Australasian Sleep Association

Submission to

The Government's Review Panel

Mr Simon McKeon, Prof. Henry Brodaty AO, Prof. Ian Frazer, Prof. Melissa Little, Ms Elizabeth Alexander AM and Mr Bill Ferris AC.

Strategic Review of Health and Medical Research in Australia

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Australasian Sleep Association, 114/30 Campbell Street, Blacktown, NSW 2148
Phone: 02 9920 1968 Fax: 02 9672 3884 Email: admin@sleep.org.au Web: www.sleep.org.au

Declaration of interests

The Australasian Sleep Association (ASA) is the peak scientific body in Australia & New Zealand representing clinicians, scientists and researchers in the broad area of Sleep.

Some members are recipients of funding from the Australian and/or state government bodies, including the National Health and Medical Research Council (NHMRC), and the Australian Research Council (ARC).

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A company limited by guarantee, ASA is run by a Board of Directors, consisting of elected members of the Association.

Vision

A community that recognises the importance of good sleep to health, public safety, productivity and quality of life.

Mission

"The mission of the Australasian Sleep Association (ASA) is to lead and promote sleep health & sleep science across Australia and New Zealand and to advance the professional interests of its members."

Goals

In order to achieve its Mission, the ASA will:

- Promote Education and Training in sleep health & sleep science within its membership and the other health related professions
- Foster Research in sleep health and sleep science
- Establish Clinical Standards within the profession and industry
- Be the recognised Voice of sleep expertise
- Advocate for the professional interests of members
- Inform members and the public on sleep health & sleep science
- Provide Services to members
- Ensure Good Governance within the Association

Our responses to key aspects of the terms of reference are provided below.

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

Australia faces significant unprecedented challenges with regard to the escalating costs of healthcare into the future, that are unsustainable. Australia's HMR sector punches well above its weight on the international stage, with world class researchers engaged in cutting edge research, producing breakthroughs in numerous areas of health and medical research, resulting in significant advances in our understanding of many diseases and medical conditions. The HMR sector is responsible for increased knowledge and improved clinical care for Australians, resulting in significant increases the health, wellbeing and quality of life for all Australians. In addition, investment in the Australian HMR sector has been demonstrated to provide consistent economic returns, thereby having the potential to continue to mitigate the rising health costs facing Australians into the future. The 2008 Access Economic report commissioned by the Australian Society for Medical Research (ASMR) [1] demonstrates that between 1993 and 2005, every dollar invested in HMR returned on average $2.17 in health benefits.

A number of reports have been commission looking at the future cost of healthy living and health and aged care costs in Australia into the future:

- The Australian Government's Intergenerational Report [2] projects that Federal Government expenditure on Health and Ageing will increase from the current level of 25% of the total Government spend to almost 50% of the total Government spend by the years 2049-2050.
- The 2008 Goss report [3] of future Australian Health Expenditure projects that Health and aged care spend will increase from 9.3% of Australia's gross domestic product (GDP) in 2003 to 12.4% of GDP in 2033.
- The 2012 Access Economics report commissioned by ASMR: Extrapolated returns on investment in NHMRC medical research [4] shows an increase in health system expenditure from the current (2012) spend of $113 billion to $3.3 trillion by the year 2062.

Looking specifically at sleep disorders, the current cost to the Australian economy is more than $5.1 billion a year in health care and indirect costs, with an additional cost of $31.4 billion a year due to the reduction in life quality caused by sleep disorders [5]. In the recently published report by Deloitte Access Economics: Re-awakening Australia – The Economic Cost of Sleep Disorders in Australia, commissioned by the Sleep Health Foundation [5] it is reported that more than 1.5 million Australian adults, equivalent to 9% of the population, now suffer from sleep disorders. This number is up from 6% of the population estimated to suffer from sleep disorders reported in 2004 in the Access Economics report commissioned by the Australasian Sleep Association [6]. In both reports, the prevalence of sleep disorders in the community is in fact likely to be higher as only individuals diagnosed with sleep disorders have been considered.

The 2011 report [5] found that:

- $250 million per annum is spent in the management of sleep disorders
- $540 million per annum is spent on health care costs for conditions associated with sleep disorders, including cardiovascular disease, diabetes, and mood disorders;
- an additional $4.3 billion per annum is spent in indirect costs, including $3.1 billion in lost productivity and $650 million in informal care and other costs resulting from fatigue-related workplace accidents and motor vehicle crashes

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

A series of reports published by Access Economics, commissioned by ASMR [1, 4, 7, 8] have clearly demonstrated that investment into the Australian HMR sector generates consistent economic returns. These reports show that:

- "Australian health R&D expenditure between 1992-93 and 2004-05 is estimated to return a net benefit of approximately $29.5 billion. For the average dollar invested in Australian health R&D, $2.17 in health benefits is returned, with a minimum of $0.57 and maximum of $6.01" [1]
- "Health R&D provides returns to Australia of 117%, exceeded only by mining (159%) and wholesale/retail (438%) of sectors considered" [1]
- Investment in the NHMRC between the years 2000 to 2010 is projected to save $966 million in direct and indirect costs to the Australian health system [7]

NHMRC is the primary agency responsible for providing funding and guidance into the HMR sector in Australia. The NHMRC funding provides research and people support for Australian health and medical researchers, and has close relationships with sister organisations in the US, Canada, the UK, Europe and Asia. Maintaining the NHMRC as the federal body to disseminate Government funding for HMR in Australia is essential to ensure appropriate expenditure and management of funds invested in the Australian HMR sector, as well as the dissemination of findings and timely translation of research findings into policy and clinical practice.

- In 2011 to 2012, investment in the NHMRC represented 0.8% of Australian health expenditure ($113 billion).
- Since 1970, the commercialised benefits of research and development funded by the NHMRC are $6.1 billion [1].
- The projected commercial returns from research and development funded by the NHMRC between 2000 to 2010 are $1.45 billion for cardiovascular disease and cancer alone [7].

Despite the sustained success of the Australian HMR sector on an international scale, and the demonstrated return on investment, in order to meet the future challenges of an ageing population, increasing burden on the Australian Healthcare System, and unsustainable Health and Ageing Care costs additional investment into the HMR is required.

- In the years 2004 to 2005, Australia spend on health and medical R&D was $2.8 billion, or 0.38% of Australia's GDP, ranking us in the middle of comparable OECD countries [9].
- On a global scale, Australian health and medical R&D expenditure was estimated to be 1.1% of the global expenditure on health and medical R&D. The proportion of world health returns attributable to Australian health and medical R&D is approximately 3.04% [1].

In addition to Federal Government funding for HMR, other sources of funding need to be identified and established in order to continue to build the strong HMR sector in Australia, and to ensure that our international reputation in the HMR sector is maintained, as well as continuing to provide health, well-being and economic benefits to all Australians.

Encouraging industry partners to invest further into the Australian HMR sector is an important future goal for the Australian Government. Such investment will work to enhance the health and economic returns from the HMR sector, and work to building stronger industry partnerships in these areas, thereby facilitating biomedical technology research and development, and research translation, as well as strengthening Australia's export market with the development of new vaccines and medical technology. At present, just over 25% of Australian HMR funding is provided by the commercial sector [1].

In the area of sleep research and sleep medicine, a major success story is the development of Continuous Positive Airway Pressure (CPAP) as a treatment for sleep apnea, which was discovered and developed by Australian researchers in Sydney. The prevalence of sleep apnea is estimated to be between 3-7% of the population, and is characterised by closure of the upper airway during sleeping, resulting in a lack of oxygen, or hypoxia, to the brain. Consequently untreated individuals with sleep apnea wake repeatedly across the night to resume breathing, resulting in severely disrupted sleep. Daytime consequences of sleep apnea include reduced neurocognitive functioning, reduced alertness, and increased risk for accidents. In addition sleep apnea is associated with an increased risk for obesity, metabolic dysfunction, diabetes type-2, stroke and cardiovascular disorders. CPAP is recognised as the gold standard for the treatment of sleep apnea, and the CPAP industry is now a multibillion dollar international industry.

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

With the increased number of Australians living for longer, one of the major challenges facing the Australian Health care system in the future is disorders related to increased age, as well as chronic disorders, many of which manifest in the early years and persist throughout the lifetime of individuals.

Sleep disorders represent a unique class of disorders, in that essentially every Australian will experience some form of sleep disorder at some stage of their life (e.g., insomnia, sleep apnea), and that sleep disorders may be both a primary disorder, and also a comorbid disorder associated with other medical conditions, including psychiatric and mood disorders, cardiovascular disorders, cancer, conditions associated with pain, infections including HIV and influenza and metabolic disorders. Sleep disturbance is also a risk factor for the development of many of these disorders, e.g., psychiatric and mood disorders, cardiovascular disorders and metabolic dysfunction. Consequently sleep is an important discipline and research area that overlaps with many other health and medical disciplines for a multidisciplinary approach to gaining greater understanding of heath and medical conditions and development of novel, multifacteted management and treatment strategies.

For example:

- Dementia is a significant health problem in Australia with our ageing population, with associated health expenditure projected to outstrip that of any other health condition by the 2060s. Delaying the onset of dementia by 5 years through Australian HMR will result in estimated savings of $67.5 billion by 2040 [1]. Dementia, as with many other neurodegenerative disorders, is associated with sleep disturbance and circadian disruption. Disturbances to the sleep and circadian systems in patients with dementia, including Alzheimer's Disease, Fronto temporal dementia and the prodrome to dementia Mild Cognitive Impairment (MCI), have been associated with worsening of primary symptoms as well as greater neurocognitive decline, both of which contribute to an increased likelihood of patients being placed into care, and increased health care needs.
- Diabetes type-2 is Australia's largest growing chronic disease and its incidence is projected to increase by 436% in the period 2003-2033 [3]. Prevention or delay of vision loss associated with diabetes alone will save $7.6 billion by 2025 [1]. Sleep disturbance, due to sleep disorders and other factors such as shiftwork and voluntary sleep loss, has been identified as a modifiable risk factor in the development of obesity and diabetes type-2. The relationship between sleep and diabetes has yet to be fully elucidated, but better understanding has the potential to develop preventative programs and new treatment regimes.

How can we optimise translation of HMR into both commercial and social outcomes?

In order to optimise the translation of HMR findings we need to ensure a diverse HMR workforce, incorporating basic researchers, clinical researchers, clinician researchers, nurse practioners, other health workers and clinicians. In order to build and maintain a strong HMR workforce we need to develop clear and sustainable career paths for people working in the sector, and find ways to attract and retain people in the sector.

We also need to build strong and meaningful alliances between research institutes and university departments, so that knowledge and expertise may be shared, as well as sharing infrastructure and resources, including access to patient populations.

Another important aspect is the development of strong relationships between researchers, funding agencies and industry partners. These relationships will facilitate the translation of research findings into clinical practice and policy in a timely fashion. In addition, these relationships will allow for the sharing of knowledge and technologies to enhance research projects and ensure Australian health and medical researchers continue to conduct their research with cutting edge technology and state of the art techniques.

Developments in technology and communication systems now allows for large collaborations or collaborations between research groups separated by large distances to occur more easily and efficiently, increasing the breadth of multidisciplinary research teams and projects possible. Continued advances in communication and establishment of national databases will further enhance these collaborations and the research outcomes possible, as well as facilitating translation of research findings.

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