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National Health and Medical Research Council
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INVESTING IN AUSTRALIA'S HEALTH
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The Chairman
Productivity Commission
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Please find attached the NHMRC's response to the Productivity Commission's Draft Research Report - *Public Support for Science and Innovation*

This response focuses on emphasising the unique features of health and medical research, within the wider research and development sector, in ways that address the "scope for improvements" element of Item three of the Commission's Terms of Reference.

It provides additional information regarding the role of the NHMRC and how it proposes meeting the expectations of Government as outlined in the recent Statement of Expectation from the Minister for Health and Ageing.

The attached submission also draws attention to other matters that may be of interest to the Commission, including some examples of international best practice in government science and technology policy.

I hope that the NHMRC's submission is useful to the Commission in finalising its report.

Yours Sincerely,

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21 December 2006

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Australian Government

National Health and Medical Research Council

National Health and Medical Research Council Response to the Productivity Commission's Draft Report on Public Support for Science and Innovation in Australia

December 2006

Introduction

This response focuses on distinguishing the unique features of health and medical research (HMR), within the wider research and development sector, in ways that address the "scope for improvements" element of Item 3 of the Commission's Terms of Reference. Overall, the NHMRC considers the draft Report to be a document that addresses Item 2 and partially addresses Item 3. Two specific NHMRC concerns are raised in this response to the draft conclusions of the Commission, relating to Australia's distance from markets and increasing business expenditure on research and development.

The NHMRC would first like to refer to the key responsibilities of the Council and its Chief Executive Officer, as specified in Sections 3 and 7 of the *National Health and Medical Research Council Act*. Their four responsibilities are to:

(a) raise the standard of individual and public health throughout Australia; and

(b) foster the development of consistent health standards between the various States and Territories; and

(c) foster medical research and training and public health research and training throughout Australia; and

(d) foster consideration of ethical issues relating to health.

As background on the upgraded activities and priorities of the NHMRC, enclosed for the Commission's information is the **Statement of Intent for 2006-07** (SOI) recently delivered to the Minister for Health and Ageing. The SOI is the Chief Executive Officer's response to the Minister's Statement of Expectation (also attached) and represents an important agreement with the Australian Government that sets the future directions of the NHMRC, in relation to health and medical research.

This response may also assist the Commission in considering its Term of Reference 4, relating to the broader social impacts of supporting health and medical research in Australia. The NHMRC wishes particularly to support the Commission's focus on the outcomes being achieved from such support and the need to improve evaluation processes.

The unique role of Health and Medical Research

While the Commission has largely focussed on the private sector and market forces in science and innovation, the NHMRC would like to note that HMR should be considered more broadly. HMR has a key role in the Australian health system.

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Governments have a key role in the health system, as funders of HMR, as funders and deliverers of health services and as regulators of those goods and services.

The 1998 Wills Review of HMR[1] made several important points that remain relevant to this inquiry, especially in relation to the role of government in supporting HMR. HMR has two important objectives: (1) improving the performance of government health services, through continuous improvement; (2) improving the health of Australians, especially by preventing the future occurrences of ill-health. Thus, while HMR discoveries do lead to significant commercial outcomes, it also leads to improved health through prevention and treatment of disease which in turn reduces the burden (and cost) on the health system.

HMR may thus be applied within two important "public good" contexts. Firstly, knowledge from HMR informs government health policies (evidence-based health policy) and practices at all levels of government; secondly, uptake of the results of HMR into clinical practice (evidence-based medicine). In this context, policy and practice focused research (or health services research) may not deliver outcomes or products that may be readily commercialised.

However, there are several illustrations of the significant returns on investment in public health already achieved. The first is the $5 return for every $1 spent on health R&D as reviewed by the Commission from the Access Economics Report - *Exceptional Returns: The Value of Investing in Health R&D in Australia*.

The second is the 2003 Abelson Report[2], which made an epidemiological and economic analysis of five public health programs over a thirty-year period. These were programs to reduce tobacco consumption, coronary heart disease, HIV/AIDS, measles and Hib-related diseases, and road trauma. As one example of the longer-term merit from such government activity, that Report estimated a return on investment of 2:1 for public health programs reducing tobacco consumption.

An important conclusion by the Wills Review (1998:160) remains current and appropriate to illustrate the unique nature of the public good characteristics of HMR:

> *Second, governments have an essential role to play in supporting fundamental research. As outlined in Section 4.01, the Industry Commission 1995 report on research and development recognised this role for government. Research creates benefits that accrue to society rather than to the researcher or to the sponsor of the research. New knowledge generated by research is published in papers that can be freely read and expanded upon by anyone around the world with appropriate skills.*
>
> *Knowledge from a range of sources is combined and built upon, sometimes over many years or even decades, before tangible value is realised. Under these circumstances, and without public support, individuals or private profit-oriented organisations would not invest sufficiently in research to create maximum benefit for society as a whole.*

Lastly, a recent ABS summary of research and development expenditure for 2004-05[3] shows that most of the R&D undertaken by the business sector was in the "engineering and technology" classification while most (75%) "medical and health sciences" R&D in that year was undertaken by universities and government.

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[1] **The Virtuous Cycle – Health and Medical Research Strategic Review**. Chapter 5. *At* www.health.gov.au/internet/wcms/publishing.nsf/Content/hmrsr.htm

[2] **Returns on Investment in Public Health** (2003): Applied Economics. *At* www.health.gov.au/internet/wcms/publishing.nsf/Content/health-pubhlth-publicat-document-roi_eea-cnt.htm

[3] **Research and Development Expenditure, 2004-05. All sector summary** (2006): Australian Bureau of Statistics. *At* www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/8112.02004-05?OpenDocument.

HMR assists in creating and sustaining Australia's competitive advantages

Australia has a well-deserved reputation for excellence in HMR and success its HMR researchers. This success means less disease, better treatmenst, improved quality of life and longer lifespans. This success is also illustrated by six Nobel prizes for Physiology and Medicine and a per capita research output double the OECD average.

There is great potential for HMR to contribute to economic growth in Australia. As recently noted by Invest Australia[4]:

> *Australia's biggest appeal once lay in its abundance of natural resources. While mining and agriculture remain an important part of the economy, Australia has been transformed into a diverse, services based economy. Emerging technology sectors such as biotechnology, information and communications technology and nanotechnology have increased in prominence.*

The "services sector" (more broadly-defined) now constitutes more than three-quarters of the Australian economy[5] and eighty-five per cent of employment[6]. These are emerging employment and knowledge strengths upon which Australia can build new advantages through employing highly-trained researchers in HMR.

Two government initiatives seek to enhance the attractiveness of Australia as a competitive location for undertaking world-class R&D. The **Federation Fellowships**[7] of the Australian Research Council:

> *……..provide opportunities for outstanding Australian researchers to return to, or remain in key positions in Australia. Outstanding international researchers may also be attracted to undertake research which is demonstrated to be of national benefit to Australia.*
>
> *It is expected that, through the Federation Fellowships, Australian researchers of international renown will make a significant contribution to the generation of knowledge and the Australian innovation system. They will also assist with the development of stronger links between researchers, industry and the international research community.*

The NHMRC's **Australia Fellowships**[8] more particularly relate to encouraging HMR. They help the most outstanding health and/or medical researchers, both nationally and/or internationally, to undertake research that is of major importance in its field and is of significant benefit to Australian health and medical research.

The **Australia Fellowship** Scheme aims to:

- increase Australia's capacity for outstanding health and medical research at the highest competitive level internationally.

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[4] **Australia. Your Competitive Edge** (2005:5): Invest Australia
At www.investaustralia.gov.au/media/IA_flagship_05.pdf

[5] **Services Sector 2004-05. Industry Brief** (2006): Department of Industry, Tourism and Resources**.**
At www.investaustralia.gov.au/media/RP_SRV_ITRIPD_20%Services_Brief_200405.pdf

[6] **Inquiry into the Current and Future Directions of Australia's Service Industries** (2006): Submission to *Hof R Standing Committee on Economics, Finance and Public Administration,* Department of Industry, Tourism and Resources. *At* www.aph.gov.au/house/committee/efpa/services/subs/sub021.pdf

[7] **Federation Fellowships** (2006): Australian Research Council.
At www.arc.gov.au/apply_grants/discovery_federation.htm

[8] **Australia Fellowships** (2006): National Health & Medical Research Council.
At www.nhmrc.gov.au/fellows/apply/granttype/career/index.htm

- encourage high calibre Australian researchers to continue their work in Australia.
- attract outstanding Australian researchers currently based overseas.
- attract leading international researchers to Australia, to benefit Australia through outstanding contributions to knowledge in health.
- further support the internationalisation of Australian health and medical research through enhancement of networks between the Australian and international research communities.
- enhance the reputation of Australia as a place of excellence in health & medical research.
- support the development of better health practice and policy, and the development of innovative industries in Australia.
- support the training of future health and medical researchers in intellectually stimulating environments.

Geography as policy barrier.

The NHMRC questions the Commission's conclusion that barriers such as distance "do not generally constitute a strong basis for policy action" (p.6.15). In this context, the NHMRC would like to draw to the Commission's attention to the conclusions of recent research within Treasury, in relation to labour productivity[9].:

> *Finally, this work also raises questions that extend beyond just the domain of labour productivity. If geographic factors can shape labour productivity outcomes so obviously, what does this mean for other economic activity and outcomes? We might expect capital to labour ratios will look different in remote areas under a similar hypothesis to that contained in this work. Similarly, we might also expect that the rates of return to other types of investment, such as research and development, may also be different.*
>
> *Given that the result in this paper suggests that more than half of Australia's productivity gap with the United States is not explained by geography, these are clearly very important questions. Their answers will ultimately provide better guidance on where policies might be best targeted to ensure the ongoing growth of Australian labour productivity which, itself, will be a platform for sustained improvement in wellbeing throughout Australia.*

Increasing BERD.

The NHMRC also questions the Commission's conclusions regarding increasing business expenditure on R&D (p.7.5). This has been, and remains, a key Australian government policy for increasing innovation in the private sector. It is also a key part of government policy in the USA, the United Kingdom, Ireland and the European Union. The NHMRC would like to make the following observations.

Firstly, the NHMRC notes that "stimulating business investment in R&D" was the first recommendation made recently by a Working Group for the Prime Minister's Science, Engineering and Innovation Council[10], especially in relation to Australia's world class

[9] **Does Australia's geography affect labour productivity** ? *Economic Roundup Spring 2006*. The Treasury. *At* www.treasury.gov.au/documents/1190/HTML/docshell.asp?URL=06_distance.asp

[10] **Strengthening Australia's Position in the New World Order.** ***Working Group on Asia. Report to PMSEIC***. June 2006. At www.dest.gov.au/sectors/science_innovation/science_agencies_

capabilities in health. There was also concern about the earlier decrease from 150% to 125% in the deduction factor for the R&D tax concession.[11]

Secondly, the NHMRC would like to draw attention to the Minister for Health and Ageing's **Statement of Expectation** to the NHMRC in September 2006. This Statement of Expectation requires the NHMRC to:

> "*develop and implement a framework for supporting the transition of health and medical research outcomes through to commercialisation, with the express objective of ensuring that Australia's economy benefits more effectively from its investment in such research*".

This requirement is reflected in the NHMRC's Statement of Intent to the Minister and the draft NHMRC Strategic Plan (2006-2009). The NHMRC will be consulting widely on how best to inform this strategic goal of government.

Enhancing the nexus between HMR and industry take-up is also a key aspect of the December 2006 Cooksey review of UK health research funding[12].

This short outline of the NHMRC's future HMR strategy may assist the Commission in responding to Items 3 and 4 of the Inquiry's Terms of Reference.

National Consistency of Regulation

The NHMRC supports the Commission's view that *"there should be national consistency in the application of privacy regulation and in ethical review of multi-centre research"* (draft finding 5-1, point 2). The NHMRC notes the inquiry by the Australian Law Reform Commission (ALRC) into the Commonwealth *Privacy Act 1988* and reiterates its view that it is essential that Australia has a single, simplified, privacy regime.

On the subject of national consistency in ethical review of multi-centre research, the NHMRC notes the Commission's proposed recommendation. At the October 2006 meeting of the Australian Ministers Advisory Council, agreement was reached on establishing a nationally harmonised system of scientific and ethics review of multi-centre health and medical research. The national coordinating body will be the NHMRC, which is tasked with creating a national harmonised system based on mutual recognition by all jurisdictions of the single review undertaken by recognised human research ethics committees in any jurisdiction

In addition, the NHMRC has progressed other initiatives of which the Commission may not be aware. A key development in removing impediments to such multi-centre research has been the **National Ethics Application Form** (NEAF)[13], available for public use since May

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committees/prime_minister_science_engineering_innovation_council/meetings/documents/pmseic_working_group_report_pdf.htm

[11] e.g. see **The Performance Record of Australian Manufacturing. Research Paper 22 1999-2000**. Parliamentary Library. *At* www.aph.gov.au/LIBRARY/Pubs/RP/1999-2000/2000rp22.htm

[12] **Cooksey Review. A Review of UK Health Research Funding**. *December 2006*. UK Treasury. *At* www.hm-treasury.gov.uk/independent_reviews/cooksey_review/cookseyreview_index.cfm

[13] **National Ethics Application Form**. *At* www.neaf.gov.au/Default.aspx

2006. This Application Form is an electronic, web based form for use by researchers in any research discipline when submitting research proposals to one or more Human Research Ethics Committee (HREC) for review.

Funding Support for Science and Innovation

The NHMRC notes the Commission's finding that Australia is currently well served by its public funding support for science and innovation. The NHMRC is committed to improving the health of Australians through funding innovative HMR and believes strongly that HMR funding requires separate treatment by the Commission in this regard. The analysis of return on investment in science needs to separately address the context of the HMR sector and not focus only on science and innovation generally.

The NHMRC would like to draw the Commission's attention to page 5 of its original submission, regarding the need first to identify Australia's health and medical research needs before determining an appropriate funding level.

The NHMRC also detailed in its original submission to the Commission its commitment to expanding Australia's health and medical research infrastructure (facilities and equipment and the services which support them) as an essential component in developing Australia's HMR. It notes that the need for expanded infrastructure was the stated position in many of the submissions made to the Productivity Commission.

The NHMRC supports the Commission's proposal for a national audit of existing infrastructure capacity to optimise infrastructure utilisation. It does suggest that this should be a key component of the process by which the Commission should determine whether existing infrastructure capacity is sufficient to underpin Australia's science and innovation.

Science and Innovation as a national funding priority

As discussed by the Commission, the Prime Minister announced four national research priorities in 2002. One of these - "promoting and maintaining good health" – indicates the public good associated with HMR through the preventative aspects of its outcomes. Similar priorities are increasingly being addressed by other governments in their integrated science and innovation strategies, as these governments seek to maintain the international competitiveness of their own policy regimes and business support programs. Four examples are given below, from the United States, Canada, the United Kingdom, and Ireland

In the *United States,* there were two noticeable features of the President's 2006 State of the Union presentation[14]: (1) increased investments in research and (2) increased expenditure on R&D tax incentives. The US National Institutes of Health has created its **Roadmap for Medical Research**[15], to include quicker transformation of basic research discoveries into drugs, treatments or methods for prevention.

[14] **American Competitiveness Initiative**, February 2006. *Office of Science and Technology Policy.* At www.whitehouse.gov/stateoftheunion/2006/aci/

[15] **NIH Roadmap for Medical Research.** Fact Sheet. National Institutes of Health. At http://nihroadmap.nih.gov

In *Canada*, the Canadian Institutes of Health Research (CIHR) has mandated roles under the *CIHR Act* to excel "in the creation of new knowledge and its translation into improved health for Canadians, more effective health services and products and a strengthened Canadian health system". Under Section 4(i) of that Act, this includes "encouraging innovation, facilitating the commercialisation of health research in Canada and promoting economic development through health research in Canada". The CIHR is currently developing a framework to measure the impact of health research[16] and a draft policy on access to research outputs is also under development.[17]

In the *United Kingdom*, the 2003 **Lambert Review of Business-University Collaboration**[18] has generally guided public policy development within the bilateral aspect under review. The UK Government has since responded with a ten-year science and innovation investment framework for 2004-2014. In its March 2006 Budget[19], the Government announced additional support through its R&D tax credit, to encourage business investment in R&D.

This 2006 Budget also announced a review of the effectiveness of the UK's eight Research Councils. The Medical Research Council currently has a budget of £546 million, which is about 20 per cent of the total expenditure of these Councils. The same 10-year Science and Innovation Investment Framework is also guiding the national health research strategy of the UK Department of Health[20].

In *Ireland* a 2004 goal[21] aims to increase Irish business investment in research and development from 0.9% of GNP to 1.7% of GNP by 2010. This stemmed from a 2002 Agreement by European Union Heads of State to raise expenditure on R&D (generally) to 3% of GDP by 2010.

A seven-year **Strategy for Science, Technology and Innovation** was announced in June this year[22], with priorities in agriculture, health, environment and natural resources. The Minister's announcement drew upon the globalised nature of competitive government policies and the place of increased R&D, in the following extract:

> *Science, Technology and Innovation is vital to our economic and social progress. In an increasingly globalised world, it is recognised that high levels of investment in research and innovation are essential, both for economic competitiveness, and to yield innovations in areas such as healthcare and environmental technologies which make tangible improvements to our quality of life.*

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[16] **Developing a CIHR Framework to Measure the Impact of Health Research**. Canadian Institutes of Health Research. *At* www.irsc.gc.ca/e/30324.html

[17] C**onsultation on a CIHR draft Policy on Access to Research Outputs**. Canadian Institutes of Health Research. *At* www.cihr-irsc.gc.ca/e/32395.html

[18] **Lambert Review** (2003), HM Treasury. *At* www.hm-treasury.gov.uk/consultations_and_legislation/lambert/consult_lambert_index.cfm

[19] **Science and Innovation Investment Framework 2004-2014: next steps** (Budget, 2006). HM Treasury. *At* www.hm-treasury.gov.uk/budget/budget_06/assoc_docs/bud_bud06_adscience.cfm

[20] **Best Research for Best Health – a new national health research strategy**. Department of Health. *At* www.dh.gov.uk/PolicyAndGuidance/ResearchAndDevelopment/ResearchAndDevelopmentStrategy/RDStrategyArticle/fs/en?CONTENT_ID=4127109&chk=RKJISx

[21] **Building Ireland's Knowledge Economy. *The Irish Action Plan for Promoting Investment in R&D to 2010***. *At* www.entemp.ie/publications/enterprise/2004/knowledgeeconomy.pdf

[22] **Strategy for Science, Technology and Innovation 2006-2013**. Department of Enterprise, Trade and Employment, Dublin. *At* www.entemp.ie/science/technology/sciencestrategy.htm

On 23 November 2006, the Irish Government also announced a new health research strategy[23] derived from the above **Strategy for Science, Technology and Innovation**. This Irish Government science and innovation policy echoes several of the issues raised in this submission, such as human capital development and commercialising the results of HMR.

Private Sector Investment

The NHMRC would like to draw the Commissions attention to its original submission, in relation to two fundamentals of private sector investment. The first is that Australia has a stable regulatory environment (including for example the R&D tax concession) and, second, that Australia's regulatory framework needs to be internationally competitive. This has been highlighted by the above developments this year in the USA and the United Kingdom.

The NHMRC understands that the private sector component of the health sector is subject to significant government regulation which may increase transaction costs and agrees with the Commission's remarks on page XX of its Overview that *the challenge for public policy is to elicit private sector investment that would not otherwise have been able but for which the collective private and spillover returns are still positive.*

The NHMRC also agrees with the Commission's observation that R&D is often an *input* into activities that are public goods. Such R&D should be financed even if it does not, itself, generate spillovers. Private sector investment in HMR in Australia is low in comparison to that in other countries.

Knowledge Transfer

The NHMRC notes that the Commission's comments on page 6.54 focus more on financial means of support for knowledge transfer (KT). There are other forms of KT which could involve agents such as knowledge brokers, redressing market failure in the effective transfer of this knowledge into policy, practice and the private sector.

A useful distinction can be made between KT which is principally for commercial (private) benefits and KT where principally there are public benefits derived from these commercial mechanisms. The former involves partnerships between universities and industry. The latter means collaborations with a wider range of not-for-profit and other community organisations.

Both types of KT often mean collaborative partnerships with government(s). There is an active process for government of funding research, and assessing and translating the resulting knowledge. Engaging (at a minimum) with health professionals, policy-makers and the private sector then improves the Australian health system, the health of Australians, and the economy through national wealth generation.

This is also a key theme for the Canadian Institutes of Health Research, where "the creation of new knowledge and its translation into improved health for Canadians" is a legislated requirement for the CIHR under its *CIHR Act*. A five-year Knowledge Translation Strategy[24]

[23] **Towards Better Health: Achieving a Step Change in Health Research in Ireland**. Advisory Council for Science, technology and Innovation. *At* www.forfas.ie/publications/show/pub248.html

[24] **Knowledge Translation Strategy 2004-2009.** Canadian Institutes of Health Research. *At* www.cihr-irsc.gc.ca/e/26574.html

has been in place since 2004, which (for example) involves **Knowledge Translation Networks** (between researchers and research users).

Knowledge Translation - as such - is an activity, rather than an outcome and the NHMRC considers that there is merit in considering the potential of "knowledge brokers" to assist in ensuring that KT is effective.

As one example of international best policy practice, the Canadian Health Services Research Foundation (CHSRF)[25] has described "knowledge brokering" as:

> *…..one of the human forces behind knowledge transfer. It's a dynamic activity that goes well beyond the standard notion of transfer as a collection of activities that helps move information from a source to a recipient. Brokering focuses on identifying and bringing together people interested in an issue, people who can help each other develop evidence-based solutions. It helps build relationships and networks for sharing existing research and ideas and stimulating new work. Knowledge brokering supports evidence-based decision-making by encouraging the connections that ease knowledge transfer.*

The tasks of such a broker have been set out by the CHSRF as including

- *bringing people together to exchange information and work together;*
- *helping groups communicate and understand each other's needs and abilities;*
- *pushing for the use of research in planning and delivering healthcare;*
- *monitoring and evaluating practices, to identify successes or needed changes;*
- *transforming management issues into research questions;*
- *synthesizing and summarizing research and decision-maker priorities; and*
- *'navigating' or guiding through sources of research.*

The NHMRC suggests that such roles could be further investigated by the Commission, in considering that part of its third Term of Reference relating to identifying the scope for improvements in the decision-making principles and programs in the public support for science and innovation in Australia.

Research Quality Framework (RQF)

The decision announced on 14 November to proceed with the RQF has been noted and the NHMRC looks forward to participating in the process. The NHMRC is a major funder of the university sector and has particular skills and experience in addressing the important issues of research quality and impact.

One issue for the NHMRC regarding the RQF is that about two-thirds of the total number of institutions funded by the NHMRC are non-university organisations (such as medical research institutes, hospitals, etc). Since these non-university organisations may not be directly affected by the RQF, the NHMRC will be monitoring whether or not implementation of the RQF creates any disparity.

[25] **The Theory and Practice of Knowledge Brokering in Canada's Health System.** Canadian Health Services Research Foundation. *At* www.chsrf.ca/brokering/pdf/Theory_and_Practice_e.pdf