Heart Foundation submission to MRFF Priorities 2018-2020

FINAL VERSION	29 August 2018

Medical Research Future Fund consultation to inform the second Australian Medical Research and Innovation Priorities 2018-2020

Closes 31 Aug 2018

Introduction

1. What is your name?

Adj Prof John Kelly AM, Group CEO, National Heart Foundation of Australia

2. Are you affiliated with an organisation?

(Required) ☑ Yes ☐ No

3. What kind of organisation do you work for?

(Required) ☐ Consumer representative ☐ Professional representative ☐ University ☐ Medical research institute ☐ Health service (public) ☐ Health service (private) ☐ Industry (medical technology, biomedical or pharmaceutical) ☐ ☑ Government Non-government organization ☐ Other

4. 4. Are you representing your organisation in making this submission?

☑ Yes ☐ No

5. 5. What state or territory do you live in?

☑ Victoria ☐ New South Wales ☐ Australian Capital Territory ☐ Queensland ☐ Northern Territory ☐ Western Australia ☐ South Australia ☐ Tasmania ☐ Currently living overseas

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
- [x] Communicable disease control
- [ ] National Institute of Research
- [x] Building evidence in primary care
- [ ] Behavioural economics application
- [ ] Drug effectiveness and repurposing
- [ ] National infrastructure sharing scheme
- [ ] Industry exchange fellowships
- [x] 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?
How can the most important Priority identified in Question 6 be extended or re-emphasised?

Building evidence in primary care:
While mortality rates have been in decline for several decades, cardiovascular disease (CVD):

- accounts for almost 30% of all deaths;
- is a leading cause of the total burden of disease (15% 0f the total burden)
- is the most costly disease to treat, accounting for 11.1% of total spending on admitted hospital patients, or $5bn each year.

The greatest change in health over the previous decades in Australia is the shift to chronic disease – including cardiovascular disease, cancer, diabetes, dementia - which now makes up the vast bulk of the disease burden. Around half of all Australians are suffering from a chronic/non-communicable disease.

MRFF disbursements need to match Australia's disease burden so that the community directly benefits from research into chronic diseases. Within the chronic diseases, heart disease is largest killer and the most expensive in terms of direct health care costs. Cardiovascular disease is responsible for the second highest burden of disease, accounting for 15% of the total burden in Australia

A substantial proportion of chronic disease is preventable. In addition, much can be done for

the 1 in 2 Australians with chronic disease to manage and prevent adverse outcomes.

The MRFF could drive greater focus on chronic diseases and fund research on gaps in prevention, treatment and care to improve outcomes for consumers, including the general population, at risk populations, disadvantaged groups and patients.

Primary care is an area of urgent need with many gaps that MRFF targeted research could fill. There are huge and acknowledged shortfalls in prevention, early detection and management of chronic disease in primary care, including promoting best-practice and in developing new ways of tackling disease.

There is an urgent need for integrated primary care that combines the multiple related conditions causing and exacerbating chronic disease. This includes research to improve our understanding of chronic disease comorbidity and interactions, as well as developing methods to address absolute cardiovascular and dementia risk.

Consumers would benefit directly through a better defined and managed patient journey. Benefits would stem from the development of central processes to manage co-morbidities, such as effective use of e-health to reduce the need to attend multiple clinics and travel when unwell. Research into how to integrate carers' needs into the process would also improve the process.

Data linkage should be a key funding priority for MRFF to facilitate building evidence in primary care and health, health and hospital services, universities and governments. particularly to address disease comorbidity. There is so much untapped data that could be made accessible and linked to inform better health system practice and improve health outcomes.

If you identified a second Priority in Question 6 please explain how it needs to be extended or re-emphasised?

Clinical research fellowships:
Researchers need a clear career pathway with equal access to clinical fellowships at all stages of their career. Talented early and mid-career researchers have been attracted away from fields such as cardiovascular disease due to funding stress. Women researchers face greater barriers to career progression than men and need specific strategies to target barriers.

A whole-of-nation approach is needed by the major funding bodies of MRFF, NHMRC and ARC which need to work together to support researchers at early career, mid-career or established, to counter the current weighting in favour of established researchers.

It is strongly recommended that clinical research fellowships include pre-clinical and public health researchers.

As part of the workforce development, involvement of consumer and consumer groups embedded throughout the whole process (i.e., tri-partied fellowships between clinicians, academics and consumers) is essential.

Investing in the research workforce is cost-effective. The total benefits of the NHMRC funded health and medical research workforce were estimated to be $33.8 billion between 2000 and 2015, while the cost of funding was only $10.5 billion (real 2015-16 dollars). The net gain was $23.4 billion, or roughly $257,000 per FTE worker.

Even greater returns are expected to occur for CVD and cancers than for other conditions. Overall, it was estimated that every $1 invested in the NHMRC funded health and medical research workforce returned $3.20, on average. (Deloitte Access Economics 2016 - https://www2.deloitte.com/content/dam/Deloitte/au/Documents/Economics/deloitte-au-economics-australias-health-and-medical-research-workforce-071116.pdf)

CVD research is an example of social and economic wellbeing investment that returns $9.80 for every $1 invested (Deloitte Access Economics 2016 – Australia's health and medical research workforce: Expert people providing exceptional returns).

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

Communicable disease control:
Greater focus of research on communicable disease control could address some issues of poverty and the social determinants of health to support disadvantaged groups such as Aboriginal and Torres Strait Islander peoples and some refugee populations. These are complex problems that research could assist in finding answers to.

Research into the root causes and steps needed to eradicate diseases of poverty such as Acute Rheumatic fever (ARF) and Rheumatic heart disease (RHD) would improve the health and wellbeing of Indigenous and CALD populations.

RHD is the result of repeated cases of ARF caused by an infection (Group A streptococcal bacteria) resulting in a sore throat, or a skin infection commonly known as 'school sores'. RHD is a heart-breaking chronic condition that affects our most vulnerable peoples and has almost totally been eradicated from the non-Indigenous community. It is entirely preventable, resulting from poverty, overcrowded housing and houses with poor health hygiene facilities (e.g. no hot water, cold, damp and mould).

The MRFF could support further research which is required in areas such as trialing ways to wash clothes & bedding to stop the spread of disease in the absence of hot water in remote Indigenous communities. It could also support management of the disease by researching improvements in levels of treatment adherence to secondary prophylaxis injections.

Preventive health interventions would also be a worthy investment to not only prevent RHD but also prevent other diseases caused by social determinants such as poor housing, education, employment, transport and so on.

Australia has one of the highest rates of RHD in the world. We cannot wait for a vaccination, which is under development, because children are still contracting the disease. It places large burden on individuals, their families and community over many decades of the lives.

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?

Most important gap identified that needs to be addressed in the 2018-2020 MRFF Priorities

Preventive health commitments:
Preventive health research is an area with many unaddressed gaps is knowledge, capacity and effort across the healthcare system and research pipeline. Preventive health research is chronically underfunded in Australia and needs targeted strategic funding. MRFF Research investment in preventive health would drive improvements in health outcomes and prevention of disease.

Without the political will of governments to effectively fund preventive health, the MRFF could support the research community to build further evidence to demonstrate the cost effectiveness of preventive health.

With healthcare costs at an unsustainable level, consuming up to 30% of total state budgets, there is an urgent need by our community to secure better preventive health measures. Governments traditionally fund prevention poorly due to short term electoral cycles versus the long-term gains of prevention that they may never see to fruition.

Poor health outcomes for Aboriginal and Torres Strait Islander peoples is a known gap that needs greater research investment. Cardiovascular disease is a strong example, accounting for over a quarter of the increased mortality in Aboriginal people compared to non-Aboriginal people and it has been estimated that they could gain 6.5 years of life if death rates were lowered to the rates of non-Aboriginal Australians.

There is evidence that Aboriginal people have a different experience of clinical services for cardiovascular disease which requires further investigation:

- Aboriginal people receive fewer cardiac procedures compared to non-Aboriginal Australians, with rates of revascularisation 40% lower, percutaneous intervention 50% lower and bypass surgery 10% lower.
- Rates of early discharge from hospital are higher in Aboriginal people in NSW (2.4%) compared to non-Aboriginal people (0.6%)

In addition, Australia has one of the highest rates of rheumatic heart disease (RHD) in the world, due to its high prevalence in Aboriginal and Torres Strait Islander people. RHD is uncommon in non-Aboriginal Australians.

If you identified a second gap please explain how it needs to be addressed in the 2018-2020 MRFF Priorities

Implementation science could improve poor levels of translation:

There is a critical unaddressed gap in translational research which needs a whole-of-pipeline vision and strategic investment. There is an unmet need to invest in platforms to support a whole-of-nation cardiovascular program that will address the major health burden to our nation and complement the individual funding schemes. The aim of this would be to reduce the siloed approach to discoveries and successes of the past.

There is a capacity gap in the step between discovery of an innovation and take up in the health system at macro, meso or micro level. Guidelines are not enough in themselves to ensure policymakers, health service executives and clinicians will adopt a particular research finding. It is particularly problematic when research shows that a particular activity is ineffective and should be stopped. It involves much more than clinical research and needs a broad range of expertise to know how best to manage the change.

In cardiovascular health for example we have challenges with the introduction of new devices and interventions (e.g. TAVI), new imaging techniques (cardiac MRI and CT), demographic changes in the patient population- older, more obese, more diabetes- the health system needs to reshape to accommodate these.

If you identified a third gap please explain how it needs to be addressed in the 2018-2020 MRFF Priorities

Better absolute risk prediction

Presently, some very basic biological models and tools are utilised to determine an individual's risk of developing some forms of chronic disease, including cardiovascular disease. Many of these rely on the translation of population based data to determine the risk an individual faces. Risk assessment can be undertaken presymptomatically and also during the process of clinical management.

In acute coronary syndrome management for example, fascinating questions that treating cardiologists want to know the answer to are:

- Can we predict which of two coronary artery plaques that look the same on an angiogram will progress to ACS while the other remains benign?
- Can we find ways of predicting sudden cardiac death ahead of the event?

Developing better ways of absolute risk prediction is essential to move from population estimates of risk to individual assessment by:

- Building on classical risk factors such as blood pressure status and lipid levels;
- Adding in new biomarkers (omics) and;
- New imaging modalities

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

What specific priority or initiative can address the first gap identified in Question 8?

Preventive Health

MRFF needs to prioritise investment in preventive health research.

Preventive health research investment could include specific priorities:

- Behaviour change research including how to engage people in effective healthy lifestyle interventions; screening in a sustainable and scalable way across all diseases and adherence to long term therapies; ensuring innovative digital and app solutions are encouraged utilizing cross collaborations outside of health including marketing, psychology and technology.

- Effective system change research on how policy and legislation effect long term improvements to public health and save the nation billions. Specifically, researchers could add evidence to the complex issue of obesity in our community to drive innovative solutions.

  Tobacco control is an outstanding example where a multi-pronged approach to prevention has resulted in millions of healthcare dollars and thousands of lives being saved and people's productivity maintained. For more than thirty years, tobacco control measures have directly reduced smoking rates from 70% of the population to 12% or less. We know what works and this can now be applied to obesity.

- Building evidence and data on improving health outcomes for Aboriginal and Torres Strait Islander peoples. Initiatives to look at vulnerable communities and survivorship would address part of the gap in knowledge. Exploring the status of survivorship for Aboriginal and Torres Strait Islander people would increase understanding of its impact on health outcomes.

The MRFF and researchers would need to ensure that their approach is culturally appropriate and work closely with Aboriginal and Torres Strait Islander communities. These could build existing knowledge and include: culture and health; building appropriate health systems; implementation; social and emotional wellbeing; chronic disease; disability and data infrastructure.

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

Implementation science initiative in chronic disease:
Research that focuses on health systems and services implementation, especially for chronic disease, should be prioritised in order to better enable the movement of evidence based practices into routine clinical care.

This research would include, via the establishment of multidisciplinary teams:

- data and data systems strengthening;
- how to bring about large-scale behaviour change by undertaking behavioural research on engaging people in a healthy lifestyle and their adherence to long term therapies.
- Establishment and monitoring of care pathways and models of care.

Numerous factors that impact on uptake have to be considered in designing such studies, including the patient, the clinical provider, clinic, organization, as well as the broader community and policy environment.
Women are a priority area of focus for cardiovascular disease with specific initiatives needed to:

- Improve our understanding of disease patterns in women, especially the role of hormones and microvascular disease is a particular gap.
- Use of health services by women and gender bias amongst clinicians in diagnosis, treatment and management of heart disease

Enabling the consumer and consumer groups throughout the whole process (i.e., tri-partied fellowships between clinicians, academics and consumers) is critical to its success.
A successfully designed and delivered implementation science initiative will drive improvements in the effectiveness and quality of health services.

If you identified a third gap in Question 8 what specific priority or initiative can address this gap?

Improving individualised disease risk assessments
Fund a significant program that collects data on:

- biological samples by undertaking a systematic analysis of such samples using the “OMICS” capabilities i.e. genomics, metabolomics, proteomics and cell therapy, for example, developing the algorithms around mass spectrometry.
- State of the art imaging capabilities that can identify new biological markers of disease status.

The collation, integration and analysis of such biological information on a significant scale will improve the risk assessments in patients at risk or suffering from cardiovascular disease.

By funding a large study in the area of cardiovascular disease, the opportunity is created to build a research and clinical resource that will be able to integrate key biological variables that relate to cardiovascular disease and provide better absolute risk prediction to this important health area.

10. What Strategic Platforms (identified in the MRFF Strategy document) would the Priority/ies you identified in Question 8 fall under?
See MRFF Strategy document: https://beta.health.gov.au/resources/publications/australian-medical-research-and-innovation-strategy-2016-2021

- ☐ 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?

We need an evidence and systems-based approach to evaluation and refining of MRFF targeting. This could include an audit of funding against the burden of disease and parts of the health and healthcare system being addressed, to ensure balance and appropriate coverage.

For example, investment should span basic biomedical science and its translation, clinical sciences, prevention, health services research and health economics. Gaps should then be addressed and MRFF targets iterated. Investment should also address the burden of disease and community priorities, especially for Aboriginal and Torres Strait Islander people. Greater inclusion of consumer views, including at a prevention level, would be welcome.

Without an over-arching, federally supported strategy, fundamental discoveries of new biomarkers of early risk; of new therapeutic targets and drug development; or of bioengineering inventions are not able to easily make it across the “translational gap” to first in man, early phase clinical trials and beyond into evidence-based implementation.

Clinical trial capacity is one of the most significant gaps through underfunding. The MRFF could address this gap by funding clinical trials focused beyond rare cancers and diseases. There is substantial need for clinical trials in many other areas of unmet need. Opening the call up to common diseases as well would seem most appropriate since there is substantial unmet need in these areas too. There is also a need to resolve important medical practice controversies through large trials in order to benefit patients and optimize use of resources.

Linking large trials through international collaborative research is cost-effective and will help answer important health questions. Currently there are limited means to achieve funding for this as most nations focus on research by investigators in their country. If the MRFF could establish a means for linked applications with similar countries with one central assessment, rather than each country separately, it could provide a pathway to test promising therapies relevant to the world population.

Translational research capacity needs to be increased to streamline our urgent need for more research translation. To support this pathway, MRFF and other funding schemes need to focus not only on clinical research, but also to link in with clinicians and pre-clinical researchers. The current funding schemes separate pre-clinical research from clinical.

Translational research capacity could also be built by the MRFF supporting systematic change for clinicians to do research. Currently there is a large gap in this area across Australia, with many hospital and health services not providing support for clinicians to do research, as they see their focus as providing services. Clinicians could be funded to secure at least 20% or more of their time for research. MRFF could play a leading role in supporting this culture change.

Biomedical translation funding has focused on the technology to be used and not necessarily the ability to translate as supported by the investigator. This risks putting all efforts behind one technology or topic eg. Microbiome. The MRFF could support research that considers the clinical need and has a well-supported rationale and mechanism to translate to patients.

12. Do you have any additional comments on the Discussion Paper?
Please give us your feedback on the Discussion Paper

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

☑ Yes ☐ No