SECTION FIVE

Methods of Assessment

This section looks at a critically important aspect of teaching and learning – the assessment of students' learning. Why is it so important?

Assessment is the heart of learning

Assessment drives learning. Students take great trouble to find out exactly what the examination will be like. Why is this? Because they want to pass the examination, of course! There is always too much to learn, so it makes sense to concentrate on what you need to know to pass the exam. We may want our students to be able to make diagnoses – but if our tests only test facts, the students will quickly learn just to memorise facts. If, on the other hand, they know that the test consists of clinical problems to diagnose and manage, they will study each clinical problem in such a way that they understand it well enough to diagnose and manage it. If there is no practical in the exam the students will stay out of the wards and clinics to spend all their time with their books. But if they know there is going to be an OSPE, (see page 37), they will spend time with patients to make sure they have mastered all the skills.

REMEMBER! ASSESSMENT DRIVES LEARNING

What does this mean, practically? It means we have to plan our assessment very carefully in such a way, that our students will learn what we want them to learn. Teachers often spend more time on preparing lessons and teaching them, than they do on assessing the results. Any time you spend on improving your assessment will be richly repaid – your students will be better learners as a result.

Why do we assess students?

The main reason is obvious – we want to see if they have learnt what we have taught them. This kind of assessment, which is done at the end of a period of teaching, is called *summative* – it is a 'summary' of what the students have learnt. But there are also other reasons for assessment:

- Assessment is very important for our students because it shows them where they are falling short. This is why teachers should always discuss exams with students afterwards, to show them what the right answers were, and where they made mistakes. For the same reason students must be given their marks, and their exam scripts, as soon as possible. Assessment which is done in this way, while the students are still learning, is called *formative* – we are 'forming' or 'improving' the students.
- Assessment also gives the *teachers* important information. If the students do well in the assessment it also means the teachers are doing their job well. If not, the situation must be investigated. Perhaps the students are being overloaded, or the assessment itself is too difficult or tricky, or the students' studying and exam techniques are faulty.
- We are training health workers to do a job. To protect society, we should only send out students who are *safe* – who know their work well enough not to harm anybody. One of the reasons for our final examination of students is to make sure that they are safe. Society expects us to do a good job!

Assessment should be valid

Good assessment is valid. *This means that it tests what it is supposed to test.* Perhaps you want to assess your students to see if they can measure intraocular pressure. You can ask them to write short notes on how to use a Schiötz tonometer – but that will not tell you if they can really do the job. Your method of testing is *not valid*. A better way is to stand by and watch them while they perform it on a patient, then you will really know if they can do it properly. This second method of testing is *valid*.

In an earlier section, we discussed the domains of learning. We saw that each domain is taught in a different

way. The same is true of assessment: we assess each domain in a different way. In the table below, you will find examples of how we should assess the learning of our students, for each domain.

Skill/enabling factor to be examined	Suitable assessment method
Manual skill • Performing a tarsal rotation	• The student has to *perform* the operation on a patient with entropion, while the teacher watches and marks her/his performance with a *checklist*
Communication skill • Educating a family on how to prevent trachoma	• The student has to *educate* a family on the prevention of trachoma, while the teacher watches and gives marks with a *checklist*
Decision making skill • Diagnosing and treating a case of trachoma	• The students are presented with a patient suffering with trachoma. They have to question and examine the patient and *explain how they come to a diagnosis*, while the teacher *watches and questions* • The teacher can also give the students a *written case study*, which gives all the history and examination findings, and ask them how they would manage the patient
Knowledge • Knowledge of symptoms, signs, stages, the organism, medication, anatomy, spread, prevention, etc.	• *Written* examination with short answer questions, multiple choice questions (MCQs), essay questions • *Oral* examination
Attitude • An attitude of concern and caring	• The teacher *observes* the student as s/he works in the clinic. After a week or so the teacher uses a *checklist* to make a final assessment of the student's attitude

If you follow the guidelines in this table, your assessment is likely to be valid – it will test what it is supposed to test.

Some teachers like to ask 'trick questions' to catch out their students. Others like to ask questions about very rare, very obscure diseases. Such assessment is not valid. Valid assessment should be straightforward, and should focus on the 'must knows' and 'must be able to dos' – the things that are really necessary for day-to-day practice.

Finally, in every assessment the examiner has to take a *sample* of all that the students had to learn because there is never enough time to examine everything. To be valid the sample has to cover the whole range of knowledge and skills that the students were supposed to master.

Assessment should be reliable

Good assessment is *reliable*. This means that if we repeat the assessment on the same student at another time, or using another examiner, the mark will be the same.

Some forms of assessment are more reliable than others. An OSPE (see page 37) is more valid than old-fashioned practical sessions, which use different patients for different students. A written exam (where everyone gets the same questions) is generally more reliable than an oral one (where different candidates get asked different questions by different examiners).

You can make any form of assessment more reliable by giving a little thought to the matter. Practical exams are more reliable if you use a checklist to mark the performance of the student. Written exams are more reliable if the markers are guided by a very clear document which shows how marks are allocated for each question.

Multiple Choice Questions (MCGs) - beautiful but deadly?

MCQs consist of a leading statement or *vignette*, at the end of which there is a question. This is followed by a number of answers or *options* for students to choose from. Three types of MCQs are commonly used:

- A-type MCQs test the ability of the students to solve a problem. The vignette poses a problem (often a clinical one) and only one answer is correct – the last phrase in the vignette is something like – *'which one of the following is most likely?'*
- R-type MCQs are also called 'extended matching questions'. The question starts with 10–20 answers, followed by a series of vignettes. The answer to each vignette is one of the answers at the head of the question.
- In X-type MCQs the examiner is assessing facts. The vignette is usually short and two or more of the five options may be true. The last phrase in the vignette is something like – *'which of the following statements is true?'*

MCQs have become popular because they are very reliable and are also very easy to mark. On the other hand they have a number of serious drawbacks:

- Students often misunderstand part of the MCQ (vignette or options)
- In X-type questions, every option must be totally true or totally false. They are therefore only suitable for assessing pure facts and not the application of facts (which A-type and R-type MCQs can do)

For these reasons MCQs often have low *validity*. They have to be carefully tested to see if students understand them correctly. People who write MCQs should receive training first or consult a manual.

The following manual is recommended for MCQs and is available free of charge on the Internet:

Case S.M., Swanson D.B. (2001), *Constructing Written Test Questions for the Basic and Clinical Sciences*, third edition, Philadelphia: National Board of Medical Examiners.

What is an OSPE?

The OSPE is a special kind of examination that is now commonly used. What do the letters mean?

- **O** stands for ***Objective***. If different students are given different patients to examine, this could be unfair: some patients and conditions are easier to examine than others. So, in this examination, every student gets the same patient and the same examiner and this is why we say it is *objective*
- **S** stands for ***Structured***. Several skills are tested at one time. Each skill is tested in a separate room called a *station*. At each station there is a card with clear instructions for the student, all the equipment s/he needs, a patient (if necessary), and an examiner with a checklist for doing the marking. There may be ten such stations in an OSPE and ten students are then examined together. Each starts at a different station and, after 10–15 minutes, a bell rings and they move on to the next one
- **P** stands for ***Practical***. This means that this exam is practical – it *only* tests the *skills* of the students. It could be manual skills, like examining the anterior chamber of the eye, or it could be a communication skill, like taking a patient's history. Some people prefer the word ***Clinical*** – so that makes their exam an 'OSCE'
- Finally, **E** stands for ***Examination***. Good OSPEs are an excellent way of examining skills. They take a lot of time and preparation, as do all practical examinations