

## Medical Education

# Developing medical education

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**Summary:** This article reviews the current state of undergraduate and postgraduate medical education, and suggests changing the educational methods used rather than rearranging the content of courses. A learner centred approach is described, and its applications to postgraduate medical education discussed. Some research and development implications are considered.

### The present state of undergraduate and postgraduate medical education

It has been well established that undergraduate medical education faces a number of problems.<sup>1–4</sup> Students in difficulty feel overloaded and lose their motivation. They find the relevance of much of their early learning difficult to see, commit vast amounts of facts to memory, and quickly forget what they have learnt for their examinations. In their clinical attachments they fail to retrieve and apply information they previously learnt. At worst they find their teachers humiliating. Most students enter medical school with apparently desirable approaches to studying but many find these quickly deteriorate.<sup>5</sup>

Compared with this, the problems of postgraduate medical education at first seem somewhat different. Rather than receiving poor teaching, many trainees complain they receive hardly any teaching at all.<sup>6</sup> It is understandable, then, that in order to make the rapid career progress many want, they seek posts that provide not just varied clinical experience but also good educational opportunities for them to prepare for qualifying examinations. When attending an interview, trainees must consider not just the job itself but the quality of the teaching they might receive. At best they are likely to get it. At worst they could be highly frustrated at the lack of it.

Once in post, many trainees find their heavy service responsibilities outweigh the opportunities available for educational enhancement.<sup>7,8</sup> Clinical work often requires an immediate response but education is more long term, and can all too easily be deferred until the service commitments have been met.

Some trainees become disillusioned, feel stressed and unsupported.<sup>9–11</sup> They complain of a lack of any clear idea as to what they are expected to have achieved at the end of a training post, and at the absence of any mechanism for supportive systematic supervision of their work. What feedback they do receive is often destructive rather than constructive.

Recently a report by the Royal College of Physicians (RCP) Education Committee has reinforced these findings and it expresses serious concern at the lack of progress.<sup>12</sup> It observes that 'education is an integral part of health service activities rather than an optional extra' (p.6), and makes three recommendations: first, the Department of Health should make available half-a-day protected time for education; second, the College should initiate the development of a formal systematic programme of education; and third, a mechanism should be developed for the systematic supervision of trainees with regular unambiguous feedback and opportunities for self assessment (p. 2).

### Some solutions

Roughly every decade the General Medical Council (GMC) publishes recommendations for undergraduate medical education. The ones currently in operation were issued in 1980.<sup>13</sup> In May 1991 the GMC issued an interim document for discussion and wide consultation with medical schools and other interested bodies.<sup>14</sup> It suggested that the 1980 recommendations were entirely appropriate for the educational needs of today, and commented that the earlier recommendations had been implemented only to a limited extent. It reminded medical schools that in 1980 there had been 'a powerful plea that the factual load imposed on students should be reduced' and an exhortation to

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promote 'a capacity for self education, for critical thought, and the evaluation of evidence.' It pointed out, though, there had been little change, and that the emphasis was 'still on the passive acquisition of knowledge, much of it to become outdated or forgotten, rather than on its discovery through curiosity and experiment'.

At about the same time, the King's Fund of London undertook a wide-ranging enquiry into clinical undergraduate teaching. The findings closely parallel those of the GMC. The King's Fund report<sup>15</sup> suggests that students should not be overwhelmed by huge volumes of course work but should have time for discussion and reflection, and should be allowed to develop their own individual interests. Teaching methods should reflect the aims and objectives of the curriculum, and embody the principles of adult learning. Courses should be based on the needs of the learner, and students should be encouraged to take responsibility for their own education. There should be more emphasis on guided self learning, small group tutorials, problem-based learning, and project work with fewer lectures and formal teaching sessions.

The GMC discussion document<sup>14</sup> also argued that courses should help students develop an attitude to learning 'based on curiosity and exploration of knowledge rather than its passive acquisition', and there should be 'a reduction in the excessive burden of information in the existing course' with the introduction of 'a substantial component of problem based learning, including laboratory practicals, small group seminars, and bedside clinical sessions.' Like the King's Fund report, it suggested there should be an emphasis on self education. 'Much didactic teaching, whether in the lecture theatre, the small group meeting or the hospital clinic, should be replaced by the provision of learning opportunity and the stimulus to acquire knowledge because of its inherent interest or essential relevance to a problem to be solved'.

Postgraduate medical education, on the other hand, has received much less guidance, at least until recently. A significant development occurred, however, when in 1987 the GMC published a set of recommendations on the basic training of specialists.<sup>16</sup> This stated that every trainee should have a nominated educational supervisor, normally that person's consultant. This proposal has recently been reinforced by the GMC's recommendations on general clinical training<sup>17</sup> which suggests that educational supervisors of house officers should help with both professional and personal development, including needs 'arising from the unfamiliar demands of clinical practice or from personal circumstances.'

The emphasis now being placed on the role of the trainee's educational supervisor seems wholly

desirable. Clinical education probably best occurs through self study but this rests on guided experience. Trainees need support and help, and some form of mentorship from a more senior colleague would provide this. Of course, in some specialities the education of trainees has for many years been closely supervised. In others several trainees are attached to a number of consultants. There is shared responsibility. This is educationally less desirable than having a clearly established one-to-one relationship. Trainees should know clearly who is their particular educational supervisor. However, in many specialities matters have been left very much to chance. Trainees may have a nominated educational supervisor but never see them to discuss their education. Worse still educational supervisors may believe they are giving adequate supervision simply through their daily contact with their trainees in the course of their clinical duties.

The extent to which the provision of nominated educational supervisors has been fully implemented has not yet been researched but from the studies outlined above it seems in certain fields trainees are not receiving the constructive guidance they require.

### Facilitating learning

There is a remarkable similarity then between these reports on both undergraduate and postgraduate medical education. Passive learning should be replaced by active, self directed learning. Each report tacitly states that the relationship between undergraduate and postgraduate medical education should be one where there is a continuous development of self learning skills. Whatever knowledge the undergraduate acquires that prepares the newly qualified doctor for a house post, perhaps more important is the development of attitudes of mind and approaches to studying that ensure that medical education is life long. The trained doctor should not only know a lot but should have learnt how to learn and keenly want his or her education to be truly continuing.

Throughout these reports, too, there is another recurring theme. The solution to medical education's problems, whether at the undergraduate or postgraduate level, resides less in the syllabus – that is in developing courses and their content – but more in the teaching methods employed – that is in the way education is delivered.

A third theme focuses educationalists on learning rather than teaching. Learning is not so much a matter of what the learners have been taught but more concerned with the sense they have made of it. Knowledge is not just a collection of facts but a mosaic where the sum is greater than the parts.

People need to be relating new information to what they already know, and should be elaborating their knowledge, and this can be achieved best by studying 'theory' in the context of one's practical experience.<sup>18</sup>

In parallel with this there is an increasing emphasis on the value of having trained teachers who understand and can apply the principles of learning, and who have themselves undergone training in curriculum development and effective teaching. Paramount in education is the relationship between the teacher and the learner. No longer should this be seen as a hierarchic one where the teacher is in control of the student's learning but rather one in which learners are encouraged to assume more and more responsibility for their own learning.

Medical education, then, should primarily be concerned with ensuring that students and trainees become efficient and effective learners. Medical teachers should not content themselves with what they have taught their students but ask in what ways their teaching has helped them to learn. At the same time of course students and trainees must themselves accept much more responsibility for their own learning. They should not expect to be 'spoon fed'. Rather, they should seek out educational opportunities and maximize the learning potential within them. Every situation in which they find themselves should be exploited educationally.

The burden, however, remains with the teachers. Rather than being the fount of all knowledge and wisdom, they need to learn how to facilitate learning. Instead of merely telling students or trainees what they know, they should be facilitating their learning. Providing information is relatively easy. Helping people to learn is much more difficult.

To achieve this, medical teachers will need to acquire the skills of learner centred education, that is to help learners define their own educational problems and to seek their own solutions to them. This means they recognize that, while they may have their own educational agenda for their trainees, it is also likely that their trainees will have an agenda for their own training. When these two agendas, the trainee's wants and the trainee's needs, are the same teaching is relatively easy and trainees will to a large extent direct their own learning. However, when they are not the same the teacher has to 'negotiate' the difference.

The difficulty of course is that very few have experienced a learner centred approach to education themselves and even fewer have received any training to help them carry it out. An illustration of how this can be achieved is to be seen in Wessex.

### The Wessex experience

In the Wessex Region, many medical teachers have been trained in learner centred educational methods over the past 6 or 7 years. This began with general practice trainers and was extended to clinical tutors, and is now offered to hospital consultants. The Wessex scheme is based on a protocol<sup>19</sup> shown in Table I. This involves a series of closely related stages, each with its own educational objectives. The protocol can be used in a variety of settings and its application will be briefly described here in one-to-one teaching, that is where medical teachers receive training by working in pairs.

The procedure begins with one of the pair (the 'learner') demonstrating some aspect of his or her practice to the other (the 'teacher'). This demonstration of practice can range from direct observation with one person watching the other, or it can involve a video recording. Experienced people can even begin with a verbal description of some aspect of their practice. The piece of practice being observed can be clinical, such as a consultation, outpatients clinic or clinical procedure, or alternatively it can be a piece of teaching such as a lecture, seminar, teaching round or tutorial.

The next stage of the protocol is for the 'teacher' to invite the 'learner' to say what went well in that demonstration of practice, following which the 'teacher' will say what he or she observed that was good. This establishes standards of good practice as demonstrated by the 'learner', and should be written on a flip chart by the 'learner' so they both can refer to points already made.

Following this, the 'learner' should be asked to say what did not go well, and again the 'teacher' should add his or her comments. In this way errors or omissions can be identified.

These first stages establish the principles of constructive feedback, and provide a basis for agreeing some learning objectives which happens in the following manner. The 'teacher' invites the 'learner' to say what he or she would *want* to do differently, and again these points are listed. The

**Table I** Protocol for learner centred education

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1. Observe the learner's practice.
  2. What went well? (learner first)
  3. What didn't go well? (learner first)
  4. What would the learner want to do differently?
  5. What does the teacher think the learner needs to do differently?
  6. Negotiate the learner's 'wants' and 'needs'.
  7. Agree the educational objectives.
  8. Meet these objectives.
  9. Articulate the educational outcomes (learner first)
  10. Set new educational tasks as a result.
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'teacher' then says what he or she believes the 'learner' needs to do differently. Clearly there can be a difference between what the 'learner' wants to do and what the 'teacher' believes the 'learner' needs to do. These differences are negotiated, and priorities determined. Out of this an agreed list of educational objectives for the 'learner' – a shared agenda – is established.

These objectives are dealt with in some appropriate manner, or if they are deferred some definite arrangement made for meeting them. The 'learner' is then asked to say what he or she has gained from this process and through having to put this into words often clarifies the learning outcomes. Finally the 'teacher' says what he or she believes the 'learner' should have got from it, and from this new learning tasks can be agreed.

Perhaps the most significant element of this protocol is that it emphasizes the importance of teachers and learners agreeing some shared educational objectives. The earlier phases are there to ensure this happens productively and the latter ones can only happen once an agreed set of learning objectives has been established. Experience in using this protocol suggests that 80% of the time needs to be devoted to this objectives setting exercise. Then the learner can become educationally self directing. The teacher's role is to help the learner get to this point and not to tell the learner what he or she knows.

## Applications

There are many ways in which this protocol can be applied but discussion here will be restricted to its use in postgraduate medical education. In particular its value will be examined in relation to both informal and formal teaching.

### 1. *Informal teaching*

Most of the education trainees receive is informal. This can take three forms: on the job training; feedback; and counselling. The protocol described above can be used in each of these situations.

On the job training refers to education which occurs during routine clinical work and probably provides the widest source of postgraduate and continuing medical education. Once trainees have admitted a patient they commonly present the case to the consultant. Invariably there will be service implications concerning what should happen next. Almost inevitably, too, there will be educational implications concerning the trainee's understanding of the case. Both the clinical and the educational implications should be explicitly addressed. The principles of the protocol can be used for both. By addressing the positive aspects of the trainee's

performance the standards of good practice are identified and reinforced. The weaknesses, first identified by the trainee and then by the consultant, then form the basis for development. Negotiating what should happen is a key feature of the protocol, and agreement is essential if the objectives (whether clinical or educational) are to be satisfactorily achieved. Articulating the outcomes of the discussion clearly identifies what should happen next and who has responsibility for what.

Informal teaching also requires the provision of constructive feedback. People learn best when they know how they are doing. Ideally this should occur in 'protected time', and in private. Again, the principles of the protocol can be applied. The essence here is for the trainee to learn how to evaluate his or her own progress. The role of the educational supervisor is to facilitate this, that is to provide a conducive and supportive environment to encourage self evaluation and to help the trainee become proficient at it. This is not to suggest that errors of practice should go unchallenged, though educational supervisors may be quite surprised to find that trainees who are encouraged to criticize their own performance first may not need to be criticized. Rather the educational supervisor will often need simply to agree with and reinforce the trainee's own self criticism.

A distinction should be made when considering feedback between appraisal and supervision. Appraisal would refer to relatively formalized meetings between consultants and their trainees at regular intervals of say 2 months throughout the trainee's clinical attachment. These should be opportunities for both consultants and trainees to discuss the strengths and weaknesses of the trainee's progress and of the education he or she is receiving. Appraisal interviews probably need to last at least an hour, and might follow some agreed and established guidelines. Quite probably some record will be kept of these discussions and their outcome. Supervision on the other hand would be rather more informal and could deal rapidly with matters concerning the trainee's service provision and educational development. It should also occur as regularly as possible. In some specialities these meetings happen weekly. In the case of both appraisal interviews and supervision discussions the principles of the learner centred protocol can be employed.

Counselling is another way in which educational supervisors can provide support for trainees, and here too the principles of the learner centred protocol can be applied. The essence of counselling is increased self awareness and personal insight. Educational supervisors should provide a supportive and safe environment in which trainees can identify their own difficulties and arrive at their own solutions. Here, the content of the discussion

is often the trainee's career development or personal matters affecting their professional work rather than clinical or educational matters directly. The educational supervisor who allows self reflection will often find that trainees solve their own difficulties. On those rare occasions when the trainee's problems are greater than the educational supervisor can handle, both parties are likely to perceive the need for specialist advice and the trainee is more likely to consider outside help.

## 2. *Formal teaching*

In what ways can the principles of learner centredness be applied to formal teaching? At first it seems paradoxical to consider that lectures can be learner centred. As suggested earlier, the key features of learner centredness are these: teachers and learners strive together actively to meet agreed learning objectives, and considerably more time needs to be devoted by teachers to objective setting than is normally spent on the more traditional pursuit of teachers of passing on information to learners. How could this be achieved in a limited time with large numbers of learners, and even in a lecture theatre?

One approach put forward for encouraging active learning in these situations has been to consider restructuring the lecture.<sup>20,21</sup> For example, at the start of the lecture, the lecturer could say what he or she sees the objectives to be, indicating what the learners might expect to gain from it. The lecturer could present some example or illustration at the start, possibly based on some clinical cases. Then subsequently when presenting information the lecturer could refer back to these examples to indicate ways in which that information can be applied. During the lecture, too, the lecturer might pause for the class to reflect on what has been covered so far. A minute or two writing notes or summarizing could be extremely useful. Alternatively a short task could be set on what has already been covered involving learners in some relevant activity for a few minutes or so. Questions could be taken at this stage rather than simply waiting until the end. The use of 'buzz' groups, either in pairs or with people turning around to those sitting behind to form a group of four or six, can be very useful to discuss certain points at particular times during a lecture. Again, questions arising from these discussions could be taken there and then. At the end of the lecture the lecturer might indicate ways in which the learners could take the information further, indicating perhaps how this lecture relates to previous lectures, to lectures running concurrently, or to lectures that will occur in the future. The success of the lecture itself can probably best be determined not so much by what the lecturer has tried to 'cover' but by the ways in which it

influences someone's study once the lecture is over.

Applying the principles of learner centred education to small group work is perhaps more obvious.<sup>22</sup> Certainly it is easier to negotiate the learning objectives. Right at the start, the teacher could ask the group what they want to get out of the session, and then to discuss the points he or she felt they needed to know. As suggested earlier, the learner's perception of their learning wants and the teacher's perception of their learning needs may well be different. The resulting negotiation should lead the teacher to agreeing with the class some learning objectives for the session, and possibly having to modify what had been prepared already. Teachers who teach in a learner centred way have to be ready to be flexible about what they feel they should be teaching. As with lectures, small group work should actively engage the class. Perhaps more easily than in lectures, small group teaching can involve extended periods of group work. Teachers may be surprised to find that group members corporately bring considerable knowledge to the session, and that group working can unlock this knowledge. The combined insights from members of the group often meets, and occasionally surpasses, the information the teacher had intended to impart. The essence of group work is for each of the participants to create their own personal knowledge through actively working on the information being pooled by them.

One variant of small group learning is a workshop approach to education.<sup>23</sup> Here, the teacher provides some educationally appropriate task which might revolve around a problem which is pertinent or relevant to the learners, or it could be a clinical situation carefully chosen by the teacher to provide an appropriate learning context for what he or she would like the group to learn about. It might too be a problem or case brought along by the participants. A workshop often requires the provision of additional resource material where the group members' knowledge is likely to be inadequate for the solution of the problem or the completion of the task. In workshops too, it is important at the start for the learners to agree the learning objectives with the teacher, and at the end for them to articulate for themselves the outcomes of their learning. Once again, the key role of the teacher is to set up the learning situation and to facilitate the educational process.

## **The future: research and development**

The concept of learner centredness, though well established,<sup>24-27</sup> is relatively new to medical education, and the next few years are likely to see considerable research and development in this area.

Research is required in two broad ways. First, there is a need for education to be regularly evaluated.<sup>28</sup> It is perhaps surprising that very little is known about not just the amount but also the effectiveness of undergraduate and postgraduate medical education. Evaluation though should focus not just on formal education such as courses, lectures, seminars, and study leave, but also on the informal provision of medical education through one-to-one teaching, supervision, and private study which forms the bulk of the learner's educational experience. Also, the kind of evaluation undertaken should reflect the nature of education itself. Quantitative studies which attempt to apply the principles of experimental science to the evaluation of educational events may be less appropriate than studies reflecting the growing interest in quality assurance. Education is neither static nor unidimensional. It is dynamic and responsive. The variables influencing what happens can not and should not be controlled but rather understood and articulated. Accurate observation and description should be preferred to statistical accuracy.

Research also needs to be undertaken to evaluate schemes such as the one described above in which Wessex general practitioner (GP) trainers and consultants are being introduced to learner centred methods. The GP scheme has been shown to be effective in the short term,<sup>29</sup> and research is under way to assess its effectiveness in the longer term. It appears successfully to influence the attitudes towards education of people being trained to teach in this way. The scheme for hospital consultants is being evaluated both in terms of its effect on consultants' attitudes towards teaching, and on the amount and quality of the teaching they provide for their trainees. Further research is required to look at the effects of learner centred education on the service provision of the people being educated, and the consequences for patient care. Related indicators of health should similarly be investigated regarding the effectiveness of the educational process.

Research will provide base lines and supporting evidence but developments are needed in parallel with ongoing studies. A number of developments are suggested as a result of the initiatives reviewed above. Teacher training schemes, such as the one being implemented in Wessex, need to be replicated elsewhere, and others devised. Very importantly, training schemes themselves should model the educational principles they are attempting to encourage. It would seem an anachronism that training for learner centred education should itself be didactic. People can not learn how to become learner centred by being told what to do but they can by having some 'ownership' of the problems trainees are experiencing and by solving these themselves.

In addition, medical teachers and their teaching should be regularly and systematically appraised. There should be a continuous review of the education provided by consultants for their trainees and by clinical teachers for the undergraduate programme. Teachers should be encouraged to record and evaluate their educational contributions, and perhaps to develop portfolios that represent the quality of their teaching just as publications indicate people's research output.<sup>30</sup> Medical teachers should welcome the opportunity to discuss their teaching in regular appraisal interviews, perhaps with their managers and/or through peer review.

Finally, teaching should be rewarded. Intrinsic rewards will inevitably come as a result of the provision of good educational experience. Trainees should achieve greater job satisfaction, there will be a happier staff, and better working practices should become established. Posts where there is high quality teaching are likely to attract high quality applicants. Extrinsic rewards, too, should be given for good teaching. In some ways this is already happening in a negative way. General practice trainers who provide unacceptable training can lose their accreditation to train. Might the same occur for educational supervisors in hospitals? Should the criteria for the reaccreditation of a training post include the quality of the teaching being given? Then again, in general practice trainers are reimbursed for the training they provide. Might this too occur in hospitals? Should consultants be paid a certain sum for being educational supervisors, and by implication not paid this if they are not. Perhaps the conferment of appointments and even merit awards might rest in part on the quality of the education a consultant provides.

Perhaps an even more important development is to establish a coherent and unified strategy where teacher training, teacher appraisal, and teacher reward are seen as interrelated. None of these alone will be as effective in developing medical education as seeing them as linked.

## Conclusions

In this review, the problems of undergraduate and postgraduate medical education have been described, and it has been shown that these have not yet been resolved. Recent reports suggest that the way forward is to look not so much at a reorganization of the content of courses but at the educational processes being employed. In particular, these reports stress the importance of the relationship between the teacher and the learner. An environment needs to be created between teachers and learners which is conducive to learning, where there is trust and openness, cooperation and collabora-

tion. Learner centred education seems able to achieve this. This requires an agreement between teachers and learners concerning educational objectives, and it rests on teachers enabling learners to see and fill their educational gaps for themselves. The principles of learner centred education are embodied in a protocol developed within Wessex which has been successfully used in the training of general practice trainers and hospital consultants. The application of these principles is possible in informal as well as formal teaching.

Learner centred education does not imply simply allowing trainees to learn what they want, nor of simply having the trainee's interests at heart. Rather, it is an attitude of mind: a way of approaching the educational task. It requires acknowledging that people learn best when they are helped to reflect on their practice, to identify the strengths in it as well as the weaknesses, and to see for themselves what should be learnt. The teacher's role is to make this happen by the atmosphere he or

she creates. However, this is nowhere as easy as it sounds, and many medical teachers do not yet have the teaching skills to facilitate learning, but they can acquire them, as work in Wessex is showing.

Learner centred education is not new but it may be unfamiliar to some medical educators. There will be those who are suspicious of it or find it challenges their previously held assumptions about teaching and learning. However, people who have adopted it say how valuable they have found it and how teaching in this way is much more enjoyable than operating in a didactic manner. Learner centred education is an exciting and rewarding way of teaching for both teachers and learners.

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