Public, Political, Scientific Advocacy

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Budget Policy Division
Department of the Treasury
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Re: Pre-Budget Submission for the 2022/2023 Australian Federal Budget

ASMR's Position – A minimum doubling of Annual Investment into the National Health and Medical Research Council

Funding of discovery science in Australia has reached a crisis point.

Without immediate and substantial investment into the National Health and Medical Research Council (NHMRC) grant schemes, Australia's entire Health and Medical Research (HMR) innovation ecosystem is at risk. This compromises Australia's ability to compete internationally in the multi-trillion-dollar medical innovations sector and damages the Commonwealth's goal to make Australia the "healthiest nation on Earth" [1]. Long-term strategic visions and the translation and commercialisation goals of the pioneering Medical Research Future Fund (MRFF) also cannot be achieved without a well-supported and innovative discovery science sector, delivered through NHMRC-funded research and researchers.

Investment in HMR is an investment in the future economic prosperity of Australia through a healthy and productive population. The current levels of investment are insufficient for a sustainable and economically beneficial sector and are threatening Sovereign capacity to address current and future health challenges.

An independent report commissioned by the Australian Society for Medical Research (ASMR) modelled the value of the HMR sector to the Australian economy, finding that for every $1 invested into NHMRC grant schemes there is an average return of $3.20 in health and economic benefits [2]. Similar later reports corroborate these exceptional returns [3] [4], clearly highlighting the remarkable potential of a well-supported HMR sector to deliver economic, health and social returns at a far higher level than is needed to secure government funding in almost every other sector.

Adequate investment in HMR is urgently needed to support the government's own strategic priorities [5-7], in addition to ensuring a dynamic and adaptable workforce capacity, promoting economic growth within Australia and enabling Australia to respond to current and future health challenges. In the 2021 Intergenerational Report [8], the Treasury highlighted the need for increased funding in HMR to tackle mounting issues associated with our ageing population. As the peak representative organisation for the entire HMR sector, the ASMR makes the following recommendation for allocation in the 2022/2023 Federal Budget.

An immediate doubling of annual investment into the NHMRC to support an urgent increase in capacity for innovative discovery research that underpins social, economic and health benefits for all Australians.

The impact of increasing investment will begin a stabilisation of the sector responsible for the first step in the development pipeline for new health and medical discoveries, technologies, policies and products that lead to economic and social benefits throughout the community.

Critical Issues

Critical importance of health and medical research

The Commonwealth of Australia aims to provide the best possible health and health care for all Australians, aspiring to be the "healthiest nation on Earth"[1]. The COVID-19 pandemic has emphasized the fragility of our health and the enormous importance that a healthy society plays in the economic and social prosperity of Australia. As we emerge from the COVID-19 global pandemic, we do so with the same ageing population with increasing and new health challenges[8], but also a keener sense of how essential preparedness and health and medical innovation are. The 2021 Intergenerational Report [8] identified health as a priority area, and that "over coming decades Australia must prepare for known pressures and unexpected risks". Long-term challenges will require ongoing attention, but immediate priorities include increasing the capacity of our economy and our workforce. It is therefore critical that the Government capitalises on this "golden opportunity"[9] to strengthen Australia's HMR capacity, equip the nation to effectively respond to current and future health challenges, and to capitalise on the benefits of innovation and economic prosperity that ample investment across the HMR pipeline can provide [2, 10].

Globally, our ability to respond rapidly to COVID-19 has relied on expertise spanning the entire HMR sector from research, modelling and policy through to biomanufacturing expertise and capacity. Medical research has undoubtedly limited the impact of the pandemic but our sovereign capabilities to beat to future health challenges is threatened by under-funding of the HMR sector. Even with our impressive response t COVID-19, Treasury's economic impact analysis, "*National Plan to Transition to Australia's National COVID-19 Response*", estimates the cost to the Australian economy of even the most minor of social restrictions at $100 million per week[11]. With more global pandemics inevitable in the future and the effects of our ageing population and climate change set to impact health for generations to come, now more than ever before, we need the government to be fiscally responsible, consider the evidence and take the necessary steps to secure the future. Investment in HMR, creating high-value, knowledge-based jobs that contribute substantially to the Australian economy and the health of our nation, presents as a an essential undertaking for a Government that hopes to reap economic, health and social benefits.

The HMR sector is facing three crises, all addressable through adequate investment.

- ***A broken HMR pipeline that compromises health innovation and global competitiveness***
- ***Loss of expertise, progress and innovation in the HMR sector***
- ***Reduced diversity in the HMR workforce***

A broken HMR pipeline

The research pipeline is the process that moves a research idea from the discovery phase to implementation at patients' bedsides and encompasses basic, clinical, and practice-based research with direct influences on health policy and preventative health strategies. Innovation through discovery science sits at the very start of the pipeline where step changes in how we consider and approach health problems begin. HMR is a long-term investment that requires sustained support and stability, particularly at the start of the pipeline, as the research tap cannot be turned on and off and "there can be no translation or commercialisation without the genesis of discovery"[12].

Outcomes of HMR, from public health modelling through to vaccine development and soon the delivery of anti-viral drugs, have protected the lives of millions of Australians during the COVID-19 pandemic. The technologies behind the COVID-19 mRNA vaccines were first conceived in the early 2000's [13] and have been developed and refined for a number of applications since then. The same can be said about many medicines that are changing the world today. The cervical cancer vaccine, Gardasil, was only made possible by discovery science that was not immediately or obviously applicable to vaccine development. Step

changes, which transform our world, come from discovery innovation at the start of the research pipeline, which is then nurtured through its development and supported by various funding schemes, such as the MRFF, alongside public-private partnerships. Without innovative discovery research, like that funded through the NHMRC, Australia's HMR development pipeline will run dry.

The MRFF and NHMRC serve distinct but complementary purposes. Singular attention on the MRFF has been at the expense of the NHMRC and as a direct result the HMR sector is under enormous stress from ongoing funding destabilisation. While the visionary MRFF is a valuable and welcome addition to the HMR funding landscape, it is a top-down fund focussed at the translational end of the research pipeline[14]. For the MRFF to meet its aspirational goals, there must be a bold commitment to substantially and sustainably invest in the bottom-up discovery research funded by the NHMRC, which supports the people and projects that drive the essential discoveries to be translated and commercialised by the MRFF. Static investment into the NHMRC for over a decade, a lack of indexation benchmarking, and new NHMRC grant schemes that see more expensive but fewer grants have all negatively impacted the HMR sector. Without adequate support for fundamental discovery HMR, there will be fewer researchers and little knowledge to translate to the clinic in future decades – "like expecting crops without planting seeds"[12].

Loss of expertise and innovation in sector

The effect of the current NHMRC funding shortfall is a sector that has witnessed grant funding success rates plummet to an unprecedented low of 12.3% across all NHMRC schemes, with some individual schemes dropping below 10%. For the first time, grants that scored greater than 6 on a 7-point scale ("Outstanding" by international standards) are now unable to be funded. No other international grant scheme in the OECD is unable to support all of their "*Outstanding*" quality research proposals due to insufficient funding. In the 2021 NHMRC Ideas grant scheme (a project based grant scheme) one third of "*Outstanding*" applications (118 applications) were unable to be funded.

As a direct result of static funding into the NHMRC (with no indication of change in forward estimates), discovery and early translation HMR has become increasingly vulnerable, leading to:

- Considerable attrition of the highly skilled workforce[2]
- Loss of early to mid-career talent, with consequent long-term impacts on the HMR workforce[2]
- 50% fewer grants funded in 2021 (617) than 2013 (1226) [15]
- Grant funding rates at unprecedented lows [16]
- Loss of outstanding research that is deemed fundable at any credible international level[16]
- Exacerbation of wasted productivity from ~90% of grants going unfunded[17]

Reduced diversity in the HMR workforce

Across all disciplines diversity promotes innovation [18]. An effective and adaptable workforce is underpinned by diversity in all its forms. This enriches the HMR sector with diverse set of skills, knowledge, and experiences. COVID-19 has reduced diversity across the research sector. For example, women and early career researchers (who are the emerging leaders of tomorrow) have experienced 60% of the 40,000 University job cuts arising from loss of international student fees [19]. In 2021, 18 per cent of female scientists were planning to leave the profession permanently [20]. Many international health and medical researchers have returned to their home countries during COVID-19 while potential international recruits are discouraged from relocating to Australia due to our extremely low grant funding success rates. The 2021 Intergenerational Report correctly states that "*while uncertainty remains about future risks to the health of Australians, investments in medical research will support the Australian health system to continue to innovate and prepare to respond*" [8]. Current funding limitations are reducing diversity of our highly-skilled workforce at a time when the intellectual capital it represents is so crucial to economic recovery, adaptability and Australia's capacity to move to a secure, knowledge-based future [14].

Progression to a more stable and prosperous HMR sector

With immediate, adequate and in the long-term, sustainable Federal Government investment into NHMRC-funded HMR, the loss of highly skilled human capital to other sectors, and increasingly to overseas, could be reduced, the funding and undertaking of outstanding research could increase, and the sector could begin to be stabilised and strengthened to drive innovation that will provide billions of dollars of economic returns in addition to inherent health and social benefits. An immediate doubling of investment into the NHMRC grant schemes would bring grant success rates close to 25%, closer to the international benchmarks of 25-30% and will generate over 1,000 new highly skilled jobs.

Investment in the NHMRC is an investment in the economy

As the major funding body for HMR in Australia, the NHMRC is essential for enabling the foundational health and medical innovation that will underpin future translational returns.

- Investment into NHMRC-supported projects and people yields exceptional returns – ***every $1 invested returns at least $3.20*** in economic, health or social benefits, including wellbeing gains, avoided health system and indirect costs, and commercialisation[1, 2].
- NHMRC investment between 2000-2015 is projected to yield ***net returns of over $1.5B per year by 2040-2055***[1]***.***
- The ***largest increase in real exports over the last decade has been in medical instruments and medicinal and pharmaceutical products***[9] – an industry with a rich future as Australia transitions from a resource-based economy to a knowledge-based economy.
- Independent economic modelling indicates that sustained investment into the NHMRC MREA to reach 3% of total health expenditure could generate ***$58 billion in health and economic benefits over a ten-year period***[2]. Using forward projections for 2022 disbursements from the MREA ($863 million) and MRFF ($455 million), current HMR research disbursements equate to ~0.6% of projected total health expenditure ($214 billion).
- Econometric studies indicate that basic/discovery research provides the greatest social returns and increases the productivity of applied research[21].

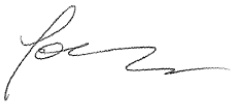
Australia is in a $1.6 trillion global health innovation race[22], where the prize at stake is a bigger share of global wealth, better jobs, and the best access to the products of innovation, such as new health treatments. We now lag behind our competitor nations in the amount we invest in innovation, and in the level of our ambition. In the 2020-2021 Federal budget $854 million was allocated to the NHMRC for discovery and fundamental research. A further $580 million has been disbursed in 2021 through MRFF to support applied medical research. Collectively, this represents a total investment in HMR, during a global health pandemic, of 0.68% of the Federal Health budget. We need to accelerate our pace now to Secure sovereign capabilities and ensure that our response to future health challenges is underpinned by medicines developed and manufactured in Australia, not compromised by global supply chain demands.
This investment also aligns with the stated Australian priorities as outlined in the following Government reports

- 2021 Intergenerational Report: Australia over the next 40 years [8]
- Australian Medical Research and Innovation Priorities 2020-2022 [5]
- Science and Research Priorities [6]
- National Security S&T Policy and Priorities [7]
- Australia 2030: prosperity through innovation [1]

And through appropriate levels of funding benchmarked to indexation, Australia can once more lead the world in medical innovation and serve as a powerhouse in the use of home-grown ideas to promote Australian economic benefit.

The Government has a golden opportunity to fund the engine room of discovery in HMR, thereby positioning Australia as a global leader in the race for innovative healthcare solutions. An immediate increase in investment to support NHMRC grant schemes will grow the adaptable HMR workforce of highly skilled researchers and realise a return on investment of $5.44 - $6.63 billion. With aspirational Federal support, HMR will serve as a cornerstone in shaping a 21st century society founded on a strong knowledge-based economy, a healthy population and social equality. ***The best investment a nation can make!***

Yours sincerely,



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