

Medical Research Future Fund 2018-2020 Priorities

**Australian
Living Evidence
Consortium**

Submission to the Australian Medical Research Advisory Board
August 2018

Introduction

The Australian Living Evidence Consortium welcomes the opportunity to contribute to the national consultation on development of the *Australian Medical Research and Innovation Priorities 2018-2020* (the Priorities).

We strongly support the Australian Medical Research Advisory Board's work in developing the *Australian Medical Research and Innovation Strategy 2016-2021* (the Strategy), and recognise that the Priorities must continue to address the objectives of the Strategy and align to the six platforms that underpin it.

We also recognise the need for a Priorities framework that delivers maximum health and economic returns for Australians. This framework should guide a balanced investment spanning the full spectrum of research along the pipeline from discovery to sustained translation into practice and policy.

Our submission focuses on a critical, rate-limiting component of the research pipeline—the process of evidence synthesis—which in all modern health care systems acts as the key pathway along which research discoveries are translated into health and economic benefit.

Evidence synthesis capability has a *whole-of-system* impact on Australian health care and our health and medical research enterprise.

Q. Which 2016–2018 MRFF Priorities do you think need further focus?

› Targeted Translation Topics

Q. How can this 2016–2018 MRFF Priority be extended or re-emphasised in the 2018–2020 MRFF Priorities?

EXPANSION OF TARGETED TRANSLATION TOPICS

The translation of research into societal benefit is the ultimate aim of the MRFF and we welcomed the inclusion of Targeted Translation Topics in the 2016-2018 Priorities.

We note that program investments aligned to this priority have to date clustered around ‘valley one’ or T1 translation to prime the research pipeline, and funding for Advanced Health and Research Translation Centres and Centres for Innovation in Regional Health to strengthen geographically-based links between academia and health care delivery.

Both are important components of Australia’s research translation architecture, however we submit that priority investments in Targeted Translation Topics should now include large-scale, nationally coordinated initiatives to address ‘valley two’ of the research translation pathway (T2-T4 translation) as a matter of urgency.

Crossing ‘valley two’ requires using all available research evidence to generate a clear understanding of the potential value, risks and costs of treatments and interventions. This is achieved through the process of evidence synthesis: producing reliable summaries of the body of knowledge generated through research. These summaries are used to shape policy, inform purchasing decisions and underpin clinical implementation to improve health and health system performance.

There are strong indications that Australia’s systems for evidence synthesis are no longer fit for purpose and are impeding effective research translation:

- › The *Medicare Benefits Schedule Review* has highlighted the enormity of the challenge of staying abreast of evidence in the face of rapidly moving advances in health technology and clinical practice.
- › The Australian Commission for Safety and Quality in Health Care has shown that poor quality and conflicting evidence is driving unwarranted variation in health care and outcomes.
- › The National Health and Medical Research Council (NHMRC) has identified many barriers to the use of high-quality evidence in clinical guidelines and decision making.

We propose below a series of recommendations for priority investments to strengthen Australia’s capacity to effectively and efficiently use the outputs of research to support evidence-based health care, policy and spending decisions.

Q. 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?

THE EVIDENCE SYNTHESIS BOTTLENECK: A CRITICAL GAP IN AUSTRALIA'S RESEARCH PIPELINE

An essential link between health research and societal benefit is the synthesis of millions of research studies into reliable and usable evidence summaries to inform health decision-making. Many individuals and organisations in Australia are committed to this task but increasing demand for timely, high-quality evidence synthesis is not being met.

Evidence synthesis involves a rigorous process of finding, assessing and analysing all research relevant to a clinical or policy question. It is the trusted, scientific method for generating bottom-line summaries of 'what we know' and is deeply embedded in modern health systems. It underpins a vast array of processes that shape 'what we should do' in health – guidelines, policymaking, health technology assessment, licensing and reimbursement, program investment/disinvestment and research prioritisation and funding.

The methods for high-quality evidence synthesis are well developed, but the systems that support the process are outdated, slow, costly, inefficient, drowning in a deluge of research and failing to harness technological innovation.

Key factors include:

- › **Information overload:** Exponential growth in research is overwhelming current systems. Over 4,000 health research articles, including more than 75 clinical trials, are published every day. Practice and policy recommendations can't be updated efficiently, so go rapidly out of date.
- › **Inefficient evidence synthesis:** Evidence synthesis processes are rigorous, but do not make best use of innovations in technology. It can take up to 6.5 years for research to be included in a systematic review and up to 17 years to for evidence-based innovations to reach practice.
- › **Lack of co-ordination:** Multiple stakeholders are involved in evidence synthesis but limited capacity for coordinating these efforts means the overarching system is fragmented, non-strategic and inefficient.
- › **Inaccessible outputs:** Dissemination of synthesized evidence (eg. systematic reviews, guidelines policy briefs) is usually in the form of unstructured text-based documents that impair discoverability, reuse and integration with decision support systems.
- › **Poorly targeted research:** Research is often designed without reference to up-to-date systematic reviews of existing evidence, resulting in duplication and wasted research investment.
- › **Diverse data deluge:** As the digital health revolution accelerates, robust methods for incorporating real-world data into evidence synthesis processes are lagging behind.

In the absence of timely, high-quality evidence synthesis:

- New research is not effectively and efficiently targeted to the most important research gaps, contributing to research waste
- Return on research investment is eroded as consumers, clinicians, policymakers and the research community continue to make important decisions without access to reliable, up-to-date summaries of all the best available evidence
- Translation of new research into practice and policy is significantly delayed, contributing to unwarranted variation in care and outcomes
- The true benefits and harms of health and medical discoveries are poorly understood, leading to low value care, inefficient resource allocation and threats to health system sustainability

To maximise returns on health and medical research investment, Australia must improve its capacity to synthesise the growing volume of research and health-related data, and deliver reliable, evidence-based guidance to decision-makers faster, more efficiently and more effectively.

ADDRESSING FRAGMENTATION, INEFFICIENCY AND MISSED OPPORTUNITIES WITHIN THE EVIDENCE ECOSYSTEM

In order for any health system to derive maximum benefit from health and medical research, the best current research evidence must be transferred seamlessly between the communities of people designing and undertaking primary research, those synthesising research findings and generating evidence-based recommendations, and the people who use evidence at the point-of-care and policymaking, evaluate its impact on outcomes and identify future research priorities.

The effective transfer of research within this complex ‘evidence ecosystem’ involves multiple stakeholders, levers and tools that act to ‘push and pull’ the evidence generated through research into practice and policy. Currently in Australia, these efforts are largely siloed, resulting in fragmentation, duplication of effort and significant delays (or complete failure) in translating research into impact.

Compounding inefficient linkage between major stakeholders within the evidence ecosystem is the lack of systems, tools and methods to enable digitally structured data to flow easily from primary research, through the evidence synthesis and dissemination processes, into electronic health records and decision support tools, and to link to the clinical quality registries and large observational cohort datasets that describe practice and outcomes.

The poor coordination of people, methods, data and technology results in a wasteful disconnect between evidence production, synthesis and use that impairs decision making across the entire health system – from individual treatments to major health program spending.

In strategically important fields such as genomics and clinical trials there has been a shift towards tackling important questions by harnessing the coordinated efforts of a large and diverse set of contributors. **Large-scale, coordinated national investments are needed to catalyse a similar shift and drive a discovery-based approach to developing next generation evidence synthesis and research translation systems.**

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

Our vision is that health practice, policy and purchasing decisions will be informed by reliable, up-to-date evidence that moves rapidly and seamlessly from research finding to point-of-care and decision-making.

PRIORITY 1. Develop next generation technical systems to dramatically reduce the time and cost of evidence synthesis.

- a) **Structured Data:** Major international funders are committed to making research outputs findable, accessible, interoperable and reusable (FAIR data), recognising the importance of meta-data and other forms of structured data (data standards, controlled vocabularies and linked data) for maximising value from data assets. These approaches are being developed in Australia and internationally; strategic investment is now needed to coordinate their development and deployment as part of Australia's core research infrastructure.
- b) **Automation:** Text mining, machine learning and citizen science are cutting-edge fields of research in evidence synthesis. Pilot work by several Australian research groups has demonstrated the potential to reduce workload by up to 80% for some evidence synthesis tasks. Investment is needed to develop automation technologies at scale that can significantly reduce the unit cost of finding, assessing and analysing evidence.
- c) **Software:** Several cloud-based 'software-as-a-service' platforms that accelerate key steps in evidence synthesis and dissemination (systematic reviews, clinical guidelines, policy briefs, decision aids etc.) have been developed over the last decade. These have been proven to reduce workload for some tasks by up to a third and are being rapidly taken up globally, but there is significant opportunity to improve their interoperability and integration. As a leader in this field, Australia has an opportunity to build on these early successes and stimulate a thriving evidence technologies sector.

PRIORITY 2: Develop innovative processes to deliver reliable evidence to point-of-care and policymaking in near real-time

- a) **Living Evidence:** Living systematic reviews and living guidelines harness continuous evidence surveillance processes to enable updating as soon as new research becomes available, reducing the time to update systematic reviews and other evidence products from years to weeks. Australian guideline developers are at the forefront of these innovations globally. Further research is needed to understand how living evidence impacts knowledge translation and to develop methods and processes for Living Evidence at a national scale.
- b) **Implementable evidence:** New platforms are enabling the digitisation of guidelines and other evidence products in user friendly, multi-layered formats accessible from any device. These have the potential to be linked to decision support systems and create new opportunities for knowledge translation. Research is needed to understand how to increase the use and impact of these tools in clinical care and policymaking.

- c) **Diverse data and integration:** As individual participant data, clinical study reports and routinely collected health data become more widely available, new methods and processes to reliably incorporate these data into evidence syntheses to best inform practice are needed. Greater linkage between evidence synthesis, registries and population datasets will help address the current fragmentation between development of guidelines and standards, measurement of adherence and identification of unwarranted variation in practice, and prioritisation of future research and knowledge translation activity.

PRIORITY 3: Stimulate the formation of large, multi-stakeholder, multidiscipline evidence synthesis and translation consortia.

- a) **Co-creation of evidence:** There is a widespread recognition of the importance of fostering deeper engagement of consumers, clinicians, policymakers and other stakeholders in substantive, diverse and flexible opportunities to guide production of systematic reviews and evidence-based recommendations, and enhance their acceptability and uptake in practice and policy. There is a need for substantial research to define effective ways to create and sustain these partnerships for the benefit of contributors and to create the best possible environment for knowledge translation, particularly when using new Living Evidence approaches and tools.
- b) **Prioritising and harmonising evidence synthesis:** There is an urgent need to improve the prioritisation of evidence synthesis activities to redirect efforts toward areas of high-burden and high cost to the health system, or where there is a rapidly changing evidence base. National co-ordination of our efforts in order to reduce the high levels of unnecessary duplication is equally urgent.
- c) **Leveraging investment and innovation:** The NHMRC estimates that at any given time there are up to 600 clinical guidelines circulating in Australia of varying quality and currency. Current funding is not commensurate with the level of need and is shared between federal and jurisdictional governments, professional societies, consumer groups and private philanthropy. These groups are united by the common goal of improving health outcomes through better translation of evidence into practice and policy and each has an interest in improving the evidence ecosystem. Recognition of the role and value evidence synthesis within the Priorities would provide a catalyst to drive system-wide investment and innovation, with a much greater emphasis on leveraging funding between these groups.

Q. What Strategic Platforms (identified in the MRFF Strategy document) would the Priorities you identified fall under?

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

Q. How can current research capacity, production and use within the health system be further strengthened through the MRFF?

HARNESS EXISTING EXPERTISE AND BUILD CRITICAL WORKFORCE CAPACITY

While there are pockets of deep, globally networked, expertise in Australia that can be harnessed, there is insufficient capacity to meet the growing need for evidence synthesis and to fully realise its potential. Funding to support these efforts should focus on building workforce capacity in evidence-based synthesis methodologies and implementation science, in the context of the rapidly changing landscape of health evidence.

Strengthening workforce capacity would serve multiple agencies and institutions across the health portfolio including those responsible for guideline development, NHMRC, Medical Services Advisory Committee (MSAC), Pharmaceutical Benefits Advisory Committee (PBAC) and the Australian Commission for Safety and Quality in Health Care.

Additional comments

The MRFF aims to improve lives, build Australia's economy and contribute to health system sustainability by doubling the Australian Government's investment in health and medical research.

To deliver returns on this investment, research must translate into positive policy and practice change, and health decision-making and resource allocation must be based on high-quality evidence. With rapidly increasing investments in research there is an urgent need to address the evidence bottleneck and create effective pathways for the synthesis and translation of Australia's research output. This will enable an Australian evidence ecosystem that provides reliable, up-to-date evidence to inform decision-making, incorporates all relevant research outputs and other data sources, and which is easily accessible and usable.

Australian tax-payers who ultimately fund public-good research, and who consent to participate in research, have a right to expect that research published today is understood and available to inform clinical practice and health policy decisions *as soon as possible*, not in decades.

Australia is at the forefront of early global efforts to build next generation evidence ecosystems. Feasibility has been demonstrated and there is increasing momentum around the world, but the scale and potential impact of these systems is far from being realised.

The MRFF is uniquely positioned to provide the level of strategic, top-down investment required to stimulate game-changing innovation in evidence synthesis technologies, processes and capacity in Australia.

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