



Australian
Academy *of* Health and
Medical Sciences

Harnessing health and medical research and innovation to drive pandemic recovery and future prosperity

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COVID-19 has driven home the importance of an adaptable and responsive research and innovation sector working in concert with government, industry and the community. The value of a vibrant health and medical research environment has never been so clear. We now have the opportunity to build on this legacy, to ensure that research and innovation drive our economic and societal recovery from COVID-19, and to foster the next generation of research leaders who will steer us through future national and global challenges.

Research and innovation to drive health, societal and economic recovery

A thriving health and medical research sector underpins the nation's health. We have seen this play out as Australia has tackled the urgent threat of the COVID-19 pandemic and before that, the 2019/20 bushfires. The evidence produced through innovation in health and medical research has helped navigate the knowns and unknowns imposed by the novel coronavirus. Australia has been at the forefront of research efforts on SARS-CoV-2 and COVID-19 – leading the world in characterising the virus and deploying effective public health measures, and working at the cutting edge to develop diagnostics, vaccines and treatments. Australia was able to move quickly in these areas as a result of the expertise built from past investment in public health and basic laboratory research in microbiology and immunology.

Research and innovation will also be essential to address longer term health challenges, including chronic diseases, an ageing population and rising health inequalities, especially among Aboriginal and Torres Strait Islander communities. Health spending has grown faster than GDP over the past decade in Australia.¹ Research and innovation in health and medicine can deliver more efficient and effective care, but this is only possible if these endeavours are properly embedded and incentivised in the health system.

The response to the pandemic has highlighted how essential it is for Australia to have expertise ranging from fundamental biomedical research through to clinical and population health science, and ultimately translational impact. Research translation – to produce a vaccine or new diagnostic test, for instance – is only possible as a result of previous findings from basic laboratory research.

Investing in research and innovation drives growth and productivity, which will be crucial to the nation's future prosperity – rebuilding our economy and society as we recover from the pandemic. Data consistently show that investing in health and medical research brings exceptional returns – a recent estimate suggests Australia sees a return of \$3.90 for every \$1 invested in health and medical research.² These data are reflected overseas, for example, for every £1 the UK invests in medical research, there is a return of £0.25 every year, forever.³

Maximising efficiency and impact requires long-term, sustainable and predictable funding. However, Australia's investment in research and innovation has been falling behind that of similar nations – gross expenditure on research and development (GERD) as a proportion of GDP was 2.25% in 2008-09, but only 1.79% in 2017-2018.⁴ This downward trend is set in the context of rising investment among OECD nations, where total GERD rose from 2.27% to 2.37% over the decade to 2017.⁵ Australia is slipping behind other nations at a time when our outstanding evidence-based approach to tackling the pandemic is receiving global attention.

Business expenditure on research and development (BERD) has also fallen in recent years, dropping from 1.19% of GDP in 2013-14 to 0.94% in 2017-18. BERD is a critical component of GERD and government spending on R&D is important in leveraging other sources of investment, but has fallen in Australia – from 0.24% of GDP in 2015-2016 to 0.18% in 2017-18, again well below the OECD

average of 0.23% for the same period.⁶ Australia needs to foster and promote cross-sector collaboration to attract such investment and drive up BERD. Attracting and retaining business to our shores can also be extremely valuable in emergencies – for example, CSL’s presence in Australia bolsters our capacity to produce vaccines and treatments once they have been developed.

Research and innovation also seed the high-value jobs of the future and will support Australia to address employment challenges emerging from the pandemic. Further, a vibrant research culture provides an environment to foster the development of future health and medical research leaders.

Research and innovation should be positioned as a key pillar of economic and societal recovery from the pandemic. To achieve this, long-term, sustainable and predictable investment is needed. Gross expenditure on R&D should therefore be returned to a positive trajectory as a proportion of GDP, ideally with a longer term goal more consistent with the OECD average, to ensure we remain competitive in this sector and continue to reap the associated economic and societal benefits. This investment could be made through existing mechanisms, including the National Health and Medical Research Council and the Australian Research Council; and via appropriate levels of indirect cost recovery to all institutions recipient of federal research funding, including from the Medical Research Future Fund.

Challenges now facing the sector

The health and medical research sector has shown considerable flexibility during the pandemic – responding quickly and overcoming barriers to facilitate world-leading research. The pandemic has shown the need for agile research funding mechanisms that enable us to adapt to situations that require rapid action and response. Australia has an opportunity to shape a funding environment that is equipped to respond to sudden and fast-changing global challenges, while also maintaining a stable funding base in other research areas.

While the sector has moved quickly and efficiently, challenges have nevertheless emerged, particularly in fields not directly related to COVID-19. Research has been delayed, in many cases due to restricted access to laboratories and other research facilities, while many clinical studies have seen patient recruitment and participation disrupted.⁷ Restrictions are necessary to prevent spread of infection and ensure safety of staff e.g. appropriate physical distancing, but the inevitable impacts and productivity losses will affect outputs and outcomes, and need to be recognised and addressed. Grants come with specified timelines and milestones, which in many cases will not be met due to pandemic-induced disruptions. Australian research is facing funding challenges and job losses, with universities estimating that up to 7,000 research positions will be at risk across the sector over the coming months.^{7,8}

The disruption particularly affects early- and mid-career researchers, who are at a critical stage of their careers, when grants and employment contracts are relatively short-term. We face a serious risk of losing talented researchers – individuals who will solve tomorrow’s challenges – if we do not provide the funding and opportunities that they need to continue pursuing their research careers. We are pleased to support a joint submission from the learned Academies, which expands further on actions to address these issues.

Additionally, these impacts are likely to disproportionately affect women, who have taken on a greater share of care responsibilities resulting from school and child care closures.⁹ Evidence from journal submission data already indicates that female submission rates have declined compared to those of male researchers since the start of the pandemic.¹⁰ We must utilise the full breadth of

talent of Australia's research sector – ongoing investment in programs that drive up diversity and inclusion in STEMM remain crucial.

The impacts on the sector will disproportionately affect some groups, especially early- and mid-career researchers, and urgent measures are needed to address these issues, as outlined in our joint submission through the Australian Council of Learned Academies (ACOLA). Some areas of research have seen significant disruption during the COVID-19 pandemic and action is needed from governments, funders and institutions to ensure this work can get back on track as soon as possible.

Future preparedness

Preparedness plans will be crucial for the next pandemic (as well as for the continued response to the short- and long- term impacts of the current one), and ongoing monitoring of Australian preparedness is vital. A 2017 report found limitations in Australia's medical countermeasure capabilities, such as capacity shortages to produce vaccines at scale.¹¹ Consistent funding is needed to build the required capacity and resources, such as public health capability and facilities for biologics manufacturing that are designed to be productive at all times and can be quickly repurposed during an emergency, to ensure we are able to produce vaccines or treatments on Australian soil.

Future challenges will be solved by integrating knowledge and expertise from across many disciplines. Indeed, Australia's success in tackling the pandemic has relied on findings from science, health, engineering, social sciences and the humanities.

The health and societal impacts of the pandemic are unmistakable. Ongoing assessment and development of pandemic preparedness must be a long-term priority. There is an urgent need to strategically balance funding across the increasing number of national and global health challenges with which we are confronted.

Science advice for the benefit of all Australians

The pandemic has demonstrated the value of scientific advice in supporting interpretation and analysis of evidence in highly challenging and fast-changing circumstances, and ultimately in informing decision-making; the Government has used such input effectively. There is an opportunity to build on this partnership, ensuring that the best available evidence continues to drive the response to the pandemic and to support policymaking in other areas.

The Australian Academy of Health and Medical Sciences has been delighted to contribute to this effort as our role as a learned Academy develops, for example through the Rapid Research Information Forum. We look forward to continuing to provide authoritative, expert advice, to ensure that science is put to best use across the nation.

Additional funding to the learned Academies would assist in ensuring this kind of authoritative, expert advice, including rapid analysis, remains available to governments and policymakers as Australia tackles this pandemic, as well as future national and global challenges.

About the Academy

The Australian Academy of Health and Medical Sciences is the impartial, authoritative, cross-sector voice of health and medical science in Australia. We advance health and medical research in Australia and its translation into benefits for all, by fostering leadership within our sector, providing expert advice to decision makers, and engaging patients and the public.

We are an independent, interdisciplinary body of Fellows – elected by their peers for their outstanding achievements and exceptional contributions to health and medical science in Australia. Collectively, they are a representative and independent voice, through which we engage with the community, industry and governments.

The Academy is uniquely positioned to convene cross-sector stakeholders from across Australia to address the most pressing health challenges facing society. We focus on the development of future generations of health and medical researchers, on providing independent advice to government and others on issues relating to evidence based medical practice and medical researchers, and on providing a forum for discussion on progress in medical research with an emphasis on translation of research into practice.

The Academy is registered with the Australian Charities and Not-for-profits Commission (ACNC) and is endorsed as a deductible gift recipient.

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