Building quality in health — the need for clinical researchers*

Graham V Brown and Tania C Sorrell

ABSTRACT

- Integration of research and education into health care delivery leads to improved outcomes and facilitates rapid translation of results into policy and practice.
- Australia is at great risk of losing the important contribution of clinical research conducted in our public hospital system. This risk is increasing as research and educational training are targeted for expenditure reduction in the current business models of health service delivery, which focus only on short-term outcomes.
- The Centres of Clinical Research Excellence Scheme — initiated by the National Health and Medical Research Council (NHMRC) — is an excellent step towards redressing this problem, but it cannot succeed in isolation.
- We must improve and optimise care through promotion of attractive sustainable career pathways to provide strong clinical and translational research capabilities in hospital settings that address current health priorities and new disciplines.
- Targeted investment in talented people is the greatest long-term contribution that governments can make to guarantee quality in national systems of health.

MJA 2009; 190: 627–629

Australia has achieved health indices that are among the best in the world, with a mixed public–private system and a health workforce trained predominantly with substantial government support of education and health. It is essential to ensure that the excellent past performance is sustained through appropriate attention to training of the next generation, who will translate knowledge into improved patient outcomes. The almost exclusive emphasis that is now being placed on service provision in hospitals, without accompanying attention to education and research, could put that record at risk.[1] It is, however, reassuring that the nation is showing determination to address the major exception to a good report in health — Indigenous health.

The 10-year health trends for Australia and the developed world suggest that we are likely to be managing large numbers of older patients with chronic diseases, with more demand for "personalised" medicine and information that enables patients and families to participate in management. There will be increased use of very expensive technology, and practitioners without full medical training (eg, psychologists, practice nurses, nurse practitioners and physician assistants) will take more active roles. Hospitals will promote shorter stays, greater efficiencies, more open displays of outcome data, and a response to community demand for quality and safety (Box 1). If societal pressure leads to increasing emphasis on community, more attention will be given to areas of extreme need for under-served populations, particularly Indigenous populations.

Encompassed within these trends, and leading them, is a new generation of leaders who require evidence to justify change. Hospitals see the need for research into their own business (health services research) as a higher priority than clinical or translational research that is likely to lead to improved medium- or long-term health outcomes. Hospital executives in the public sector do not have financial incentives to be innovative leaders in clinical services or to provide conditions that attract the world's best practitioners.

In Australia, the first clinical academic departments of universities were established in the mid 20th century,[1] some 50 years after their counterparts were promoted in Europe and North America.[2] Until the late 1970s, it was generally accepted that the public hospitals had an important role to play in training the medical workforce of the future. With increasing trends towards payment based solely on the services delivered, public hospitals are seen by some as business units of state health service delivery units, with minimal acknowledgement that education and research are essential for improved health outcomes.

Clinical academics are the "threatened species" of medicine.[3] Perhaps extinction of this species is an unintended consequence of assets being stripped from public health and education, but not compensated for by research and educational training programs such as those in the United States. The effects of weakening and undermining these foundations are not immediately visible, but they weaken the system in the long term. A strong case has been put forward in the United Kingdom for the National Health Service to promote research and an environment that enables people to undertake research.[4] It has further been argued that academic centres that provide service delivery contribute to improved health outcomes in the short and longer term. Application of the philosophy of "no service without research" facilitates the process of researchers and practitioners co-creating relevant knowledge to improve health outcomes.

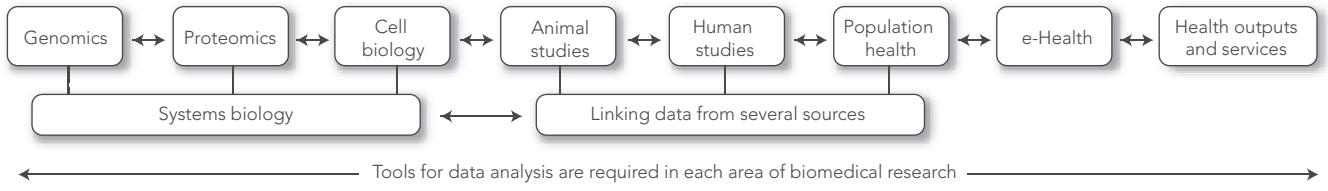
Better patient outcomes are achieved in academic clinical settings because of closer attention to protocols, delivery of better care in a clinical trial setting, and ready access to new interventions provided by health care practitioners with experience in their benefits or side effects.[5] In an environment that facilitates interac-

1 Changes in emphasis for hospitals[1]

- Shorter hospital stays
- Greater focus on costs
- Less emphasis on capacity building
- Research can be considered an extra
- No financial incentives to be world leaders in clinical services, or to provide conditions to attract world's best practitioners
- Possible increases in privatisation
- Quality and safety focus
- Safety and service framework
- Clinical governance
- Open display of outcome data
- Requirement for evidence to lead change
- Need for "health services research" ◆

*This article is based on a presentation given by Graham Brown at the Clinical Research Excellence Conference 2007 (CRX07) in Melbourne.

2 Translational research: a bi-directional iterative process*



*Translational research is often considered to flow from basic science discovery to products. Clinical research for improved health also supports "right to left" discovery, and requires data linkage and domain knowledge from genomes to populations. ◆

tion between research and clinical practice, collaborative projects and programs can be developed. These allow patient-focused questions to be addressed and research translation that takes local health care settings into account. Furthermore, it has been clearly shown that Australia has benefited in economic terms from investment in medical research.[5]

Translational research: a bi-directional iterative process

Biomedical research is a spectrum — from genetics through to protein products, laboratory-based cell biology, animal studies, human studies, population health and individualised medicine — that continually undergoes transition, most recently with the advent of "e-health" (Box 2). Translational research is an iterative process, from molecules to medicines to millions, but discovery and application are just as important in the other direction, from populations to patients to genetics. It is a high priority to develop systems for linking datasets from different areas of research and service, to allow the best decisions to be made for patient care and to facilitate research. Integrating a research culture into patient management must be acknowledged by both hospital managers and government bodies as a vital component of good patient care.

Professional priorities are changing

New generations of clinical researchers acknowledge that their training is lengthy, with specialist and PhD qualifications adding 7 and 3–4 years, respectively, following a long medical course. International students and fee-paying local students, who start their careers with large debts, are unlikely to take up financially unrewarding positions in academia or clinical research. Thus, the pool of potential researchers to keep Australia at the forefront of clinical care is diminishing. Targeted investment in talented people is the most effective long-term strategy to strengthen our national health systems, and is essential for a workforce that is well prepared to tackle new and emerging problems.

Centres of Clinical Research Excellence

The initiative of the National Health and Medical Research Council (NHMRC) in creating Centres of Clinical Research Excellence has been an important mechanism for enhancing the quality of clinical research in Australia and mentoring a new generation of clinical academics. The intent of the program is to reward successful clinical researchers and expand their potential to produce high-quality research, provide high-quality clinical research training, and translate research findings into health policy and improved health outcomes (Box 3).[6] The Centres provide career-based training in patient-oriented research for investigators, support staff, trial managers, and leaders in disciplines including nursing, pharmacy, physiotherapy and social sciences. They have already enriched local academic environments, provided initial funding for investigators to develop autonomy and independence, and contributed to developing the capacity of the Australian pharmaceutical industry to conduct trials initiated by investigators and industry. The mentoring role for students has been important, and funding has enabled increased investment, and improvements in study design and analysis.

Need for strengthening new disciplines

Infrastructure for the clinical research that is undertaken in public hospitals for the good of all Australians is absolutely crucial. We need strength in newer disciplines such as pharmacogenomics, health informatics, mathematical modelling, systems biology, genetics and general evidence-based medicine. Australia must be able to respond to national priorities, such as an ageing population, obesity, increasing prevalence of diabetes and osteoporosis, Indigenous health, disability, mental health, quality and safety of medical care, and effective and safe use of medication. We should also demonstrate our concern for the health of others in our region through participation in interactive programs that address health problems in developing nations. We need strong leadership in a national medical research framework that contributes to conduct of research in public and appropriate private hospitals, and favours partnerships among federal, state and territory governments. The NHMRC Partnership Projects scheme could be an important part of this medical research framework.

Industry should also encourage governments to support research and innovation that will generate new products. We need to support exchange programs with industry, and encourage research contracts with industry that provide scientific outcomes that lead to publication in high-impact journals. We need to encourage all clinical practitioners to contribute to this field, and support infrastructure development to enhance Australia's capacity

3 Aims of the National Health and Medical Research Council (NHMRC) Centres of Clinical Research Excellence Scheme[6]

- Support clinical (human) research with potential to lead to improved health outcomes
- Foster training of clinical researchers, particularly those with a capacity for independent research
- Ensure effective translation of research outcomes ◆

for analysis so that we are not just an outpost for large international organisations.

To encourage career development for academic clinicians, particularly women, shorter career pathways are urgently needed for trainees in hospital-based research. Attempts must be made to reduce the salary gap between academia and private practice, and further analysis of successful interactive "MD PhD" programs will help to determine their relevance for Australia. State, territory and federal government agreements must provide incentives for hospitals to manage research, or provide adequate funding for the NHMRC to provide the necessary research training and support. Strategies such as the requirement for a clinical component in all NHMRC Program Grants or enhanced funding for translational programs and partnerships should be considered. Although the good work of the NHMRC is recognised, a case needs to be made to increase funding, to equip us as a nation to deal with newly emerging and future health priorities. It is also important to recognise that private patients, their carers, and the outpatient or inpatient settings of their care environment all provide excellent opportunities for clinical research and clinical training. It can be argued that this should be considered a duty, particularly when carers and patients are receiving substantial support from Australian taxpayers.

To prepare for new health challenges and improve on current standards of health care, state and federal governments, the NHMRC and industry should recognise the projected skills deficit and address it by working together to support secure career pathways in clinical research.

Competing interests

Graham Brown has served on NHMRC committees and is on the Management Committee of BioGrid (a platform for sharing life science information). Tania Sorrell has sat on advisory boards for antifungal drugs for Pfizer, Merck, Gilead and Schering-Plough, and received investigator-initiated grants and travel assistance from Pfizer, Merck and Gilead.

Author details

Graham V Brown, PhD, FRACP, MPH, James Stewart Professor of Medicine,[1] currently Director[2]
Tania C Sorrell, MD BS, FRACP, Director[3]
1 University of Melbourne, Royal Melbourne Hospital, Melbourne, VIC.
2 Nossal Institute for Global Health, University of Melbourne, Melbourne, VIC.
3 Centre for Infectious Diseases and Microbiology, Western Clinical School, University of Sydney, Sydney, NSW.
Correspondence: gvb@unimelb.edu.au

References

1 Penington DG. Rediscovering university teaching hospitals for Australia. *Med J Aust* 2008; 189: 332-335.
2 Flexner A. Medical education in the United States and Canada: a report to the Carnegie Foundation for the Advancement of Teaching. New York: Carnegie Foundation for the Advancement of Teaching, 1910.
3 The death of the US academic medical centre [editorial]? *Lancet* 2007; 369: 532.
4 Cooksey D. A review of UK health research funding. London: Her Majesty's Stationery Office, 2006.
5 Grant J (Chairman). Sustaining the virtuous cycle for a healthy, competitive Australia: investment review of health and medical research. Final report, Dec 2004. Canberra: Commonwealth of Australia, 2004.
6 National Health and Medical Research Council. Centres for Clinical Research Excellence funding policy. Canberra: NHMRC, 2008. http://www.nhmrc.gov.au/grants/apply/ccre/_files/CCRE_Funding_Policy_2008.pdf (accessed Apr 2009).

(Received 3 Aug 2008, accepted 19 Jan 2009) ❑