SUBMISSION

Submission to the Department of Health and Age Care

Submission to the National Health & Medical Research Strategy

05 March 2025

The Australian Academy of Technological Sciences and Engineering (ATSE) is a Learned Academy of independent, non-political experts helping Australians understand and use technology to solve complex problems. Bringing together Australia's leading thinkers in applied science, technology and engineering, ATSE provides impartial, practical and evidence-based advice on how to achieve sustainable solutions and advance prosperity.

Australia's successful health and medical research sector plays a key role in driving innovation, improving patient outcomes, and strengthening the economy and has enormous potential to do more. To ensure investment in research can build impactful outcomes and build Australian success stories over the long term, challenges must be addressed: in the way in which funding is organised; the sustainability of our workforce; how our data is governed; and declining trust in science. By implementing strategic funding reforms, strengthening data governance, supporting a sustainable research workforce, and enhancing public understanding of science, the National Health and Medical Research Strategy (NHMRS) can help secure Australia's position as a global leader in medical research and innovation.

ATSE makes the following recommendations:

Recommendation 1: Increase long-term R&D investment to strengthen workforce stability and innovation.

Recommendation 2: Outline a plan for government funding agencies to fully cover the costs of health and medical research for the projects they allocate support to.

Recommendation 3: Embed funding for First Nations-led research with strong IP protections and to ensure ethical application of Traditional Knowledge.

Recommendation 4: Embed job security and progression opportunities for researchers within the National Health & Medical Research Strategy.

Recommendation 5: Continue to implement targeted programs and initiatives to address career progression barriers that disproportionately impact underrepresented groups.

Recommendation 6: Provide funding and protected time for clinician researchers to balance clinical and research work.

Recommendation 7: Include public communication of health and medical research and outcomes as a principle of the National Health & Medical Research Strategy.

Recommendation 8: Embed data governance and sovereignty in the National Health and Medical Research Strategy.

Maximising the impact of health and medical research with strategic, coordinated investment

Australia's total research and development (R&D) investment is declining, from 2.25% of GDP (2008-09) to 1.68% (2021-22), falling behind leading countries like Israel (5.8%), South Korea (4.9%) and Japan (3.3%). ATSE urges an uplift to national investment in R&D, to 3% of GDP, with increased government investment stimulating industry investment and activity in R&D. ATSE's new report, Boosting Australia's Innovation, outlines strategies for institutional reform, targeted investment, increased collaboration and improved evaluation to create an innovation sector that can commercialise, iterate, experiment and develop the technologies to support better lives in Australia and around the world.

Nearly half of health and medical research is conducted by the higher education sector, with the largest funding sources including government, philanthropy, and universities' own funds (Research Australia, 2024b). The Australian Government supports a large portion of the higher education and research institute sector medical research including through the National Health and Medical Research Council (NHMRC) and the Australian Research Council (ARC) (Research Australia, 2024b). However, these grants only provide partial support for research projects and do not cover all associated costs, such as full salaries, laboratory costs, support staff, data storage, cybersecurity and commercialisation (AAMRI, 2024). Medical research institutes must find at least AUD$0.56 for every AUD$1 of government grant funding to cover full research costs, which is typically drawn from philanthropy, commercial sources and other state and federal grants for systemic costs of research (AAMRI, 2021). For university research, cross-subsidisation from international student fees has been used to cover some indirect costs – with these profits financing almost one-third of university research expenditure (Norton, 2020). However, recent changes to international student intakes will reduce the ability of universities to rely on this strategy. To support the system's sustainability, it is important that the National Health and Medical Research Strategy outlines a plan for support the full cost of health and medical research projects receiving government grants. This could include developing a more

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strategic approach to engaging with philanthropic funding, as recommended by Research Australia (Research Australia, 2023).

Researchers spend significant time applying for different grant schemes, rather than conducting research. There is an opportunity to address this inefficiency by improving alignment between grant opportunities. Coordinating processes, including due dates, across government research grant programs would improve efficiency for applicants, administrators and assessors. ATSE has advocated this approach across all government research grant funding mechanisms (ATSE, 2022b). Piloting this approach for government agencies that provide health and medical research grants would unlock significant efficiency for the sector. The planned coordination between the Medical Research Future Fund and the NHMRC's Medical Research Endowment Account is a first step. Ultimately, coordination with the ARC, and ideally with other grant opportunities such as state government programs and philanthropic programs, would support researchers to spend more time on the R&D that matters.

Another opportunity in maximising research impact is drawing on Australia's rich Traditional Knowledge systems. Traditional Knowledge applications hold immense potential for advancing medical research, with increasing recognition in recent years (Sutton, 2022). For example, in 2023, ATSE awarded John Watson & Professor Ron Quinn the Traditional Knowledge Innovation Award for their work in turning a bark of Mudjala mangrove tree into a natural remedy for the treatment of severe pain (ATSE, 2023). There is an opportunity to build on initiatives such as the NHMRC's Indigenous Health Research Fund, which supports First Nations led health research, including applying and building on Traditional Knowledge. The NHMRS could encourage greater First Nations participation in the medical and health research sector. Adapting Traditional Knowledges for health and medical research requires a strong commitment to intellectual property (IP) rights and First Nations-led research. It is essential to establish appropriate frameworks that facilitate genuine partnerships with Traditional Owners, ensuring IP arrangements prioritise and benefit those whose knowledge is being researched (AIATSIS, 2020). Collaboration between researchers, Traditional Knowledge holders, and the scientific community should be supported to examine how Traditional Knowledge can complement Western science and medicine. Beyond scientific outcomes, ways of working – such as culturally responsive engagement and ethical collaboration – are equally important. Additionally, metrics used to assess and monitor health and medical research that uses Traditional Knowledge require co-design with First Nations researchers and Traditional Owners, incorporating appropriate timeframes and strong emphasis on meaningful engagement. These principles, as highlighted in the Diversity in STEM Review (DISR, 2024), are key to ensuring ethical, impactful, and sustainable research practices.

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Strengthening career sustainability and workforce retention in Australian medical research

Without strategic investment in career sustainability and training pathways, Australia risks losing its world-class medical research community. Addressing job insecurity — with 54% of university researchers and 74% of those at medical research institutes on short-term contracts (Research Australia, 2024a) — will be pivotal in supporting retention and enhancing the attractiveness of research careers. Without a sustainable workforce, Australia's risks losing its capacity to conduct life-saving medical research. This research is key for driving healthcare advancements and improving patient outcomes.

The NHMRS could centre building sustainable and rewarding careers to strengthen Australia's research capability and ensure its long-term viability. Retaining mid-career researchers is critical, as many leave the sector due to limited job security and career progression opportunities. The lack of job security affects

individual researchers and impacts the continuity and quality of research projects. The MRFF's Early to Mid-Career Researchers Initiative, which commits $384.2 million over ten years, exemplifies the importance of dedicated income streams for emerging researchers to foster innovation and career progression (Department of Health and Aged Care, 2024a). Expanding this or similar programs would stabilise this segment of the health and medical research workforce. Training centres could also be established to strengthen the research pipeline in priority areas. Models like the ARC Industrial Transformation Training Centres provide a coordinated framework for PhD and postdoctoral training, enabling impactful, interdisciplinary research teams. Similarly, the NIH Institutional Training Grant model offers a long-term structure that ensures a steady pipeline of skilled researchers. These approaches can be adapted to create more robust training pathways for health and medical researchers.

Gender inequality remains a persistent issue in the health and medical research workforce, mainly at senior levels. Career interruptions disproportionately affect women: 55% vs 27% of men, with 76% due to parental leave (Department of Health and Aged Care, 2024b). In the NHMRC's Investigator Grant Scheme, women make up only about 20% of the most senior applicants (Leadership Level 3) (Kelso, 2022). This underrepresentation at senior levels indicates the presence of systemic barriers that hinder women's career progression in the field. ATSE has engaged in NHMRC consultations to improve gender equity for grant funding and recognises there has been some progress in this space (ATSE, 2022a). Targeted programs, like ATSE's Elevate: Boosting Diversity in STEM scholarships program, can be utilised to attract and retain underrepresented groups at an early stage. Additional initiatives at a senior level would help stabilise this persistent inequity.

Aboriginal and Torres Strait Islander people are also significantly underrepresented in the STEM research workforce, making only 1.9% despite comprising 3.8% of the population (Department of Health and Aged Care, 2024b). Aboriginal and Torres Strait Islander students are less likely to express interest in a STEM-related career and they represent a very small portion of STEM enrolments in tertiary education (Department of Education, 2024). STEM curriculum reforms, such as Deadly Science, can improve long-term Aboriginal and Torres Strait Islander participation in the research workforce. Programs such as Elevate, as well as targeted funding schemes such as NHMRC Indigenous Health Research Fund, can support retention in the current research workforce.

Another challenge is the erosion of the clinician-research workforce. Clinicians who wish to engage in research often face a lack of support (AAMRI, 2021). The limited dedicated research time, unclear career structures, and financial disincentives makes it difficult for clinicians to balance their clinical duties with research pursuits (Brandenburg & Ward, 2022). This leads to a potential loss of valuable insights and innovations that come from combining clinical experience with research expertise.

Recommendation 4: Embed job security and progression opportunities for researchers within the National Health & Medical Research Strategy.

Recommendation 5: Continue to implement targeted programs and initiatives to address career progression barriers that disproportionately impact underrepresented groups.

Recommendation 6: Provide funding and protected time for clinician researchers to balance clinical and research work.

Strengthening public trust and understanding of health and medical research

The COVID-19 pandemic was accompanied by an infodemic - the rapid spread and overabundance of information, both accurate and false, that occurs during a disease outbreak (Rubinelli et al., 2022). Misinformation, spread by traditional and social media, has fuelled public distrust in science and government institutions, making it more difficult to communicate accurate scientific findings (Kisa & Kisa, 2024). Increasing public distrust in institutions, including healthcare, contributes to a reliance on alternative sources of information, which can be unreliable or misleading. This creates fertile ground for misinformation

and even conspiracy theories. Public trust is key for communicating when the risks and benefits of medical research are not well understood. Given the risks posed by misinformation, the NHMRS could support public trust by encouraging responsible public communication of government funded research.

Simultaneously, institutions have failed to keep personal and sensitive information secure, contributing to the erosion of public trust. This has been pronounced in healthcare sector. The Office of Australian Information Commissioner's Notifiable Data Breaches Report (OAIC, 2024), identified health service providers – which often participate in medical research – as having the most reported data breaches. This sector is at high risk due to sensitivity of patient information and the increasing, targeted cybersecurity threats. The key data governance issues identified include weak access control, human error, supply chain risks, and cloud misconfigurations.

Placing data governance at the heart of the new National Health and Medical Research Strategy would convey its importance and support public trust in research. Transparency in governance – who controls the data, where the data is stored, and how the data is used - and robust cybersecurity frameworks are essential to foster public trust in how data is handled. Initiatives such as the National Digital Health Strategy and the National Healthcare Interoperability Plan aim to improve digital connectivity and secure data sharing within the healthcare system, supporting patients, providers, and researchers. The National Health and Medical Research Strategy has an opportunity to support public trust through requiring even higher standards for government-funded research – including cloud governance, onshore data storage, transparency, and Aboriginal and Torres Strait Islander data sovereignty.

Recommendation 7: Include public communication of health and medical research and outcomes as a principle of the National Health & Medical Research Strategy.

Recommendation 8: Embed data governance and sovereignty in the National Health and Medical Research Strategy.

ATSE thanks the Department of Health and Aged Care for the opportunity to respond to the consultation on the National Health and Medical Research Strategy. For further information, please contact academypolicyteam@atse.org.au.

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References

AAMRI. (2021). *Australia's Missing Link: A National Health and Medical Research Strategy*. https://www.aamri.org.au/wp-content/uploads/2021/11/Australias-Missing-Link-A-National-Health-and-Medical-Research-Strategy.pdf

AAMRI. (2024). *Protecting Australia's Health and Medical Research Ecosystem - A Staged Approach: AAMRI's 2025-26 Pre-Budget Submission*. https://aamri.org.au/wp-content/uploads/2024/11/AAMRI-2025-26-Pre-Budget-Submission.pdf

ATSE. (2022a, August 16). *Submission to NHMRC consultation on options to reach gender equity in the investigator grants scheme*. https://www.atse.org.au/what-we-do/strategic-advice/submission-to-nhmrc-consultation-on-options-to-reach-gender-equity-in-the-investigator-grants-scheme/

ATSE. (2022b, December 15). *Submission to the Australian Research Council (ARC) Review*. https://www.atse.org.au/what-we-do/strategic-advice/submission-to-the-australian-research-council-arc-review/

ATSE. (2023). *Winners of the Traditional Knowledge Innovation Award*. https://www.atse.org.au/what-we-do/atse-awards/traditional-knowledge-innovation-award/winners-of-the-traditional-knowledge-innovation-award/

Brandenburg, C., & Ward, E. C. (2022). "There hasn't been a career structure to step into": a qualitative study on perceptions of allied health clinician researcher careers. *Health Research Policy and Systems*, *20*(1), 6. https://doi.org/10.1186/S12961-021-00801-2

Department of Education. (2024, September). *Aboriginal and Torres Strait Islander Students*. https://www.education.gov.au/australian-curriculum/national-stem-education-resources-toolkit/i-want-know-about-stem-education/which-school-students-need-stem-education/aboriginal-and-torres-strait-islander-students

Department of Health and Aged Care. (2024a). *Medical Research Future Fund 2023 Early to Mid-Career Researchers grant opportunity outcomes data*. https://www.health.gov.au/sites/default/files/2024-06/medical-research-future-fund-early-to-mid-career-researchers-grant-opportunity-outcomes-data.pdf

Department of Health and Aged Care. (2024b). *The Australian Health and Medical Research Workforce Audit*. https://www.health.gov.au/sites/default/files/2024-11/the-australian-health-and-medical-research-workforce-audit.pdf

DISR. (2024). *Pathway to Diversity in STEM Review*. https://www.industry.gov.au/publications/pathway-diversity-stem-review-final-recommendations-report

Kelso, A. (2022). Towards gender equity in Australian health and medical research funding. *The Medical Journal of Australia*, *218*(2), 58. https://doi.org/10.5694/MJA2.51767

Kisa, S., & Kisa, A. (2024). A Comprehensive Analysis of COVID-19 Misinformation, Public Health Impacts, and Communication Strategies: Scoping Review. *Journal of Medical Internet Research*, *26*, e56931. https://doi.org/10.2196/56931

Norton, A. (2020, May 21). *How reliant is Australian university research on international student profits?* https://andrewnorton.net.au/2020/05/21/how-reliant-is-australian-university-research-on-international-student-profits/

OAIC. (2024, September 16). *Notifiable Data Breaches Report: January to June 2024*. https://www.oaic.gov.au/privacy/notifiable-data-breaches/notifiable-data-breaches-publications/notifiable-data-breaches-report-january-to-june-2024

Research Australia. (2023). *Inquiry into Philanthropy*. 1–17. https://researchaustralia.org/wp-content/uploads/2023/05/Research-Australia-Philanthropy-Submission-FINAL.pdf

Research Australia. (2024a). *Future-proofing Australian health and medical research*. https://researchaustralia.org/health-and-medical-research-australia-can-do-better/future-proofing-australian-health-and-medical-research/

Research Australia. (2024b, July). *Australian H&MR Facts*. https://researchaustralia.org/australian-research-facts/

Rubinelli, S., Purnat, T. D., Wihelm, E., Traicoff, D., Namageyo-Funa, A., Thomson, A., Wardle, C., Lamichhane, J., Briand, S., & Nguyen, T. (2022). WHO competency framework for health authorities and institutions to manage infodemics: its development and features. *Human Resources for Health*, *20*(1). https://doi.org/10.1186/S12960-022-00733-0

Sutton, P. (2022). Aboriginal Uses of Australian Herbs: Exploring Traditional Knowledge, Medicinal Practices, and Their Role in Modern Applications. *Australian Herbal Insight*, *5*(1), 1–5. https://doi.org/10.25163/AHI.519944