
Submission to Strategic Review of HMR

Strategies for Impact

PACIFIC **STRATEGY** PARTNERS

EXECUTIVE SUMMARY

1. Introduction. This submission addresses 2 questions review panel has invited input on:

- *What are the health and medical research strategic directions and priorities and how might we meet them?*
- *How can we optimise translation of health and medical research into better health and wellbeing?*

2. The Case for a Strategic Approach. The substantial public investment (over \$1bn) made into HMR has delivered excellent returns. The current system is primarily investigator driven and directs funding around University disciplines, so largely aligns with research capacity. However, three reasons exist for a far more strategic approach

1. Greater accountability for delivering impact to the community is required
2. A more strategic approach has been used by NGOs and shown to be effective in accelerating discovery
3. Australia's has limited resources and should focus in the few areas where significant impact is achievable given our relative advantages – we cannot afford to do a bit of everything

A more strategic approach and would include consideration of:

- Burden of disease
- Areas of relative research strength
- National health priorities

3. How to Optimise Translation. Given the potential for HMR to save lives, the processes for research translation and innovation in clinical practice are woefully ad hoc. Integration of research into clinical practice is a complex process that works best when driven by leading clinicians who are research literate. The most innovative countries enable this cross-functional integration by building research hubs that include:

- A teaching hospital
- A University
- Capital providers and entrepreneurs

4. Specific Recommendations. The specific strategies to deliver improvement should be:

- Identify Centres of Excellence
- Build Translational Capacity
- Set National Health Research Priorities
- Invest in a few Strategic Initiatives

1. INTRODUCTION

The Strategic Review of Health and Medical Research (HMR) has invited input into 4 questions:

1. Why is it in Australia's interest to have a viable, internationally competitive health and medical research sector?
2. How might health and medical research be best managed and funded in Australia?
3. What are the health and medical research strategic directions and priorities and how might we meet them?
4. How can we optimise translation of health and medical research into better health and wellbeing?

This submission focuses on questions 3 & 4

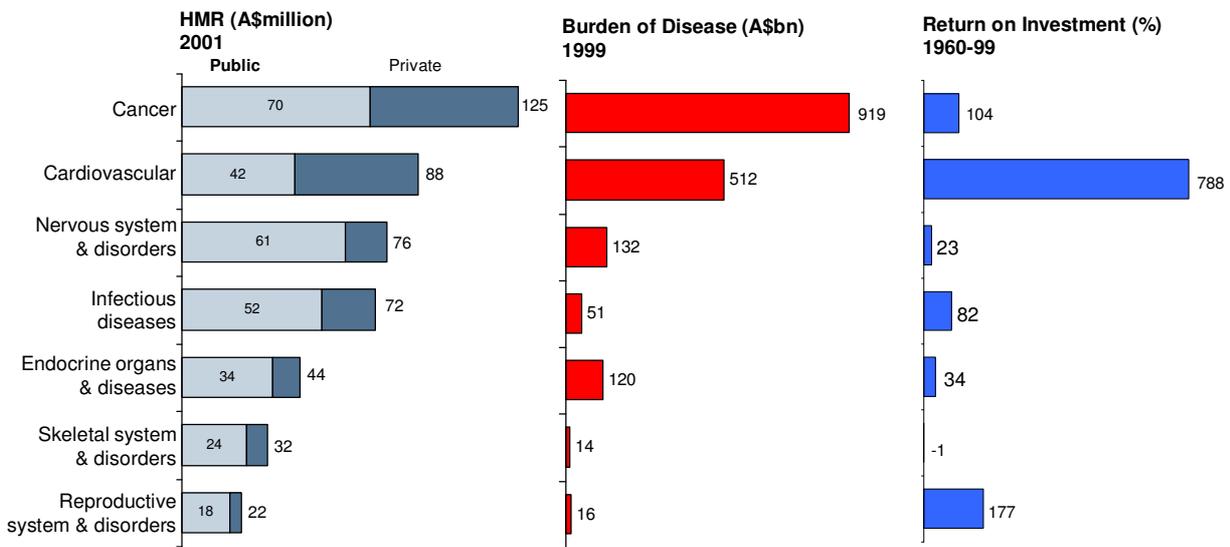
2. THE CASE FOR A STRATEGIC APPROACH

The total Australian investment in health and medical research is around \$2bn, with the Commonwealth Government contributing over \$1bn, mainly via Universities. The rationale for this investment has always been improvements in the health and lifespan of the Australian population, and it has delivered substantial returns.

Exhibit 1

Cancer now has the largest burden when compared to other diseases, and has the greatest research investment

Investment by Disease, Burden of Disease and Return on Investment



Source: Access Economics (2003) 'Exceptional Returns. The value of Investing in Health R&D in Australia', Canberra September

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The 2004 Grant Review included an assessment of the return on investment of HMR, and found that the increased lifespan it has generated represents an enormous benefit for the citizens of Australia – valued at over \$5.4 trillion by Access Economics (Exhibit 1). This improvement has a number of underlying causes, including:

- Some improvements in population behaviour, such as increased vaccination rates, a reduction in smoking and earlier identification of melanoma
- Advances in medical research – mostly publicly funded in the US, but with an important Australian contribution
- Development of drugs & devices – mostly by the private sector
- Crucially, the adoption of these improved drugs, devices and clinical processes by a few leading clinicians, and then into general clinical practice

It is likely, however, that a more strategic approach would have delivered even greater benefits. While the current post-Wills funding system ensures that the best research ideas are funded, it

also still allocates funding largely around University disciplines. This means that funding is aligned around research capacity, rather than health issues of interest to the population that is providing the capital to invest in research via taxation. The result is that resources can be invested in (no doubt excellent) research into obscure diseases where “more people have made a living from studying them, than have died from them”. There is a false dichotomy between “investigator-initiated” and “strategic research” – in fact the best approaches combine two processes:

- A strategy agenda that sets broad goals, impact and evaluates research pathways that can deliver against them (eg finding ways to restore pancreas function can benefit x,000 people)
- Investigator-initiated approaches to identify research questions that can address the research agenda, with grants awarded on a competitive basis

Two case studies can demonstrate the power of a strategic research focus - Juvenile Diabetes and Cerebral Palsy.

Juvenile Diabetes. The Juvenile Diabetes Research Foundation (JDRF) is a global federation of national charities, with leadership provided by the US arm. JDRF has a clear mission to cure and ameliorate the impact Juvenile Diabetes, and so has adopted a strategy of only funding research that could deliver against this goal. The main tool to do this is a process every 3-5 years to review the state of play of research and estimate how many years each research pathway is from finding a cure. This approach can allow resources to be reallocated from less to more promising avenues of research in a reasonably objective way. Our initial review of the JDRF process was in 2003, and it was then felt that a cure was about 20 years away. By 2012, there are 2 cures available, a mechanical insulin pump and a biological islet implantation approach, with both having passed from the fundamental research phase into R&D to allow adoption into clinical practice. So a strategic approach has accelerated the timeframe of the research program by roughly a factor of 2, and also avoided resources being wasted on less promising approaches.

Cerebral Palsy. The Cerebral Palsy Research Foundation (CPRF) is an Australian charity that was launched in 2005. Despite having relatively high incidence, and a high economic and social impact, there was relatively little research into cerebral palsy. This was partly due to conventional clinical wisdom that cerebral palsy is caused by neonatal oxygen deprivation. In 2007, CPRF established a strategic review process involving 100 experts and identified 33 areas of research that can help understand how to reduce the incidence and impact of Cerebral Palsy. This process has shown that cerebral palsy is a complex condition that is largely unrelated to clinical procedures around the time of birth. Two research findings, each reducing the impact of cerebral palsy by 30%, are already being translated into clinical practice:

- Cooling of the brain can reduce the severity of cerebral palsy
- Magnesium sulphate can reduce the incidence of cerebral palsy in premature infants

A more strategic approach would inform investment priorities using factors such as the burden of disease in Australia, areas of relative research strength and national health priorities. A strategic expert review process, as used by JDRF and CPRF, does seem to have potential to accelerate progress and focus investment in many areas of research. There are other alternative more incremental, processes, such as requiring researcher or NHMRC staff to weight strategic impact of research more highly in the granting process that may also have merit.

3. HOW TO OPTIMISE TRANSLATION

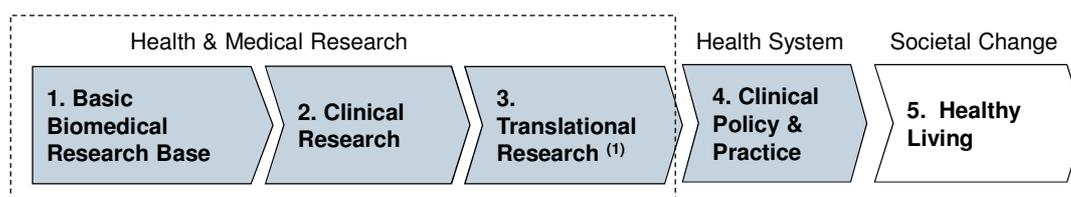
Given the potential for HMR to save lives, the processes for research translation and innovation in clinical practice are woefully ad hoc. The basic goal of a researcher is to publish a paper in a peer-reviewed journal, attend conferences, and have their work cited by others as a measure of its relevance. The basic goal of a clinician is to treat patients to give the best possible health outcomes. There is therefore a huge cultural gulf between knowledge generated by researchers and clinical practice, and the translation of research into clinical practice is inherently problematic. This requires active intervention rather than the current “researcher/clinician knows best” approach.

Exhibit 2 shows at a high level the stages that research must navigate to become embedded in clinical practice and deliver health impact.

Exhibit 2

To deliver health benefits, knowledge needs to pass through 5 stages of research

Stages of Research



Definition

- Experimental and theoretical work undertaken primarily to acquire new knowledge without a specific application in view
- Use of human subjects, direct application to prevention, diagnosis, or treatment of cancer in the individual under study, or the rehabilitation of the patient
- Involves both top-down and bottom-up initiated research, focused on driving changes in the health system or underlying population health, typically in the short-medium term
- Use of medical innovations and developments by leading clinicians which, with further diffusion, may become routine practice and policy.
- Enhanced knowledge has become generally and widely accepted leading to changes in lifestyles and risk factors and improved health behaviours

Examples

- Understanding of cancer at the molecular, cellular, and organismic levels
- Clinical trials
- Impact of population screening for colorectal cancer
- Use of radiation therapy
- Reduction in smoking

Note: (1) "Practice focused" is synonymous with translational research; Policy research could also include research aimed at changing Government policy
 Source: McClellan, M and Heidenrich, P. (2000) 'Biomedical Research and then some: The causes of Technological Change in Heart Attack Treatment'

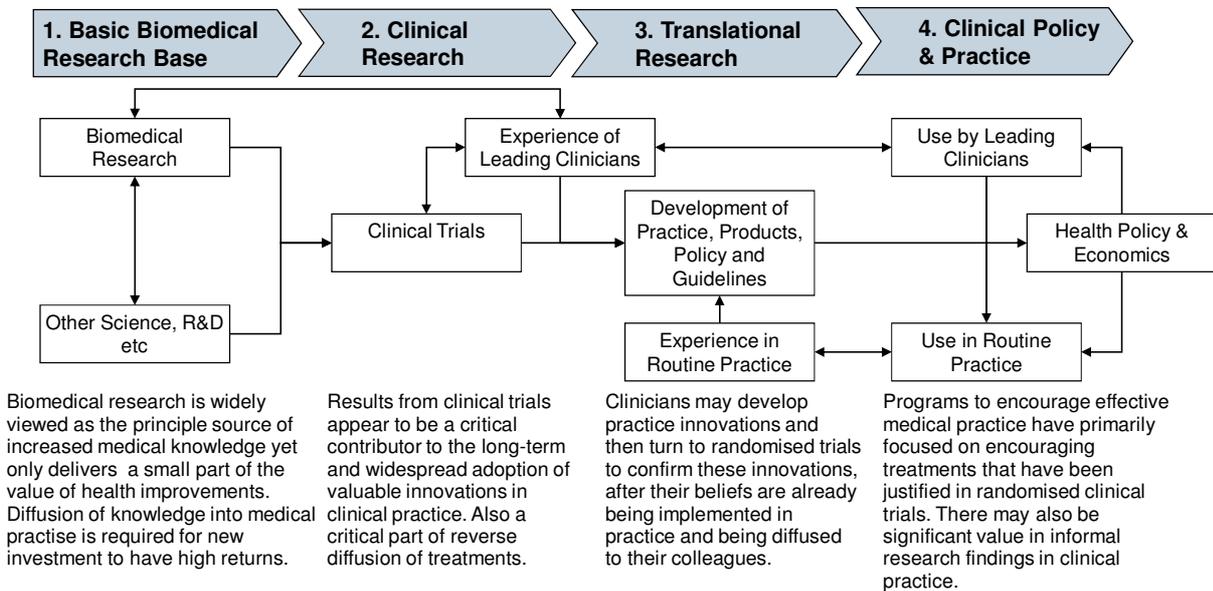
In fact, the process of research translation is not an orderly flow through these 5 stages. As shown

in Exhibit 3, many clinical breakthroughs are initiated by leading clinicians (and are not investigator initiated), who ask interesting research questions based on their observations of clinical practice. Research may then validate the hypothesis, and may lead to clinical trials and clinical guidelines, and use by leading clinicians. Translation into routine practice may still be problematic, as clinicians have broad autonomy on the clinical practices they engage in (eg despite a few hundred years of evidence, some clinicians still do not wash their hands adequately).

Exhibit 3

This process involves complex interactions between researchers, policy development and clinical practice

Integration of Research into Policy and Practice



Source: McClellan, M and Heidenrich, P. (2000) 'Biomedical Research and then some: The causes of Technological Change in Heart Attack Treatment'

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The best way for this clinician / researcher interaction to occur is in geographically close hubs that combine a teaching hospital and a university. Adding venture capital expertise and entrepreneurs builds a capability to commercialise discovery. The current status in Australia is that there is a lack of focus on building differentiated genuinely world class research hubs, at least if this means not investing in centres that are second tier. The implication of this is that we do not translate some world leading research into clinical practice, or commercialise it because we don't have the right institutional arrangements. We also do not have easy access to the large global pools of venture capital because "I can see more innovation in California in a day than I can see in Australia in a week".

4. STRATEGIES FOR IMPROVED PERFORMANCE

Problems can't be solved at level of thinking that created them – Albert Einstein

We suggest 4 strategies should be included in the recommendations of the strategic review:

1. **Identify Centres of Excellence.** As a relatively small player in HMR, Australia simply cannot compete effectively in all areas of HMR, much less ensure each State has HMR capacity in its Universities. To put it simply - one Top 20 University in a given research field would have greater impact than 5 top 100 Universities. We should therefore institute a Centres of Excellence program to assist the formation and development of hubs that have genuine world class expertise in geographically co-located hubs. This would likely focus some investment at established hubs such as Parkville in Melbourne, but would also encourage emerging players such as the Hunter to specialise and focus, rather than attempting to replicate Sydney University. This would specifically require:
 - **Governance & Strategy.** Develop clear, contemporary governance (eg Board & empowered CEO), and a strategic plan for each centre.
 - **Infrastructure.** Facilities and equipment required for area of focus
 - **Star Researchers.** Fellowships or top ups to attract star researchers

2. **Build Translational Capacity.** Research translation is often seen as an academic poor cousin, and not treated as “real research”. For example, one of highest impact translational projects in recent history was a re-scaling of research on passive smoking that led to NSW Government restrictions on smoking in clubs (funded by the Cancer Council). There is no way this would have won an NHMRC grant, as the basic science was already well established. The NHMRC should fund translational institutes (on a competitive basis) that can combine research and clinical expertise to produce scientifically credible outputs that influence policy or clinical practice. These institutes should also be a conduit for disease specific NGOs to finance credible research to support their advocacy programs.

3. **Set National Health Research Priorities.** The NHMRC should be tasked with developing a cascading set of national health research priorities, with a set research questions that can guide researchers. For example, “cancer” should clearly be a priority given its incidence, and potential for research breakthroughs. Cancer is many different diseases, however, so could then be split further into, say:
 - **Lung Cancer.** Focus on prevention / behavioural change (ie why do people find it hard to give up smoking? Are there gender differences?)
 - **Pancreatic Cancer.** Focus on treatments to reduce mortality and whether there are any prevention strategies.

- **Colorectal Cancer.** Focus on improving screening approaches (eg develop more specific and sensitive tests to improve screening economics, understand gender differences in voluntary screening)

Achieving agreed research priorities is hard and will require the input of a range of experts, but NGOs have shown the way, and the impact clear priorities can have.

4. Invest in a few Strategic Initiatives. Once National Health Research Priorities have been set, invest in a competitive process to make substantial investments where:

- There is a research priority that can deliver health benefits
- Australia has distinctive world class researcher capability
- There is the potential for commercialisation within Australia

Examples of strategic initiatives could be the bionic eye initiative already underway, implantable insulin pumps, an in-utero test for cerebral palsy or (previously) the Gardasil vaccine. While the track record of Governments in “picking winners” is not good, the premise should be to instead *back winners* who are already demonstrating superior performance. This approach is not new – it has been used to great effect by NGOs such as the JDRF, the Gates Foundation and the Cancer Council. There is no reason an expert organisation such as the NHMRC can’t learn from or licence the approach taken by these organisations, and use its access to Australia’s leading researchers recommend some strategic goals Australia should invest in.

APPENDIX A: ABOUT PACIFIC STRATEGY PARTNERS

Pacific Strategy Partners is the leading **Australian strategy consulting firm**. We develop practical strategies to help our clients succeed:

- Gain competitive advantage
- Increase revenue, margins and market share
- Reduce operating costs and improve productivity
- Secure capital for growth
- Ensure business strategy includes and influences public policy developments
- Improve society through better policy and non-profit impact

We assist **senior management** and Boards in large Australasian corporates in the private, not-for-profit and Government sectors **resolve complex issues** of strategy and organisation, speed up decision making and plan for successfully implementing change:

- **Tailored approach** (vs. standard process)
- **Joint teams** with senior client management
- Deploy **low leveraged teams** ensuring deep Director involvement
- Provide **objective, independent** challenge
- Team up with **other professional advisors** and subject matter experts
- Joint **research and IC** development
- Enable **excellent communication and decision making** at CEO, senior departmental leadership and Board level

We differentiate ourselves by deploying our extensive Director experience to client problems on a hands-on basis to provide better results more cost effectively than the globally branded firms.