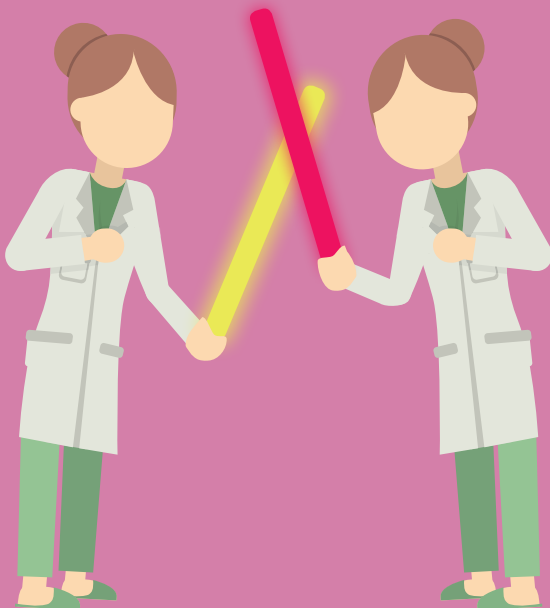


*Dr Kylie Baker demonstrating lung ultrasound on a patient*

# Get to know the GEDI

**Friday 3pm:**

**Future Direction of Emergency Medicine Research panel discussion.**



The GEDI (Geriatric Emergency Department Intervention) minimises harm and improves outcomes for elderly patients by opening up communications between their health carers to provide quicker and more personalised treatment.

GEDI developed from a partnership between USC nursing academics including Professor Marianne Wallis, Queensland Health physician Dr EJ Marsden and other local health providers.

Hear Marianne and EJ talk about their research into GEDI in the "Future Direction of Emergency Medicine Research" panel discussion.



# RESEARCH THAT WILL CHANGE OUR HEALTHCARE

Many of the projects funded by EMF have the potential to change patient care in a medical emergency. From trialling new treatments and education programs, to innovative changes in practice, these projects will potentially help improve treatments, patient outcomes and the patient experience. Our research is also likely to generate millions of dollars in cost benefits for the Australian healthcare system.

## Improving survival rates from sepsis

Sepsis kills more Australians each year than breast cancer and prostate cancer combined. Daily, as many as 20,000 people worldwide are thought to die from this deadly disease.

Also known as blood poisoning, sepsis is a life-threatening condition that can develop when the body is fighting an infection. In 2017, the disease was established as a global priority by the World Health Assembly (WHA), the decision-making body of the World Health Organization (WHO).

EMF has invested more than \$1.1 million into sepsis research, including the establishment of a sepsis registry at the Royal Brisbane and Women's Hospital (RBWH) along with several projects investigating better treatments for the condition.

The sepsis registry contains detailed data from 9,719 patients admitted with infection over three years, for use in sepsis research. It was created by RBWH Emergency Medicine Staff Specialist, Dr Julian Williams, together with Associate Professor Jaimi Greenslade. Their work using the registry has led to the publication of five journal papers with several more planned.

Dr Williams said major findings from the published research has included an association between the early use of vasopressors and survival in patients with septic shock; and higher mortality in patients with severe sepsis and septic shock admitted to wards compared to those admitted to intensive care.

"Our current projects include the incorporation of our sepsis registry into a larger multicentre examination of the qSOFA score for sepsis<sup>5</sup>; antibiotic prescribing and microbial aetiology in community-acquired pneumonia; and a study looking at clinical characteristics associated with positive blood cultures in the Emergency Department," he said.

<sup>5</sup>The qSOFA score is a bedside prompt that may identify patients with suspected infection who are at greater risk for a poor outcome outside the intensive care unit: <http://www.qsofa.org>





## Emergency doctors trialling treatment for children with seizures

Each year, more than 1000 children present at an Australian hospital with prolonged seizures. A small percentage require medication to stop them seizing: this condition, known as convulsive status epilepticus (CSE) can cause death or permanent brain damage.

EMF is funding three Queensland Emergency Departments to take part in a large Australasian clinical trial aiming to improve the care of children suffering from CSE. In the trial, clinicians are comparing two second-line treatments – a newer anticonvulsant called levetiracetam (also known as Keppra) and an older drug, phenytoin – for treating children who don't respond to standard treatment.

The Townsville Hospital Emergency Department Director of Research, Associate Professor Jeremy Furyk said the trial will provide controlled evidence of levetiracetam in treating convulsive status epilepticus in children

"We believe the results will have a profound impact on treating the condition world-wide," said A/Prof Furyk.

EMF has also awarded Associate Professor Furyk a further grant to pilot a CSE Registry in Australia to help gain a better understanding of the incidence and cause of the condition.



*Dr Simon Bugden applying medical glue to a patient's IV line.  
Image courtesy Caboolture Hospital.*

## Holding IV drips in place with medical glue

Caboolture Hospital Emergency Department emergency medicine researchers have found a new way to make one of the most common medical procedures in the world – placing drips or intravenous (IV) lines – safer, less painful and potentially more cost effective.

Caboolture Hospital Emergency Department Staff Specialist, Associate Professor Simon Bugden said the failure rate for IV lines in the first 48 hours was 29 to 40 per cent in Australia and as high as 90 per cent internationally.

"By using medical skin glue, we reduced the failure rate to below 17 per cent," Associate Professor Bugden said.

"The glue made IV lines harder to unintentionally remove and was also shown to kill the bacteria that most commonly cause infections," he said.

"The other major benefit was patient comfort, with patients in the trial reporting that the glue caused less irritation and they were less worried about the lines falling out."

An economic evaluation of the breakthrough is underway, with the savings expected to run into the millions nationally.

This project was part of the Griffith University Avatar Group's research effort to improve vascular access.



## Better diagnosis for head injuries in children

EMF co-funded a large Australasian clinical trial, which could see clinicians using fewer CT scans and less radiation exposure when managing children with head injuries.

In a prospective observational study, run across 10 Australian and New Zealand tertiary hospitals and involving 20,137 children, researchers compared the sensitivities of three clinical decision rules for head injuries.

The research group found all three rules had a high sensitivity. Their findings, which were published recently in *The Lancet*, are likely to inform new clinical guidelines for head injuries according to Lead Investigator, Murdoch Children's Research Institute's Associate Professor Franz Babi.

"Internationally, the findings will provide a useful starting point for individual clinicians as well as hospitals or regional bodies contemplating the introduction or modification of one of the clinical decision rules," he said.

"However, it will be important to relate the findings to a number of other factors before implementation, such as the baseline CT use, the effect of the rules on the projected CT rate, the baseline clinician diagnostic accuracy and experience, parental expectations, the medico-legal climate and economic considerations."

The study was run by clinicians involved in the PREDICT network (Paediatric Research in Emergency Departments International Collaborative) and included Lady Cilento Children's Hospital Department of Emergency Medicine's Director, Associate Professor Jason Acworth and Staff Specialist, Dr Natalie Phillips.

Based on the research findings, the next step is for the group of emergency physicians to develop national approaches to optimise the management of children with head injuries in Australia and New Zealand.



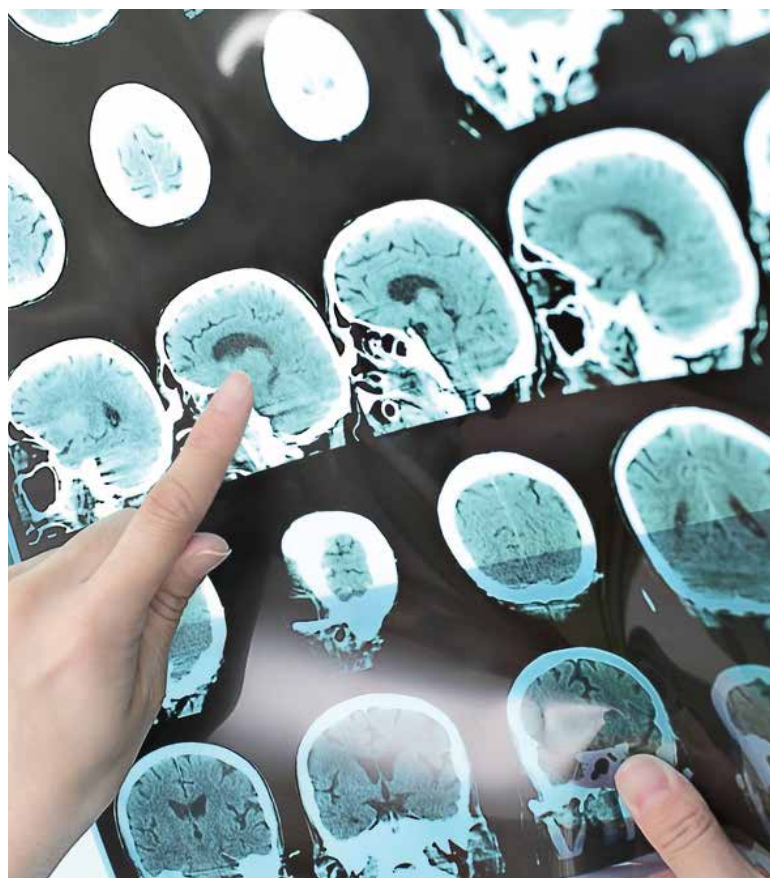
## Better treatment of people with headaches

Queensland emergency medicine researchers – led by Royal Brisbane and Women's Hospital Director of Emergency Medicine Research, Associate Professor Kevin Chu – are hoping their research will lead to new diagnostic guidelines and tests for patients who present to the Emergency Department with a headache.

They are also hopeful that their research will see more patients, with non-life threatening headaches visiting their GP for treatment rather than a hospital.

Following a snapshot study of 34 Queensland public and private hospitals, the research team found only three per cent of patients who attended an Emergency Department with a headache had a life-threatening condition such as subarachnoid haemorrhage or bacterial meningitis.

However, an unexpectedly high proportion of patients (38%) underwent a CT-scan as part of their diagnosis. According to Associate Professor Chu, this suggests that there is scope to improve diagnostic testing in this group of patients.



## Trauma

Each year, almost half a million people are admitted to hospital with a traumatic injury, with 27 dying each day—almost 10,000 lives are lost each year.

Since 2008, EMF has invested \$1.1 million in multiple traumatic injury research projects aimed at improving patient care and survival rates.

Key projects include clinical trials to improve the diagnosis and treatment of trauma patients, including severe bleeding. Traumatic injury is the leading cause of death in people under 45 in Australia.

## Sedation and pain medication

In the past decade, EMF has awarded 11 grants worth \$456,229 to researchers investigating improved treatments for pain relief or the sedation of patients in a medical emergency. Many of these projects are clinical trials, several of which could lead to the easier delivery of pain medication for children and the safer sedation of violent patients.



*Stock photo: x-ray of kidney stones*



## Relief for kidney stone sufferers

Australians suffering from kidney stones could soon get relief, with EMF-funded researchers showing a prostrate treatment can help ease the painful condition. Patients with kidney stones were treated with the drug Tamsulosin in a clinical trial run across five Queensland hospital Emergency Departments.

Trial leader and specialist emergency medicine physician at The Townsville Hospital, Associate Professor Jeremy Furyk, said Tamsulosin was normally used to treat an enlarged prostate, but the research team found the treatment could also assist the passage of large kidney stones in the urine.

"Of more than 400 patients in the trial, we found those who received Tamsulosin passed their large kidney stones more often than the placebo group. This means patients with large stones might not need more complicated treatments including surgeries, and could be treated closer to home rather than needing referral to a major centre," Associate Professor Furyk said.



## Lowering the rates of cannulation

Led by Professor Louise Cullen, EMF-funded emergency medicine researchers at the Royal Brisbane and Women's Hospital (RBWH) have successfully trialled an education campaign to reduce the number of catheters Emergency Department clinicians insert.

Implementing the multimodal education and training program in Australian hospitals could lead to a decrease in patient pain, potential infection rates and significant healthcare costs.

A peripherally inserted intravenous cannula (PIVC) is a small tube placed into a vein. It's common practice for emergency clinicians to insert a PIVC in patients so that they can quickly and easily be given fluids and medications or have blood taken. However, emergency clinicians may insert PIVCs more often than required, with a small retrospective study suggesting up to 50 per cent remain unused.

The findings from this study will be published in late 2017.



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## DEVELOPING RESEARCH CAREERS

In 2009, EMF introduced a scholarship scheme to enable emergency medicine specialists to receive a Frank Garlick Masters Scholarship or a Noel Stevenson PhD Scholarship. EMF has since awarded two scholarships for Masters and four PhD scholarships (see Table 1). Of the four completed scholarships, two of the recipients, Louise Cullen and Peter Aiken, have been appointed as Adjunct Professors at the Queensland University of Technology. A third, Jeremy Furyk, holds an Adjunct Associate Professor position at James Cook University.

However, EMF is having a far broader impact on research careers. Our research programs are playing a pivotal role in growing not just the research careers of clinicians, but also academics, nurses, paramedics and allied health professionals who are co-investigators on EMF-funded projects. In addition, EMF also has had feedback that its Queensland Research Program is advancing the field of emergency medicine research Australia-wide and in New Zealand.

**TABLE 1: EMF SCHOLARSHIP RECIPIENTS**

SCHOLARSHIP RECIPIENT	MASTERS/PHD	HOSPITAL (AT TIME OF GRANT)	AMOUNT	YEAR
Dr Joseph Ting	Masters	Mater Adult Hospital	\$150,000	2009
Associate Professor Peter Aiken	PhD	The Townsville Hospital	\$150,000	2009
Associate Professor Jeremy Furyk	Masters	The Townsville Hospital	\$225,000	2009
Professor Louise Cullen	PhD	Royal Brisbane and Women's Hospital	\$225,000	2012
Dr Colin Page	PhD	Princess Alexandra Hospital	\$450,000	2015
Associate Professor Jeremy Furyk	PhD	The Townsville Hospital	\$150,000	2016

“ I wouldn't be doing research if it wasn't for EMF. Securing grant funding means I can set aside time to do research. We're incredibly lucky to have access to a program dedicated to emergency medicine research.”

**Dr Julian Williams**

Senior Staff Specialist, Department of Emergency Medicine Royal Brisbane and Women's Hospital

“ Over the last decade [EMF's] support of emergency medicine research has been incredible. The structure and governance that EMF has developed to support projects has allowed both world-class research to occur, but also, and just as importantly, fostered emerging and new researchers within the specialty. This has made a huge difference to the specialty and has been critical in a culture change that embraces research more.”

**Dr Stuart Dalziel**

Paediatric Emergency Medicine Specialist, Starship Children's Hospital, New Zealand Collaborator on EMF-funded projects and lead for the CSE trial (see page 22)



## Professor Julia Crilly

RN, MEmergN (Hons), PhD

Professor of Emergency Care, Griffith University & Gold Coast Health

Professor Crilly holds a joint appointment position between Griffith University and Gold Coast Health as Professor of Emergency Care. Her program of research is focussed on evaluating innovative service delivery models of care for vulnerable population groups as well as understanding and improving aspects of the Emergency Department workforce.

The professor has led or been involved in multi-disciplinary and multi-site emergency care research which have attracted more than \$3.5 million dollars in funding and resulted in 60 plus peer-review publications.

Professor Crilly readily credits EMF with having a significant impact on her research career.

“ Since 2008, I have been a co-investigator on 13 EMF grants worth more than \$1 million. These were predominantly multi-site and multi-disciplinary emergency related research projects, which have led to other grants, including NHMRC, as well as my career progression,” said Professor Crilly.

“EMF funded research has the ability to make a positive impact locally, nationally and internationally by providing opportunity for clinicians and academics to better understand and improve how we deliver care and ultimately the health outcomes for people requiring emergency care,” she said.



## Menzies Health Institute Queensland

*Committed to developing healthy communities through exceptional health and medical research*

The Menzies Health Institute Queensland at Griffith University brings together world leading researchers and clinicians with the common goal of translating innovative health research into better health outcomes.

The Menzies Health Institute Queensland (MenziesHIQ) undertakes research across the life cycle to identify key factors that influence health. From this we develop and test strategies to improve health and well being for individuals, families and communities. With exceptional biomedical, nursing, allied health, social and behavioural scientists, clinical researchers and PhD candidates, Griffith's MenziesHIQ has achieved remarkable outcomes.

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Underpinning the work of these programs is a focus on innovation, data science, research translation and meaningful clinical and community partnerships.

### Menzies Health Institute Queensland

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## FOSTERING RESEARCH IN HOSPITALS

EMF is actively fostering emergency medicine research in Queensland hospitals through a Research Support Network and dedicated hospital capacity building grants.

### RESEARCH SUPPORT NETWORK

EMF launched a Research Support Network (RSN) in Queensland in late 2015. This was a strategic initiative envisaged by the EMF Board to support and foster research by emergency medicine professionals in the Queensland Health workforce. The Board committed to funding the program for three years.

Via this Network, EMF is providing leadership and support as well as fostering multi-disciplinary collaborations and the increased translation of new knowledge into better clinical practice. The RSN is designed specifically to distribute a wealth of research skill, knowledge and networks to researchers and clinicians based in rural and regional areas.

The RSN operates via a hub and spoke model, with each hub supported by a dedicated Research Development Manager. This Manager provides support for emergency medicine researchers based in hospitals within the hub as well as working closely with the hospitals to build research capacity. Initially, EMF is running three RSN hubs: a Gold Coast, West Moreton and Toowoomba hub; a Children's Health Queensland hub; and a 'North of the River' hub (Redcliffe, Caboolture, Sunshine Coast, Wide Bay and Rockhampton).

EMF is actively seeking funding from government and industry to extend the RSN program.

*Pictured L-R: Members of the RSN team, Sharleen Young, Tegwen Howell, Richard Henshaw, Julia Hocking and Kelly Foster; Amy Sweeny absent.*





*Stock photo: golden staph*

## **MT ISA EMERGENCY MEDICINE DOCTORS LEADING NATIONAL RESEARCH PROJECT**

The RSN worked closely with emergency medicine doctors from Mt Isa Hospital in far north west Queensland, to successfully secure funding for a research project.

The Mt Isa research team's project aims to improve the diagnosis and treatment of infections caused by the bacteria Group A Streptococcal (GAS) and Community acquired (CA) Methicillin Resistant Staphylococcus Aureus (MRSA) or 'golden staph'.

Infections caused by these bacteria are particularly prevalent in Indigenous communities and the rates of incidence are high in North West Queensland.

Mount Isa Hospital Emergency Department Director, Associate Professor Ulrich Orda said the RSN played a significant role in assisting Mt Isa to submit its first research grant application to EMF.

"The EMF RSN Manager was available any time to provide feedback and guidance, often working additional out of office hours to accommodate the limited research time I had available," said Associate Professor Orda.

"We as a rural and remote community have limited opportunities to establish networks that might enable researchers to expand and collaborate. A rural and remote and an Aboriginal and Torres Strait Islander focus are very important to provide results and solutions for these remote communities that will differ from those for urban settings."

The research team is now collaborating with groups from the Northern Territory, Western Australia and Victoria.





*Photo courtesy Gold Coast Health*

## CAPACITY BUILDING GRANTS

Since 2010, EMF has awarded \$1.2 million in eight Capacity Building grants to Emergency Departments in Queensland. With matched funding from their hospital, the grant allows Departments to dedicate research personnel and time to realising their strategic research vision.

“Successful EMF grants have helped Gold Coast Health Emergency Departments to provide infrastructure support and create opportunities to collaborate with multiple high-calibre (interstate and international) researchers and we’re now conducting multi-centre, interdisciplinary research that aims to change practice and provide better outcomes for patients.

“EMF’s support has undoubtedly played a large part in making the culture of our Department very much research-orientated.”

**Professor Gerben Keijzers**  
Senior Staff Specialist, Department of Emergency Medicine  
Gold Coast University Hospital



**TABLE 2: EMF CAPACITY GRANT RECIPIENTS (2010-2016)**

<b>HOSPITAL</b>	<b>GRANT PERIOD*</b>	<b>GRANT AMOUNT</b>
Cairns Base Hospital	2010-2013	\$210,000
Gold Coast University Hospital	2010-2014	\$210,000
Nambour Hospital+	2010-2010	\$30,000
Princess Alexandra Hospital	2011-2015	\$210,000
The Prince Charles Hospital	2011-2018	\$190,000
The Townsville Hospital	2012-2017	\$210,000
Royal Brisbane and Women's Hospital	2017-2019	\$140,000
<b>TOTAL</b>		<b>\$1.2M</b>

\* Year grant funding used by Hospital; some grants were awarded up to two years prior  
+ This grant did not proceed.





## THE PRINCESS ALEXANDRA HOSPITAL EMERGENCY DEPARTMENT

With joint funding from an EMF Capacity Building grant and The University of Queensland, the Princess Alexandra Hospital Emergency Department (PAH-ED) employed a full-time Research Manager, Dr Rob Eley, for three years.

PAH-ED Staff Specialist, Dr Michael Sinnott said the grant provided the Department with an opportunity to advance its research capacity to a level that would not have been otherwise possible.

“We achieved in three years more than what we’d been able to do in the previous decade. Having a full-time research manager enabled clinical staff to realise their research ideas and produce significant outcomes.”

During the grant period, the Department applied for more than 30 research grants and published 90 journal articles and conference papers and abstracts. They reported that more than half of the 24 emergency specialists employed in the Department were involved in at least one research project during the three years.





## CAIRNS BASE HOSPITAL

With an EMF Capacity Building grant in 2010, Cairns Base Hospital appointed Associate Professor Jamie Seymour as a Senior Research Fellow for three years.

Associate Professor Seymour is the Director of the Tropical Australian Venom Research Unit at James Cook University and has a long association with the Hospital's Emergency Department. He is internationally renowned for his work in venom research, particularly jellyfish envenomings.

According to Cairns Base Hospital Senior Staff Specialist Emergency Medicine, Associate Professor Peter Pereira, the EMF Capacity Building Grant helped to create a research culture within the Department as well as helping to attract toxicologists.

The Department and Associate Professor Seymour are continuing to advance our understanding of jellyfish stings and treatments with further EMF funding.



## THANK YOU...

to everyone who has served on an EMF Board,  
Committee or Review Panel

A/Prof Jason Acworth  
A/Prof Peter Aitken  
Dr Sylvia Andrew-Starkey  
A/Prof Glenn Arendts

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*The EMF Board and Committee positions are voluntary and members receive no remuneration.*

## EMF GRANT RECIPIENTS

Since 2007, EMF has awarded more than \$13 million in 134 grants and scholarships through its Queensland and Rural & Remote Research Programs. These grants supported projects involving more than 430 researchers.

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**NB:** every effort was made to include all research team members. Only recipients of grants from 2008-09 to 2016-17 are included.

## RESEARCH COLLABORATORS

EMF-funded researchers have collaborated internationally with more than 160 hospitals, universities, research institutions and industry partners.

### AUSTRALIAN HOSPITALS

Alfred Hospital (Victoria)  
 Armadale Health Service  
 Austin Hospital (Victoria)  
 Bundaberg Base Hospital  
 Caboolture Hospital  
 Cairns Hospital  
 Caloundra Hospital  
 Canberra Hospital  
 Children's Hospital Westmead  
 Dalby Hospital  
 Dandenong Hospital  
 Fiona Stanley Hospital  
 Frankston Hospital  
 Gatton Hospital  
 Gladstone Hospital  
 Gold Coast University Hospital  
 Greenslopes Private Hospital  
 Hervey Bay Hospital  
 Ipswich Hospital  
 John Hunter Hospital  
 Kilcoy Base Hospital  
 Kingaroy Hospital  
 Lady Cilento Children's Hospital  
 Launceston General Hospital  
 Liverpool Hospital  
 Logan Hospital  
 Mackay Hospital  
 Macquarie University Hospital  
 Maryborough Hospital  
 Mater Hospital (Brisbane)  
 Monash Medical Centre  
 Mt Isa Hospital  
 Nambour Hospital  
 Noosa Private Hospital  
 Princess Alexandra Hospital  
 Princess Margaret Hospital  
 Queensland Elizabeth II Jubilee Hospital  
 Redcliffe Hospital  
 Redlands Hospital  
 Robina Hospital  
 Rockhampton Base Hospital  
 Royal Adelaide Hospital  
 Royal Brisbane and Women's Hospital  
 Royal Children's Hospital Melbourne  
 Royal Children's Hospital Adelaide  
 Royal Hobart Hospital  
 Royal North Shore Hospital  
 Royal Perth Hospital  
 Royal Prince Alfred Hospital  
 Sir Charles Gairdner Hospital  
 St Andrew's Private Hospital  
 St Georges Hospital  
 St Vincent's Private Hospital  
 Sunshine Coast University Hospital  
 The Canberra Hospital  
 The Prince Charles Hospital  
 The Townsville Hospital  
 The Tweed Hospital  
 Toowoomba Hospital  
 Wesley Hospital  
 Western Hospital (SA)  
 Western Hospital (Victoria)  
 Women's and Children's Hospital, (SA)

### AUSTRALIAN RESEARCH CENTRES, INSTITUTIONS & UNIVERSITIES

Australian College of Rural and Remote Medicine  
 Australian Paediatric Pharmacology Research Unit, Royal Children's Hospital Melbourne  
 Australian Venom Research Unit  
 Black Dog Institute  
 Bond University  
 Central Queensland University  
 Centre for Clinical Research in Emergency Medicine, Royal Perth Hospital  
 CSIRO  
 Flinders University  
 Griffith University  
 James Cook University  
 Joseph Epstein Centre for Emergency Medicine Research, Western Health (Victoria)  
 Mater Medical Research Institute  
 Mater Pharmacy Services  
 Medicine Research, Western Health (Victoria)  
 Menzies School of Health Research, Royal Darwin Hospital  
 Monash University  
 QIMR Berghofer Medical Research Institute  
 Queensland Trauma Registry  
 Queensland University of Technology  
 The University of Melbourne  
 The University of Newcastle  
 The University of Queensland  
 The University of South Australia  
 The University of Southern Queensland  
 The University of Sydney  
 The University of the Sunshine Coast  
 The University of Western Australia  
 Western Australian Institute for Medical Research

### OTHER AUSTRALIAN ORGANISATIONS

Adrenaline Dive-Townsville  
 Allied Health Professions Australia  
 Armadale Health Service  
 Australian Red Cross Blood Service  
 CareFlight  
 CaSS Pathology Queensland  
 Central Queensland Hospital and Charterhouse Medical  
 Council of Ambulance Authorities Inc  
 Heart Foundation Australia  
 Metro North Brisbane Medicare Local  
 Monash Health  
 Pathology Queensland  
 Australian Government Primary Health Networks (Brisbane North, Brisbane South, Central Queensland, Wide Bay, Sunshine Coast, North Queensland)  
 Queensland Ambulance Service  
 Queensland Emergency Department Strategic Advisory Panel  
 Queensland Health  
 Queensland Government, Centre for Healthcare Related Infection Surveillance and Prevention (CHRISP)  
 Queensland Government Emergency

Management Unit, Disaster Management  
 Queensland Health, Clinical Forensic Medicine Unit  
 Queensland Pathology  
 Queensland Police Service  
 Queensland Trauma Registry  
 Remedial Services Queensland  
 Royal Australian Air Force  
 Royal Flying Doctors (Qld)  
 Royal Life Saving Society (Qld)  
 The Dive Academy Port Douglas  
 Toowoomba Hospital Foundation

### OVERSEAS HOSPITALS

Auckland City Hospital  
 Beth Israel Deaconess Medical Centre (USA)  
 China Medical University (Taiwan)  
 Christchurch Hospital (New Zealand)  
 Hospital del Mar (Barcelona)  
 Human Effectiveness  
 Defence Research Development Canada  
 Kantonsspital Liestad (Switzerland)  
 Kidzfirst Hospital (New Zealand)  
 London School of Hygiene and Tropical Medicine (UK)  
 Poole Hospital, UK  
 Skane University Hospital (Sweden)  
 Spital Lachen (Switzerland)  
 Starship Children's Hospital (New Zealand)  
 The Nuremberg Hospital (Germany)  
 The Royal Liverpool University Hospital (UK)  
 Trollhattan Norra Älvsborgs County Hospital (Sweden)  
 University Hospital Basel (Switzerland)  
 University Hospital Zurich (Switzerland)  
 Wellington Regional Hospital (New Zealand)

### OVERSEAS UNIVERSITIES, RESEARCH INSTITUTIONS AND ORGANISATIONS

Harvard University  
 Human Effectiveness Experimentation Centre, Defence Research Development Canada  
 London School of Hygiene and Tropical Medicine (UK)  
 Lund University, Sweden  
 NHS Lothian/Barnados Scotland (UK)  
 U.S. Department of Veterans Affairs (USA)  
 University of Auckland  
 University of California  
 University of Gothenburg (Sweden)  
 University of London  
 University of Minnesota (USA)  
 University of Otago, NZ  
 University of Pittsburgh







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# Exploring the link between wealth and health

## *Griffith Centre for Personal Finance and Superannuation*

The Griffith Centre for Personal Finance and Superannuation is an academic centre within Griffith Business School, Griffith University.

The Centre is a source of expertise on, and a centre of excellence in the areas of personal finance and superannuation, investment, professionalisation of financial services, and financial education.

Our members undertake innovative and high quality research projects, and advise national and international organisations on the strategic and technical aspects of financial decision making.

## *Partnering with medical research*

The Centre is interested in partnering with medical researchers in the area of 'wealth and health'. Recent research shows a positive link between wealth and health; however, the details and drivers of this relationship remain unclear.

Key themes include, but are not limited to:

- the health of elderly Australians and their finance and housing status
- obesity and an individual's financial situation
- chronic disease and personal finance
- commercialisation of medical research products.

[griffith.edu.au/personal-finance-superannuation](http://griffith.edu.au/personal-finance-superannuation)

## Contact us

Please contact us to find out more about our research or discuss partnership opportunities.

**Griffith Centre for Personal Finance and Superannuation**

E [gcpfs@griffith.edu.au](mailto:gcpfs@griffith.edu.au)

P 07 3735 4272





THE UNIVERSITY  
OF QUEENSLAND  
AUSTRALIA

## Faculty of Medicine

For more than eighty years, our Faculty of Medicine has educated and worked with outstanding people to create positive change for society. Our research has global impact and is delivered by a truly interdisciplinary health community.

With two research intensive schools, medical education, and five hospital-based institutes and centres, we have achieved broad coverage of the 'translational pipeline' linking the pre-clinical and clinical sciences with population and global health.

