Imperatives in medical education and training in response to demands for a sustainable workforce

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ABSTRACT

Factors to be considered in planning our medical workforce to meet future needs include:

- Need for outcomes-based curricular designs in medical schools and postgraduate training.
- Shortening the length of medical training.
- Improving career flexibility to permit professional reinvention.
- Developing awareness within the profession about how innovation happens.

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The adequacy and sustainability of the health workforce has emerged as a major concern that is occupying policymakers worldwide.[1,2] The absolute shortage of doctors, nurses and other health workers is compounded by maldistribution of the workforce and skill imbalance. This complex predicament is the result of global, national and local factors (Box 1). Despite major changes in medical student education and adjustments in postgraduate training over the past 25 years, we are insufficiently prepared to deal with the current workforce shortage.

Models for training of health workers remain fixed within different professional craft groups, and neither formal curricula nor practical experience have sufficiently emphasised the health care needs of local communities and national populations.

A view expressed by some is that if only today's doctors would stay in the system in which they train, devoting themselves to a lifetime of selfless service, health systems could reach a plateau of stability and designing rational solutions for workforce development would be easier. But such thoughts are illusory, given the complexities of increasing transnational professional migration, the increasing flight to early retirement or alternative careers, and the reality that health care and the health workforce will always be heavily influenced by politics.

There are many important factors at the intersection between workforce development and medical education and training. Better tracking of the medical workforce and trainees, targeted programs for general practice training, development of education pathways to enhance rural recruitment and retention, and consideration of delegating certain tasks to "physician assistants" are all necessary, but individually are insufficient. If we are to avoid seesawing between the prospects of a deluge or dearth of doctors in the future, concerted discussion is needed about some matters that have not been widely considered, including:

- Moving towards outcomes-based curricular design in medical schools and postgraduate training;
- Shortening the length of medical training;
- Improving career flexibility to allow for professional reorientation; and
- Developing awareness within the profession about how innovation occurs.

Outcomes-based education and training

It is time to put on the table fundamental issues about the philosophy and design of medical education. It is encouraging that some medical schools around the world are beginning to seriously emphasise graduate outcomes — ie, they are attempting to create an explicit link between desired capabilities at the end of a program and the methods of pedagogy and learning needed to achieve those capabilities.

Much of the innovation in medical education over the past 25 years with problem-based learning (PBL) curricula has focused on methods of instruction, with emphasis on the "process of learning" as a keystone of design. While there is evidence that students in PBL programs are more self-directed in their learning and have higher motivation,[4-7] such programs fall short in their ability to improve two outcomes — reliable scaffolds of knowledge and clinical performance.[4-9] Besides these shortcomings, there are several other compelling arguments for placing a greater emphasis on outcomes. These include initiatives to establish a common set of educational standards for medical graduates in a global market, as proposed by the World Federation for Medical Education[10] and the China Medical Board;[11] demands for more explicit delineation of competence at graduation by organisations responsible for overseeing early postgraduate training (such as the New South Wales Postgraduate Medical Council); and the advent of outcomes-based curricula in secondary schools.

Outcomes-based education emphasises that, by the time of graduation and at intervals during the program, students will have developed defined capabilities and that every aspect of the educational design should be directed towards attaining the defined capabilities. The University of New South Wales has recently introduced a new curriculum in which the capabilities of graduates are central to its design (Box 2). In developing its curriculum, the idea of "capabilities" was adopted from the Capability in Higher Education movement in the United Kingdom,[12] in which capability includes not only knowledge and skills but also the capacity to continue to learn from experience, to act in unfamiliar and changing contexts, to be clear on professional purpose and to successfully function with others in the workforce.

However, widespread adoption of outcomes-based curricula will be difficult. Many universities in Australia have invested substantially in curricular redesign in recent times and it is unlikely that, without significant external or dedicated resources, vice-chancellors will embrace and fund another wave of change for their medical teaching programs. Furthermore, little true innovation has emerged from the recent expansion in the number of medical

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1 Factors affecting medical workforce supply

Global factors

- Globalisation of economies
- Increased transnational movement of medical professionals
- Relaxed immigration controls for health professionals
- Export of traditional models of medical education from developed countries into new settings (eg, the New York-based China Medical Board's work in Asia)
- Changing burden-of-disease profiles for entire regions, and the direct impact of disease on survival of health care professionals themselves (eg, HIV/AIDS impact on African health workers)
- Increasing demand for health care services
- Population ageing

National factors

- Government policies to open more medical schools or expand existing schools using the same curricular design
- "Crises" in public confidence about health care arising from instances of failure to ensure safety and quality of care (eg, the recent Bundaberg Hospital scandal[3])
- Increased regulation of working hours

Local and personal factors

- Desired lifestyle changes by doctors (including students and junior doctors), with increased attention to family and leisure considerations
- Shift from emphasis on remuneration to job satisfaction
- Local communities (especially in rural settings) attempting to recruit doctors through incentive schemes ◆

schools in Australia. Some of these, presumably for financial reasons, are bolting new medical school programs onto existing health science curricula or "acquiring" curricula (entirely or in modules) from established schools. Schools that have highly modular curricula are most likely to be able to successfully introduce serial changes over time in the direction of greater attention to outcomes. However, the very essence of moving to an outcomes-based approach requires a change of curricular philosophy. The solution to workforce shortages will not simply be to add more medical schools just like the ones we have. The newer medical schools appear to be borrowing or buying curricular models from established schools in Australia or offshore.

If programs are carefully crafted, the shortcomings of PBL can be avoided. Furthermore, the concern that focusing on final outcomes will deny attention to critical processes of learning throughout the program can be countered. Achieving specific outcomes — such as breadth of perspective, information literacy, use of varied learning skills, and effective group membership — is entirely compatible with sound teaching and learning processes throughout the program.

Length of training

For many reasons, the 8–13 years required for medical education and training is just too long and cannot be justified, but any suggestion that shortening the pipeline alone will solve the workforce problems is facile. It would, however, be a helpful change as part of a comprehensive solution. In medicine, unlike any other profession, the education and training system for trainees is inextricably interlocked with delivery of health care, a reality recognised by the Productivity Commission's recent report.[13] Interns, residents and vocational trainees play an irreplaceable role in the delivery of daily direct medical care in public hospitals. Nonetheless, the move by some clinical colleges to tracking performance and outcomes through demonstrated mastery of skills rather than rigid adherence to time-in-training alone is to be welcomed.

Any consideration of changing the length of training will be complex and will polarise stakeholders. It will require collaboration between university medical schools, medical boards, health departments, governments, clinical colleges and the Australian Medical Council. From whatever direction such an innovative initiative might come, the collaboration of registration boards will also be needed to allow a new model to be implemented.

Our longstanding system of pluripotential generalist education for the first half or more of medical training before beginning specialist differentiation must be critically reviewed. Although the rich heritage of medical education in Australia is undeniable, the reality that the current system may not be what the country needs in the future cannot be escaped. Many possibilities could be examined, including, for example, streamlining of training for future super-specialists, psychiatrists, or general practitioners. Removing aspects of postgraduate trainees' work that are not clinically or educationally relevant has been shown, in some hospitals, to enhance training and care of patients. This may provide an option for shortening the length of residency or specialist training. Like any change in education, this notion must be part of systematic workplace reform in clinical care delivery settings.

One possibility for shortening training is the untapped opportunity to allow medical students greater real responsibility for supervised care of patients. This would raise many issues, such as indemnity coverage, adequacy of clinical supervision, amount of remuneration, and the future of general internships. However, concern about such potential barriers should not be allowed to stifle the discussion. The revolving door of federal and state

2 Desirable capabilities of graduating medical students at the University of New South Wales*

Applied knowledge and skills

- Using basic and clinical sciences in medical practice
- Understanding the social and cultural aspects of health and disease
- Patient assessment and management

Interactional capabilities

- Effective communication with patients, colleagues, team members and the community
- Working as a member of a team

Personal attributes

- Self-directed learning and critical evaluation skills
- Understanding and acting in an ethical and socially responsible manner
- Development as a reflective practitioner

* These eight outcome capabilities have formed the central core of planning for the recently introduced medical curriculum at the University of New South Wales, Sydney. All details of the teaching and learning program can be mapped back to one or more of these desired outcomes by the time of graduation. ◆

3 Principal triggers for innovation in different types of "cultures"*

Sociability	Solidarity: High	Solidarity: Low
High	**Networked culture** ***Triggers for innovation*** • informality • having fun ***Characteristics*** • unplanned connections • diversity of talent and interests • radical ideas • slow implementation	**Communal culture** ***Triggers for innovation*** • teamwork • participation ***Characteristics*** • strong visionary leadership • innovation is possible throughout the organisation • longer-term projects
Low	**Fragmented culture** ***Triggers for innovation*** • establishing cognitive conflict ***Characteristics*** • successful innovation largely depends on recruiting the right skills and talents • individualistic behaviour tolerated	**Mercenary culture** ***Triggers for innovation*** • market pressures ***Characteristics*** • planned and measured outcomes in mind from the beginning • accepting of incremental steps • capable of fast implementation

*Many examples of each type of culture can be seen across the health care system — in component stakeholder organisations and within individual hospitals, clinical practice settings, and learning and teaching environments (adapted from Goffee and Jones[20]). ◆

responsibilities for funding education and care delivery, respectively, is another issue to be dealt with, but well funded pilot programs could provide an opportunity for interagency collaboration in this regard.

Finally, any discussion of length of training must recognise that medical education is a continuum. All institutions involved must commit to embracing this reality and planning changes in concert with one another.

Flexibility to permit professional reinvention

We need to give more thought to developing systems to help doctors with professional reinvention — that is, helping them gain skills for new types of work in medicine that are different from their original specialty. The reasons why an increasing number of doctors no longer stay in clinical practice for an entire professional life are complex and have not been extensively examined. Changing lifestyle preferences, escalating insurance, onerous credentialing (especially in procedural disciplines) and dissatisfaction with apparently failing health systems are some of the contributing factors. To lose doctors who have had 8–13 years of training followed by many years of clinical experience is a tragedy. We must attempt to entice these doctors back into personally meaningful and useful medically-related work.

One area in which such doctors could make a powerful contribution is in education of medical students and early postgraduate trainees. For example, given the lack of classically trained anatomists and histologists to teach medical students, surgeons, radiologists and pathologists could proficiently fill the gap and potentially find great personal reward in doing so. This would require development of appropriate support for retraining such consultants as teachers, as well as negotiation of suitable employment conditions and remuneration.

Many clinicians in Australia enjoy teaching, but yearn for a renewed sense of commitment to this aspect of professional life, believing that education receives less recognition than research or clinical care. Some medical schools in the United States are reinvigorating their educational mission by creating funded organisational structures specifically dedicated to education — often in the form of "academies" of teaching and learning.[14] Although the models are all slightly different, they share common elements, such as support for distinguished teachers, encouragement of educational innovation, dedication to staff development in teaching and learning, and promotion of scholarly work in education. Such structures may provide an entry point for mid-career or retiring doctors who wish to make a contribution to the educational enterprise of their medical school. The success of these initiatives in medical schools in the United States deserves continuing attention.

Developing awareness within the profession about how innovation occurs

How likely is it that anything bold and sustainable can be achieved at the intersection between workforce planning and medical education? Notions that Australia needs a new sort of health care worker or that we should embrace multiprofessional education resurface from time to time.[13] These are worthy suggestions,[15,16] but have they ever really achieved traction and gained momentum? It is a sad reality that, as a profession, we have not done well as real innovators. In hospitals and community practice, "evidence-based care" has become the catchcry. Why, then, are we not applying the same principles of evidence to solving some of our organisational and system problems? Some of the answers may be found in research from other professions and businesses about how innovation happens.

During the past 25 years, Clayton Christensen of the Harvard Business School has studied the capabilities of organisations to respond to the need for change and why hundreds of organisations, companies and industries fail to respond to the necessity for innovation.[17] Christensen has now turned his interest to the health care system, for which he advocates the following changes:[18]

- The skill level of individuals providing clinical care should be matched to the difficulty of the medical problem, with non-doctors performing much of the work that was once done by doctors when the same work was new and complex;
- There should be less investment in complex technologies and more in technologies that simplify complex problems; and
- We need to create new and external organisations to disrupt the status quo. We will fail if we persist in trying to do new things from inside existing organisations, as all we achieve is trying to do the same things we have always done, only better.

When change and innovation are needed, success from inside an existing organisation is unlikely if its processes (ie, patterns of interaction, coordination, communication and decision-making) and values (ie, beliefs or standards that an organisation trusts in and uses to operate and prioritise decisions) are not aligned. When processes and values are malaligned, it is better to create a new

entity to do the work of innovation.[19] It is noteworthy that a number of the recommendations of the Productivity Commission's recent report include creation of new entities — an advisory health workforce improvement agency, a health workforce education and training council, and a consolidated national accreditation agency.[13] As the fundamental processes and values of our health care system have diverged from those of our education system, any attempt at serious reform of the health care system from within existing organisational structures is likely to fail.

Sparking innovation also requires an understanding of the cultures involved. The problem with the health care, workforce planning and health education sectors is that they contain many cultures and subcultures all operating at the same time. No dominant culture has emerged.

Goffee and Jones[20] describe a useful model of culture incorporating two basic dimensions:

- Sociability — a measure of "friendliness" within an organisation (ie, how well people get along with each other); and
- Solidarity — a measure of how work gets done, with emphasis on focus and efficiency of the work.

In each possible cultural construct, the triggers for innovation are different (Box 3). Even a quick glance at these four possible cultural paradigms reveals that they are all alive and well in organisations at the intersection of health care, workforce planning and education. The message here is that innovation of the type needed will require skilled leadership to navigate a complex pathway through these different cultural shoals, all operating at the one time in different parts of the system. New breakthrough organisations in which a dominant new culture can converge are needed to help plan, pilot and scale up potential solutions. From research within a network of organisations studying innovation, von Stamm argues that the breakthrough to innovation is more about removing obstacles to innovation than encouraging innovation in the first place.[21] With the entrenched positions of many existing stakeholder organisations in health care and education, it is hard to imagine that we will move off the square without creating some new entity with the authority to drive the changes.

The power to make it happen

The fact that the workforce drives the cost of health care makes workforce planning an inherently political issue. The federal and state governments in Australia control large slices of health care spending, immigration policy, medical registration and funding for education and training. Clearly, any real change in workforce development will have financial ramifications in the short term. However, the cost of changes made now should more appropriately be considered over the life cycle of the workforce. Planning for a stable medical workforce will require investment and involvement of all stakeholders (eg, colleges, universities, health system executives, community representatives, the Australian Medical Council and the Health Insurance Commission). Because of the inherently political nature of health care, there is an essential role for governments to either drive real innovation or at least remove obstacles to legislative approval of new models and organisations when they arise without explicit government initiation.

Competing interests

None identified.

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