

Examining the educated and the trained

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The present widespread practices of evaluation in medical education often give the appearance of a pagan rite of worship at the altar of many ill-defined gods, practised with all the grace of an angry bull—G E Miller¹

In 1910, just three years before Sir William Osler published the devastating critique of medical examinations that Richard Godfrey described in the first article of this series, G H Hardy, the mathematician now principally remembered in the biological sciences for the Hardy-Weinberg equilibrium, was instrumental in the partial dismantling of one of the world's most difficult and respected examinations, the Mathematical Tripos in Cambridge. This he did despite having himself achieved exceptionally highly in it, although not attaining the coveted title of senior wrangler.

Examinations of high standards and traditions

Hardy's motives were not a general denunciation of examinations; indeed he was scathing of educational reformers, of whom "most of what they say . . . appears to me to be little better than nonsense".² He readily accepted that examinations had an important role: "If a teacher wishes to test his pupil's industry . . . or their capacity to understand something he has told them . . . the most reasonable course is to subject them to some sort of examination". Hardy's main criticism was not of examinations that assessed such humdrum qualities but of examinations of "high standard and traditions", where eventually the examination becomes an end in itself, "a collection of elaborate futilities" where "the examination necessarily degenerates into a kind of game, and instruction for it into initiation into a series of stunts and tricks". Most damningly of all, and in terms that Osler might have used, Hardy realised that teaching and learning were themselves distorted by the examination:

"It is often hard to ask your pupils to go on listening when you know that what you tell them will gain them no credit in an examination to which they attach enormous importance and over which you have practically no control".²

Hardy and Osler's criticisms of examinations were hardly new, even in their day: T H Huxley, many years earlier, had commented that:

"Experienced friends of mine do not hesitate to say that students whose career they watch appear to them to become deteriorated by the constant effort to pass this or that examination . . . They work to pass, not to know; and outraged Science takes her revenge. They do pass and they don't know."³

Flexner, the great reformer of American medical education, in 1925 simply stated that "However the teacher teaches, the way in which the student studies is largely influenced by the examinations".⁴ And more

recently, in 1978, while attacking the particular role of multiple choice examinations in undergraduate and postgraduate medicine, Sir George Pickering wrote:

"The questions asked in examinations are by far the most sure indication that the pupil receives from his teachers as to what is important and what is unimportant. . . It is understandable if today's student considers that because many universities and the Royal College of Physicians judge his competence without testing his ability to display and marshal evidence and form a judgement and to convey information and opinions clearly and succinctly in writing and speech, therefore these attainments are unimportant".⁵

A call for low standards

Hardy's solution to what he saw as the problem was a simple dictum: *an examination can do little harm, so long as its standard is low*. Although this suggestion seems paradoxical, if not bizarre, I wish to suggest that this is in fact part of the solution to the problem of medical examinations, at least in the UK.

Before justifying and expanding, we first need to stand back a little and ask why we have examinations, what is their function, and how they may be better fitted to serve their purpose.

Flexner may have attacked the form of medical examinations, but he was in no doubt about one thing: "Examinations are necessary; there is no way of getting on without them. But their importance, even as a protection to the public, may be over-emphasised. . .".⁴ Medical examinations have several purposes, all of which have slowly become intertwined; the following list expands somewhat on those proposed by Godfrey in the first paper of this series:

- To satisfy the general public that its practitioners have a minimum level of competence—the *licensing* function, typically carried out by legally constituted bodies such as the General Medical Council
- To satisfy universities that its graduates are academically fit to carry their scholarly imprimatur—the *graduating* function, which often also acts as a surrogate for the licensing function
- To discriminate between the best, the good, the poor and the worst—the *ranking* function ("braingrading").
- To encourage students to work—the *motivating* function, be it carrot or stick
- To assist students in putting together materials that have been acquired separately—the *integrative* function.
- To provide feedback to students and staff on the performance of students—the *informing* function, or more generally what has been called formative assessment (see paper by Rolphe and McPherson).

These separate functions have various implications for each other. My thesis here is that it is impossible for them to be mutually satisfied in a single examination, and that the solution is their separation. If in some parts of the world that argument sounds like a glimpse of the obvious then I should emphasise that in the UK the system of

licensing has changed little since 1859,⁶ and other countries remain locked into the British system.

The particular problem arises with the graduating and the licensing functions. Although distinct in many ways (and in many respects these represent the distinction between *education* and *training* [see panel]) they cannot under the present system ever be but the same. The public would have little faith in candidates who were licensed but had failed a university's examinations, and universities would likewise be unhappy to see their successful graduates failing a licensing examination. If universities are therefore to be allowed to default as a licensing examination then the only effective solution is for them to be the only form of licensure. But if that is the case the public effectively loses control over the process of licensing. In the UK the General Medical Council (GMC) holds nominal control by "supervising" universities in their examinations and courses. In practice it has no real authority at all, never having failed to recognise a single course or examination at a medical school⁷ (or as Merrison put it, with that vicious elegance to be found only in a British civil service document, "These . . . powers have been used sparingly in recent years"⁸). In consequence, few standards have been imposed on medical schools—and therefore little real reassurance has been provided to the public, the appearance being instead of a conspiracy *with* medical schools rather than a check *upon* them.

Elsewhere things are done differently. Probably the most advanced medical examining systems are found in North America.⁹ The National Board of Medical Examiners (NBME) of the USA has been at the forefront of educational research, development, and innovation for many decades. Probably central to its success is its independence from universities and medical schools, with its own clearly defined remit. In other words, it sets out to satisfy the licensing function and only the licensing function. Other functions are carried out separately by the universities which prepare candidates for the examination.

A licensing examination

The principal defect of the current UK undergraduate examinations is that they confuse the licensing and other functions. Following Hardy's dictum, licensing examinations should be easy, since, as Smart suggested, "A candidate who is fully prepared and up to standard ought confidently to pass";¹⁰ that some do not reflects an examination with confused intentions. Examiners in universities try to encourage the highest of standards in their graduates (a laudable intent) by stretching the top end of the range of candidates—often into the obscure arcana of medicine—and so they discourage, scare, and humiliate the bottom 80% of students who wish to become effective, competent doctors rather than academics or researchers. In their continual search for university gold medals or some other external validation of the very best, schools ignore the needs of the majority. Gold medals may indeed tell us something about schools—that their system has been skewed and distorted by concentrating on this sole objective; as Colin Coles once commented, "You know, East Germany used to win a lot of gold medals as well".

The problem of university finals is, to paraphrase Wakeford,⁷ that "deans and professors organise curricula, deans and professors set examinations, deans and professors act as external examiners, deans and professors sit on the GMC's education committee, and so it goes, round and round with little intervention from the outside world". And that is why whole areas of importance in medicine—how to put in a catheter, how to write a drip chart, how to talk to a dying patient, how to ask for informed consent, what are the medical limitations on driving—are hardly ever asked about in final examinations. Simultaneously another set of questions is never asked *about* examinations, since effectively they are set, marked, and administered by amateurs in educational and psychometric method; and they are important questions about reliability, generalisability, factor structure, standard setting, and validity.¹¹

Panel: Comparison of education and training

Education

Intrinsically valuable through broadening understanding of the world; not necessarily important in everyday practice; not directed to immediate effect

Wide cognitive perspective; widening and deepening of understanding of a range of problems

Practitioners *care* about good practice, are reflective upon its applications and its interrelations with other disciplines, and are critical (and self-critical) of practice

Practitioners have a breadth of interest, and education transforms their entire perspective on the discipline in a holistic fashion

An opening out, an "educing" of the individual, providing a release and a liberation

Competency not easy to identify since often involves diffuse, poorly specified skills and generic approaches to the discipline

Requires to be taught in an open, morally acceptable, person-respecting manner, in which education is centred on the needs of the learner, and on caring for the needs of those studying the subject

Concerned primarily with the basic sciences underlying medicine, including morphology, cell biology, behavioural science, and the broader aspects of the human sciences and humanities, and their future developments. Students should be encouraged to attain the highest levels possible

Content is broadly defined, and components tend to act synergistically in stimulating and supporting interest in other areas. Not readily definable as "necessary" in a core curriculum. Difficult to examine

Training

Useful but without intrinsic worth; of immediate practical utility in patient care; goal directed

Circumscribed in its application; areas of application and effectiveness clearly demarcated and usually recognised

Practitioners are competent in their specialist areas but are otherwise indifferent to the broader implications of the practice; practitioners often highly skilled and very practised

Techniques and skills are developed in isolation from other aspects of the personality of the practitioner

A narrowing of the consciousness to cover a specific, restricted set of skills; a focusing on the specific tasks in hand

Specific areas of competency necessary for effective practice are relatively easy to recognise and identify

Can be taught efficiently by restrictive study methods involving rote-learning, and by methods of indoctrination without insight

Concerned principally with medical practice and its administration and organisation as it actually occurs at the particular time the student is examined. It probably does not make sense to ask for very high levels of achievement in generalist undergraduates (as opposed to qualified specialists in the field)

Content readily compartmentalised and assessable, and individual discrete facts often known independently of other syllabus material; the principal domain of the "core-curriculum". Easy to examine

Based on and extended from the work of Calman and Downie¹⁵ and Downie and Charlton et al.¹⁶

The solution is to remove the licensing function of examinations from the universities in their entirety. Instead an independent body should carry out examinations for all medical graduates. The advantages would be manifold. In the UK the system would for the first time enable the GMC to satisfy its clear duty, identified by the Merrison Report,⁸ to ensure equivalent standards; at the moment that simply cannot happen. A national examining board would also allow many other innovations in examination content and method, including those described in the paper of van der Vleuten and Newble—the use of objective structured clinical examinations (OSCEs), perhaps with standardised patients (as described in the paper by Pololi) defined in terms of key features, would allow the systematic testing of all candidates on ability to diagnose and manage patients, on communicating with patients, on practical procedures, on clinical reasoning, on patient management, and on ethical and legal aspects of medicine.

The standard of a national examination would need to be low. In effect this would mean that 80 or 90% of today's graduates would pass with little difficulty. Of course the pass rate would be determined by criterion-referencing rather than norm-referencing, and those criteria would need to be published (how else could medical schools ensure that their candidates were likely to pass?). That openness and explicitness would immediately be refreshing to all in a system where teachers and examiners are often one and the same, and where everybody is trying to second-guess everyone else. There is an additional, important spin-off from this—in effect it means that the core curriculum¹² would have been defined. At present medical schools around the UK flounder to identify the core curriculum, all coming up with different versions (an absurdity if ever there was one), so the need for a central definition becomes more important.

What's in it for medical schools?

Such proposals would also benefit medical schools in several ways. All medical schools believe that they are better than others. A national board of examiners would, for the first time, allow objective comparisons (and partly do away with the need for external examiners, as pointed out by Walters, Sivanesaratnam, and Hamilton). A national board of examiners would also allow formal evaluation and comparison of educational innovations, as was illustrated by Blake, Norman, and Smith in the paper on evolution of the McMaster system, and was also the case in New Mexico.¹³ More critically, by separating explicitly the training (licensing) component of a professional education from its educational (graduating) component (see table), universities would be free to develop academic courses as they wish, resting assured that as long as their graduates obtained licences then their courses would be acceptable. For the first time schools would be allowed to be different; to develop those areas of their curricula and methods of teaching that they believe to be important and that characterise their type of graduates; to think about the philosophy of education and its implementation. And in so doing medical schools

would probably become universities, rather than the forcing schools implied by their names. Because the standard of the licensing examination will be low, with most current graduates passing it, and with its core curriculum content comprising between perhaps 30%¹⁴ and 70%¹² of the essential content of the current curriculum (and for which, of course, high standards would apply), medical schools will for the first time have the luxury of being able to teach the remaining 30–70% *as they want*. They will be able to offer a wide range of modules or special topics covering their own areas of medical expertise and specialisation. These will be the basis of the degrees that they award (the graduating function), and since they will be in medical sciences in the broad sense it will be legitimate to class them as are other degrees (the ranking function); we will be able to distinguish first-class medical scientists from third-class medical scientists. Students will be free to concentrate on areas they are attracted to, and indeed students will choose to apply to different medical schools because of their courses. Some universities might choose to concentrate their teaching specifically to attract students interested in, say, biomedical research, general practice, public health, psychiatry, or even general medicine (in the proper sense of the term). The bland, stifling similarity of most medical courses would be replaced by a healthy and invigorating difference, underwritten by performance in a nationally attested licensing qualification. A national licensing examination would allow the hundred flowers to bloom.

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