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Techniques for effective bedside teaching

Introduction

Junior doctors need to acquire many skills in their training for the efficient and successful day-to-day clinical management of patients. These include effective communication skills, which are essential for a doctor to be able to ask the relevant questions in a sympathetic manner to the patient to acquire the precise facts. Correct examination techniques are also needed to allow doctors to effectively spot clinical signs and formulate their thinking to provide a differential diagnosis, and good presentation skills are needed to enable the students to deliver their findings in a systematic and logical manner.

The importance of the correct application of clinical skills has recently been recognized by the Modernising Medical Careers taskforce. They have instigated various methods of formally assessing doctors' clinical techniques, including the direct observation of procedural skills and the mini-clinical evaluation exercises. Also many medical student and Royal College examinations have practical aspects to them with patient interaction an essential component.

In order for students and doctors to obtain the optimum training for these areas, clinical teaching is a vital component of the medical education process. It will teach many aspects of medicine that cannot be learned in the classroom or lec-

ture. Clinical teaching occurs in a variety of forms including simple question and answer sessions on ward rounds, discussions in outpatients, and case presentations in grand rounds. They all have the benefit of using real patients as the focus of the educational session. However, more formal organized bedside teaching is necessary for students and doctors to acquire hands-on experience and skills.

Teaching small groups with patients allows the individuals to be closely observed and taught for clinical practice and medical examinations. These education sessions integrate theory, practical skills and patient contact to make the educational process as realistic as possible and allow the students to develop empathy with the patients. However, the teaching of these aspects is often poorly conceived and structured and many teachers will have had little formal training in the educational principles.

This article gives tips and techniques for improving the organization and delivery of the patient-orientated educational process. The ideas described apply in many different scenarios, and can be used to tailor the teaching specifically to meet the needs of the students and doctors. This will help to make the learning as interesting and relevant as possible.

Know the target audience

There are various aspects that will modify the type of teaching provided. These should be investigated and understood before the teaching session occurs:

The subject

What the teacher and the students feel should be the outcome of the educational session is not always the same. Therefore it is important to meet with the students before the session to discuss their requirements and expectations. The curriculum that the students are studying must also be assessed, and discussion with other teachers may help. It is also essential for the teacher to have a degree of specialist knowledge of the subjects to be taught. This needs to be up to date and evidence based.

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The students

It is essential to know who will be taught and how many students will attend. If there is a large group then alternative methods such as a clinical lecture should be considered. It is important to know the level of the students' knowledge and what stage of training they are at. The teaching techniques will obviously vary if the students are learning a topic for the first time, or if they are revising a subject before an examination.

The examination

If any examination is imminent then its structure and format needs to be known to make the clinical session as realistic as possible. The teacher should try to emulate the exam conditions and act in a similar manner to the actual examiners. This will help the students gain vital understanding of the experience and pressure they will soon be under.

Organization and resources

Organization is the key to providing the best educational experience for the students. The teaching will, to an extent, be determined by the patients that can be arranged. The patients need to be available and have relevant clinical signs. They also have to be well enough to allow the examination to take place and have given informed consent. Other resources that are necessary include a quiet environment with enough room for the examination, plus a separate room to allow more detailed discussion away from the patient.

Plan a structured lesson

The basic structure of the lesson should be considered before meeting the students. To help with this a lesson plan can be defined before the session to aid the teacher. Lesson plans can take a variety of formats, from a simple list of topics to a complex breakdown of all of the components in the lesson. A sample plan for a typical teaching session is presented in *Figure 1*. This particular lesson has two components – a bedside patient-orientated session allowing the students hands-on experience and a non-clinical question and answer session to discuss further topics and revise clinical facts. The basic structure of this example can be adapted to fit a number of scenarios.

Lesson plan summary			
Title:	Clinical teaching for the MRCP PACES examination		
Class:	Junior doctors – group of 4		
Duration:	90 minutes		
Time	Content	Methods	Aids
Part 1 Clinical teaching			
3 mins	Meet students, give introduction	Explanation	
3 mins	Ascertain prior knowledge, explanation of lesson objectives	Question and answer	
2 mins	Introduce students to patients	Introduction	Patients with clinical signs
5 mins each patient	Observe students examining each patient	Observe that examination is methodical, relevant and no signs are missed	One student examining, others watching
3 mins each patient	Student's presentation of findings	One-to-one assessment with others watching	Away from patient
2 mins each patient	Questions about the presentation	Discussion	Away from patient
3 mins each patient	Questions about associated topics	Question and answer	Away from patient
5 mins each patient	Return to patient for sign finding/ demonstrations	Group teaching session	Return to same patient
Part 2 Non-clinical teaching			
3 mins	Introduce session	Informal group discussion	Can use printed handouts
18 mins	Discuss cases seen and other associated conditions	Discussion, question and answer	Using handouts
5 mins	Any further questions	Discussion of any points not covered or areas of concern	
5 mins	Feedback from teacher and students	Discussion, feedback forms	Feedback forms

Figure 1. Sample lesson plan.

Providing the clinical teaching

The time period of teaching should be protected, both for the teacher and the students. If possible beeps should be handed in and clinical responsibilities covered by other staff. The students should be met by the teacher and introduced to the patients. The teaching can then progress in a structured manner. The components of an optimal educational session have been investigated and described previously in the literature by Curzon (2004), who stated that there should be four main components to a lesson, as listed here:

The introduction

This is used to capture the students' interest and to set the stage for the session. The teacher should introduce him/herself and allow the students to do likewise. The students should then be

informed about what they should expect in the session, its duration and how it will be structured.

The central section

This is the main part of the teaching and will include clinical teaching and theory. With clinical teaching the students should be asked to examine the patients with the candidate being closely watched by the teacher and the other students. If the session is meant to be under exam conditions then the student should be allowed to examine and present without interruptions. However, if the session is less formal then the teacher can demonstrate correct techniques as the student proceeds.

The student then should be asked to present their findings away from the patient to allow a free and frank discussion of the case. Questions on further

related subjects can be asked, involving the other observing students if appropriate. The students can then return to the patient so that the correct technique can be demonstrated. The other students can also use the opportunity to examine for themselves to determine the clinical signs. The candidates should rotate for subsequent patients to allow them all to be under the 'spotlight'.

The students must be encouraged to participate in 'active learning', i.e. they should be motivated to take control of their own learning process. For this to take place they should have full participation before the session with regards to planning. During the session they should be encouraged not only to answer questions but to formulate questions of their own. Discussions, debate and brainstorming can all be instigated. Reflection after the session should be encouraged. The key aspects of the lesson have been described by Gagne (1992) as nine events of instruction and are listed in *Table 1*.

The consolidation

This involves reinforcing facts and knowledge. A non-clinical session away from the patients can be used for theory and may be enhanced with the use of various types of media. Flip charts and PowerPoint presentations are useful to present the information in an interesting and visible manner.

Table 1. Nine events of instruction
Gain attention, e.g. greet the students
Inform the learner of their objective – determine signs, presentation skills, improved knowledge, examination practice
Stimulate the recall of prerequisite learning – to recap prior knowledge and experience
Present the stimulus material – clinical patients and theoretical facts
Provide the learning guidance – demonstrate correct techniques, provide structure and knowledge
Elicit the performance – examination techniques, presentation skills
Provide the feedback – positive and negative
Assess performance – concise, logical, structured
Enhance retention and transfer – reiterate key points, take home material
From Gagne (1992)

Hand-outs will also help to provide a take home summary of the session which can be used for revision purposes.

Students should be encouraged to be 'actively thinking', i.e. they should assimilate the information and search for greater understanding of the subject, for example to assess the evidence behind a hypothesis or recognize inconsistencies in an argument.

The conclusion

This ensures that the session has achieved its aims. A summary of what has been taught should be presented and questions should be addressed. Feedback should be given in both directions. Future sessions can be planned.

Watch and listen

The students should be observed closely to formulate a picture of all aspects of their performance. Their politeness to the patient, examination techniques, presentation skills and knowledge should all be assessed. This will help the teacher to determine the better aspects of the student's skills, but also where improvements can be made. The teacher can then focus on these areas for the latter parts of the teaching.

As well as watching, one of the important skills a teacher can acquire is listening, and a great deal of information can be gained by this. Not only can immediate questions be answered, but a feel for the confidence of the student can be obtained, their reactions under pressure and the logic of their thought processes. Rowe (1986) stated that a delay of as little as 3 seconds after questioning led to answers three to seven times longer.

Communication

Students should have the information presented to them in a way that is clear and easily understood. The knowledge should be presented in a structured manner, and placed in context with descriptions of wider ramifications. Evidence behind the information should be discussed. The teacher should also impart an enthusiasm for a subject which can lead to greater student interest and motivation to learn.

An example where good communication skills are important is that of giving explanations. Clear and precise explanations will

help the student to understand and improve for the future. The technique of effective explaining has been described by Spencer (2005), who states that five points of effective explanations should be used:

1. Check understanding
2. Give information in bite-sized chunks
3. Put into broader context
4. Summarize periodically
5. Reiterate the take-home messages.

Effective questioning

There are different types of question to be used in education, which should be used at the correct times and in the correct context. Closed questions are useful but limited. They are used to ascertain particular points of knowledge, e.g. 'Does vitamin B₁₂ deficiency cause neuropathy?' However, the use of open questions allows a far greater scope for information retrieval. Open questions can be used to begin a dialogue or start a discussion, e.g. 'Tell me about lung fibrosis'. Finally clarifying questions can be used to determine further information from a provisional answer, e.g. 'What other causes of a purpuric rash do you know?'

A different method for describing the types of questions that can be used was described by Okey (1991). In this technique questions are categorized by the context in which they are used:

1. Social purposes – this type of questions is to promote active involvement of the students and build relationships between the students and teachers. An example of a social purpose question is made at the start of the teaching session – asking the students about their prior knowledge and experience
2. Motivational purposes – these help to develop motivation in the students by critical encouragement, e.g. 'tell me why it is important to understand electrocardiograms as a junior doctor?'
3. Cognitive purposes – these include logical questioning and fact recollection. For example 'tell me your differential diagnosis'
4. Assessment purposes – questions to assess current knowledge and skills as compared to specific criteria, e.g. asking the student the correct management of acute myocardial infarction, and comparing the answer to the examination syllabus.

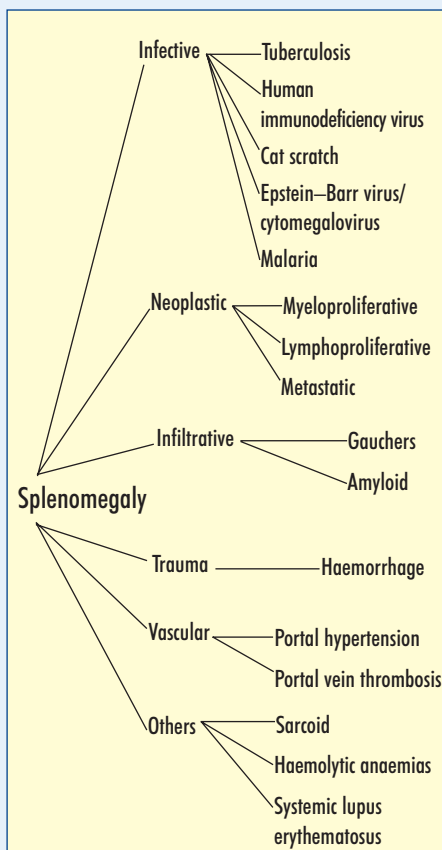
Consolidation of facts

It is important at the end of the session to reiterate the areas discussed during the session and to answer any further questions. Written hand-outs can be given out to help the students to retain knowledge for the future. These are used not only to list the main facts covered in the lesson, but to put these in context. A useful method to help students with logically structuring a subject is the idea of ‘concept mapping’. The information regarding a clinical case can be presented in a visual manner, categorized into levels of priority. An example of the causes of splenomegaly is shown in *Figure 2*.

Assessment and appraisal

The teacher should assess the students in a systematic and objective manner. All aspects of the student’s performance should be taken into account, e.g. knowledge, examination skills, presentation clarity and logic. The teacher should develop an overall view of the session and consider the positive and negative aspects to be commented upon with feedback.

Figure 2. Concept mapping – the causes of splenomegaly.



Other students should also be encouraged to participate to give an alternative viewpoint.

Feedback

Feedback is an important method of improving future performance and can be positive or negative. Positive feedback will reinforce the good aspects of a trainee. It will encourage and motivate for the future. However, if handled correctly, negative feedback is just as important. If a student’s knowledge or technique is wrong then this needs to be corrected to avoid perpetuating the mistake.

Differing methods of delivering negative feedback can be used, as described by Kurtz et al (1998). The ‘sandwich approach’ is where negative comments are used in conjuncture with constructive methods for improving the performance. For example ‘you examined the cardiac system very well; however, you may get more marks if you auscultated in this manner.’ It is essential to avoid having a judgmental attitude and demoralizing the student. Using the agenda-led approach a discussion can be instigated with the trainees to allow them to explain the reasoning behind their decisions, or gain their perspectives on their performance. This approach should follow an method based upon Pendleton et al’s (1984) rules:

1. The facts under discussion should be briefly clarified
2. The student goes first and discusses what went well
3. The teacher then discusses the positive aspects
4. The student describes what could have been done differently and makes suggestions for change
5. The teacher also identifies alternative helpful approaches.

Reflect for the future

It is essential that the teacher also continues to improve his or her performance and teaching techniques. It should be remembered that the students will also be appraising the teacher during the session so feedback from the students should be sought. This can be as a general overview with the group at the conclusion of the teaching session, or individually after the teaching. Anonymous feedback sheets are also useful. The teacher should reflect at the end of a session on the positive aspects and what could be improved upon for the future.

Conclusions

There are many facets to medical education that cannot be learnt in a classroom. Therefore learning in a clinical environment is essential for the training purposes of both students and doctors. This article has outlined techniques and structures for clinical teaching to allow both the trainer and students to gain the most from each session. **BJHM**

Conflict of interest: none.

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KEY POINTS

- Clinical skills are an essential part of effective medical practice.
- Bedside teaching provides the optimal learning environment for acquiring these techniques.
- Patient-orientated teaching allows students and doctors to obtain hands-on experience that cannot be taught in a classroom.
- Various methods can be used to structure the teaching to provide the optimal educational session for the students.
- Effective communication, appraisal and feedback skills will help the teacher in the assessment and teaching process.