



Submission to the Australian Medical Research Advisory Board: August 2018

MEDICAL RESEARCH FUTURE FUND – AUSTRALIAN MEDICAL RESEARCH AND INNOVATION PRIORITIES 2016-2018

1. Australasian College for Emergency Medicine
2. Affiliated with an organisation
3. Other: specialty medical college
4. Representing ACEM
5. All jurisdictions
6. Which 2016-2018 MRFF Priorities do you think need further focus? (please select a maximum of three Priorities)

- Antimicrobial resistance
- International collaborative research
- Disruptive technologies
- Clinical quality registries
- National data management study
- MRFF infrastructure and evaluation
- Communicable disease control
- National Institute of Research
- Building evidence in primary care
- Behavioural economics application
- Drug effectiveness and repurposing
- National infrastructure sharing scheme
- Industry exchange fellowships
- Clinical researcher fellowships
- Clinical trial network
- Public good demonstration trials
- Targeted translation topics
- Research incubator hubs
- Biomedical translation
- None

7. How can the 2016-2018 MRFF Priorities you identified in question 6 be extended or re-emphasised in the 2018-2020 MRFF Priorities?

- a) How can the most important Priority identified in Question 6 be extended or re-emphasised? (max 500 words)

Clinical Trial Network (CTN) as it relates to emergency medicine is the most important Priority. ACEM considers that CTNs can be extended or re-emphasised in the 2018-2020 Priorities through mechanisms that support and resource robust research infrastructure. Value for investment in clinical trials run by CTNs is almost 10 to one (9:1). As a specialty, currently emergency medicine has relatively poor clinical and epidemiological research infrastructure and expertise. This lack of capacity and expertise is compounded by institutional and hospital silos (constraining multisite collaboration), a marked diversity in the range of clinical problems treated in EDs

(meaning it is often difficult to recruit large samples of any one patient 'type' for a clinical research project without multisite collaboration), and inadequate academic career pathways and support for emergency medicine doctors-in-training and newly-graduated specialists.

ACEM's philosophy is that clinical, epidemiological and laboratory research are essential 24-hour core ED activities that are integral to optimal ED functioning. ACEM's goal is to improve emergency medical care through robust scientific investigation within a well-structured academic milieu. To achieve this, large, diverse groups of clinical, laboratory and epidemiological researchers need to be brought together from across Australia to cover the breadth of emergency medicine practice. ACEM considers that two broad priorities ought to be pursued in tandem: (i) infrastructure support to enable research project design, development and implementation, and (ii) flagship research projects to provide 'runs on the board' that engage clinicians, patients and the general public.

In the context of emergency medicine research, an ideal network for collaborative research will collectively provide (i) a critical mass of academic leaders/senior researchers to cover core areas of clinical research expertise and assist the development of early career researchers, (ii) dedicated time for clinicians to undertake vital research, (iii) experienced clinical trial managers and administrative support, (iv) research nurse/assistant support, (v) biostatistical support, (vi) information technology and infrastructure, and (vii) research laboratory infrastructure and personnel, and (viii) exploratory epidemiological studies to generate new hypotheses and trial concepts.

To begin to address these issues, in 2018 ACEM invested in the implementation of a Clinical Trials Network (ACEM CTN) and Emergency Department Epidemiology Network (EDEN). Establishing these entities will facilitate systematic data collection on all ED patient presentations, description, analysis and comparison of patient groups and outcomes, and the strategic planning and conduct of interventional clinical research. The role of the ACEM CTN is to facilitate investigator-initiated, collaborative, multicentre clinical research in emergency medicine throughout Australia and New Zealand, foster multidisciplinary research collaborations, and develop high quality research programs that address clinically relevant questions of importance to clinicians and patients. Part of EDEN's role is to drive the development of valid, reproducible, practical datasets and data collection techniques to understand regional and temporal variations in outcomes and treatment provision, and to help inform clinical research priorities. In the MRFF, mechanisms are needed for CTNs and epidemiological networks to apply for funding to deliver bodies of work with defined outcomes. ACEM considers that quarantining funding for such networks is a priority.

- b) If you identified a second Priority in Question 6 please explain how it needs to be extended or re-emphasised? (max 500 words)

As a second Priority, ACEM considers that the MRFF should develop and implement mechanisms for funding new Clinical Quality Registries and other registries of proven benefit. Registries that are relevant to the practice of high quality, safe emergency medical care are necessary to define specific disease states, and optimal clinical management strategies, processes and outcomes. These registries should be funded to enable ongoing monitoring and surveillance of presentations, emergency medical care and health outcomes. Well-resourced registries can be utilised as platforms for both interventional research trials and epidemiological studies over significant time periods, particularly in cases of infrequently seen but important disease groups (e.g. influenza epidemics, severe acute respiratory syndrome, avian influenza, Ebola virus disease etc.), with the capacity for outcomes to be tracked to specific interventions (e.g. step-wedge cluster designed registry based trials, platform trials). Emergency medicine epidemiological registries should also be funded to monitor the distribution, determinants and changing patterns of disease among specific populations.

- c) If you identified a third Priority in Question 6 please explain how it needs to be extended or re-

emphasised? (max 500 words)

ACEM considers that the third Priority for MRFF extension and re-emphasis is Targeted Translation Topics. Funds should be directed to translational research that rapidly transforms and applies new scientific knowledge into effective emergency medicine practice and, where applicable, Australian health policy. Funding should also be directed to translational research that defines the science of translation for emergency medicine and what works in specific environments like EDs. At a more granular level, translation of what works in emergency medicine is fundamentally important to implement new standards of ED care, reduce unwanted care, and to understand what works in mixed (i.e. adult/paediatric) EDs as well as EDs in metropolitan, regional, rural and remote areas. Further, acceptance of the philosophy that healthcare delivery is no longer separate from research will provide faster, easier access to translatable information that can assist all priorities and more quickly realise the benefits of research findings.

8. What unaddressed gaps in knowledge, capacity and effort across the healthcare system and research pipeline need to be addressed in the 2018-2020 MRFF priorities?

a) Most important gap identified that needs to be addressed in the 2018-2020 MRFF Priorities? (max 500 words)

Emergency departments are the key interface between primary health and hospital care. Although almost eight million Australians attend EDs each year, emergency medicine research is under-represented in Australian Government research funding. For instance, of all National Health and Medical Research Council (NHMRC) grants funded between 2000 and 2014, only 40 (0.2%) were in the emergency medicine field. Due to this lack of funded capacity, many treatments understood as the standard of care for emergency and critical care patients are solely supported by evidence extrapolated from other, non-time critical medical settings. Indeed, there have been reported instances of the withdrawal of 'standard care' in emergency and critical care medicine as new evidence demonstrates a lack of benefit, and sometimes detriment. To provide high quality, safe emergency medical care, CTNs and networks that bring together clinical researchers and epidemiologists with strong translational capacity are essential for closing gaps in knowledge, capacity and effort, developing and supporting best practice, and reducing unwarranted variation in outcomes for millions of Australians. Built into these networks will be important collaborative research opportunities with primary care, ambulance and public health researchers to reduce expensive hospital care for ambulatory care- and time-sensitive conditions seen in EDs.

ACEM emphasises that patients present to EDs with 'problems' rather than definitive diagnoses, so current funding models for traditional disease-based programs of funding do not readily apply to ED patient populations. Emergency departments represent a nexus for integrated and coordinated care across whole patient journeys. The MRFF provides a new opportunity to innovate in emergency medicine for the benefit of the millions of Australians presenting to EDs every year.

The public tend to understand the critical nature of getting the right emergency medical care as early as possible in the continuum to reduce suffering and prevent further morbidity and mortality. Early diagnosis is key, which is especially true for critical illness and injury (e.g. heart attacks, brain injury, major trauma, sepsis, allergies and envenomation). However, with the ageing population, the complexity of cases presenting to EDs is increasing enormously, and early diagnosis can be difficult. Further, sustainability of health services is currently threatened by conflation of demographic characteristics, rising demand for care, higher patient expectations, and fragmented health service provision, which all converge in the ED. In this context, mental illness, substance use and end-of-life care are prime examples of this phenomenon.

Emergency medicine research allows the specialty to improve clinical care and processes to assist clinicians with decision making in uncertainty. In addition, a well-structured emergency medicine research program can provide

a service to other publicly funded critical care clinical trials and promote collaboration between various health system sectors. Currently, there is a gap between the capacity of researchers and research networks to maintain a stable research environment, personnel and infrastructure and develop sound systems to investigate gaps in knowledge. There is a need to establish a funding stream for CTNs that enables the appropriate infrastructure to develop and implement clinical trials and other studies for the public good.

- b) If you identified a second gap in Question 6 please explain how it needs to be addressed in the 2018-2020 Priorities? (max 500 words)

ACEM considers that there is a second gap in knowledge of the drivers of increasing ED demand and hospital workloads. There is a need to develop systems and/or fund research that (i) determines the drivers of increasing ED presentations, and (ii) designs interventions that can be trialled to reduce or reverse this expansion. Funding of Clinical Quality Registries for cohorts of ED patients will allow for better understanding of variation in clinical practice across hospitals, regions and jurisdictions. This will allow assessment against current evidence-based practice, and monitoring and benchmarking of improvements. The increasing amount of digital data produced in the acute health system as part of routine patient management and care is also exponentially increasing the ability of researchers to use techniques such as data linkage, complex adaptive system modelling, big data analytics (e.g. classification tree analysis, machine learning and artificial intelligence), and geospatial modelling of disease and its determinants.

- c) If you identified a third gap in Question 6 please explain how it needs to be addressed in the 2018-2020 Priorities? (max 500 words)

ACEM considers the third gap for addressing in the 2018-2020 Priorities is the translation of knowledge into ED practice. The Clinical Quality Registries and epidemiological research mentioned in Question 6 will enable efficient assessment of interventions and monitoring of changes in practice in different environments over time, improving the efficiency and effectiveness of emergency medicine and implementation of high quality, safe emergency medical care. Given the recognised evidence gaps in the treatment of emergency and critically ill and/or injured patients, in this group of patients the necessity of new knowledge translation is paramount. Translational research and implementation science is fundamental in delivering the highest quality patient care in time-dependent conditions, where correct but timely decisions are vital. There is also opportunity for the MRFF to support the development of a nationally relevant set of ED specific clinical guidelines to support knowledge translation. An appropriate national entity could provide the repository for such guidelines, based on best evidence.

9. What specific priority or initiative can address the above gaps?

- a) What specific priority or initiative can address the first gap identified in Question 8? (max 500 words)

ACEM considers that ongoing funding support for CTNs and other research networks is vital. As mentioned in Question 7a, ACEM has prioritised and supported the establishment of both the ACEM CTN and EDEN. Together, these entities are separate but complementary, with EDEN aiming to provide epidemiological and data centred knowledge, setting the scene for a deep and comprehensive knowledge of the natural history of patient presentations in emergency medicine, and the effectiveness of interventions and treatments. Both of these entities have been identified as key pillars in the College's advocacy for driving best emergency medicine practice and efficient research. The ACEM CTN needs to be the driver of multicentre clinical research that has a focus on patient-oriented outcomes. As outlined previously, this requires infrastructure support.

- b) If you identified a second gap in Question 8 what specific priority or initiative can address this gap?

(max 500 words)

As above, the lack of knowledge about current ED presentations and current clinical care will be addressed by initiatives such as the ACEM CTN and EDEN. Funding for the infrastructure of such networks is fundamental – not only if we are to better understand current emergency medicine practice, but also unwarranted variations in healthcare and outcomes, and changes in hospital presentations over time.

- c) If you identified a third gap in Question 8 what specific priority or initiative can address this gap?
(max 500 words)

ACEM considers there is a strong need to monitor emergency medical care and understand the factors that are effective in changing practice. Investment in Clinical Quality Registries of populations and diseases should be continued and expanded. Such registries should be prioritised where they are used for quality improvement and assurance activities, with implementation of iterative clinical changes that can also be monitored over time to improve understanding of what (i) constitutes best practice and (ii) works to change practice.

10. What Strategic Platforms (identified in the MRFF Strategy document) would the Priority/ies you identified in Question 8 fall under?

- Strategic and international horizons
- Data and infrastructure
- Health services and systems
- Capacity and collaboration
- Trials and translation
- Commercialisation

11. How can current research capacity, production and use within the health system be further strengthened through the MRFF? (max 500 words)

The MRFF can strengthen current research capacity, production and use within the health system by fostering research active health service organisations. For ACEM members, the two biggest impediments to clinical research are lack of time and resources. In emergency medicine, clinical researchers need to be allocated specific time to undertake research, as well as appropriate infrastructure and resources to support the conduct of research. The MRFF is ideally placed to support both of these. In Queensland, there is a highly successful model that complements and locally supports CTN functionality by providing local capability development through grant writing/review education, upskilling for new researchers, navigation of research governance and ethics processes and preparation for peer review. In addition, the regulatory burdens of research have become increasingly problematic in the emergency medicine context, which is slowing down the knowledge translation process.

Johnson & Black (BMJ 2018;360:k1254) provide the following insights with regards to strengthening research:

- Research active organisations have better patient outcomes and higher clinician engagement and morale than inactive organisations
- To improve research, eliminate delays in confirming approvals for multisite clinical trials
- Engage patients throughout the research pathway, including in priority setting for funding
- Provide protected time and funding so clinicians can undertake research
- Unlocking research potential in organisations supports staff recruitment and retention and improves morale
- As well as encouraging clinicians to gain skills in research to improve patient care, provide clinicians with the time to use these skills.

ACEM considers that the priority infrastructure items for which funding is required are:

- A basic level of non-grant dependent research assistant/nurse support. Note that the capacity for continually piloting studies and producing 'small' research papers is critical to have a chance of success with large grant applications
- Clinical, epidemiological and laboratory research fellowships and PhD opportunities for emergency medicine doctors-in-training, specialist emergency physicians, and laboratory scientists and epidemiologists with an interest in acute care research
- Permanent clinical trials coordinator appointments that can be shared across sites
- Permanent data management specialty staff working within the emergency medicine context, and across sites and jurisdictions, to develop techniques and processes for routine linkage of large clinical and administrative datasets
- Basic levels of recurrent funding for laboratory staff and consumables for laboratory method development and pilot studies.

12. Do you have any additional comments on the Discussion Paper? (max 250 words)

Chris Del Mar, Professor of Public Health at Bond University in Queensland said, "We need to find a way of funding research into clinicians' questions. When you look at the kind of projects the NHMRC is funding, even for clinicians, they nearly always have an animal model or benchtop model in it somewhere. There is very little done on simple, pragmatic questions that are going to make a difference in the here and now."

Our focus should be investigator-initiated 'common good' research to deliver safe, high quality care more efficiently that improves patient outcomes for the eight million Australians who present annually to EDs across the country.

13. Do you consent to this submission being made public on the MRFF website?

- Yes
 No

STATEMENT

On Friday 31 August at 2:33 this paper was submitted by Shelley Cogger to the MRFF consultation website: <https://consultations.health.gov.au/health-economics-and-research-division/medical-research-future-fund-consultation-for-the/>

Submission received: https://consultations.health.gov.au/health-economics-and-research-division/medical-research-future-fund-consultation-for-the/consultation/my_response?user_id=ANON-823Y-XGUG-H&key=509712a1bca45a53d378c623dd79490ccce207d4

Reviewed by Doctor Simon Judkins, ACEM President and Prof Yusuf Nagree, CAPP Chair, on 30 and 31 August 2018.