



Report of the Review of Public Health Research Funding in Australia

Prepared by the Public Health Research Advisory Committee
Chaired by Professor Don Nutbeam

December 2008



© Commonwealth of Australia 2009

Electronic documents

This work is copyright. You may download, display, print and reproduce this material in unaltered form only (retaining this notice) for your personal, non-commercial use, or use within your organisation. Apart from any use as permitted under the *Copyright Act 1968*, all other rights are reserved.

Requests for further authorisation should be directed to the Commonwealth Copyright Administration, Attorney-General's Department, Robert Garran Offices, National Circuit, Canberra ACT 2600 or posted at: <http://www.ag.gov.au/cca>

ISBN Online: 186496376x

April 2009

Contents

1	Executive Summary	5
	Key Recommendations	6
2	Introduction	12
	Defining Public Health Research	12
	The Context for the Review	13
	The Review Process	14
3	Public Health Research in Australia	15
	Recent History of the Development of Public Health Research	15
	Funds Allocated by NHMRC to Public Health Research	16
	Project Grants	18
	Program Grants	18
	Researcher Support	18
	Capacity Building Grants	19
	New Capacity Building Grants in Population Health and Health Services Research	19
	New NHMRC Partnerships	20
	Strengths and Weaknesses of the Current National Funding Approach	21
	Strengths and Weaknesses of the NHMRC Funding Approach	23
4	Key Messages from the Consultations and Submissions	24
	A leadership role for NHMRC to provide strategic direction and improved coordination of public health research in Australia	24
	Strategic investment to improve connection between research and improved health outcomes	23
	Strategic investment in public health infrastructure – capacity building in public health research	25
	A wider range and greater flexibility in funding schemes	27
	Ensuring the integrity of research outcomes	27
	Full funding of research	28
	Improvements to NHMRC application, review and assessment processes	28
	NHMRC as a source of expert advice and public health guidance	30
	Indigenous Public Health Research	31
	International Observations	32



5	Recommendations on the Way Forward	35
6	Acknowledgements	37
	Bibliography	40
	Appendices	42
	Appendix I: Membership and Terms of Reference	42
	Appendix II: Public Health Education and Research Program	44
	Appendix III: NHMRC Funding Data	45
	Appendix IV: Outline of NHRMC Funding Schemes	52
	Appendix V: Suggested Modifications to Peer Review and Assessment Processes	58
	Appendix VI: Suggested Improvement to Review Panels	59

I Executive Summary

This Review was established to advise the Chief Executive Officer (CEO) on the ways in which the National Health and Medical Research Council (NHMRC) can maximise its contribution to improved population health outcomes and align its public health funding to the needs of the Australian community.

The Review has taken place at a time of unparalleled attention to public investment in research in Australia with several Government reviews pertinent to the Australian research, innovation, and health and higher education systems taking place during the same time period as this Review. The Committee has attempted to incorporate findings from these reviews where feasible and relevant. The Review has also been fundamentally informed by a series of consultations and written feedback from the public health research community, the university sector, non government organisations, charities with an interest in public health issues, state and federal government departments as well as international funding agencies.

The Committee received consistent, positive feedback regarding the fundamental role of the NHMRC as the peak funding body for investigator initiated, peer reviewed research in the health and medical sciences. It has a well established reputation for uncompromising support of excellence in research, as well as a source of independent health evidence, advice and guidance. These are attributes that need to be protected.

However, it also received robust feedback indicating disappointment that NHMRC has not responded adequately to recommendations from the Wills and Grant Reviews¹ of the NHMRC – both of which recommended an increase in priority driven and strategic research with the greatest potential to contribute to improved population health. For many, this would require a proportionately increased investment in public health funding by NHMRC, and this has not been achieved.

The Review found that there is no overarching Australian public health research strategy to ensure Australian health priorities are considered through all types of research. Further, it found that the impact of public health research is limited by funding systems and academic incentives which encourage descriptive research rather than intervention research. Furthermore, current systems provide inadequate support for policy and practice focused research, and the translation of research into policy and practice.

The Committee also determined that funding for public health research in Australia is currently dispersed across several funding agencies. In addition to NHMRC, Australian public health researchers currently obtain funding from state and federal governments, non-government organisations and charities. As a result, there is little, if any co-ordination of research funding or project outcomes.

The Committee received regular and consistent feedback on the need for a more strategic approach to the deployment of funds for public health research, as well as greater co-ordination and cooperation between funding agencies. NHMRC is seen as uniquely placed to act as a convenor and catalyst for co-operation between public health funders, government departments and health practitioners in the promotion of public health research. This can be achieved by increasing its strategic focus, fostering collaborations between funding agencies and developing innovative models of funding that can be used by other financial supporters of public health research.

¹ Wills, P. 1998 Health and Medical Research Strategic Review, the Virtuous Cycle - Working together for health and medical research, Department of Health and Aged Care: Canberra. Grant, J. 2004 Sustaining the Virtuous Cycle for a Healthy Competitive Australia: Investment Review of Health and Medical Research, Department of Health and Aged Care: Canberra.



The Committee endorses the feedback received throughout the consultation in relation to Indigenous health research issues. It has made recommendations concerning the need for priority research and intervention research that are compatible with this feedback. The Committee recommends to the CEO the need for greater Indigenous participation across *all* aspects of research development and assessment activities within NHMRC, and in the development of the next NHMRC Strategic Plan. .

The Committee found that a more coherent and comprehensive approach to funding arrangements for public health research will provide invaluable assistance in supporting the translation of ideas from conception to practice. The existing fragility of public health research funding is exacerbated by unnecessary competition between universities, research institutes and state government to receive funding in the education and health sectors. Fragility is also demonstrated through the unproductive duplication of efforts in funding arrangements and in application processes for funding.

The Committee also acknowledged concerns that arose about the integrity of research outcomes and has proposed a National Register of Public Health Research be established. This is to ensure that research findings with the potential to benefit public health are made available in ways that show transparency and public accountability for the funds invested.

The Committee received significant and wide ranging criticisms of NHMRC's current management of public health research applications. Although there was acknowledgement of current efforts to improve the NHMRC application processes, there remains considerable concern that current processes still disadvantage public health research applications. Based on this feedback, the Committee has provided several detailed suggestions for improvements to the process.

The following Key Recommendations are proposed after careful consideration of the major issues and the areas of recurrent concern that were highlighted to the Committee throughout this Review. In particular, Recommendations 1 to 5 seek to encourage NHMRC to take a more strategic approach in developing a robust public health research funding infrastructure that is more closely linked to policy and practice. In making these recommendations, the Committee re-iterates the consistent, positive feedback regarding the role of the NHMRC in funding investigator initiated, peer reviewed research to complement a strategic research program. With this in mind, the Committee's recommendations for a strategic research program should be seen as in addition to, rather than a replacement for, investigator-initiated research.

In line with the Terms of Reference for the Review (refer to Appendix D), all recommendations are directed to the CEO of the NHMRC. Where relevant, the Committee has indicated its view on the need for different areas within NHMRC to respond to the challenges that have emerged from the Review.

Key Recommendations

The purpose of the recommendations is to expand the volume and range of opportunities for public health research in Australia. In advocating this expansion the Committee proposes an important leadership role for NHMRC in determining strategic direction in public health research, and in improving coordination of investment in public health research that offers greatest potential to contribute to improved population health.



Strategic Leadership and Co-ordination

Recommendation 1

That NHMRC supports the establishment of a National Public Health Research Forum.

This Forum would act as a catalyst for co-operation between government and non government public health research funders. Key outcomes from the creation of the Forum would include the identification of national priorities in public health research that would underpin a more strategic and collaborative approach to public health research funding in Australia. The Forum would also provide a location for a National Register of Public Health Research (see Recommendation 5). The Forum could also support the development and wider adoption of innovative models of funding that respond to the range of challenges identified through the review (see Recommendation 6). It would facilitate the assessment of current and future public health research capacity development and workforce needs, and the funding mechanisms required to enable appropriate support for the development of the workforce (Recommendation 9).

Recommendation 2

That NHMRC develop a national public health research strategy to identify priority research streams, and emphasise intervention research.

This strategy should form a part of, or emanate from, current work within NHMRC Council. It should include the identification of priority research streams, especially those aligned to the Government's preventative health strategy. The strategy would also identify the proportion of NHMRC funding to be directed towards intervention research, particularly for Indigenous populations.

Recommendation 3

That NHMRC collaborate with the Department of Health and Ageing in the future development of the Public Health Education and Research Program (PHERP) to support the development of national Centres of Excellence in key public health priority areas.

The Committee received feedback expressing concern that the public health research talent in Australia was currently spread thinly across many institutions, indicating that there would be significant benefits from practical support for the development of public health research Centres of Excellence. These centres would not only assist early career public health researchers, but also contribute to the critical mass of multi-disciplinary researchers that are needed to adequately address the major public health challenges facing Australia. The recently announced NHMRC Partnerships Program (Recommendation 6) that foreshadowed new funding for Centres of Excellence. These, combined with the use of Capacity Building Grants, could make a positive impact alongside the more strategic application of PHERP funds in building public health research capacity.



Recommendation 4

That NHMRC engage more fully in its established role as a source of evidence-based guidelines on key public health issues.

NHMRC should work closely with state and federal government agencies to produce guidelines that address national priority health areas and risk groups, and fit with the Government's emerging Preventive Health Strategy. The integration of the National Institute of Clinical Studies (NICS) into NHMRC presents an opportunity to ensure that guidelines are disseminated and implemented more systematically than has traditionally been the case.

Recommendation 5

That NHMRC support the establishment and maintenance of a National Register of Public Health Research.

This register would be similar to the Australian New Zealand Clinical Trials Registry². It would ensure greater transparency in the conduct and reporting of results of government, non-government and commercially supported public health research. The Register will also assist researchers in identifying gaps in research and may prevent unnecessary duplication. The Register could be managed and monitored through the National Public Health Research Forum described in Recommendation 1.

²

www.anzctr.org.au



Changes to Funding Strategies and Mechanisms to Address Australia's Public Health Needs

Recommendation 6

That existing NHMRC schemes accommodate two new categories of funding to enable greater flexibility and responsiveness to emerging public health priorities and research opportunities.

The Committee was impressed by two schemes that have operated successfully in Canada that would, if implemented in Australia, respond to criticism about the lack of flexibility and responsiveness in current NHMRC schemes. The Committee has recommended the creation of:

- a. Start-up Funding Grants to build research capacity in the initial stages of a project. These include seeding collaborations (\$20-25,000) and pilot study/ proof of concept grants (up to \$100,000). The new NHMRC Partnership Project Grants have the potential to accommodate these grants.
- b. Rapid Response Intervention Grants to support the development of intervention studies and allow data collection at a time when policy direction is about to change. The Committee recommends a multi-year funding mechanism offering grants of up to \$100,000 per annum for up to three years. This type of grant will require an “out of rounds” assessment capability within NHMRC.

In both cases, these new grant schemes should be assessed against pre-determined outcomes so that it is possible to critically review their effectiveness in the medium term.

Recommendation 7

That NHMRC facilitate the development of large scale, long term, and nationally-relevant public health research infrastructure.

Establishing such public health research infrastructure will require NHMRC to take a leading and facilitating role with governments, government agencies and non-government organisations. It should be considered a form of investment equivalent to and compatible with the research infrastructure investments made through the existing National Collaborative Research Infrastructure Strategy (NCRIS) scheme.

This would include support for significant large cohort studies, disease registries, data-linkage and survey facilities. Infrastructure considered here should be: large scale and beyond the capacity of a single group to support it; collaborative and accessible nationally; and required to maintain Australia's international competitiveness. Specific consideration should be given to funding for nationally-relevant resources that incorporate bio-data, bio-specimens and quality epidemiological data that would be of use in basic, clinical and public health research.



Recommendation 8

That NHMRC adopt the principle of fully funding the costs of research in line with recommendations emanating from the Review of the National Innovation System.

This recommendation follows consistent feedback from the consultations, and is made in the light of the recommendations from the Review of the National Innovation System, proposing adoption of the principle of fully funding the costs of university research activities. These should be implemented through adjustments in funding to block and competitive grant schemes, without compromising grant success rates. There was recognition that in order to phase-in 'full cost' funding that the number of grants that could be offered may be reduced in the short term.

Recommendation 9

That NHMRC initiate a review of the likely workforce needs in public health research over the coming decades and allow changes to the balance of relevant funding in response to existing and future needs.

The recent Capacity Building Grants have been successful in building capacity in public health research at relatively junior levels. At present, the lack of NHMRC Senior Research Fellows in public health, and the poor record of public health research in securing Program Grants mean that problems are likely to be encountered in sustaining public health researchers at more senior levels. These senior level researchers are essential for the future of public health research.

A coherent evidence-based understanding of the requirements of public health research in the coming decades, along with the ability to modify funding strategies to meet these demands (for example, by targeting funds at the specific areas of deficiency in the workforce) is essential. This could be constructively done in cooperation with the Department of Health and Aging to help shape the future development of the Public Health Education and Research Program (PHERP)

The Committee anticipates that one important outcome of the NHMRC Partnership program would be to support an increase in the number of Public Health Fellowships aligned with Centres of Excellence.



Continuous Improvements to NHMRC Application and Assessment Processes

The Committee received a high volume of detailed feedback on NHMRC application and assessment processes. In considering this feedback, the Committee was conscious of the fact that there was no fundamental desire for public health applications to be considered in ways that were significantly at variance from the assessment processes used for basic and clinical sciences. However, given the high quality of public health research in Australia, there is no a priori reason for a higher proportion of basic science grant application so the funded compared to public health applications. The recommendations that follow could be considered as applicable to the other broad research areas. Further in the appendices, the Committee have summarised the detailed proposals for application and assessment modifications (Appendix V), and suggested improvements to review panels (Appendix VI).

Recommendation 10

That NHMRC modify weighting and selection criteria to enable applicants from various public health disciplines to more effectively describe their relevant experience, research activities and the links between their research and public health improvement (see Appendix V for detailed suggestions on these modifications).

Recommendation 11

That NHMRC consider revising review panel membership to reflect the diversity and breadth of disciplines involved in public health research (see Appendix VI for detailed suggestions on possible modifications).

Recommendation 12

That NHMRC introduce a mechanism for formal training of reviewers and provide materials outlining what quality is expected of a fundable public health application.

Recommendation 13

That NHMRC develop, promulgate and implement strategies for defining and monitoring its research outputs.

Recommendation 14

That NHMRC cease to define Preventive Medicine as a broad research area and include applications that might otherwise have been considered in this area within the existing Public Health, and Clinical Medicine and Science research areas.



Introduction

This Review of public health research funding is being conducted at a time when there is unprecedented attention to public investment in research and genuine opportunity to expand funding for research in Australia.

The Review was recommended by the National Health and Medical Research Council (NHMRC) Research Committee (RC) to respond to recommendations from previous reviews concerning the funding, quality and impact of public health research in Australia³, as well as addressing concerns from within the public health community over the success of public health research in attracting funding from within existing NHMRC funding schemes.

The Public Health Research Advisory Committee (the Committee) was appointed by Professor Warwick Anderson, the Chief Executive Officer (CEO) in March 2008, and is chaired by Professor Don Nutbeam. The Committee comprises individuals that bring a wide range of disciplinary perspectives to public health research and its transfer to policy and practice.

In broad terms the Committee has been established to advise the CEO of NHMRC, Professor Warwick Anderson, on the ways in which the NHMRC can maximise the impact of its public health funding mechanisms and processes to:

- align public health research funding to the needs of the Australian community
- increase capacity for and the quality of public health research in Australia
- maximise training and other opportunities for public health researchers
- support more intervention oriented public health research in Australia
- provide better support for public health research across diverse institutional settings as well as the range of NHMRC funding vehicles used to support investigator initiated research
- promote public and professional recognition of the value of public health research.

The full terms of reference and membership of the Committee are at Appendix I. The Committee was supported by NHMRC staff members as Secretariat.

Defining Public Health Research

In considering the scope of the review, the Committee adopted a broad definition of public health research to include the investigation and analysis of factors that influence the health status of groups or whole populations, as well as the testing and evaluation of policies and interventions to improve population health outcomes.

The Committee recognises that the current NHMRC's requirement that supports investigators to define the broad research area of grant applications means that some grants that are self-classified as public health research in NHMRC data may not meet the definition above. It also recognises that there will be grants awarded in other broad research areas, especially in preventive medicine and health services research which do meet this definition.

³ Wills, P. 1998 Health and Medical Research Strategic Review, the Virtuous Cycle - Working together for health and medical research, Department of Health and Aged Care: Canberra. Grant, J. 2004 Sustaining the Virtuous Cycle for a Healthy Competitive Australia: Investment Review of Health and Medical Research, Department of Health and Aged Care: Canberra.

The Context for the Review

A change in Australian government in 2007 has seen some early initiatives and the establishment of several wide-ranging reviews of relevant public policy, including national investment in research and innovation, and direction and priority in investment in health and higher education. This review has to be situated within this context.

Initiatives announced in the 2008 Budget include \$209 million over four years to double the number of Australian Postgraduate Awards and \$326.2 million investment over four years in Future Fellowships to attract and retain 'the best and brightest' mid-career researchers. The recently published Review of the National Innovation System⁴ has examined the array of government innovation and industry assistance programs across all levels of government in Australia, aimed at supporting innovation. One aspect of that review will be consideration of the current status of collaboration between business, universities and research agencies (public and private) and ways to strengthen such collaboration.

The Government Review of Australian Higher Education⁵ (the Bradley Review) will address the funding agreements for universities including the funding of research, research training and of university research infrastructure. The *Excellence in Research for Australia* (ERA)⁶ managed by Australian Research Council will assess research quality within Australia's higher education institutions using a combination of indicators and expert review. NHMRC is working with the ARC to prepare a consolidated response to submissions on the journal outlet rankings for discipline clusters 7 (Biomedical and Clinical Research) and 8 (Public Health).

In terms of health policy, the Government has established a National Health and Hospitals Reform Commission⁷ to develop a long term health reform plan for Australia. Within its terms of reference the Commission is required to report upon ways of:

- bringing a greater focus on prevention to the health care system
- improve frontline care to better promote healthy lifestyles and prevent and intervene early in chronic illness
- improve Indigenous health outcomes.

The Government funded several initiatives to improve Indigenous health with its commitment to closing the 17 year gap in life expectancy among Australia's Aboriginal and Torres Strait Islander population by 2020. In addition, the Government established the Preventative Health Taskforce (PHT)⁹ to develop a National Preventative Health Strategy to provide a blueprint for tackling the burden of chronic disease currently caused by obesity, tobacco, and excessive consumption of alcohol.

Within NHMRC, the Independent Review of the NHMRC (Zerhouni Report) conducted in 2007 recommended actions to support strategic direction setting, strengthen and clarify the roles of the NHMRC Council and existing NHMRC Committees, bolster knowledge translation, improve the peer review processes and build a better and more skilled organisation.

The NHMRC is also currently conducting a Review of the NHMRC Roadmap: A Strategic Framework for Improving Aboriginal and Torres Strait Islander Health through Research.

⁴ The Green Paper — *Venturous Australia: Building Strength in Innovation* has been released and can be accessed at: <http://www.innovation.gov.au/innovationreview/Pages/home.aspx>. Outcomes of the Green Paper have fed into this Report. *The Government's response to the Cutler Review will be issued in December and may not accept all of the recommendations in Venturous Australia.*

⁵ http://www.dest.gov.au/sectors/higher_education/policy_issues_reviews/reviews/highered_review

⁶ http://www.arc.gov.au/pdf/ERA_ConsultationPaper.pdf

⁷ <http://www.health.gov.au/internet/main/publishing.nsf/Content/nhrc-1>

⁸ <http://www.health.gov.au/internet/ministers/publishing.nsf/Content/mr-yr08-nr-nr085.htm>

⁹ <http://www.preventativehealth.org.au/internet/preventativehealth/publishing.nsf/Content/home-1>



Several of the recommendations from each of these Reviews are of direct relevance to this Review. Given this context of unprecedented attention to public investment in research, the Committee is challenged to ensure that the findings and recommendations are compatible with the changing environment. At the same time, the Committee hopes to make use of the opportunity for change to present a positive vision for the future development of public health research in Australia.

The Review Process

At its inaugural meeting in April 2008, the Committee agreed to engage the public health research community as early and as comprehensively as possible in the processes of the review. As a consequence it held face to face consultation meetings in Adelaide, Perth, Hobart, Melbourne, Sydney, Brisbane, Canberra and Newcastle during May and June 2008. Further consultation in Darwin and Alice Springs (linked by teleconference with Darwin) occurred in September.

An important goal of the consultations was to engage a broad range of individuals in defining key issues and in developing responses in the context of the aims and terms of reference for the review. The Committee was encouraged by the participation of over 180 people in the consultations and by receipt of 51 written submissions from a wide range of stakeholder groups including non-government organisations (NGOs), state health departments, public health research institutes, university research offices and individual public health researchers.

In addition to holding consultation meetings, members of the Committee and NHMRC Secretariat engaged in information exchange with relevant funding agencies in public health research in Canada, the UK and the Netherlands. These discussions have yielded valuable examples of strategic direction, peer review processes and funding mechanisms specific to public health research, and are referred to in Section 3.

3 Public Health Research in Australia

One of the Committee's key aims is to consider the capacity for and the quality of public health research in Australia. In particular, it seeks to offer recommendations on ways in which NHMRC funding for public health research can be directed to maximise health outcomes for Australians. These recommendations need to be informed by the history and development of public health research in Australia.

Recent History of the Development of Public Health Research

The recent history of development of capacity for public health research can be traced back to a review of public health in Australia by the Canadian academic Professor Kerr White in the mid 1980s. He was asked by the Australian Government to report on "appropriate arrangements for meeting public health and tropical health teaching and research requirements to the year 2000"¹⁰. Kerr White identified several weaknesses and deficiencies with the existing 'arrangements' and made recommendations for a major increase in Commonwealth funds to support public health education and research. He also argued for a major reallocation of resources across a wider range of institutions, and changes to the way in which the NHMRC dealt with public health in all its programs.

Many of Kerr White's key recommendations were implemented¹¹. For example, reallocation and expansion of funding under the new Public Health Education and Research Program (PHERP) (refer to Appendix II for details of this program) led to the development of centres of public health education and research in Newcastle, Adelaide, Melbourne, Sydney and Brisbane, the establishment of the National Centre for Epidemiology and Population Health at the Australian National University, as well as an expanded role for what is now the Australian Institute of Health and Welfare. The PHERP funding has continued for more than 20 years and has been regularly modified in the light of a series of reviews. This funding, whilst modest in total (\$60 million including GST over 5 years) and thinly spread among 19 institutions¹², remains an important contribution to public health academic capacity-building in Australia.

Following the Kerr White Report, the NHMRC overtly strengthened its support for public health research by establishing a second principal research committee, the Public Health Research and Development Committee (PHRDC), alongside the Medical Research Committee (MRC). The PHRDC, which existed from 1987 to 1996, provided an explicit stream of funding for public health research. Many of the now established elements of grant review processes, such as providing reviewers comments to the applicants and allowing them to respond were developed by the public health research and development group.

In 1997, the role of the PHRDC was absorbed by a single Research Committee which subsumed the existing MRC and the PHRDC. This was in line with Kerr White's recommendation that public health funding be integrated fully across the range of NHMRC programs.

¹⁰ White KL. Independent Review of Research and Educational Requirements for Public Health and Tropical Health in Australia. Presented to the Commonwealth Minister for Health, 1986

¹¹ This section of the report draws on an excellent summary of the Kerr White reforms published in a report published by the National Public Health Partnership entitled National Directions for Research and Development in Public Health published in 1998

¹² <http://www.sport.gov.au/internet/main/publishing.nsf/Content/pherp-funded.htm>

In 1998, The Health and Medical Research Review: the Virtuous Cycle (commonly known as the Wills Review¹³) developed a vision for health and medical research in Australia. It proposed a major increase in the overall funds for health and medical research in Australia and confirmed the importance of a strong investigator-initiated and peer-reviewed research program as the foundation for that expansion. However, it also emphasised the need for priority-driven research that contributes more directly to population health and the development of evidence-based health care, particularly the need to routinely integrate research-based knowledge into health policy and practice. These recommendations were broadly adopted by the government, and have provided the foundation for research funding policy since that time.

Six years later, in *Sustaining the Virtuous Cycle*, John Grant¹⁴ argued that while some of the recommendations by Wills had been successfully implemented, the research output was limited and the impact on health outcomes lower than had been anticipated. Grant reiterated the need for greater focus on strategic research and on the development of the infrastructure needed to enable the transfer of research results into policy and practice. Like Wills, Grant placed emphasis upon the important potential contribution of public health research to improving national health outcomes. Increased government funds for NHMRC followed the recommendation of the Grant Review in May 2006. Grant also recommended that a policy and practice focused research program be established, which is being implemented in 2008-09.

Given this context, the Committee has closely examined available information on NHMRC funding data covering the period from 2000 to 2007, reflecting the impacts of recommendations from the Wills and Grant Reviews. The Committee was also able to obtain unpublished data on fundable-but-not-funded projects to examine potential differences in trends between public health research, clinical medicine and basic science applications, and to locate any variation between public health research funding applications compared to other schemes. Much of this information was made available at the public consultation and on the Review web site.¹⁵

Funds Allocated by NHMRC to Public Health Research

Currently there is no standard definition of how public health research is funded throughout Australia. Therefore, it is important to examine a number of data sources to determine how funding for public health research is allocated. This situation also points to a need for a more coordinated approach to funding and collecting data that records such funding.

The Australian Institute of Health and Welfare (AIHW) collected data in 2005-06 which showed that from the Australian Government's expenditure on public health research, NHMRC funded 80.9% (\$74.9 million)¹⁶, and PHERP funded 9.7% (\$9 million).

Data from Victoria's Public Health Research and Education Council (VPHREC) report¹⁷, identified NHMRC as the main source of national funding in Victoria in 2004, providing 63% (\$11.2m) of all national peer reviewed public health research. National funding includes both Commonwealth and national non-government organisations. The VPHREC report also identified that when NHMRC funding was compared with **all peer reviewed** funding sources,

¹³ Wills, P. 1998 Health and Medical Research Strategic Review, the Virtuous Cycle- Working together for health and medical research, Department of Health and Aged Care: Canberra

¹⁴ Grant, J. 2004 *Sustaining the Virtuous Cycle for a Healthy Competitive Australia: Investment Review of Health and Medical Research*, Department of Health and Aged Care: Canberra.

¹⁵ http://www.nhmrc.gov.au/about/_files/public_health_research_consultation_may_june_2008.pdf

¹⁶ Australian Institute of Health and Welfare, 2008: National Public Expenditure Report 2005-06

¹⁷ <http://www.vphrec.com.au/publications/documents/20061219VPHRECreporton2004publichealthresearchfunding.pdf>

including State and Commonwealth departments, non-government organisations, international organisations, charities and corporate and commercial sources, NHMRC only provided one third of funding (35%). NHMRC funding for Victorian public health research reduced to 20% when compared with all peer reviewed **and** non-peer reviewed funding available during that year¹⁸.

By any criteria the NHMRC is the single most important source of funds, and a clear national leader in supporting competitively based, peer-reviewed public health research in Australia. The funding schemes and methods of application and assessment used by NHMRC provide the benchmark against which other schemes are based and judged.

The Committee interrogated the NHMRC Funding Data for public health research, which are outlined in tables in **Appendix III**. The data used to define Public Health Research in Appendix III is defined as per the Broad Research Areas (alongside Basic Science, Clinical Medicine, Preventative Health and Health Services Research). All these Broad Research Areas are applicant-defined criteria. A descriptive outline of the NHMRC Funding Schemes is at **Appendix IV**.

Appendix III:Table 1, reveals an increase in funding commitments for public health research across major NHMRC grants from 2000 to 2007, rising from \$16.5 million in 2000 to a peak of \$90.4 million in 2006. Table 1 also reveals a drop in overall funding from \$90.4 million in 2006 to \$64 million in 2007.

This decline in overall funding between 2006 and 2007 may be understood better by looking more closely at individual funding schemes in Table 1, where decreases in funding can be attributed to a sharp decrease for Strategic Awards in 2007, and to the fact that there were no applicant-defined public health Program Grant applications. The fact that no Capacity Building Grants were awarded in 2007 when the program was being evaluated and redesigned is also a contributing factor to the overall decrease in funds. A new Capacity Building Grants scheme in Population Health and Health Services Research was advertised in 2008.

An interrogation of NHMRC funding data by Broad Research Area at **Table 2** reveals that there has been no increase in the proportion of funding for public health research from 2000 to 2007 where compared to other broad research areas. It has remained stable at around 15% of the total despite both Grant and Wills¹⁹ advocating for an increased proportion of funding for applied research (of which public health would make a substantial contribution) and for additional funds to implement these recommendations.

Expenditure in other research categories has also fluctuated proportionally year by year, but increased in absolute terms in line with the increase in funding for NHMRC.

¹⁸Victorian Public Health Research and Education Council, 2006: Survey of Public Health Research Funding for 2004 in Victoria, Chart 2Aii: Breakdown of Income from National Peer Reviews Grant Sources.

¹⁹Wills P (1998) Health and Medical Research Strategic Review, the Virtuous Cycle- Working together for health and medical research, Department of Health and Aged Care, Canberra; Grant J (2004) Sustaining the Virtuous Cycle for a Healthy Competitive Australia: Investment Review of Health and Medical Research, Department of Health and Aged Care Canberra.



Project Grants

Project grants are the major funding vehicle accessible to public health researchers for investigator-initiated research. Since 2003, there has been a 19% increase in the proportion of public health Project grant applications scored as suitable for funding (but not actually funded) — from 25% to 44% as indicated in Table 3A. Despite this increase, the proportion of grants rated as suitable for funding in 2007 is lower for public health (44%) than for basic science (49%). Refer to Table 3B.

Of even greater concern, the success rates for public health Project grant applications, i.e. the proportion of applications receiving actual funding, has remained broadly static over recent years (22% in 2003 and 20% in 2007). Overall, these success rates are lower than those for basic science applications, which were 32% in 2007 (Table 3B) and closer to clinical medicine, which have risen to 25% in 2007 (Table 3C).

The relatively low success rates for public health Project grant applications, as outlined in Table 3A were a consistent source of comment and genuine concern within the public health community. These data have provoked a range of suggestions for modification of the application and assessment processes from the public health community that are described later in the report.

Program Grants

Program grants provide longer term support for large programs of work and are important for developing and sustaining larger research teams. Public health has a poor record of securing NHMRC Program grants, with only 5 grants funded since 2002 and only 1 grant funded in the last 3 years (Table 4B).

The lack of Program grant success for public health researchers is a cause for concern, with the Committee identifying this as being problematic for building critical mass in public health research and supporting the development of research leaders. However it is noted that Capacity Building Grants scheme were implemented between 2002 and 2006 to supplement Program Grants.

Researcher Support

With regard to support for researchers, NHMRC currently offer a range of postgraduate scholarships, research training fellowships and career development awards. Descriptions of the awards are contained in Appendix IV.

In line with the overall increase in funds available for fellowships, NHMRC funding for Research Fellowships in public health have grown from \$1.4 million in 2000 to \$7.7 million in 2007 (refer to Appendix III: Table 1). Despite these increases, the number and proportion of Research Fellowships in public health remains low with only 2 to 8 fellowships awarded annually from 2002-2006, rising to 14 in 2007 (Table 5B). Since these senior fellowships provide current and future research leaders in public health, the Committee felt that the small proportion (approximately 8% on average) awarded to public health applicants is a cause for concern.



Training Fellowships increased from \$0.9 million in 2000 to \$8.3 million in 2007 (Table 1). Funding for public health researchers receiving Scholarships and Career Development Awards has remained fairly static over recent years, especially in view of the increase in absolute cost for each award.

The recent announcement by the government to double the number of Australian Postgraduate Awards and to invest in *Future Fellowships* to attract and retain ‘the best and brightest’ mid-career researchers, will add to the total resources available to retain and support researchers in public health.

Capacity Building Grants

The Capacity Building Grants in Population Health scheme commenced in 2002, after two years of planning, extensive consultation and policy development. Twenty-five capacity building grants were awarded from 2002 and 2006 worth a total of \$57.5 million dollars (Appendix III: Table 1).

Selection criteria for this scheme were weighted towards policy relevance, with applicants required to demonstrate their record in effecting policy and service changes alongside their conventional research track record. The scheme intended to improve the availability of the most appropriate and experienced mentors to build capacity and networks for other researchers working in population health research, and to strongly target the development of policy relevant researchers in priority areas.

Disappointingly, it is not obvious that there was any interaction between NHMRC and PHERP in the development of this program, and some potential for synergistic investment may have been missed as a consequence. Both programs focus on the development of research capability, targeting related and complementary discipline and health priorities.

New Capacity Building Grants in Population Health and Health Services Research

In 2008, NHMRC combined the funding for Capacity Building Grants with Health Services Research grants to a total of \$18 million²⁰. The grants will provide \$2.5 million for up to five years. This scheme aims to develop capacity through strengthening and growing teams with a record of undertaking innovative, significant and internationally competitive research. It aims to develop capacity within teams of researchers by bringing in new expertise and by increasing workforce capacity in order to by develop less experienced researchers to become research leaders. At the time of preparing the report, no information on the outcomes of the current funding round was available.

²⁰ A total of up to \$18 million is available under the current call: \$10 million for grants with a focus on health services research and \$8 million to grants with a focus on public health research. The grants will provide up to \$2.5 million for five year grants, or pro rata. Applicants will normally be funded for up to a five-year period on a one-off basis



New NHMRC Partnerships

The recommendation in the Grant Review that a policy and practice focused research program be established is of particular significance for public health. NHMRC's commitment to embarking on such a program fits well with a need in the public health discipline to link research to policy and practice, and to increase the quality and volume of research that is intervention oriented.

In 2008-09, NHMRC will fund two types of awards: NHMRC Partnership Projects, similar in value and conditions to existing Project Grants, and NHMRC Partnership Centres for Research Excellence. It would be reasonable to expect that a significant proportion of funds will support public health research, especially research directed at intervention development, testing and evaluation.

Funding to the value of \$108 million over the first two years will be available under the new initiative which is designed to support opportunities for researchers and policy makers to work together, to define research questions, undertake research, and interpret the findings.

Research teams will also be required to partner with organisations including; government agencies, industries and the private sector, professional associations, non-government, or charitable organisations.

NHMRC Partnership Projects will focus on informing the decisions that influence health and well-being through changes in the delivery, organisation, funding and access to health services. A call for Partnership Projects opened in July 2008, and as distinct from other awards, the partners have a longer time to prepare a research proposal (up to four and a half months) and can be awarded funding for up to 5 years to a maximum of \$1.5 million per application.

The creation of this type of award substantially addresses a proposal that emerged consistently from the consultations to establish a grant type in the NHMRC that was broadly equivalent to the ARC Linkage grant.

NHMRC Partnership Centres for Research Excellence are to be established in 2009 to develop research capacity in designated areas of interest to one or more partner policy agency. Partnership Centres will work on large scale programs of research and have in place strategies to meet the needs of the partner agency for evidence from research. These Centres will require significant funding and financial flexibility. It is anticipated that cash and in kind contributions would be provided by the partner organisation/s. They will be encouraged to attract additional funding from other sources and to use such funding to become viable as independent entities.

Depending on the approach taken to assessment and selection, The Partnership Centres for Research Excellence offer an excellent vehicle through which to address a problem identified through the consultation concerning the thin spread of public health expertise throughout Australia. These Centres offer an opportunity to support and develop a substantial critical mass of public health researchers around priority issues and methodologies.

Strengths and Weaknesses of the Current National Funding Approach

The strengths of Australian public health research are reflected in its public health research achievements. Australian health policy and public health campaigns, and the research that underpins them are well regarded internationally, and have led the world in reducing deaths from road injury, melanoma, SIDS, HIV/AIDS, tobacco use, firearms and breast cancer among many major achievements (see over page).

Box 1. Contribution of public health research to knowledge translation

References to Australian public health research contributing to knowledge advancement or evaluation of interventions to improve health outcomes

Road injury

McEvoy S, Stevenson M, McCartt A, Woodward M, Claire Haworth, Palamara P, Cercarelli LR. The role of mobile phones in motor vehicle crashes resulting in hospital attendance: a case-crossover study. *British Medical Journal* 2005; 331:428-433.

Henstridge J, Homel R, P M. The long-term effects of random breath testing in four Australian states: a time series analysis. Canberra: Federal Office of Road Safety; 1997.

Sun exposure and skin cancer

Dixon HG, Lagerlund M, Spittal MJ, Hill DJ, Dobbinson SJ, Wakefield MA. Use of sun-protective clothing at outdoor leisure settings from 1992 to 2002: serial cross-sectional observation survey. *Cancer Epidemiol Biomarkers Prev.* 2008 Feb; 17(2):428-34.

Giles GG, Armstrong BK, Burton RC, Stales MP, Thursfield VJ. Has mortality from melanoma stopped rising in Australia? Analysis of trends between 1931 and 1994. *British Medical Journal* 1996; 4:312:1121-5.

Sudden Infant Death Syndrome

Ponsonby AL, Dwyer T, Cochrane J. Population trends in sudden infant death syndrome. *Semin Perinatol.* 2002 Aug; 26(4):296-305.

Dwyer T, Ponsonby AL. Prone sleeping and SIDS. *Epidemiology.* 1997; 8(3):329-31.

HIV/AIDS reduction

Prestage G, Jin F, Zablotska I, Grulich A, Imrie J, Kaldor J, Honnor G, Kippax S. Trends in HIV prevalence among homosexual and bisexual men in eastern Australian states. *Sex Health.* 2008 Jun; 5(2):103-7.

Tobacco Control

Wakefield MA, Durkin S, Spittal M, Siahpush M, Scollo M, Simpson J, Chapman S, White V, Hill D. Impact of tobacco policies and mass media campaigns on monthly adult smoking prevalence: time series analysis. *American Journal of Public Health* 2008; 98(8):1443-50.

Chapman S, Borland R, Brownson R, Scollo M, Dominello A, Woodward S. The impact of workplace smoking bans on declining cigarette consumption in Australia and the USA. *American Journal of Public Health* 1999; 89:1018-23.

Firearm deaths

Chapman S, Alpers P, Agho K, Jones M. Australia's 1996 gun law reforms: faster falls in firearm deaths, firearm suicides, and a decade without mass shootings. *Injury Prevention* 2006; 12: 365-72

Breast cancer

Taylor R, Morrell S, Estoesta J, Brassil A. Mammography screening and breast cancer mortality in New South Wales, Australia. *Cancer Causes Control.* 2004 Aug; 15(6):543-50.



The volume and quality of published outputs from public health research in Australia is impressive and reflects a strong public health research culture. Data on the impact of journal publication outputs collated in 2005 indicated that public health research in Australia is among the most cited in the world literature; with more than 1 in 10 of the 5% most frequently cited public health papers originating in Australia²¹. This is a higher ratio of citations than any other health, medical or biomedical discipline in Australia, and indicates a significant return in terms of scientific impact for the investment made in Australia. The role of NHMRC as the leading provider of funds for investigator initiated, peer-reviewed research must also be acknowledged for this outcome.

During the consultations, some argued that these impressive contributions to knowledge through public health research have been achieved on limited resources, and built on a fragile base. Expertise in public health research is thinly spread. As in many disciplines, there is a continuous pull on both established and up-coming researchers to locate overseas where offers of higher salaries and full infrastructure to support their research often prove too tempting to resist.

The impact of public health research is also limited by funding systems and academic incentives which encourage the production of descriptive research rather than intervention research, and does not support translation into policy and practice focused research. A recent paper prepared for the NHMRC Research Committee²² revealed that, both in Australia and internationally, the vast majority of published research examines and analyses biological, environmental, social and behavioural influences on population health. Far less research was dedicated to the transfer of this knowledge into policy and practice, particularly through the development and testing of interventions to improve public health.

Frustratingly, there are no reliable, national figures on the total investment in public health research in Australia. AIHW data show that public health research is funded from a variety of sources, primarily Federal Government and State Government agencies, with complementary support from the non-government organisations and charities.

A report from Victoria's Public Health Research and Education Council (VPHREC)²³ identified that in 2004 total external income for all public health research in Victoria was \$54.5 million, made up of \$31.2 million of income from established peer-reviewed sources (57%) and \$23.3 million from commissioned research and other sources (43%). One third of peer-reviewed income (\$11m - 35%) was allocated by the NHMRC. Peer-reviewed public health research was also funded by VicHealth, charities, Federal and State health departments and to a lesser extent, the Australian Research Council. Further peer-reviewed income in 2004 in Victoria was also received from international funds, most notably the US National Institutes of Health. Funding that was classified as non-peer reviewed in the report was mostly from State and Federal Government, and from corporate and commercial support.

These data indicate that whilst the NHMRC is the largest source of funding overall and the most significant funder of peer-reviewed research in Victoria, in total, NHMRC funds still amounted to 20% of all (peer reviewed and non peer reviewed) income in 2004 for public health research. Whilst it would not be reasonable to assume that such a profile would be matched in all States, these data do point to the variety of sources of income for public health research, and to the potential for confusion in mission and purpose between funding agencies. It suggests that there is considerable scope for a more strategic approach to the deployment of funds for research, the potential for cooperation between funding agencies, and the need for better coordination of funding and of the collection of data that records such funding²⁴.

²¹ Butler, L. 2005 The Impact of Journal Publication Output 1999-2003, Canberra: NHMRC: Section 4.11.

²² Sanson-Fisher, R. 2007 Increasing Investment in Policy and Practice, Descriptive research formed the largest proportion of publications over each time period for each health area, comprising between 62 and 87% of publications.

²³ <http://www.vphrec.com.au/publications/documents/20061219VPHRECreporton2004publichealthresearchfunding.pdf>

²⁴ Australia is not the only country that has faced problems with funding data. The major reason for the UK and the



Australia presently lacks a system or mechanism with the capacity to plan and co-ordinate public health research nationally. Neither does it have a strategic national approach that prioritises, co-ordinates and fosters a co-operative approach to the funding of public health research projects on a national scale. Rather, the present system encourages competition and duplication both in applying for funding and in research projects themselves, often resulting in sub-optimal research scale, and a thin spread of research expertise among competing institutions.

Strengths and Weaknesses of the NHMRC Funding Approach

Within this broader context, NHMRC plays a key role in funding public health research in Australia. It is the leading funder of peer reviewed public health research, and the major source of support for early and mid-career academics. NHMRC is also a major contributor towards capacity building for public health research. In the past decade there has been a substantial increase in public health research funding in line with NHMRC's overall growth in income.

Despite this progress, some concerns emerge from the available data. As mentioned earlier, the relatively poor success rates from project grants, and the relatively low proportion of Research Fellowships awarded in the broad research area of public health, just 8% in 2006, are a real cause for concern in the public health community. It was also noted that the proportion of Program Grants being awarded to public health applications is low. In combination, these initiatives are designed to provide the basis for long term research projects and research career development, and the poor success rates have an insidious impact on the development of a critical mass of research capability in key areas.

High quality public health research that leads to improved health outcomes is most likely to emerge from a thriving public health research community conducting a combination of investigator driven and strategic research. Despite the importance of strategic research and strategic direction in the overall research effort, the ways in which NHMRC identifies and manages strategic directions in research is not easily identifiable. Nor is it possible to clearly identify the extent to which community and consumer involvement in priority setting has been adequately achieved.

In addition, it is apparent that public health research expertise is spread relatively thinly across numerous organisations, with difficulty building critical mass and limited connection and coordination between different funding sources. At the same time, existing funding schemes can foster dysfunctional and sometimes unnecessary competition between higher educational institutions. There is a need for a broader and more strategic view of building infrastructure and applying research expertise cooperatively, to maximise the likelihood of tangible improvements in health outcomes directly attributable to research.

In making these observations, the role of the NHMRC in funding investigator-initiated, peer reviewed research remains highly valued. A strong investigator-initiated research program has the capacity to train new researchers, to develop methodologies and to address issues

for the future that are not yet on the public policy agenda. A more strategic approach to research should be seen as complementary and in addition to, rather than a replacement for, investigator-initiated research.

A range of more specific strengths and weaknesses relating to the role of NHMRC were identified through the public consultation process. These are described in greater detail in the next chapter, followed by recommendations on how these issues might be addressed.

Netherlands establishing an umbrella agency to oversee, promote and fund public health research was to be able to collect reliable data. Secondary effects of establishing the agencies include the creation a unified mission and purpose between funding agencies. Source: NHMRC Secretariat teleconference held 8 May 2008 from NHRMC offices.

4 Key Messages from the Consultations and Submissions

The Committee received feedback on a wide range of issues through the consultations and written submissions. Inevitably, much of the feedback it received was critical of current arrangements and operations, and most of what follows reflects this constructive criticism as a prelude to recommendations for change. However, the Committee also received consistent positive feedback on the fundamental role of the NHMRC as the peak funding body for investigator initiated, peer reviewed research in the health and medical sciences. It has a well established reputation for uncompromising support of excellence in research and as a source of independent advice. A strong investigator-initiated research program has the capacity to train new researchers, to develop methodologies and to address issues for the future that are not yet on the public policy agenda. These are significant reputation advantages that serve the research community and wider Australian society well, and should not be compromised by recommendations emerging from this review.

The Committee has considered carefully all of the issues raised, and the practical suggestions for change and improvement that have emerged from this input, and has grouped the responses into the key themes below.

A leadership role for NHMRC to provide strategic direction and improved coordination of public health research in Australia

At the consultations and in several written submissions concerns were expressed at the lack of coordination and strategic direction for public health research funding in Australia. In spite of the existence of national health research priorities, there was a sense that these priorities had not been used to actively guide funding decisions across the wide range of funding sources, and that more generally, there was only modest cooperation and coordination among funding agencies in addressing strategic priorities in public health.

It is evident that there is support for NHMRC to play a leadership role in achieving a higher level of national co-ordination of public health research funding. One submission noted *“there has been little attempt to think through what the long-term research priorities for Australia might be and how systematic, integrated programs to address these might be developed.”*

The Committee also received a clear and consistent message that *“NHMRC should consider establishing national priority research streams for example: Aboriginal health improvement, Cancer and Cardiovascular Disease, Obesity and Type 2 Diabetes, Prevention, the Science of Knowledge Generation and Translation and Exchange”*.

Another submission suggested that by establishing these streams, NHMRC could act as a ‘broker’ and as a *“research clearinghouse to identify needed research and policy gaps, set priorities, establish funding, facilitate national priority setting and processes, encourage innovative research and research partnerships; guide best investments in research nationally and ensure effective synthesis of research.”*



This feedback signals a need for improved cooperation and coordination of research funding, and suggests that a mechanism needs to be found to engage a broad group of research funders and users in all aspects of the research process from concept and design, to conducting research, testing and evaluating public health interventions, and implementing research findings.

The NHMRC is well placed through its Council structure and established relationships to involve policy makers from federal and state governments in the development of such a mechanism and in the identification of strategic national research priorities.

Strategic investment to improve connection between research and improved health outcomes

Related to the first theme, there was consistent feedback that funding needs to be strategically applied in ways that more overtly connects research to health outcomes. This feedback included support for increased funding for translational research and intervention-oriented research. One submission summarised the general feedback received by the Committee on this theme: *“NHMRC [needs to] review research funding on the basis of the ability and direction of funding to bring health outcomes to the population of interest, influence policy, reorient health services, build capacity and be generalisable in benefit to like populations, groups or communities.”*

The Committee received feedback from both consultations and written responses highlighting the importance of intervention research that is closely aligned with the Australian Government’s focus on prevention. Feedback was particularly mindful of the need to connect NHMRC research priorities to the work of the Preventative Health Taskforce (PHT)²⁵ and development and evaluation of a National Preventative Health Strategy. Feedback, particularly from the consultations, underlined the continuum that links research to develop and test interventions and the achievement of improved health outcomes. This continuum also includes dissemination studies (including both quantitative and qualitative elements) that examine the potential to scale-up local interventions to better inform policy and practice.

The consultations and the written feedback provided some practical suggestions for NHMRC to allocate funds for strategic public health research. These included short-term seed funding for pilot studies and funding schemes that allow rapid response to emerging health risks. Other suggestions pointed to the need for a protocol to be established that would facilitate research into unanticipated opportunities (such as when a government introduces an experimental policy or program that provides a natural public health experiment).

Feedback received from the research community on the new NHMRC Partnership Project Grants and Partnership Centres of Research Excellence was extremely positive. Expectations in the public health community are that a significant proportion of these funds will be awarded to priority public health programs and partnerships.

Some concerns were voiced from non-government agencies that the partnership research grants will make it difficult for this sector to be actively involved in the scheme. While, it could be argued that these agencies could contribute in kind there is concern that such agencies fulfilling important roles, are not able to allocate resources into research or to evaluate interventions.

²⁵ <http://www.preventativehealth.org.au/internet/preventativehealth/publishing.nsf/Content/home-1>

Strategic investment in public health infrastructure – capacity building in public health research

The Committee received a range of comments concerning the current infrastructure supporting public health research in Australia. This ranged from concerns about career development opportunities for individual researchers, through the development of a critical mass of researchers capable of addressing complex public health issues, to practical support for data collection and management.

A common concern at the consultations was the ‘gap’ in funding opportunities for early career researchers who, having completed a period of postdoctoral research, may not yet have a sufficiently strong track record to be competitive for a Career Development Awards (CDAs). This is a common problem for all early career researchers, but felt acutely among the public health community where there is less opportunity and tradition for building research teams when compared with the basic sciences, where research teams tend to cluster around specific laboratories and/or equipment. This problem is, in turn, connected to concerns described below about the weighting placed on “track record” in grant applications (which strongly counts against early career researchers who are not connected to a team with more experienced researchers).

The thin spread of public health research talent referred to earlier in relation to the application of the PHERP funds, suggests that practical support for the development of public health research centres of excellence would not only assist early career researchers, but also help to develop the multi-disciplinary critical mass of researchers that is required to address many of the major public health challenges facing Australia. Feedback from the consultation process indicates that NHMRC could liaise far more strategically and productively with the DoHA-funded PHERP to develop a smaller number of truly world-class research groupings in Australia. The recently announced Partnerships Program that foreshadowed new funding for Centres of Excellence, combined with strategic use of Capacity Building Grants could make a real impact in building capacity.

Feedback signalled that the recent Capacity Building Grants have been successful in building capacity in public health research at relatively junior levels. However, there was concern that, at present, there is a noticeable lack of NHMRC Senior Research Fellows in public health. There was also concern that public health research applications have a poor record of securing Program Grants. Some of those participating in the consultations expressed real concern at this situation because problems are likely to be encountered in sustaining the more senior levels of public health research.

Finally, the Committee received feedback on the need for investment into specific public health research “infrastructure”. The need for large and costly collaborative infrastructure is well accepted in the physical and biomedical sciences. For example, the recent investment in a synchrotron cost in the order of \$200 million, with additional long term running costs. Such investment providing necessary infrastructure for a wide range of research areas is recognised as central to the conduct of cutting edge, internationally competitive research in Australia.

Equivalent infrastructure for large scale public health research includes cohort studies, disease registers, and data linkage and survey facilities, to provide data on exposures, characteristics and outcomes on very large numbers of individuals. Internationally, the need for public investment in accessible large scale public health research infrastructure is increasingly recognised, with many governments supporting massive combined biodata, biospecimen and epidemiological data repositories over recent years. The UK Biobank²⁶, the US National Health and Nutrition Examination Survey²⁷, and the Canadian Partnership for Tomorrow²⁸ are examples of this.

²⁶ <http://www.ukbiobank.ac.uk/>

²⁷ <http://www.cdc.gov/nchs/nhanes.htm>

²⁸ See, Webster P. Canada launches massive study of cancer precursors. *Science* 20 June 2008;320:1572 – 1573

The assembly, linkage and maintenance of such facilities require substantial long term resources, particularly for the support and retention of highly trained staff. Current NHMRC funding schemes are not suited to the support of this type of large-scale public health infrastructure for a number of reasons. Funding provided under current schemes is insecure, not long term, and insufficient for the type of investment required. For example, the UK Biobank has around £60 million for its first 5 years of operation.

It was noted that a major national data linkage project is identified as a priority for the next round of the National Collaborative Research Infrastructure Strategy (NCRIS) funding²⁹.

A wider range and greater flexibility in funding schemes

The Committee received many comments and suggestions that indicate a less than optimal fit between existing NHMRC funding schemes and perceived priorities for research in public health. For example, concerns were expressed that current arrangements did not offer flexibility in response to opportunities to test and/or evaluate changes to government policy or the introduction of a new initiatives.

Throughout the consultations, the Committee received consistent feedback that the NHMRC lacked a funding mechanism that supported partnerships between researchers and health agencies similar to the ARC Linkage grant. At the time of the consultations the new NHMRC Partnerships Program had not been announced. This will go some way towards addressing these concerns.

Other practical funding suggestions included:

- shorter-term (1-2 year) development funding to develop and pilot test interventions, that would subsequently become the basis for more substantial intervention research applications
- dedicated funding for one year *opportunity grants* that would enable researchers to respond in a timely way to emerging public health issues, and to intervention research opportunities
- a funding mechanism that supports partnerships between researchers and health agencies, especially in the development of intervention research, and the development and evaluation of health policy.

Ensuring the integrity of research outcomes

Some participants at the consultation meetings expressed concern that some types of funding for public health research, particularly contract research funded by state and federal governments may result in less than optimal outcomes where the findings are delayed, sanitised or at worst, suppressed. These concerns echoed the findings of Yazahmeidi and Holman³⁰ who found that no State or Territory was “immune from this form of ‘suppression’”. The authors found that researchers commonly believed their work was targeted because it drew attention to failings in health services (48%), the health status of a vulnerable group (26%), or pointed to ‘a harm’ in the environment (11%). The government agency seeking to suppress the health information mostly succeeded (in 87% of cited cases) and the authors concluded that the public was left uninformed or given a false impression.

²⁹ http://ncris.innovation.gov.au/development_ffolder/Pages/roadmap_review_2008.aspx

³⁰ Yazahmeidi, B. and Holman, C. D’Arcy, 2007, ‘A survey of suppression of public health information by Australian governments’, Australian and new Zealand Journal of Public Health, Vol 31 No 6, 551:557.



Some commentators have argued that the research method used by Yazahmeidi and Holman (self report) may have led to some exaggeration of the findings, and that subsequent media coverage may have exacerbated community concern. Nonetheless, the strength and consistency of these findings, and the widespread perception in the community indicated that some response by the NHMRC is warranted to this serious problem.

In response to similar concerns in relation to clinical trials, the NHMRC has provided resources to establish the Australian New Zealand Clinical Trials Registry³¹. This provides a comprehensive, on-line register of clinical trials being undertaken in Australia and New Zealand. The register supports far greater transparency in the conduct and reporting of results from commercially supported clinical trials, as well as helping researchers identify gaps in their own research and prevent unnecessary duplication of clinical trials.

The findings from the Yazahmeidi and Holman research and the general concern expressed by the public health community in relation to clinical trials may warrant a similar response from NHMRC. Specifically, these findings suggest a need for a Register of Public Health Research to ensure that research findings from studies that are supported by state and federal government or by commercial organisations with the potential to benefit public health are published or made publicly available.

Full funding of research

The Committee received consistent feedback on the under-funding of salaries, and more general failure to invest in research infrastructure in Universities and other research entities. Whilst this is a system-wide challenge and not one that is unique to the NHMRC, it is important to record the concerns expressed through the consultations and feedback on this issue, and to add weight to the evidence being considered by both the current Review of the National Innovation System and the Review of Australian Higher Education³² in relation to the full funding of research.

Some participants in the consultation process argued that the problem was felt more acutely by public health researchers, in part because their work often involves long time periods. Some participants in the consultations expressed a view that, if funds cannot be increased to meet full costs, NHMRC should fully fund fewer research projects.

The Committee endorses the Review of the National Innovation System that recommends that the government and its agencies (including NHMRC) “adopt the principle of fully funding the costs of research activities and implement through adjustments in funding to block and competitive grant schemes.”³³

Improvements to NHMRC application, review and assessment processes

The Committee received a high volume of feedback and many practical suggestions for improvements to the NHMRC application, review and assessment processes. These issues were examined in some detail with participants in the consultations. A key premise within the research community is that, given the high quality of public health research in Australia, there is no a priori reason for a higher proportion of basic science grant applications to be funded compared to public health applications. However, the nature of the feedback suggests

³¹ <http://www.anzctr.org.au/faq.aspx>

³² http://www.dest.gov.au/sectors/higher_education/policy_issues_reviews/reviews/highered_review/

³³ [http://www.innovation.gov.au/innovationreview/Documents/NIS_review_chapter%206\(1\).pdf](http://www.innovation.gov.au/innovationreview/Documents/NIS_review_chapter%206(1).pdf)

that there is a widespread view that public health applications are judged harshly when compared with other broad research areas. Overall the feedback indicated that current NHMRC processes often do not appropriately address the diversity and complexity of public health research, resulting in applications being inappropriately assessed against criteria that lacked sophistication in relation to the complex, multi-disciplinary nature of many public health applications.

There was no consistent support for a separate system for application and assessment, such as existed under the former NHMRC Public Health Research and Development Committee (PHRDC). The suggestions for improvements to existing common approaches to application and assessment are summarised below, grouped into issues relating to the operation of the grant review panels, and improving the relevance and effectiveness of selection criteria.

The consultations indicated a need to review the disciplinary balance of grant review panels, to address the relevance of the available expertise, and suggested that each panel includes more than one public health reviewer to balance minor constituencies (an approach similar to that adopted in relation to Indigenous issues). Another suggestion was to increase the number of public health streams to enable differentiated applications in public health to be heard.

Further suggestions for the composition of grant review panels included:

- they should comprise a mixture of researchers, practitioners, and policy makers
- that panel members *“should be elected by their peers”*; that is, nominations for the panels could be sought from each of the public health discipline groups in Australia
- that a *“separate panel should be considered for applied public health projects where the new knowledge generated from the research could be used to address major health problems”*
- that NHMRC track applications against panel memberships to manage bias and potential conflict of interest
- that NHMRC *“develops a sophisticated reviewer database reflecting disciplinary and seniority, and including international researchers, in order to ensure the appropriate experts are appointed to panels, and to review applications”*
- that a *“senior public health researcher appointed to NMHRC be tasked with overseeing appointments to public health panels, and increasing the understanding among NHMRC staff of the multidisciplinary nature of public health and the need to ensure an appropriate and diverse skill mix in panels”*
- that NHMRC *“makes a formal commitment to seeking written expert external reviews for public health grants to avoid discrimination against small discipline areas where a representative committee cannot be readily established”*.

There was a strong and consistent message that training is needed for panel members and reviewers. In particular, it was suggested that reviewers and panel members need training to achieve a more consistent understanding of the qualities expected of a fundable application. Suggestions by those participating in the consultation included having a web based checklist and training module for reviewers and panel members using material which is already available for reviewing papers for some journals. It was suggested that this could be supplied in an electronic format.

Suggested options to better manage the process of review include:

- educating panels on what is expected of public health projects and programs
- providing an adequate picture on what has already been funded and where the gaps/research needs are
- including reviewers with policy background in the review process
- assigning senior researchers to review panels to ensure that there is adequate and realistic understanding of the methods being used.

The Committee received a consistent message that the existing selection criteria may inadvertently undervalue research with the potential to result in health and economic gains and thus exclude it from being funded simply because the research team lacks track record and journal citations.³⁴

Options to modify the selection criteria for public health applications include:

- weighting selection criteria towards translational consequence, and policy relevance
- weighting towards the use of existing data sets (where relevant and possible); and of longitudinal studies
- weighting towards previous success in policy and practice focused research
- recognition of the value of different methodologies such as natural and quasi experiments.

Finally at both consultations and through written submissions the Committee were made aware of the confusion and inconsistencies caused by the existence of the Preventative Medicine broad research area. There was a consistent proposal that research in this area is distributed between Public Health and Clinical Medicine.

NHMRC as a source of expert advice and public health guidance

The Committee received feedback on what was perceived to be a withdrawal by NHMRC from one of its traditional roles as a source of evidence on key public health issues, offering authoritative statements on *“what works and what doesn’t”* in the Australian context. This was seen as an unhelpful step on NHMRC’s part, particularly when *“[the] need for guidelines that will enable research findings to be implemented and reduce the research practice gap is well documented in health literature”*.

There was the impression that *“NHMRC guidelines need to have a stronger focus on dissemination, implementation and evaluation”*. It was drawn to the Committee’s attention that the integration of the National Institute of Clinical Studies (NICS) into NHMRC presents the opportunity to consider the implementation and evaluation of guidelines from the very beginning of a guideline’s development.

There is also the opportunity for areas within NHMRC such as the Health Evidence and Advice Branch to work more closely with state and federal government agencies in its production and dissemination of guidelines so that guidelines are produced and marketed to specific ‘at risk groups’. For example, working with the Preventative Health Taskforce and relevant branches within DoHA to update nutritional guidelines, or working with the Queensland and Northern Territory governments to produce guidelines for Sudden Infant Death Syndrome (SIDS) and Sudden Unexplained Death in Infants (SUDI) within Aboriginal and Torres Strait Islander groups.

³⁴The 2006 Cooksey Review of publicly funded health research also commented that there were biases in the research assessment processes, stating, ‘while the UK Research Assessment Exercise (RAE) has done much to improve the quality of research in UK universities, it has provided too little recognition of research that does not result in citations in prestigious journals, even if that research has resulted in economic and/or health benefits’ (Cooksey: 2006: 37).



Indigenous Public Health Research

The Committee received a wide range of feedback on issues relating to public health research in, and for, Indigenous communities. Consideration was given to the new government's general commitment to reduce social inequality and specific commitment to close the gap in Indigenous life expectancy within a generation.

There were **five key themes** in the feedback. The first centred on the need for NHMRC to scrutinise the type of research that is supported. There were consistent criticisms of research that simply described a well established set of health problems among Indigenous communities. These were accompanied by the argument that: *“there needs to be a greater emphasis on intervention research and on rigorous evaluation of interventions in priority areas if public health research is to contribute to improved policies and practice.”*

By contrast, it was perceived that too little research was directed at the development, testing and evaluation of local interventions to address previously identified health problems. The Committee formed the view that a clear statement of commitment to fund more intervention research with Indigenous populations is required by NHMRC.

The second, and inter-related, theme centred on the need to carry out priority driven as well as investigator driven research. It was argued that *“Priority driven research should be encouraged to include a broad range of people in a steering /reference group that can assist with the research process as well as a dissemination plan. Areas that need to be prioritized include:*

- *Health inequities*
- *Indigenous health, particularly in under-researched areas including intervention research*
- *Health services research including primary health care research*
- *Research in populations with poorer physical or mental health, such as people with intellectual disability and people living with major mental illness.”*

The third theme centred on the need to increase involvement of Aboriginal and Torres Strait Islander populations in the research development process. It was felt that NHMRC should *“work with Indigenous communities to define research problems and solutions that are relevant and able to be implemented”*.

It was further argued that *“NHMRC research criteria should be revised to improve the opportunity for participation of practitioners and consumers, particularly in Aboriginal health research.”*

In particular, it was suggested that *“Researchers need to engage with health service boards, managers and practitioners in formulating research questions and developing clinical interventions. This is particularly pertinent in Indigenous health given the need for focused research that can be quickly and effectively translated into clinical practice and so improve outcomes. This could be encouraged by priority driven research that is located in primary health care and which is required to be undertaken in partnership with managers and practitioners.”*

This is obviously highly relevant in relation to public health research, but applies across all broad research areas. On this theme, it was suggested that *“NHMRC should consider Indigenous research as a specialised, and costly, area. To do it well, an institution needs to foster a welcoming environment, have mentoring programs, other organisational structures such as Indigenous Advisory groups, and networks, strong links to communities for project development and feedback, and clear processes for Indigenous community feedback, input and participation.”*



The fourth, and related theme, concerned the need for NHMRC to increase its networking and partnering arrangements with Indigenous public health agencies and NGOs both in the implementation and dissemination of key guidelines and publications to ensure effective knowledge translation.

There was also the suggestion that NHMRC should design a detailed implementation strategy to effectively translate and embed NHMRC-endorsed principles contained in documents such as *The NHMRC Road Map: A Strategic Framework for Improving Aboriginal and Torres Strait Islander Health through Research (2002)*, and *The Values and Ethics: Guidelines for Ethical Conduct in Aboriginal and Torres Strait Islander Health Research (2003)* into research practice.

Finally, it was felt that a research framework needs to be developed so that “*Indigenous health issues can be truly embedded in public health research and not just adjunct to it*”³⁵.

The Committee endorses the feedback received in relation to Indigenous health issues throughout the consultation. It has made recommendations concerning the need for priority research and intervention research that are compatible with this feedback. The Committee recommends to the CEO the need for greater Indigenous participation across all aspects of research development and assessment activities within NHMRC, and in the development of the next NHMRC Strategic Plan.

International Observations

The Committee were informed by NHMRC Secretariat discussions with public health research funding agencies in the United Kingdom, the Netherlands and Canada. The discussions revealed that these other countries were facing and addressing similar issues to those emerging from this review. Each country has considered how best to achieve better cooperation and coordination between public health research funding agencies. Both the Netherlands and the United Kingdom have established umbrella organisations — the Advisory Council on Health Research (Raad voor Gezondheidsonderzoek, RGO) in the Netherlands and the Office for Strategic Coordination of Health Research (OSCHR) in the UK — that provide a mechanism for information exchange between funding agencies, including NGOs, charities and the jurisdictional health departments to strategically support better coordination of health research, including public health research.

Canada, unlike the UK and the Netherlands, has not set up an umbrella organisation to oversee and strategically link public health funding nationally across agencies. However, the Institute of Public and Population Health (IPPH) has adopted a brokerage role by networking with other funders and other Canadian Institutes for Health Research (CIHR) entities to develop a collaborative research agenda/ideas/funding programs and developing the Public Health Research Canada Strategic Plan. This process involved intense consultations with the public health research and practitioner communities as well as NGO, charities and government health agencies over a number of years.³⁶ Through this process, moves were made to increase public and population health research funding across all health funders and to strategically focus funding to areas of intervention and translational research linked to areas of high health priority.

³⁵ NHMRC are currently looking at ways to promote interest and take up of research findings from completed projects, such as a database of completed projects for use by practitioners.

³⁶ Canadian Institute for Health Information, 2002 Charting the Course A Pan-Canadian Consultation on Population and Public Health Priorities, Canadian Institute for Health Information: Ottawa.

In response to concerns about scarce expertise becoming too thinly spread, each country has also taken steps to achieve greater concentrations of excellence in public health research. For example, in 2005, the Dutch Ministry of Health, Welfare & Sport and the Netherlands Organisation for Scientific Research allocated €4 million over four years to ZonMw to implement the Academic Collaborative Centres for Public Health program. These “set an example for new innovations in the public health sector, developing high-quality scientifically useful products based on relevant research questions, based on the needs of the public health department concerned. Health care professionals and researchers are working on the introduction of innovations and improvements at all levels, sometimes in response to problems they have encountered in practice, sometimes in response to research results and policies that give rise to a need for new routines or structures.”³⁷

The United Kingdom has made similar moves with the establishment of the Clinical Research Collaboration (UKCRC) Centres of Excellence in 2008. The aim of the UKCRC Centres of Excellence is to build academic capacity, boost infrastructure and encourage multi-disciplinary working in public health research in the UK. The Centres bring together leading experts from a range of disciplines working in partnership with practitioners, policy makers and wider stakeholders in order to tackle complex public health issues that will potentially have a significant impact on the health of the nation. Each Centre supports an active career development programme and will undertake high quality research with a strong emphasis on translational or applied activity. £20 million funding for the establishment of five Centres of Excellence to strengthen research into complex public health issues such as obesity, smoking and health inequalities³⁸.

The Committee also observed that in the different countries, the same pressures are in place to achieve greater focus on strategic research and on the transfer of research results into policy and practice. This has led to some innovative funding schemes. In Canada, following the establishment of a Public Health Research Canada Strategic Plan, IPPH has established vehicles to develop research and research capacity in public and population health. These included the following mechanisms:

1. **Start-up Funding Grants** to build research capacity in the initial stages of a project. These include:
 - seeding collaborations (\$20-25,000 Canadian)
 - pilot/catalyst grants (up to \$100,000 Canadian)
 - research development grants – 1 year to develop project, stakeholder relations.
2. **Rapid Response Intervention Program** to support the development of intervention studies and allow data collection at a time when policy direction is about to change. The program has direct benefit to policy and practice and has multi-year funding mechanism offering grants of up to \$100,000 a year for up to three years.
3. **Infrastructure Grants** to enable the development of intervention research and to facilitate the transfer of research into policy and practice. Seven research centres with longer-term funding have been established under this scheme.
4. **Public Health Chairs Program**³⁹ that supports fourteen Chairs at mid-career (Associate Professor) level. This program has the following three key objectives:
 - developing a program of research (key into existing systems)
 - mentoring- education (Masters and PHD)
 - linking to policy and practice.

³⁷ Dr. E.P. Beem, Co-director ZonMw, the Netherlands Organisation for Health Research and Development, June 2008.

³⁸ Funders include the British Heart Foundation, Cancer Research UK, the Department of Health, the Economic and Social Research Council, the Medical Research Council and the Research and Development Office for the Northern Ireland Health and Personal Social Services, the Wales Office of Research and Development, the Welsh Assembly Government and Wellcome Trust.

³⁹ Telephone interview with Erica Di Ruggiro (Associate director, IPPH) on 2 May 2008



These practical responses to challenges that are common between Australia and Canada were of great interest to the Committee, and provided working examples of potential solutions to some of the challenges raised by the consultation.

The Canadian Institute of Population and Public Health (IPPH) has also developed some innovations within their evaluation and review processes that may be highly pertinent to Australia.

1. **Review Process** - Over 50 Review Committees (panels) in public health research have been established, each one a blend of researchers and decision makers/policy makers. Committee Chairs have research and policy making experience, having had high level careers in academia and government. An international peer review panel has also been established to review proposals relating to global public health.
2. **Evaluation of Programs** - IPPH identified that the first criterion for measurement of outcomes is to have clearly articulated aims and objectives in the call for research. From this they were able to develop a logic framework and a set of performance expectations, evaluation indicators and self-reporting forms. IPPH carries out evaluations every four years.
3. **Measurement of Outputs** - Outputs are not simply measured in terms of publications, but rather in terms of the extent that articles are being published or cited in inter-disciplinary journals and how they are contributing to the development of new knowledge.

When taken as a whole, the challenges faced in the UK, Canada and the Netherlands are remarkably similar to those observed by the Committee in Australia. Encouragingly, each country appears to be addressing these challenges in ways that provide ideas and working models that could have application in Australia. In each case there appears to be real advantage in establishing a structure to achieve a higher level of co-ordination between of public health research funding agencies, and between funders, researchers, policy makers and practitioners. There appears to be a consistent move towards greater concentrations of public health expertise in a small number of centres of excellence that can offer genuinely, internationally competitive research and research training. There are also some very useful models of funding, assessment and peer review that offer practical solutions to some of the challenges involved in supporting greater investment in intervention research, and in the alignment of research into policy and practice. The Committee has drawn upon these examples in making its recommendations.



5 Recommendations on the Way Forward

The Committee has carefully considered all of the issues raised during extensive consultation with relevant stakeholders and the practical suggestions for change and improvement that have emerged from this input.

In line with the Terms of Reference for the Review, all recommendations are directed to the CEO of NHMRC. Where relevant, the Committee has indicated its view on the need for different parts of NHMRC to respond to the challenges that have emerged from the Review.

The purpose of the recommendations is to expand the volume and range of opportunities for public health research in Australia. In advocating this expansion the Committee proposes an important leadership role for NHMRC in determining strategic direction in public health research, and in achieving improved coordination of investment in public health research that offers greatest potential to contribute to improved population health.

The recommendations are detailed more fully in the **Executive Summary** (Section 1).

NHMRC to play a leadership role in achieving a higher level of national co-ordination of public health research funding

The Committee encourage NHMRC to establish this leadership role by:

- supporting the establishment of a National Public Health Research Forum (Recommendation 1)
- developing a national public health research strategy to identify priority research streams, and emphasise intervention research (Recommendation 2)
- collaborating with the Department of Health and Ageing in the future development of the Public Health Education and Research Program (PHERP) to support the development of national Centres of Excellence in key public health priority areas (Recommendation 3)
- engaging more fully in its established role as a source of evidence-based guidelines on key public health issues (Recommendation 4)
- supporting the establishment and maintenance of a National Register of Public Health Research (Recommendation 5).



Changes to Funding Strategies and Mechanisms to Address Australia's Public Health Needs

The Committee recommends that NHMRC develop existing and new funding vehicles that capture the whole continuum of research from basic science through to the development of interventions, to the translation of evidence and policy development, and review and evaluation by:

- accommodating two new categories of funding to enable greater flexibility and responsiveness to emerging public health priorities and research opportunities (Recommendation 6)
- facilitating the development of large scale, long term and national public health research infrastructure (Recommendation 7)
- adopting the principle of fully funding the costs of research in line with recommendations emanating from the Review of the National Innovation System (Recommendation 8)
- initiating a review of the likely workforce needs in public health research over the coming decades (Recommendation 9)

Continuous Improvements to NHMRC Application and Assessment Processes

NHMRC are recommended to apply the following principles to applications and assessment processes across all broad research areas, not just public health, through:

- modifying weighting and selection criteria to enable applicants in public health disciplines to more effectively describe their relevant experience, research activities and links between their research and public health improvements (refer to Appendix V and Recommendation 10)
- revising review panel membership to reflect the diversity and breadth of disciplines involved in public health research (refer to Appendix VI and Recommendation 11)
- introducing a mechanism for formal training of reviewers and provide materials outlining what quality is expected of a fundable public health application (Recommendation 12)
- developing, promulgating and implementing strategies for the defining and monitoring research outputs (Recommendation 13)
- cease defining Preventive Medicine as a broad research area and include applications that might otherwise have been considered in this area within the Public Health and Clinical Medicine and Science areas (Recommendation 14)

6 Acknowledgements

The members of the Public Health Research Advisory Committee would like to acknowledge the assistance provided by the Public Health Association of Australia in arranging the national face-to-face consultations and teleconferences with the public health research community throughout Australia in May to September 2008.

The Committee was encouraged by the participation of over 180 people in the consultations and by receipt of 51 written submissions from a wide range of stakeholder groups including non-government organisations (NGOs), state health departments, public health research institutes, university research offices and individual public health researchers.

Acknowledgement is also provided to Dr Barbara Henderson-Smith, Miranda Bruyn and Terri Ahearn from NHMRC for secretariat support to the committee and in the production of the report, and to Dr Marcus Nicol and Roland Wise from NHMRC for providing the funding datasets on NHMRC public health research funding.

Consultations Schedule in 2008:

State/City	Day/Date/Time	Venue
Brisbane	Monday 26 May, 12:00pm-2:00pm	Auditorium 1, Cancer Council Queensland, 553 Gregory Terrace Fortitude Valley
Sydney	Tuesday 3 June, 5:00pm-7:00pm	John Niland Scientia Building, Tyree Room, University of New South Wales, Anzac Parade, Kensington Campus
Melbourne	Wednesday 4 June, 3:00pm-5:00pm	Basement Lecture Theatre, Population Health School of The University of Melbourne, 207 Bouverie St, Carlton
Perth	Wednesday 11 June, 4:00pm-6:00pm	Telethon Child Health Research, 100 Roberts Road, Subiaco Institute
Hobart	Monday 16 June, 5:30pm-7:30pm	The Salamanca Inn, 10 Gladstone Street, Hobart
Adelaide	Wednesday 18 June, 3:00pm-5:00pm	Function Room 2, The Art Gallery of South Australia, North Terrace, Adelaide
Canberra	Wednesday 18 June, 5:30pm-7:30pm	National Centre for Epidemiology and Population Health, Building 62, Cnr of Eggleston and Mills Roads, The Australian National University, Acton
Darwin	Monday 1 September, 12:00pm -1:30pm	Menzies School of Health Research, Building 58, Royal Darwin Hospital Campus, CASUARINA NT 0810
Alice Springs	Monday 1 September, 1:30pm- 3:00pm	Teleconference from Darwin, Menzies School of Health Research



Written Submissions Received:

Federal and State/Territory Governments:

- Dr Kerry Chant, Chief Health Officer, NSW Health
- Professor Peter Sainsbury, Director of Population Health, Sydney South West Area Health Service & Associate Professor, School of Public Health, University of Sydney
- Dr Linda Selvey, Population Health, QLD Health
- Dr Tony Sherborn, Office of the Chief Executive, SA Health
- Dr Roscoe Taylor, Director of Public Health & Director, Population Health, Department of Health & Human Services, TAS
- Dr Jim Hyde, Director Public Health, VICHealth
- Dr Dorothy Mackerras, Chief Public Health Nutrition Advisor, Food Standards Australia New Zealand (FSANZ)
- Elizabeth Dax, National Serology Reference Laboratory
- Deborah Radvan, the Population Health Priority Taskforce (PHPT)

Universities:

- Professor Alan Lopez, Professor of Medical Statistics and Population Health & Head of the School of Population Health, University of QLD
- Professor Les Field, University Of New South Wales
- Adrienne Farago, Executive Officer, Menzies School of Health Research, NT
- Dr Gnani Thenabadu, MBBS, (MPH, MHM - University of NSW)
- Kaarin J. Anstey, Australian National University
- Professor Hal Kendig, Research Professor of Ageing and Health, Faculty of Health Sciences University of Sydney & National Convenor, ARC/NHMRC Research Network in Ageing Well
- Miranda Cumpston, Research Officer, Australasian Cochrane Centre
- Professor Caroline Finch, NHMRC Principal Research Fellow, Research Professor in Human Movement Studies, University of Ballarat
- David Whiteman, NHMRC Senior Research Fellow, Queensland Institute of Medical Research
- Professor Billie Giles-Corti, Professor Centre for the Built Environment and Health, School of Population Health, The University of Western Australia
- Marilyn Wise, Associate Professor (Healthy Public Policy), University of New South Wales marilynw@health.usyd.edu.au
- Professor Sheena Reilly, Director, Speech Pathology Department, The Royal Children's Hospital; Professor, Paediatric Speech Pathology, Department of Paediatrics, University of Melbourne; & Theme Director, Healthy Development, Murdoch Childrens Research Institute
- John Moss, Associate Professor and Head, Discipline of Public Health, University of Adelaide
- Dianne Jeffery, Training and Development Officer, Office of Research and Development, Curtin University of Technology
- Andrew Waters, Port Hedland WA 6721



Research Institutes:

- Peter Dolnik, Manager, Research Office, The George Institute for International Health
- Louisa Jorm, Research Director, The Sax Institute
- Professor Anne Kavanagh, Director, Key Centre for Women's Health in Society, Melbourne School of Population Health, The University of Melbourne
- Professor Madeleine King, Cancer Australia Chair in Cancer Quality of Life, PoCoG, School of Psychology, UNSW
- Dr. Tim Luckett, Project Manager, PoCoG Quality of Life Office PoCoG, School of Psychology, UNSW

NGO/Charity Organisations:

- Michael Moore, Chief Executive Officer, Public Health Association of Australia
- A/Prof Jane Halliday, President, Australasian Epidemiological Association & Head, Public Health Genetics, Murdoch Childrens Research Institute
- Simon Donohoe, Acting Executive Director Australian Federation of AIDS Organisations
- Glenn Rees, National Executive Director, Alzheimer's Australia
- Professor Leona Wilson, Australian and New Zealand College of Anaesthetists
- Kirtsy Ford, Australasian Society for HIV Medicine
- A/P Michael Woodward, President, Australian Wound Management Association
- Judith Manning, Australasian Wound Management Association Secretary (acting)
- Karen Steadman, Senior Policy Officer, Policy, Advocacy and Communications, The Royal Australasian College of Physicians
- Ms Woody Macpherson, Head, Research Management Unit, The Cancer Council Victoria
ph: 03 9635 5100
- Sue Aiesi, Policy and Research Manager, Carers Australia
- Terry Stewart, Chief Executive Officer, Cystic Fibrosis Australia
- Ms Annette Byron, Policy Dietitian, Dietitians Association of Australia
- Neil McWhannell, HeartKids Australia
- Helen McNeill, President, Hepatitis Australia
- Peter Canavan, Health, Treatments & Research Unit, National Association of People Living With HIV/AIDS (NAPWA)
- Dr Prema Thavaneswaran, Senior Research Officer, Division of Research, Audit and Academic Surgery, Royal Australasian College of Surgeons
- The College of Surgeons of Australia and New Zealand
- John Biviano, Director Policy, Quality and Accreditation, Australian and New Zealand College of Anaesthetists
- Andrew Waters, Port Hedland WA
- Rachel Yates, Director Policy and Principal Adviser Member Services, Australian General Practice Network
- Jason Appleby, Policy Analyst, Australian Federation of AIDS Organisations Inc.
- Helen Tyrrell, Chief Executive Officer, Hepatitis Australia
- Ann Maree Bosch, Administration, Cystic Fibrosis Australia

Bibliography

1. Advisory Council on Health Research, 2007 Research that matters. Responsiveness of university medical centres to issues in population health and health care. The Hague: Advisory Council on Health Research (RGO), publication no. 57.
2. Australian Institute of Health and Welfare, 2008 National Public Expenditure Report 2005-06, Health and Welfare Expenditure series no. 32. Cat. no. HWE 39. Canberra: AIHW.
3. Butler, L. 2005 The Impact of Journal Publication Output 1999-2003, Canberra: NHMRC
4. Canadian Institute for Health Information, 2002 Charting the Course A Pan-Canadian Consultation on Population and Public Health Priorities, Canadian Institute for Health Information: Ottawa
5. Cutler, T. 2008, Venturous Australia: Building Strength in Innovation, Cutler and Company: Melbourne
6. Advisory Council on Health Research, 2007, Responsiveness of university medical centres to issues in population health and health care, The Hague: Advisory Council on Health Research (RGO), publication no. 57
7. CHSRF 2005, Annual Report 2004, Canadian Health Services Research Foundation. http://www.chsrf.ca/other_documents/annual_reports/pdf
8. CIHR 2003, Investing in Canada's Future: CIHR's Blueprint for Health Research and Innovation, Ottawa, Ontario: Canadian Institutes of Health Research. Online at <http://www.cihr-irsc.gc.ca/e/20264.html>
9. CIHR 2004, Knowledge Translation Strategy 2004–2009: Innovation in Action, Ottawa, Ontario: Canadian Institutes of Health Research. Online at <http://www.irsc.gc.ca/>
10. CIHR 2005, CIHR: Catalyst for Commercialization, Ottawa, Ontario: Canadian Institutes of Health Research. Online at http://www.cihr-irsc.gc.ca/e/documents/cihr_catalyst_e.pdf
11. Cooksey, D., 2006, A Review of UK Health Research Funding, HM Treasury: London
12. Cochrane Institute 2002, Effective Practice and Organisation of Care Review Group, The data collection checklist, Accessed from <http://www.epoc.cochrane.org/Files/Website/Reviewer>
13. Department of Health, 2006, Best Research for Best Health: A new national health research strategy, Department of Health: London.
14. Graham Woodward, G., Manuel, D., Goel, V., 2004, Developing a balanced scorecard for public health. ICES, Toronto, Ontario
15. Grant, J. 2004 Sustaining the Virtuous Cycle for a Healthy Competitive Australia: Investment Review of Health and Medical Research, Department of Health and Aged Care: Canberra
16. Hanney, S.R., Gonzalez-Block, M. A., Buxton, M.J., Kogan, M. 2002, The Utilisation of Health Research in Policy-Making: Concepts, Examples, and Methods of Assessment A report to the Research Policy and Co-operation Department, World Health Organization, Geneva
17. National Health Service Executive; the Wellcome Trust. Putting NHS research on the map: An analysis of scientific publications in England 1990-97. London: The Wellcome Trust, 2001
18. National Health and Medical Research Council (NHMRC) NHMRC Strategic Plan 2007 – 2009, Australian Government 2007. Accessed from: http://www.nhmrc.gov.au/publications/synopses/_files/strat_plan0709.pdf. pp 6-7

19. Moher D, Schulz KF, Altman DG. 2001 'The CONSORT statement: revised recommendations for improving the quality of reports of parallel-group randomized trials', *Lancet*; 357: 1191-1194
20. National Institute for Health Research, 2008, *Transforming Health Research the first two years*, National Institute for Health Research Progress Report 2006-2008: Department of Health: London
21. NHRMC. 1999 *A guide to the development, evaluation and implementation of clinical practice guidelines*. NHMRC
22. Shakeshaft A, Bowman J, Sanson-Fisher R. 1997 'Public health alcohol research: new directions or more of the same?' *Addiction*; 92:1411- 1422
23. Sanson-Fisher RW, Campbell E, Perkins J, Blunden S, Davis B. 'Indigenous health research: A longitudinal critical view', *Medical Journal of Australia* 2006; 184(10): 502-505
24. Sanson-Fisher RW, Campbell E, Thidar Htun A. *We are what we do: research outputs of public health*. Under editorial review
25. Smith-Merry, J, Gillespie, J., and Leeder, S. R., 2007 'A Pathway to Stronger Research Culture in Health Policy', *Australia and New Zealand Health Policy*, 4:19
26. Soper B., Hanney SR. *Lessons from the evaluation of Australia's NHS R&D Implementation Methods Program*. *Implementation Science* 2007, 2:7 doi:10.1186/1748-5908-2-7
27. Thorngate, W., Faregh, N., and Young, M. (2002), *Mining the Archives: Analyses of CIHR Research Grant Adjudications*, Ottawa, Ontario: Carleton University, December 2002; Online at http://http-server.carleton.ca/~warrent/reports/mining_the_archives.pdf
28. Victorian Public Health Research and Education Council, 2006: *Survey of Public Health Research Funding for 2004 in Victoria*, Victorian Public Health Research and Education Council: Melbourne
29. White KL. 1986 *Independent Review of Research and Educational Requirements for Public Health and Tropical Health in Australia*, Presented to the Commonwealth Minister for Health
30. Webster P. 2008, 'Canada launches massive study of cancer precursors', *Science* 20:320
31. Wills, P. 1998 *Health and Medical Research Strategic Review, the Virtuous Cycle - Working together for health and medical research*, Department of Health and Aged Care: Canberra
32. Yazahmeidi, B., Holman, C.D.J. 2007, *A survey of suppression of public health information by Australian governments*, *Australian and New Zealand Journal of Public Health*, 31, 6, pp. 551-557.
33. Zara S, Briss P, Harris K. 2005. *Preventive Services: What works to promote Health? Task Force on Community Preventive Services*. New York: Oxford University Press



Appendices

Appendix I: Membership and Terms of Reference

Membership of the Public Health Research Advisory Committee

Chair

Professor Don Nutbeam

Deputy Vice Chancellor, University of Sydney

Members

Associate Professor Toni Ashton

Director, Centre for Health Services Research and Policy, School of Population Health, University of Auckland, NZ

Associate Professor Emily Banks

National Centre for Epidemiology and Population Health, Australian National University

Associate Professor Alan Cass

Director, Renal Division, the George Institute of International Health, University of Sydney

Professor Mike Daube

Professor of Health Policy, Curtin University of Technology
President, Public Health Association of Australia

Associate Professor Stephen Farish

School of Medicine, University of Melbourne

Professor Rob Sanson-Fisher

Medical School, University of Newcastle

Professor Judith Lumley

Director, Mother and Child Health Research Centre, Division of Health Research, Faculty of Health Sciences, La Trobe University, Melbourne.



Terms of Reference for the Public Health Research Advisory Committee

Within the context of the national public health research effort, and informed by stakeholder submissions and the recommendations of the International Review of the NHMRC, the Public Health Research Advisory Committee (the Committee) will advise the NHMRC's Chief Executive Officer (CEO) on the ways in which the NHMRC can most effectively contribute to public health research in Australia.

To ensure that the NHMRC's contribution to public health research maximises health outcomes, the Committee will advise the CEO on:

- the effectiveness of NHMRC mechanisms for supporting public health research, these mechanisms to include: the Project Grants, Program Grants, Training Scholarships and Fellowships, Career Development Awards, Research Fellowships, Practitioner Fellowships and Capacity Building Grants in Population Health Research funding schemes
- whether current selection criteria and assessment processes should be modified to better support public health research
- the nature of modifications to criteria and processes
- whether there is a need for NHMRC to develop other means for funding public health research
- based on the above, draw conclusions on how the NHMRC can contribute to the wider Australian public health research infrastructure.

Appendix II: Public Health Education and Research Program

Public Health Education and Research Program (PHERP) was established in 1987 in response to Professor Kerr White’s 1985 review of public and tropical health in Australia commissioned by the Commonwealth.

PHERP aims to improve the capacity and preparedness of the national public health workforce to be responsive in the protection, improvement and promotion of Australia’s health.

PHERP funding of \$60.7 million (GST incl) is provided for the 2006-10 funding period through the following funding streams:

‘Core’ funding to support the development and delivery of Graduate Certificates, Diplomas or Masters of Public Health over 19 universities.

‘Contestable’ funding for time limited projects in workforce development, capacity building, research, education and training, designed to meet emerging national health priority areas in workforce capacity building.

‘National workforce’ funding for substantial projects addressing a workforce deficit. Funded programs include Masters of Applied Epidemiology (MAE) at the Australian National University, the Royal Australasian College of Physicians (RACP), the Biostatistics Collaboration of Australia and the Australian Network of Academic Public Health Institutions (ANAPHI).

Funding is also provided to undertake a National Nutrition and Physical Activity Survey Program.

Funding Stream	Funding GST inclusive
Core funding	\$41 798 373
Contestable funding pool	\$5 500 000
National workforce projects	\$7 978 556
Nutrition and physical activity survey	\$5 500 000
TOTAL	\$60 776 929

PHERP funding commenced in 1987. Reviews have been conducted at the end of each five year funding cycle to ensure the Program remains relevant to emerging public health workforce and education requirements. The last review was in 2005. It concluded that there is compelling evidence that PHERP has increased public health workforce capacity to address threats to human safety and health.

A further review will be conducted in 2008-09.

Appendix III: NHMRC Funding Data

Table 1: Funding for Public Health Research for Major NHMRC grants 2000-2007
(Funding commitments based on New Grants Awarded each year)

Grant Type	2000 \$m	2001 \$m	2002 \$m	2003 \$m	2004 \$m	2005 \$m	2006 \$m	2007 \$m
Research Support Grants								
Capacity Building Grants	Not Avail	9.3	11.8	Not Avail	12.3	Not Avail	24.1	Not Avail
Project Grants	9.4	14.1	21.1	19.2	28.2	25.5	29.5	35.7
Development Grants	No Applic	No FG	.63	No Applic	No Applic	0.15	No Applic	0.19
Strategic Awards	3.2	4.5	2.7	5.0	6.8	10.8	21.4	6.4
Program Grants	Not Avail	25.4	No FG	4.6	24.4	6.7	No Applic	No Applic
Researcher (People) Support Grants								
Research Fellowships	1.4	0.4	1.2	2.4	2.2	4.5	4.4	7.7
Career Dev Awards	Not Avail	1.7	2.2	3.0	3.3	3.3	2.3	3.8
Training Fellowships	0.9	2.3	1.4	3.7	5.5	5.5	7.2	8.3
Scholarships	1.6	1.9	2.9	1.9	3.0	2.1	1.5	1.9
Totals	16.5	59.6	43.93	39.8	85.7	58.55	90.4	63.99

Notes:

Not Avail: Scheme not offered in that application year

No Applic: No Public Health applications received in that application year

No FG: Applications received but no Public Health application were successful in that application round

Nil: No funding provided to that scheme in that application year

Table 2: Funding Trends: 2000 to 2007 – Proportion of Annual Expenditure (New and Continuing) by Broad Research Area

Broad Research Area	2000	2001	2002	2003	2004	2005	2006	2007
Basic Science	58%	63%	52%	50%	51%	41%	46%	54%
Clinical Medicine and Science	24%	29%	22%	31%	29%	28%	33%	26%
Health Services Research	1%	1%	2%	5%	3%	4%	5%	4%
Preventive Medicine and Science	1%	1%	1%	1%	2%	2%	2%	1%
Public Health	14%	6%	15%	11%	11%	16%	13%	14%
Not Allocated	1%	0%	8%	2%	3%	9%	1%	1%
Grand Total*	100%							

Note: Numbers may not add up to total due to rounding

Table 3: Success Rates for Project Grant Applications 2000-2007

3A: Proportions of Public Health Project Grant Applications funded and rated as suitable for funding or unfundable

Year	Funded	Suitable for funding but not funded	Unfundable
2000	15%	17%	69%
2001	23%	21%	56%
2002	22%	24%	54%
2003	22%	25%	53%
2004	23%	31%	47%
2005	20%	37%	44%
2006	18%	35%	47%
2007	20%	44%	37%

3B: Proportions of Basic Science Project Grant Applications funded and rated as suitable for funding or unfundable

Year	Funded	Suitable for funding but not funded	Unfundable
2000	32%	25%	43%
2001	26%	36%	38%
2002	25%	41%	34%
2003	26%	39%	35%
2004	23%	40%	37%
2005	25%	46%	29%
2006	26%	46%	28%
2007	32%	49%	19%

3C: Proportions of Clinical Medicine Project Grant Applications funded and rated as suitable for funding or unfundable

Year	Funded	Suitable for funding but not funded	Unfundable
2000	23%	20%	57%
2001	19%	32%	49%
2002	19%	38%	43%
2003	19%	33%	48%
2004	21%	34%	45%
2005	16%	44%	40%
2006	18%	43%	40%
2007	25%	47%	28%



Table 4: Success Rates by Broad Research Area: Research Support Schemes, 2002-2007

Key:

Broad Research Area	BRA	Clinical Medicine	CM	Preventative Medicine	PM	Applications	Apps
Basic Science	BS	Health Services Research	HSR	Public Health	PH	Success Rate	%

4A: Success Rates for Projects Grants by Broad Research Area - 2002-2007

	2002			2003			2004			2005			2006			2007		
	No of Apps	Awarded	%															
BRA	961	243	25.3%	912	234	25.7%	996	225	22.6%	1053	259	24.6%	1353	353	26.1%	1167	374	32.0%
BS	665	124	18.6%	701	131	18.7%	652	140	21.5%	735	120	16.3%	1022	188	18.4%	822	207	25.2%
CM	121	18	14.9%	112	14	12.5%	120	13	10.8%	112	15	13.4%	158	23	14.6%	114	23	20.2%
HSR	47	9	19.1%	47	7	14.9%	56	14	25.0%	63	11	17.5%	77	8	10.4%	72	14	19.4%
PM	193	43	22.3%	196	43	21.9%	214	49	22.9%	235	48	20.4%	313	56	17.9%	246	49	19.9%
PH	1987	437	22.0%	1968	429	21.8%	2038	441	21.6%	2198	453	20.6%	2923	628	21.5%	2421	667	27.6%
Total																		



4B: Success Rates for Program Grants by Broad Research Area - 2002-2007

	2002			2003			2004			2005			2006			2007		
	No of Apps	Awarded	%	No of Apps	Awarded	%	No of Apps	Awarded	%									
	21	8	38.1%	13	7	53.8%	16	9	56.3%	4	3	75.0%	12	8	66.7%	7	7	100.0%
	18	7	38.9%	11	3	27.3%	13	8	61.5%	6	6	100.0%	12	3	25.0%	7	5	71.4%
	3	1	33.3%	0	0	n/a	1	0	0.0%	1	1	100.0%	0	0	n/a	1	1	100.0%
	0	0	n/a	1	0	0.0%	0	0	n/a									
	4	0	0.0%	3	1	33.3%	7	3	42.9%	1	1	100.0%	0	0	n/a	0	0	n/a
Total	46	16	34.8%	27	11	40.7%	37	20	54.1%	12	11	91.7%	25	11	44.0%	15	12	80.0%

4C: Success Rates for Strategic Grants by Broad Research Area - 2002-2007

	2002			2003			2004			2005			2006			2007		
	No of Apps	Awarded	%	No of Apps	Awarded	%	No of Apps	Awarded	%	No of Apps	Awarded	%	No of Apps	Awarded	%	No of Apps	Awarded	%
BRA	10	2	20.0%	2	1	50.0%	0	0	n/a	16	12	75.0%	3	2	66.7%	32	7	21.9%
BS	12	3	25.0%	8	8	100.0%	23	10	43.5%	30	15	50.0%	25	16	64.0%	93	17	18.3%
HSR	5	3	60.0%	16	16	100.0%	18	5	27.8%	15	6	40.0%	40	21	52.5%	36	16	44.4%
PMI	5	1	20.0%	2	2	100.0%	9	2	22.2%	13	6	46.2%	5	3	60.0%	32	7	21.9%
PH	78	10	12.8%	1	1	100.0%	21	14	66.7%	51	26	51.0%	25	12	48.0%	43	11	25.6%
Total	110	19	17.3%	29	28	96.6%	71	31	43.7%	125	65	52.0%	98	54	55.1%	236	58	24.6%

Table 5: Success rates by Broad Research Area: Researcher (People) Support, 2002-2007
5A. Success Rates for Career Development Awards by Broad Research Area - 2002-2007

BRA	2002			2003			2004			2005			2006			2007		
	No of Apps	Awarded	%															
BS	81	22	27.2%	75	20	26.7%	104	26	25.0%	137	31	22.6%	111	3	2.7%	196	43	21.9%
CM	32	10	31.3%	35	9	25.7%	33	8	24.2%	46	9	19.6%	48	11	22.9%	91	22	24.2%
HSR	4	1	25.0%	9	3	33.3%	6	1	16.7%	4	1	25.0%	4	2	50.0%	10	0	0.0%
PM	3	0	0.0%	3	1	33.3%	2	0	0.0%	2	1	50.0%	2	0	0.0%	4	0	0.0%
PH	16	5	31.3%	26	7	26.9%	25	7	28.0%	33	7	21.2%	19	5	26.3%	48	12	25.0%
Total	136	38	27.9%	148	40	27.0%	170	42	24.7%	222	49	22.1%	184	48	26.1%	349	77	22.1%

5B: Success Rates for Research Fellowships by Broad Research Area - 2002-2007

BRA	2002			2003			2004			2005			2006			2007		
	No of Apps	Awarded	%	No of Apps	Awarded	%	No of Apps	Awarded	%	No of Apps	Awarded	%	No of Apps	Awarded	%	No of Apps	Awarded	%
BS	87	32	36.8%	99	43	43.4%	116	53	45.7%	128	59	46.1%	127	54	42.5%	117	50	42.7%
CM	23	5	21.7%	22	7	31.8%	32	11	34.4%	26	11	42.3%	33	13	39.4%	44	18	40.9%
HSR	2	0	0.0%	4	2	50.0%	3	0	0.0%	3	2	66.7%	2	0	0.0%	2	1	50.0%
PM	2	2	100.0%	2	1	50.0%	2	1	50.0%	2	1	50.0%	3	3	100.0%	4	2	50.0%
PH	7	2	28.6%	13	5	38.5%	13	4	30.8%	14	8	57.1%	21	8	38.1%	30	14	46.7%
Total	121	41	33.9%	140	58	41.4%	166	69	41.6%	173	81	46.8%	186	78	41.9%	197	85	43.1%

Table 5C. Success Rates for Scholarships by Broad Research Area - 2002-2007

BRA	2002			2003			2004			2005			2006			2007		
	No of Apps	Awarded	%															
BS	97	42	43.3%	116	71	61.2%	130	76	58.5%	110	47	42.7%	112	54	48.2%	103	46	44.7%
CM	122	62	50.8%	126	69	54.8%	130	61	46.9%	144	72	50.0%	155	76	49.0%	143	69	48.3%
HSR	21	12	57.1%	19	13	68.4%	15	7	46.7%	21	12	57.1%	20	7	35.0%	25	19	76.0%
PM	5	3	60.0%	5	2	40.0%	8	3	37.5%	3	1	33.3%	6	3	50.0%	7	4	57.1%
PH	71	46	64.8%	59	32	54.2%	77	46	59.7%	60	32	53.3%	58	21	36.2%	64	36	56.3%
Total	316	165	52.2%	325	187	57.5%	360	193	53.6%	338	164	48.5%	351	161	45.9%	342	174	50.9%

Table 5D. Success Rates for Training Fellowships by Broad Research Area - 2002-2007

BRA	2002			2003			2004			2005			2006			2007		
	No of Apps	Awarded	%															
BS	111	62	55.9%	139	59	42.4%	196	67	34.2%	206	78	37.9%	203	54	26.6%	233	74	31.8%
CM	43	23	53.5%	54	26	48.1%	82	22	26.8%	87	27	31.0%	161	48	29.8%	107	33	30.8%
HSR	7	0	0.0%	3	1	33.3%	14	4	28.6%	9	3	33.3%	18	1	5.6%	21	4	19.0%
PM	0	0	n/a	2	0	0.0%	8	0	0.0%	11	1	9.1%	12	3	25.0%	4	3	75.0%
PH	25	7	28.0%	44	18	40.9%	45	21	46.7%	57	22	38.6%	69	25	36.2%	78	33	42.3%
Total	186	92	49.5%	242	104	43.0%	345	114	33.0%	370	131	35.4%	463	131	28.3%	444	147	33.1%

Appendix IV: Outline of NHRMC Funding Schemes

1. Research Support Schemes – to support the gaining of basic and applied knowledge in health and medicine

Funding Scheme	Purpose	Basis of Selection Criteria
<p>Project Grants</p> <ul style="list-style-type: none"> • Standard • New Investigator • Development Grant 	<p>To support specific research projects; individuals and small teams of researchers in biomedical, public health and health services research at Australian universities, medical schools, hospitals and other research institutions.</p>	<p>All</p> <ul style="list-style-type: none"> • Scientific intent • Record of research achievement • Relevance/significance <p>New Investigators</p> <ul style="list-style-type: none"> • Cut-off point lowered (but still in very good category) to meet recommended targets for new talent <p>Development</p> <ul style="list-style-type: none"> • As above, but commercial prospects also scored (Panel of industry and business)
<p>New Program Grant (Large, one line grants primarily on the basis of recent record of research achievement and translation/action)</p>	<ul style="list-style-type: none"> • Contribute new knowledge at a leading international level in important areas of health and medical research • Develop novel ideas and approaches • Tackle problems for which longer term funding is essential • Develop training and career development opportunities within the team • Facilitate collaborative use of specialised facilities or expertise 	<ul style="list-style-type: none"> • Record of Research Achievement (60%) • Future research plan (20%) • Collaborative Gain (20%)

2. Targeted and Priority Research Support Schemes

Funding Scheme	Purpose	Basis of Selection Criteria
<ul style="list-style-type: none"> Aboriginal and Torres Strait Islander Project grant Capacity building in Population Health Research Health Services Research Asbestos Diseases Pandemic Influenza Medical Bioinformatics, Genomics and Proteomics Complimentary and alternative medicines Dementia General Practice A Healthy Start to Life for Aboriginal and Torres Strait Islander Children A Healthy Start to Life for All Australians Ageing Well, Ageing Productively 	<p>Fund projects that meet NHMRC and its partners' identified priorities and needs.</p>	<p>Similar to project grants in scientific merit, record of research achievement, significance (relevance) plus additional criteria specific to the work of the targeted funding scheme.</p>
<p>Projects – International Collaborations</p> <ul style="list-style-type: none"> International Collaborative Indigenous Health Research Partnership (ICIHRP) Juvenile Diabetes Research Foundation (JDRF) Australian - European Union Collaborative Research Grants (EU) Human Frontiers of Science Program (HSFP) 	<p>To fund research collaborations with international health and medical research funding agencies (both government and non-government).</p> <p>ICIHRP: Collaboration between Australia and Canadian Institutes of Health Research, Health Research Council of New Zealand and the NHMRC to support research in the area of Indigenous peoples' health, with the goals of improving health outcomes; enhancing the research skills and profile of Indigenous and other researchers in the field; and increasing research capacity in this sector.</p> <p>JDRF: To support multidisciplinary research teams working collaboratively on the biology of Type 1 diabetes: its causes, diagnosis, complications, treatments, and prevention. They support groups that bring novel approaches from disciplines not traditionally associated with diabetes research. The grants are awarded for up to five years and are aimed at supporting teams that have a critical mass of investigators working on a problem of importance to people with Type 1 diabetes. The program is funded in conjunction with the Juvenile Diabetes Research Foundation.</p> <p>EU: To assist Australian participation in projects selected for funding under the European Commission's Framework programme.</p> <p>HSFP: The Human Frontier Science Program (HSFP) supports international and interdisciplinary collaborations in basic research, focusing on complex mechanisms of living organisms.</p>	<p>Criteria vary between grants.</p> <p>EU: The peer review process for the research is undertaken through the European Commission, and NHMRC assess the value of the contribution to and collaboration with both the European and Australian research and budget.</p> <p>HSFP:</p> <ul style="list-style-type: none"> interdisciplinarity, novelty and innovation, and need for collaboration.

3. Building Australia’s Research Capacity – Researchers

Funding Scheme	Purpose	Basis of Selection Criteria
<ul style="list-style-type: none"> Australia Fellowship NHMRC Research Fellowship 	<p>Provides opportunities for outstanding biomedical and health researchers with proven track records to undertake research that is both of major importance in its field and of significant benefit to Australian health and medical research</p>	<ul style="list-style-type: none"> Track record of baseline activities against opportunity Congruence with aims and intent of scheme Quality of the host research environment, including the extent of facilities and infrastructure that will be available to support the proposed research activities; Research performance descriptors including: publications, grants, peer recognition/invitation to speak, prizes and awards, research translation (commercialisation, clinical activities, public health activities), contributions to research training, and contributions to professional activities.
<ul style="list-style-type: none"> Macfarlane Burnet Fellowship 	<p>Provide support for Australian researchers who have been awarded the Noble Prize for physiology or medicine to carry out high quality research to further advance Australia’s health and medical research capabilities.</p> <p>The aims of the fellowship are:</p> <p>To conduct high quality research to further advance Australia’s health and medical research capabilities;</p> <p>To develop strategic research to provide the evidence require for improved national health policy and practice;</p> <p>To foster the development of a more dynamic health and medical research sector; and provide leadership to up-and-coming researchers; and</p> <p>To take a prominent role at national and international conferences and seminars that would assist in raising Australia’s standing in health and medical research</p>	<p>The Sir McFarlane Burnet Fellows will be required to:</p> <ul style="list-style-type: none"> Make satisfactory achievement against specified objectives, outcomes and milestones; Be actively engaged in research and overseeing research that produces new knowledge or addresses significant health and medical issues; Author and co-author articles and present papers; and Contribute to the development and mentoring of a team of researchers
<ul style="list-style-type: none"> Industry Research Fellowship 	<p>To allow recipient to work two years in industry (in Australia or overseas), and two years in an Australian laboratory.</p>	<p>No longer being offered. Now part of Career Development Awards.</p>

Funding Scheme	Purpose	Basis of Selection Criteria
<ul style="list-style-type: none"> Practitioner Fellowship 	<p>Assists experienced and productive clinical, public health and health services researchers who wish to maintain both a research and a professional career. The scheme aims to support health professional that have undertaken a successful research program and wish to continue at nationally or internationally competitive levels.</p>	<p>Criteria include:</p> <ul style="list-style-type: none"> Track record of baseline activities against opportunity Congruence with aims and intent of scheme Quality of the host research environment, including the extent of facilities and infrastructure that will be available to support the proposed research activities; Research performance descriptors including: publications, grants, peer recognition/invitation to speak, prizes and awards, research translation (commercialisation, clinical activities, public health activities), contributions to research training, and contributions to professional activities. Clinical/health services practice responsibilities Profile in research and practice
<p>Career Development Award (Mid-career awards)</p> <ul style="list-style-type: none"> Clinical Population health Biomedical Partnership 	<p>Awarded for people between three and nine years post-doctorate. The proposed research must:</p> <ul style="list-style-type: none"> be internationally competitive; develop their capacity for original independent research; develop their research leadership skills; and help them to establish themselves as independent self-directed health and medical researchers in a research program or as part of a research team. <p>Offered in all disciplines relevant to health.</p>	<p>Criteria include:</p> <ul style="list-style-type: none"> Demonstrated research success relative to opportunity in terms of both seniority and field of research with reference to the levels of activity outlined in the classification statement for these positions; Potential for further career development in health and medical research. A clear career development strategy; Research plans that are consistent with the aims of the award scheme; Supportive research environment with the facilities and infrastructure needed to support the proposed research and career development plans.
<p>Post-Doctoral Fellowships</p> <ul style="list-style-type: none"> Aboriginal and Torres Strait Islander Health Research Fellowship Clinical Biomedical Public Health Overseas – Sidney Sax, General Practice Health professional Returning to Australia – Howard Florey Bilateral exchange – INSERM, China, 		<ul style="list-style-type: none"> General eligibility criteria across all types of fellowships with a few types identifying specific requirements e.g.: affiliation with a French based investigator for INSERM exchange fellowship, Health Professional Research – demonstrated need for research training, Primary Health Care – delivery of health and medical care in GP or Aboriginal Medical Services. Generally weighted 80% track record and 20% science



Funding Scheme	Purpose	Basis of Selection Criteria
Postgraduate Scholarship Biomedical Dental Medical Primary Health Care Public Health Indigenous	<ul style="list-style-type: none">To compliment DEST scholarships in targeted areas (as health professionals)	<ul style="list-style-type: none">General eligibility criteria across all types of scholarships with a few types identifying specific requirements e.g.: being currently registered for practice for Primary Health Care Research Scholarship.Scoring matrix with criteria based on academic performance, research experience publications and prizes as well as referee reportsPartnership Scholarships are selected on the basis of the proposals relevance to the research interests of a given organization e.g.: cerebral palsy foundation, MND research Australia, MS foundation, Heart Foundation, OsteoporosisGenerally weighted 80% track record and 20% science

4. Building Australia's Research Capacity - Facilities

Funding Scheme	Purpose	Basis of Selection Criteria
Centres of Clinical Research Excellence	<ul style="list-style-type: none"> • Ensure effective translation of research outcomes into clinical practice • Support clinical research with potential to lead to improved outcomes for the community • Foster training of clinical researchers, particularly those with a capacity for independent research and future leadership roles 	<ul style="list-style-type: none"> • Scientific and clinical merit of the proposed research activities • Unique contribution to existing and new research activities • Training opportunities for clinical researchers, • Ability to effectively transfer research findings into clinical practice • The record of research achievement of the Chief Investigators • The proposed budget (value gained from NHMRC support).
Enabling Grants Scheme	<p>For underpinning national facilities such as:</p> <ul style="list-style-type: none"> • National Non-Human Primate Research Facility • Australian NHMRC Twin Registry • The National NHMRC Baboon Colony • Australian Zebrafish Phenomics Facility • National Centre for Intensive Care Research • The Australian Proteomics Computational Facility (APCF) • The Australian Childhood Diabetes DNA Repository • Australian Phenome Bank • Cell Bank Australia • National Network of Brain Banks • A National Clinical Trials Register 	<ul style="list-style-type: none"> • A clearly demonstrated national need in order to underpin aspects of the national health and medical research effort; • Significant enhancement of research in areas of strategic importance, as designated by the NHMRC or other major public body; • Potential for significantly improved health outcomes, research commercialisation opportunities, and/or translation opportunities as a result of research and/or clinical trials assisted by the proposed facilities and/or activities; • The proposed facilities and/or activities are not normally supported by other government funding schemes. • High level capacity for applicants' to deliver [an outcome] taking into account their expertise, ability and/or experience to operate, manage and support a facility and/or activity; • Enhancement of training and development opportunities; • A high quality and feasible plan for the ongoing financial and operational sustainability of the proposed facilities • A high level of support for the proposed facilities from supporting institutions.
Equipment Grant	Pro-rata payment to Research Administering Organisations (RAO) to purchase equipment to support health and medical research. Based on share of competitively funded grants that a RAO wins in a calendar year.	No selection criteria
Independent MRI Infrastructure Grant	To provide infrastructure support for medical research institutes who have received NHMRC funding.	No selection criteria

Appendix V: Suggested Modifications to Peer Review and Assessment Processes

The Public Health Research Advisory Committee identified that the following minor modifications to the panel judgments system are undertaken and include:

- a. Decreasing possible bias associated with early assessment. Given the potential confounders associated with early assessment, the first 20 research grants to be reviewed by the panel should be randomly selected rather than in alphabetical order.
- b. Panel members indicate their weighting for the three components of scientific method, relevance and track record. The relative contributions of each component as defined should be reflected in the standard deviations of these components, rather than their respective denominators. This requires some standardisation within components before addition to ensure that the intended weightings are correctly applied to the final score. It is argued that this process will provide a more sensitive indicator of the perceived value of a grant and allow greater sensitivity and reflection of the three categories of scientific method, relevance and track record.
- c. Once ranking has been completed, derive scores obtained in a manner specified above be presented to the panel members. Shifting of grants would therefore not be limited by the category in which they were scored.
- d. The above (or similar) mechanism is needed to ensure that major discordance did not occur between different categories of application, and to discourage applicants from “gaming” the category of their grant. This may involve adjusting rankings within categories to “normalise” the proportion of successful applications, within limited ranges.

Appendix VI: Suggested Improvement to Review Panels

The Public Health Research Advisory Committee also suggested modifications to review panel structure and activities, which include:

- a. Panel membership should include a combination of successful senior and less experienced junior researchers so there is an adequate and realistic understanding of the research methodology and intervention strategies while also helping to train a new generation
- b. Junior researchers who have not submitted grants should be invited to attend in observer-only capacity for the last two days of GRP sessions to provide a realistic understanding of the process whilst also helping to further train a new generation of panel members. Panel chairs would be available to meet with observers to answer any questions arising, after the final session.
- c. The workload of review panels has been excessive for some panels. It is recommended that the number of grants per panel should be capped to maintain quality and focus.
- d. It was noted that the majority of applications were subject to only one external reviewer, and strategies should be developed to minimise this.
- e. NHMRC introduce a Web-based mechanism for reviewers and panel members to provide them with materials outlining methodological checklists for commonly used research methodologies including intervention studies (EPOC criteria), cohort research.