Title:	Australian Technology Network Submission to the Australian Medical Research and Innovation Five Year Strategy

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The Australian Technology Network of Universities (ATN) welcomes the opportunity to provide comment on the Australian Medical Research and Innovation Strategy (Strategy). The ATN suggests that in its Strategy, the Advisory Board takes a broad view of medical research, and include research in areas such as preventative health, health systems research, health service and delivery, health impacts of social disadvantage, and population and behavioural research. The ATN supports the focus on transformative health outcomes, as well as research, and urges the Advisory Board to place the wellbeing and health of Australians and the community at the forefront of its strategy.

Referring to Figure 1 of the Strategy 'Building Blocks', the ATN would like to specifically address the following challenges:

- The translation of research into health outcomes;
- Embedding research universally across the health system;
- Reducing barriers to collaboration; and
- Supporting research and innovation from concept to delivery

Addressing gaps in translation of research into health outcomes by supporting collaboration
Australia already invests significantly in medical and health research and there has been demonstrable impact from this investment. In terms of research output alone, medical and health research was the highest contributor to Australia's research quantum, accounting for 21 per cent of the total research output assessed under the Excellence for Research Australia (ERA) 2015 exercise at Australian universities.[1] While much has been made of Australia's ability to convert research excellence into commercial outcomes, medical and health research fares relatively well in this regard, with 25 per cent of the university sector's patents and 46 per cent of research commercialisation income coming from within the medical and health fields.[2]

The ambition of the MRFF Strategy should be to build on this body of expertise and target gaps in the translation of medical and health research; not only in commercial areas but more broadly via the dissemination and application of research right across spheres of primary care, community and clinical practice, preventative health, diagnosis and treatment. The MRFF needs to be able to demonstrate additionality above what is already achieved via funding streams such as the NHRMC. As such, the ATN supports the Strategy challenge to take research and innovation from concept to delivery, and to transfer new technology and knowledge to benefit as many Australians as possible.

NHMRC partnership grants have been effective in supporting collaborative networks between researchers, clinicians, health providers and policy makers to better link research, policy and practice.

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[1] http://www.arc.gov.au/sites/default/files/filedepot/Public/ERA/ERA%202015/ERA_2015_National_Report/ERA2015_Section1.pdf

[2] *ibid*

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Building on this, the ATN suggests that the MRFF could foreground and incentivise such collaboration at the core of their strategy, and give priority to research that includes collaboration with end-users (e.g. health consumers, public and private healthcare providers) to support the development of research and its translation into health outcomes.

Addressing translation gaps by leveraging co-funding

The ATN understands that a key intent of the MRFF is to help move Australia towards an innovation economy in medical and health research and as such, the ATN encourages the Advisory to align its strategy with the Government's National Innovation and Science Agenda (NISA). The ATN is pleased to see that reducing barriers to collaboration is identified as a current challenge in the building blocks for the Strategy. To maximise value coming out of the fund, priority could be given to projects which are able to leverage co-funding for research.

Assistive health research at UTS takes this approach to improve the wellbeing and standard of living of the elderly, and people with disabilities, working closely with industry partners such as Greystanes Disability Service, Mobility 200 Australia Ltd, Northcott Sydney, and the Illawarra Retirement Trust to develop robotic patient transfer hoists, a prototype wheelchair attachment that enables users to navigate kerbs and single steps, and electrical walking aids to help individuals with limited mobility. Funds that could help take such research to market would have the potential to create high-value jobs and revolutionise the disability and aged health care sectors.

The McKeon review highlights the importance of medical and health export products for the Australian economy.[3] In particular, grants that translate research into tangible benefit to the community should be supported, as it is often this last stage of the research and innovation pipeline (i.e. commercialisation of a product, medical device, or drug, influencing policy or embedding diagnosis into practice at scale) that carries the most risk and is comparatively underfunded. For example, researchers specialising in advanced manufacturing at RMIT have collaborated with medical device company Anatomics and a neurosurgeon to successfully insert a 3D printed spinal implant cage into a patient to treat severe lower back pain. Here, researchers with expertise in a wide range of enabling technologies such as materials engineering, medical biotechnology, and biomedical engineering have played a key role in facilitating the translation of research into health outcomes. The ATN can envision a case for the MRFF supporting the scaling of such game-changing technologies to achieve maximum benefit for the community but to do so requires the Fund to take a broad definition of medical and health research, bringing together multi-disciplinary research teams. Connectivity with the both the Advanced Manufacturing Industry Growth Centre and the Medical Technologies and Pharmaceuticals Growth Centre should be considered, as these are key *industry-led* initiatives aimed at growing Australia's innovation capability in areas of competitive strength and strategic priority.[4]

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[3] McKeon S, Alexander EA, Brodaty H, et al. Strategic review of health and medical research: final report February 2013. Canberra: Australian Government Department of Health and Ageing, 2013. http://www.mckeonreview.org.au

[4] http://www.industry.gov.au/industry/Industry-Growth-Centres/Pages/default.aspx

Embedding research into the healthcare system by co-creating projects with end-users

In addition to enabling commercial pathways, more could be done to integrate research discoveries into the health system. One way of achieving this is to support research developed in partnership with end-users of research. For example, UniSA researchers have partnered with Bupa Health Foundation and the Department of Veterans' Affairs to develop evidence-based medication-related indicators of sub-optimal processes of care before hospitalisation for the Australian health care setting. Their research has found that over a quarter of hospitalisations of older Australians could be caused by poor medication-related primary care before admission. As a result, the researchers have developed evidence-based indicators to enable quality improvement in the management of chronic conditions, saving the Australian health system up to $300 million a year. This is an example of a collaboration achieving wide reaching benefits to Australians and improving the productivity value of the health care system for all Australians.

Measures of success

The ATN acknowledges the need to have measures of success for the Strategy and its related priorities, and suggests that these measures focus on benefits to the end-user, including improved uptake of health and medical innovations, improved patient health outcomes, translation of medical evidence into policy and practice, as well as indicators of improvements to the medical and health research system itself (e.g. improved multi-disciplinary approaches to health and medical challenges, reduction in barriers to collaboration).

The UK has a commendable model for measures of success where each of the Research Councils, including the Medical Research Council (MRC) are required to publish outputs, outcomes and impact reports with agreed metrics as part of their performance management framework.[5] In the context of the UK spending review, there is increased pressure to provide evidence of return on investment, particularly for medical funded research. These include both case studies and quantitative analysis of: publications; collaborations; generation of further funding; engagement activities (e.g. influence on public policy, contributions to human capital); intellectual property activity (e.g. patent applications and grants, creation of new businesses/spin-outs); products and interventions (e.g. diagnostic/screening tools, drugs, vaccines, medical devices/surgeries, preventative interventions and health/social care services); and research materials (e.g. databases, data analysis techniques, cell lines, new equipment).

Recommendations:
- The Strategy should strive to maximise the impact of medical research and innovation, with benefits to the health and wellbeing of the Australian community at the heart of decision making.
- The Strategy should, where possible, incentivise or prioritise research and innovation that is co-created with end-users or includes collaboration with partners to support research and innovation from concept to delivery.
- The Strategy should support research and innovation that provides additionality to medical and health research already conducted.
- The Strategy should have clear accountabilities and measures for success to demonstrate return on investment, looking to the UK Medical Research Council as a model.

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[5] For example, http://www.mrc.ac.uk/successes/outputs-report/