

Oration

Arthur Mitchell Wilson Oration 2005: Educating future health professionals

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Arthur Mitchell Wilson was born at Albert Park, Melbourne in 1888, the only son of a widowed mother. In 1901 he won first place in a government scholarship scheme enabling him to attend Scotch College where he matriculated in 1905. He commenced studying at Melbourne University, graduating in medicine in 1912. Early in his career he travelled to China as a ships surgeon and then took up a position at the Melbourne Women's Hospital where he studied under such luminaries as Rothwell Adam, Felix Myer and RH Featherstone. In 1915 he joined the Australian General Hospital and earned the DSO for meritorious work during the Battle of the Somme. He then returned to Australia in 1919, establishing a practice in Prahran and becoming honorary obstetric surgeon at the Women's Hospital. In 1926 he took up a lectureship in obstetrics and gynaecology at the University of Melbourne. In reading his obituary in the *Medical Journal of Australia* of the 14 April 1948,¹ I was struck by his dedication to his patients and to the obvious respect that he held with his colleagues. To quote from the obituary – 'his strength lay in his simple directness. He did not evade issues, and he had an unerring instinct of knowing what the issue was. This made his stature as a workman and as a teacher. As a man of peace he recognised that there was much to be said on both sides, he kept out of arguments but produced the answers'. I imagine that with his interest in teaching and learning he would have been interested in the topic that I have chosen for his oration – Educating future health professionals.

In covering this topic I want to explore the future of health care reviewing both community expectations and expectations of health professionals, review workforce needs, comment on health education in Australia and explore some potential solutions. I want to take as an underlying premise that there are three fundamental pillars to a health system – service, teaching and research. The translation of the term 'Dr' in Latin is teacher and we are all teachers of our patients and of our colleagues, but we are also researchers – asking questions, developing hypotheses.

We sometimes forget about research in our busy service lives and it is even more important to impress upon health bureaucrats the important gains that can be made from research. For example the development of lithium for treating manic depressive disorder has resulted in a saving of \$US9 billion per year in the USA while in Australia the 8-year gain in life expectancy of Australians over the period 1960–1999 has been valued at \$A5.4 trillion.²

If we consider the future of health care it is likely to be driven by the population that we are dealing with, by the workforce, by the diseases and to a certain extent by technologies. Muir-Gray³ has defined the characteristics of modern health care as:

- concern with health as well as healthcare (prevention as well as treatment);
- concern with patient satisfaction and experience of care;
- evaluation of services in terms of effectiveness, appropriateness and necessity;
- public involvement in health and healthcare policy making;
- commitment to continual quality assurance; and
- emphasis on accountability.

When we look at the future of healthcare it will certainly be more devolved than it is now, technology influenced and with more community and individual participation.⁴ There will be much more of an emphasis on disease prevention and health promotion (a move from ILLTH to health). There will also be a significant influence on healthcare delivery by an ageing population and by chronic disease.

The population demographic is changing significantly in respect to age as demonstrated in Table 1. Life expectancy will increase significantly to nearly 90 years in females by 2042, but already Australia is seeing a significant proportion of its population over the age of 65 (12.3% in 2000). A decreasing birth rate may also impact on carer and health workforce issues as well as reducing the taxable population base. However we should not despair because many other countries already have population structures that are much more 'aged' than ourselves. For example Sweden and Japan

Table 1 Life expectancy

	2002	2022	2042
Males	77.2	81.3	83.9
Females	82.6	86.1	88.5

Intergenerational Report 2002.

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Table 2 Australian Burden of Disease Study: measuring the loss of health from disease, injuries and risk factors

Mortality burden: percentage of total years of life lost due to mortality (yll)		Disability burden: percentage of total years of life lost due to morbidity (yll)	
Persons	% of total	Persons	% of total
1. Ischaemic heart disease	20.5	1. Depression	20.5
2. Stroke	8.3	2. Dementia	8.3
3. Lung cancer	6.3	3. Asthma	6.3
4. Suicide	5.2	4. Osteoarthritis	5.2
5. Colorectal cancer	4.4	5. Adult-onset hearing loss	4.4
6. COPD*	4.0	6. Diabetes mellitus†	4.0
7. Road traffic accidents	3.3	7. Alcohol dependence/abuse	3.3
8. Breast cancer	2.8	8. COPD*	2.8
9. Diabetes mellitus†	2.1	9. Stroke	2.1
10. Dementia	1.8	10. Ischaemic heart disease	1.8

*, Chronic obstructive pulmonary disease (chronic bronchitis and emphysema); †, includes type 1 and type 2 diabetes.

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have nearly 17% of their population over the age of 65 while US and Canada are around 13%.

The issue that will drive health planners and funders is a focus on disability rather than mortality. This is demonstrated in Table 2 which shows the quite different conditions that produced mortality in Australia as opposed to morbidity.⁵ With the ageing population we are now moving into an era of chronic disease where health providers are having to focus on the diseases that produce global burden within the community.

The health professional of the 21st century is going to have to deal with chronic disease, with ageing, the development of new and often costly interventions, with communication and information 'overload' in respect to guidelines and protocols as well as a much greater focus on health economics.⁶ This health professional is also going to face less secure job prospects, and will need to network with the other members of the care team while accepting increasing participation of non-medical groups in healthcare. Finally there is going to be increasing pressure from patients to understand more about the health options available to them. Health care in the 21st century will continue to devolve from hospitals which are likely to become centres for high-technology and interventional management. Patient monitoring in its broadest sense will be made much easier by electronic health records, a variety of implantable devices which allow for patient monitoring and the ability of health professionals and patients to communicate much more easily using a variety of media – computing, telephones and video conferencing. Health information will be much more readily available on the World Wide Web and it will be very important that the content of this material is made more user-friendly and evidence based.⁷ Already we are seeing the development of 'virtual' practice particularly in areas such as radiology and pathology.

Health workforce

The health workforce of the future will be more flexible, more mobile and a significant proportion will need to be

multiskilled. Australia is currently in the grip of significant health workforce shortages particularly in nursing and medicine but increasingly in other health disciplines such as pharmacy and the allied health professions. These workforce challenges seen in Australia are also reflected in overseas jurisdictions such as the United Kingdom, Europe and North America. For years a variety of government instrumentalities have concluded that the medical workforce is adequate for our future and in fact medicine is still the only university course where numbers are controlled by the Federal Government. The organisation of the medical workforce has played a significant role in these shortages with women wishing to work shorter hours and have significant periods of time off for their families. Significant boosts to healthcare funding in both the United Kingdom and North America have led to those countries becoming much more attractive for our own Australian workforce. Although there is some anecdotal evidence that the 'healing professions' are becoming less attractive for students we need to acknowledge that health science courses, whether they be medicine or the allied health professions, are still some of the most highly sought after by school leavers. Australia has a particular challenge in that increasingly medicine, and particularly surgery, is being carried out in the private sector. This can lead to significant discrepancies in financial rewards between the public and private sectors producing the scenario where significant numbers of health professionals who do their training entirely in the public sector end up providing exclusively to the private sector.

Figures from the Royal Australian and New Zealand College of Obstetrics and Gynaecology and Australian Medical Workforce Advisory Committee surveys clearly demonstrate the feminisation of the obstetrics and gynaecology workforce and the fact that the workforce is ageing (Fig. 1).⁸ This will provide a significant challenge for the College over the next few years although it has however, encouraged the creation of rural and remote training positions and part-time training which will form a very important part of health workforce training in the future.

In Australia those working within the health sector make up approximately 11% of the total workforce. The total

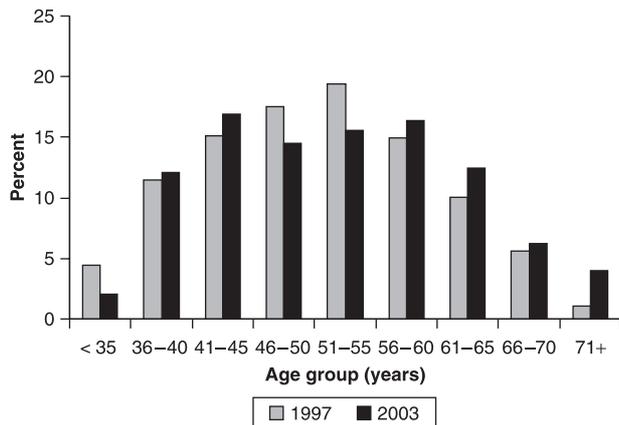


Figure 1 Obstetrics and gynaecology workforce, (%) by age group, 1997 and 2003. RACOG database 1997; RANZCOG database 2003.

health budget is approximately \$A50 billion and constitutes just over 8.5% of the gross domestic product. Although the Australian health workforce has been growing significantly (12% increase between 1995 and 2000) there is increasing evidence that it needs to expand at a much more rapid rate to make up perhaps 20% of the total workforce by 2020. This will be required to maintain the standard of health care to which we have become accustomed. However this will provide significant challenges for health employers in terms of making health professional positions attractive and looking at ways of maintaining participation in the health workforce over a period of time. The challenge to health educators will be to provide interprofessional learning, a range of learning programs for new health professionals and to create opportunities for retraining existing health workers.

Current medical programs in Australia

Australia currently has one of the most varied systems of medical training in the world. Students have the ability to enter a medical program of 5 or 6 years directly from school or to undertake an initial degree and then enter a 4-year graduate entry program. Universities are now able to take in Australian full fee paying students and there are two medical schools established in the private sector. Interestingly there seems a high degree of collaboration between public and private providers in terms of curriculum development and design. Graduate entry medical programs have been available in Australia for the last decade and have come in for somewhat unfair criticism from many members of the profession. Although problem-based learning programs are more expensive to run there is good evidence to show that students score better in clinical examinations, that staff prefer to teach into these programs and that these programs enhanced self-directed learning skills. There are now an increasing number of carefully conducted studies which demonstrate that problem based learning does provide good

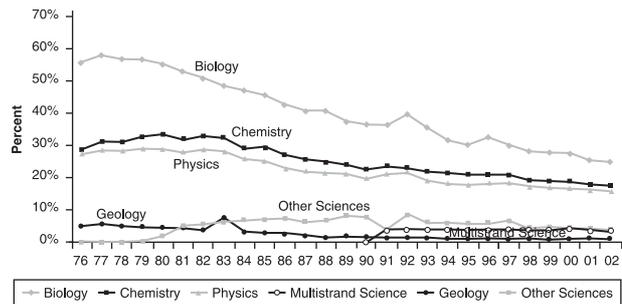


Figure 2 Percentage of Australian year 12 students enrolled in science subjects 1976–2002. From Mattick LE and McManus ME. *Science teaching and research – which way forward for Australian universities?* Conference report. www.brightminds.uq.edu.au/trc.

training in basic science knowledge that is no different from the traditional medical programs.^{9,10} It must be appreciated that the basic sciences do not just include anatomy, physiology and biochemistry but also the basic science of clinical medicine (clinical epidemiology) as well as the social sciences, psychology and sociology and some of the new sciences such as molecular biology and genetics.

A particular criticism of new medical graduates seems to be in the area of anatomy training. It must be appreciated that anatomy can now be taught in a number of different ways by surgeons (surface anatomy) and by radiologists using some of the new imaging technologies, particularly ultrasound. The traditional anatomist is now almost an endangered species and it is important that medical programs/health science programs explore new ways of teaching anatomy without necessarily the need for dissection. In the context of the teaching of basic sciences Australia has an even greater challenge to face and that is the appalling reduction in science teaching within secondary schools. A recent meeting at the University of Queensland¹¹ has shown that although there has been a very significant increase in university enrolments (400 000–1989 to 700 000–2002) there has been a very significant decrease in the science learnings of Year 12 students particularly in biology (Fig. 2). This is at a time when we in the health professions are saying to patients – ‘we can help you understand your disease but the responsibility for that disease and your health has in part to be taken by yourself’.

A very important part of healthcare training needs to be that of interprofessional learning.¹² This enables different health professionals to learn together and promotes service and research collaborations as well as allowing professionals to understand different discipline roles. At a time when it is becoming more important to develop team management, it seems highly relevant to understand what each member of that team brings to a clinical problem. Inter-professional learning can increase professional satisfaction and does go some way towards tackling the ‘ego’ systems that so pervade health professional organisation and dynamics.¹³ This is not to say that interprofessional learning is easy but it can be achieved if the various discipline groups can develop some shared outcomes.

Learning environment

Teaching at both an undergraduate and postgraduate level is still focused around public tertiary care institutions (teaching hospitals). Undergraduate teaching is now moving into the community with a much greater focus on teaching opportunities in primary care. Postgraduate teaching has however, not followed suit and there is still very little teaching in the private sector.¹⁴ With the increasing delivery of care in the private sector it is important that learning opportunities in these private environments are expanded. With the increasing pressure on clinical material in hospital due to the decreased length of stay and more rapid throughput, there is increasing emphasis on the use of simulation particularly to teach in the postgraduate area. The key advantages of simulation are that the agenda can be tailored to the needs of the learner and not the patient, that there is a safe environment for failure with measurable skills development and immediate feedback for collaborative learning.¹⁵ Over the last decade we have seen the development of a number of simulation laboratories around Australia often established as collaborations between Colleges, universities and in some cases, the State Health Department. These simulation centres have a particular interest in postgraduate training and retraining and have been shown to be very useful for endoscopy, laparoscopy, and the training of resuscitation and acute trauma skills. For example, in the training of laparoscopic cholecystectomy techniques, simulator trained residents performed the procedure 30% faster and made 6 times fewer errors while standard trained subjects were 9 times more likely to fail to make progress and 5 times more likely to injure the gall bladder.¹⁶ Simulators are now used extensively for training in cardiac endoscopy and interestingly the Federal Drug Administration in the USA has mandated simulator training for some of the newer cardiac stents.

New/different health professionals

Nurse practitioner programs are now being developed across Australia. It is likely that this group of health professionals will play an increasing role in primary care and in certain specialist areas. In a number of countries, nurses are increasingly being trained to carry out certain techniques particularly endoscopy and have been shown to be equivalent to physicians for colorectal screening, dyspepsia clinics and upper GI endoscopy.¹⁷

In the United States, Physician Assistants (PA) provide an important role in health care. There are some 60 000 PAs registered in the USA and licensed to practice with a doctor's supervision. They cover a wide range of areas including primary care, the emergency room, orthopaedics, chronic disease and surgery.¹⁸ There are now over 140 PA programs running across the US primarily linked to medical schools. Physician Assistants undertake a 2-year program covering basic science and clinical training, undergo rigorous continuing medical education and recertification program and have clear task delineation with appropriate reporting within their

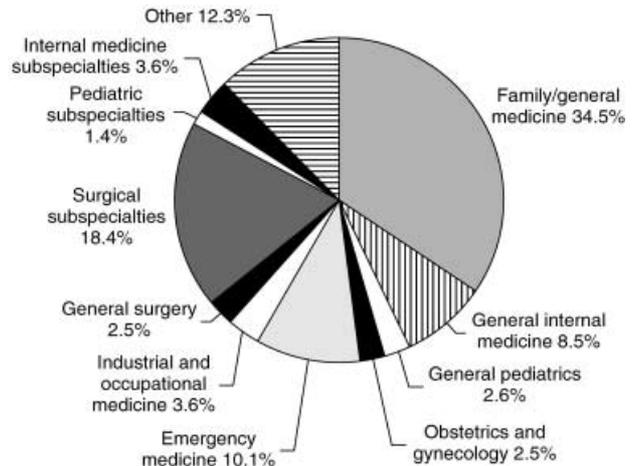


Figure 3 Distribution of practicing Physician Assistants by specialty. Data from American Academy of Physician Assistants, AAPA. Physician Assistant Census Report, 2001. Hooker RS and Cawley JF. *Physician assistants in American medicine*. Churchill Livingstone, 2nd edn. St Louis, Missouri. 2003; p. 102. Reprinted with permission from Elsevier.

job descriptions. From Figure 3 it can be seen that practising PAs cover a range of specialties and provide important input to the US healthcare system. The United Kingdom is currently trialling a PA program at the University of Birmingham in association with the Royal College of Physicians and the Royal College of General Practitioners. The United Kingdom has also recently announced an exciting new development – a link between the Royal College of Surgeons and the Royal College of Nursing to develop nurse surgical training. Under this scheme, nurses will be trained to perform routine surgical tasks such as removal of veins in preparation for cardiac surgery.

There is increasing evidence that routine X-rays can be read by radiographers¹⁹ and it may be possible to train pathology technicians to be involved more in the routine screening of histopathology. The training of different types of health professionals for use in this way should be seen as a way of liberating health professionals to do the things that they really wish to concentrate on.

It may well be that we need to look at breaking the link between procedural skills and diagnosis/management planning. We need to be asking ourselves – can we afford to spend 10–15 years training a specialist who will undertake a relatively routine and repetitive procedure? It is likely that we could teach practical skills and competencies much more rapidly and fast track a number of these postgraduate activities. If this were to occur then there may need to be some type of 'competency-limited' registration provided for people trained in this way.

Data from the medical program developed by the Royal Colleges of Physicians and Surgeons of Canada in 2001 is now being used to identify new learning opportunities, particularly in postgraduate training. This project identifies the roles that the health professional of the 21st century need to cover and the way is that this training might be provided.⁶

As we move forward, there are very significant opportunities to look at the horizontal and vertical integration of health professional training. There are great opportunities to link the major stakeholders – universities, health departments and the Colleges to create more flexible and alternative pathways for training. This may entail a focus on skills development and the challenge will be to maintain standards within this ever changing environment. The professions need to be proactive in helping to develop this agenda because there are groups such as the Productivity Commission and the Australian Competition and Consumer Commission (ACCC) which have the potential to drive the agenda if the professions do not.

We have a great opportunity to provide in this country learning centred health education, patient-centred health care and a consumer focused but provider friendly health system if we collaborate.

We need to focus on who is paying for health and how we set priorities for funding in health as we move into the 21st century. We also need to try to maintain the equity and access that we have had to healthcare for all parts of this community and be careful not to create an information rich and an information poor group within society. The opportunities for change are significant if we can only work together.

As Lewis Thomas said in 1974, 'there has never been a period in medicine when the future has looked so bright. There is within medicine, somewhere beneath the pessimism and discouragement resulting from the disarray of the healthcare system and its stupendous cost, an underlying current of almost outrageous optimism about what may lie ahead for the treatment of human disease if we can only keep learning'.

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