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EDITORIAL

Medical Practice in the Twenty-First Century - What, if anything, will doctors be doing?

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الممارسة الطبية في القرن الواحد والعشرين - ماذا سيفعل الأطباء؟

ديس جورمان

The ability of Governments to identify, fund and deliver desirable health services will be increasingly challenged by ageing populations, escalating costs of health-related technology and by increasing consumer expectations. Current health costs are unsustainable. The USA 'health-spend' is about 16% of gross domestic product (GDP); about 31% of this is consumed by bureaucracy and up to 45 million citizens have little or no access to health care.[1, 2] Almost 10% of Australians are employed as health workers and health care costs about 10% of the Australian GDP.[3] The latter is increasing by 0.5% per annum such that it will double in less than 20 years. The New Zealand Treasury has made a similar forecast,[4] which is in line with Nobel Laureate Robert Fogel's prediction that Western economies will spend about 20% of GDP on health by 2020.[5] The context of this increase is that of relatively fewer tax payers in Australasia as the "baby-boomer generation" leaves the workforce.[6,7]

The WHO estimates a global shortage of 4.3 million health workers for the decade 2006-16.[8] It is noteworthy then that countries such as Australia, New Zealand and Oman, which are heavily reliant on recruiting overseas trained doctors,[9] are counting on remaining attractive to international health workers at a time of severe global shortage. This reliance will be variously threatened by Indo-Asian doctors "staying at home" to attend to an increasing affluent middle class and by the related recent decision by the Indian Government to recognise foreign trained doctors,[10] and by an enlarging and increasingly specialised health workforce in the USA.[11, 12, 13]

In this context, a cautious response is probably advisable to any recommendation to address shortfalls in the medical workforce by re-training nurses or other existing health workers given the generic nature of current and predicted shortages.[6, 7] This is not to argue that health provider roles will or should not change, but rather that there is a need to encourage health work careers and to create new and satisfying roles for any consequent recruits.

Health workforce planning is both complex and difficult; probably the only truism is that any plan is inevitably wrong. The effective variables are plentiful and comprise cultural and social changes, which include the demand-side effects of ageing and the supply-side effects of feminisation and generational changes; macro-and micro-economic changes; new biomedical technologies, pharmaceutical and health-disease industry developments and marketing; changes in the balance of power between health 'accountants', public health advocates and clinicians; changes in relative remuneration between and within

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the medical profession and other groups; successful trials of alternative health service models versus the power of established models and guilds; migration, recruitment and retention and international and private versus public recruitment changes; changes in medical indemnity; and, other changes in those factors that influence clinical decision making. [6, 7 , 14, 15, 16, 17, 18, 19]

A change in work hours for doctors illustrates the problems for planners. The effect of every doctor in New Zealand working one hour less per week is the same as 300 doctors leaving the health system completely. The inevitable conclusion is that health professionals must be able to be rapidly cross- and re-trained and re-deployed. Recognition of this intrinsic uncertainty also supports an emphasis on generalist and inter-professional training in all health disciplines and the need for new educational models.

We have previously proposed four categories of solution to shortfalls in health workforces: [20] the compression of the years of morbidity in later life; a better alignment of the elements of the medical education and health systems with each other and with patient care needs; an increase in the percentage of the community employed in health services and greater output from the current workforce; and, the identification and employment of disruptive innovations.[16]

Compressing morbidity in later life will be difficult in the context of epidemics such as obesity and diabetes and will be opposed by increasing health service consumption by the affluent "well-worried-sick". The commercial investment in this anxiety is considerable.[19, 21] In Australia and New Zealand, there will be relatively fewer workers, and individual productivity gains will be opposed by generational phenomena and the effect of feminisation, work life balances, litigation and practice safety, unionisation, indebtedness, demographic changes, profitable low utility practice, and by practitioner emigration. Indeed, it is probably wise that health planners begin with an assumption of an average 37.5 hour working week.[22]

The proposals likely to be most useful are based on the elements of the education and health systems being better aligned with each other, to increase health literacy, and with patient care needs, and on the identification and employment of disruptive innovations.[16]

A reasonable first step for a health planner is to debate the role that doctors should play in a health service. In the context of the increasing recognition that health costs are increasingly unsustainable, the only justification for a health service provider that takes 15 years to train to individual competency, and at a considerable cost, is the need for patient differentiation and care planning and oversight. These functions must be of high quality if a health service is to be outcome-focussed and cost-effective. If doctors in 2025 are to be employed to sclerose varicose veins, then all communities will need many times more than the current number of medical graduates.[9] By contrast, if doctors are to be employed in a narrower range of predominantly cognitive roles, then the non-medical trained-for-purpose workforce will have to be extensive and adaptable.

To paraphrase Jean-Paul Sartre, you cannot choose not to choose; that is, to do nothing is to select the status quo of medical education and practice. We have argued previously that time in training is a poor facsimile of competency determination and that direct measures are needed.[23] The utility of such a time-independent approach has been demonstrated by the Faculty of Occupational Medicine of the Royal Australasian College of Physicians. The acknowledged preface to such a system is agreement on the intended role of the worker group and consequent essential competencies ("attributes").

This editorial then will present some generic doctor 'attributes' that are likely to be agreed upon and sufficiently robust to stand the test of time. These should be debated vigorously as they will determine learning outcomes and responsive curricula and pedagogies.

The doctor of the future should be professional. Effective medical practice is contingent upon skills in the professional domains of communication, quality and safety, teaching and learning, cultural competency, ethics, clinical decision-making, leadership and management, and health advocacy.[24, 25]

The doctor of the future should be re-deployable. As cited above, given the uncertainty about what society might be like in 2025, let alone what the health needs and resources of that time might be, the only truism for planning the future health workforce is that the planners will 'almost certainly get it wrong'. The inevitable conclusion then is that the doctor of the future must be able to be cross- and re-trained and re-deployed.

The doctor of the future should be able to recognise and employ suitable innovative disruptions, even if they result in personal role change. This is not the

usual case, nor is it the common history of innovations that disrupt established groups and technologies outside the health sector.[16]

One previous development that illustrates both these perspectives is the nurse practitioner. This innovative disruption was predictably opposed by doctors on the grounds that doctor roles and status were threatened. In the case of obstetric services in New Zealand, the result of the consequent turf war is an apparent increase in autonomy for pregnant New Zealand women, which may have been gained at the expense of quality of care.[26] The initial enthusiasm of employers for nurse practitioners to undertake both general and limited scopes of practice has dissipated somewhat with the realisation that there are usually only marginal savings in time to train, and in cost to employ and deploy. In part, this occurred because nursing authorities chose to follow traditional and time-punitive pathways for aspirants to obtain the new 'higher' qualifications. An opportunity for innovation was lost.

In retrospect, it should not have been such a surprise that changing the name of a task-oriented practitioner would not significantly change the time it took or the cost of training and employing them unless the training was genuinely innovative, or unless there was a reduction in the quality or the quantity of the tasks undertaken. Although this threat to doctors may have been somewhat averted, nonsensical concepts persist, such as the use of nurses to triage undifferentiated patients for doctors, rather than the other way around.

The practice of differentiation is one of the few reasons why it is possible to argue that the medical section of the health workforce should be strongly rooted in science and so slow and expensive to train. The reaction of the doctors to the threat of being disrupted by nurse practitioners was understandable, given the way in which the disruption was often presented to them. It was also predictable on the basis of the history of the profession and the reaction of any community to such innovations.[16] Finally, it was reactionary and unhelpful. A sensible engagement of nurse practitioners and doctors has been put off by the response.

The doctor of the future should be a physician-scientist. The history of medicine shows a persistently elevated status and consequent privileges for doctors.[27] Comparison with other health providers suggests that the basis of that status and privilege is the scientific predication and evidence base of medical practice. Accordingly, contractions of training time and revisions of training for doctors should not be at the expense of scientific education; however, there is a reasonable argument that this should be predominantly clinically-oriented science. Within the sciences there is a need for some rationalisation. Organ anatomy is often taught in great detail, although such knowledge serves the interest of relatively few future proceduralists, in contrast to the often neglected teaching of surface anatomy, which is important to almost all doctors. Similarly, teaching should focus on pathophysiology as compared to physiology *per se*. Personal interests of basic scientists should not be allowed to dictate medical curricula.

The doctors of the future should be resilient and sceptical, and will need to be if they are to remain scientific. Already, the pharmaceutical industry exerts undue influence on health service expenditure and potentially distorts professional judgment.[28] This is not accidental; in the USA, this industry spends about as much as the combined budgets of all the medical schools on direct doctor-propaganda.[29] There are many examples of health-disease industry marketing triumphing over scientific practice; one is the use of MRI images to determine surgical interventions for back surgery at a time when the 'normal' findings in people who did not have back pain were unknown.

Inevitably, escalating health costs must be curtailed. Doctors with training and attributes for effective clinical decision making will be best prepared to assist with the difficult decisions regarding limiting applications of expensive health technologies. The ability to tolerate clinical uncertainty will also become increasingly important.

Resilience will have to be taught and reinforced through continuing medical education programmes. Such programmes do exist and have reasonable track records. Scepticism will also need to become a cornerstone of teaching. This will require a major change in examination techniques,[23] as current recall-based assessments strongly reinforce the evolution of what are ephemeral hypotheses into "life long facts".[21, 23]

The doctor of the future should have skills in and an understanding of health psychology, and of anthropology and sociology. There is widespread agreement that the future role of the doctor will be increasingly that of generalist individual health care within a population health approach;[30] however, other than being taught statistical and epidemiological princi-

ples, modern graduates are generally poorly equipped for effective preventive medicine. To do so requires education in health psychology, anthropology and sociology. Mindful of the marketing success of water bottlers, who have convinced the consumer to pay three times more for their water than for petrol, there is clearly great potential for modifying health-at-risk perceptions, beliefs and behaviours.

The doctor of the future should have a cognitive and general scope of practice. There is a strong financial and health outcome basis for arguing that doctors should, as much as possible, be employed in general scopes of practice.[17, 31] We have already opined that a cognitively-oriented practice is the only one that would sustain critical public scrutiny in terms of how much and how long it takes us to educate doctors. To this must now be added a shift in emphasis from acute to chronic disease management.

The opposite is occurring. In our medical school, about 10% of graduates have a strong interest in becoming general practitioners. Unfortunately, more exposure to general practice does not translate into more inclination; the key issue is the quality and not the quantity of the exposure. Nevertheless, there is evidence that "immersion programmes" do work, and particularly in respect to graduates selecting rural medical careers.[32, 33] The disinclination to general medical practice is in part maintained by the significant distortion of medical career choice and practice that we have described beforehand.[21] This arises from the perverse and now 70 year old actuarial decision to fund medical units of practice rather than time expended.

The failure of "generalism" is global.[11, 13] Bodenheimer reports that less than half the training positions in family medicine in North America are taken up by local graduates. In the same edition of the *New England Journal of Medicine*, Woo cites a decline in US medical graduates filling training positions, in the period from 1998 to 2006, of 51% in family medicine, 18% in internal medicine, 16% in obstetrics and gynaecology, 8% in paediatrics and of 4% in general surgery.[13] To a large extent, these declines are explained by relative levels of remuneration. To the acceptance of medical education, designed to show-case general scopes of practice, must then be added the need for an urgent relative values study and realignment of remuneration and need. Fear of waiting-list blow-outs and other undesirable outcomes has prevented any such political bravery in the past; the current and emergent crisis in medical workforce disposition may warrant greater fortitude now.

Another consideration in the context of generalism is the feminisation of the medical workforce. In New Zealand, women now comprise over 50% of undergraduates and junior doctors, but only 31% of specialists, including GPs.[34] With respect to the future roles of doctors, there are positives to this demographic change as the cognitive and flexible generalist roles, which many of us advocate, appeal more to women. There has been much made of the fact that women work around eight fewer hours per week,[34] yet analysis of these New Zealand data shows this differential is not present in the early post graduate years, or past the age of 70, although there are, as yet, few practitioners in this latter age group. There is also a suggestion that women doctors may have longer working lives;[35] however, if women are to lead a generalist revival, ways must be found to make working and training more flexible, especially through the years of specialty training and early specialist practice. This should be accompanied by a revaluing of the skills needed to effect quality chronic and integrated care, so crucial to the health of society and to controlling health costs.[14, 36] The future, female dominated, medical profession will need sufficient status to exert the necessary influences to maintain high standards of patient care.[35, 36] Along with redefining the role of a doctor, some thought must be given to addressing what will be regarded as 'success' in the medical profession in 2025.

CONCLUSION

The doctor of the future is already in training. The health system that they will inherit, the health problems of that day, and the technology, which will be available to them, can only be guessed at. The reality of the latter must underpin the outcomes, which are adopted for each stage of medical training, and the curricula and pedagogies that are consequently derived. The debate about these competencies and who decides them needs to begin.

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