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**Mr Simon McKeon**

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Dear Mr McKeon

The University of Sydney welcomes the opportunity to contribute this preliminary submission to the *Strategic Review of Health and Medical Research (McKeon Review)*. We look forward to working with the review panel, and participating in workshops and expert groups, in the development and implementation of a strategic plan to optimise Australia's capacity to produce world-class health and medical research (HMR) through to 2020.

We commend the Commonwealth for the consistent, substantial and increasing investment in HMR over the last decade following the important and influential Wills Review (1998) and continued through the former governments BAA 1 and BAA 2 programs.

The HMR landscape has changed greatly in the decades since the Wills Review (1998), however, and we believe the *Strategic Review of Health and Medical Research* presents a timely opportunity for the sector to take stock of the impact that this investment has had on the scale and quality of Australian research and health outcomes for Australians. As is inevitably the case in a rapidly evolving world, change is needed to further strengthen the system, in order to maximize its contribution over the next decade.

We organise these remarks under the four questions proposed to align with the terms of reference by the Panel of Eminent Australians. We also refer the Review to our recent submissions to:

- NSW Health and Medical Research Strategic Review (the Wills Review) - November 2011.<sup>1</sup>
- Independent Review (the Lomax-Smith Review) - Higher Education Base Funding Review - March 2011<sup>2</sup>
- NHMRC Advanced Health Research Centres – March 2011<sup>3</sup>

Yours sincerely

**Signature withheld for electronic distribution**

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<sup>1</sup> [http://sydney.edu.au/about/government/submissions\\_2011.shtml#NSWHMR](http://sydney.edu.au/about/government/submissions_2011.shtml#NSWHMR)

<sup>2</sup> [http://sydney.edu.au/about/government/submissions\\_2011.shtml#BFR](http://sydney.edu.au/about/government/submissions_2011.shtml#BFR)

<sup>3</sup> [http://sydney.edu.au/about/government/submissions\\_2011.shtml#AHRC](http://sydney.edu.au/about/government/submissions_2011.shtml#AHRC)

**Question 1. Why is it in Australia's interest to have a viable, internationally competitive health and medical research sector?**

*TOR 1. The need for Australia to build and retain internationally competitive capacity across the research spectrum, from basic discovery research through clinical translation to public health and health services research.*

*TOR 6. Strategies to attract, develop and retain a skilled research workforce which is capable of meeting future challenges and opportunities.*

- We do not reiterate here, but do endorse, the general and well documented evidence that investment in health and medical research delivers benefits many times over to Australians, at rates of return better than, or comparable to, other public good investments<sup>4</sup>.
- While 97% of HMR happens overseas, Australian researchers participate fully and “punch above their weight” in quantity and impact of their output. The ARC 2010 Excellence in Research for Australia (ERA) assessment has confirmed that Australian university-based health and medical research takes place at a quality level above international standard, and has both breadth and depth<sup>5</sup>. The Commonwealth's initiatives in lifting HMR funding have been an important input towards this achievement, and without sustaining that investment, Australia's performance will inevitably slip back.
- This research base should be supported to remain internationally competitive for three major reasons. We need to continue to generate our share of discoveries and to solve our own health problems; we need our researchers to be attractive, credible and respected partners for the international collaborations that bring us early access to the research conducted outside our borders; and we must have the capacity locally to consider, adopt and adapt the best of international research for the benefit of the Australian population.
- The above stated benefits can only accrue if internationally competitive levels of investment are sustained, with considered priorities, and if due attention is given to how the HMR research enterprise functions as a whole, and the way it penetrates, inhabits and sustains the quality of our health care system.

We now consider how we are performing in the context of our stated aspirations.

- First, despite increased investment (noted above), Australia's spend on HMR remains below comparable countries<sup>6</sup> and R&D expenditure as a share of GDP remains below OECD averages<sup>7</sup>. However research is increasingly large-scale, high technology, global and expensive. Australian public investment in HMR needs to be set at or above the level of our international peers if we are to remain internationally competitive and a vital member of the international community, rather than lose the capacity to participate in the global research enterprise along with the benefits for Australians from that participation.
- Second, as we have argued elsewhere in a joint submission to the NSW Review of Health and Medical Research with our fellow universities in NSW, the interface of research with the health care system needs strengthening. The current arrangements for base funding and infrastructure support in the universities, medical research institutes (MRIs), and hospitals are fragmented, lack consistency and discourage partnership and participation in research by health practitioners. Our success in

<sup>4</sup> Recent reports include, Deloitte Access Economics report for Australian Society for Medical Research, Returns on NHMRC funded Research and Development. October 2011, and Access Economics for the Australian Society for Medical Research, Exceptional Returns: The Value of Investing in Health R&D in Australia II. Canberra, June 2008.

<sup>5</sup> Excellence in Research for Australia: 2010 National Report. [http://www.arc.gov.au/pdf/ERA\\_s1.pdf](http://www.arc.gov.au/pdf/ERA_s1.pdf)

<sup>6</sup> NSW Health and Medical Research Strategic Review, Fact Base. Australia's spend as a percentage of GDP is lower than comparable countries (p.98)

<sup>7</sup> OECD Science, Technology and Industry Scoreboard 2011: Innovation and Growth in Knowledge Economies (p.76)

collaborative and translational research and developing research ‘hubs’ within the health system is occurring in spite of present structures. Enabling structures would greatly increase productivity in research and health outcomes.

- The critical interdependence of universities, MRIs and hospitals should be recognised by reforms that would encourage partnerships between them and embed a research culture in the health system.
- An important enabling structure would be the establishment of *Advanced Health Research Centres* (AHRC), similar to the Academic Health Science Centres/Networks that have been highly successful in the North America and the United Kingdom as a strategy to improve the performance of and impact of health and medical research. Such vibrant and flexible workplaces allow “porosity” between roles and partners, enabling seamless movement that generates increased opportunities for high-quality training and career development of researchers and health and medical workforce.
- As clusters of physically co-located partners – in cities and regional areas – the AHRC could be an ideal medium through which to actively engage HMR providers with the local community and health care consumers.
- In the workplace more broadly we argue that a more rational strategy is needed to develop and sustain flow into and through postgraduate training, to early- and mid-career researcher roles across the sector. Investment by the National Health and Medical Research Council (NHMRC) has led to significant growth in entry to research through a variety of people support mechanisms, yet these have been poorly joined-up with mechanisms to retain and nurture successful younger researchers through entry into stable research-active roles in the institutions of the system.

**Question 2. How might health and medical research be best managed and funded in Australia?**

*TOR 2. Current expenditure on, and support for, health and medical research in Australia by governments at all levels, industry, non-government organisations and philanthropy; including relevant comparisons internationally.*

*TOR 3. Opportunities to improve coordination and leverage additional national and international support for Australian health and medical research through private sector support and philanthropy, and opportunities for more efficient use, administration and monitoring of investments and the health and economic returns; including relevant comparisons internationally.*

*TOR 7. Examine the institutional arrangements and governance of the health and medical research sector, including strategies to enhance community and consumer participation. This will include comparison of the NHMRC to relevant international jurisdictions.*

- HMR should be developed and managed according to an agreed, long-term, sustainable strategy that is an integral part of Australia’s overall strategy for research.
- The HMR system has unique features and assets. First, it underpins our aspirations for health and for development and reform of the health system. This necessitates strong engagement with HMR by health portfolios at state and Commonwealth levels of government. Second, some of its strongest parts are independent MRIs that provide a strong focus for public support for HMR, and that exist in immensely valuable interdependent relationships with university and hospital-based researchers.
- The costs of research are funded inconsistently in the various participating institutions and are not fully met anywhere. Incentives in existing schemes, especially for infrastructure support, are often in conflict and undermine important relationships. Significant progress has been made in the universities towards addressing the gap between the true costs of research and its funding through the Sustainable Research Excellence (SRE) initiative and improved indexation. The SRE is now coupled with a reasonably robust framework for assessing quality of output, the Excellence in

Research Australia (ERA) scheme. We urge the Review to endorse these measures that address the funding gap and quality assessment and to advocate the application of their principles across the sector. However we also urge, as previously<sup>8</sup>, that further attention must be given to reform of base-funding to the university sector on a principle basis that recognises research as a core activity.

- The recent national reforms to governance and funding of health care through the National Health and Hospitals Agreement (NHHA) offer a further major opportunity to rationalise investment in HMR across jurisdictions and locations. We have argued above and elsewhere<sup>9</sup> for strengthened relationships between the various players in HMR through support of Advanced Health Research Centres and evolving research 'hubs'. Medicare locals become a significant new player through the health reforms, extending these potential research partnerships into the community and primary care.
- We urge the Review to recommend clarification of the respective roles of the Commonwealth and the states in a federated health and medical research system. This role clarity is going to be particularly important under the imminent reforms to the funding of teaching and research in the public hospitals under the National Health Reforms – the financial reform legislation that has just been introduced to Parliament (*Federal Financial Relations Amendment National Health Reform Bill 2012*). This Bill is based on a clear partnership role in the funding for hospital teaching and research.
- Given the above trends and opportunities, we question whether the present separation of HMR management between higher education and health portfolios serves the sector or its mission well. Further, we strongly encourage the Review to compare research investment and management processes between these portfolios (specifically the Australian Research Council (ARC) and NHMRC), and with international examples considered to reflect best practice.
- Consideration is needed of the different approaches to grant application and evaluation by the ARC, NHMRC and international equivalents to achieve better outcomes for the Australian research enterprise overall and HMR in particular. Our NHMRC-funded researchers, many of whom devote considerable effort to its peer review processes, express concern that these are inefficient, are supported by inadequate IT and data handling systems, and as a result deliver a poor return for effort by applicants, reviewers and panellists.
- We recommend review of existing Australian incentives for philanthropic support of research and venture capital support of research application to determine if they are internationally competitive.
- Finally, action is needed to address the now unsustainable gap between the costs of employment of research staff and the funding provided for projects through NHMRC Professional Support Packages (PSP). This shortfall is now more than 30% and threatens to exclude all but the most junior research staff working on NHMRC projects, and will drive research to workplaces with the lowest remuneration, which will ultimately lead to a degradation of the research workforce and its productivity.

**Question 3. What are the health and medical research strategic directions and priorities and how might we meet them?**

*TOR 5. Likely future developments in health and medical research, both in Australia and internationally.*

*TOR 12. The degree of alignment between Australia's health and medical research activities and the determinants of good health, the nation's burden of disease profile and national health priorities, in particular "closing the gap" between indigenous and non indigenous Australians.*

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<sup>8</sup> [http://sydney.edu.au/about/government/submissions\\_2011.shtml#BFR](http://sydney.edu.au/about/government/submissions_2011.shtml#BFR)

<sup>9</sup> [http://sydney.edu.au/about/government/submissions\\_2011.shtml#NSWHMR](http://sydney.edu.au/about/government/submissions_2011.shtml#NSWHMR)

*TOR 13. Opportunities for Australia's health and medical research activities to assist in combating some of the major barriers to improved health globally, especially in the developing world.*

- The following trends are striking in the current HMR landscape and are set to gather pace. First, the so-called “omics” revolution in biologic understanding of the genetics and molecular biology of human disease is transforming every area of biomedicine and will continue to in the coming decades. These insights are illuminating much of the heterogeneity of causation of common complex diseases, by revealing the differing susceptibility and pathogenesis processes behind them. Cancer is set to be an early beneficiary of this approach, with complete analysis of tumour genomes revealing new, targetable cellular chemistry, and a more rapid pathway from basic research to clinical drug development. Complete analysis of the genomes of microbes and parasites, together with that of the host will prompt novel approaches to prevention, diagnosis and therapy of infectious disease. And chronic degenerative diseases will yield progressively to specific therapies based on better-characterised causative mechanisms.
- These developments are simultaneously understood and misunderstood by the term ‘personalised medicine’. The term is true to the extent that it captures how a more nuanced view of all disease at the level of the individual patient will make all diagnosis more accurate and treatment more predictable. It is misleading on two grounds. First, it actually arises from a massive increase in the scale of analysis in much HMR, where very large sample sizes, indeed whole populations are now the necessary object of study. Second, it can be taken to imply vast proliferation in treatment strategy, dependent on high technology. This revolution has the potential to substitute relatively cheap DNA and other biomarker analyses for many presently ineffective and costly investigations, and will offset costs by rendering clinical medicine much more accurate and its treatments more effective.
- Since the health problems of developing countries are set to recapitulate the recent history of societies such as ours, with spiraling expenditures on chronic diseases, these revolutions in biomedicine need to be applied as rapidly as possible there as well. So when we invest in the research base of more accurate, mechanism-driven clinical medicine in Australia we also benefit our neighbours and partners in the less-developed world.
- The second major trend in HMR is the mobilisation of the social and behavioural sciences to analyse the determinants of health and its consequences for national welfare. This is part of the deepening multi-disciplinarity of HMR and a reflection of its ambition to understand health at levels ranging from the particularities of individuals, households and workplaces, to entire societies and populations.
- Within the above-described trends, clinical practice and the health care system itself have become key objects of study, with the disciplines of health services and health policy research essential to developing and implementing effective and affordable evidence-based responses to health problems.
- Both of these major trends have been driven in part by new or intensified engagement from disciplines outside traditional HMR – mathematics, engineering, economics and sociology among them. And a key feature of both trends is that progress in all disease groups is being enabled by platform developments in technologies (genomics, biobanking, imaging) and approaches (large cohorts, data linkage). Priority setting around all but the largest disease groupings (eg cancer, mental health), though highly responsive to stakeholders (affected patients, their families and charities) has been less obviously responsible for this overall progress.
- Finally, as a nation we still struggle to overcome the legacy of dispossession and disadvantage in the disastrously poor health of indigenous Australians. Equal access to the benefits of even the HMR we already have is an unachieved goal of our current health strategy. Intensified effort and investment is required to ensure that the promise of the trends just described is realised for indigenous and other disadvantaged Australians.

- We recommend that priority setting in HMR be used principally to channel effort to areas of insufficient, lagging or missing capacity (on a platform or disciplinary basis), and to force new or re-balanced engagement with problems neglected in the HMR marketplace (eg indigenous health). However this is additional to, not a substitute for nurturing the overall capacity and flexibility of our HMR institutions (universities, MRIs and hospitals) to address our health burdens over the long haul, whatever they may be.

**Question 4. How can we optimise translation of health and medical research into better health and wellbeing?**

*TOR 4. The relationship between business and the research sector, including opportunities to improve Australia's capacity to capitalise on its investment in health and medical research through commercialisation and strategies for realising returns on Commonwealth investments in health and medical research where gains result from commercialisation.*

*TOR 8. Opportunities to improve national and international collaboration between education, research, clinical and other public health related sectors to support the rapid translation of research outcomes into improved health policies and practices. This will include relevant international comparisons.*

*TOR 9. Ways in which the broader health reform process can be leveraged to improve research and translation opportunities in preventative health and in the primary, aged and acute care sectors, including through expanded clinical networks, as well as ways in which research can contribute to the design and optimal implementation of these health reforms.*

*TOR 10. Ways in which health and medical research interacts, and should interact, with other Government health policies and programs; including health technology assessments and the pharmaceutical and medical services assessment processes.*

*TOR 11. Ways in which the Commonwealth's e-health reforms can be leveraged to improve research and translation opportunities, including the availability, linkage and quality of data.*

- Several of our responses to the previous questions come together to address this lynchpin question of how to translate HMR into better health. A large part of the solution lies in embedding a research culture in the health system more broadly, and providing policy and funding incentives for researchers and health services (public, private and public health) to constantly seek to improve patient care and broader health outcomes through communication and education.
- As discussed above, the Advanced Health Research Centre concept, that has been so successful in North America and parts of Europe and the UK, is one strategy that has great potential to make a difference in this area. The Commonwealth has the opportunity not only to designate and fund a suitably limited number of such centres, as flagships of a reformed, knowledge-driven health system, but to use the national health reform agenda to foster partnerships of hospitals and other health provider networks with universities and MRIs at smaller scales, ie research hubs.
- Such centres, networks and hubs would create opportunities to broaden research training and engagement by clinicians, in partnership with biomedical and public health scientists, health service researchers and researchers in non-traditionally HMR disciplines. They would not only facilitate current funding schemes to secure clinician-researcher development (eg Practitioner Fellowships), but through clearer governance and commitment to research as a core function, would help address declining participation by clinicians in research.
- Our comments on trends and priorities have highlighted the key role of research into the health system, service delivery and implementation in realising the benefits of HMR. They also addressed the critical role that expanded, population-level platforms have played in progress in understanding the determinants of health, especially genetics and genomics. Few such platforms are as powerful in driving research



translation as data linkage, bringing together events and outcomes for individuals at a scale large enough to illuminate whole communities, populations and the outputs of our health system and policies. The power of Australia's current HMR capacity, and of much related social and economic research, will be multiplied by commitment to full implementation of e-Health measures, data linkage at research data quality standards, and support for sufficient capacity to meet and facilitate requests for data from researchers.