Medical education—the next 40 years

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Abstract

As the Christchurch campus of the Otago Medical School celebrates its 40th anniversary, this paper ponders where medical education might head in the next 40 years. The patient must remain at the centre of health care and health care education but such education needs to be placed within nurturing environments that value support and innovation. Synthesising evidence, weighing up options, considering the personal factors that a patient brings and the uniqueness of a person’s particular illness will be increasingly important roles of a future doctor. This requires interpreting complex data, people skills, flexibility, redeployability and, at times even acting like the “Parish priest”. Ultimately however, if we select the right people, create the right expectations, and give them the right learning opportunities, then the curriculum will look after itself.

The Christchurch campus of the Otago Medical School celebrates its 40th anniversary in 2013. This prompts us to ponder where medical education might head in the next 40 years. However, as the Nobel Prize-winning physicist Neils Bohr reminds us, prediction is very difficult, especially about the future.

Any future predictions about medical education are therefore likely to be speculative, but we can divide the issue into those aspects that are likely to change and those that are likely to remain the same. Those things that are likely to change are the nature of health care delivery, the role of the doctor and the change in patient demographics. Those things that are less likely to change are the principles of effective education, the powerful impact of role models and the health care environment, and that the patient will remain at the centre of health care.

The stakes are high in medical education. In 1944, the UK Goodenough Report noted that “properly planned and carefully conducted medical education is the essential foundation of a comprehensive health service”. Over 50 years later, Training Tomorrows Doctors, a Report of the Commonwealth Fund mentioned that “at a time of unprecedented advances in medical knowledge and rapid changes in the organisation and delivery of healthcare, the primacy of the education of a nation’s healthcare workforce remains constant”. It seems likely therefore that the place of medical education in effective health care delivery will remain important into the future.

Rather than speculate about what a future curriculum might look like, as there are many variables that might affect that, instead it is likely to be more helpful to consider what factors need to be taken into account in looking at any curriculum developments. Such factors could then be taken as criteria by which to judge if a curriculum evolution is moving in the desired direction.
Start with the patient

Good medical practice in New Zealand and the UK emphasises that good doctors make the care of patients their first concern; they are competent, keep their knowledge and skills up to date, establish and maintain good relationships with patients and colleagues, are honest and trustworthy and act with integrity.

The health and wellbeing of people has always been the goal of medicine and this is unlikely to change. However, the needs and attributes of patients may well change, some of which we have seen already.

The context of health care is changing. As a geriatrician colleague reminded us, “Observing old people in hospital is like teaching zoology in a zoo. Observing old people in their homes is like teaching zoology in the woods and fields”. Likewise, studying medicine in hospitals could be likened to studying zoology in a zoo; whereas studying medicine in the community is like studying zoology in the woods and fields.

Our health care education needs to continue to be focused more on the patient, and therefore “the woods and fields’. Nevertheless, extremes of illness are always likely to feature in hospitals, and seeing such extremes can assist in recognising milder versions. Hospitals are likely to remain important in health care education.

Sometimes as medical educators we are asked whether medicine should be learnt in urban settings, in rural settings, in the community or in the hospitals. Such questions are almost framed as though it were a competition to see which context offers the most. Instead, education should be like a balanced diet—there should be variety and a mixture of contexts in which to learn. That way the weaknesses of one context can be balanced by the strengths in another. Furthermore, it is easier to recognise the strengths of a context, when one notices its absence somewhere else. Such considerations are not just about where our students intend to practise in the future.

While exposure to rural settings, for example, is known to be an important factor in encouraging doctors to practise rurally in the future, it can equally be argued that exposure is even more important for those students who have no intention of practising in rural settings. Understanding the healthcare needs of rural communities and the support needs of rural doctors is important for any urban doctor. Likewise, understanding the support needs of general practitioners is important for hospital-based doctors.

Similarly, the needs of hospital based doctors for community-based doctors. Appreciating the roles of other health practitioners and the limitations in which they work is a vital precursor to effective teamwork. Thus the choice of contexts in which to learn medicine should be mindful of these, and other educational, factors rather than by unquestioning tradition (“we’ve always done it this way”) or by defending threats to power bases.

The nature of illness is also likely to change over time—chronic illness is increasing in prevalence and importance—this trend is likely to continue. Whether we will see a resurgence of the “old” acute illnesses, particularly infectious diseases remains to be seen. The health effects of climate change may alter the prevalence and geographical distribution of some diseases. So-called lifestyle diseases, such as problems with obesity or addictions, are also likely to increase in prevalence.
Patient demographics are changing and are likely to continue to do so—the well-documented projections in the age makeup of our population will mean a steady increase in the proportions of older people in our communities. The proportion of people identify as Maori is likely to continue to increase.

Among all populations, it is likely that all patients will continue to be better informed—the access to the same information as one’s doctor through the internet means that increasingly people will come along not so much seeking “the answer” but wanting help to decide between “the answers”. Furthermore, making a distinction between patient needs and patient wants will continue to challenge doctors to decide which areas to legitimise as “worthy” of the health dollar.

Synthesising evidence, weighing up options, considering the personal factors that a patient brings and the uniqueness of a person’s particular illness will be increasingly important roles of a the future doctor.

Future role of the doctor

There has been much speculation about how the role of the doctor may change in the future. The complex marriage of the art and science of medicine is likely to be enduring. Doctors need to be scientists and humanists.

Medicine is predicated on a sound scientific base with a sound understanding of people. As such, the role of a doctor could be seen as a translator where the “language” of the patient is translated into science so that it can be understood and helped. Likewise, the language of science needs to be translated back into the language of the patient, so that the complexities can be understood. Doctors need to be fluent in both.

In a graduation address, a recent Dean of Otago Medical School reminded us that medicine is about making difficult decisions with incomplete information. While it is hard to argue that any area of health practice is uniquely “owned” by medicine, and it is equally hard to argue that any area of health practice is not important for a doctor to know about, it could be argued that dealing with complex uncertainty is one of the areas that distinguishes doctors from other health practitioners. This requires skills in evaluation, synthesis and scholarship.

Doctors will be expected to have excellent skills in leadership. Good leaders aren’t necessarily those “in charge” but are able to be flexible in their role so that they can take charge when necessary and follow others when necessary.

Workforce planners also have their views on the role of the doctor. Doctors are expensive to train and expensive to run. Health care delivery is evolving. This suggests that future doctors need to be flexible and redeployable. It is increasingly unusual for people to remain in the same career over their entire working life, yet our medical education systems have high “up front” costs (not just in time and money but also in personal commitment). Is it still appropriate to consider “once a cardiologist, always a cardiologist”? If our workforce needs to be flexible, then our training needs to produce flexible workers. This underpins the call for more generalists in healthcare.
We also need to ask what areas will not remain unique to a doctor. While doctors will need to remain prescribers, proceduralists or technicians, we are likely to see some of these roles increasingly taken over by others.

Interpreting complex data, people skills, flexibility, redeployability and, at times even the “Parish priest” encompass, and will continue to encompass, what our doctors need to be.

Get the learning environment right

Alan Clark, a previous Dean in Christchurch, suggested that we should “get the learning environment right and the facts will look after themselves”. This is very good advice. People learn much more from what they see around them than from what they are told to do. Similarly, people learn much more from rich experiences than from sitting in darkened rooms with slides. This is not to undervalue what good theoretical underpinning adds to these rich experiences.

Learning can only occur in a person’s head. A teacher cannot make a student learn. As such, learning requires time and thought. Cramming someone’s head with facts competes with, and hinders, this time for thought. These observations have lead to the rise of so-called self-directed learning and independent learning.

The trap with self-directed learning is that sometimes it can be mistaken for directionless learning or teacherless learning. Ultimately, the direction will come from the health problems that need to be addressed, so maybe self-managed learning might be better term.

The role of the teacher is to help the student see the desired destination of what needs to be learnt, create the right conditions, ask the right questions, and then let the student go so that he or she can find their own path to that destination. Teachers can contribute to deciding what is important, can make use of their experience, can help a student navigate the path to the destination but cannot do the learning.

Learning takes time and space—commodities that are always under pressure in any curriculum—with medicine no exception. One of the suggested goals for medical education is for us to standardize the learning outcomes but individualise the learning process. In other words, set the right environment, ask the right questions and allow time, space and resources for the students to do the learning.

The major challenge of medical education is to integrate formal knowledge with clinical experience and to develop habits of inquiry and innovation. The gold standard of good medical education is where students learn the underlying theory and science of a problem at the same time as they encounter that problem in real life.

Learning the theory before the experience risks not seeing the relevance or applicability of what needs to be learnt. On the other hand, learning the theory after seeing the problem risks not making the most of that learning experience. It is therefore very difficult to get that timing right—but we should not stop trying.

American educator, Abraham Flexner, at the beginning of the 20th Century, recognised this problem when he noted that medical education was either predominantly based in practice with little underpinning science, or primarily based in...
His suggested solution was to link both the science (university) and practice (clinical environments) together.

Early attempts at this linkage resulted in the first few years of a medical course being based in universities and lecture theatres and the later years being based in clinical environments. Whilst this was an improvement on what had occurred previously, it still created a gap between the theory and practice of medicine.

Increasingly, we are trying to close that gap so that theory and practice occur as close as possible to each other. This means that all years of medical course need to reinforce the underpinning sciences (not just the earlier years) and provide clinical experience (not just the later years).

Somewhat in jest, I have sometimes suggested we should have an upside-down curriculum—this would start with the trainee intern year whereby the novice student would spend time immersed in a variety of health care settings, observing what happens and what needs to be learnt. The middle years would be spent acquiring such attributes and the last year would finish with anatomy and other foundation sciences—by which time, the student would have a yearning to know more and clearly see the relevance of why he or she had to learn where not to put needles or what drugs not to prescribe.

While this curriculum model has clear logistic problems, and may create as many problems as it solves, putting an immersion year early in the course might help with selection processes into medicine—a student who completed a year of immersion in medicine and a variety of health contexts and who still wants to be a doctor, is likely to have the motivation needed to take them through their training and beyond.

The other model of education that I find useful is the “rocket launch” model. An analogy has been drawn between the teaching and learning of medicine and the launching of a rocket. The old model suggested that you need to provide the rocket with enough fuel to last its whole journey. It will take off with enormous force and gradually return to earth just as the fuel runs out.

The analogy in relation to medical education suggests that we need to equip our students with all the knowledge and skills they need for their professional practice. They would then be launched into their professional careers and hopefully the parabolic curve they follow would mean they would run out of this knowledge just after they reached retirement age. Instead, the new model makes use of refuelling stations.

A successful launch needs to provide the rocket with enough fuel to get to the next refuelling stage, and with the equipment to engage with refuelling stations so that it can remain in orbit and functional for as long as is needed. Likewise, the analogy for the new model of medical education suggests a medical programme needs to equip students with enough core knowledge but more importantly with the skills by which they can constantly engage with new learning throughout their professional life.

Finally we need to consider, not just what should be learnt, but how it should be learnt. If we accept the role of the future doctor is as translator, leader, synthesiser but not fact memoriser, then we need to consider models of learning that support this. Some have referred to this as transformative learning.
In such learning, students develop leadership attributes; moving from fact memorisation to searching and synthesis for decision making; from seeking professional credentials to achieving core competencies in teamwork; from non-critical adoption of educational models to creative adaptation of global resources. I look forward to seeing ways developed that encourage this.

**Select the right people**

Just it is important to get the learning environment right, it could also be claimed “select the right people, give them the right learning opportunities and the curriculum will look after itself”. To this could also be added, and try not to demotivate the students, or make them too cynical, while they are going through it.

Selecting the right people to admit to medical school is probably the most important decision a medical school can make. In 2002 the BMJ devoted a whole issue to considering what makes a good doctor. Letters to the editor were invited and one person’s summary of the responses suggested that “all we can hope to do is select students with the right gifts (not the right exam results) and somehow stop them from going rotten through overload, cynicism and neglect during their training and early career”.15

Of course, trying to predict people’s behaviours from day to day is hard enough, but devising systems to select young students in order to determine how they may practise as doctors for the rest of their lives is a near impossible task. To my mind, the most important attribute to select for, but arguably the most difficult to measure, is motivation.

We don't want to select those people who just want to be doctors, we certainly don’t want to select those people who might want to be doctors, what we want to select are those people who enthusiastically want to be doctors, who have given the matter considerable thought, who have considered all the options, who have looked at what medicine demands, and despite all that, still really want to be doctors. This goal is easier said than achieved.

When I looked at what differed between graduates who entered medical school, compared with school leavers, motivation was one of the biggest differences—graduates were more sure of their career decision and were more motivated to do medicine.16 What was interesting about this finding, however, was that this was not due to the graduates having a degree, but that the graduates were older—they had had more time to consider their options, looked around and still decided medicine was right for them. As such, a gap year (or gap years) may be more important than a prior degree.

I don’t have the answers about how we measure attributes relevant to selection, particularly motivation, but I’m not sure that a two-hour test and/or 30-minute interview is likely to be sufficient. Despite looking at other measures, whichever way we look at it, prior academic achievement remains the most consistent predictor of success in medical school and beyond.

If we assume that future behaviour is best predicted by past behaviour, then some documentation of past behaviour and past achievements could be a good place to start. This may be why prior academic achievement works so well as a selection criterion.
Nevertheless, New Zealand medical schools are unique in selecting most medical students after a year at university.

Other medical schools either select directly from school or after a degree. This first year of university could offer untapped opportunities to try to measure some of these attributes that we think are important in informing selection decisions.

Whatever else we need to select on, we need to base them on the important roles of a doctor—synthesiser, scientist, humanist and leader, not on an ability to recall facts by rote.

**Work within good systems**

The learning environment cannot be discussed without considering the powerful effect of the health care environment. Moving into clinical practice and into an environment of experienced practitioners can be stressful.

There is an encounter with the hospital that new studies describe as brutalising in impact

_Samuel Bloom_ 

Graduating medical students cross over from a highly idealistic phase and enter another culture often constrained by the philosophy of those educated and trained in a different era. Medical schools can help students learn all manner of appropriate behaviours and attitudes in medical practice, but if they do not see these role modelled, then they will quickly be undermined. The recognition of, and focus on, professional identity is an increasing challenge in medical education.

To my mind, there are four solutions: creating synergistic relationships between the medical schools and the health care systems; equipping our graduates with the skills to learn in workplaces and to work well with others; helping all practitioners recognise and challenge behaviours in colleagues that are unacceptable; and finally, creating a culture of reflection and quality improvement.

When I undertook a review of professionalism, I looked at many of the definitions of professionalism that had been given and tried to distil what was common to them all. In the end, one of the elements that appealed to myself and my colleagues the most we phrased as a “commitment to improvement in oneself, others and systems”. Professionals continually want to improve themselves, they want to improve others (which incorporates teaching) and they want to improve the systems in which they work.

Creating effective relationships between a medical school and a health care system is the basis of what has been called a symbiotic curriculum. This is where education improves clinical service and clinical service improves education. As for any relationship, this requires nurturing, which in turn requires close communication and collaboration between both parties.

Such symbiotic improvements are likely to be mediated through role models and a culture of questioning. Such improvements don’t occur in a vacuum but are stimulated by colleagues and patients who ask difficult questions and refuse to be put off by easy answers.
End with the patient

Just as we began with the patient, so should we end with the patients. Medical schools need to show social accountability.\textsuperscript{22,23} This includes contributing to the diversity of the workforce, and to improving access to health care.

Keeping the patient at the centre, attending to common courtesies, and a willingness to improve are enduring attributes of good health care and good medical education. This is illustrated by noting that problems with health services that lead to complaints have often been classified into problems with communication, a lack of courtesy, kindness or empathy, a lack of self reflection or openness to criticism, problems with teamwork, lack of commitment to quality improvement, and finally, sometimes to problems with competence.

As healthcare becomes increasingly able to do more and more, and as quality of life will increasingly compete with length of life in a person’s values, our decisions with patients will move not just from knowing what to do but to knowing when not to do it, and having the skills by which such decisions are discussed and agreed with patients.

Never think you’re finished

Just as professionalism includes a commitment to improve in self, others and systems, so too must medical education have a commitment to improvement. There will be no perfect system of medical education—there are too many tensions to resolve for this to emerge. What is more important is that thought is given to these tensions, there is commitment to looking for innovative ways to resolve some of the tensions and there is commitment to question the status quo. This means medical education needs to be embedded with evaluation, research and quality feedback loops. Medical education needs to embrace and nurture a culture of innovation, courage to fail, openness to change, reflection and yearning to improve.

Above all, we all have an individual responsibility to be a good role model—we are not just the products of medical education but, regardless of our positions, the shapers of its future.

What might this all look like?

It is tempting to put this all together to show what the “perfect curriculum” might be. However, this probably doesn’t exist and those that think they have one are likely to be wrong. Instead, each curriculum is likely to be unique, as everyone needs to do the best with what they have got.

What is more important is that people care about the curriculum they have; they worry that it isn’t good enough; and they are committed to its improvement. That way the curriculum will be dynamic, innovative, responsive and populated by enthusiasts. Probably no more can be asked for more than that.
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