



the **Australian Society** for **Medical Research**

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National Research Priorities Taskforce
Department of Education, Science and Training
Location 703
GPO Box 9880
Canberra ACT 2601

Via email: priorities@dest.gov.au

Dear Sir/Madam,

Re: National Research Priorities Nominations

1 Name

Australian Society for Medical Research
145 Macquarie Street
Sydney 2000

President, Professor Peter R Schofield
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2 Nomination for broad thematic priority

“To increasingly improve the health and quality of life of all Australians”

more specifically, this broad thematic priority could be rephrased as

“Reduction of the burden (both morbidity and mortality) of disease”

3 Nomination for priority goals within the broad thematic priority

- a) “Prevention of life threatening diseases”
- b) “Reduction in the impact of the major burdens of disease”
- c) “Development of biotechnology, pharmaceutical and public health programs capable of wealth creation”

(Note the broadest interpretation of wealth creation is used which considers net the economic benefit of decreased morbidity and mortality).

4 Key Objectives

The government's stated key objectives are to identify and target areas of strength, opportunity or need where an increase in research effort would make a significant contribution to the nation and to determine what is involved to achieve a shift in research effort to these priorities.

Living healthier and longer lives will contribute to our social environment but also make major positive impacts on our economic well being. These include positive impacts on:

- Jobs Created
- Health Care Costs Saved
- Value of Increased Longevity
- Value of Reduced Morbidity and Disability
- Benefits of Newer Medicines

This is robustly summarised in 'Exceptional Returns' (Appendix 1). In brief, increases in life expectancy between 1970 and 1990 in the USA were worth roughly 2.8 trillion dollars per year (a rate of return on investment >100:1). Based on very similar increases in longevity and similar reductions in the burden of disease in Australia, equivalent returns apply for Australia. Health and medical research, which includes public health research, is the key contributor to these increases in life expectancy.

Improvements in health account for nearly half of the actual gain in American living standards during the past 50 years. Again, similar gains have been made in Australia.

Thus, the likely returns from medical research are so high that the payoff from any plausible "portfolio" of investments in research will be enormous (e.g., research that led to reducing cancer deaths by 10% would be worth >4 trillion dollars in the US. In Australia, this would be worth over 250 billion dollars)

In summary, "the health of nations is more important than the wealth of nations" (Will Durant) because health and longevity lead directly to increased wealth. This is an approach that the World Bank has long adopted, namely that the main obstacle to economic development of poor countries was the absence of health. But the argument applies equally to economic prosperity of developed nations as well.

In terms of the key objectives, "Australia has a proud tradition of being a world leader in medical research" (Dr Michael Wooldridge). The details are only briefly reiterated by quotation as they have been extensively detailed in the Health and Medical Research Strategic Review (1999).

"We have 0.3% of the world's population but produce 2.5% of the world's research. More importantly, 1.3% of Australian publications fall in the world's top 1% most cited, and peer-reviewed NHMRC funded research makes up 2% of the world's top 1% most cited research."

"Australian's have received four Nobel Prizes for Medicine or Physiology, two others in related fields and many other prestigious awards. Australia is widely recognised internationally for its strengths in health and medical research."

Australia's strength in this area is demonstrated by the presence of numerous internationally recognised independent medical research institutes, strong clinical and public health activities focussed on hospital and state department's of health and a strong tertiary sector including university medical, science and allied health faculties. The interaction with national research capacity in bodies such as CSIRO and national research facilities; centres of excellence, such as CRCs etc; and with the private sector, which includes a strong pharmaceutical industry presence, several established major companies based on Australian innovation and many new biotechnology companies, provides an exciting mix of resources.

This provides a mix that clearly fits the key objectives. We have a strong resource base in the area of health and medical research with globally competitive capability. However, we also have an increasing need and expectation from the community for improvements in health, reduction in the burden of disease and reduction in mortality. Likewise, there is significant financial pressure on the health care system that arises from these increasing community expectations. New knowledge, innovation and medical and pharmaceutical developments will be critical agents of change in this equation, as will improvements in clinical practice and public health. Thus, we have a system which is both able to make the research innovation needed and a strong demand for this research innovation.

In terms of the key priorities, previous investment in the sector, such as that arising from the Health and Medical Research Strategic Review and the progressive increases in investment in the NHMRC plus the initiatives of Backing Australia's Ability provide an internationally competitive, broad based, research system. The system has a number of strong linkages provided through existing mechanisms, although as with most sectors, specific focus on capturing increased cross sectoral support would further enhance the system. The Wills Review highlighted a number of these opportunities, including greater Federal and State interaction especially in areas of clinical service provision and public health, increased development of commercial opportunities within the research sector and the capacity to develop a nascent biotechnology industry into a major national resource. Together with other commercial developments in the sector, such as the Pharmaceutical Industry Action Agenda, there are many framework components that are now being put in place to capture the benefits of the investment in health and medical research. These developments have the capacity to deliver benefits to the Australian community and the Australian population. However, adoption of improved health and quality of life as a national research priority area will provide the key impetus for the respective government agencies to complement and enhance their priority setting and strategic planning arrangements. Designation of a national research priority area, and the attendant budgetary focus this would bring would engage and ensure that the relevant research agencies would advise and lead in formulating the optimal implementation of the research priorities.

Together, these resources provide a key area of strength through which national research priorities can be harnessed. Equivalently, we have argued above as to why investment in the health of the nation is of such high priority. With our health care budget rapidly expanding and with individuals greater desires for increased quality and longevity, there is a major opportunity for a disproportionately large return from additional priority and investment.

5 Selection Criteria

In providing comments against the criteria and commentary, specific new analyses have not been conducted. Much of the detailed analysis has already been performed in the extensive analysis conducted by the Health and Medical Research Strategic Review. However, the ASMR is willing and committed to assist the EAC in documenting any specific issues but in view of the highly restricted timeframe for developing new criteria, this has not been undertaken.

Criterion 1. The scope for increased Commonwealth research effort in the priority area to deliver a measurable and significant positive impact, by:

- a. achieving an appropriate 'critical mass' of excellent research through specific support and/or coordination and collaboration at the national level; and*
- b. addressing Australia's strengths, opportunities or needs arising from:*
 - i. our nation's geography, climate, bioresources, economy, way of life*

- and/or culture; or*
- ii. issues of global importance which impact significantly on Australia;*
- or*
- iii. Australia's competitiveness in a global context.*

You may wish to comment on ways to enhance collaboration, cooperation and coordination between agencies.

Australia has considerable resources already invested in the health and medical research sector. Adoption of priority areas would aid this output. Considerable improvements are envisaged if more national approaches to research outcomes are supported. This may serve to bring agencies from different portfolio's into closer working relationships eg CSIRO and NHMRC. Similarly, the Wills Review envisioned considerable opportunities by bringing a national focus to strategic research, especially in the public health sector, where considerable state by state duplication of activity currently occurs. Building on our existing support base and critical mass of excellent research would provide the opportunity for increased global leadership and capacity to become an increasing exporter of knowledge, IP and high value manufactures as well as a key regional provider and partner in improving health and economic outcomes in the underdeveloped and developing nations of our region.

The ASMR notes that robust and thorough mechanisms and processes for selecting strategic research priorities by the NHMRC (Strategic Research and Development Committee) are currently in place, but the magnitude of support available for these initiatives is typically relatively small. The adoption of national research priorities would bring further focus and resources to bear on the these areas.

There are considerable opportunities for harnessing our world class health system to lead to global research leadership. Several countries (but not national government's) have instigated large scale population based prospective health studies. Eg in the UK a long term study of health and disease involving 500,000 individuals has just been commenced. With national leadership, similar projects could be achieved in Australia, with outcomes directed specifically to the health of the Australian population. Our track record of research in these areas suggests that there would be considerable global opportunities especially through developing world's leading practice in the application of all aspects of health management in contributing to a reduction in the growth of health expenditures. Thus, benefits will be in terms of dollars saved, lives improved, and health systems and knowledge exported.

Criterion 2. The scope for Australia to build the capacity needed to achieve that impact, taking into account:

- a. existing expertise, experience and technological capacities or whether such capacities can be reasonably acquired or accessed;*
- a. the availability, quality and scale of necessary research infrastructure;*
- c. research conducted in other nations and the potential benefits of international collaborations; and*
- d. the overall magnitude of the investment required to make an impact.*

Factors that are likely to limit Australia's capacity to achieve the desired outcomes – such as skills shortages in key disciplines, structural issues or other considerations -should be identified.

The ASMR considers that Australia substantively already has the existing expertise, experience and technological capacity to continue as a globally competitive producer of health and medical research outcomes. We also have the capacity to translate this knowledge to health and (to a lesser extent) commercial outcomes. Accordingly, the benefit of national research priority status would be to result in the ability to harness and focus these skills to achieve the necessary outcomes. We envisage that specific funding of directed programs with specific aims would be an outcome of priority selection. The purpose of this approach would be to facilitate linkage of various research groups and research areas into a more integrated series of outcomes focussed projects. Clearly, such linkages need to occur on a firm research base. The underpinnings of this research base have been provided by the government's support of the Wills Review.

Australia, especially through the NHMRC, has been developing a number of international collaborations, eg with the Juvenile Diabetes Research Foundation in the area of treatments for type1 diabetes and with the Wellcome Trust for the training and development of health and medical researchers from Asia and the Pacific. Further efforts towards establishing international linkages would enhance the development of the sector. Thus, for example the Human Frontiers Science Program has supported a considerable number of Australian investigators, but our lack of official membership and participation in this program has precluded Australians from initiating and leading any international team applications. Similarly, Australia was in our view, remiss by not more formally joining major international research efforts in global biology such as the Human Genome Project. Despite involvement of key individuals in the project and very modest amount of sequencing being done here, our lack of formal participation and the fact that Australia has still to contribute a complete genome sequence or be a major contributor to any complete genome sequence seriously compromises our global competitiveness. Australia needs to be more proactive in its participation in global scientific endeavours and the adoption of national research priorities provides an opportunity to address this weakness.

Infrastructure enabling the maximum impact of the sector is of a reasonable level. However, recent key problems have emerged through the funding of the current round of Major National Research Facilities. The ad hoc nature of calls for funding, the significant funding delays because of back end loading of funds disbursement create significant problems for the operations of MNRFs, especially established facilities that are seeking to maintain globally competitive services. Accordingly, we strongly advocate the establishment of a recurrent source of support for MNRFs. This would allow more mature development of proposals and reduce the establishment difficulties that are currently being faced. Since MNRF support is aimed at providing research infrastructure through the provision of national resources, key to the ability of a MNRF team in delivering this infrastructural support is the need to acquire the necessary equipment to provide the services. Deferring the budgetary support for equipment acquisition to years 3-5 has the net effect of denying these key infrastructural elements to the Australian research community.

A further area of infrastructural support that is lacking and should be addressed as an outcome of national research priority selection is the clear definition of budgetary requests in research grants for the use of MNRFs. At present, MNRFs require users to fund the marginal costs of their research activities using the core MNRF infrastructure. While this model is appropriate, funding for use of MNRF capacity is at present included in maintenance requests in NHMRC and ARC grants. A more transparent mechanism, and one which would aid researchers, grant agencies and MNRFs would be to have a specific MNRF budget request and justification line item included in grant applications.

These initiatives will have a financial implication, although the exact cost will depend in part upon whether there are overarching initiatives directed to all infrastructural support or whether they are directed solely to the designated priority areas. In either case, our assessment is that the magnitude of support will be small, in percentage terms, relative to the total investment in R&D that is currently made.

Criterion 3. The scope for Australia to capture the benefits of the research, through the potential of the research to:

a. achieve commercially, socially or environmentally relevant outcomes over the cycle of the priorities regime; or

b. enhance significantly Australia's overall innovation capacity by broadening the knowledge base, and fostering acquisition of skills and understanding of emerging areas of 'hot' research.

You may wish to suggest possible milestones, outcomes and performance measures to be achieved over the short (1-5 years), medium (10 years) and longer term (15-20 years). For example, this could include, 'reduce incidence of ____ by ____% by 2008'; or 'increase uptake of ____ in ____ industry by 2010'.

Benefits will flow to Australia through increased commercial developments. This coincides with the government's current stated objective of building an biotechnology industry as detailed in Backing Australia's Ability and with the current development of the Pharmaceutical Industry Action Agenda.

More importantly, we need to properly cost the impacts of such research investments. In a robust series of economic analyses, the FundingFirst initiative of the US Lasker Foundation has shown that investments in health R&D have provided exceptional returns (see Appendix 1). The exceptional returns demonstrated in this US study – 3 to 1 returns on investment for cost savings and 100 to 1 returns on investment for the worth of life – justify, and indeed make health a mandatory priority area. Similar data apply to Australia and have already been accepted and endorsed by the government. Thus, health and medical research was adopted as a national priority in 1999 through the implementation of the Wills Review.

Ongoing assessment of the performance of R&D by external bodies, such as the ABS, will provide a basis through which investment in national research priorities can be assessed. Many of these are long term goals. Thus, the decrease in death rates is usually a slow process, delayed for many years from the advent of health interventions. As shown in the attached Powerpoint presentation and text from the National Press Club address by Prof Leon Rosenberg in June this year, the 1950's and 60s decreases in death rates due to infectious disease and the advent of widespread immunisation and public health campaigns (see also Rappouli et al, 2002) were marked. More recently, the steady decline of deaths due to cardiovascular disease is clearly attributable to numerous incremental advances of health and medical research, but is difficult to attribute to a single event. This is contrasted to examples such as the polio vaccine, in which impacts were seen almost immediately, or one of Australia's great advances in the rapid reduction by 50% of the death rate of sudden infant death syndrome (SIDS) by identification and adoption of non-prone sleeping position of infants.

While endorsing priority setting, it is crucial to note that the Wills Review stressed the critical importance of fundamental research with the statement that 'curiosity driven, investigator-initiated, peer-reviewed fundamental research is the foundation of our current success and it must remain so. It must underpin our research effort as it does in other successful research countries.' ASMR does not consider that adoption of national research priorities should be to the detriment of this fountain of innovation.

6 Implementation and Monitoring

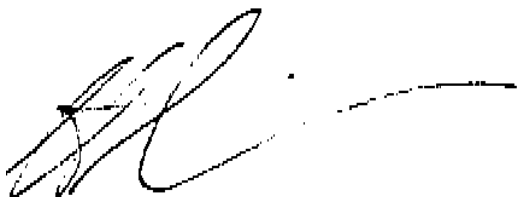
Agencies covered by national research priorities will be asked to develop detailed implementation plans after priorities are announced. You may wish to comment on aspects of implementation and monitoring at this stage to assist in the design of these plans.

ASMR considers the development of implementation (and monitoring) plans to be most appropriately done by the respective research agencies. This will allow the agencies the best opportunity to inculcate the national priorities into their overall research portfolios.

While this approach is the simplest available for implementation, it will leave some gaps between the respective agencies. The alternate approach of allocation of national research priority funds would be even less effective as it would remove the capacity of the respective agencies to develop responsive implementation strategies. However, in order to meet the challenge of interfaces between agencies and to ensure that maximum synergistic benefits are obtained from the priority process, we strongly suggest that some additional (possibly contestable) support be made available for development of interagency initiatives. Such a strategy would create considerable incentives for agencies to develop both internal as well as collaborative implementation proposals.

Finally, long term priorities require regular data collection and monitoring followed by periodic reevaluation and assessment of return on investment. A key issue is therefore the availability of robust and detailed data on the performance measures. Collection of this data should be included in the implementation plans. More importantly, independent collection of this data, most preferably by the ABS, but also by other selected agencies, such as the Australian Institute of Health and Welfare, would serve as existing and independent resource base for data collection and evaluation.

Yours sincerely,



Professor Peter R Schofield
President

Appendix 1 'Exceptional Returns' – Funding First
Appendix 2 Prof Leon Rosenberg – National Press Club Address
Appendix 3 Prof Leon Rosenberg – Powerpoint