Graduate entry medicine: high aspirations at birth

Yvonne H Carter and Ed Peile

ABSTRACT – Four-year fast-track courses for graduates started in the UK in 2000, and are now offered at 14 UK medical schools. Graduate entry medicine (GEM) started five years earlier in Australia, and of course in the USA it has been the norm for students to begin studying medicine after university graduation. This paper reviews the aspirations for GEM and looks at the early evidence on delivery against those aspirations. Particular reference is made to the experience at Warwick Medical School which was one of the two pioneers of GEM in the UK, has the largest GEM intake and continues to admit only graduates.

KEY WORDS: diversity, graduate entry medicine, learning styles, mature students, medical workforce, self-directed learning, student support

Introduction

> *To produce doctors who are able to respond well to the changing relationships [of a patient-led service] invites a different way of thinking. Each student must not only develop excellent technical skills but also be able to adapt to a setting that increasingly respects other health professionals.*[1]

Shortly after the Department of Health (DH) was alerted to workforce shortages in the NHS and an expansion of medical student numbers was recommended, Richard Horton, Editor of *The Lancet*, concluded that: 'We are likely to be asking a great deal more of students in the future. Graduate medical schools might be especially well placed to draw out these skills'.[2]

In this review, we shall examine the background to graduate entry medicine (GEM) and look at how far the preset evidence allows us to evaluate this initiative. We use the term GEM to include all four-year courses for medical students who already have a university degree, sometimes known as fast-track, or accelerated courses. We will refer to our experience at Warwick Medical School (WMS), and to the associated paper on curriculum aspects of GEM.[3]

As well as recommending the overall increase in student numbers in 1997, the UK Medical Workforce Standing Advisory Committee (MWSAC) recommended that clinical courses with graduate entry should be developed. The Committee also emphasised that GEM courses needed to comply with EEC Medical Directive 93/16/EEC which stipulates a minimum of 5,500 hours of training.[1] The stated rationale was: 'both to allow faster production of doctors than traditional courses (a "once-off" effect) and to broaden the field from which doctors are recruited' (p 39).[1] The report went on to claim that the development of graduate-entry courses could offer an efficient use of existing educational and healthcare capacity to produce more medical graduates and increase flexibility to respond to changing demand (p 40).[1]

These views exemplify some of the hopes and aspirations shortly before the first two UK medical schools (St George's Hospital, London, and Warwick, as Leicester-Warwick) began four-year graduate entry fast-track courses in 2000. They were followed a year later by Oxford and Cambridge, and there are now 14 UK medical schools offering such courses.

In an international context, GEM is not new. American systems of medical education have traditionally seen students coming from high school through university to medical school. Australian medical schools commenced their 'fast track' experiment approximately five years before the UK initiative. The strongest argument for their introduction there was that of diversity. It was perceived that the motivation of graduates would be higher and the attrition rate lower than in school leavers. Mature students would also, it was thought, be able to make a more informed career choice. There was a motivation in Australia to meet workforce needs, in particular the shortage of rural doctors. There was also evidence from the USA that older graduates practise in underserved areas more readily than younger ones, and are more likely to work in primary care.

Peter McCrorie, Director of the St George's Graduate Entry Programme, was asked in an interview in 2002: 'Does undertaking medical training as a graduate have any bearing on being a good doctor?' He replied:

> *If the course they undertake is little or no different from the school leaver course, in the end it would make little difference. However, if the graduate programme is tailor-made specifically for graduates, and it builds upon their*

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strengths, motivation, and prior learning, then it will make a difference.[4]

The aspirations for GEM programmes may be summarised as those of attracting and developing a particular profile of mature learner, with high levels of motivation to succeed, and the necessary independence of outlook and orientation towards hard work to master self-directed learning.[5]

Workforce considerations

Following MWSAC's recommendations,[1] medical student numbers in the UK increased by 18% between 1998 and 2001. The NHS Plan later stipulated that intake should rise further,[6] and by 2005 the number of UK medical school entrants was projected to be 5,894, an increase of 57% over 1997 levels.[7] The increase is continuing. In 2006, the Joint Implementation Group made further recommendations to the Higher Education Funding Council for England, allocating 108 additional medical student numbers, none of which were for GEM.

The primary challenges facing medical schools in any planned expansion are: educational capacity; clinical placement capacity; the drive to widen access to medical education; and the curriculum issues of developing the doctor of the future.

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.[8]

Nearly 10% of the current UK medical student intake is to GEM courses, but the picture is patchy. There are no GEM places in Scotland or Northern Ireland, but 19% of all medical student intake in Wales is for GEM. In England the figure is closer to 11%. In 2006, 17,562 home and EU candidates applied through UCAS for medical student intake with 1,997 overseas candidates, making 19,559 candidates in total applying for some 7,700 places.

Many graduates still, however, opt for the slightly less intensive five-year courses. For example, all the four newest UK medical schools (Brighton and Sussex, Peninsula, Hull York, and University of East Anglia) offer a full five-year undergraduate entry course with no reduction for those who already hold a first degree. Between 20 and 60% of their first student cohorts are graduates.[8]

The median age at entry in GEM courses is 23–24 years, versus the 17–18 years in non-graduate entry programmes.[9] Predictions have been made about the potential influence on career choice. In the UK, age at entry was not, however, found to be a predictor of long-term career choice.[9]

Currently GEM courses are offered at the Universities of Birmingham, Bristol, Cambridge, Leicester, Liverpool, London (St George's, King's College and Queen Mary), Newcastle, Nottingham, Oxford, Southampton, Swansea and Warwick. Of these, WMS has the largest intake, taking just over a quarter of the total UK graduate-entry fast-track entrants into a school dedicated entirely to this form of education.

Selection of graduate entrants

Part of the process of change towards GEM programmes has been predicated on the need to widen access to medical education and to consider both cognitive and non-cognitive student characteristics in the admission process.[10] Although we know that A levels are a significant predictor of success in school-leaver courses, there is less certainty about the predictors of success on GEM courses. Academic referees reporting on previous performance at university are better placed than schoolteachers to identify which students might struggle on a fast-track course. Moreover, older applicants are often at an advantage in selection interviews as they have more life experiences on which to draw in answering the questions posed.[10]

The predictive value of A levels for school-leavers could reflect their knowledge, motivation, or study habits.[11] Poorer grades in A levels are a predictor of early dropout from medical school, and evidence that A levels are a predictor of success at post-qualification membership examinations suggests that they are unlikely to have lost their predictive power at the graduate stage.[11] Personality measures have also been shown to predict success in UK school-leaver courses,[11] as have learning styles.

The importance of selecting doctors who will thrive is undisputed.[12] Pilot work by City University, the DH and the Council for Heads of Medical Schools suggested that it would be feasible for graduate entry programmes to work collaboratively in introducing a selection centre process to their admissions cycle. There are advantages to this form of selection, which have been widely used in industry, and also in selecting doctors for competitive training schemes. Candidates are offered more opportunities to demonstrate their worth than just a single interview. Queen Mary's School of Medicine and Dentistry and WMS decided to introduce this process for their 2005/06 cycle.

Diversity issues

Schemes aimed at widening access should be designed to attract students from more deprived socioeconomic backgrounds. Just before the first UK GEM schools opened, three of the London medical schools were singled out as having some of the least accessible courses of any UK university. Since then, the GEM programme at St George's claims to be widening access to medicine to include late entrants, and those who seek career changes after a period in full-time employment. Within these groups are people who failed to achieve good A level grades. At the other end of the spectrum are those who have not only first degrees, but also masters or doctorates.[13]

The most recent audits at WMS portray the ethnic diversity of a medical school operating an equal opportunity policy (Table 1).

Judy Searle, Dean of Griffith University School of Medicine, observed that:

Strong diversity position statements promoting the selection of students from under-represented minority groups go part way to a more active strategy to provide equity. These statements will, we hope, in time be supported by evidence of improved health care outcomes for disadvantaged members of society served by a more diverse medical graduate pool.[14]

Table 1. Ethnic monitoring profile, Warwick Medical School.

	White British	Black British	White Irish	White other	Asian or Asian British-Indian	Asian or Asian British-Pakistani	Asian or Asian British-Chinese	Not stated	Total number
Year 1	116	6	2	8	13	7	3	14	169
Year 2	119	6	4	2	14	10	1	24	180
Year 3	97	5	2	1	7	5	3	14	134
Year 4	88	4	1	3	12	7	1	8	124

Affirmative action in admissions policies needs to be congruent with student support systems at medical school if we are to avoid a 'revolving door' situation. In order to succeed, students need to know not only how hard they will have to work, but also how and where to access help, and to gain the reassurance that major debts can be shifted by the relatively high-salaried employment open to qualified doctors.

Powis and colleagues summarised the position of GEM programmes in respect of diversity:

> *Graduate entry programmes represent a particular approach to minimising the effects of disadvantage, increasing the representation of students from diverse backgrounds, achieving a better match between the medical student population and the general population.*[10]

Student motivation

Adult learning theory assumes that graduate entry students potentially have stronger motivation, more mature learning skills, increased self-direction, and more 'life experience'.[15] Our experience is that clinical teachers perceive that these students are more internally driven to learn which, in turn, motivates the clinicians to teach and there is published anecdotal support for a high level of motivation in GEM students.

> *Students work very hard on the graduate entry courses.*[16]
>
> *The graduate students are challenging, enthusiastic, and fun to teach.*[17]
>
> *These graduate students certainly know how to learn. If they don't know something, they know how to find it out.*[18]

WMS students were asked about their motivation to undertake a GEM course. Some had not considered medicine previously, and were empowered by their degree or contact with medical students. Another group wanted to apply their science to working with people. Most of the first cohort under the new fast-track scheme had always wanted to become doctors, had failed to get a medical place when leaving school, and hence read a science degree first.

Table 2. Student debt.[20]

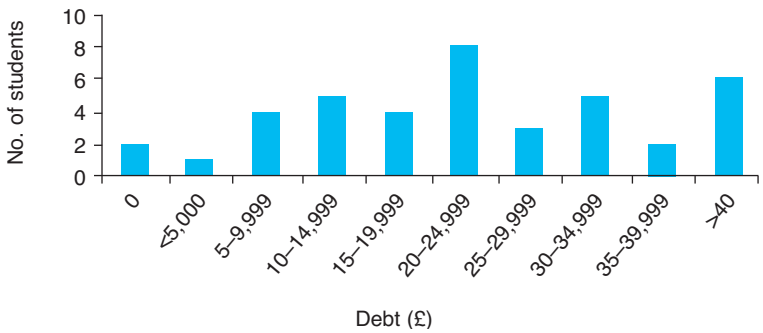
- Average debt was £20,000–25,000. Six students had debt >£40,000.
- 60% of students reported stress in relation to their debt.
- All students had extra jobs at some point during the course.
- 92.5% were receiving some financial support from parents.
- The average estimated time to clear the debt was within five years.

The total training time for graduates entering medicine depends on the length of the first degree and on such factors as the need to repeat a year and, for conventional courses, on intercalated degrees and pre-medicine studies. A study from South Africa comparing retrospective data on conventional courses for school-leavers with projections for a GEM course, found similar total years of study, student costs and societal costs for a four-year graduate entry and a six-year undergraduate programme.[19]

Student finance

The first year cohort of Warwick graduates were asked about debt on graduation (cohort n=64; sample n=40) (Table 2). The range of debt found in this study is shown in Fig 1. The perceived time to clear the debt is shown in Fig 2.

Fig 1. Levels of student debt.



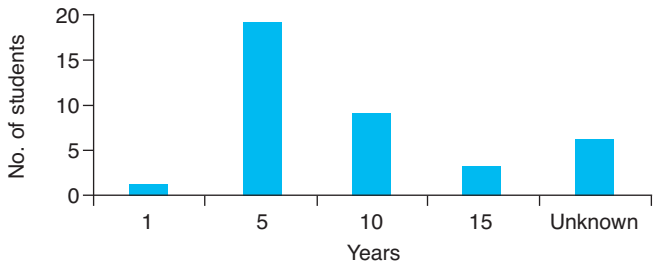


Fig 2. Perceived time for students to clear debt.

Gender balance and age at entry

Many undergraduate programmes have seen an increase in the proportion of women entering medicine, currently standing at around 46% of the medical student population in Australia and 56% in the UK. At WMS, the picture is even more dramatic with only one-third of recent cohorts being male (Table 3). Searle cites the example of one programme in Australia which has seen a variable pattern in the proportion of female students entering over the past nine years since its move to graduate entry, with an overall average of 51% of students being women.

Female students performed significantly better overall at the end of Year 2 and in Year 3 in summative assessments in an Australian study of a GEM programme.[21]

The median age at entry in GEM courses is 23–24 years, versus the 17–18 years in non-graduate entry programmes. The age range of entrants to St George's was 21–44 years in 2003, although significantly older students have been accepted there, as at Warwick.

Outcomes: what is known so far?

In medical schools with a mixed entrance policy early evidence is that graduates without science degrees do not struggle more than science-trained colleagues in early assessments. Early work from Australia has shown that graduates are at least as well prepared for work as junior doctors as their counterparts from conventional courses.[22] Domains where graduates felt better prepared included interpersonal skills, confidence, collaboration, holistic care and self-directed learning.[22] By contrast, an Australian study on perceived preparedness for junior doctor years found older graduates to be less confident on patient management than their younger peers.

Despite the expectation that older (more mature) students will benefit from adult approaches to learning,[23] the experience at St George's is that some can be disadvantaged by fixed learning approaches, greater financial concerns, and a scientific background that may be suboptimal for their learning progression.[15]

Overall, GEM students were found to make a greater daily/weekly use of library facilities than undergraduates on the five-year course.[24] In one study in Leeds, mature students had a lower than average attrition rate.[25]

On the GEM programme at the University of Sydney, students with science-based prior degrees performed better in single best answer assessments during Years 1–3. Students coming from the health professions also performed consistently better than students from non-science backgrounds but overall differences were small.[21]

Early experience at Leicester-Warwick Medical Schools has been similar. In the Phase 1 assessments which test mainly the scientific basis of medicine, students on the GEM course at Warwick and on the GEM course at Leicester perform at least as well as those on the five-year Leicester course. In the later stages of the course, students from the health professions achieve very high pass rates on clinical assessments. The overall pass rate of graduate entrants from bioscience backgrounds has been higher that that of school-leavers. However, more school-leavers obtain distinctions, suggesting that really high-fliers may choose medicine at the stage of school-leaving.

Students newly graduating from WMS were asked what they had most valued about the course. Early clinical contact, clinical methods teaching in primary care, and supported learning in 'two-on-two' clinical attachments were the most valued aspects.[26]

After much reflection, Searle points out that GEM courses are no panacea.[27] There are important questions to be asked and assumptions to be tested by further research.

> *There is at least one profitable direction for research in new or changed medical schools. Impact or outcome research may provide external sponsors with the information they need, but, if rigorously conducted, it will also provide generalisable findings for the wider medical education community.*[28]

Conclusion

Our experience of GEM is that it has been highly rewarding for students, patients and clinicians who teach. WMS has taken the

Table 3. Gender breakdown Warwick Medical School.

	Male No (%)	Female No (%)	Total number
Year One (mainly 2005 entry)	61 (33)	126 (67)	187
Year Two (mainly 2004 entry)	59 (35)	110 (65)	169
Year Three (mainly 2003 entry)	62 (34)	118 (66)	180
Year Four (mainly 2002 entry)	58 (43)	76 (57)	134

decision to remain an exclusively graduate-entry school. The accumulating evidence from other schools encourages us to broaden our entry requirements for first degrees. Evidence also suggests that graduates are contributing effectively to the medical workforce.

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