



**Association of Australian Medical Research Institutes
Submission**

**NHMRC Consultation Paper
*A Draft National Strategy for Medical Research and Public
Health Research***

August 2009

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1. Summary of AAMRI recommendations

- Investigator-initiated innovative research should remain the main focus of the NHMRC programs.
- Promote to Government the need to double the NHMRC budget to reach a target of \$1.4 billion by 2015.
- Develop a long-term clearly articulated vision for the future of the health and medical research sector, which includes measurable targets developed in collaboration with the related Government portfolios of Education, and Innovation, Industry, Science and Research.
- Develop a 'whole of government' cross-portfolio approach to health and medical research in Australia, with strategies that integrate with the national innovation and health reform agenda.
- Limit strategic and priority-based funding at less than 20% the overall NHMRC grants budget. Investigator-initiated research should be maintained as the vanguard of the NHMRC funding.
- Ensure an evidence-based approach to 'targeted' and 'urgent' calls for research, including the use of panels of experts to determine specific areas of need.
- Establish a program to support visionary scientists or projects that demonstrate potential for high impact outcomes, but that may be too novel or at too early a stage for the traditional review process.
- Increase the amount of funding towards indirect costs for MRIs to ensure competitiveness with the university sector.
- Attach funding for indirect costs to all competitive grants to reduce administrative burden and improve efficiency.
- Promote to Government the need for funding for public health infrastructure and capacity building, as recommended in the Nutbeam review.
- Review scoring process and develop new metrics and guidance for review panels to ensure that public health research is appropriately assessed.
- Collaborate with the higher education sector to develop a workforce strategy for public health researchers.
- Collaborate with government to promote the establishment of research clinicians and research as a normal and reportable activity of large and/or teaching hospitals.
- Collaborate with government to increase the funding and role of the National Institute of Clinical Studies (NICS) and develop systems to assess and benchmark health care performance with regards to the implementation of evidence-based medicine.

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- Support the formation of a \$1 billion Health and Medical Research Fund to support early-stage commercialisation activities.
 - Ensure the attractiveness of Australia as a location for clinical research by fast-tracking the proposed centralised ethics, governance and regulatory approval systems, facilitating IT and e health platforms, and working with government to establish national patient referral mechanisms.
 - Undertake a thorough evaluation of the existing and potential health and medical research workforce, including reasons for attrition and effect of factors such as grant success rates and duration.
 - Develop clear targets as to the number of researcher positions to be supported by the NHMRC in the future.
 - Develop a plan in collaboration with the higher education and innovation sectors for attracting and recruiting world-class scientists.
 - Consider the development of a framework for international research collaborations, which strengthens Australia's participation in research consortia, enhances our workforce mobility and ensures the protection of any resulting intellectual property.

2. Introduction

The Association of Australian Medical Research Institutes (AAMRI) represents 37 independent, not-for-profit medical research institutes across Australia. AAMRI members carry out some of Australia's most distinguished and world-renowned health and medical research and are closely affiliated with major research hospitals and universities. Almost 6,500 researchers and support staff are employed at our member institutes which also train more than 1500 post-graduate students each year. They have a combined research income of more than \$400 million per annum, approximately half of which is derived from the NHMRC competitive grants program.

AAMRI welcomes this opportunity to contribute to the NHMRC consultation paper, *A Draft National Strategy for Medical Research and Public Health Research* (Draft Strategy). AAMRI considers the NHMRC to be the 'jewel in the crown' of Australian research funding and that by and large the funding program works exceedingly well and has supported our member institutes in making ground-breaking discoveries and gaining national and international repute.

Rather than commenting on every aspect of the NHMRC Draft Strategy, this AAMRI submission concentrates on those aspects it regards as most urgent to the medical research sector and our member institutes. The themes that underpin our recommendations for the NHMRC are firstly, that investigator-initiated discovery research should remain the vanguard of NHMRC strategy, as it is this type of research that will drive our future health and wellbeing, as well as our economic prosperity.

Secondly, while we applaud the Federal Government's broad and significant investment into capital infrastructure,¹ the consequence of this investment is a needed expansion in the biomedical workforce with over 3,000 new positions required, plus an increase in funding for indirect costs. While this expansion is most welcome, it is absolutely essential that it be fuelled by an equally significant increase in health and medical research funding. Accordingly, AAMRI, along with other peak industry bodies, recommends that the NHMRC budget should be doubled to \$1.4 billion by 2015.

Thirdly, AAMRI recommends that the NHMRC develops a long-term (ten year) clearly articulated vision for the future of the health and medical research sector, which includes measurable targets developed in collaboration with the related Government portfolio of Education, as well as the Innovation, Industry, Science and Research portfolio. The triennial NHMRC Strategy should be guided by the longer-term goals outlined in the NHMRC vision. This longer-term vision with clear targets will ensure transparency and accountability as well as provide a clearer platform from which to assess our strategic and funding gaps.

Recommendations

- Investigator-initiated innovative research should remain the main focus of the NHMRC programs.
- Promote to Government the need to double the NHMRC budget to reach a target of \$1.4 billion by 2015.
- Develop a long-term clearly articulated vision for the future of the health and medical research sector, which includes measurable targets developed in collaboration with the related Government portfolios of Education, and Innovation, Industry, Science and Research.

Response to the NHMRC *Draft National Strategy for Medical Research and Public Health Research*.

3. Creation of knowledge – NHMRC support for research

3.1. Promote sustained funding for health and medical research

Australian investment in health and medical research not only benefits our society in terms of health and wellbeing,² but has the potential to generate significant financial returns.³ However, several government initiatives may have serious implications for the funding strategies and capacity of the NHMRC. The Rudd Government has made an outstanding commitment to capital spending with over \$644 million allocated to specific health and medical research capital infrastructure projects as part of the innovation strategy of the most recent Federal Budget.¹

As a result AAMRI estimates that this capital spending program will create laboratory space for at least 3,000 *additional* researchers in the next five years. Highly qualified research staff are the “missing piece of the jigsaw puzzle” in Australia’s innovation strategy. Additional NHMRC funding is urgently required to begin the process of attracting and retaining the increased research and support staff that will be needed once these new facilities are completed.

In addition, the Government’s commitment to double the number of Australian Postgraduate Awards and to implement 1000 ARC Future Fellowships, both excellent initiatives, will place additional pressure on the NHMRC grants and awards system. Potential growth in the number of early career researchers could mean that increased competition for NHMRC funding would see many researchers moving overseas or leaving science – a terrible waste of public investment.

Although the \$85 million increase in the NHMRC budget, also announced in the Budget,⁴ will go some way to addressing the skills shortage in the health and medical research workforce, it is not currently clear exactly how this will be distributed nor how many new researcher positions can be created in the sector.

For reasons such as these, AAMRI, along with other peak research bodies, has been campaigning for the NHMRC budget to increase from 2010-11, by an additional \$700 million to reach a new base of \$1.4 billion by 2014-15. If we consider that current spending on health and medical research represents just 4.7 days of our annual spending on healthcare, then the proposed increase in research funding still only equates to approximately 10 days’ of healthcare spending at its peak in 2015.

AAMRI also recommends a ‘whole of government’ approach to the NHMRC strategy, with communication and planning taking place with consideration of the national innovation⁵ and health reform agenda⁶ to ensure optimal returns from government spending initiatives. The worst-case scenario would be that first-class facilities are left empty due to the lack of a workforce strategy.

Recommendations

- Promote to Government the need to double the NHMRC budget to reach a target of \$1.4 billion by 2015.
- Develop a ‘whole of government’ cross-portfolio approach to health and medical research in Australia, with strategies that integrate with the national innovation and health reform agenda.

3.2. Maintain the focus on innovative research

The NHMRC Draft Strategy outlines issues faced by analogous funding bodies in the UK, US and Canada, including the importance of translating research findings into clinically useful outcomes, and maintaining a balance between priority-driven research and discovery research.

Although AAMRI recognises the importance of priority-driven research that contributes to specific health outcomes and emerging and urgent health needs, AAMRI believes that for sustained long-term benefits, the bulk (>80%) of NHMRC funding should remain with investigator-initiated, discovery research. This will ensure a sustainable, vibrant, competitive research sector that can drive both industry and healthcare reform into the future.

AAMRI supports the NHMRC strategy to introduce targeted calls for research to address major health issues, but would like an assurance that these will not become a major component of the NHMRC budget. For comparison, the National Institutes of Health (NIH) in the United States, which is the largest single source of funding in the world for biomedical research, has developed the Request for Application (RFA) process. An RFA is granted for research in a particular scientific area of special interest. Although important, the RFA program represents less than 10% of the total NIH budget; investigator-initiated ‘unsolicited’ grants for basic research still represent the bulk of NIH spending.⁷ The process for deciding which RFAs to be issued is an exhaustive one, determined by panels of experts, who identify areas of need in their particular field. The resulting specific research proposals must then compete against a pool of proposals from other expert panels. This assists in removing any *ad hoc* or political forces that can influence evidence-based priority-setting.

On the other end of the spectrum, the NIH has established various funding programs (the NIH Roadmap and the Director’s Pioneer Award) to support “high risk” research. Innovative ‘blue sky’ research is in danger of being overshadowed in Australian science. As Elias Zerhouni, director of the NIH, noted “the greatest risk for science is to stop taking risks.”⁷ AAMRI recommends that a similar investment in high risk research should be undertaken, with a proportion of the NHMRC budget allocated to support visionary scientists or projects that demonstrate potential for high impact outcomes, but that may be too novel or at too early a stage for the traditional review process.

Recommendations

- Limit strategic and priority-based funding at less than 20% the overall NHMRC grants budget. Investigator-initiated research should be maintained as the vanguard of the NHMRC funding.
- Ensure an evidence-based approach to ‘targeted’ and ‘urgent’ calls for research, including the use of panels of experts to determine specific areas of need.
- Establish a program to support visionary scientists or projects that demonstrate potential for high impact outcomes, but that may be too novel or at too early a stage for the traditional review process.

3.3. Address the gap in funding for indirect costs of research

To reap the highest returns on investment, government spending of public funds must support the highest quality research with the most productive output. Based on objective bibliometric data including that commissioned by the NHMRC itself,⁸ independent, not-for-profit medical research institutes (MRIs) have consistently demonstrated a higher level of productivity than other recipients of government research funding programs. MRIs are also able to leverage significant funds from international granting bodies, philanthropic donations and business investment through spin-off companies; this also assists in maximising the government's returns on investment.

The cost of undertaking research is split into economic categories of direct costs and indirect costs. Through its grants and awards program, the NHMRC contributes towards direct costs, such as investigator salaries, consumables and smaller equipment purchases. Indirect costs of research include costs relating to intellectual property and commercialisation activities, researcher salary on-costs and gaps, non-academic salaries and support, capital depreciation and utilities among others. A review commissioned by the Department of Innovation, Industry, Science and Research (DIISR) of the university research sector estimated that funding for indirect costs of 50 cents for every dollar of direct grant funding received are needed to sustain research in Australia.⁸

At present in Australia indirect costs are either not provided or provided via arcane and markedly differing and frequently non-transparent systems. At the one end is the CSIRO, which receives complete funding to cover both direct and indirect costs via a single large block grant. This system is to be applauded as it is the most sensible and equitable – it recognised that indirect costs are as germane to the research enterprise as direct costs and it obviates the need for separate peer-reviewed evaluations of both of these two costs.

AAMRI **strongly** endorses the linkage of indirect costs to direct costs and the simultaneous consideration of both by a single peer-review process.

Universities, on the other hand, are funded by an increasingly elaborate system of core grants provided by the Department of Education, Employment and Workplace Relations as well as the Department of Innovation, Industry, Science and Research (DIISR). These include the Research Infrastructure Block Grant (RIBG), the Joint Research Engagement initiative (which will replace the Institutional Grants Scheme), the Research Training Scheme and now the Sustainable Research Excellence (SRE) funding initiative. It is estimated that through these schemes universities will receive indirect costs to an average of 50 cents per dollar of competitive grants awarded, by 2014.⁹

Finally, the NHMRC Independent Research Institutes Infrastructure Support Scheme (IRIIS) provides a contribution towards the indirect costs borne by MRIs. IRIIS contributes approximately 20 cents per dollar of competitive grants awarded by the NHMRC. However, MRIs do not receive any funding support for the indirect costs associated with grants awarded by non-NHMRC funding bodies.

Despite the proven track record of MRIs,¹⁰ contributions towards the indirect costs of research via IRIIS is now substantially less than that of the university and government research agency sectors. When the IRIIS program was established, it was understood that state governments would also provide a contribution towards the costs of indirect research for those institutes in their jurisdiction. However, most of our AAMRI members, especially those in NSW and Victoria, have reported that

state government support has been minimal and has declined in recent years, despite the growing success of the MRIs in obtaining commonwealth and international grants. In addition, philanthropic contributions are in decline due to the global economic environment.

To ensure that all research organisations receive direct and indirect funding on an equal footing depending only on merit-based assessments, we ask that the NHMRC increase its indirect cost contributions for MRIs to equal that of the university sector.

Recommendations

- Increase the amount of funding towards indirect costs for MRIs to ensure competitiveness with the university sector.
- Attach funding for indirect costs to all competitive grants to reduce administrative burden and improve efficiency.

3.4. Increase commitment to public health research

AAMRI supports the proposals of the NHMRC Draft Strategy to increase its commitment to public health research and adopt many of the recommendations of the Nutbeam review into public health research funding in Australia. The Nutbeam review included many recommendations that are pertinent to all health and medical research fields, such as greater workforce planning and the development of infrastructure such as data-linkage infrastructure and biobanks.¹¹

Although Australia is regarded as a world-leader in public health research, the Nutbeam review and the government's response to the inquiry¹² admit that this field has a poor record in securing grant and award funding from the NHMRC.

We believe that change needs to occur within the sector, such that government and the NHMRC recognise that public health is a major aspect of national health system and the benefits of investing in public health research will have substantial benefits to the health of Australians - including significant reductions in the cost to the overall health budget.

Those AAMRI members who have a strong reputation in public health research have noted that the process by which grants are scored by the NHMRC make it extremely difficult for their projects to receive funding. A significant problem is the difficulty public health researchers have in regularly publishing in high impact journals due to the nature of publications available in this area. With this in mind it is essential that NHMRC review their scoring process and develop new metrics and guidance for review panels to ensure that public health research is assessed in accordance with its importance to health outcomes.

One limiting factor in public health research that needs to be addressed is the further development of quality technical capacity within the sector. While this is being addressed by a limited number of academic institutions, it does need a more long-term strategic view with an intensive push of quality researchers into this stream of research. This needs to occur at the undergraduate level and then be supported with program grants and awards supported by the NHMRC.

Recommendations

- Promote to Government the need for funding for public health infrastructure and capacity building, as recommended in the Nutbeam review.
- Review scoring process and develop new metrics and guidance for review panels to ensure that public health research is appropriately assessed.
- Collaborate with the higher education sector to develop a workforce strategy for public health researchers.

4. Translate knowledge into practice

“Translational research” has emerged both as a buzzword and as a priority for government funding bodies internationally as they recognise the need to rapidly convert scientific observations and laboratory discoveries into benefits for human health and wellbeing. Initiatives to improve translational research in the UK, as a result of the “Cooksey review” of UK health funding, include establishing hospital-based biomedical research units that bring together a critical mass of clinical investigators.¹³ In the US, the National Institutes of Health Clinical Centre in Bethesda has been established as the nation’s largest hospital devoted entirely to clinical research.¹⁴

The NHMRC Draft Strategy has outlined several steps to combine basic and clinical research in order to improve the translational research environment, which AAMRI generally supports, but has the additional comments below.

4.1. Improve partnerships and collaborations

The reports released by the National Health and Hospital Reform Commission inquiries, which were undertaken to assist the government in strengthening and improving Australia’s health system, have recommended fostering a culture of collaboration between research organisations and hospitals as an important component of translating research into practice.^{6, 15}

Many AAMRI member institutes are located near major teaching hospitals and so are physically ideally placed to take advantage of such collaborations, however the appropriate mechanisms for such collaborations need to be in place in the hospital setting.

The final report of the NHHRC recommended the establishment of clinical research fellowships across hospitals, aged care and primary healthcare settings, “so that research is visible and enabled as a normal part of providing health care services.”⁶ A research-enabled clinical workforce is an essential conduit to translating research knowledge. To this end, the NHMRC funds several clinical research fellowships. However, the other side of the coin is adequate funding and support from government. For example, there have been suggestions that the Council of Australian Governments (COAG) could agree to sequester funding under the Australian Healthcare Agreements (AHCA), and provide health professionals with opportunities and ‘protected time’ for clinical research in hospital and health care settings.

Whilst we are waiting for the Government’s response to the NHHRC reports, we urge the NHMRC to promote the establishment of research clinicians as a normal part of the activity of large and teaching hospitals. As part of this process, we suggest that the NHMRC work with the relevant government agencies to develop a method of benchmarking and evaluating collaborative clinical research in these settings. By so doing, research will become a reportable activity of hospitals, who are then financially rewarded for this undertaking.

In previous government consultations, AAMRI has supported an increased role for the National Institute of Clinical Studies (NICS), in synthesising and disseminating evidence-based research. This suggestion has also been taken up by the NHHRC final report.⁶ However, in its present form NICS is not adequately funded to carry out its role of disseminating evolving evidence on how to deliver safe and high quality health care. AAMRI recommends that the NHMRC collaborate with government and

health departments to adequately support NICS and to develop systems to assess and benchmark health care performance with regards to the implementation of evidence-based medicine.

Recommendations

- Collaborate with government to promote the establishment of research clinicians and research as a normal and reportable activity of large and/or teaching hospitals.
- Collaborate with government to increase the funding and role of the National Institute of Clinical Studies (NICS) and develop systems to assess and benchmark health care performance with regards to the implementation of evidence-based medicine.

4.2. Commercialisation of research

Research commercialisation is a critical step in the conversion of scientific discoveries into clinical products. The report by the International NHMRC Review Panel, *An international perspective on the National Health and Medical Research Council's research strategies* ("Zerhouni report") as well as earlier inquiries such as the Grant report and Wills reviews recommended that the NHMRC promote the integration of public investments in research with private development opportunities, such that real economic returns are generated.¹⁶

However, significant private investment will only occur once each innovation is developed to a point where external investment is feasible. Thus, government support is absolutely critical during this early stage of research commercialisation.

The *National Survey of Research Commercialisation* is a biennial survey of publicly funded research organisations, including universities and medical research institutes, with regards to their commercialisation activities. The latest survey shows that 1,716 patent applications (and applications for plant breeder's rights) were filed in 2007 by the survey respondents and 550 patents were granted.³

However, AAMRI members state that each year there is a pool of research discoveries with commercial potential, from which only a small percentage are successfully prosecuted as patents.³ This unfulfilled potential has been termed the "valley of death" for research commercialisation.

There are several impediments for medical research institutes (MRIs) when commercialising their research discoveries. Our member institutes have reported significant costs related to salaries of their commercialisation staff, establishing proof-of-principle, seeking legal advice, filing applications and prosecuting and maintaining successful patents. These form a significant component of the 'indirect costs' of MRIs, for which they only receive a small amount of government support (see section 3.3).

In addition, the NHMRC spends only 1% of its research grant budget on Development Grants, which are intended to support researchers as they develop their discoveries into the early stages of commercialisation. Last year the NHMRC announced funding for only 22 Development Grants.¹⁷ Each year MRIs alone file patent applications for over 250 different inventions, and universities file over 800 per year.³ Thus government support for this early stage of the commercialisation process is inadequate for any real commercialisation of research discoveries.

AAMRI recognises that providing adequate funding to take advantage of the untapped pool of research discoveries which hold commercial potential is beyond the scope of NHMRC funding. In light of this, AAMRI endorses Research Australia's proposal for a \$1 billion Health and Medical Research Fund. AAMRI and Research Australia would welcome NHMRC support for this fund.

Importantly, commercialisation funding should be available in the form of grants to the founding scientists and not skewed towards venture capitalists, as is the current situation. The absence of significant early-stage funding has enabled venture capital companies to purchase greater ownership in the inventions; this stifles innovation by failing to reward the very people responsible for the discovery.

A Health and Medical Research Fund which allows scientists to develop their own discoveries beyond the early-stage will improve the attractiveness of these investments to capital providers whilst still allowing the original inventors to retain ownership.

AAMRI will be outlining the above arguments for increased early-stage investment in health and medical research commercialisation to the Department of Innovation, Industry, Science and Research during its consultation into the proposed Commercialisation Institute.

Recommendations

- Support the formation of a \$1 billion Health and Medical Research Fund to support early-stage commercialisation activities.

4.3. Improve participation in clinical research

A strong and effective collaboration between the pharmaceutical industry and academic research will assist in the commercialisation of clinical research. However, AAMRI members are concerned about Australia losing its competitiveness in pharmaceutical industry-supported clinical trials. A forum sponsored by DIISR and with the participation of the pharmaceutical industry predicted that global investment in clinical trials in Australia will decline dramatically over the next three to five years.¹⁸

While the interests of industry may not always align with that of the broader social interest, the cost of clinical trials means that attracting private funding is a necessity.

Although the NHMRC cannot, in its current form, be a main provider of funding for clinical trials, it has a role in providing the research and regulatory environment necessary for ensuring Australia's competitiveness in this arena. For instance, the NHMRC can increase clinical trial participation by fast-tracking the proposed centralised ethics, governance and regulatory approval systems (e.g. the Harmonisation of Multi-centre Ethical Review, or HoMER initiative), facilitating IT and e-health platforms, and working with government to establish national patient referral mechanisms.

Recommendations

- Ensure the attractiveness of Australia as a location for clinical research by fast-tracking the proposed centralised ethics, governance and regulatory approval systems, facilitating IT and e health platforms, and working with government to establish national patient referral mechanisms

5. Build capacity to undertake research

5.1. Conduct a workforce assessment

As the primary funding body, the NHMRC has an important role in strengthening and sustaining Australia's skilled research workforce. As outlined in our submission to the recent NHMRC inquiry into the Fellowship scheme, AAMRI supports initiatives to increase the flexibility of NHMRC awards schemes, and to improve the retention of women in health and medical research including family-friendly policies.

The overall success of the NHMRC grants and awards schemes in supporting the research workforce is difficult to ascertain without a more thorough understanding of this sector. As an example, research commissioned by the Governor of Texas reported that the bioscience and biotechnology industry in that state in 2007 employed approximately 78,986 people¹⁹ out of a population that is almost identical in size to Australia. Australia probably employs about 15,000 researchers in similar fields, but a detailed study of the health and medical research workforce has not been undertaken.

As such, AAMRI calls for a thorough evaluation of the existing health and medical research workforce, the potential workforce (including number of people enrolled in relevant university higher degrees by research) and an assessment of the attrition rate, including the proportion of researchers who choose to work overseas, in the private research sector or leave science, and the reasons for this.

Only by having a thorough understanding of the medical research workforce and the factors affecting its stability will the NHMRC be able to set informed targets for the size and capacity of this workforce. This information will also assist in evaluating the effect of new flexibility and family-friendly policies, and in evaluating the adequacy of Personnel Support Packages in attracting and retaining a world-class research workforce.

Other factors that should be examined as affecting workforce stability include the success rate in obtaining grants and awards and the potential effect that having longer, larger grants will have on our workforce stability. One AAMRI member has even suggested going so far as to divide the grants system, allocating the Project Grants for early-career researchers and retaining the Program Grants for established researchers. This would obviate early career researchers competing against those with a necessarily better track-record due to their time in the industry.

AAMRI believes that the NHMRC is a key component of the research path of publicly-funded scientists; a long-term plan for the workforce and targets for recruitment should form part of the NHMRC Strategy.

Recommendations

- Undertake a thorough evaluation of the existing and potential health and medical research workforce, including reasons for attrition and effect of factors such as grant success rates and duration.
- Develop clear targets as to the number of researcher positions to be supported by the NHMRC in the future.
- Develop a plan in collaboration with the higher education and innovation sectors for attracting and recruiting world-class scientists.

6. Being a good international citizen

Australia is a recognised centre for world-class research,²⁰ and is also a leading biotechnology location in the Asia-Pacific region.²¹ The excellence of our education system, research facilities, and regulatory backbone, including a strong intellectual property (IP) protection environment, are the strengths upon which our international research reputation is built.

The NHMRC Draft Strategy has recognised Australia's interaction with international researcher groups as a source of collaboration and funding, but has perhaps not made clear that the Asia-Pacific region will also be a source of future competition, due to the investment in medical research in several countries, especially China and Singapore.

As such, AAMRI supports a strategic approach to participation in international research consortia, which our members have described as difficult to achieve up until now. However, we recommend that the NHMRC consider developing a clearer framework and accompanying guidelines, such as have been embodied in the *European Framework 7*, which is the European Union's chief instrument for consolidating collaborating research. The framework should also acknowledge the mobility of researchers across international boundaries. An Australian-led research framework must also deal with issues of weak patent protection that exist in some jurisdictions where our potential collaborators are based.

Recommendations

- Consider the development of a framework for international research collaborations, which strengthens Australia's participation in research consortia, enhances our workforce mobility and ensure the protection of any resulting intellectual property.

Peer review

See sections on public health (section 3.3) and workforce assessment (section 5).

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