

Australian
Academy *of* Health and
Medical Sciences

Driving prosperity and improving lives through health and medical science

Statement from the Australian Academy of Health and Medical
Sciences ahead of the 2019 Federal Election

February 2019



Driving prosperity and improving lives through health and medical science

Global advances in health and medicine, when combined with Australia’s strengths in the sciences and in medical research, offer the Government an exceptional opportunity to improve the health of the nation, reduce health inequalities, and drive economic growth and productivity.

Australians consistently rank health, including health research and innovation, among the most important areas for public investment.¹ At the same time, Australia punches above its weight in the health and medical sciences: global data from Clarivate Analytics show that we rank seventh globally for the number of highly cited researchers in clinical medicine, and 79% of Australian research outputs in the medical and health sciences are above or well above world standard, according to Excellence in Research Australia (ERA) data.^{2,3} Discoveries and innovations here in Australia have had profound impacts on health at home and across the world, and successive governments have rightly recognised the value of health and medical research to Australia in driving economic growth, creating jobs and delivering societal benefits.

In short: we have an edge.

However, these endeavours are increasingly competitive, with more and more countries choosing to invest substantially. **We must act decisively to retain and improve our competitive edge, and deliver the advances in health and productivity that Australians rightly expect.** If our pace of innovation slows, we will rely on innovations developed elsewhere – and lost ground takes years, if not decades, to recover.

The Australian Academy of Health and Medical Sciences has therefore identified **five priorities that will enable the Government to drive prosperity and improve the lives of all Australians through health and medical sciences, and we have specified nine goals that will help deliver them.**

1. Invest in health and medical sciences as part of a comprehensive research and innovation strategy to drive health, productivity and prosperity

- To maximise efficiency and impact, the health sector needs a long-term, stable R&D funding commitment. To remain competitive, Australia must return gross expenditure on R&D (GERD) to a positive trajectory as a percentage of GDP, at a level competitive with other developed nations – we suggest a target of 3%. We also endorse a sector target of 3% of total Australian Government health expenditure on R&D.
- The Government should continue to invest and improve coordination between the National Health and Medical Research Council (NHMRC) and Medical Research Future Fund (MRFF) – to underpin a strong pipeline across discovery, translation and clinical research and deliver the very best improvements to health and lives.
- The MRFF must be built in line with current capital projections – to ensure it reaches \$20 billion by 2020-21, so that it has the stability and capacity necessary to improve the health of all Australians as promised.



2. Foster a vibrant health and medical research environment that promotes cross-sector collaboration and attracts industry investment

- Strong government investment underpins a thriving health and medical research environment, which in turn leverages further investment, attracts industry and creates high-value jobs. We must create an environment in which responsible collaborations flourish and where smart investments through mechanisms such as the MRFF continue to support and bolster cross-sector interaction and commercial development.

3. Embed research in the health system and streamline regulation to drive health outcomes and efficient services

- Research, to improve health outcomes, must be seen as a priority objective across the health system. Federal Government should use innovative incentives to encourage service providers to increase their commitment to health research. Facilitation of research should be a core objective of an electronic health record system, in which there is secure access to aggregated data for legitimate research purposes.
- Health professionals must be trained in the skills necessary to participate in research as an integral part of health delivery. Alongside this, we must ensure that clinician scientists are able to follow training and career advancement pathways that are clearly defined and appropriately funded. Health delivery, training and research funding mechanisms must enable them to balance their clinical and research commitments – to the mutual benefit of both.

4. Harness the outcomes of health and medical science to improve the lives of all Australians and address health inequalities

- Australia must reverse the current trend of rising health inequalities. There is an opportunity for Government, in partnership with the community, to develop policies that address social determinants of health, a key driver of inequalities. An evidence-informed inter-governmental approach is key to understanding causes, developing effective solutions and implementing preventive strategies.

5. Cultivate a skilled, diverse and mobile workforce, fully equipped to embrace new technology and tackle future health challenges

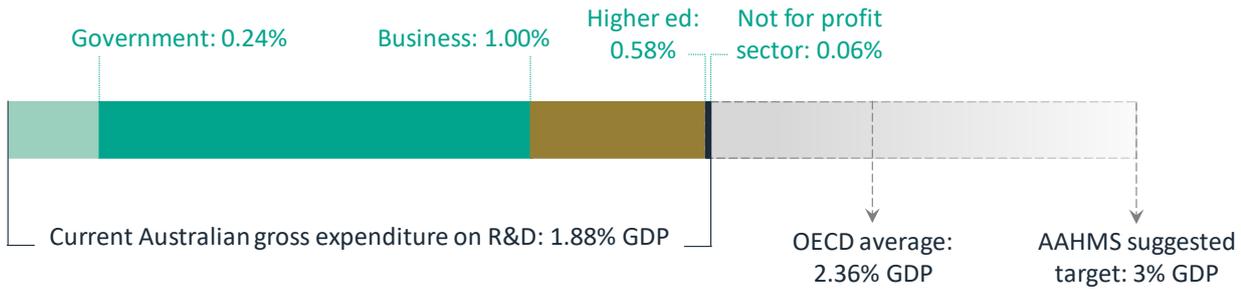
- The Government should oversee a coordinated effort to build a workforce able to meet the interdisciplinary demands of the future. Australian research and innovation will be stronger if we embrace global mobility and the Government should sustain and grow a policy environment that attracts and enables high quality clinicians and scientists to work in Australia.
- The Government must not only maintain, but accelerate, the momentum gained from recent investments in diversity programs and should set ambitious goals in other areas including opportunities for Aboriginal and Torres Strait Islander researchers. We would urge the Government to use all levers at its disposal to drive broader cultural change in Australia, which will ultimately benefit all sectors.

The Academy is committed to supporting Australia's health and medical research environment and throughout this document, we outline the ways in which we will continue to support those endeavours

1. Invest in health and medical sciences as part of a comprehensive research and innovation strategy to drive health, productivity and prosperity

Research and innovation drive economic growth, create jobs and bring considerable societal benefits through the translation of research findings. Over the past decade, Australian gross expenditure on R&D (GERD) has fallen as a proportion of GDP. From 2006-2014, GERD was consistently above 2% of GDP, hitting a high of 2.25% in 2008-09. In 2015-16 it fell to 1.88%.⁴ This is a worrying trend, which has seen Australia fall behind our competitors – average GERD among OECD countries was 2.36% in 2015-16; Australia ranked 18th within this group. Figure 1 shows the composition of our 1.88% investment in 2015-16.^{5,6,7}

Fig 1. How we stack up: Australian investment in R&D as a proportion of GDP (2015-16)



Source: OECD, Main science and technology indicators; https://stats.oecd.org/Index.aspx?DataSetCode=MSTI_PUB

Funding that is stable over the long-term is hugely important for attracting external investment and retaining talented researchers, and therefore maximising the productivity of the research and innovation sector. Australia must set an R&D investment target that is competitive with other developed nations, and then set spending on a positive trajectory towards that target. In the health and medical sciences, the goal of investing 3% of health expenditure in research, originally recommended in the McKeon report, remains an important target.⁸ This should be accompanied by investment across all areas of science, including mathematics, the ‘pure’ sciences, the humanities, and the applied sciences of engineering and social sciences. The best solutions to tomorrow’s biggest challenges will come from multidisciplinary approaches.

To maximise efficiency and impact, the health sector needs a long-term, stable R&D funding commitment. To remain competitive, Australia must return GERD to a positive trajectory as a percentage of GDP, at a level competitive with other developed nations – we suggest a target of 3%. We also endorse a sector target of 3% of total Australian Government health expenditure on R&D.

Australia has a rich history of delivering health and medical research outputs that have global impact, such as the cochlear implant for deafness, the HPV vaccine to prevent cervical cancer and ‘spray-on’ skin that improves healing for burn victims. Data consistently show that investing in health and medical research brings exceptional returns – for example, Australia sees a return of \$3.90 for every \$1 invested in health and medical research.⁹ These sorts of outcomes depend on coordinated funding across the full pipeline of research and innovation.

\$3.90

Return for every \$1 spent on health and medical research in Australia

The Government should continue to invest and improve coordination between the National Health and Medical Research Council (NHMRC) and Medical Research Future Fund (MRFF) – to underpin a strong pipeline across discovery, translation and clinical research and deliver the very best improvements to health and lives.

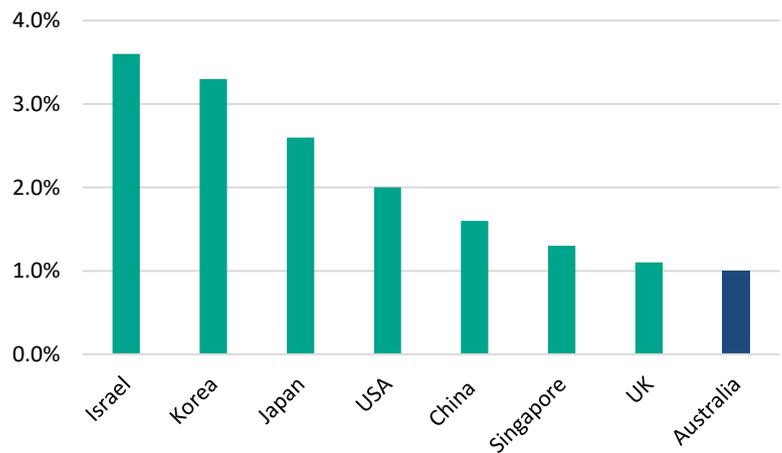
The MRFF must be built in line with current capital projections – to ensure it reaches \$20 billion by 2020-21, so that it has the stability and capacity necessary to improve the health of all Australians as promised.

2. Foster a vibrant health and medical research environment that promotes cross-sector collaboration and attracts industry investment

Business expenditure on research and development (BERD) has fallen in recent years, dropping from 1.19% in 2013-14 to 1.00% in 2015-16.¹⁰ BERD is a critical component of GERD and Australia is falling behind our competitors across the globe, as shown in Figure 2.^{11,12} We also underperform in global measures of innovation, for example ranking 20th in the 2018 Global Innovation Index.¹³ Government spending is important in leveraging other sources of investment – in 2015, Australian government funding for R&D was 0.24% of GDP (as shown in figure 1), which fell well below the OECD average of 0.63% in the same year.¹⁴

We are seeing these trends in an environment where health challenges are complex and solutions increasingly rely on collaboration between academia, health services, government and industry. Innovation and commercialisation are critical to advancing care of patients and for the benefit of the economy. Funds such as the MRFF and Biomedical Translation Fund have made a valuable contribution to commercialisation; smart investment through these sorts of mechanisms can attract and leverage industry, bringing considerable economic benefits; for instance, each job in the medical technologies and pharmaceuticals sector in Australia contributes \$107,000 to the economy.¹⁵

Fig 2. Global comparisons of business expenditure in R&D (BERD) as a proportion of GDP (2015/16)



Source: OECD, Main science and technology indicators;
https://stats.oecd.org/Index.aspx?DataSetCode=MSTI_PUB

Investment needs to be underpinned by a culture of collaboration and commercialisation, which values mobility and interaction between sectors, with targeted support where the commercialisation pipeline most often fails. Organisations such as MTP Connect (the MedTech and Pharma Growth Centre) are playing a valuable role in setting and implementing a clear path forward, and there are signs that industry has an appetite to connect with Australian health and medical research – we must capitalise on this. For instance, Australian clinical trials are rising approximately 5% each year, which is faster than the US, UK and global average; and about a third of these are industry-sponsored.¹⁶

Strong government investment underpins a thriving health and medical research environment, which in turn leverages further investment, attracts industry and creates high-value jobs. We must create an environment in which responsible collaborations flourish and where smart investments through mechanisms such as the MRFF continue to support and bolster cross-sector interaction and commercial development.

The Academy will continue to support this agenda across our activities and we are well placed to provide an independent forum for cross-sector discussions about how to generate meaningful change in the life sciences industry in Australia.

3. Embed research in the health system and streamline regulation to drive health outcomes and efficient services

While Australia punches above its weight in health and medical science, to realise the potential of our outputs, we must translate and implement them into practice. This process is vastly more efficient when research is deeply embedded in the health system and when studies are co-designed through partnership between research, patients and the health system from the outset. Patients benefit from faster access to new interventions and quicker dissemination throughout the system, and there are productivity gains to be made, meaning that every dollar of health funding can go further. What's more – all patients benefit from a research-engaged health system, not just those directly involved in the studies.¹⁷ We know that patients want to be involved in research; it is therefore our duty to develop a system that allows them to participate.¹⁸

Instruments such as the Advanced Health Research and Translation Centres (AHRTCs) are helping to better connect research, health providers, education and training – and drive translation. However, there are still barriers to embedding research in many cases. Health outcomes can be improved by shifting perspectives and making research a core priority – innovative incentives should be developed that encourage service providers to increase their commitment to research. There is also an opportunity to foster a more productive health and medical research environment in Australia by streamlining regulation and governance. We should build on initiatives such as the National Mutual Acceptance scheme and deliver greater efficiency by building a system that takes a proportionate approach – one which balances patient safety with the need to minimise delays to studies, trials and outcomes.

It is important here to acknowledge the value of patient data. Access to individual patient records can facilitate involvement in studies by helping to identify suitable participants. Moreover, these data (anonymised and aggregated) provide a vital resource for health research, driving considerable improvements in individual and population health. These kinds of studies revealed, for instance, the link between smoking and lung cancer or the dangers of iodine deficiency to infants. This requires an environment in which the safe and secure use of patient data is balanced with the rights and interests of individuals – well-designed regulation and policy can unlock substantial opportunities to improve health.

Research, to improve health outcomes, must be seen as a priority objective across the health system. Federal Government should use innovative incentives to encourage service providers to increase their commitment to health research. Facilitation of research should be a core objective of an electronic health record system, in which there is secure access to aggregated data for legitimate research purposes.

These endeavours require a health workforce equipped to embrace research. Health professionals must be trained in the skills necessary to participate in research as an integral part of healthcare delivery. Clinician scientists are drivers of clinical research. This is a highly demanding career path, which requires individuals to complete training both as a clinician and as a researcher. They fall behind their peers and make sacrifices including to their income. Despite Australia's strengths in clinical research, we have no specific career pathway for clinician scientists to follow – they are instead required to forge their own path, for example negotiating with multiple employers to create a shared position across clinical work and research.

Health professionals must be trained in the skills necessary to participate in research as an integral part of health delivery. Alongside this, we must ensure that clinician scientists are able to follow training and career advancement pathways that are clearly defined and appropriately funded. Health delivery, training and research funding mechanisms must enable them to balance their clinical and research commitments – to the mutual benefit of both.

The Academy delivers programs that support individuals to pursue translational research careers. Our independence and convening power mean we are uniquely positioned to formulate a roadmap for providing targeted support to clinician scientists.

4. Harness the outcomes of health and medical science to improve the lives of all Australians and address health inequalities

Research has increased our knowledge of how to better treat disease and maintain health, but for many reasons this knowledge is not being optimally translated into improved health outcomes. Public health research and delivery can provide considerable benefits to the population and the economy. Yet public health and prevention are poorly coordinated and consistently under-resourced, with responsibilities spread across Federal, State and local governments, and investment totaling only 2.1% of government health expenditure (across all levels of government, 2015-16).¹⁹

2.1%

of health funding is spent on public health in Australia

One consequence is that we are seeing a concerning rise in health inequalities in Australia, which are especially pronounced in Indigenous communities. The most recent data show that Indigenous males still have a life expectancy 10.6 years lower than non-Indigenous males and females have a life expectancy 9.5 years lower than non-Indigenous females.²⁰ And these inequalities start from an early age with infant and child mortality rates generally higher in Indigenous communities.²¹ Despite concerted efforts to 'Close the Gap', in many instances this is not occurring, or worse, the gap is widening – for instance, in mortality rates from cancer.²²

Social determinants of health are a key cause of inequalities in Indigenous and other communities. We know that social inequalities are associated with avoidable differences in health outcomes and life expectancy, but we need to better understand why this is the case and what can practically be done to alleviate the differences through lifestyle education and equitable access to quality healthcare.

Prevention will be key. The pressure on health budgets will not ease in the future – prevention policies and programs will therefore be a critical component of future health systems. We must collectively work to avoid hospitalisation and reduce the burden of disease. This requires investment in coordinated approaches, through which we can put evidence into practice and scale up the impact of approaches known to be effective.

Emerging technologies can help address many of these challenges. Developments on the horizon promise revolutions in research, care, prevention and disease management – including opportunities to better deliver health to rural and remote communities. Artificial intelligence, for instance, offers unique opportunities for detailed patient and population analysis, early detection of health issues, targeted interventions and highly efficient services. However, we must move forward with implementation based on the best available evidence and on a proper understanding of how to elicit their full value; this includes an appreciation for where health outcomes are driven by factors beyond the capacity or scope of new technologies.

Introducing new technologies is complex, involving regulatory, social and ethical challenges. We know from experience that implementation of complex new technologies for the benefit of everyone will be more successful if it follows an inclusive policy debate – incorporating patient and public perspectives on the benefits and costs.

Australia must reverse the current trend of rising health inequalities. There is an opportunity for Government, in partnership with the community, to develop policies that address social determinants of health, a key driver of inequalities. An evidence-informed inter-governmental approach is key to understanding causes, developing effective solutions and implementing preventive strategies.

The Academy's interdisciplinary Fellowship will provide independent, expert and timely advice, based on analysis of the best available evidence, to assist the Government in its efforts to improve health outcomes. We stand ready to support efforts to incorporate wider perspectives into policy development.

5. Cultivate a skilled, diverse and mobile workforce, fully equipped to embrace new technology and tackle future health challenges

Our future requires a workforce that is educated at the cutting edge of new technologies – with workers individually specialised in careers spanning the full range of STEM disciplines, including medicine. For example, precision medicine promises to unleash new levels of accuracy in diagnosis and targeted treatment; developing and delivering this degree of change requires not only basic biomedical researchers and clinicians, but data scientists, computer scientists and engineers, among others – all working together in teams and able to move between sectors.

As part of this, it is critical that we not only nurture world-class researchers in Australia, but that we also attract the world's brightest global talent – including through our immigration policy and messaging. International collaboration and mobility are fundamental to modern science – when our best scientists work with the world's best scientists, their outputs are stronger. We know that papers produced by authors from multiple countries have more impact and global surveys show that three quarters of researchers have trained or worked overseas.^{23,24,25}

The Government should oversee a coordinated effort to build a workforce able to meet the interdisciplinary demands of the future. Australian research and innovation will be stronger if we embrace global mobility and the Government should sustain and grow a policy environment that attracts and enables high quality clinicians and scientists to work in Australia.

Australia can gain a competitive edge by fully harnessing the potential of a diverse and inclusive research and innovation workforce – and the breadth of skills and experience it brings. Progress is being made, particularly for women, as a result of efforts by successive Governments, most recently through the Science in Australia Gender Equality (SAGE) pilot and the Decadal Plan for Women in STEM. We must build in on this momentum to deliver further progress and to impact on other aspects of diversity and inclusion, particularly the representation of researchers of Aboriginal and/or Torres Strait Islander descent.

It is important to note that the scope for change within the STEM sector (or any other) is limited by wider societal context and practice – broader cultural change, including through Government policy, must provide a strong foundation for progress.

The Government must not only maintain, but accelerate, the momentum gained from recent investments in diversity programs and should set ambitious goals in other areas including opportunities for Aboriginal and Torres Strait Islander researchers. We would urge the Government to use all levers at its disposal to drive broader cultural change in Australia, which will ultimately benefit all sectors.

The Academy is actively working to ensure diversity and inclusion within our own activities and will continue to engage with partners across the sector to promote and drive progress throughout the research and innovation sector.

The Australian Academy of Health and Medical Sciences was established in 2013 to provide an impartial and authoritative voice for healthcare, informed by the best available evidence and expert advice from the best and brightest in health and medical research. The Academy is an independent, interdisciplinary body of 357 Fellows – elected by their peers for their distinguished achievements and exceptional contributions to health and medical science in Australia.

www.aahms.org

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