



## **The Australian Society for Medical Research**

Submission to

### **The House of Representatives Standing Committee on Economics**

#### *Increasing Productivity Growth in the Australian Economy*

January 2010

## **Declaration of interests**

The Australian Society for Medical Research (ASMR) represents members from the health and medical research sector including researchers from universities and research institutes, medical colleges and patient groups.

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).

ASMR receives direct funding from the NHMRC for ASMR Medical Research Week®, a public outreach program that raises public awareness of medical research in Australia.

## **The Australian Society for Medical Research**

The Australian Society for Medical Research (ASMR) is the peak professional body representing the nation's HMR sector. In addition to more than 1400 direct members, ASMR represents the sector through 57 affiliated professional societies and medical colleges representing an additional 18,000 people actively involved in health and medical research (HMR). Our corporate and disease-related foundation memberships bring a further 100,000 Australians with an interest in HMR in association with ASMR.

Our mission is to foster excellence in Australian HMR and to promote community understanding and support of the sector through public, political and scientific advocacy. ASMR has a demonstrable knowledge and understanding of the HMR community as a result of it being closely connected to its members and actively involved in research concerning the sector's productivity, workforce conditions and planning.

## Introduction

Over the coming decades, Australia faces unprecedented challenges to the health of the nation posed by an ageing population, potential impacts of climate change on health, increasing incidents of life style-related disease and substantial disease-burden amongst indigenous populations. The economic burden associated with this is unsustainable. Currently Australia spends 1 in 12 dollars on health, but by 2012 this will rise to 1 in 8 dollars.

In 2003, the ASMR commissioned a report from Access Economics - *Exceptional Returns: The Value of Investing in Health Research & Development in Australia*<sup>1</sup>, to examine the returns – in both economic and health indices, on investment in Australian health and medical research (HMR). This report was updated by Access Economics in 2008<sup>2</sup>, but the message remained unequivocal – investment in Australian HMR provides exceptional returns, surpassing every other source of rising living standards in our time and contributing an extraordinary level of productivity in both an economic and health context.

The Australian HMR sector truly ‘punches above its weight’ on the international stage, contributing 3.05% of the total world HMR R&D from only 1.1 % of the expenditure and delivers twice the OECD average on a per capita basis. It also produces world-class research rapidly translatable into beneficial health outcomes e.g. treatments for cervical cancer, peptic ulcers, bipolar disorder. In addition, 6 Nobel Prizes have been awarded to Australians for contributions to medicine and physiology.

This submission summarises the exceptional level of productivity growth from the Australian HMR sector focusing particularly on its impact in economic terms, and proposes key measures necessary to preserve and enhance this level of output going forward.

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<sup>1</sup> Access Economics. *Exceptional Returns: The Value of Investing in Health Research & Development in Australia*. In; 2003, <http://www.asmr.org.au/Publications.html>

<sup>2</sup> Access Economics. *Exceptional Returns II: The Value of Investing in Health Research & Development in Australia*. In; 2008, <http://www.asmr.org.au/Publications.html>

## **a) Trends in Australia's productivity growth rate during the past 20 years – the HMR perspective.**

Historically, the productivity of the Australian HMR sector has significantly enhanced the health and wellbeing of the nation, with a direct impact on economic returns through decreased hospital stays, reduced Medicare and PBS costs and a healthier, more productive workforce. For example, between 1960-1999, an 8-year (11.5%) gain in life expectancy, as well as improved wellness were worth \$5.4 trillion to Australians - a figure more than 8 times larger than the entire national output in 2002. Moreover the gains associated with the prevention and treatment of cardiovascular disease alone totalled 1.7 trillion.<sup>1</sup>

Funding for HMR in Australia is derived from a range of organisations across the public and private sectors, including the Commonwealth, state and local governments, private non-profit (PNP) organisations, and industry. However, the largest single source of funding is the federal government through a suite of National Health and Medical Research Council (NHMRC) funding mechanisms covering research, infrastructure and people support.

In 2004-05, \$2.8 billion was spent on health R&D in Australia. This investment, at 0.38% of GDP, places Australia in the middle of comparable OECD countries. New Zealand, The Czech Republic and Japan spend less relative to GDP while the United Kingdom, United States, Germany, France, Denmark and Canada spend more.<sup>2</sup>

- Around 44% of health R&D was performed by higher education facilities, 26% by business, 16% by PNP organisations and 14% by Government facilities.
- In 2004-5, the Commonwealth Government contributed around \$1.4 billion of funds across all five sectors – the majority of this spending went to higher education facilities (79%).
- The majority of health R&D since 1992-93 has been undertaken in clinical research, which has increased from around \$413 million to \$1.43 billion at an average annual growth rate of 12%.
- R&D expenditure on human pharmaceutical products and public health had similar expenditures in 2004-05 with \$548 million and \$536 million spent respectively, although the average annual growth rate for the former was larger at 15% compared to 12%.

Investment in Australian HMR provides exceptional returns:

- The projected net benefits from health R&D over the period 1992-93 to 2004-05 are estimated as \$29.5 billion, representing an average net benefit of around \$2.3 billion per year.<sup>2</sup>
- The return on investment (ROI) in Australian HMR is around 117%, surpassed only by that of the mining (159%) and wholesale/retail sectors (438%). The health R&D ROI is also well above that the average gross rate of return presented within the Productivity Commission (2007) review (65%-85%).
- Commercialisation of HMR in Australia has also been growing at 16% and economic benefits include the generation of over 4,000 knowledge-based jobs resulting from the development of health and medical research discoveries.
- For every dollar invested a maximum of \$6 in health benefits to Australians is returned, with gains of over \$100 and \$200 billion for Australian females and males, respectively.

Research into cardiovascular disease is a good example of the potential social and economic impact of HMR productivity. The healthcare and social costs of heart attack and chest pain are large: <sup>3</sup>

- Cost of heart attack \$281k
- Chest pain episode \$74k
- Projected fatalities 10,000

Australian HMR aimed at identifying preventative measures for cardiovascular disease can lead to:

- Faster treatment when symptoms are recognized
- Compliance with medical regimes
- Adoption of lifestyle changes
- Advances in drug development and delivery, such as The National Heart Foundation of Australia's LIPID trial into the heart health benefits of a cholesterol lowering drug, Pravastatin.

Integrating prevention and acute health care services through Australian HMR has led to an 87% reduction in hospital readmissions for cardiac-related events, with dramatic savings to the health care system.<sup>4</sup>

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<sup>3</sup> *The economic cost of heart attack and chest pain*, Access Economics 2009

<sup>4</sup> Holst et al *Eur J Heart Fail*. 2001: 619–25

## **i) The adequacy of resources devoted to training and development of the labour force.**

Australia boasts one of the most highly-trained and highly-productive HMR workforces in the world, as evident by a strikingly high international standing by citation and impressive translational outcomes in global terms e.g. lithium for treating bipolar disorder, the bionic ear, antibiotic treatment of *Helicobacter pylori* in peptic ulcers, and a cervical cancer vaccine.

In order to better evaluate and model the Australian HMR labour force, the ASMR recently commissioned a study that projected attrition from the workforce by 2019 and drew conclusions about the number of new staff required to replace the workforce lost.<sup>5</sup> Estimates were also made of the number (and related cost) of additional PhD-qualified individuals who would need to enter the workforce by 2019 to maintain current levels and also to match the level of comparable OECD nations.

Key findings of this study were:

- The Australian HMR workforce consists of 23,411 research staff of which 15,203 are PhD-qualified.
- From 2009-2019, an estimated 6,250 people will leave the HMR workforce, about 4,000 of whom hold a PhD.
- Maintaining the current ratio of PhD-qualified persons:working population up to 2019, will require an additional 5,700 PhD-trained individuals at a projected cost of approximately \$810 million in 2009 dollars (excluding the cost of scholarships and supervision).
- Reaching comparable levels of PhD completions per 100,000 in the workforce will require about 5,700 additional PhD graduates to be comparable with the US, about 22,800 to be comparable with Germany and about 38,000 to be comparable with Switzerland.

A major source of funding underpinning the human capital in the HMR sector is the NHMRC fellowship scheme. However, the current funding cycle for the NHMRC has now ended, meaning in real terms, the sector faces a decline in NHMRC investment going forward. This has already impacted on the HMR labour force with an unprecedented 65% of Senior Fellowship applicants ranked as 'excellent' (in the top 10% globally) by their peers remaining unfunded in 2009 (up from 33% in 2008).

Such funding pressure is not surprisingly having a significant impact on the sentiment of the HMR community – the majority of the respondents to a recent survey commissioned by ASMR on issues related to employment and funding opportunities, indicated that as a result of employment insecurity and/or lack of funding, they had moved overseas or were contemplating moving overseas.<sup>6</sup> This has major implications for Australia's ability to attract and retain its best and brightest researchers, seriously impeding the momentum of discovery and the realisation of prior investment into the sector. The provision of adequate resources for an attractive and sustainable career structure for Australian medical researchers is a national imperative.

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<sup>5</sup> Schofield D. *Planning the Health and Medical Research Workforce 2010-2019*. In; 2009. <http://www.asmr.org.au/Publications.html>

<sup>6</sup> Kavallaris M., Meachem S., Hulett M., West C., Pitt R., Chesters J., Laffin W., Boreham P. and Khachigian L. *Perceptions of Health and Medical Research Careers: The Australian Society for Medical Research Workforce Survey*. Medical Journal of Australia. 2008 188:520-524.

**j) The key reforms and measures that can be undertaken to lift Australia's permanent rate of productivity growth.**

*A sustained funding mechanism for Australian HMR.*

Chartering a well-planned HMR workforce with an appealing environment that attracts and retains highly skilled and productive human capital will require an ambitious, innovative and sustained investment program. Current investment in Australian HMR is cyclical and vulnerable to fluctuation, placing at risk key investment and creating the potential for significant economic loss. To ensure the sector maintains its extraordinary level of productivity and continues to deliver strong economic returns, it needs insurance against decreases in funding.

The ASMR proposes that future investment strategies could centre around two major funding streams:

1. National funding for the NHMRC that at the very least ensures the Commonwealth invests sufficiently for Australia to be above the average of other OECD countries.
2. A value-added system where Australia is part of a regional union (Asia Pacific union) that commits to an agreed level of investment providing a realistic and appropriate base of support with the provision for responsive additional funds for targeted projects. Such a scheme could be modeled upon the highly successful European Union 7th Framework where member countries have committed 3% of GDP to R&D, including that for HMR.

*The necessity to fully fund HMR.*

A major restrictive factor in the sector is that research salaries and infrastructure are not fully supported. Provisions for supporting research staff on NHMRC grants is significantly below the actual cost of salaries at host institutions (up to 30% shortfall). This shortfall is crippling the ability to fully perform research projects and significantly impacting on the productivity of the sector. Similarly, funds for research infrastructure have not kept pace with that required to adequately perform the research. Mechanisms to provide additional funding to cover the salary 'gap' and infrastructure deficiencies are needed desperately.