

*Rediscovering University Teaching Hospitals for Australia*  
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*Abstract:*

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- Partnership between research and health services has a long history in other countries but has been relatively recent in Australia, with several models in the 1960s and 70s as research-based specialties developed.
  - Since implementation of Medibank and Medicare, Australian Health Care Agreements have been primarily crafted on the basis of transactional numbers, ignoring the need for links with teaching and research and the need for implementation of new developments.
  - Education and research have been seen as the responsibility of the Australian Government and hospitals are progressively less recognised or funded for these functions by the States.
  - Australia's teaching hospitals are in danger of falling seriously behind those in other countries and lose their capacity to monitor quality, to innovate and branch into new strategies in partnership with primary care services.
  - We should look at initiatives in other countries such as the United Kingdom, Canada and elsewhere, making big strides in tackling similar issues. University hospitals hold the key, if appropriately linked with other services.
  - The current AHCA is on hold; a new agency is needed to support clinical and service related research, with a new structure and track for Australian Government funding, and providing oversight of research and development, of clinical governance and quality of outcomes in health care, linked with new strategies for prevention and treatment.
  - A component of the foreshadowed additional Australian Government funding for health should be sequestered to set up such an agency.
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**The practice of medicine has changed immensely over the past fifty years, with burgeoning discoveries in biomedical science and new technology in both diagnosis and treatment. New preventive possibilities continue to emerge. The new frontier is translating research into clinical services. , Over the past 30 years, our public hospital system has been locked into a system which lacks the necessary capacity to adapt, tied as it is to processes of transactional funding. Innovative actions by managers have led to shortening of hospital stay and increased day surgery, but the interface with community based care has been poorly developed in terms of sharing necessary information about patients, developing linked programs for care, collecting information on health outcomes and adapting to necessary changes in education of health professionals. In reality, health care is increasingly provided outside hospitals.**

**Those responsible for managing tightly budgeted public hospitals and those providing clinical services under inevitable time pressures need to pause and consider whether we have the essentials in place to handle emerging challenges. The appointment of a National Health and Hospitals Reform Commission (NHHRC) and suspension of 5-year Australian Health Care Agreements (AHCAs) offer a ‘once in a generation’ opportunity to get sensible plans in place for the next twenty years. Relevant research and development is critical in providing the basis for ongoing evolution. Australia has outstanding medical research and first class clinicians, but the two need to be brought effectively together with appropriate support. Major teaching hospitals and their associated universities have much to offer if they accept the commitment to extend their roles in partnership with primary health care.**

**Many assume advances in health care just ‘happen’ but on the world scene, major university hospitals have provided most of them. These hospitals have a great history, with important messages still relevant today.**

## **Evolution of the University Hospital**

**Medical education in Europe was undergoing major change when Australia's first medical schools were established in Melbourne and Sydney on the British model. Between 1820 and 1850, Paris was the unquestioned leader in clinical methods and medical training.<sup>1</sup> After 1855, however, an explosion of knowledge about human biology and disease led by Virchow, Cohnheim, Koch in Germany, and in France by Bernard in physiology and of micro-organisms as the cause of disease by Pasteur (largely ignored by the Parisian clinicians) changed the scene at the time Australia's medical education was being established.**

**Prompted by Pasteur's research, Lister, in Edinburgh, developed antiseptic surgery from 1867<sup>2</sup> and Billroth in Vienna, effectively founded modern antiseptic surgery. These were slow to be adopted in surgical practice in both London and Australia, where visiting honorary staff reigned, committed to existing practices. Edinburgh had both university and practitioner schools. Lister belonged to the former.**

**In the United States, Johns Hopkins University developed its graduate school of medicine resembling the Berlin medical school, opening a hospital in 1889 with research and laboratory based teaching and clinical settings. The Harvard medical school was then reshaped, as were those at Columbia-Presbyterian in New York and Yale. The University of Chicago, founded by John D. Rockefeller, drew heavily on the Hopkins model.<sup>3</sup>**

**The key to the hospital model was leadership of all units by academic clinicians with questioning minds, contributing to knowledge and committed to services of the highest standard. From this was to develop a rigour of testing the quality of services linked with traditional peer review, now spoken of as 'good clinical governance'.**

A revolution in American medical education followed a review by Flexner in 1910. He achieved closure of up to 120 ‘apprenticeship-based’ schools of low quality. His ‘model’, based on Hopkins, was of medical education in an environment tested and enriched by research.<sup>4</sup> Between 1913 and 1928, working for the Rockefeller Foundation, Flexner facilitated allocation of huge sums of money, both in the US and overseas, to support clinical professors with research laboratories.<sup>5</sup> America’s university hospitals have been, since that time, the international powerhouse of research and innovation, with burgeoning NIH funding since 1946 and partnerships with industry.

#### Australia’s medical schools and teaching hospitals

Medical education in Australia commenced at the University of Melbourne in 1862. Clinical teaching depended on honorary clinical staff (“honoraries”) of the Melbourne Hospital trained in London, Edinburgh and Dublin.<sup>6</sup>

Sydney’s Medical Faculty, established in 1858, became a medical school in 1883, led by Stewart Anderson, an able young Edinburgh graduate with research experience in the German medical school of Strasburg.<sup>7</sup> Academic teachers from Britain included a young British physiologist, Charles James Martin, who later developed outstanding teaching and experimental research in Melbourne from 1896. He returned to London in 1904. His name is remembered in the prestigious C J Martin Scholarships of the NH&MRC.

In 1913, Melbourne adopted a proposal for clinical chairs and hospital-based research appointments based on Flexner, but it was not implemented.<sup>8</sup> In 1927, the Rockefeller Foundation invited a delegation from Melbourne to visit university hospitals in the US and Canada, envisaging support to rebuild the Melbourne Hospital close to a new medical school.. A change of government in Victoria led to abandonment of the hospital move and ended the Foundation’s interest.

In Sydney, the next year, a remarkable philanthropist, George Henry Bosch, funded two new full-time salaried clinical chair positions. The Sydney medical school then sought and gained a generous grant from the Rockefeller Foundation to rebuild its medical school close to the Prince Alfred Hospital as they awaited arrival of the clinical professors.

#### **Clinical professors appointed in Australia**

When Lambie (Medicine) and Dew (Surgery) reached Sydney, the Flexner model proved unacceptable to the staff of the Prince Alfred Hospital. Lambie put the view that “the University Medical School should be the centre or focal point of all medicine and that the Professor of Medicine should have overall control as was the case in the major German Universities before World War I.” The professors’ hospital appointments permitted responsibility for patients only within their professorial units and they were specifically excluded from the hospital hierarchy. A similar pattern later followed in new schools in Adelaide and Brisbane.

A clinical chair in Obstetrics was established in Melbourne in 1929, after a groundbreaking research report on maternal and neonatal deaths in Victoria by Marshall Allen. He, likewise, was not given control of his hospital’s obstetrics.

**An overview of important developments in academic departments in teaching hospitals after World War II is shown in Box 1.**

**Changes to our system since 1975.**

The introduction of Medibank in 1975 brought free hospital services across the nation, with shared funding by the Australian government and States. It was re-established as Medicare in 1984. Control of burgeoning costs in hospitals became paramount for governments with ever growing demand for services. Shared responsibilities between the Australian government and the States were set out in AHCAs defining the responsibilities of States for hospital services linked with an agreed formula for Federal contributions over a five year period. Negotiations

became increasingly preoccupied with ‘transactional’ numbers and politically sensitive issues such as waiting lists. Diagnosis Related Groups (DRG) came to determine hospital budgets. Research and education were seen as the responsibility of the Australian government. ‘Cost-shifting’ between Commonwealth and State responsibilities became an art form. Support for research and university functions in hospitals dwindled as funding of universities was also progressively squeezed.

## **1. Academic departments in teaching hospitals after World War II.**

**By the 1960s, pressure for specialties supported by research became critical in fields such as endocrinology, haematology, interventional cardiology and open heart surgery, gastroenterology, nephrology, organ transplantation and so on.**

**Clinical professors in medicine (Lovell) and surgery (Ewing) were appointed in Melbourne in 1956 on the British (and Sydney) model, with discrete academic units in the Royal Melbourne Hospital (Lovell) and Alfred Hospital (Ewing). However, these and similar appointments in other Australian medical schools came to provide much needed research support for new specialties and contributed greatly in specialist training.**

**Genuine partnership between hospitals and universities in development of services became important as research-based specialties evolved in the 1960s and 70s.**

**Australian ‘Flexner’-type ventures with academic leadership began to emerge:**

- **at the Austin Hospital in Melbourne from 1966, as it became a new clinical school, and became the driver of clinical research in Melbourne.**
- **at Flinders University in 1974 with a fully integrated university hospital, Flinders Medical Centre, developing much national research leadership.**
- **in Sydney from 1976 when Westmead Hospital was developed with strong research involvement.**
- **At Newcastle from 1975, with its medical school and John Hunter Hospital, having clinical academic oversight of services and a strong community interface.**

## **Medical Research in Australia**

**The NH&MRC has led development of Australian medical research over many years, funding research in universities, research institutes and in hospitals. It developed the immensely important Post-graduate Research Scholarships and Research Fellowship programs. Following the Wills Review of 1999<sup>9</sup> and the Grant Report of 2004,<sup>10</sup> which confirmed the high international standing of Australian medical research, the NHMRC enjoyed trebling of research funding over a period of some years.**

**Access Economics demonstrated huge economic returns to the community from advances in medical science<sup>11</sup> but Grant raised important questions as to whether the NH&MRC was sufficiently supporting evidence-based medicine and**

generating real innovation in health policy and services as seen in Canada, the Netherlands, the United States and elsewhere. Grant gave examples from several countries of major improvements and cost savings in health services proceeding from rigorous applied (clinical) research.

Changes have since led to restructuring of the NH&MRC with new leadership, establishment of Clinical Research Centres of Excellence, new Fellowships in Clinical Research and support for the evidence based medicine program. Funding for research infrastructure had been secured for universities in 1990 and was also introduced for medical research institutes from 2005, but is not provided for hospitals, which struggle even to fund necessary administrative support for their Human Research Ethics Committees. The AHCA neither referred to research and development nor to bridging the gap between hospitals and community based care. This situation needs to change. An ageing population and problems such as indigenous and mental health now offer major challenges. Are we satisfied that, as a nation, we have the means to handle future needs in health care?

What can we learn from Britain and elsewhere as we look at change?

From 2004 the UK government committed major support for development of research within the National Health Service. Reforms, led by Professor Sally Davies as Director General of Research and Development for the NHS, were reported in 2006, finding that the NHS “needs a stronger culture to support research.”<sup>12</sup> A National Institute of Health Research, including the Medical Research Council, was established with strategies which bring research to interface effectively with clinical services at many levels across their system.

A 2008 review of the NHS, led by Lord Darzi, a practicing academic surgeon, has moved reorganisation even further in this direction.<sup>13</sup> Major new funding is supporting development of large University Health Centres bringing research, service delivery and education together to create the equal of any of the great American University Health Centres.

**Where does Australia stand at this time of change?**

**‘Transactional funding’, based on DRG adjusted figures, currently drives our system. Teaching hospitals are increasingly funded and managed as large community hospitals with little recognition of their special functions. Repeated instances of failure in hospital performance reflect poor clinical governance. There is objective international evidence that teaching hospitals provide better quality health care than non-teaching institutions.<sup>14</sup> They recruit and retain the best staff and inevitably influence hospitals linked for undergraduate teaching, intern and registrar rotations.**

**Melbourne’s Bio21 Cluster links the University with its teaching hospitals and neighbouring research institutes. They share expertise and infrastructure in new joint programs, getting outside research funding as and where we can. A Monash cluster is evolving similarly. An example of such collaboration is an on-line IT facility for sharing data between Victorian hospitals, now named BioGrid Australia, currently applied to cancer tissue samples but with planned expansion into data on epilepsy and diabetes. Sharing of genetic information is awaiting development. Multicentre trials in intensive care, anaesthesia and cancer therapy in Victoria and elsewhere struggle to fund research nurses to enter data without confining research to drug trials for international pharmaceutical companies. Such studies should be widespread, seeking to test and improve our own services.**

**The Bio21 Cluster sponsors a Victorian forum of Hospital Research Directors, experienced part-time research leaders who liaise with their hospital CEOs, Research Ethics Committees, hospital and university researchers and associated research institutes. Most member hospitals now publish research reports. These moves seek to rediscover university hospitals in an Australian context. Hospital CEOs are constrained to contain expenditure within budgets, set with ‘caps’ on funding of ‘weighted patient separations’. Fresh funding is needed for administrative support of research, advice on data handling and for research nurses collecting clinical data in support of busy clinicians.**

**Suspension of the AHCA process and establishment of the NHHRC offers a ‘once in a generation’ chance for change to meet the challenges of the next 20 years. We must think broadly, and be aware of what is happening elsewhere in the world as similar problems are tackled. Australia has outstanding resources in research and its clinical workforce; a small investment in bringing them closer together could yield great benefits. A ‘hub and spoke’ model linking major university hospitals with community hospitals, already associated in undergraduate education, intern and registrar exchanges, and with GP networks has much to offer. We need modest additional funding through a new dedicated channel to support change in both hospital and community based care.**

**Proposed solutions to the problems facing health care in Australia are offered in Box 2.**

## **2. Proposed Solutions**

**Recognition and support is needed for a reinvigorated partnership between major teaching hospitals and universities, in clinical services and related research as well as in education, involving all health services.**

**Teaching hospitals must interface effectively with primary care and preventive health. Medical schools with their departments of public health and general practice must support this development, working with general practice networks.**

**New initiatives using modern broadband IT facilities need to become part of this mix with common patient identifiers and records. They can provide the means to link data across the healthcare system, support family practice with information and track health outcomes.**

**Links exist between major teaching hospitals, community and regional hospitals for both medical education and post-graduate training, but need to be formalised in a 'hub and spoke' model so that education, research and development involve a wide network. Better links with general practice are essential for aged care, diabetes and mental health and overall patient services.**

**A portion of new Australian Government funding foreshadowed for health care should be sequestered and managed through a new agency for Health Development and Quality associated with both the Department of Health and Ageing and the NH&MRC.**

**It should oversee and fund programs for research and for prevention in partnership with the States and hospitals, with special focus on innovation and assessment of the quality and outcomes of all health services, both public and private, and provide support to university hospitals and other agencies to meet real costs of service related research.**

**The next AHCA must commit States to collaborate with the new agency in the development of Australia's health system**

**These are key issues for consideration by the Hospitals and Health Reform Commission, due to report later this year.**

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- <sup>6</sup> Gregory A *The ever open door. A history of the Royal Melbourne Hospital* Hyland House South Melbourne 1998 pp53-57.
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- <sup>10</sup> Grant Report, *Sustaining the Virtuous Cycle For a Healthy, Competitive Australia* Investment Review of Health and Medical Research 2004
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- <sup>12</sup> Cooksey D A review of UK health research funding HM Treasury 2006
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- <sup>14</sup> Imperial College, London, Faculty of Medicine, Dr Foster Unit at Imperial College  
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