

SRHMRA Submission 286 — Dr Ashley Ng

Summary

Health and Medical Research remains the cornerstone for the advancement of medical care into the 21st century. As the Australian population ages and the demographics of disease changes from internal as well as external pressures, maintaining the health and well being of Australians becomes an increasingly difficult challenge. There are significant implications for the government of the day and society as a whole in terms of maintaining the health and productivity of its citizens.

The expectation that Australians should receive the world's best practice medical care can only be met if Australia remains engaged at the highest possible level in basic, translational and clinical research. Australian researchers and doctors have always been at the forefront of medical research. Importantly, they have taken key leadership roles through quality research, which in critical instances, has led to transformations in how we understand and treat diseases today. In short, Australian researchers have helped to define the world's best medical practice.

A paradigm of trailing the research findings of others forgoes the importance of performing research that matches the needs of Australians. The importance of maintaining expertise within Australia for undertaking quality research cannot be overemphasized. The intellectual wealth of a nation is as valuable as any other resource possessed by a country.

The ability to adapt to new challenges, deliver optimal medical treatment, provide appropriate and expeditious access to novel therapeutics for Australians, and develop new approaches to managing the prevalent diseases within a society, is vital in reducing the burden of disease at personal, societal, medical and economic levels. A vibrant, well supported health and medical research sector underlies Australia's ability to achieve these critical goals now and into the future.

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

Health and Medical Research remains the cornerstone for the advancement of medical care into the 21st century. As a country, Australia faces unique challenges in maintaining the health and welfare of its citizens. The geographic and cultural diversity within Australia, health challenges posed by gradual and rapidly evolving climatic events, as well as the demographic challenge of an aging population and the burdens associated with accordant changes in disease demographics, means Australia must have the capacity and flexibility to adapt and prepare to meet health care requirements now and into the future.

The expectation that all Australians should be able to receive the world's best practice medical care, can only be achieved if Australia remains engaged at the highest possible level in basic, translational and clinical research.

Historically, Australian researchers have been at the forefront of critical discoveries that have been transformative in the understanding and treatment of disease. Several of these discoveries have not only benefited Australians, but revolutionised the medical care of people throughout the world. Importantly, Australian researchers have taken key leadership roles through quality research; in short, they have helped to define the world's best medical practice.

A non-exhaustive list of research discoveries which have led to direct impacts on health and welfare includes the elucidation of the workings of the immune system, development of a commercial process for the manufacture of penicillin, development of the first clinical trial programme to treat and cure once universally fatal childhood leukaemias, identify the importance of maternal folate supplementation to prevent spina-bifida birth defects, reduction of sudden infant death rates by modification of baby sleeping positions, identification of colony stimulating factors to help treat over 10 million cancer patients, development of the bionic ear, development of the first heart pacemaker, development of the humidicrib for premature babies, development of the medical ultrasound, development of a vaccine against viruses which cause cervical cancer.

It is sobering to reflect that if Australian medical research had not been viable and the research had not been performed, some, if not all, of these Australian led discoveries and the subsequent outcomes from the above "non-exhaustive" list, may not have occurred. It is only then can the impact of Australian research be appreciated and the importance of a viable, internationally competitive health and medical research sector recognised.

To take health and medical research in Australia for granted, under the assumption that other research groups around the world will make findings that will transform medical treatment, is a fallacy. A paradigm of trailing the research findings of others forgoes the importance of performing research that matches the needs of Australians. The importance of maintaining expertise within Australia for undertaking quality research cannot be overemphasized. The intellectual wealth of a nation is as valuable as any other resource possessed by a country.

As the population ages and the demographics of disease changes from internal as well as external pressures, maintaining the health and well being of Australians becomes an increasingly difficult challenge. There are significant implications for the government of the day and society as a whole in terms of maintaining the health and productivity of its citizens. The ability to adapt to new challenges, deliver optimal medical treatment, provide appropriate and expeditious access to novel therapeutics for Australians, and develop new approaches to managing the prevalent diseases within a society, is vital in reducing the burden of disease at personal, societal, medical and economic levels.

A vibrant, well-supported health and medical research sector will continue to underlie Australia's ability to provide the relatively high standards of medical care. A vibrant health and medical research sector refuses to accept the status quo, and works to continuously to improve the understanding of disease, diagnosis of disease and provision of optimal medical care.

The economic benefits of this research has also been quantified and validated.

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

Health and Medical Research in Australia relies on predominantly on Government funding. Following reviews of the sector in 1998 and 2003, the parlous state of research funding was recognised along with the significant economic benefits of Health and Medical Research. The amount of funding allocated through the National Health and Medical Research Council was accordingly increased.

However, as a percentage of gross domestic product, Australia's funding for Health and Medical Research still trails countries such as the United States and the United Kingdom. Indeed, even in times of economic downturn and recession, the United States and United Kingdom, and Irish Governments preserved and increased the amount funding for Health and Medical research in recognition of the importance of investing in this sector for the future economic growth of their economies. It is salient that fewer than a quarter of research funding applications to the NHMRC are funded, when over two thirds of submitted projects were deemed worthy of funding.

If the Australian Government is to continue to fund research primarily through the NHMRC, it would serve the interests of researchers, research projects and the nation, that this funding is stable, indexed to increase, and not be at the whim of the Government of the day. Stable funding is critical in allowing research projects to proceed from conceptualisation, discovery and translation into clinically relevant research.

The current level of funding should be reviewed to close the gap between successfully awarded projects and projects deemed worthy of funding by a review of peers.

The process by which NHMRC grants are awarded should be reviewed. A rather eye-opening analysis into the NHMRC grant review process undertaken by Graves et al., in the paper "Funding grant proposals for scientific research: retrospective analysis of scores by members of grant review panel" published in the British Medical Journal in 2011, states that "the assessment of grant proposals is costly

and subject to a high degree of randomness owing to variation in panel members' assessments". The report concludes that "The total cost per [research] proposal was \$A17 744, with around 85% incurred by applicants. The median estimate of 22 days preparing a grant multiplied by the 2983 grant proposals submitted shows that in 2009 180 years of researcher time was used up." The paper concludes, "Retrospective assessment of actual performance may be a better system. It could be based on research productivity and broader health impacts. Funding could be allocated using quantifiable evidence rather than promises, including published papers, new policies, or observable improvements in health. Anecdotal evidence suggests researchers skilled at winning funding already use this approach by completing most of the research activity before applying for funding. There would of course have to be a reasonable programme of seed funding to get talented researchers started."

Aside from the NHMRC grants, research in Australia also relies on infrastructure grant support, philanthropic donations and non-government funding bodies with an interest in funding research related to specific diseases. Unlike some other major institutions such as within the United States, philanthropic donations do not account for a significant degree of research funding support overall. The ability to harness a significant amount of research income from investment of philanthropic donations requires a substantive pool of initial investment and advocacy from research institutions, patients as well as willing benefactors.

Further assessment of these other sources of research funding should be undertaken as part of the strategic review, including ways in which research investment may be encouraged by government and the private sector.

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

Strategic directions for Australian health and medical research should be guided by four tasks:

1) An honest assessment of the strengths and weaknesses of Health and Medical research as currently conducted to identify research areas and expertise including collaborative "outsourcing" upon which research programmes can be built at modelled, as well as identify areas in which further development is required to facilitate strategic goals. A key consideration for the last point is identifying and ensuring funding security for successful senior post-doctoral/early career researchers who can lead the research and successfully collaborate to meet strategic goals.

2) Identify strength and weaknesses in the current collaborative models between the tiers of basic, translational and clinical research. Important questions to ask include, "Are clinical needs being addressed by basic research?" and "Are the implications from the findings of basic research being fully appreciated and leads followed for translating research to clinical outcomes?"

3) As has been previously undertaken, ongoing assessment of the areas of priorities for medical research. Assessment of the impact and implementation of the research findings into these areas would

be a useful extension to determine if the strategy of prioritizing funding into these efforts is a valid mechanism with which to encourage research into these areas.

4) Undertake an assessment to determine whether basic and translational research findings being appropriately patented, licensed and commercialised.

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

The translation of research findings from Health and Medical Research into clinical benefit, requires a significant improvement of the interface between “bench” research and the “clinic”. It is essential that clinicians are actively recruited into the research process and the central role of the “clinician researcher” be fully recognised.

There is a significant need for increased funding to allow career clinicians to undertake some form of basic, translational or clinical research. The imperative lies with creating suitable access to research fellowships tailored to fostering clinicians into health and medical research.

Institutions in which clinical research is currently undertaken with active clinical trial programmes should be identified in a centralised manner, to facilitate expansion of clinical trials within Australia.

Infrastructure support for central registries of de-identified clinical and outcome data should be considered for major trial centres.

Engaging referring clinicians into the research process at the clinical trial level is vital, both within and external to tertiary referral centres, as expansion of clinical trial enrolment requires appropriate patient referral. Guidelines should be considered to expedite approval of ethics submissions at different potential enrolling hospitals as well as establishing methods to facilitate enrolment of patients into clinical trials.

Encouraging meaningful interactions between clinicians and basic researchers will be the cornerstone with which collaborative approaches are developed to answer clinically relevant research questions. Expanding the collaborative model for instance, of centres such as the planned Victorian Collaborative Cancer Centre, will, in my opinion, be a significant step toward facilitating clinical translation. To this end, aligning specialty basic research institutes with clinical centres and clinicians, should be a priority for Australian Health and Medical research.