COOPERATIVE RESEARCH CENTRES PROGRAMME REVIEW

Submission by Research Australia

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RESEARCH AUSTRALIA

AN ALLIANCE FOR DISCOVERIES IN HEALTH

ABOUT RESEARCH AUSTRALIA

Research Australia is an alliance of 160 members and supporters advocating for health and medical research in Australia. Research Australia's activities are funded by its members, donors and supporters from leading research organisations, academic institutions, philanthropy, community special interest groups, peak industry bodies, biotechnology and pharmaceutical companies, small businesses and corporate Australia. It reflects the views of its diverse membership and represents the interests of the broader community.

Research Australia's mission is to make health and medical research a higher priority for the nation. We have four goals that support this mission:

- A society that is well informed and values the benefits of health and medical research
- Greater investment in health and medical research from all sources
- Ensure Australia captures the benefits of health and medical research
- Promote Australia's global position in health and medical research.

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INTRODUCTION

Research Australia is pleased to have the opportunity to make a submission to the Review. Research Australia's submission principally addresses Term of Reference A. While Research Australia's membership includes a CRC and participants in CRCs, our submission comments on the CRC Programme's place in the broader health and medical research (H&MR) sector and the improved delivery of healthcare.

The submission briefly examines the nature of the healthcare industry and the H&MR sector to highlight some important characteristics which affect the translation of H&MR. It then expands on this to provide examples of the role of CRCs in translating H&MR and the social and economic benefits of these activities.

Research Australia is supportive of the CRC Programme and believes it has been effective in implementing the outputs of research in ways that have significant social and economic benefits. Research Australia is concerned that the discussion paper's very strong focus on private sector commercialisation of research signals a change to the CRC Programme's guidelines that would exclude non commercial research end users. While commercialisation is one of the paths to translation, in H&MR it is only one path, and Research Australia is supportive of a CRC Programme which values a range of socially and economically beneficial outcomes. In particular Research Australia supports the continued inclusion of public, private and non profit organisations as research end users; a narrow focus on private sector research partners will reduce the scope for translation of publicly funded H&MR and will also adversely affect commericalisation outcomes.

THE HEALTHCARE INDUSTRY IN AUSTRALIA

The healthcare industry is a significant component of the Australian economy, with total expenditures of approximately $147 billion per annum.[1] While it has similarities with other industries, it also has some distinctive features, and these have a bearing on the nature and composition of health related CRCs.

Who pays?

The costs of providing healthcare in Australia are met by the Commonwealth government ($61 billion), State and Territory Governments ($41 billion) and by individuals ($46 billion).[2] (Individuals contribute through out of pocket expenses and insurance premiums for private health insurance, workers compensation and third party motor vehicle insurance.) These are very different groups of 'payers.'

Delivery

Healthcare is delivered by a mix of public, private and not for profit healthcare entities. These range from Government agencies and instrumentalities to corporations, public hospitals and SMEs such as GPs and dentists. Even where governments are not delivering the service, decisions about how, where and when healthcare is delivered are influenced by government agencies which approve products and practices for use and determine which are to be publicly subsidised.

Purchasing decisions

Unlike most markets, the consumer is often not responsible for the purchasing decisions when it comes to health care. In addition to the individual health consumers, purchasing decisions are made by government agencies, large healthcare providers such as hospitals, and by individual clinicians and healthcare workers who decide which products to use; for example which artificial hip to recommend to patients.

Further, while much healthcare is delivered on a transactional basis, other elements of healthcare are delivered through more indirect mechanisms- eg. public health campaigns to reduce smoking and Australian design standards for car safety.

These characteristics of the healthcare sector mean that the market for healthcare products differs from the market for consumer goods or for industrial technology, and this has implications for how H&MR is utilised to improve health outcomes.

[1] Australian Institute of Health and Welfare 2014. *Health expenditure Australia 2012–13.* Health and welfare expenditure series no. 52. Cat. no. HWE 61. Canberra: AIHW.
[2] Ibid.

HEALTH AND MEDICAL RESEARCH IN AUSTRALIA

Australia's diverse healthcare system is reflected in an equally diverse research sector. H&MR is conducted in government agencies (eg. CSIRO); higher education institutions; not for profit organisations (eg. medical research institutes); and private laboratories. It is funded by Commonwealth, State and Territory governments, private philanthropy and corporate investment.

Based on AIHW and Australian Bureau of Statistics data, Research Australia estimates that:

- **$5.5 billion** was spent on H&MR in Australia in 2010/11
- **18% of all Australian R&D** is on H&MR
- **Half** of all Australian H&MR is undertaken in the higher education sector, and H&MR represents around **one third** of all R&D in higher education institutions.
- Almost **one quarter** of all H&MR expenditure is in the private sector (mostly pharmaceutical).
- Philanthropy provides approximately **$200 to 300 million** per annum in funding for H&MR.[3]

Estimates of Commonwealth Government expenditure on H&MR

The Australian Institute of Health and Welfare (AIHW) has estimated that the Commonwealth Government expended $3.86 billion on H&MR in 2011-12.[4] The McKeon Review commissioned its own research, which estimated that the Commonwealth Government expended $2.9 billion on H&MR in 2011-12.[5] The Department of Industry also undertakes an analysis of the level of Commonwealth Government support for Science, Research and Innovation. It has estimated that the Commonwealth Government's support for the Socioeconomic Objective (SEO) of Health for 2011-12 was $1.37 billion.[6] The variation in these three estimates is an indication of the complexity of the H&MR sector as well as definitional and methodological issues. (The Department of Industry's estimate does not allocate 'General University Funds' against SEOs.)

Estimates of Commonwealth Government expenditure on H&MR

Source	Estimate of Commonwealth Government expenditure on H&MR
AIHW	$3.86b
McKeon Review	$2.9b
Department of Industry	$1.37B

While the numbers vary, it is clear that H&MR represents a large proportion of the Australian Government's total expenditure on R&D, and it does so because of the promise it offers of improved health outcomes. This promise remains unfulfilled until the research is translated into new drugs, interventions, therapies and practices.

[3] http://www.researchaustralia.org/health-medical-research/funding-H&MR
[4] AIHW, Health Expenditure Australia 2011-12,Table A3, p.71
[5] Australian Government, Strategic Review of Health and Medical Research, February 2013, p.34
[6] The Australian Government's 2013-14 Science, Research and Innovation Budget Tables, Table 5. See Appendix 1 for an explanation of Socio Economic Objectives.

THE CRC PROGRAMME AND THE TRANSLATION OF RESEARCH

The CRC Programme has played an important role in the translation of H&MR. Eleven of the 36 CRCs that are active in 2014/15 are related to human health and wellbeing. Some, like the Oral Health CRC and the Hearing CRC have started with a strong commercial focus and a clear objective of turning research findings into products. Others have started with an objective of applying research for the benefit of the community without the explicit intention of producing a commercial product.

Due to the nature of the healthcare sector, many of the participants (eg. public hospitals, clinicians) that need to be engaged to succeed in developing and commercialising a product may not receive a commercial benefit from the research and are not seeking one. Nonetheless as the name indicates, CRCs are cooperatives, and in return for their cooperation all the individual participants expect to receive a return in one form or other. The benefit to non commercial participants can come in various forms:

- improved understanding of the issue,
- better management strategies,
- novel therapies or measures to prevent the disease/condition, improve treatment outcomes or reduce treatment costs,
- better public awareness.

For example, early access to new treatment options may significantly improve not only patient outcomes, but also health sector efficiencies in the delivery of that treatment. The participation of a CRC in activities to achieve these objectives goes beyond the commercial research programs, and is the quid pro quo that ensures the engagement of these participants in commercially oriented research programs.

This has been the experience of the Hearing CRC. Commencing initially with a research program aimed at working with its industry partners to improve commercial applications, it also undertakes a number of research and education activities that are clinically oriented. This evolution has been driven by a need to better engage the CRC's non commercial research participants; and in addressing their specific needs it has provided a more holistic approach to hearing loss, including prevention programs and improvements in clinical fitting and rehabilitation. The Hearing CRC has extended this outreach to provide enhanced professional training to surgeons, physicians, audiologists, other healthcare workers and teachers through access to on-line training courses aimed at enhancing their knowledge and skills.

The Oral Health CRC has had a similar experience. Initially solely focused on commercial product development, it now provides professional development to dentists and has worked with the Australian Dental Association to establish EviDent, an oral health research network able to undertake practice based research in a range of area and which supports dental practitioners to participate in research. It is also evaluating programs to promote better oral health in vulnerable populations.

The Cancer Therapeutics CRC has a focus on small molecule drug discovery for early intervention in metastatic or recurrent cancer. While 85% of its research program is commercially driven, it undertakes a number of complementary programs which would not be funded by a pharmaceutical or biotechnology company's commercial research program. These include:

- programs to optimise treatments for pediatric cancers, undertaken in conjunction with Australia's nine pediatric cancer centres. (Pediatric cancer is neglected by commercial research programs because the cancers are rare, and there is therefore a lack of a commercial incentive for drug development)

- development of a new style of clinical trial to test treatments for very early stage metastasis. Not the design of a clinical trial for a specific drug but the creation of a whole new type of clinical trial for a new class of treatments, this is a precursor to the successful development of these therapies
- the 'Molecules to Medicine Post Doc Business Intern Program' a 12 month on the job training and mentoring program which currently has 50 interns, and addresses a well recognised need for greater expertise and knowledge of the commercialisation process among Australia's scientific research community.

The Young and Well CRC has a different genesis. It started as a platform to bring together a disparate but mission-aligned group of higher education institutions and not for profit groups concerned about the impact of new and emerging technologies on the health and wellbeing of Australian young people. The CRC has research programs to understand the relationship between technologies and wellbeing, and explore how online technologies can be used to enhance health and wellbeing. While its focus was initially as a public or social good CRC, the CRC now measures success in terms of both social and economic returns.

Initiatives being undertaken by the Young and Well CRC such as the data integration project, Project Synergy have now attracted significant commercial interest, despite the product being in the early stages of development. Education and training is also another potential area of commercialisation.

Pioneering work by the CRC on promoting resilience and safety online has attracted the interest and support of large commercial service providers such as Google and Facebook, who have now joined the CRC to collaborate on key initiatives working alongside SMEs, academic partners and mental health service providers. Commercial opportunities have followed from an initially non-commercial focus, and commercial partners have joined non commercial participants to support translation of the research.

This combination of commercial and non-commercial research end users is common to health CRCs, and is critical to their success. Of the 11 health related CRCs:

- only three don't include a commercial end research user as an 'essential participant' (as defined by the guidelines)
- only two don't include a non commercial end research user as an 'essential participant'
- when 'non essential' participants are included, there is only one health CRC that doesn't have both commercial and non commercial research end users as participants.

BENEFITS BEYOND COMMERCIAL RETURNS

As noted earlier, the public investment in H&MR is driven principally by a desire for improved health and wellbeing. Commercialisation is just one of the ways that the benefits of H&MR can be realised, and commercial returns are only one of the forms of economic benefit that H&MR can provide.

Improving effectiveness and quality of care

H&MR has significant potential to improve both the effectiveness and quality of care. Better quality care results in quicker and more complete recoveries, fewer adverse events and lower rates of hospital admissions and readmissions. All these reduce the cost of delivering healthcare, and with the bulk of the cost borne by governments (and therefore the taxpayer) this improved efficiency is a genuine economic benefit.

The Grattan Institute has estimated that at least $1 billion per annum is wasted in the public hospital system alone.[7] There is a range of factors involved but one is the variation in practice across states, institutions and between individual clinicians. Better and more consistent adoption of evidence based practice is one of the most effective ways to eliminate waste and inefficiency and improve the quality of care; this is an area where CRCs with their focus on cooperation and engagement with research end users can play an important role. A number of existing CRCs are already supporting the adoption of better evidence based practice by health practitioners.

Prevention

Some of the greatest economic and social benefits come from preventive health measures. In 2009, The AIHW estimated that the annual loss in workforce participation from chronic disease in Australia was around 537,000 person-years of participation in full-time employment, and approximately 47,000 person years of part-time employment.[8] More than 60,000 Australians a year are hospitalised for preventable oral health conditions and the cost to the Australian economy of oral diseases is $8.4 billion per year.[9] The annual cost of mental illness in Australia is approximately $20 billion, which includes the costs from loss of productivity and participation in the workforce.[10]

Prevention is an area where CRCs can play a role. The Mental Health CRC and the Young and Well CRC are working to counter the debilitating effects of a range of chronic mental illnesses. The Oral Health CRC is working on a range of programs aimed at early detection and prevention of oral disease, including developing and trialing new approaches to promoting oral health, with a particular focus on 'at risk' groups including children, the elderly, people living with mental illness, and rural populations.

The Hearing CRC's sound protection technology, initially developed for Telstra and commercially released by Victorian SME Polaris Communications, provides hearing loss protection to thousands of call-centre operators in government agencies such as the ATO and Centrelink, as well as in industry and telecommunications.

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[7] Duckett, S.J., Breadon, P., Weidmann, B. and Nicola, I., 2014, *Controlling costly care: a billion dollar hospital opportunity*, Grattan Institute, Melbourne

[8] Australian Institute of Health and Welfare 2009. Chronic disease and participation in work. Cat. no. PHE 109. Canberra: AIHW.

[9] Oral Health CRC, Annual Report 2012-13, page 2

[10] COAG, *National Action Plan on Mental health, 2006-2011*, 14 July 2006, p.1

The economic benefits of reduced health expenditure, increased workforce participation and greater productivity are all relevant to any review of the CRC Programme.

Education

The role of CRCs in training PhD candidates is a formal part of the CRC Programme and is well recognised. The role that CRCs play in ongoing training and development of clinicians and health practitioners and their broader role in developing research commercialisation skills is less well recognised, but makes a very valuable contribution that would not be supported in a more purely commercial partnership or collaboration between industry and academia.

CONCLUSION

Research Australia acknowledges that Australia needs to do more to derive the economic benefit of its public investment in research, and that H&MR represents a large component of this investment. Research Australia is also supportive of measures to increase the rates of commercialisation of Australian research, and the CRC Programme has an important role to play in facilitating commercialisation. H&MR provides significant scope for successful commercialisation, and the Government's recent announcement of an Industry Growth Centre for medical technologies and pharmaceuticals is recognition both of Australia's existing expertise in these areas and the potential for future growth and success.

While commercialisation is an important path to the application of H&MR, it is only one of several, and these other paths are relevant to a greater extent to the health industry than may be the case in other industries like mining or manufacturing. CRC's have proven to be an effective and valuable platform for the translation of H&MR and have been effective in bringing commercial and non commercial participants together in the pursuit of common outcomes. This cooperation between private, public and not for profit entities is particularly important to the translation of H&MR because of the nature of the industry that it serves. It is not easily achieved but has proven to be one of the strengths of the CRC model.

CRCs operate differently to other programmes such as the ARC Linkages Program or the proposed Industry Growth Centres. The Australian Government's support for the CRC Programme is successful in leveraging other financial and non-financial commitments, and CRC's are unique in their ability to bring a range of partners together over an extended period of time to pursue a common goal identified by end research users.

Research Australia doesn't expect the CRC Programme to do everything or to be the only path to the translation of H&MR but it is a valuable model that should be retained. It is also a model that has an application beyond research commercialisation. The economic and social benefits of the CRC Programme go beyond company profits and export revenues. Any change to the Programme to focus it exclusively on commercialisation of research will not only prevent the effective translation of research by other means but will also reduce the effectiveness of CRCs as platforms for the commercialisation of research by discouraging the participation of the non commercial participants that is so often essential to successful commercialisation in the health sector.

Research Australia is happy to provide further examples or elaborate on any aspect of this submission.

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