

Changing education to improve patient care

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Abstract

Health professionals need competencies in improvement skills if they are to contribute usefully to improving patient care. Medical education programmes in the USA have not systematically taught improvement skills to residents (registrars in the UK). The Accreditation Council for Graduate Medical Education (ACGME) has recently developed and begun to deploy a competency based model for accreditation that may encourage the development of improvement skills by the 100 000 residents in accredited programmes. Six competencies have been identified for all physicians, independent of specialty, and measurement tools for these competencies have been described. This model may be applicable to other healthcare professions. This paper explores patterns that inhibit efforts to change practice and proposes an educational model to provide changes in management skills based on trainees' analysis of their own work.

(Quality in Health Care 2001;10(Suppl II):ii54–ii58)

Keywords: physician education; improvement skills; accreditation; competency

"The future ain't what it used to be."

Yogi Berra, former catcher and manager of the New York Yankees

Peter Senge has said that there are two sources of change: authority and learning.¹ As a group, physicians are thought to be extremely cautious, conservative, and resistant to change. We pride ourselves on "keeping up", and yet are clumsy when it comes to major organised efforts to bring about change. The thesis of this paper is that the current system of medical education does not prepare graduates to design and lead the change efforts that will improve patient care. The reasons for this deficiency are explored and a model which attempts to improve medical education is presented.

Attitudes and skills relevant to change are at the heart of the issue. The first section of this paper focuses on five reasons for resisting change: (1) failure to distinguish substance from form; (2) failure to distinguish mental models from reality; (3) an educational model that is heavily utilitarian and only partially empowering of our human capacities; (4) lack of time and skill needed to manage and lead change efforts; and (5) organisational models that do not facilitate efforts to change.

In the second section an alternative educational model is presented. It is limited in that it has not yet been fully implemented and tested; it may be unique to the USA (although

sufficient similarities in graduate medical education exists between the UK and the USA that it may be applicable in both venues); and the question of how we will know that this change in educational system is an improvement has not been fully addressed. Nonetheless, the process of introducing a change in graduate medical education, the use of an accrediting body to provoke change, and the thinking behind the competencies sought may be of interest.

Why do we resist change?

FAILURE TO DISTINGUISH SUBSTANCE AND FORM

*"Substance is enduring; form is ephemeral. Failure to distinguish between the two is ruinous. Success follows those adept at preserving the substance of the past by clothing it in the forms of the future. Preserve substance; modify form; know the difference."*²

The substance of medicine is enduring; the form of medicine is ephemeral. Failure to be clear about that which we will drag into the new world inhibits our ability to be malleable about form. It prevents us from letting go of things that are no longer useful. Our obligation to defend substance metamorphoses into a belief that all change is heresy. The substance of medicine is a relationship which addresses human vulnerability, human values, and human dignity. It also involves competence and compassion; all else is form. Harmony of competence and compassion occurs in a relationship; only a clear and open understanding of "other" can illuminate the best path.

The greatest fault in the current healthcare system (at least in the USA) is that it sabotages relationships. Although heroic efforts keep the relationship alive, the system makes it hard to find the time to listen, to develop trust, and to really connect the patient and the doctor. Time is spent on form (forms) rather than substance. Care of the system has compromised care of the patient. If we are to improve health care we must pay more attention to time and we must use it to strengthen relationships between physicians and patients, physicians and colleagues,

Key messages

- The current medical education model does not teach physicians how to design and lead the changes needed to improve patient care.
- Several factors inhibiting change are built into the existing educational models.
- Organisational models of care delivery also inhibit change.
- A new model based on educational outcomes and trainees' analysis of their own experience is presented.

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and physicians and society. The system has undervalued its greatest asset—it has preserved form and sold substance short. Technology has enhanced our capacities to recognise disease, but lack of time, skill, and clarity have inhibited our abilities to recognise the patient.

If we are clear about substance and vigorous in our defence of it, we can be flexible about form and open to improvement. A particular change can be viewed in the proper light and engage our intellect and will rather than our emotions. Change provoked by authority is frequently accompanied by a focus on compliance with the change, edicts from on high, and by unintended consequences. Change provoked by learning also has unintended consequences but appeals to higher instincts and tends to gather the best people and the best in people. Good physicians respond to data better than they do to commands, yet lack of clarity about substance inhibits full engagement of even good physicians.

FAILURE TO DISTINGUISH MENTAL MODELS FROM REALITY

Humans are designed for learning. To paraphrase Augustine, the intellect hungers for the truth and it is restless until it finds it. So why aren't we all learning? One reason is that the "restlessness" of searching for the truth is painful, whereas embracing an illusion is comforting. An ophthalmologist friend of mine tells me that vision is a physiological hallucination. Billions of photons hit our retina every second—they are not processed equally. From earliest childhood we have distinguished some things as more important; we reinforce those things and ignore background. Depending on our culture, belief system, prior experiences, and so on we literally "see" different things. I select different data from you. When we disagree it is not that one is right and the other wrong; it may be that we are both blind. We literally don't see the other's "point of view". We each are convinced that our particular illusion is reality.

Paul Batalden has taught that life is not condensable (personal communication). The full richness of life fits no model. Yet, in order to understand life, we develop mental models. Peter Senge has described this process in detail.³ All models are limited, but some are useful. We apply measurements to the models we have, so both the models and the measurements used must be constantly reassessed. I was fortunate enough to have George Engel, a master of the biopsychosocial model of disease, as one of my teachers. When "core curricula" were introduced he quipped: "The core of the apple is the only part not worth eating". He understood that the fullness of the particular encounter is always more than any general principles can accommodate.

It is relatively easy to change when the change is supported by data and primary contact with reality. It is very difficult to give up an illusion. My mental models are very precious to me. They contain a set of assumptions with which I am very comfortable. They also inhibit change and impair my ability to improve.

A LIMITED EDUCATIONAL MODEL

The educational models we use also inhibit change. Our system is a composite of the philosophies of the logical positivists who held that the only source of the truth is empirical, and the utilitarians who focused on "does this work?". Armed with this philosophy we have made great progress; however, it is ultimately limiting. A drug that works but bankrupts the patient and family (at least in the US model) cures the disease and damages the patient. End of life heroics may attack the patient as well as the disease. Our teaching models have been designed to accommodate an exponential increase in biomedical knowledge and technology. Techniques focus more on content and less on person. Perhaps an Aristotelian model is more appropriate. Aristotle considered the aim of education to be the full development of a "good citizen", a citizen capable of making and recognising right judgements, judgements that harmonise goodness and truth, not just truth. This approach appeals to our will as well as our intellect. Balancing degrees of goodness is a skill that is much needed in health care.

Science seeks universal truths; art is always unique. Medicine, when good, fully expresses both. Physicians may be fully informed about pneumonia but, when a particular patient has pneumonia, treatment of that patient is art. Achieving this harmony requires a relationship with the patient, and teaching this harmony requires a close relationship between teacher and student. Palmer,⁴ in his book "*To know as we are known*", quotes Abba Felix who said: "To teach is to create a space in which obedience to truth is practised." Characteristics essential for teaching include: memory of our previous experiences and our own attempts at learning; desire (our hopes for ourselves and our students); and the reality of a patient accompanied by the shared discovery of that reality with the student. Time and space for reflection are also needed. In professional education the memories, desires, and realities are not just personal; they are the memories of the profession, the desires of the profession, and the realities the profession has encountered over millennia.

An educational model that does not nourish the relationship between student and teacher is not robust enough to support the contract to discern and obey the truth. The contract suggested by Abba Felix fully engages humans to change in response to the truth; other educational models lack the power to generate that engagement.

LACK OF TIME AND SKILL TO LEAD EFFORTS TO CHANGE

A significant body of literature has shown that graduates of both medical schools and residency programmes are not fully prepared to lead the change efforts needed to improve patient care.⁵⁻¹² In the USA graduates practise in large healthcare systems which may facilitate or inhibit good patient care. It should be easy to do the right thing and hard to do the wrong thing. Sometimes the opposite prevails. Physicians must now be able to diagnose and treat

systems as well as patients; in general, they are not taught those skills.

ORGANISATIONAL MODELS THAT INHIBIT CHANGE

Hock, the founding CEO of the Visa Corporation, has noted that many of our major institutions have failed to achieve their mission. He attributes these failings to an outdated organisational model based on an outdated and mechanistic view of the world. Hierarchical structures and “command and control” compliance orientated directives do not work in a complex world. He favours a “chaordic” approach in which the smaller units of the organisation are charged with adapting most intelligently to their particular environment, bound together by a common purpose.² In the absence of a common purpose the only thing that can bind them together is tyranny and “command and control” behaviour.

Patterns of information usage can clarify the type of organisation in operation. In a “command and control” organisation only the front office has all the information. Information is used to provoke compliance with centralised policies and is doled out accordingly. In a chaordic organisation all information is immediately distributed to everyone because only that will facilitate successful adaptation to particular environments. Hock may have much to teach modern medicine.

When efforts to change begin by seeking compliance with the proposed change, the battle is lost. Open dialogue, clarity of purpose, and true commitment are needed to engage fully in most successful change efforts. An organisation that lacks dialogue, clarity of purpose, open flow of information, and deep respect for colleagues can change only by decree.

An alternative educational model

AN ATTEMPT TO IMPROVE MEDICAL EDUCATION

The system of graduate medical education in the US is unique, and lessons learned in the US may not always apply in the UK. However, the Accreditation Council for Graduate Medical Education (ACGME, see box) outcome initiative is an approach to enhance graduate medical education that may offer an opportunity to the larger community to explore the use of education as an improvement tool for both the system and the individual.

In 1997 the ACGME committed to the use of educational outcome measures as an accreditation tool. This initiative is supported by three principles:

(1) *Whatever we measure we tend to improve.* Process and structure measurements may indicate the potential of a programme to educate, but do not demonstrate that the programme is actually educating its residents (registrars in the UK). Measurements of the skills demonstrated by residents and graduates can be used to judge whether programmes are effective and will focus improvement opportunities.

(2) *Programmes need more flexibility to adapt intelligently to their particular environment and available resources.* Teaching hospitals have financial constraints that may compromise

The ACGME is a private, voluntary, accrediting body that does not report to the government but expresses the profession’s effort to regulate itself. It is composed of volunteer peer experts, residents, and the public. A federal member sits without vote as an important liaison between the profession and the government. The ACGME is configured as a 501(c)(3) corporation whose mission is to “improve the quality of health care in the United States by ensuring and improving the quality of graduate medical education experiences for physicians in training.” Twenty six Residency Review Committees (RRCs), small groups of specialty specific physician experts, set standards for and make judgements about the graduate medical educational programmes in their specialty. There are in total 7800 accredited residency programmes that house 100 000 residents in training. It is important to distinguish board certification, which examines individual physicians, from accreditation, which examines those educational programmes preparing individuals for board certification and independent practice. Graduate medical education in the United States refers to those educational programmes conducted after the MD degree has been conferred but before the physician is able to practise independently.

education. If residency programmes are able to show that they consistently produce competent graduates, the regulatory community may be able to tolerate more flexibility as to process. Resources can then be applied to activities that are known to be effective.

(3) *Public accountability.* The public needs assurance that graduates of residency programmes are competent. Visible educational outcome measures may be one way of demonstrating the competence of programmes as well as of the graduates.

THE PROCESS OF IDENTIFYING MEASUREMENTS

Naming what to measure

Common purpose is important, and a broad dialogue is essential to achieving common purpose. After reviewing 2500 published articles on physician competency, the ACGME research staff selected 84 competencies clustered in 13 categories. This list was then rank ordered by importance and feasibility by all RRC members, focus groups of residents, programme directors, and representatives of the public. An advisory committee reviewed the data emerging from the vetting process and recommended six competencies (table 1). Details of each of the competencies can be found on the ACGME website (www.acgme.org).

Much was learned in the vetting process— for example, “continuous quality improvement” was sent out as a major competency and was rejected. However, all parties agreed that all physicians, independent of discipline, should be able to analyse their practice and

Table 1 ACGME competencies

Patient care	Residents must be able to provide patient care that is compassionate, appropriate, and effective for the treatment of health problems and promotion of health
Medical knowledge	Residents must demonstrate knowledge about established and evolving biomedical, clinical, and cognate (e.g. epidemiological and sociobehavioural) sciences and the application of this knowledge to patient care
Practice based learning and improvement	Residents must be able to investigate and evaluate their patient care practices, appraise and assimilate scientific evidence, and improve their patient care practices
Interpersonal and communication skills	Residents must be able to demonstrate interpersonal and communication skills that result in effective information exchange and teaming with patients, patients' families, and professional associates
Professionalism	Residents must demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population
Systems based practice	Residents must demonstrate an awareness of and responsiveness to the larger context and system of health care and the ability to call on system resources to provide care that is of optimal value

improve it. All accepted “practice based learning and improvement”. Likewise “systems based practice” provoked a lot of discussion. Thinking of systems as the “physiology of the workplace” helped understanding. Eventually the vast majority accepted that detecting patterns of events and the system producing those patterns, and the relationship between the context of work and the emerging patterns of care was a skill expected of all physicians.

The six competencies may be thought of as organising principles that help to clarify thinking about the substance of medicine. We can be constant to these competencies as the forms of medicine change. They are worth dragging into the future.

Identifying measurement tools

Twenty six groups of four individuals (quads) were convened to help to identify measurement tools for each of the six competencies. The chair of the RRC, the director of the certifying board, the head of the programme director group, and a resident from each of 26 core disciplines constituted each quad. These groups met in a retreat format on two occasions, were supported by assessment experts, and came up with an initial “assessment toolbox”. The following 13 assessment tools were identified:

- a 360° evaluation;
- chart stimulated recall;
- checklist evaluations;
- global ratings;
- objective structured clinical examinations;
- procedure or operative logs;
- patient surveys;
- portfolios;
- record reviews;
- simulations and models;
- standardised oral examinations;
- standardised patient examinations;
- written examinations.

Details of the use and psychometric qualities of each of these tools can be found on the ACGME website (www.acgme.org).

At present, particular assessment tools are not being prescribed by the ACGME. Programmes are phasing in evaluation techniques that make sense for them and accreditation will depend on demonstrated progress of the programme in moving towards dependable evaluation tools. In general, four categories of tools are being deployed:

- some form of focused assessment of clinical skills;
- cognitive examinations;
- 360° evaluations;
- portfolio assessments.

Discussion

ROLE OF AN ACCREDITING BODY IN PROVOKING CHANGE

The ACGME has as its mission the improvement of patient care by improving graduate medical education in the USA. It has three points of leverage: Medicare money to support graduate medical education is linked with accreditation; the eligibility of residents to sit for certifying examinations conducted by the boards is linked to accreditation of the programme that is preparing them; and state licensure is also linked with training in an accredited programme.

The universe of accredited programmes in the USA is very pluralistic. Some programmes are housed in large academic medical centres and others in community hospitals. Improving education in all venues is better served by a focus on educational outcomes than on process and structure measurements of the programmes.

This initiative has been well served by a partnership between the American Board of Medical Specialties (ABMS) and the ACGME. Both organisations have adopted the same six competencies. Not only must the programme teach the six competencies, but they will also be on the examinations taken by individual physicians. In the US model the boards are interested in individual outcomes and the ACGME in programmatic outcomes. If a residency programme systematically produces competent residents, they will be accredited.

USING THE SIX COMPETENCIES TO LEARN ABOUT CHANGE AND TO IMPROVE PATIENT CARE

Learning about change begins by changing oneself. The six general competencies are organising principles that allow physicians of different disciplines to have conversations about their work and learning. They provide a lens through which we can examine the effectiveness of individual change efforts as well as those of educational programmes. Further, because residents learn by doing, the quality of the learning is directly impacted by the quality of the doing. Changes can be designed that improve both the resident's skill and the quality of patient care. One of the

competencies—practice based learning and improvement—calls on residents to analyse their clinical experience, design a change for improvement, make a change effort, and determine if it was an improvement. Incorporating improvement knowledge into the normal content of their curricula directly links their learning with improvement of patient care. Academic medical centres can lead improvement efforts by applying classic educational models to their daily work. Improvement work is part of the substance of medicine.

THE DREYFUS MODEL: LIFE BEYOND COMPETENCE

In an unpublished manuscript presented in February 1980 entitled “*A five-stage model of mental activities involved in directed skill acquisition*”, Hubert and Stuart Dreyfus, a philosopher and a mathematician and brothers, described a simple model of how humans acquire skills. It has proved useful in thinking about medical education. They described five categories: novice, advanced beginner, competent, proficient, and expert. In a general sense one can think of a medical student as a novice, a first year resident as an advanced beginner, and a graduating resident as competent. The first few years of independent practice and, for many, a lifetime of practice results in proficiency, and experts can be recognised because other physicians call them when they are in need of wisdom and experience about a case. Paul Batalden added a sixth category of “master”—who love surprises while experts hate them. According to the Dreyfus brothers, the early stages of learning involve rule based behaviours while the later stages involve context based behaviours. Ask a medical student what to do if a patient has a fever and he/she will pull out a pocket reference book and list the things to do; ask a master and they cannot answer—they must see the patient. This model can also be applied to the six competencies. A resident may be competent in medical knowledge, an advanced beginner in communication skills, and a novice in practice based learning and improvement, for example. The model allows us to appreciate that improvement skills can be acquired, that there are rules to understand, and that there are increasingly complex contexts in which those rules can be applied.

The model also has other educational implications. It is not uncommon to partner a novice with a master. Everyone feels good about those encounters; however, unsupported by other

activities it is probably a dangerous model. The novice may acquire the mannerisms and polish of the master, but has not yet learned the rules. A sounder approach is to find and mimic a person one step ahead of you on the continuum. Such a person can provide the student with exactly what is needed to progress to the next step.

Conclusions

While it is still too early to determine if this initiative will be effective, the process of shifting to a competency based accreditation and education model for graduate medical education has generated widespread and productive dialogue about the work of physicians and how to improve that work. Clarifying the substance of medicine, focusing on measurements of competence, and thinking about how to improve those measurements have been the products to date.

Minimal threshold models of accreditation are typical. Does a programme meet standards or not? A competency based approach automatically becomes an improvement model. Yes, you meet the requirements and here are your scores.

Changing things in an academic medical centre can be difficult, yet this major initiative has progressed to date without much resistance. It may be that framing improvement work as educational is more acceptable to the mores of an academic culture than framing it as an operational issue.

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