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Mr. Simon McKeon
Chair
Strategic Review of Health and Medical Research in Australia

Dear Mr. McKeon,

Thank you for the opportunity to provide a written submission from the Faculty of Health Sciences at Flinders University to the Strategic Review of Health and Medical Research in Australia.

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

(Terms of Reference 1 and 6)

Australia already has a viable and internationally-competitive health and medical research sector. The manifold benefits include:

- The capacity to meet unexpected health threats and emergent diseases;
- The ability to attract clinician-scientists to work in the public sector of Australia's health system;
- Employment and the generation of intellectual capital and property and income;
- The demonstrable spin-off to biotechnology, nanotechnology and medical devices industries;
- The enhancement of Australia's reputation as a good world citizen;
- The maintenance of a high level of international esteem;
- The continuing provision of an educated, highly-trained work-force, to future-proof Australia.

As examples of each benefit:

Unexpected health threats and emergent diseases. Examples of such past and present threats include dengue fever, influenza, SARS, haemolytic uraemic syndrome, and HIV. Australia has dealt reasonably well with such threats in the past in part because we had researchers expert in relevant fields already in place and skilled clinicians ready to adopt new learnings and meet the challenges.

Clinician-scientists in the public sector. Clinicians who are also trained in research are important drivers of clinically relevant health and medical research. Many clinician-scientists choose to work in our nation's public teaching hospitals and community and public health settings, because they are committed to undertaking research, and to teaching the next generation of clinicians and medical scientists. Such individuals often do so at considerable personal and financial cost, but are essential for effective translation of research into practice.

Employment and the generation of intellectual capital and property and income. Many of those involved in health and medical research in Australia do not expend their efforts for monetary gain. They do so because they believe in their ability to improve the lot of others. Despite the inevitable frustrations of our systems of research funding, most enjoy their work. The sector employs many well-educated, well-trained people who generate intellectual capital, intellectual property, and leveraged wealth for the nation.

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Spin-off to Australian industry. Australian industries involved in the health and medical research sector may not be "Big Pharma", but nonetheless are financially viable. CSL Ltd is one example.

Australia as a good world citizen. Australia cannot shirk its responsibility to the international community by riding on the coat-tails of others, when we have the ability to perform so well. The international take-up of Gardasil is one example.

International esteem. Australia punches above its weight internationally in health and medical research, as evidenced by the most recent ERA findings, and by our cadre of Nobel Laureates in the field. Young Australian post-docs are highly sought after overseas, because they are considered to have been well-trained and to be able to think and work independently.

Trained workforce to secure Australia's future. Investment in the health and medical research sector, especially in its workforce, will be a potent way of future-proofing our country.

How might health and medical research be best managed and funded in Australia? (Terms of Reference 2, 3, 7)

Management

Management of health and medical research occurs largely at the local level of tertiary institutions, hospitals and health-care providers. The sector is already heavily regulated, both through formal contractual arrangements with funding and accreditation bodies, and by statutory requirements and legislation. Researchers and their institutions must comply with many regulations including:

- Requirements of Clinical Investigations Committees;
- Requirements of Animal Welfare Committees and the State-based Acts that govern them;
- Requirements of State-based Anatomy and Transplantation Acts;
- Requirements of Institutional Biosafety Committees;
- Requirements of organizations such as the Therapeutic Goods Administration and the Office of the Gene Technology Regulator;
- Requirements of good scientific conduct in research.

Strategic directions for future management should maintain as much management locally as possible, to permit maximum flexibility and local ownership of the research effort. While regulation of research is clearly necessary, processes should be reviewed to reduce the reporting burden on individual researchers and on institutions.

Funding

Much research in this sector is funded by the National Health and Medical Research Council (NHMRC), with important contributions from other sources including the Australian Research Council (ARC), international organizations such as the US National Institutes of Health, government departments (especially those involved in health care), domestic and international charitable foundations, Australian industry, Australian universities, philanthropy and from patent income. The funding that flows into tertiary institutions from the Australian Government through the RIBG, SRE, and RTS is essential for maintenance of research infrastructure and research student training.

Strategic directions for future funding should include expansion and improvement of the NHMRC – it should not be rolled into the ARC. Funding should be increased to cover the real cost of research, as mooted in the SRE. We need to maintain diversity of research funding sources, and continue tax breaks for donations from philanthropists, charitable organizations and foundations, and private individuals. We need to maintain funding for key infrastructure including AARNET, major national core facilities, and major equipment.

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

(Terms of Reference 5, 12, 13)

Suggested **strategic directions** include:

- Maintain diversity across the sector, including in basic biomedical science, public health, population health, primary health care and social health research, and clinical (including allied-health) research;
- Improve opportunities for collaborations, both national and international, wherever possible;
- Expand those funding schemes designed to cover sudden unexpected health threats.

As examples of each suggested strategic direction:

Diversity in research. We accept the many valid arguments for maintaining focus and a critical mass in research endeavours. The role for diversity in research at institutional, discipline and individual levels is, however, to be ignored at our national peril. We provide some case study examples below.

- (i) Research into seemingly-esoteric basic biomedical research can have unexpected benefits. Himalayan zebrafish are a useful experimental model. Had they been available in 1957, the thousands of cases of human phocomelia caused by thalidomide might well have been avoided. Thalidomide is not teratogenic in mice and rats, but when added to the tank water in which zebrafish swim, it causes serious and obvious abnormalities of their fins. Current use of thalidomide in some patients with multiple myeloma is the result of work in zebrafish.
- (ii) The presence of expert researchers means that a rapid response to public health problems can be provided. In 1995, a number of children were admitted to the Adelaide Children's Hospital with haemolytic uraemic syndrome caused by metturst contaminated by enterohaemolytic E coli 0111. One child died; others were seriously and permanently affected. Researchers on site, expert in the field, were able to identify the organism and its source rapidly, curtailing the extent of the epidemic. (See Paton et al. J Clin Microbiol 1996; 34: 1622-7.)

Collaborations. Cross-institutional collaborations are an effective means of maintaining local expertise in a given geographic area, whilst increasing critical mass. Such collaborations do, however, engender challenges in obtaining totally impartial peer-review, because everyone who is expert is involved and so has a conflict-of-interest. Having said this, the benefits far outweigh the problems.

Suggested **priorities for research** include:

- Major diseases and health issues that affect the lives of many Australians, such as (but not limited to) cardiovascular disease and stroke, cancer, obesity, respiratory disease, arthritis, mental illness and sensory organ dysfunction;
- "Orphan" diseases and conditions (loosely defined as those that affect fewer than 1 in 5,000 individuals), especially those with devastating consequences for the sufferer or carer;
- The health issues that affect Aboriginal and Torres Strait Islander people;
- The social determinants of health;
- Health systems, especially the role of primary care and rural and remote health care.

As examples of each suggested strategic direction:

Major diseases and health issues. It clearly makes sense to put considerable effort into those areas that affect many people in the community, or place at risk the health and well-being of many people.

"Orphan" diseases and conditions. It also makes sense to continue to fund these areas, because the potential translational benefits in terms of improved quality of life and (likely) reduced call on the health care system may be substantial. This is also part of our nation's contribution to global health outcomes.

Health issues that affect Aboriginal and Torres Strait Islander people. As a nation, we need to continue to work with Aboriginal and Torres Strait Islander people to address key health issues and address persisting disparities in health care outcomes.

Social determinants of health. There needs to be a strengthened focus on the economic and social conditions that influence differences in health status between individuals and communities.

Health systems, especially the role of primary care and rural and remote health care. Research needs to continue into the most effective and efficient ways to deliver health care and to meet changing community needs and the availability of new developments. This includes both a focus on health care delivery in hospital settings and in urban and rural community settings where most health care actually occurs.

How can we optimise translation of health and medical research into both commercial and social outcomes?

(Terms of Reference 4, 8, 9, 10, 11)

We suggest that translation of health and medical research can best be optimised through:

- Training and employing more clinician-scientists, and embedding them at the point of care within our nation's hospitals and community health settings;
- Establishing the proposed NHMRC Academic Health Centres in every major geographic area of the nation;
- Ensuring that resources (people, infrastructure, funding) are allocated on the basis of evidence of efficacy;
- Support for more well-designed clinical trials.

As examples of each suggested action:

Clinician-scientists. As noted earlier in this submission, clinician-scientists are usually in the best position to ensure that research flows as seamlessly as possible from research settings to the sites of clinical care. Finding innovative methods to allow our nation's clinician-scientists to continue both high-quality research and clinical practice, is a challenge that hitherto has only partly been met though, for example, the NHMRC Practitioner Fellowship scheme.

NHMRC Academic Health Centres. The proposed Centres offer a great opportunity to better match health and medical research with the clinical needs of communities. Establishing such Centres can support the best possible integration of patient care, clinical and research student teaching, community involvement and translational research. The governance structures of the Centres can be developed in ways that permit improved collaboration across multiple sites with disparate geographic footprints to better meet the diversity of health care needs.

Allocation of resources based on best evidence. Health care resources should flow into areas where there is an evidence-base that supports their use. Dilution of resources by allocations into areas with no evidence of efficacy should be reduced.

Support for more clinical trials. Beneficial therapeutic effects, as measured in randomized, controlled clinical trials, have the potential to improve health outcomes. Clinical trials can be expensive to run, but they provide high-quality evidence that can translate into improved clinical care and better use of health care resources.

We hope that this submission assists the work of the Panel.

Yours sincerely



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