For Debate . . .

Facing the future: medical education in a cold climate

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The financial pressures that have afflicted universities for some years have only recently seriously affected faculties of medicine. The effects of these pressures on medical education and on the National Health Service (NHS) in general have been widely and justifiably publicised; fewer comments have been made on the effect of changes in the NHS itself on medical education. The movement of resources from the so-called overprovided areas to those that are less well endowed and from the acute sectors to the geriatric, psychiatric, and community services cannot fail to have an appreciable effect on clinical teaching. The impending merger of medical schools in central London provides an opportunity for more than usually serious consideration of the problems arising from these changes in the economic climate.

The impoverishment of academic medicine is most simply and starkly expressed as a reduction in the staff:student ratio. This is not a new problem to faculties other than medicine and, as long ago as 1976, the University of London Teaching Methods Unit organised a conference on "The efficiency and effectiveness of teaching in higher education." At the time faculties of medicine were relatively affluent, and the proceedings of this conference¹ contain little direct reference to the teaching of medicine. Even so, many points of general application were made and have influenced some of the views expressed in this paper.

The reductions in the medical academic staff:student ratio have their greatest impact on the teaching of the preclinical subjects and pathology. Much of the clinical teaching has always been conducted by NHS staff and this, of course, will continue. But the changes in medical staffing structure proposed in the Short Report² and apparently accepted by the Government cannot but have some effect on teaching; more consultants will not necessarily mean more teaching as the pattern of their service commitments is likely to change considerably.

There are only three possible reactions to a reduction in the number of teachers. One is to accept that there will be a commensurate reduction in the amount learnt by the students—a gloomy prediction in which self-fulfilment is implicit. The second is to require the remaining teachers to spend more of their time in teaching and less, presumably, in research and other academic activities; the disastrous consequences of this course for academic medicine and, in the long term, for medical education have been repeatedly pointed out, most recently by a working party of the Royal College of Physicians.³ The third option is to consider methods of increasing the efficiency of teaching and learning in medical schools so that the cost effectiveness of the educational process is increased. Few would deny that the first two alternatives are unacceptable and an attempt to implement the third is the only viable option even

though it implies the uncomfortable premise that our educational practice hitherto has been less than fully efficient. No account need be taken of a fourth option that some may have been tempted to adopt: this is to do nothing except assume that, in the fullness of time, the clock really will go backwards.

Untapped resource

It is helpful to begin a consideration of the efficiency of teaching and learning with the recognition that the purpose of medical, and any other, education is that the students should learn and that, to this end, there are many means of which only one is that the teachers should teach. The teaching potential of the students themselves, for example, is a largely untapped resource though many certainly learn a great deal from informal discussion with their peers. The use of senior students as tutors forms part of the so-called Keller plan⁴ of self-paced self-study (or personalised system of instruction in the USA). This has considerable appeal, not only when teachers are scarce but also on its own merits. Thus, the concept of learning for mastery of a subject⁵—usually in small instalments—carries the implication that mastery may be shown by effective teaching of the subject by the learner himself. The need to teach lucidly often leads to great clarification of the teacher's thoughts on a subject.

Another method of compensating for a scarcity of teachers is by using teaching machines of various types. There is less enthusiasm than in the past for programmed learning by machine but the potentialities of interactive computer programs for learning are being extensively investigated. The prospects are exciting but enthusiasm should be tempered by the realisation that, even if the capital costs of the equipment can be met, the maintenance of a complex installation may be a considerable charge on a straitened medical school budget. Furthermore, it seems that much of computer-based learning has been an addition to an existing curriculum and the replacement of part of the teaching by computers needs careful thought and preparation—itsself a time- and, therefore, money-consuming process. Even so, it would be folly not to take advantage of modern technology if these difficulties can be overcome and it is probable that they can. While on the topic of educational hardware it is worth remembering that there are many organisations concerned with training staff for work in the Health Service other than the medical schools and the possibilities of achieving economies by sharing equipment and other resources have not always been fully exploited.

Having discussed means by which it may be possible to compensate for a shortage of teachers, it becomes necessary to consider more directly how students learn. Many students entering medical school, and universities in general, have little idea how best to take advantage of the learning opportunities provided for them. They are unskilled in note-taking during lectures, in taking part in small group discussions, and, in general, in planning their own programmes of study. Most

acquire some expertise in these areas eventually but, in the process, waste much time in the early months of the preclinical course and, again, at the beginning of the clinical years. It is worth considering whether anything can be done to correct this problem.

One of the most important factors preventing students from organising their time efficiently is their inability to discover just how much of the vast area comprised by medicine and its related sciences they are expected to learn. Much has been written about the advantages and disadvantages of preparing learning objectives.^{6,7} The most obvious disadvantage is the considerable time required by teaching staff to prepare objectives in detail; teachers are inclined to rationalise their distaste for this lengthy task by expressing their reluctance to "spoon-feed" the students. On the other hand, most students would welcome being given a clear idea about the parts of the subjects they study with which they must be thoroughly familiar and those others which they can explore in as much depth as time and their inclinations permit. To be really useful, objectives must be prepared with discretion and restraint; Dornhorst⁸ has argued persuasively that medical students are currently burdened with an intolerable "information overload." His reminder that the universal introduction of postgraduate vocational training permits considerable pruning of the undergraduate medical course is timely.

Armed with such a guide to their learning, students will be much better able to plan their own study but some may still need further help and advice on such matters as note-taking and techniques of study; this topic is neglected in most undergraduate courses. Even such an obvious matter as speed of reading is worth attention. This varies remarkably from person to person and many students would benefit, in the long term as well as in the short, from tuition in rapid reading.

Effects of NHS changes

Finally, attention must be paid to the probable effects on medical education of the current changes in the NHS. The reallocation of resources is resulting in a reduction in the numbers of acute beds in the teaching districts, particularly in London, and the consequent fall in the duration of time that patients stay in hospital, however desirable on other grounds, results in less time for students to study, or be taught about, inpatients. The remedy is, of course, not to seek an artificial, and uneconomical, prolongation of the duration of hospital stay but to reorganise the clinical teaching programme appropriately. Naturally, this is not always possible and it must be accepted that teaching is nearly impossible in such high turnover units as wards for day surgery and programmed investigation units. Another change that must be expected, consequent on the depopulation of some inner cities, is an actual fall in the numbers of patients seen in the teaching hospitals. The educational answer to this has been to arrange for students to attend peripheral hospitals, and this laudable practice will certainly need to increase. This itself introduces further problems, especially when clinical work is contemporaneous with a didactic teaching programme in the centrally placed medical school, and an appropriate technological solution will need to be found to link a medical school with its peripheral hospitals and avoid an inordinate waste of time and energy by students and teachers in travelling.

The increasing emphasis being placed by the DHSS on the so-called Cinderella services⁹—for example, those for the elderly and the mentally ill and, particularly, the community services—is another change with which medical schools must come to terms. The logistical advantages of conducting most of the clinical teaching in hospitals are obvious but epidemiological and demographic trends cannot be ignored indefinitely; if more health care is to be provided outside the hospitals, that is where more of the teaching must take place. Medical education must, in the long run, be closely related to systems for the

delivery of health care and there is widespread anxiety that, as Walton¹⁰ said in his introduction to the 1979 Conference of the Association for Medical Education in Europe, "medical schools in many countries are in danger of becoming out of step with health care services, and to that extent irrelevant." At a time when medical schools, particularly in London, are being forced to make more or less drastic changes in their affairs, it would seem important to bear in mind this criticism as well as the other points discussed in this paper.

Throughout the millennia a willingness and ability to change in response to evolutionary pressures have been the hallmark of successful species, civilisations, and institutions. Today, in many ways, pressures, on medical schools as well as other organisations, are increasing and change in some direction is inevitable. It is surely wise to accept this and to recognise that the dinosaurs, however impressive in their day, were unsuccessful and that, in the long run, survival, of medical schools as well as of species, is the destiny of only the fittest and most adaptable.

References

- ¹ Piper DW, ed. *The efficiency and effectiveness of teaching in higher education*. London: University of London Teaching Methods Unit, 1978.
- ² Social Services Committee. *Medical education with special reference to the number of doctors and the career structure in hospitals*. London: HMSO, 1981. (Short Report.)
- ³ Anonymous. Threat to academic medicine: RCP report. *Br Med J* 1982;285:303.
- ⁴ Stoward PJ. Self instruction through reading: the Keller plan. *Med Educ* 1976;10:315-26.
- ⁵ McGaghie WC, Miller GE, Sajid AW, Telder TV. *Competency-based curriculum development in medical education*. Geneva: World Health Organisation, 1978.
- ⁶ Simpson MA. Objections to objectives. *Medical Teacher* 1980;2:229-31.
- ⁷ Engel CE. For the use of objectives. *Medical Teacher* 1980;2:232-7.
- ⁸ Dornhorst AC. Information overload: why medical education needs a shake-up. *Lancet* 1981;2:513-4.
- ⁹ Department of Health and Social Security. *Priorities in the health and social services: the way forward*. London: HMSO, 1977.
- ¹⁰ Walton HJ. Theme of the conference. *Med Educ* 1980;14, suppl:6-7.

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Is it possible for a fertilised ovum to be donated from one couple to an unrelated infertile couple, of whom the wife has a tubal blockage and the husband is azoospermic?

Provided that the wife's ovaries are capable of functioning, the preferred treatment for such a couple would be recovery of the wife's own ova, which would be fertilised by donor semen and reimplanted in the uterus. A successful pregnancy in such circumstances has been reported.¹ Ovum donation from one woman to another is technically possible: it can be done in animals² and it may even be easier than reimplantation of a woman's own fertilised ova. It has been reported that 50% of women undergoing sterilisation would be willing to allow their ova to be removed and donated to someone else. Ideally fertilisation would be by the sperm of the recipient's husband. Ovum donation would be suitable for an infertile woman from whom ova could not be obtained, or who was at risk of inherited disease.³ If such a woman also has an azoospermic husband her only chance of pregnancy would be to accept another woman's ovum fertilised by donor semen—a process called "embryo adoption."³ Such a procedure is technically possible: fertilisation takes place in vitro, as laparoscopic recovery of fertilised ova is not possible, at least at present. The legal and ethical implications of ovum donation and embryo adoption remain unclear.—JAMES OWEN DRIFE, lecturer in obstetrics and gynaecology, Bristol.

¹ Wood C, Trounson A, Leeton J, et al. A clinical assessment of nine pregnancies obtained by in vitro fertilisation and embryo transfer. *Fertil Steril* 1981;35:502-8.

² Biggers JD. In vitro fertilisation and embryo transfer in human beings. *N Engl J Med* 1981;304:336-42.

³ Anonymous. Test-tube babies—whatever next? *Lancet* 1981;iii:1265-6.