Medical education, in particular the role of the MSc in medical microbiology

By the time doctors start to specialise in their mid to late 20s they have already undergone about 20 years of formal education—initially at school and then at university/medical school. They then have to undergo a period of postgraduate education, after which they face a lifetime of continued professional development as prescribed by the Royal College(s). Thus, by the time they start to specialise they are feeling somewhat jaded about the prospect of further education and teachers must be aware of this, especially if they want to inspire enthusiasm in trainees.

For many years “learning the trade” (or becoming a specialist) in any branch of medicine was done by experiential learning or, in practice, by trial and error. Experience is invaluable but, depending upon where a person works, it can be patchy. In addition, although experience is usually measured in years, in reality “five years’ experience” frequently consists in essence of one year’s experience repeated five times. This has been partially rectified by the Royal Colleges detailing what they consider specialist registrars must have as essential experience, and by the development of training rotations and structured teaching.

Structured teaching takes many forms. It can be done by individuals in a trust teaching their own juniors, and there are many committed consultants who do this extremely well. Senior specialist registrars are also a good teaching resource for their more junior colleagues. Structured training can also be done by specialty training committees arranging training days/half days on a regular basis for all the specialist registrars in their region, held in rotation in different hospitals and organised by a variety of consultants. However, the attendance at these is often less than optimal, and in some places these schemes are still in their infancy and only beginning to operate on a regular/semi-regular basis.

Doing an MSc is another way in which junior doctors can receive structured training, and trainees often regard it as an easy and efficient way of picking up key areas of current knowledge in their branch of medicine. MSCs can be done full time or part time on a modular basis as a day release course usually for one day a week over two years. The part time day release option is especially popular with specialist registrars in training who often relish the thought of a regular day away from their diagnostic laboratory/hospital where they can learn in a “bleep free” environment and still receive a full salary. However, is doing an MSc good for them?

Coming from a department with a well established MSc in clinical microbiology you might expect me to believe the answer to this question is “yes”—especially because I have been the prime organiser of the course for the past five or six years. Indeed, if I did not believe our MSc to be of benefit to trainees, I would find the constant hassle involved with its organisation almost unbearable. Why then do I think doing an MSc is worthwhile?

A taught course MSc is an effective way of providing trainees in microbiology with broad based knowledge relevant to key areas they need to know for the MRCPath examination. This includes teaching on “organism based” microbiology, mycology, virology, and parasitology, as well as clinical microbiology, antimicrobial chemotherapy, control of infection both in the hospital and the community, and basic statistics and epidemiology. In addition to attending lectures, students have the chance to discuss a large number of issues, both with fellow students and more senior colleagues. It is interesting that over the course students become increasingly less concerned about exposing potential areas of ignorance in themselves and more keen on learning from the experience of others. As a teacher, I frequently learn from the students.

MSc courses generally have a large practical element. Traditionally, practical microbiology has been learnt at the bench in the routine clinical laboratory and many would argue that this is the best place to learn it. Indeed, that is where I learnt most of my practical skills. Unfortunately, these days more and more of a clinical microbiologist’s time seems to be taken up with duties such as control of infection, diagnostic problems, queries on treatment, and laboratory management. Although all of these are necessary, they nevertheless diminish the opportunities for trainees to spend time at the bench and to become proficient in laboratory techniques.

While studying for an MSc, students are able to improve their basic laboratory skills and to gain practical as well as theoretical knowledge of molecular techniques and problems relating to antibiotic sensitivity testing. In addition, they can see, handle, and study the basic microbiology of a wide range of bacteria, viruses, fungi, and parasites, including many unusual microbes that they would rarely see in a routine clinical laboratory. Moreover, they are able to see how microbes look on a wide variety of media and learn how to identify organisms in several different ways; sometimes in a routine laboratory, especially a small one, only a relatively limited selection of media and diagnostic techniques is used.

Students learning by themselves—especially the less motivated ones—tend to focus on subjects they are inherently interested in, while often avoiding areas they may initially regard as somewhat tedious, such as laboratory management and safety. A well structured taught course ensures that these issues are covered and that students are stimulated to take an active interest in them.

As I am sure is the case for other MSc courses, we try to make our lectures, discussions, practicals, and assessments relevant to trainee microbiologists. For instance, our assessments are designed to help students acquire skills they will need throughout their career, such as the ability to give proficient oral and poster presentations, and to analyse and summarise scientific papers. In addition, students have to submit a small laboratory based project as part of their MSc final examination and this gives many people their first taste of research: we hope it encourages some to maintain a lifetime interest in it.

One of the most important aspects of attending an MSc is that students have the opportunity to meet and talk to
several external speakers who are real experts and enthusiasts in their particular field. The fact that these experts come for minimal financial reward may be because they, like me, believe MSc courses are of major importance in training our doctors and scientists of the future. Some of these expert speakers are basic scientists, whereas others are consultants who may be involved in training the specialist registrars in their own institution. Trainers often find that sending their trainees on a day release MSc is an extremely cost-effective and time-efficient way of providing them with structured education, in addition to the less formal laboratory or ward-based training and tutorials given by most trainers.

As well as meeting a large number of external speakers, students attending a postgraduate course also have the chance to meet other students from a wide variety of medical and scientific institutions, both at home and abroad. All of these students have their own areas of interest and expertise. Often long-lasting friendships are made and research collaborations forged over the course.

Finally, students tend to vote with their feet. Many trainees contribute towards their fees and every year, on MSc days, some of those doing part-time courses travel long distances to attend. All these factors encourage me to believe that for those wishing to pursue a career in medical microbiology, MSc courses have an important educational role. My thanks go to everyone who teaches on these courses, especially our own.

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