

SUBMISSION TO THE SENATE STANDING COMMITTEE ON ECONOMICS

Inquiry into Australia's Innovation System

July 2014

**RESEARCH
AUSTRALIA**

AN ALLIANCE FOR DISCOVERIES IN HEALTH



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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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SUBMISSION TO THE SENATE COMMITTEE ON ECONOMICS

INQUIRY INTO AUSTRALIA'S INNOVATION SYSTEM

INTRODUCTION

The need to promote innovation in Australia is well established and has been the subject of many previous inquiries and recommendations. The Terms of Reference for this inquiry give an indication of how broad ranging the issues and scope of this topic are.

Australia already innovates. There are many scientists and other researchers who make new discoveries, and there are many companies in Australia that are innovative in their approach to the provision of existing products and services, and which utilise new discoveries to take new products and services to market.

It is equally true that Australia could be more innovative.

A NATIONAL 'WHOLE OF GOVERNMENTS' INNOVATION STRATEGY

Research Australia submits that by and large we know what we need to do to be more innovative. Individual initiatives and programs to promote innovation abound throughout Australia, at both Federal and State levels, as do examples of success. What has been lacking to date has been a consistent, coordinated and holistic approach to promoting and supporting innovation.

One reason for this has been that the innovation environment is complex and multi-faceted. It does not fall within the responsibility of one government department, one level of government or one sector of the economy.

Innovation is a priority for state and territory governments as well as the Commonwealth for a number of reasons. State and territory governments play a key role in funding research and innovation and providing support for R&D activities. In 2011-12, state and territory governments spent approximately \$1.3 billion on R&D.¹ The bulk of this money was expended directly by state and territory governments, but they also provide a range of programs designed to support research and development and promote innovation in the private and non profit sectors.²

¹ Direct State Government expenditure on R&D- \$1,125m.; through Private Non Profit Organisations \$99.732 m.; through businesses \$53.925 m. ABS *R&D Expenditure Businesses* 8104/0 2011-12; ABS *R&D Expenditure Govt. and Private Non Profit Organisations* 8109.0 2011-12

² Examples include the *Hills Innovation Centres* and *Medical Technologies Program* in South Australia; *Innovate NSW* in NSW; *The Global Health Innovation Plan* in Victoria.

State and territory governments are also significant providers of services and purchasers of products and services from the private sector. As such they have a lot to gain from increased innovation. The healthcare system is a good example, with plenty of scope for productivity and efficiency improvements through innovation directly in the public health care system and through innovation by private sector providers of products and services to the health care sector.

The state and territory governments also influence innovation through regulation. For example, commercial and non-commercial clinical trials are conducted throughout Australia. Most clinical trials occur in the state regulated healthcare system and are subject to a range of state based requirements, protocols and agreements. There is significant scope for innovation in this area, and it is currently a target of a number of initiatives to streamline processes and improve efficiency. These include a project being undertaken by the National Health and Medical Research Council and action by COAG's Standing Committee on Health (SCoH).³

Promoting and developing innovation in Australia in a meaningful way requires a 'whole of governments' strategy which elevates the importance of innovation as a national issue. It needs to be on par with education and health; not because it requires the same level of public expenditure (it doesn't) but because it has the same potential to affect the long term well being of all Australians.

The strategy needs to:

- Clearly articulate the benefits of increasing innovation in Australia. These include higher living standards, higher employment, more satisfying jobs and environmental sustainability.
- Describe the mechanisms by which innovation achieves these benefits, such as improving productivity, increasing efficiency, and creating new products and industries.
- Identify the existing government policies and programs that influence innovation, and the departments and agencies that administer them. These include taxation policy, trade policy, financial regulation, corporate regulation, industrial relations, education policy, research funding, and industry support programs. This identification exercise needs to be undertaken at all levels of government.
- Identify the nexus between:
 - publicly funded research, and
 - innovation and development programs to bridge the gap between research discovery and subsequent innovation.
- Identify the measures against which:
 - Australian innovation generally, and
 - specific programs and policies, will be evaluated.These measures need to be weighted appropriately. For example, is an Australian publicly funded research organisation licensing a new discovery to a multinational for manufacture overseas as valuable as the IP being used by an existing Australian company that manufactures overseas, or a new start-up that establishes a manufacturing facility in Australia?
- Bring greater discipline and consistency to the evaluation of the effectiveness of existing programs and initiatives to support and promote innovation.
- Determine an appropriate ratio of public funding for research to funding for innovation support.
- Ensure that the potential impact on innovation is considered when legislation and regulation is developed by Commonwealth, state and territory governments.

³ Standing Council on Health Communiqué - 11 April 2014

COAG has had an existing reform agenda item, 'A Seamless National Economy' since 2008: *'Australian governments have been working through COAG to improve the environment in which Australian businesses operate and to enhance productivity in the national economy.'*⁴

This reform agenda has a focus on uniform national regulation and deregulation. A reform agenda item of equal importance to enhancing national productivity is promoting national innovation. This reform agenda item would include the role of regulation as a barrier to innovation but go beyond this to reforms, activities and programs that promote or facilitate innovation in the private, public and not for profit sectors.

Research Australia submits that the Australian Government should work with the state and territory governments to establish a national 'whole of governments' innovation strategy. This strategy should include a COAG reform agenda item to promote and facilitate innovation.

THE ROLE OF RESEARCH INNOVATION

The Commonwealth, state and territory governments are significant providers of funding for research across a range of scientific and non scientific fields and at all stages from basic to applied and translational research.

While research underpins innovation, the relationship between the creation of knowledge and new innovation is not always linear, immediate or foreseeable.

The primary role of research is to increase knowledge and the creation of knowledge needs to be the primary focus of research funding programs, with research excellence as the primary criterion of assessment for funding.

This is not to suggest that research outcomes are the only 'input' required for innovation or that there is not a role for programs to sponsor innovation; clearly there is, but the two should not be conflated. While there is no clear delineation in practice between when the creation of knowledge ends and the application of knowledge begins, it is both possible and necessary to make a distinction between research funding programs (with the objective of creating knowledge) and innovation funding (with the objective of applying knowledge to the creation of new products and services.)

Making this distinction can assist the transition from knowledge creation to application. To this end, we need to be clearer at the outset about when publicly funded research is supported in expectation of commercial and/or practical outcomes and when this is not the case. Where there is an expectation that there will be an outcome beyond the publication of findings, innovation funding and/or other mechanisms need to be in place to support the achievement of this outcome. Programs to support research on the one hand and innovation on the other need to complement each other better than they currently do.

For example, research is funded to test the hypothesis that a particular compound will prevent the production of an enzyme that is critical to the progression of a particular disease. The research is successful in demonstrating the hypothesis under laboratory conditions, and the results are published.

Under current arrangements, the funding now ceases even though further experiments and tests will be required to demonstrate 'proof of principle' as a therapeutic approach, and it is typically only after this stage

⁴ https://www.coag.gov.au/a_seamless_national_economy

that commercial partners can be engaged in the development of a new therapy. Progression of the body of research will be dependent on securing further funding from public funding programs or other sources, and this will require further grant applications and most likely the suspension of any further work until the funding is secured.

The need for this further experimentation should be anticipated at the time the initial research grant application is made, and funding for this purpose should be available subject to the initial research achieving predetermined milestones/thresholds identified at the time the funding for the research is approved.

Creation of funding mechanisms for this type of further experimentation requires a clear understanding of what is to be funded as research and what is to be funded as innovation, and the criteria that are required to be satisfied in each case. And where it can reasonably be foreseen that the research has the potential for innovation, this potential should be identified at the outset.

Research Australia recognises that this is only one type of innovation and only one pathway, but it illustrates how being clear about the different objectives of funding for research and innovation can facilitate a more streamlined approach to the application of new knowledge.

FACILITATING INNOVATION

The following specific initiatives and programs to support innovation are proposed. In many cases these already exist in one form or other.

Promoting collaboration

The provision of grants to collaborative partnerships or ventures between research organisations and industry is an effective way of encouraging innovation. In particular it draws on research expertise to help address real, identified needs and applications that can be evaluated against their potential economic value.

Career paths

Employing more staff with commercial experience enables universities to broaden the teaching experience they provide to students. It also brings a greater understanding of innovation pathways to publicly funded research.

While some steps have been taken, more can be done within academic institutions to recognise the relevant commercial, clinical and other translational achievements of candidates for academic positions and to support the interchange of staff with the private sector. This includes changes in recruitment and promotion practices to place a greater emphasis on commercial experience, and using actual change in practice and policy as part of the 'track record' of a researcher's success. Improving pathways for re-entry to publicly funded research from industry/commercialisation activity is also important; measures that can be taken include interim funding to support a returning researcher until they are able to attract project grant funding.

Programs and incentives to promote greater collaboration of the private sector with academic researchers are also valuable, including the secondment and placement of publicly funded researchers in private sector organisations.

Support for commercialisation

The continuation and expansion of the Australian Government's dedicated support for early, mid and late stage commercialisation activities is essential. Determining the appropriate ratio of government funding for research to funding for innovation support should be part of any review of commercialisation activities.

Public databases

Information is critical to innovation. Australian governments at all levels are custodians of large volumes of information which has the potential to drive innovation in the delivery of a range of services and the development of new products. Making appropriately de-identified public data available to researchers and innovators in the public and private sectors should be a priority for all levels of government, and the development of common protocols for the use of and access to data would be a useful topic for the proposed whole of governments innovation strategy.

As an example in the health sector, smarter use of existing and potential data sources has enormous potential to stimulate and support innovation. A key initiative in this regard would be linkage of the Pharmaceutical Benefits Scheme (PBS) and Medicare Benefits Schedule (MBS) with public and private hospital data and various state registries.

INNOVATION IN HEALTHCARE

The Australian health system is large, complex and diverse. It is also an important forum for health innovation. With expenditure of around \$140 billion per year in Australia, even relatively small innovations can have significant economic benefits.

While the health needs of Australians are broadly the same across the nation and the National Health Reforms have established a broad national framework and a set of targets, the practices adopted by individual Australian hospitals and other healthcare providers vary significantly. Several reports of the National Health Performance Authority have highlighted the variation in performance by individual hospitals and health providers across Australia.⁵ While the NHPA reports have highlighted the differences, and are a valuable resource, they do not identify what needs to be done to improve performance.

In a similar vein, the CareTrack study published in July 2012 reported relatively low levels of appropriate care (in accordance with current guidelines) provided by health care providers across a range of common medical conditions.⁶ This study indicates that we have a long way to go in ensuring the provision of health care in accordance with current guidelines, and the task for translating new discoveries into mainstream healthcare practice is just as great if not greater.

If we are to achieve the more efficient, productive and effective national health system that is the aim of the National Health Reforms, we need a health system that is open to innovation and the adoption of new technologies and practices.

We need to increase the sector's capacity to translate 'good' innovations into standard health care. There are specific areas where new skill sets are required to facilitate innovation from fields as diverse as bio-mathematics and health economics. We also need to invest in comparative effectiveness research to assist with shifting practitioners to adopt better practice.

Health services research can support innovation and improve the delivery of health care through:

- using existing innovations to develop best practice models and structures for Australian health services;
- guiding the reform process; and
- supporting the evaluation of outcomes.

⁵ National Health Performance Authority, *Hospital Performance: Time patients spent in emergency departments in 2011–12; Healthy Communities: Avoidable deaths and life expectancies in Australian Communities, 2009-2011; Hospital Performance: Length of stay in public hospitals in 2001-12* <http://www.myhospitals.gov.au>

⁶ W. B. Runciman et al, *CareTrack: assessing the appropriateness of health care delivery in Australia*, Medical Journal of Australia 197 (2), 16 July 2012

Research Australia proposes additional funding for health systems research to increase the capacity to analyse and identify best practice for the Australian health care system and to increase research into the most effective delivery mechanisms for implementing best practice.

Research Australia recommends additional funding for the following initiatives to improve the adoption of innovations in health care:

- Career structures that support moving between research and health delivery roles.
- The creation of more roles in health services across medical, nursing and allied health professions that have a dedicated time and resource allocation to research as a means of supporting innovation.
- Providing research ‘buy-outs’ to enable General Practitioners and other health professionals to engage in research, including clinical trials.
- Building capacity and investing in implementation research, including comparative effectiveness research, to assist with shifting practitioners to adopt better practice.
- Investment by the health system in ‘change management’ expertise and practice to incentivise and support professionals to adopt new practices and create behavioural change.
- Creating evidence based decision support tools for practitioners, to support the adoption of best practice.

Clinical trials, both commercial and non-commercial, are an essential element of innovation in health and medical research. Australian practices in relation to clinical trials were identified as a barrier to innovation several years ago and are now the subject of several initiatives to improve and streamline the ethics approval and governance processes. The adoption by SCoH of the streamlining of clinical trials as an area for reform serves as a useful example of an approach to reform where greater uniformity of Commonwealth, state and territory practices is required.

‘Bottom up’ research - harnessing the health sector to improve productivity and efficiency

Many individuals in our health system are striving to deliver better health care, and to do so more efficiently. These efforts account for some of the variation in performance between individual hospitals and health providers noted above. At the same time there are many practices and technologies which have been in place in particular parts of the health system for many years without having been properly reviewed or evaluated for their relative effectiveness or cost effectiveness against (often more recent) alternatives.

We are not suffering from a lack of ideas on how to make our health system more effective and efficient but we don’t have the infrastructure in place to efficiently evaluate and document these ideas and apply them more broadly.

Some parts of the puzzle are already in place. For example, the Victorian Government has established the Redesigning Hospital Care Program,

'a four-year statewide initiative that is delivering significant health system improvements through the application of process redesign methodologies in Victorian public hospitals.

The program objectives are to:

- *Increase redesign capability and capacity by training staff across the system to lead projects, implement change and train their peers; and*
- *Measurably improve health delivery processes and outcomes across the system.*⁷

The Australian Resource Centre for Healthcare Innovations (ARCHI) provides an online forum for health professionals to share innovations in healthcare.⁸ It is hosted by the NSW Agency for Clinical Innovation (ACI), 'the lead agency in NSW for promoting innovation, engaging clinicians and designing and implementing new models of care.'⁹

The role of the states in identifying and implementing reforms to our health system is critical; in many areas they are the level of government closest to the delivery of healthcare. We need to capitalise on initiatives at the local and state levels for the broader national benefit, and we need to better integrate the research community in this endeavour.

The Australian Commission on Safety and Quality in Health Care already plays a role in setting national standards for healthcare, and is undertaking important work to address variations in practice. Research Australia proposes enhancing and extending the Commission's role, as a way of driving innovation.

Australia needs a national body with the capacity to formally evaluate individual practices for their safety, quality, efficacy, efficiency and transferability; and which is able to drive the introduction of evidence based best practice in the health system nationally. Research Australia proposes adapting the Australian Commission on Safety and Quality in Health Care for this purpose. The following actions would be required:

- 1) Change the Commission's mandate to include efficiency as well as safety and quality
- 2) Charge the Commission with responsibility for identifying innovative practices and initiatives in existing health care providers that can be evaluated for their suitability for adoption as part of the Healthcare Standards, and for the assessment of existing practices that are potentially harmful and/or inefficient.
- 3) Provide incentives for health providers to nominate practices/initiatives for evaluation.
- 4) Provide the Commission with the capacity to fund the research necessary to evaluate the practices/initiatives. The Commission could utilise the services of the National Health and Medical Research Council to evaluate and administer applications in response to a 'Targeted Call for Research'.
- 5) Use the existing standard setting and accreditation system to promote the adoption (or discontinuance) of the practices/initiatives.
- 6) Utilise the Commission's proposed clinical quality registers in the evaluation of appropriate practices/initiatives.

⁷ <http://www.health.vic.gov.au/redesigningcare>

⁸ <http://www.archi.net.au/home>

⁹ <http://www.aci.health.nsw.gov.au>

This proposal is not that efficiency should be prioritised over safety and quality, but that it should be included with safety and quality in the Commission's mandate.

Innovations in healthcare that improve quality and safety typically improve patient management, reduce adverse events and readmissions and lead to quicker recoveries, and these are the major drivers of efficiency gains. Giving the Commission the capacity to fund the research necessary to properly evaluate innovations ensures that good ideas can be assessed and translated in a systematic way that is consistent with the needs of the health system. Utilising the NHMRC to administer and monitor the research grant programs eliminates potential duplication in this area and provides an opportunity to better engage the research community, including through the NHMRC's Research Translation Faculty.

The reforms proposed above for the Australian Commission on Safety and Quality in healthcare (identifying and evaluating innovative practices) could serve as a model for similar standard setting bodies in other spheres.

The proposed Medical Research Future Fund provides an opportunity to redress the balance between funding for 'pure' research activities on the one hand and translation/innovation on the other. It is a potential source of funding for programs to support health care innovation, including for example, providing infrastructure for commercial and non commercial clinical trials and support for interdisciplinary research and innovation.

CONCLUSION

Research Australia's focus is necessarily on research and particularly on health and medical research. We recognise that that the community quite reasonably expects better health outcomes from its investment in health and medical research. Achieving these outcomes requires continued innovation in the delivery of healthcare services, utilising the outputs of Australia's and the world's research effort.

Research is a necessary input but is of itself insufficient to ensure innovation. As a nation we need to make better use of our significant public investment in research, and this requires a strategic public investment in supporting innovation. In areas where governments are responsible for the delivery of services such as healthcare, there is greater scope for government intervention in innovation. The economic benefits of innovation in these spheres are not only greater productivity and increased GDP but the more efficient use of public resources.

Finally, greater innovation in Australia requires not only a greater investment but a more considered and deliberate 'whole of governments' approach- an investment that is guided by a clear and comprehensive strategy.

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