

Template for submissions to the Strategic Review of Health and Medical Research

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Submission summary: (300 words or less)

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1. A viable, internationally competitive health and medical research sector is the only way to solve existing as well emerging health problems. Australia will have to pay at some point; better to invest now to improve health in the short-long term rather than delay and pay very much more for an unhealthy population in the long-term.

2. Management and funding of health and medical research can only be achieved by increasing the funding to sustainable and cost-effective levels (3% of health budget by 2022¹) and by investing and continuing to improve the existing NHMRC structure. Sufficient, transparent and equitable funding is needed to cover direct and indirect research costs across the country. State governments, especially those in power in resource-rich States, should contribute significantly to health and medical research direct and indirect research costs. Industry and philanthropy would be involved in contributing more effectively. Engagement with the public about the value and essential role of research in our current and future health research should occur more consistently, rather than management of crises such as funding cuts, so that health and medical research is valued in our culture rather than being disconnected.

3. Strategic directions have already been identified and centre on burden of disease relating to aging and lifestyle. Solving largely self-inflicted lifestyle health problems with commitment from those affected would free highly significant amounts of funding to tackle pressing, as well as rare, health issues in addition to those affecting the aged.

4. Optimising translation can be achieved first and foremost by continuing the funding stream for basic research; if we don't continue to have new discoveries, there will be nothing to translate. Translation can also be optimised ensuring opportunities for research training during medical degrees/specialist training; engaging basic researchers more with clinical research and the disease burden they are researching; engaging with patient groups. Encourage professional societies representing basic research, clinical research and the medical professions to start dialogues around needs in research and ways to fulfil them.

Please use the following questions to structure your submission:

1. Why is it in Australia's interest to have a viable, internationally competitive health and medical research sector?

A healthy, and educated, population forms the basis of any prosperous and economically stable and viable country. Countries are judged, and will succeed or fail, based primarily on the health of their population from birth to old age. The international health and medical research community has come a long way in terms of improving the health of many, but very substantial challenges still face us. Challenges can be categorised into:

- 1) The many already existing unsolved health issues for which we have made some progress but still have no definitive cure including: diseases of the mind and brain and associated conditions (Alzheimer's, stroke, schizophrenia, depressive illness, major trauma including brain and spinal cord injury, epilepsy, Parkinson's, autism, Huntington's, multiple sclerosis, peripheral neuropathy, chronic pain etc); cancer, chronic disease including cardiovascular disease, obesity and diabetes (type 1 in particular)
- 2) Infectious and transmissible diseases including TB, malaria, HIV, avian flu, influenza, dengue, issues relating to antibiotic resistance (e.g. TB, re-emergence of whooping cough etc)
- 3) Lifestyle-related disease such as some forms of cancer, cardiovascular disease and obesity, type 2 diabetes, drug and alcohol addiction etc
- 4) Others e.g. asthma, SIDS

Australia has made highly significant contributions to world health in the past (e.g. discovery of antibiotics; lithium for depressive disorders; vaccine for cervical cancer; treatment for stomach ulcers; SIDS and sleeping position etc) and, given appropriate funding, will continue do so in the future.

Australia needs a viable, internationally competitive health and medical research sector because:

1. Answers to the above crucial and already very expensive health problems will only come from high quality, internationally respected research; the problems will not solve themselves and their impact will only worsen as the population ages and as new challenges face us due to emerging threats from, for example diseases related to climate and associated social change.
2. Australia will face these problems regardless of whether we are on the international stage or not. However, without a keen, passionate, highly expert and primed health and medical research sector, Australia will find it 1) extremely expensive to buy in new drugs, treatments and technologies and 2) cannot possibly judge whether or not overseas discoveries and new treatments are beneficial and cost-effective.
3. Australia has already invested substantially in health and medical research. Without further investment, we stand to
 - a. Lose out on our investment to date
 - b. Miss out on the potentially vast economic return from emerging treatments (an estimated \$5 for every \$1 invested²)
 - c. Be diminished socially as a country because the front line of the health and medical research workforce will no longer exist therefore removing any ability to engage with the public and offer hope as well as real benefits to solve the health problems Australia faces

- d. Seriously compromise the careers of our future aspiring health and medical researcher workforce who wish to contribute to solving the major challenges but will have to go elsewhere to train and work
- e. Seriously undermine the ability to teach and train our medical doctors and healthcare professionals in the latest technology and treatments so that they can deliver the best outcomes for their patients
- f. Reduce our existing tertiary teaching hospitals to mere service delivery hospitals without the ability to question what is being done today and whether or not we can actually do any better tomorrow to not only improve patient health but also reduce healthcare costs
- g. Not be part of the international research effort to improve health and make a better world. One cannot go to the table with nothing. Health and medical research crosses geo-political boundaries and, as a highly prosperous first world nation, Australia needs to deliver on its obligations

The bottom line is: At some point, Australia will have to pay with taxpayer funds for the burden of disease and injury that Australians experience. The expense and threat is very real; for example, under the dementia growth model, the cost of providing aged care in 2010 is \$11bn; this will rise to \$80bn by 2050³ an amount which constitutes a major threat to the health budget. Either we pay up front for better healthcare now or we do nothing and pay very much more later for the consequences of an unhealthy, and unproductive, population.

2. How might health and medical research be best managed and funded in Australia?

Health and medical research needs to be funded adequately by providing sufficient funding for both direct and indirect costs. The Australian Society for Medical Research (ASMR) commissioned Deloitte Access Economics who made an effective argument to increase funding in Australia from a currently low base to 1% of the health budget in 2012 and increasing 0.2% annually to reach 3% by 2022¹. This is entirely appropriate for a wealthy country such as Australia and should already be in place. Indeed, the Deloitte report covered only 40% of disease burden (cardiovascular disease, cancer, asthma, SIDS and muscular dystrophy). A similar argument is applicable to diseases of the mind and brain which constitute $\sim 1/3^{\text{rd}}$ of all disease burden⁴.

Health and medical research in Australia has been chronically underfunded for a considerable time. Some points are made below about the consequences of underfunding indirect and direct research costs:

Indirect costs: Health and medical research in Australia is suffering from what effectively amounts to a freeze on research infrastructure funding. The infrastructure funds that were provided to support research were not increased sufficiently to match past increases in direct funding for research. Universities and Research Institutes are increasingly less able to cover indirect costs. For example, in the absence of sufficient infrastructure funding, there is discussion about how to provide sustainable infrastructure with a suggestion to source this from within research funds. This is despite the fact that, at the time of signing off on a grant submission, Universities agree to provide the necessary infrastructure for the grant to be executed. Inadequate infrastructure funding also leads to an uncomfortable two-tier

situation for all staff, with research being regarded as a cost to the Institution rather than an asset.

Direct costs: The most expensive item research is salaries. Both the major granting agencies in Australia effectively cut salaries for its research workforce. The ARC provides a template to enable budgets for salaries to be requested at the Institutional rate. However, at the time of awarding grants, substantial cuts are often made so that a politically palatable funding rate of ~20% is maintained. NHMRC takes a different approach with its own in-built cut to maintain a funding rate of ~20% by providing salary scales that are often well below Institutional rates; the differential is now close to 50% at some Universities/Institutions. The NHMRC fully recognises the differential, and argues that the gap should be funded by the Universities/Institutions. Universities/Institutions have come some way to close the gap; some pay the full gap to ensure that salaries are at full Institutional rates; others only pay a part contribution or none. In the instances where the gap is not fully covered, the research team needs to find funds from elsewhere or compromise the science so that they can stay within budget. This is an added strain that does not lend to maintaining an internationally competitive edge.

Australia either needs a transparent granting system that fully accounts for direct and indirect costs, or a mechanism that fully covers research infrastructure. At the moment, the system to cover direct and indirect funding is fragmented and lacks a uniform approach in the health and medical research sector leading to inadequacies and gaps in funding.

NHMRC is the major funder of health and medical research and should remain so:

NH&MRC has a proud and highly effective track record in funding health and medical research in Australia and should remain separate from the ARC.

NH&MRC is also agile in terms of responding to emerging changing needs by modifying its different funding schemes and introducing new ones as appropriate.

Project and program grants are the means by which Australia undertakes its basic and clinical research, as well as translation to a certain extent, and should be continued. In particular, project grants allow opportunities for young researchers to hone their skills and establish themselves as independent researchers, something that is not possible in the relative shadow of a Program grant that by its nature is headed by only very senior researchers. In other words, project grants are about ensuring succession planning in the training of our future health and medical research force. With respect to training the brightest and best in research, the Fellowship scheme enables individuals to establish and lead research teams on a 5-year competitive basis. They forgo security in order to maintain the research edge and train up-and-coming researchers and contribute significantly to Australia's research culture. The scheme should be maintained from the Career Development Fellowships through to the NHMRC Fellowships. There is, however, a gap, with researchers at the mid career stage being too long past the PhD qualification to apply for a CDF, but without the competitive edge to obtain an NHMRC Fellowship. Consideration should be given to funding to bridge this gap and capitalise on the funds that have been invested in PhD, Postdoctoral and CDF training.

This is not to say that everyone who does a PhD should go onto research. Other options are available and should be tracked through alumni to provide examples of career paths for future cohorts.

Make the virtuous cycle a reality. The last round of funding increases did much to salvage the funding rate and maintain it at ~20+% as well as build the health and medical research sector in Australia. However, more work needs to be done to engage with industry and philanthropy, the latter having a historically low input to medical research⁴

Provide better tax and other incentives for medically- and scientifically-related companies to invest in basic as well as clinical medical research.

Focus major effort towards engaging better with philanthropy in Australia to strengthen the culture of giving to health and medical research and have this recognised as a vital societal and highly valued obligation. Provide better tax and other incentives to do so.

Engage better with the public to gain their support on an everyday basis rather than via a crisis management such as we had to do (very successfully) during the Discoveries Needs Dollars campaign. There seems to be a “disconnect” between the research and the public understanding of research. Most take research and discoveries about health for granted, perhaps because research is often complex and distant from everyday life. Many of us are involved with outreach, but we need to do more to embed health and medical research into Australian culture so that it is valued and not threatened. No problem with sport; \$50m to train an Olympic athlete and the public immediately recognises these icons.

3. What are the health and medical research strategic directions and priorities and how might we meet them?

Strategic directions:

Much is already known about which conditions constitute the major health burdens for Australia with priorities being diseases related to aging and lifestyle.

A strong focus on aging and lifestyle diseases with a focus on prevention for the latter should prevail but not to the exclusion of basic, clinical and translational work in the many other health areas. Striking a balance is necessary and to a certain extent this is already done with research priority areas. Most importantly, solving mostly self-inflicted health issues relating to lifestyle will free major funding streams for other health issues that face others through no fault of their own.

Meeting priorities:

Priorities will best be met by breaking down barriers between basic, clinical research and translation sectors including engagement with patient groups.

Also, Breaking down barriers or joining forces also applies to healthcare delivery. A “one patient one record system” would reduce inefficiencies and allow provision of a continuum of care. A strong component of patient responsibility/contractual agreement for e.g. lifestyle changes, commitment to take medications and so on.

Clinical trials are the gold standard but very expensive. NHMRC is currently looking at comparative effectiveness research as a way, in addition to trials, to gain better returns.

Meta-analyses of both clinical and lab-based research also reveal that many published studies are of too low quality to be considered because e.g. they are insufficiently powered, lack randomisation, lack blinded assessment and so on. In effect, such studies are a waste of funding. Consider introducing standardisation for both grant applications and publication in peer-reviewed journals so that more papers that are published are of value.

4. How can we optimise translation of health and medical research into better health and wellbeing?

Research and translation seems to work in a series of silos rather than as an integrated continuum. Breaking down the silos and having a more integrated approach will optimise translation. There are two sides to the coin:

First, continue to support basic research:

It is not possible to strategically “pick winners” that basic research will yield because the cardinal strength of fundamental research is that you do not know where it will lead. The bright mind, unfettered and in the right environment, is a very effective way to provide the material than can be translated. It is therefore vital to fully support the engine room of pure basic laboratory-based research. No holds barred and with an implicit trust that this will work rather than trying to steer directions. Past and future discoveries come from the passion of researchers living the 24/7 chase of discovery and being hungry to do so. Fundamental “investigator initiated” research is the engine room for all translation.

Fully encourage and support young up and coming researchers and provide sustainable career paths for them to apply on a competitive basis.

Second, provide mechanisms that enable translation:

Universities have taken on this role with various degrees of success. Finds ways to better support for “Offices of Development” within Universities together with support to enable links to industries where research translation is successful.

Ensure that medical training has a research component, preferably a PhD. This will significantly extend the time of medical training, but some countries do this better than others. In USA, and Europe, MD PhDs are more common than they are in Australia. Discussions with the Colleges will be necessary to look at ways to support this significant shift in training. Physicians who have a research training will have better expertise to critically appraise current treatments and devise research programs to address directly relevant questions they face in their every day practice.

On the other side of the divide, encourage and reward ways to enable basic researchers to engage with the clinical area in which they are working. Seeing the reality of the patient situation highlights the gap between a series of experiments in tissue culture or lab animals and the reality of the disease/condition.

Encourage and reward professional Societies on both sides of the divide to have joint brain-storming events at which clinicians, clinician researchers and lab-based

scientists get together at meetings. For example, in neuroscience, the Australian Neuroscience Society is looking at ways to engage with the clinical societies (e.g. ANZAN: Australian and New Zealand Association of Neurologists). We need to start the conversation across the divide; and the divide is big, often with each side speaking a different language.

Provide much better incentives for medically- and scientifically-related companies to invest in basic as well as clinical medical research.

References

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