Submission to the Inquiry into Health and Medical Research in South Australia

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Background and Context

The School of Psychology trains students across undergraduate and postgraduate programs. At the postgraduate level, the School offers training to become a registered psychologist in Clinical, Health and Organisational psychology. Through studies conducted by students at Honours, Masters and PhD level, we train researchers across a wide range of specialist health and medical research projects. The School comprises 20 research-focussed academics involved in projects that span the body of health, medical and biomedical research. Our research groups work within the areas of neuroscience and brain health, mental health of refugee populations, maternal and paediatric health, education of allied health workers, primary health care delivery, cancer, renal health/diabetes, bowel cancer, palliative care and health in developing countries. Researchers from the School have developed entire health translation approaches in developing nations including Indonesia.

"Psychological research can be thought of as a *catalyst to the translation of innovative biomedical breakthroughs* into real clinical outcomes. "

Our researchers work in multi-disciplinary teams on public health projects related to screening for bowel cancer, treatment of needle phobia, immunization decision making and treatment decision making more broadly. All of these projects are contributed to from a pool of approximately 150 clinical title holders and visiting research fellows appointed within the school. Many of these honorary appointments are with clinicians working across the health and medical sector. One strength of the School is that we have several staff appointments with people who were previously senior clinicians in the health services in South Australia – we draw upon their links and knowledge to ensure our research is relevant. We also have new and developing projects working at the intersection between environmental concerns, physical and psychological wellbeing (also linked to Planetary Health) and psychological impacts of bush fires. These projects, along with the many that are ongoing, have the potential to increase the research income of the State by developing novel technologies, therapies and methods to address new global health challenges brought about by climate change.

This brief description captures only some of the broad array of work that uses psychological science to understand human behaviour to improve and protect the health of the human population.

We welcome the opportunity to contribute to the Inquiry and our responses are based upon a survey of researchers within the school as well as the clinical title holders and visiting research fellows that support and collaborate with us in our work.

We address questions regarding the **Policy Environment, Measurement and Data, Workforce, Translation of Research, Access to Data, Competitive Advantage: Location, Competitive Advantage: Population, Competitive Advantage: Clinical Trials, Competitive Advantage: Collaboration and Precinct**. We provide some relevant examples to illustrate the challenges to increasing the productivity of the health and medical research sector in South Australia.

3.1 Policy Environment

Is there alignment between state and national policy and research priorities?

State and national research policies and priorities are generally well-aligned and it is recognised that there should be an opportunity to pursue priorities that are particularly relevant to the state given the features of the South Australian population and the unique mixture of environmental, genetic and geographical parameters of the health problems that we face.

How should HMR research priorities be determined?

Research priorities should be a mix between research initiated (according to the strengths of the researchers in SA) and priority driven (according to the needs of the State).

In both cases the underlying principle is that the research should be internationally competitive where the South Australian researchers can make a unique contribution. Often it is via national initiatives or calls for funding (for example, through the MRFF) that strengths are identified, albeit sometimes after the initial lobbying for research funding has occurred interstate. Interstate investment in health and medical research is substantially greater than that within South Australia. For example, in the recent COVID-19 pandemic, the Western Australian government has put in $3 million in research funds for local researchers to address the immediate need to investigate the many questions and challenges posed by COVID-19. In summary, research priorities need to be determined by the strengths that exist in our state currently and the future health challenges we are likely to face both locally and globally. Current predictions suggest that pandemics caused by ecological degradation are likely to increase rather than decrease[1] .

Research priorities can often be driven by innovations in the development and availability of technology. If there were a true innovation culture with new technologies made available to researchers in an open way – then the research scale and focus would follow. The University of Adelaide, in particular has specialist centres and researchers who would be able to contribute to the development of the new technologies that will transform health innovation. In particular, the co-location of the Australian Institute for Machine Learning and the Adelaide Health Simulation facility are both potential catalysts for developing a health technology industry in South Australia. The missing ingredient is the funding required to develop these industries.

How efficiently are regulatory arrangements administered?

The overwhelming response to this question from our staff and stakeholders is that within individual research institutions – regulatory arrangements are efficiently administered. The problem, however, exists at the level of external organisations and their involvement in the compliance processes. There are often difficulties in obtaining agreement on timelines for checking compliance and this can greatly hinder the timeliness and scope of research undertaken.

How significant is the compliance burden on researchers/institutions?

The compliance burden is minimal within institutions but can be substantial in partner organisations depending on the views of management regarding the value of research projects (see below).

What is the potential for further simplifying or streamlining current HREC approval processes?

A consistent complaint and barrier to productivity in research has been presented by the regulatory arrangements regarding ethics approvals and governance of human research trials in primary and secondary health settings. Mutual acceptance has helped, but has not eliminated these problems and it may be important to recognise that the NHMRC would favour single national ethics committees for multicentre trials – however, this has not been realised. For low risk research – this should be possible to achieve. Much psychological research – involving questionnaires, interviews and non-invasive interventions would fall into this category and thus be greatly facilitated by a streamlined nationally harmonised approach.

The issue of compliance burden is *not* the problem identified by researchers, rather it is the time taken for ethics approvals to be processed as a function of governance reviews undertaken by each individual health unit or organisation involved in a trial. This greatly decreases the opportunity for research students to be involved in projects (thus limiting their training opportunities) – as their candidatures are strictly time limited and must be completed on-time to allow the University to be funded via the Commonwealth Research Training Scheme. In summary, relieving individual health units from having to do compliance and governance checks, by harmonising the approvals for psychological research could both give back time and resources to the health system and increase research student participation in projects.

4.1 Measurement and data

What are the limitations of the Commission's suggested measures?

Reliance on bibliometrics is a major weakness in the assessment of productivity of research. This is a particular problem when assessing research in the health and medical sector. Among many problems, the key limitations are that author self-citations and reciprocal citing by colleagues often inflate citation counts. Although a number of metrics correct for this there are still issues with groups citing one another and failing to cite appropriately when reviewing research. A more pervasive problem is that citations do not

reveal evidence of research impact such as synthesis into clinical applications or public health outcomes. It would be valuable to move away from citation counts toward assessment of research engagement. In particular, qualitative assessment of research engagement can described the value of research in terms of it's benefit to the broader Australian community. This cannot be indexed by citation counts or similar metrics. Similarly, clinician and consumer involvement in research from inception to translation is a good indicator high quality health and medical research.

What other definitions and data could be used for measurement of inputs, outputs, productivity and impacts in HMR?

As noted above the procedure used to measure research engagement by the ARC involves submission of case studies to illustrate how the research conducted has resulted in tangible outcomes for end users of research. These narratives detailed the extent and manner by which research has engaged government, industry and community in the definition, conduct and implementation of research outcomes. Examples of the submissions can be viewed at: https://dataportal.arc.gov.au/EI/Web/impact/ImpactStudies#/20/3

A further useful metric for evaluation of the productivity of HMR research is the relative percentage investment in research from Category 1 research funding sources compared with investment from end users of research (Category 2 research funding). To standardise this metric it can be normalised by FTE staff across institutions. An organisation performing well and producing research with impact will show a mixture of Category 1 and Category 2 funding.

5.1 Workforce

What strategies are being used by institutions to attract talented researchers and postgraduates and how successful have they been?

It is an reality that the relatively small population and the amount of research funding available in Australia has meant that it is difficult to attract and retain the best and brightest individuals to Adelaide. A successful strategy has been to 'recall' known researchers who have personal connections to Adelaide after they have established their research and career in other parts of the world. The pool of individuals for whom this is a reality is limited however, and as such it is a more effective and efficient strategy to foster and retain 'homegrown' talent. In that regard, an effective strategy is to offer early and mid-career fellowships that are 'tied' to the State.

Are there barriers to clinicians participating in research? How can any barriers be addressed?

There are definitely barriers to clinicians who are not employed by universities or research centres, participating in research. Depending on the discipline, some clinicians do not have the desire or the skills to participate in research. For those that have the necessary desire and skill the barriers are often around gaining support from management to

undertake research. It is not typically seen as core business and therefore clinicians are not given time to undertake research – anything they do is often done in their own time. They are often also provided with no resources in terms of necessary equipment or funding and sometimes there is reluctance if the research would involve staff or the service's client group.

Opportunities to undertake further training or to attend conferences are often very limited in terms of time and funding and so any support that could be given to increase this would greatly increase the impact and scope of the research that could be carried out. However, a core factor to address is the relationship between the university sector and service providers. Joint appointments and reciprocal arrangements that enable a cross-over of skills, knowledge and time, may be one way to address limitations for both sectors, in (a) producing translational research and (b) ensuring a teaching/training and research nexus is maintained and enhanced. Such appointments would recognize research as part of workload, and appropriate output metrics would be part of the position description in relation to research activity.

If research was seen as a valuable endeavor for clinicians that can aid developments in the field, grow and develop the clinician and their colleagues and continue to better service outcomes, that would be a good first step toward removing barriers. This may mean that clinicians would gain the support of management and at a minimum be given a little bit of time to undertake research.

What connections are there between SA Health and university workforces and how do these affect recruitment and retention of HMR researchers?

In Psychology we have many clinicians, who as title holders, are keen to try to find ways to be involved with research and/or teaching, despite barriers as outlined above. One way in which clinicians try to overcome some of the barriers to research is to offer to co-supervise research theses alongside academic and research staff at the University. These clinicians may not have the time or resources to conduct their own independent research, but are willing to share their time and expertise to support a student to undertake a project. This enables them to explore areas of importance and to maintain research skills, contribute to the development of future researchers/clinicians. The impact on recruitment and retention of HMR researchers has not been quantified, however, anecdotally, some clinicians do leave clinical work for an academic role where they can conduct and contribute to research, and some clinicians undertake a PhD, or secure roles in research teams in hospitals and SAHMRI, to contribute to research.

In terms of current relationships with the SA Health workforce – there are many researchers within the school who make contributions by conducting research with specialist research units in SA Health. An example is the work of Professor Anna Chur-Hansen, and the INJECT SUCCESS trial being carried out with the Central and Northern Adelaide Renal and Transplantation Service (CNARTS). This important work aims at improving the management of needle fear during the journey to dialysis using psychological education and training. It has the potential to greatly improve the lives of people suffering

from kidney disease. If this program of work were expanded it could increase the opportunity to train researchers in an interdisciplinary research project, this then ensures that researchers have better success in developing research programs that include clinicians.

5.2 Access to Data

Is the current regulatory environment at the national level conducive to data generation and sharing?

The volume and depth of analysis that is now possible for researchers to carry out is unprecedented as a result of greater accessibility to primary and secondary health data. This is particularly relevant to Psychology research projects as they often require application of a bio-psych-social model to provide comprehensive information about the psychological effects of particular treatments and approaches to health. Despite these opportunities there are still significant barriers in the regulatory environment that impact research productivity.

One of these is a lack of a transparent and unambiguous governance framework. Ideally this would be designed to address the ethical concerns around the many uses of primary and secondary data as well as the issues around multiple uses of linked datasets. As highlighted in the debate about the My Health record – many Australians are sceptical about the capabilities of the government to protect privacy and misuse of their data. These ethics and data management problems need to be addressed whilst keeping in mind the significant benefits that can be gained by the health researchers and consumers when anonymised de-identified linked datasets are used by researchers in highly secure environments to inform clinical and health research and evidence-based healthcare policy.

What types of data are important to share in HMR?

For Psychology, data usually consist of measures on standardized instruments and tests, however, in the School of Psychology at Adelaide, a significant proportion of the work being done uses qualitative, interview-based data. This type of data can present a particular challenge in maintaining anonymity as there may be topics of discussion, uses of language and detail that makes the identity of the participant easy to discern. Additional consideration should be given to the implications of this type of data in any sharing arrangements so that projects can be conducted and information shared to the benefit of clinicians, policy makers and researchers. Sharing data also increases trust in the results – by ensuring replicability of analysis techniques and findings.

What data related bottlenecks constrain HMR and what can be done to remove them?

A major issue here in South Australia is that there is legislation required in relationship to data linkage which would give reassurance to external jurisdictions about the confidentiality of data imported into the state which has never been enacted. That does not mean we cannot link data as per SA NT data link, but it does ensure that we comply with the privacy and data protections implemented at state and national levels.

From a broader perspective – much could be done to increase the opportunities highlighted by the collaboration and data sharing mechanisms embraced out of necessity during the COVID-19 pandemic. It is clear that data sharing platforms – of the type that could

be administered and managed by BioMed City, would greatly enhance the scale and scope of research in South Australia.

For example, shared brain imaging data could greatly enhance our neuroimaging and neurotechnology industry. Developing machine learning approaches for precision medicine requires large amounts of data. Data sharing requires the development of standardised protocols across a range of modalities (neuroimaging, neurostimulation, cognitive testing, blood/saliva collection) to harmonise data collection amongst members of research groups, thereby establishing large healthy and disorder-based cohorts. Such cohorts not only maximise value-for-money in data collection, but will provide unique collaborative opportunities between South Australian researchers and teams specialising in big data analysis at Australian Institute for Machine Learning – and internationally. Having a centralised team to ensure adherence with State and Federal data management and privacy legislation is critical to the potential for expanding data sharing in the South Australian context.

5.6 Translation of Research

Is there potential to enhance translation of SA based research into health care policy and practice in SA and how can this be realised?

Much of the work done in the School of Psychology has been translated into health care policy and practice within South Australia. For example, work by Professor Deb Turnbull has lead a clinical trial assessing STan intrapartum fetal monitoring (cardiotocographic plus electrocardiographic) compared with cardiotocographic (CTG) monitoring alone[2]. This technology has the potential to reduce negative psychological and physical outcomes of complications during birth and is nationally recognised as a breakthrough in maternal care. The realisation of this translation of research into policy and practice in South Australia is a function of the interdisciplinary models developed by Professor Turnbull and her team. Training researchers in these ways of working could help to realise the potential of excellent health and medical research in South Australia.

Is there potential to increase the quantity and quality of clinical trials conducted in SA?

There is a great potential to increase the quality and quantity of clinical trials in SA with the realisation of the BioMed City project. The potential however, needs to be increased via careful selection of trials for ensuring that the likelihood of success is high and that the outcomes will be quickly developed into policy and practice in SA.

Translation of research outcomes into clinical outcomes is driven by conducting clinical trials in primary health care settings. Public hospitals should see clinical trials as part of care business giving further options for patients. Therefore they should be bear some of the infrastructure costs so that SA can be competitive in the costs per patient of tendering for trials. For example, trial funding should not have to bear say the cost of utilities (power, cleaning etc.) and there should not be additional excessive hospital pharmacy dispensing fees for trial medication. Further reimbursement for investigations should be provided where those investigations that are in addition to routine care. With the initiation of Adelaide BioMed City some of these issues may be addressed, this is but one facility to serve

the entire sector. More needs to be invested to extend the possibilities for clinical trial facilities in the Northern and Southern areas. It is not as yet clear that BioMed City will result in better translation of research into clinically relevant outcomes for South Australians.

What opportunities are there to increase commercialisation of HMR in SA?

The opportunities presented by start-up incubators such as ThincLab at the University of Adelaide and the co-location of Lot14 near the University may help to ensure that researchers come in closer contact with companies what might which to commercialise their research into applications. However, in South Australia there is a definite limitation in terms of scale and venture capital availability. South Australian companies are often required to go interstate and overseas to seek capital investment in their commercialisation plans.

5.8 Competitive advantage - Population.

The advantage here is that Adelaide is the closest we have to a City State with the majority of the population and resource centralised in Adelaide. The relatively well-defined health networks, with populations located within easy distance from the major research facilities greatly reduces the costs associated with travel to and from data collection facilities.

5.10 Competitive advantage - Clinical trials

South Australia does not have an advantage in clinical trials because of a small population and little infrastructure support in the public hospital system (see above). The Universities and state government have attempted to remedy this situation (Adelaide BioMed City), however, the difficulty will remain with regard to the relative size of the population (and the special populations within SA required for particular types of health and medical research). As yet, it is too early in the life of Adelaide BioMed City to determine the extent to which the new opportunities presented by this facility will boost the research productivity of our School. The critically important aspect will be whether or not the funding model is sustainable in the current economic climate.

5.11 Competitive advantage: Collaboration and precincts

The precincts and collaboration opportunities in South Australia are an important issue for health and medical research contributed to by the School. SAHMRI was a great initiative funded by the major research universities and the original intention was that it was going to be a shared joint resource until there was an edict that it had to become a self-funding entity. With this requirement there were flow-on consequences for the collaborative

dynamics within the State. SAHMRI has now become a competitor for funds against the institutions that were funding them – including the Universities. Although many researchers have trained at the University of Adelaide and now lead research teams within SAHMRI, the collaborations that have been formed have been limited.

One consequence of that for researchers is that the State Government used to be the key source of partners on grants such as NHMRC Partnership grants and ARC linkage grants which leveraged the contribution several fold and increased the success rates for funding. Since the establishment of SAHMRI, the response from SA Health when approached to be a research partner on a grant is that their research dollars go to SAHMRI and they have no capacity to support other groups. Given that SAHMRI is an NHMRC recognised institution it cannot be a partner, so that creates a barrier to finding partners for health and medical research in South Australia.

South Australia can have a competitive advantage due to the focussed networks of researchers in the state with access to unique facilities. Looking ahead SA will have the first proton beam accelerator in the state, so it would make good sense to create research infrastructure (including patient experience and psychosocial research) around that unique facility. Further, there is potential to better utilise and harmonise the facilities available within each of the universities. Within the area of neuroscience research the opportunity to leverage the existing facilities within SAHMRI. Better organisation and leadership of research networks across the universities could capitalize on the world-class neuroimaging and neurostimulation facilities available at SAHMRI (3T Siemens MRI, PET + radiochemistry, TMS, EEG) to establish novel, multi-modal approaches for investigating brain function. This would leverage the existing network of neuroimaging/neurostimulation equipment already available across different laboratories in Adelaide to facilitate large-scale, collaborative data collection projects.

References and Example Papers and Links

[1]Bogich, T. L., Chunara, R., Scales, D., Chan, E., Pinheiro, L. C., Chmura, A. A., … & Brownstein, J. S. (2012). Preventing pandemics via international development: a systems approach. *PLoS medicine*, *9*(12).

[2]Benton, M. R., Salter, A., Simpson, B., Wilkinson, C., & Turnbull, D. (2020). A qualitative study of a sample of women participating in an Australian randomised controlled trial of intrapartum fetal surveillance. *Midwifery*, *83*.

INJECT Success Trial: https://www.rahresearchfund.com.au/get-involved/donations/eskd/eskd-research/