

Graduate entry medicine: curriculum considerations

Yvonne H Carter and Ed Peile

ABSTRACT – Graduates entering medicine need to achieve the same learning outcomes as school leaver medical students in less time. Time is not the only consideration, and rather than just compress five-year courses into a four-year time-frame, curriculum planners have often taken the opportunity to introduce innovations for small cohorts as schools begin these new programmes. This article considers how the particular needs of graduate entrants can be met by UK medical curricula and reviews accumulating evidence around the design considerations, especially that of problem-based learning. Graduate entry courses have been at the forefront of curriculum planning for new professionalism in doctors.

KEY WORDS: curriculum, graduate entry medicine, learning styles, self-directed learning

Introduction

Previously, we reviewed some of the aspirations for graduate entry medicine (GEM), when such schemes started in the UK in 2000.¹ Reference was made to opportunities created for innovation in curriculum design, as shorter courses offered scope to build on early experience with problem-based and case-based learning in developing the self-directed learner.

Learning styles

Much has been written about learning styles and curriculum design. Evidence suggests that styles are determined at secondary school and although medical curricula can encourage different ones there is relatively little change. Deep learning styles, whereby comprehension and contextualisation is an essential component, are highly rated by educationalists wishing to prepare students for lifelong learning, although the value of 'strategic' learning styles, which accommodate some rote learning of material which is only of temporary value to medical students, is also recognised. At Warwick Medical School (WMS) the inclusion of reflective questions in module handbooks and study notes is designed to stimulate deep learning strategies. However, current evidence is that even with curriculum change, it is difficult to influence learning styles.²

The curriculum for the GEM course at Warwick is designed to be vertically and horizontally integrated. There has to be coherence between the scientific basis of medicine (both behavioural and biomedical sciences) and clinical practice at all stages of the course, and each stage must build on what has gone before. The theoretical importance of integrating experience underlines the importance of early clinical attachments. Graduate entrants should be at an advantage as learners are more able to deal with abstraction when they have more experience.

The introduction of GEM in Australia and London has been researched as a case study to examine the 'dynamic, complex and open' processes of change management.³ Working with highly motivated, participative, mature learners is not without challenges for a medical school. If students are not to become disillusioned and disengaged, schools must acquire the characteristics of learning organisations whereby double-loop learning leads to learning about learning.

Staff-student liaison committees are a particular example of how the organisation can learn and develop together. We have observed a maturation of this colloquium as the WMS developed, and polarisation and defensiveness have given way to robust constructive critique and collaboration in the learning enterprise. At the same time the student web discussion forum has moved beyond a 'rant' to that of an exploration of ideas and constraints.

Curriculum issues

New courses are likely to encourage learning methods that directly link new knowledge to patient care, modernise approaches to basic science (in particular anatomy), increase emphasis on appropriate consultation skills and attitudinal learning, and promote a more humane and supportive learning environment.⁴

It has been repeatedly stated that the design *de novo* of GEM programmes has been an occasion to re-examine the medical curriculum and to institute innovative changes. It is impossible to fully dissociate the impact of the change in student profile from the impact of change in curriculum.⁵ Educationalists in Australia led the way with a reduction in didactic teaching accompanied by an increase in small group teaching in the GEM courses. Colleagues in the UK

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followed, with St George's collaborating with Flinders University in Australia to introduce an entirely problem-based curriculum.⁶ Interestingly, at St George's many new ideas tried out in the four-year programme have later been transferred successfully into the school leavers' course.⁷ The content knowledge and process knowledge which graduate students bring to their courses can help with peer learning in groups. Citing Oakeshott, 'what university has to offer is not information but practice in thinking'.⁸ Horton asked in 1998, 'Can we put our hand on our heart and say that this is one of the chief concerns of those running medical schools today?'⁹

In 1998, convincing reports were emerging of a continuing decline in clinical skills among medical students observed over a 10-year period.¹⁰ Horton points out that the broader abilities and empathies needed by future doctors in a more patient-led service demand a distinctly reflective practice.⁹ Patient-driven practice was likely to also undermine some of the authority and certainty that doctors had previously enjoyed. In developing professionalism, medical humanities have a part to play in medical education, and accelerated curricula have to ensure that this component is not squeezed out:

*Medical education today should be aiming to marry the skills and sensitivities of the applied scientist to the reflective capabilities of the medical humanist.*¹¹

Curriculum design is as much about timing as it is about content. One study showed students were better prepared to start full-time clinical attachments, and less anxious following the early introduction of clinical skills teaching, backed up by a fully integrated clinically relevant curriculum with continued assessment.¹² Here, course design differences accounted for more variance in the outcome measures of student anxiety than any differences in maturity between student groups.

Clinical skills and communication skills

Medical curricula may still not be providing students with all the clinical skills needed to be a competent junior doctor. A student survey of 1,000 emergency admissions to a district general hospital revealed that case mix did not correlate with priorities of the clinical curriculum. Over three quarters of newly-qualified doctors did not feel confident in dealing with emergencies. By delivering competency-based teaching in a clinical skills course, culminating in the period of additional clinical practice, perceived competence in the key skills rose from 55% to 94.8%.¹³ At the same time, we have placed an emphasis on teaching clinical skills in conjunction with communication skills.¹⁴

Self-directed learning

Many graduate programmes encourage self-directed learning. GEM students seem to appreciate the flexibility offered by this approach as evidenced by one former Warwick student:

*Graduates have already learnt how to study and how to ration the other temptations of student life in order to keep up with their studies. This makes them better able to handle a self-directed learning approach.*⁷

Even at graduate level, to be effective, self-directed learning still needs to be supported and educational supervision is particularly important in the clinical workplace.

Problem-based and case-based learning

Problem-based learning (PBL) is both a method and a philosophy involving problem-first learning via small group work and independent study. PBL is the central educational approach at St George's, where students study the curriculum through a series of problem situations or 'scenarios' in groups of seven assisted by a facilitator. Each group has a study room equipped with a computer, internet access, key textbooks and whiteboards. Problems are presented on paper and electronically, with a new problem at the beginning of each week. PBL is also the theory-in-action at the University of Derby: 'At its heart is the spirit of inquiry and making sense for oneself of new ideas and information'.⁷

The model in use at WMS is case-based teaching,¹⁵ whereby students have their learning anchored to clinical cases, but are directed towards productive lines of enquiry in group learning. In case-based learning as in PBL, the way the group functions is important.¹⁶ Much has been written about the outcomes of PBL curricula, but despite meta-analyses, there is much that is unproven.¹⁷ Earlier reviews had concluded that while there was no evidence that PBL curricula resulted in any improvement in content-free problem-solving skills, learning in a PBL format could ultimately result in increased retention of knowledge, despite initially reducing levels of learning. Claims that PBL enhances intrinsic interest in the subject matter and appears to enhance self-directed learning skills have likewise been partially substantiated, but others appear more elusive.¹⁷

In terms of performance on undergraduate assessments, the evidence is mixed. Certainly PBL students have consistently reported high levels of satisfaction with their courses. New curriculum initiatives towards strengthening the knowledge base of medical graduates, including developing ways of assimilating complex data, have been advocated. Likewise, there is some conflict in the post-qualification evidence about PBL courses from other countries, but again the picture emerges of PBL doctors often offering additional strengths in some of the teamwork competencies for practice, but sometimes weaknesses on scientific knowledge. The postgraduate evidence on PBL for the five-year course at Manchester is likewise mixed.¹⁸

Other important elements of curriculum design

Research-based teaching for scientists extends beyond teaching the rudiments of evidence-based medicine to teaching about decision analysis. Whereas evidence-based medicine is sometimes unable to resolve competing claims of different interest groups, values-based practice delivered at WMS successfully models ethical practice in situations of complexity or where values conflict.¹⁹

Electives

The elective is one of the most consistent features of UK medical courses, and the stated aims of this curriculum component include gaining of maturity, self-reliance and resourcefulness and broadening horizons. GEM courses likewise prioritise electives, yet graduate students are thought to be 'more self-directed, challenging, demanding, questioning and mature'.²⁰ Arguably, therefore, they join their course having previously achieved many of the above stated objectives. They are also older so more likely to have family commitments, and to have already accrued travel experience and debt.²¹ In a study looking at GEM electives, most students exhibited indistinguishable travel patterns from the school-leaver entrants and cited the same reasons for their choices. There were clear emergent themes of graduates feeling they took the elective more seriously, and focused on the educational aspects rather than the travel or social aspects.

Assessment

Assessment in the first year at St George's GEM course is almost entirely formative, the process being designed to give students from a wide range of backgrounds time to reach a common basic level of understanding before being assessed summatively.⁶ By contrast, WMS students face summative assessments throughout the first year, culminating in assessments at the end of the first year and six months later at the end of phase 1, both of which have to be passed before the student is allowed to progress.

Clinical teaching faculty

New courses have to compete for limited clinical placements and scarce clinical teachers in an over-worked environment. Despite the pressures on clinical service, there is a willingness among hospital clinicians to undertake clinical teaching. The job satisfaction derived from teaching can be compromised by time and resource constraints, and by perceptions that teaching is not afforded the levels of recognition and reward associated with clinical work or research. Further factors that can impair the motivation of clinical teachers are poor organisation of the clinical teaching curriculum and the inadequate preparation of students for clinical practice.

Changes in clinical practice, such as reduced hospital stays and increased management of chronic disease in the community, have resulted in medical schools looking to primary care to deliver more teaching. Here the pressures on teaching faculty are even more acute, and medical students have to compete with foundation doctors, GP registrars, and other practitioners for precious placement teaching capacity. In 2001 academic departments of general practice delivered an average of 9% of the undergraduate curriculum in medical schools, receiving an average of 5% of the service increment for teaching income for doing so. Whereas established courses have a network of committed teaching practices, it may be more difficult for the new GEM courses to compete for precious teaching time in primary care if it is perceived to be underfunded.

For clinician tutors, on GEM courses, and foundation schools it can be challenging to teach students and 'junior' colleagues who are considerably older than their tutor.⁷ However, it is common experience that graduate entrants are among the most rewarding to teach, and deans find this a strong 'selling point' in seeking out new clinical placements.

Role models

Although the evidence about exposure to different specialties influencing students' choice of career is somewhat contested, the importance of role models influencing recruitment in particular clinical fields is clear. All interactions with clinicians affect students. In selecting key members of the teaching faculty for a new medical school we have been mindful of the need for inspirational teachers contributing to a faculty that has balance across gender, ethnicity, age, experience and specialism.

Initially, new students at WMS were taught largely by social scientists, the theory being that rapid immersion in the behavioural sciences balanced the previous biological science training of graduate entrants. This has since been modified as students appear to be more receptive to the important learning about behavioural sciences once it is endorsed by respected clinical role models.

Partnership learning

Ashley, pointing out the evidence that humans learn best by watching and copying, with feedback, is an enthusiast for apprenticeship learning and role modelling in medicine.²² In the WMS partnership system (derived from that in use at Leicester) students on clinical placements are taught in pairs on rotating attachments in a wide variety of clinical environments. Self-directing students set out to achieve the learning outcomes identified for the two and a half years of clinical placements.

Clinical education supervision

Stress in GEM students was explored in an Australian study.²³ Significant stressors were time management problems and financial difficulties. Systematic peer support reduced stress levels in new entrants. There is a need for quality assured educational supervision in the workplace in order to help students establish a sound base for clinical practice. Facilitating self-directed learning can demand movement on the part of even experienced tutors and the modeling of problem-solving is a key component of educational supervision.

As well as adapting the tutoring style to the needs of the trainee, clinical educators have to give some thought to the degree of autonomy and independence afforded to learners, keeping a watchful eye on patient safety.

Assumptions about mature learners being able to 'self-direct' in unfamiliar clinical environments may be incorrect as opportunistic learning opportunities may seem inaccessible. Earlier in the Warwick GEM course some students reported feeling unsupported as they made the transition to apprentice clinicians.

Assertive learners flourished but others lacked the confidence to approach clinicians for teaching.

A system of clinical educational supervision combining the tools and structures of foundation training with mentoring and learning planning has recently been introduced. Now each student has a clinician offering personal educational supervision throughout the two and a half years of their clinical placement learning.

Interprofessional learning

The challenge of developing effective interprofessional learning involving medical students is formidable. For GEM the situation is exacerbated by the maturity of the medical cohort, who are difficult to match with students of other healthcare professions in terms of assessment of common learning outcomes. Graduate entrants to medicine are involved in some of the current high-profile developments in interprofessional learning, including the New Generation Project at Southampton and the southeast London project.

At Warwick, the GEM students work with around 1,000 students from other healthcare disciplines, in partnership with the University of Coventry, on the interprofessional learning pathway. Part of the concept of these mixed groups working together on carefully prepared virtual cases which are appropriate for their disciplines, is that well-facilitated web-based discussion can minimise obvious differences in maturity and balance the inter-student interactions.

Professionalism

*Looking at the kind of doctor we need raises such issues as ethical standards, continuing professional development, team working, clinical standards, quality, outcomes, and research and development.*²⁴

The complementary skills of leadership and teamworking need to be incorporated into doctors' training to ensure high standards of professionalism. Graduates often have relevant experience in the workplace by the time they commence medical studies, and group-based GEM curricula attempt to capture some of this experience, developing the more equal partnerships, critical self-reflection, and outward looking perspectives that underpin modern professionalism.

Conclusion

The introduction of GEM in the UK has been an opportunity to think afresh about curriculum design in medicine. Six years into the evolution of these schemes, it is evident that medical schools have seized the opportunity to look at the learning needs of doctors, and in particular to reflect on the implications of maturity and wide previous experience. Graduate entrants have been willing participants in the experimentation and evaluation. No one curriculum paradigm emerges as superior to others, but there is widespread reliance on working together to maximise the potential for graduates to learn from each other.

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