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AMEE GUIDE

AMEE Guide no. 34: Teaching in the clinical environment

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Abstract

Teaching in the clinical environment is a demanding, complex and often frustrating task, a task many clinicians assume without adequate preparation or orientation. Twelve roles have previously been described for medical teachers, grouped into six major tasks: (1) the information provider; (2) the role model; (3) the facilitator; (4) the assessor; (5) the curriculum and course planner; and (6) the resource material creator (Harden & Crosby 2000).

It is clear that many of these roles require a teacher to be more than a medical expert. In a pure educational setting, teachers may have limited roles, but the clinical teacher often plays many roles simultaneously, switching from one role to another during the same encounter. The large majority of clinical teachers around the world have received rigorous training in medical knowledge and skills but little to none in teaching. As physicians become ever busier in their own clinical practice, being effective teachers becomes more challenging in the context of expanding clinical responsibilities and shrinking time for teaching (Prideaux et al. 2000). Clinicians on the frontline are often unaware of educational mandates from licensing and accreditation bodies as well as medical schools and postgraduate training programmes and this has major implications for staff training. Institutions need to provide necessary orientation and training for their clinical teachers. This Guide looks at the many challenges for teachers in the clinical environment, application of relevant educational theories to the clinical context and practical teaching tips for clinical teachers. This guide will concentrate on the hospital setting as teaching within the community is the subject of another AMEE guide.

Introduction

Teaching in the clinical environment is defined as teaching and learning focused on, and usually directly involving, patients and their problems (Spencer 2003). The clinical environment consists of inpatient, hospital outpatient and community settings, each with their own distinct challenges. It is in this environment that students learn what it means to be a real doctor. Skills such as history taking, physical examination, patient communication and professionalism are best learned in the clinical setting, medical knowledge is directly applied to patient care, trainees begin to be motivated by relevance and self-directed learning takes on a new meaning (Spencer 2003). Teaching in the clinical setting often takes place in the course of routine clinical care where discussion and decision-making take place in real time. Often the teaching will centre on an analysis of actual patient care that the student has undertaken. This is the most common pattern for postgraduate trainees. Undergraduate students benefit from additional sessions specifically planned for teaching. These sessions may take place in the ordinary clinical environment and make use of the patients who are opportunistically available. They may on the other hand be highly structured with particular patients brought up especially for the session.

The word 'doctor' is derived from the Latin docere, which means 'to teach' (Shapiro 2001). Clinical teachers have a dual role in medicine, to provide patient care and to teach (Prideaux et al. 2000; Irby & Bowen 2004). Though all doctors are usually well prepared for their clinical roles, few are trained for their teaching roles (Steinert 2005). Clinical teachers take their role as teachers of future generations of doctors seriously and with enthusiasm. Yet, most lack knowledge of educational principles and teaching strategies thus may be inadequately prepared for this additional professional role (Wilkerson & Irby 1998). It has simply been assumed that professionals who have graduated from medical schools/colleges and undergone postgraduate training can automatically start teaching the day after they graduate. Due to advances in education such as new methods of teaching and learning, a more student-centred teaching, competency based assessment and emphasis on professionalism; educators today are required to have an expanded toolkit of teaching skills and clinical expertise (Harden & Crosby 2000; Searle et al. 2006).

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Practice points

- Clinicians do not become teachers by virtue of their medical expertise, but a reflective approach to teaching and professional development can foster excellence in clinical teaching.
- By using an outcome based approach to teaching and learning, clinical faculty can progress along the spectrum of clinical teaching and if they choose to, they can become truly professional teachers.
- Soliciting feedback on teaching and reflective practice are key to advancing to the highest level of teaching and moving from being a technically sound teacher to a professional and scholarly teacher.
- Staff development can provide clinicians with new knowledge and skills about teaching and learning. It can also reinforce or alter attitudes or beliefs about education.
- Staff development can provide a conceptual framework for teaching and help clinical teachers adopt and adapt specific teaching behaviours to real clinical settings and introduce clinicians to a community of medical educators interested in furthering clinical teaching and learning.
- Several models of teaching have been described in this guide, they are behaviour based and can be easily adapted to a 5-minute teaching encounter or a one-hour encounter. These models could also help teachers set defined objectives for each clinical teaching encounter and also tailor objectives to individual learners.
- Clinical teachers should attempt to draw a road map of their career as educators, what their ultimate goals are (become technically proficient as teachers or researchers and scholars or develop into educational leaders) and how they intend to progress and accomplish their goals.

Box 1. Skills that make a clinical teacher excellent

Excellent clinical teachers:

- share a passion for teaching;
- are clear, organized, accessible, supportive and compassionate;
- are able to establish rapport; provide direction and feedback; exhibit integrity and respect for others;
- demonstrate clinical competence;
- utilise planning and orienting strategies;
- possess a broad repertoire of teaching methods and scripts;
- engage in self-evaluation and reflection;
- draw upon multiple forms of knowledge, they target their teaching to the learners' level of knowledge.

Box 2. Challenges of clinical teaching

- Time constraints
- Work demands – teachers maintain other clinical, research or administrative responsibilities while being called upon to teach
- Often unpredictable and difficult to prepare for
- Engaging multiple levels of learners (students, house officers etc)
- Patient related challenges: short hospital stays; patients too sick or unwilling to participate in a teaching encounter
- Lack of incentives and rewards for teaching
- Physical clinical environment not comfortable for teaching

From Focus group discussions of clinical faculty in the Department of Medicine at Boston University School of Medicine

Clinical teaching overview

What makes a clinical teacher excellent?

Many investigators have examined the qualities that learners value in their clinical teachers. Irby & Papadakis (2001) summarized these and list the skills that make a clinical teacher stand out (see Box 1).

Problems with clinical teaching

John Spencer has listed common problems with clinical teaching in his article on learning and teaching in the clinical environment published in the British Medical Journal's ABC of learning and teaching in medicine series (Spencer 2003). The following are examples of such challenges, though by no means a complete list:

- lack of clear objectives and expectations;
- teaching pitched at the wrong level;
- focus on recall of facts rather than problem solving;
- lack of active participation by learners;
- inadequate direct observation of learners and feedback;
- insufficient time for reflection and discussion;
- lack of congruence with the rest of the curriculum.

Challenges for teachers in the clinical environment

Teaching in the clinical environment comes with its own set of unique challenges (Spencer 2003); some key ones are listed in Box 2.

Despite the numerous challenges noted, many clinicians find practical solutions to overcome them and excel in their dual role as clinician and teacher. The remainder of this guide focuses on practical educational strategies that clinicians can use while teaching in the clinical environment from technical skills to a scientific and professional approach to their teaching.

General teaching models for teaching in any clinical setting

Two models of clinical teaching have been successfully used in faculty development of clinical teachers. Both models are behaviour based and can be adapted by clinical teachers to all clinical settings. The first is the Stanford Faculty Development model for clinical teaching and the second is the Microskills of teaching model, also known as the one-minute preceptor.

Stanford faculty development model for clinical teaching

A popular model for teaching improvement has been the seven-category framework of analysis developed by the Stanford Faculty Development Centre. This comprehensive framework is outlined in the article by Skeff (1988). In addition, this seven-category framework has been validated by work at the University of Indiana which resulted in a 26 item questionnaire that can be used to evaluate teaching (Litzelman et al. 1998). Although it provides a categorical framework for evaluation and analysis of teaching, the power of the model is most effectively demonstrated in hands-on seminars in which faculty are enabled to both understand and apply this method of analysis to their teaching. This model described all clinical teaching as fitting into seven key categories, lists key components under each category and further describes specific teaching behaviours under each key component.

The categories are as follows.

(1) Promoting a positive learning climate: The learning climate is defined as the tone or atmosphere of the teaching setting including whether it is stimulating, and whether learners can comfortably identify and address their limitations. It sets the stage for effective teaching and learning.

(2) Control of session: This refers to the manner in which the teaching interaction is focused and paced, as influenced by the teacher's leadership style. It reflects the group dynamics, which affect the efficiency and focus of each teaching interaction.

(3) Communication of goals: This includes establishment as well as explicit expression of teachers' and learners' expectations for the learners. Setting goals provides a structure for the teaching process, guides teachers in planning the teaching and provide a basis for assessment.

(4) Promoting understanding and retention: Understanding is the ability to correctly analyse, synthesize and apply whereas retention is the process of remembering facts or concepts. This category deals with approaches teachers can use to explain content being taught and have learner meaningfully interact with the content, enabling them to understand and retain it.

(5) Evaluation: It is the process by which the teacher assesses the learner's knowledge, skills and attitudes, based on educational goals previously established. It allows the teacher to know where the learner is and helps them plan future teaching as well as assess effectiveness of teaching. Evaluation can be formative to assess ongoing learner's progress towards educational goals or summative for final assessment to judge learner's achievement of goals.

(6) Feedback: Feedback is the process by which the teacher provides learners with information about their performance for potential improvement. It provides an educational loop through which the teacher can guide learners to use the evaluation of their performance to reassess attainment of goals.

(7) Promoting self-directed learning: Teachers achieve this by facilitating learning initiated by learner's needs, goals and interests. It stresses the importance of acquiring skills to equip the learner to continue learning beyond the time of formal education.

The one-minute preceptor

The 'Microskills' of teaching, also called the one minute preceptor because of the short time available for teaching in the clinical environment, provides a simple framework for daily teaching during patient care (Neher et al. 1992). It is most relevant to teaching postgraduate trainees but the steps also apply to the longer encounters that are specifically focused on teaching for undergraduates. These steps can be used to structure effective short clinical teaching encounters that last five minutes or less as well as to address problems that arise. The original microskills model uses a five-step approach.

Step 1. Getting a commitment: The teacher encourages learners to articulate their opinions on the differential diagnosis and management rather than giving their own conclusions and plans. The teacher must create a safe learning environment so that learners feel safe enough to risk a commitment – even if it is wrong.

Step 2. Probing for supporting evidence: The teacher should encourage learners to 'think out loud' and give their rationale for the commitment they have just made to diagnosis, treatment, or other aspects of the patient's problem. Teachers should either validate learners' commitments or reject them gently if flawed.

Step 3. Teaching general rules: Teachers can guide learners to understand how the learning from one patient can be applied to other situations. The learner is primed for new information they can apply to a given patient as well as future patients. If the learner has performed well and the teacher has nothing to add, this microskill can be skipped.

Step 4. Reinforcing what was done well: It is appropriate to use this microskill every time the trainee has handled a patient care situation well. Effective reinforcement should be specific and behaviour based and not vague. Positive feedback also builds the trainee's self-esteem.

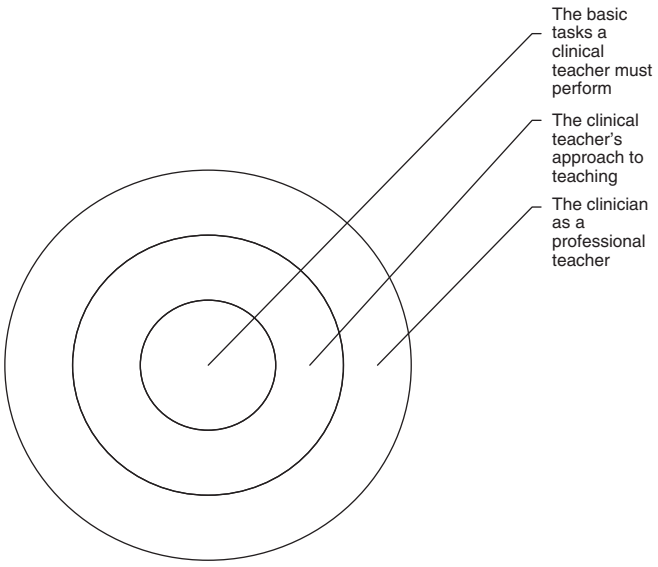
Step 5. Correcting mistakes: Negative or constructive feedback is often avoided by clinical teachers, but this is vital to ensure good patient care. Encouraging self-assessment is a good way to have the learners realise their mistakes themselves and if they have identified their errors, they can be given positive feedback on their self-reflective capabilities. If the teacher has to point out mistakes, this must be specific, timely and based entirely behaviour based.

Applying the Dundee outcomes model in clinical teaching

It has been stated that the medical profession needs to think more seriously about training their teachers and a framework for developing excellence as a clinical educator is needed (Hesketh et al. 2001). Harden et al. (1999) had previously

proposed a 3-circle learning outcomes model to classify skills and abilities that doctors must possess. The Dundee outcomes model offers a user-friendly approach to communicate learning outcomes and was adapted to describe outcomes for medical teachers (Hesketh et al. 2001). We use this model in describing outcomes expected of a clinical teacher, moving from technical competencies to meta-competencies within each circle (Figure 1).

(1) The inner circle refers to the fundamental tasks that clinical teachers should be able to perform competently; doing the right thing.
(2) The middle circle represents the teacher's approach to clinical teaching with understanding and application of relevant learning theories; doing the thing right.
(3) The outer circle represents the development of the individual through a professional approach to teaching in the clinical environment; the right person doing it.



Adapted from Harden et al. 1999

Figure 1. The Dundee 3-circle outcomes model.

In applying the three-circle outcomes model for teachers in the clinical environment we have attempted to keep these outcomes clear and unambiguous, specific, manageable and defined at an appropriate level of generality (Harden et al. 1999) (see Box 3).

Circle one: what the clinical teacher should be able to do (doing the right thing)

We list the following tasks as essential for teachers in the clinical environment: time efficient teaching, inpatient teaching, outpatient teaching, bedside teaching, assessment of learners in the work setting and giving feedback.

Time efficient teaching

Irby & Bowen (2004) described a 3-step approach for time efficient teaching in the clinical environment. All three steps described can be adapted equally well to a one-hour session as a 10-minute teaching session.

Planning. Advanced planning can achieve the following:

- sharpen expectations;
- clarify roles and responsibilities;
- allocate time for instruction and feedback;
- focus learners on important priorities and tasks.

The planning stage includes communicating expectations to learners, soliciting learners' goals, creating a safe and respectful learning environment, selecting appropriate patients for the teaching and priming learners about the goals of the session.

Teaching. Distinguished clinical teachers draw upon a repertoire of teaching strategies to meet the needs of their learners and selectively use any or all of the following five common teaching methods.

- Teaching from clinical cases; combining simple discussions for novice learners with higher level discussions for more senior learners

Box 3. Applying the three-circle outcomes model for teachers in the clinical environment

Tasks of a clinical teacher (Doing the right thing)	Approach to teaching (Doing the thing right)	Teacher as a professional (The right person doing it)
• Time efficient teaching	• Showing enthusiasm for teaching and towards learners	• Soliciting feedback on teaching
• Inpatient teaching	• Understanding learning principles relevant to clinical teaching	• Self-reflection on teaching strengths and weaknesses
• Outpatient teaching	• Using appropriate teaching strategies for different levels of learners	• Seeking professional development in teaching
• Teaching at the bedside	• Knowing and applying principles of effective feedback	• Mentoring and seeking mentoring
• Work based assessment of learners in clinical settings	• Modelling good, professional behaviour including evidence based patient care	• Engaging in educational scholarship
• Providing feedback	• Grasping the unexpected teaching moment	

- Using questions to diagnose not only learners' capacity for recall but also their analysis, synthesis and application capabilities
- Using advanced learners to participate in the teaching
- Using illness and teaching scripts. Examples of illness scripts include knowledge of typical symptoms and physical findings, predisposing factors that place the patient at risk and underlying pathophysiology. Teaching scripts commonly include: key points with illustrations, appreciation of common errors of learners and effective ways of creating frameworks for beginners to build their own 'illness scripts'.
- Acting as role-models at the bedside or in examination rooms

Evaluating and reflecting. Observing learners directly is an important prerequisite for effective feedback. Feedback should be based on observed behaviours, include positive and negative feedback and teachers need to promote self-assessment by learners. These techniques are discussed in greater depth later.

Inpatient teaching

Ende (1997) wrote that the role of the inpatient teacher is one of the most challenging in medical education, that of a master, mentor, supervisor, facilitator, or all of the above. Inpatient teaching can be chaotic and frustrating, as students of varying levels of sophistication and interest fight off (or surrender to) interruptions and urges to sleep, while the attending physician holds forth on unanticipated topics, and about patients who may not be available. Despite the various challenges (see Box 4), he states that inpatient teaching can be riveting if the teachers follow some basic principles. Teachers should try to facilitate knowledge acquisition by asking questions that make learners think and reason rather than recall facts. More importantly, knowledge should be applied to specific patients for clinical problem solving. Teachers should have some knowledge of different learning styles and adapt their teaching style to different learners. Teachers can set a comfortable and safe learning environment in which they and the learners freely ask questions and are prepared to admit their limitations. Inpatient teams also need to behave as a teaching community where each member respects the other in order to maximize their learning. Teachers should learn to challenge their learners without humiliating them and provide support so that learning can be furthered. Ende suggests that in preparation for effective ward teaching, the teachers should ask themselves a set of questions before each teaching encounter.

(1) What do you hope to accomplish?
(2) What is your point of view?
(3) How will your learners be engaged?
(4) How will you meet the needs of each learner?
(5) How will rounds be organized?
(6) Are your rounds successful?
(7) How will you make the time?

Although these questions can be applied to any clinical environment, they are particularly apt for the inpatient setting where a little mental preparation goes a long way. Time constraints, varying learner levels, unexpected teaching moments, presence or absence of the patient can all be factored in while the teacher attempts to answer these questions.

Outpatient teaching

Clinical teaching has recently been moving from the wards to clinics. In recent years, the outpatient clinics have become an integral venue to teach clinical medicine. With shorter hospital stays, it has become impossible for trainees to follow and learn the natural history of a disease from the inpatient environment. Outpatient settings provide one area where trainees can learn this, follow the patient over time and become involved in the psychosocial aspects of patient care (McGee & Irby 1997; Prideaux et al. 2000). Outpatient clinics are exceedingly busy and chaotic settings with very short teacher-trainee interactions (see Box 5). Often, clinical teachers are providing direct

Box 4. Challenges of inpatient teaching

1. Difficult to set teaching goals, unanticipated events occur frequently
2. Ward team usually composed of varying levels of learners
3. Patients too sick or unwilling to participate in the teaching encounter
4. Patient stays are too short to follow natural history of disease
5. Teachers could compromise trainee-patient relationship if they dominate the encounter
6. Trainees and teachers feel insecure about admitting errors in front of the patient and the rest of the medical team
7. Tendency by many clinical teachers to lecture rather than practise interactive teaching
8. Engaging all learners simultaneously can be difficult
9. Teachers need to pay close attention to learner fatigue, boredom and workload

Box 5. Challenges of outpatient teaching

- Busy clinical setting
- Teaching time often short, no time for elaborate teaching
- No control over distribution and organization of time
- Attending to several patients at the same time with multiple learners
- Brief teacher-trainee interactions
- Patient care demands usually take priority and must be addressed
- Multiple patient problems must be addressed simultaneously, so teachers cannot focus on one problem to teach
- Learning and service take place concurrently
- Organic and psychosocial problems are intertwined
- Diagnostic questions often settled by follow up of empiric treatment
- Teacher should be a guide and facilitator than information provider

patient care while supervising and trying to teach students and residents (Neher et al. 1992; McGee & Irby 1997). In a busy clinic, patients too may not be interested in being participants of a trainee-teaching encounter. Overall, service requirements outweigh teaching requirements thus making this an uncontrolled teaching setting. Techniques originally described for effective inpatient teaching do not apply well to outpatient teaching. The outpatient clinic promises many unique educational opportunities including more complete observation of chronic diseases, closer relationships between teachers and learners, and a more appropriate forum for teaching preventive medicine, medical interviewing, and psychosocial aspects of disease (McGee & Irby 1997).

McGee and Irby describe practical tips for efficient teaching in the outpatient settings and they categorize these steps as follows.

(1) Prepare for the visit: Orientate learners of the number of patients to be seen, time to be spent with each patient and how to present patients succinctly.
(2) Teach during the visit: Ask questions to diagnose the learner's knowledge and clinical reasoning, select a specific teaching point in each case, model good physician-patient interactions, observe at least in part learner-patient interactions and provide timely and specific feedback.
(3) Teach after the visit: Answer questions that arise from specific patient problems, clarify what learners did not understand, refer to literature and create reading assignments.

Wolpaw et al. (2003) describe a model for learner-centred outpatient precepting where learners are equal if not the leaders of the teaching interaction. They applied the mnemonic SNAPPS to this model. The six steps of the SNAPPS model are described below.

(1) Summarize briefly history and exam findings: The learner obtains a history, performs an appropriate examination of a patient, and presents a concise summary to the supervisor. The summary should be condensed to relevant information because the preceptor can readily elicit further details if needed.
(2) Narrow the differential diagnosis: For a new patient encounter, the learner may present two or three reasonable diagnostic possibilities. For follow-up or sick visits, the differential may focus on why the patient's disease is active, what therapeutic interventions might be considered, or relevant preventive health strategies.
(3) Analyse the differential diagnosis: In this step, the learner should compare and contrast diagnostic possibilities with evidence of clinical reasoning. This discussion allows the learner to verbalize his or her thinking process and can stimulate an interactive discussion with the preceptor. This discussion also helps clinical teachers to diagnose the level of their learners and thus plan further teaching accordingly.
(4) Probe the preceptor by asking questions about uncertainties, difficulties, or alternative approaches. This step is the most unique aspect of the learner-driven model because the learner initiates an educational discussion by probing the preceptor with questions rather than waiting for the preceptor to initiate the probing of the learner. The learner is taught to utilize the preceptor as a knowledge resource that can readily be accessed.
(5) Plan management for the patient's medical issues. The learner initiates a discussion of patient management with the preceptor and must attempt either a brief management plan or suggest specific interventions. This step asks for a commitment from the learner, but encourages him or her to access the preceptor readily as a rich resource of knowledge and experience.
(6) Select a case-related issue for self-directed learning. The learner may identify a learning issue at the end of the patient presentation or after seeing the patient with the preceptor. The learner should check with the preceptor to focus the reading and frame relevant questions.

Teaching at the bedside

It has been stated that since clinical practice involves the diagnosis and management of problems in patients, teaching of clinical medicine should be carried out on real patients with real problems (Nair et al. 1997). There are many skills that cannot be taught in a classroom, particularly the humanistic aspects of medicine (Nair et al. 1997; Ramani 2003) and require the presence of a patient, real or simulated. The patient's bedside, however, appears to be one of the most challenging settings for clinical teachers. Although many clinical teachers find this an intimidating mode of teaching that bares their own deficiencies, they need to realize that all of them possess a wide range of clinical skills that they can teach their junior and far less experienced trainees (Ramani et al. 2003). Some common sense strategies combined with faculty development programmes at individual institutions can overcome some of this insecurity and promote bedside rounds, which can be educational and fun for teachers and learners alike. Teachers' insecurities can be classified into 2 major domains (Kroenke 2001):

- Clinical domain: Teachers may feel insecure about their knowledge being up to date.
- Teaching domain: Teachers often feel intimidated by having to teach a heterogeneous group of learners who are busy and frequently sleep deprived.

Twelve practical tips have been described to help ease teacher discomfort at the bedside and promote effective bedside teaching (Ramani 2003).

(1) Preparation: Teachers need to familiarise themselves with the clinical curriculum, attempt to diagnose different learner levels and improve their own clinical skills.

(2) Planning: Ende (1997) suggests that all clinical teachers should ask themselves the following questions prior to a teaching encounter and try to answer them:

   a. What do you hope to accomplish?
   b. What is your point of view?
   c. How will your learners be engaged?
   d. How will you meet the needs of each learner?
   e. How will rounds be organized?
   f. Are your rounds successful?
   g. How will you make the time?

(3) Orientation: Teachers should obtain objectives of learners, assign roles to each of the team members, try to engage everyone and establish team ground rules.

(4) Introduction: The team of doctors need to be introduced to patients and patients should be oriented about the nature of the bedside encounter; e.g. Patients need to be told that the encounter is primarily intended for teaching and that certain theoretical discussions may not be applicable to their illness.

(5) Interaction: The clinical teachers should serve as role-models during their physician-patient interactions and teach professionalism and a humanistic bedside manner. In addition, teachers should model team work and promote positive team interactions including professional interactions with nursing and other ancillary staff.

(6) Observation: Teachers need not put on a show at the bedside and dominate the bedside encounter (Kroenke 2001). Observing the trainees' interaction with the patient at the bedside can be very illuminating and these observations can be used to plan future teaching rounds.

(7) Instruction: Clinical teachers should avoid asking the trainees impossible questions and 'read my mind' types of questions (LaCombe 1997; Kroenke 2001) and actively discourage one-upmanship among learners. Admitting one's own lack of knowledge might allow trainees to admit their limitations and ask questions. Teachers can role model their willingness to learn by being prepared to learn from trainees.

(8) Summarise: Learners would find it beneficial if teachers summarize what was taught during that encounter. Patients also need a summary of the discussion, what applies and what does not apply to their illness and management.

(9) Debriefing: Time is needed for learners to ask questions and teachers to make clarifications and assign further readings.

(10) Feedback: Teachers can find out from learners what went well and what did not and give positive and constructive feedback to learners.

(11) Reflection: Reflections about the bedside encounter coupled with learner feedback can help teachers plan the next encounter.

(12) Preparation for the next encounter should begin with insights from the reflection phase.

Work based assessment of learners in the clinical cenvironment

Assessment plays a major role in the process of medical education, in the lives of medical students, and in society by certifying competent physicians who can take care of the public. Society has the right to know that physicians who graduate from medical school and subsequent residency-training programmes are competent and can practise their profession in a compassionate and skilful manner (Shumway & Harden 2003). Miller (1990) proposed his now famous pyramid for assessment of learners' clinical competence (Figure 2). At the lowest level of the pyramid is knowledge

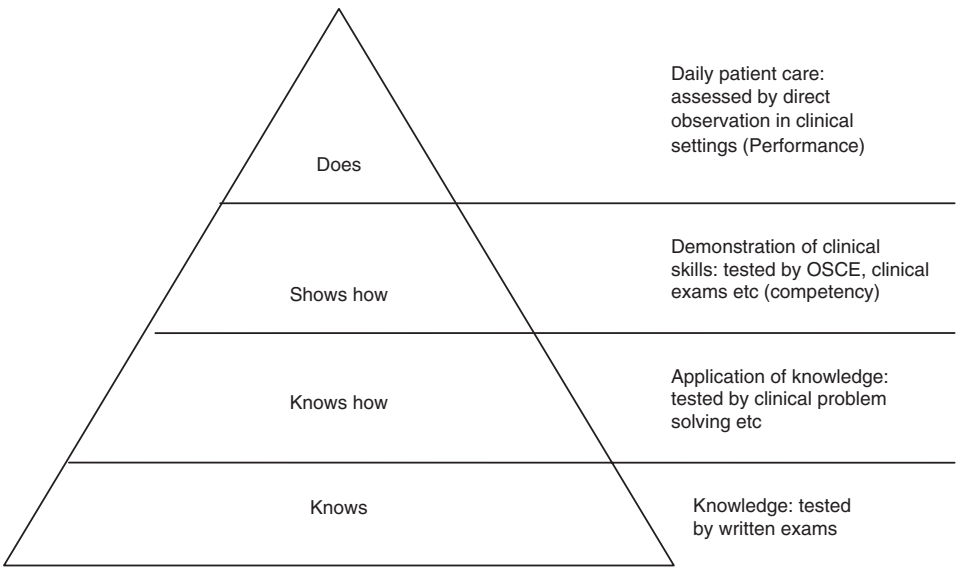


Figure 2. Miller's pyramid of assessment.

(knows), followed by competence (knows how), performance (shows how), and action (does) The clinical environment is the only venue where the highest level of the pyramid can be regularly assessed.

Studies have indicated that performance in high stakes examinations do not accurately reflect what doctors do in actual patient care (Ram et al. 1999; Rethans et al. 2002). Patient outcomes are the best measures of quality to assess learners in the clinical settings (Norcini 2003), but these are often difficult to ascertain due to factors such as case mix, case complexity, nature of the clinical team and other intangible factors. Assessment in the workplace is quite challenging as patient care takes top priority and teachers have to observe firsthand what the learners do in their interaction with patients and yet be vigilant that patient care is of the highest quality.

Performance outcomes. Norcini (2003) states that the principal measures of performance in the clinical environment include patient outcomes, process of care and volume of services doctors provide.

- Patient care outcomes include morbidity and mortality, physiological outcomes such as blood pressure or diabetes control, clinical events such as stroke or heart attack and last but not least patient satisfaction and experience with care.
- Process of care includes such factors as patient screening, preventive services provided, disease specific measures such as HbA1C for diabetes, aspirin prescription after a heart attack etc.
- Patient volume refers to features such as number of hip replacements performed by orthopaedic surgeons or cardiac catheterizations performed by cardiologists. Volume, in general, correlates with skill and patient morbidity and mortality, but does not always equal high quality patient care.

Clinical teachers should gain familiarity with an outcomes based assessment method appropriate to their own environment (CANMEDS, ACGME, LCME etc.).

Rethans et al. (2002) emphasize that the distinction between competency-based and performance-based methods is important and propose a new model, designated the Cambridge Model, which extends and refines Miller's pyramid. It inverts his pyramid, focuses exclusively on the top two tiers, and identifies performance as a product of competence, the influences of the individual (e.g. health, relationships), and the influences of the system (e.g. facilities, practice time). The model provides a basis for understanding and designing assessments of practice performance.

Assessment methods. In the clinical environment, faculty can readily assess any of the performance measures described above that relate directly to patient care. In these settings, trainees' clinical skills can be assessed outside a simulated or test environment; skills such as patient communication, physical examination, clinical reasoning, case presentation and notes, team work, communication with clinical and non-clinical staff and professionalism. Methods of assessment include examining case records and notes for evidence of diagnostic thinking, listening to case presentations, but the most important method of assessment for clinical teachers would be direct observation. Without observing trainees at work and at the bedside, teachers cannot gather accurate data to provide appropriate feedback.

Giving feedback

In the clinical environment it is vital to provide feedback to trainees as without feedback their strengths cannot be reinforced nor can their errors be corrected (Ende 1983). It is a crucial step in the acquisition of clinical skills, but clinical teachers either omit to give feedback altogether or the quality of their feedback does not enlighten the trainees of their strengths and weaknesses. Omission of feedback can result in adverse consequences, some of which can be long term especially relating to patient care. For effective feedback, teachers need to observe their trainees during their patient interactions and not base their words on hearsay. Feedback can be formal or informal, brief and immediate or long and scheduled, formative during the course of the rotation or summative at the end of a rotation (Branch & Paranjape 2002).

Why is feedback needed? Feedback is essential for a student or intern to gain an insight into what they did well or poorly and the consequences of those actions. If educational goals had been established ahead of the teaching encounter or period, feedback is essential to examine accomplishment or lack thereof of stated goals, re-establish new goals and make action plans to address them (Ende 1983). It tells the learners where they are in comparison to where they ought to be and where they should go. Feedback, when well done, also promotes self-reflection and self-assessment, which are valuable traits for lifelong learning.

Barriers to feedback. One of the biggest hurdles to giving feedback is lack of direct observation of trainees by teachers (Ende 1983). Clinical competence cannot be assessed by written exams, self-report or third party observation, rather this needs to be observed directly by clinical teachers. Teachers are also very hesitant to provide negative feedback and frequently avoid it altogether although this can have adverse consequences on patient care. Trainees, on the other hand, may view negative feedback as a personal attack. Teachers need to establish a positive learning environment in which errors are acknowledged and feedback is expected and accepted. Frequently, feedback is non-specific and unhelpful to learners, e.g. 'good job', 'bad patient communication', etc.

Circle 2: how the clinical teacher approaches their teaching (doing the thing right)

Showing enthusiasm for teaching and towards learners

The starting point for any good teacher must be enthusiasm for the subject being taught. This has to be complemented by an eagerness to transmit this enthusiasm to others, which will necessarily result in a positive attitude to learners.

Enthusiasm for the subject is usually accompanied by a sound knowledge of the subject and a desire to learn more about it, both of which are pre-requisite for successful teaching in higher education. However, while enthusiasm, knowledge and a desire to learn more are necessary for successful teaching they are not sufficient. Teaching is a professional discipline with its own theoretical background and its own recognised techniques. A good teacher must have and apply a working knowledge of both techniques.

Understanding learning principles relevant to clinical teaching

Pedagogy versus andrologogy. Much of our approach to teaching and learning is based on studies in children at school and is therefore termed pedagogy. The content of learning is defined by a syllabus and the method of learning is laid down by a curriculum. Both of these may be developed by the individual teacher but are likely to have been laid down by a central authority. The pace of learning is dictated by the teacher. Knowles (1990) studied adults enrolled at evening classes in New York and realised that their approach to learning was different. He coined the term andrologogy to cover this approach. The content of the student's studies is dictated by perceived need; the method of learning is selected by the learner and the pace of learning is dictated by the learner. From his observations Knowles derived a set of Principles of Adult Learning which are now widely regarded as crucial to the design of any course for adults (Box 6).

Learning theories. Theories of learning may be neurobiological or behavioural. From a pragmatic educational viewpoint the most useful at present are the behavioural theories. These can be broadly classified as individualistic (based on psychological approaches) and social constructivist (based on sociological approaches). While some of the proponents of each theory will claim that their insights are the only valid approach, the practical educator can draw lessons from all of them. It is important to recognise that the theories are attempting to describe what actually occurs in learning rather than what ought to occur.

Psychological theories. Learning and memory. There is an extensive literature on learning and memory. There appears to be a consensus that different models apply for the learning of knowledge and the acquisition of skills. Clinical teaching must deliver both modalities.

The first stage of acquiring knowledge is the activation of prior knowledge. This is followed by the acquisition of new knowledge. The new knowledge is incorporated into the memory through rehearsal which is more effective if it is done to a third party. The final stage of the learning process is elaboration. This may take the form of transforming the information into a different format e.g. summarizing words as a chart or diagram; comparing and contrasting new information with old; or drawing inferences and conclusions from the total information (Bransford et al. 1999). A slightly different articulation of this process is Schmidt's Information Processing Theory which emphasises the link between the remembering of the new material and the prior knowledge that has been activated which he describes as encoding specificity (Schmidt 1983).

The commonest model used to describe the acquisition of skills is the conscious-competence model. This model is widely used in management training but no-one is entirely clear where it originated. Four stages of ability are described, as described in Box 7.

A fifth stage has been suggested which can be thought of as reflective competence. It is often the case that the person who is operating at the level of unconscious competence is unable to teach others the skill. The person who has reflective competence is able to perform the task without conscious thought but can if necessary analyse what they are doing in order to teach the skill to someone else (Chapman 2007).

Self-determination theory. It is self-evident that students' learning is affected by their motivation. Williams et al. (1999) suggest that the nature of the motivation is important. According to self-determination theory there are two primary kinds of motivation – controlled and autonomous. Controlled motivation is brought about by external pressures (other people's expectations; rewards and punishments) or by internalized beliefs about what is expected. In contrast, autonomous motivation occurs when individuals see the material to be learnt as intrinsically interesting or important. Controlled motivation leads to rote-learning with little

Box 6. Principles of adult learning

Adults:

- have a specific purpose in mind;
- are voluntary participants in learning;
- require meaning and relevance;
- require active involvement in learning;
- need clear goals and objectives;
- need feedback;
- need to be reflective.

Knowles (1990)

Box 7. The conscious-competence model

Unconscious incompetence	The subject is not aware of the skill in question
Conscious incompetence	The subject is aware of the skill and recognizes the need to acquire it
Conscious competence	The subject has acquired the skill but needs to focus their attention on its performance
Unconscious competence	The subject has achieved mastery of the skill and can perform it without conscious thought; other tasks can be performed at the same time.

integration of the material into the student's long term values. Autonomous motivation, among other benefits, leads to greater understanding, better performance, and greater feelings of competence. In addition, students who are encouraged to develop an autonomous approach to learning are more likely to act in ways that promote the autonomy of their patients.

Experiential learning. Most informal learning is based on experience. Kolb (1984) described the process by which this occurs in his learning cycle. Learning occurs when an individual reflects on an experience. On the basis of this reflection, the individual will develop a working theory (although they may not fully articulate it), which will lead them to take a certain course of action. That action will result in a further experience and so the cycle continues with a steady accumulation of useful knowledge. The cycle can be entered at any point. For example, an individual may be told about a theory and take action without having had previous experience of the particular situation. Different individuals will have different preferences for the starting point depending on their learning style (see below).

Sociological theories. Situated learning. Vygotsky, the Russian educational psychologist, postulated on the basis of his study of school children that learning was socially determined and resulted from the interaction of the child with those around her. He observed that if a child has adult or peer support she can solve problems that she is incapable of solving unaided. This difference between aided and unaided performance he called the zone of proximal development and suggested that it is here that learning takes place. In other words, interaction with others is essential to learning (Vygotsky 1978).

Communities of Practice. Clinical activity usually takes place in teams. Such teams are important not only for the delivery of care but for the continuing professional development of the team members. Functional teams form communities of practice in which the individual members support one another. It is a feature of such groups that knowledge and skills are rapidly disseminated throughout the group. This may be through formal structures such as seminars but is more likely to be through the informal day-to-day contact between members. Lave & Wegner (1991) suggest that learners or apprentices are legitimate peripheral participants in such groups. Although they have yet to achieve full membership of the group they are allowed to take part in the activities of the group and in that way they also acquire the knowledge that is inherent in the group. Eventually, they will be absorbed into the group and accepted as a full member of the group. This transition is often marked by ceremony such as passing the final examination.

Reflective practice. At first sight, reflective practice might seem to be an individualistic learning method rather than a social one. However, Schon (1995) identified that reflection is much more effective when conducted with a mentor making it a social activity. He describes two forms of reflection: reflection in action which takes place during an activity, and reflection on action which takes place once that action has been completed. Both are important adjuncts to learning.

Learning styles. It is apparent that different individuals have different approaches to learning. There have been a variety of attempts to describe these different approaches or learning style. Some classifications focus on the cognitive aspects of learning; some focus on the modalities of learning preferred by the learners; a third group focus on the outcomes of the learning.

Cognitive approach – Honey and Mumford Learning Style Inventory. The Honey and Mumford Learning Style Inventory is widely used in management training. It is based on Kolb's learning cycle and identifies four main learning styles (Honey & Mumford 1992).

- Pragmatists prefer to learn directly from experience
- Reflectors prefer to learn by reflecting on their experiences
- Theorists prefer to learn by developing explanations and working theories
- Activists prefer to learn by involvement in activity.

No individual has a single preferred style of learning but each individual will display the learning styles to differing degrees.

Modalities of learning – visual–auditory–kinaesthetic learning style. A potentially more useful learning style questionnaire is the visual–auditory–kinaesthetic (VAK) questionnaire which is widely used in schools. The emphasis is on the subject's preferred modality for acquiring material to be learnt.

- Visual learners prefer material that is delivered through visual media. This includes written and graphic material but also electronic visual media.
- Auditory learners prefer the spoken word to visual material.
- Kinaesthetic learners learn best when the learning involves them in physical activity.

Learners will usually display a mixture of the three learning styles although one may predominate.

Outcomes of learning – deep/superficial learning. The desired goal for learning is that the learners should achieve understanding of the subject. This is called deep learning. When the amount of material to be learnt is too great, or where the assessment of the learning is based purely on recall, learners will display superficial learning. Experienced students will identify those aspects of the material presented which need to be understood for future use and those which will merely need to be recalled for the purposes of assessment. They will adopt a deep learning approach for the former and a superficial learning approach for the latter. This combined approach is described as strategic learning (Newble & Entwhistle 1986).

The teacher's goal must be to develop deep learning. Because students have differing patterns of learning styles, the material to be learnt must be presented in a variety of ways. Patient-centred teaching involves all modalities of the VAK approach as the student will observe the patient, hold conversations with the patient and the instructor and will

carry out physical activity in examining the patient and carrying out clinical procedures. It is also evident that patient-centred teaching will give the student experiences as a result of activities that they undertake. The teacher needs to encourage reflection on what has taken place linked to a discussion of the theoretical background to the case.

Using appropriate learning strategies for different levels of learner

Approaches to teaching in the clinical setting will differ according to the level of the students being taught. Undergraduates are likely to be taught in sessions specifically dedicated to this end. Postgraduate trainees may well be taught in the course of routine service delivery. In any clinical teaching session it is important that the teacher has clear goals and objectives for the session. If the teacher is unsure what they are trying to achieve, the students will not be able to identify the purpose of the session. This will conflict with the principles of adult learning.

Motivation is rarely a problem with students in the clinical setting. Failure to engage with the student is more likely to be a result of poorly constructed teaching sessions rather than student motivation. This is often due to the selection of inappropriate goals for the session.

The purpose of the session will differ depending on the level of the student. The underlying teaching methods can be the same. The new undergraduate who is developing the art of history taking will require different goals from the senior postgraduate student who is learning the nuances of managing variants of the same disease. Both can be taught on the same patient by focusing on different learning tasks. It is not a good idea to try to teach both at the same time as they have different goals and objectives.

The session should start with establishing what the student already knows relevant to the patient's presentation and this should include their understanding of the scientific background as well as the clinical aspects. Failure to establish the students starting point is another common reason for the failure of the student to engage in a teaching session. The topic chosen by the teacher may be too advanced or too elementary for the group of students being taught. In either case the student will have difficulties.

The students should be active participants in the session. Merely telling the students the teacher's view of the situation or having them observe the expert in action does not lead to deep learning. The students should be permitted to carry out relevant components of the clinical task and then be engaged in active discussion. In this way the full range of different learning styles can be accommodated. Dialogue with the student is an important part of clinical teaching. Attention should be paid to probing the students' understanding rather than their simple ability to carry out a mechanical task or recall isolated facts. The questions 'Why' and 'So what' are an essential part of the clinical teachers armamentarium. This will encourage the elaboration stage of learning.

Knowing and applying principles of giving feedback

Feedback should provide the student with the opportunity to reflect on their performance and its possible consequences. It can guide the student's future learning by identifying their strengths and weaknesses (Sender Liberman et al. 2005). The principles of giving feedback have been well-rehearsed by a number of authors. These principles include the use of mutually agreed upon goals as a guide to the feedback; addressing specific behaviours not general performance; reporting on decisions and actions not on one's interpretation of the student's motives; and using language that is non-evaluative and non-judgemental (Ende 1983). These attributes have been found empirically to be valued by trainees (Hewson & Little 1998). Feedback may be corrective (when the student's performance has been inadequate) or reinforcing (well the student has done well) (Branch & Paranjape 2002). Feedback may be formal or informal. In the clinical teaching setting timely, informal feedback is highly valued by the students.

The first requirement of feedback is that the student has a clear concept of the objective they are trying to attain. Feedback can then inform how close they have come to achieving that target and ideally what they need to do differently in order to achieve the target. Direct observation of the performance is necessary if feedback is to be effective. The objective may be a behaviour such as a clinical skill or a cognitive process such as interpreting a history.

At the simplest level feedback informs the student that they have either succeeded or failed at the task. This is common in licensing examinations where the candidate knows either that they have passed or failed but is not told why. In the clinical setting it would be more usual for the student to be told that their performance was inadequate and then a demonstration given of how it should have been done. Once again the student is not offered an analysis of what they did wrong. This approach does not provide the best opportunity for the student to learn and is more akin to evaluation than feedback.

Learning is assisted when both the strengths and the weaknesses of the student's performance are identified and discussed. Feedback is not evaluation and therefore should not use judgemental language or make personal remarks. The emphasis should be on reporting the observed behaviours and thinking and should be detailed and specific rather than general. It is a good technique to start with self-assessment as many astute learners usually identify their errors and the teacher can help make plans to correct those errors and reinforce their strengths. It is often the case that the student's judgement of their performance is harsher than the teacher's and it is important to reassure the student that they have done well.

Clinical learning often takes place in a group environment. In this setting it is helpful to involve the other members of the group in the informal feedback process. They often have valuable insights into why their colleague behaved as she did and, in addition, they will learn the process of constructive feedback. More formal summative feedback should be given in private at a mutually agreed time.

Above all feedback should be constructive. This does not mean that the student's performance cannot be criticized but when there are deficiencies the feedback should include suggestions for making improvements.

Role modelling

An important part of clinical reaching is the development of the professional role in the students. Both trainees (Brownell & Cote 2001) and faculty (Wright & Carrese 2002) agree that the observation of role models is the most important component in this process. This fits well with the theories of situated learning and communities of practise discussed previously. If positive messages are to be transmitted consistently it is essential that teachers reflect on their own attitudes and behaviours (Kenny & Mann 2003). Modelling life long learning requires that the teacher is willing to admit ignorance and prepared to learn from the students. Good doctor-patient relationships and evidence based clinical practice are other areas where the teacher's behaviour will reinforce (or undesirably contradict) their formal teaching.

'Grasping the unexpected teaching moment'

Unpredictability is one of the attractions of clinical practice. There are occasions when it is better to abandon the carefully constructed teaching plan and seize the opportunity which suddenly presents itself. After all, the unexpected will be what excites you and you are likely to transmit that excitement to the students. A sound grasp of the theoretical approaches to teaching are no substitute for enthusiasm for the process of teaching and for the subject that is being taught.

A key prerequisite for using the unexpected teaching moment most efficiently is a teacher's willingness to admit their errors or limitations, thus allowing learners to admit their own without an a climate of humiliation.

Circle 3: the clinician as a professional teacher (the right person doing it)

Even if a teacher can master all the technical competencies listed in the inner circle, emotional and attitudinal competencies such as self-awareness, self-regulation, motivation, empathy and social skills are required to achieve excellence (Harden et al. 1999).

We list the following as essential circle 3 tasks for clinical teachers by which they may become the 'right persons doing it'.

- Soliciting feedback on teaching
- Self-reflection
- Professional development in teaching
- Mentoring.

Soliciting feedback on teaching

Most clinical teachers go about their business of teaching with very little feedback on their strengths and weaknesses as a teacher. Frequently, the only evaluations on their teaching are from learners and these too may be few and far between. Some institutions have adopted a coaching or consulting service for teachers, but these pertain more to classroom teaching or small group teaching rather than teaching in the clinical environment. More institutions should adopt a 360-degree method for evaluating their clinical teachers rather than depend on incomplete and ineffective evaluations from learners alone. These may include measures such as learners' performance and progress as a proxy for teaching impact, video recording of teaching sessions with reflection and feedback, teacher self reports, peer observations etc.

In the face of overwhelming expectations at work, clinical faculty rarely ask for feedback on their teaching from learners or peers. The clinical environment adds an additional twist by the all-important focus on patient care and safety. Thus, frequently the emphasis is on the patient and their management and the teaching strategies are all but forgotten. In the event that a teacher asks their learners for feedback, learners hesitate to offer it as there may be some anxiety about their own evaluations by their teachers. Those learners that offer feedback give non-specific, vague feedback that teachers cannot readily assimilate or apply in their future teaching encounters.

Teachers should be encouraged to seek feedback on their teaching from peers and learners, staff development should train teachers in efficiently obtaining feedback and last but not least a teaching consulting or coaching service developed by institutions for clinical teachers would help improve teaching skills of individual teachers as well as the institution as a whole. Trainees too can benefit from coaching and encouragement on providing useful feedback to their teachers.

Self-reflection

Reflection in medicine has been defined as consideration of the larger context, the meaning, and the implications of an experience or action (Branch & Paranjape 2002) and when used properly allows for the growth of the individual. It has also been stated that professionals must distinguish themselves from technicians by awareness of the larger context of their work using this knowledge for lifelong learning and not limiting themselves to performing specific tasks (Schön 1987; 1983). One might therefore assume that reflection, so essential to educating physicians, is even more crucial for clinical teachers to adopt a professional approach to their teaching, namely be the right person doing it.

Both phases of reflective practice (Kaufman 2003), reflection in action which occurs immediately and reflection on action which occurs later, are readily applicable to clinical teachers.

Fryer-Edwards et al. (2006) have suggested three key teaching skills that illustrate learner-centred, reflective teaching practices and provide a framework for teachers with both cognitive and affective components. Although these teaching practices were developed for communication skills training, they are readily applicable to any clinical environment.

- Identifying a learning edge: Teachers work with learners to identify their learning edge, which is the place where they find learning challenging, but not overwhelming.
- Proposing and testing hypotheses: Teachers formulate hypotheses on issues such as barriers or facilitators to learning for individual learners, learning needs, emotional responses to patients or the rest of the team and apply teaching strategies to test these hypotheses.
- Calibrating learners' self-assessments: This involved learners thinking out aloud their self-assessment, values and beliefs and using these insights to stimulate further reflection.

Professional development

Medical education has traditionally had little input from trained educators. In the past, a high level of clinical competence and experience was considered sufficient to be a good clinician educator, now it is increasingly recognized that teaching itself is a skilled profession. The British General Medical Council in its publication: *Tomorrow's Doctors*, includes the following attributes of a practitioner (General Medical Council 2002).

- Recognition of the obligation to teach others, particularly doctors in training.
- Recognition that teaching skills are not necessarily innate but can be learned.
- Recognition that the example of the teacher is the most powerful influence upon the standards of conduct and practice of trainees.

Most clinical faculty receive little or no explicit training in how to teach, or in theories and processes of teaching. Yet, they are expected to help their trainees master medical knowledge, clinical skills and acquire a habit of lifelong learning. In the changing world of medicine, clinical teachers need to perform time-efficient ambulatory and inpatient teaching, while their own clinical workload keeps increasing. For teachers to succeed at their teaching tasks, faculty development is essential (Wilkerson & Irby 1998). Faculty development also helps teachers build important professional relationships with peers and mentors within and outside their institutions and contribute positively to academic advancement overall (Morzinski & Fisher 2002).

Summary of professional development programmes. Common faculty development formats include train the trainer workshops or seminars, short courses developed by individual institutions, sabbaticals, part time or full time fellowships, scholars programmes and educational workshops at conferences (McLeod et al. 1997; Steinert 1993; 2005; Steinert et al. 2006).

Workshops. The prototypical faculty development programme is a short, focused series of workshops, most of which focus on practical teaching skills development and the educational strategies directly applicable to those teaching skills. Studies demonstrate that such programmes serve a variety of purposes including improving attitudes, self-efficacy, augmenting self-assessed and actual use of specified teaching concepts; facilitating faculty's ability to recognize teaching deficiencies; and increasing knowledge of teaching principles and teaching ability.

Fellowships. In part-time fellowships, faculty spend limited time training at another institution and then work on educational projects at their home institution. Combining the training with the practical application of knowledge and skills at home institutions, such fellowships teach the theory and practice of critical faculty teaching skills. Full-time fellowships are designed to prepare the fellows to be full-time medical educators. Although they include teaching skills, they also emphasize other important educator roles such as educational research and educational leadership.

Teaching scholars programmes. Innovative formats have been developed to link workshops into a more comprehensive programme to target a broader range of outcomes (Gruppen et al. 2003). As a result, some institutions have designed teaching- scholars programmes for their faculty. These programmes are usually a year long and serve as an immersion experience for clinical educators and most require their 'fellow' to complete some educational project. The Teaching Scholars Programme for Educators in the Health Sciences at McGill University (Steinert et al. 2003) and the Medical Education Scholars Programme (MESP) at the University of Michigan Medical School (Gruppen et al. 2003) were designed to create leaders in medical education. These programmes train faculty to provide curriculum design, improved teaching, educational research, and institutional leadership.

Courses at conferences. Many conferences hosted by primary care societies as well as conferences organized by medical education organizations provide a number of courses which focus on teaching and education. These courses range from 90 minute courses to all day courses. Examples of such conferences include the annual conferences of the AAMC, AMEE, Society of General Internal Medicine, Association of Teachers of Family Medicine and the Ottawa conferences.

Co-teaching or peer coaching. In this model, paired physicians focus on developing their teaching skills while sharing the clinical supervision of trainees (Orlander et al. 2000). Through teaching, debriefing and planning, co-teachers gain experience in analysing teaching encounters and develop skills in self-evaluation. Typically, a junior faculty or fellow is paired with a senior faculty educator who helps the 'trainee' teacher reflect on his/her teaching session.

Educational content. The content of staff educational development programmes can be classified under the following key categories.

- Teaching skills: Teaching skills sessions are designed to help participants identify their own needs with respect to teaching skills, and then to practice these skills and receive feedback from colleagues and the faculty (Pololi et al. 2001). Typical topics included in staff educational development include: interactive lecturing, small group discussion, case based teaching, giving effective feedback, promoting a

positive learning climate, communication of goals, evaluation of learners, ambulatory and inpatient teaching and physician patient communication, learner- centred learning, teaching evidence based medicine, stimulating self-directed learning, bedside teaching, etc.

- Educational leadership: This is a higher level of educational development of staff. Having acquired the basic teaching skills, some educators go on to become educational leaders. Examples of topics on the leadership track include: mentoring skills, curriculum development and reform, leadership and management of work teams, running effective meetings, small group leadership, time management, instituting change, cost-effectiveness etc.
- Miscellaneous: Additional skills include learning about instructional technology, using computers in clinical teaching and diversity for the learning environment.

Steinert (2005) has described in depth the reasons and goals of staff development for clinical teachers and also summarized types of professional development resources available.

Mentoring

Several literature reports indicate that mentoring is a useful tool in the academic progression of professionals with many successful academicians attributing their growth and success at least partially to their mentoring relationships. It has also been said that good mentors help their protégés achieve their professional goals more expeditiously. The medical world has well-established research mentoring programmes, but formal mentoring programmes for clinical teachers are scant to non-existent. Mentors can provide guidance, support or expertise to clinicians in a variety of settings and can also help teachers to understand the organisational culture in which they work and introduce them to invaluable professional networks (Walker et al. 2002).

Most successful clinical educators have achieved their success by a trial-and-error approach, seeking multiple senior educators' advice and mentoring on their growth as educators or just talking to their peers. If educating is to be a skilled and scholarly task, educators need mentoring. The ultimate evidence of a clinical teacher being a professional would be if they themselves start mentoring their junior or peer colleagues who wish to achieve professional success in teaching.

Engaging in educational scholarship

For clinical teachers to attain the highest level of professionalism in education and advance academically as educational innovators and leaders, scholarship is essential. Education becomes scholarship when it demonstrates current knowledge of the field, invites peer review, and involves exploration of students' learning. Furthermore, educational work should be made public, available for peer review and reproduced and built on by others (Glassick 2000). Glassick also described six essential criteria of scholarship.

(1) Clear goals
   i. The purpose of the work is clearly stated
   ii. The goals and objectives are realistic and achievable
   iii. The work addresses an important question or need

(2) Adequate preparation
   i. Mastery and understanding of current knowledge in the field and acquisition of skills to carry out the work
   ii. Identifying and obtaining the resources needed to complete the work

(3) Appropriate methods
   i. Using and applying appropriate methods to achieve the stated goals
   ii. Modification of methods to deal with changing circumstances

(4) Significant results
   i. Achievement of the stated goals and objectives
   ii. The work should add to the field and open up additional areas for further exploration

(5) Effective presentation
   i. Using suitable style and organization to present the work at appropriate venues
   ii. Presentation of results with clarity and integrity

(6) Reflective critique
   i. The scholar critically evaluates his or her own work
   ii. The scholar uses evaluations to improve the quality of future work

Points for reflection

(1) How can change be sustained – Change in teaching skills as well as change in attitudes towards teaching?

Other educators have shown that a one-shot approach to educational development does not sustain change and staff development should be longitudinal. Moreover, the educational environment and institutional attitudes towards teaching need to change in order that teaching skills are considered as valuable as research skills in academia.

(2) Can improving clinical teaching skills and excellence in clinical care co-exist? How can teaching initiatives be reconciled with the demands of service?

Clinicians face increasing pressures in their clinical practice and the volume of patients they care for keeps increasing. Time to see patients keeps shrinking and has often been stated as one of the foremost barriers to clinical teaching. Departments and institutions must see high quality teaching as one of their core values; maybe create a core group of faculty who would be responsible for much of the teaching.

(3) Does improvement in clinical teaching matter to patient care? If teaching skills improve, what is the impact on patient management, safety and satisfaction?

This is an area that has not been investigated extensively and is a difficult area to research. Regardless, unless medical educators

Box 8. Practical strategies to achieve Circle-3 clinical teaching outcomes: The teacher as a professional (the right person doing it)

Teaching objectives

Do you establish teaching goals for different types of clinical encounters?

Did you communicate your teaching goals to the learners?

Did you elicit goals of the learners?

Teaching methods

What teaching methods did you use and were they successful (demonstrating, observing, questioning, role-modelling)?

Do you use the same teaching strategies for all learners or do you change your methods for different learner levels and skills?

Feedback

Did you give feedback?

Did you ask for learners' feedback on your teaching?

Planning for the next encounter

Have you used reflective critique of your teaching (from self-assessment or peer or learner feedback) to change your teaching methods?

Professional development

Have you attended courses, studied educational literature or held discussions with other teachers to improve your teaching skills?

Are you planning to engage in the scholarship of teaching, study the impact of your interventions?

demonstrate that improved teaching leads to improved patient outcomes, the public and other stake holders may not see the value of allocating dedicated time to teaching.

(4) How should teachers be evaluated – What outcomes should be measured and who should evaluate them?

Most clinical teachers are evaluated by their trainees, often irregularly and inconsistently. Frequently trainee evaluations are subjective and cursory, thereby of little help to teachers who wish to improve their teaching skills. Trained peers, acting as coaches, may be one of the more useful ways to evaluate teaching, but time needs to be set aside for this coaching model. Microteaching or videotaping of teaching encounters can be invaluable in allowing self-assessment of teaching, but can this be carried out in the clinical environment?

(5) How can institutions and departments elevate the value of clinical teaching – The hidden curriculum, reward its teachers and nurture educational leaders?

In the clinical world, research accomplishments are often held in higher esteem than educational achievements. Expanding academic tracks, staff development, rewarding teachers and establishing clear criteria by which educators can be promoted are possible ways to elevate the value of teaching within institutions and departments.

(6) Teaching clinical skills, bedside teaching – do they really matter? Can technology answer all diagnostic questions?

For better or for worse, technology is here to stay in medicine. Clinical teachers can model appropriate use of technology in making the best clinical decisions and teach trainees the respective value of clinical data and laboratory data in patient care. Educators can further use technology to demonstrate the precision of clinical signs, discarding those that of little value.

(7) How can a clinical teacher set educational objectives when much of the learning is opportunistic? How can teachers respond to the unexpected teaching moments?

Teaching in the clinical environment is beset by frequent unexpected teaching challenges. Questions arise from patients or trainees that teachers are unprepared to answer; patient mood or severity of illness can displace preset teaching objectives. Setting a positive educational environment where teachers are willing to admit their limitations, show willingness to learn from trainees and are prepared to set aside their teaching objectives while grabbing the unexpected moment and doing opportunistic teaching are some strategies to overcome these challenges.

(8) How should teachers inform and orient patients about the teaching nature of the session – Are patients benefiting from the teaching?

If physicians are to learn from direct patient care, patients should be fully engaged in the teaching encounter. Several reports state that most patients enjoy participating in clinical teaching. A few common sense strategies can maximise their impact; introductions, orientation of patients, professionalism, patient education etc, to name a few.

(9) How can a clinical teacher target their teaching to multiple levels of learners and keep them all engaged?

A typical clinical team often consists of multiple levels of trainees from early students to senior house officers and beyond. Clinicians are often intimidated by having to engage all levels during their teaching encounters. Some ways to achieve this successfully include: giving assignments for

trainees to prepare ahead of time, allocating specific tasks at the bedside and using senior trainees to participate in the teaching.

Quotes for Teaching in the Clinical Environment

Summary: Teaching in the clinical environment is a demanding, complex and often frustrating task, a task many clinicians assume without adequate preparation or orientation.

Introduction: Due to advances in education such as new methods of teaching and learning, a more student-centred teaching, competency based assessment and emphasis on professionalism; educators today are required to have an expanded toolkit of teaching skills and clinical expertise

General Teaching models: Two models of clinical teaching have been successfully used in faculty development of clinical teachers. Both models are behaviour based and can be adapted by clinical teachers to all clinical settings.

Stanford Model: Although it (the Stanford model) provides a categorical framework for evaluation and analysis of teaching, the power of the model is most effectively demonstrated in hands-on seminars in which faculty are enabled to both understand and apply this method of analysis to their teaching.

One minute preceptor: The 'Microskills' of teaching, also called the one minute preceptor because of the short time available for teaching in the clinical environment provides a simple framework for daily teaching during patient care.

Applying the Dundee model: It has been stated that the medical profession needs to think more seriously about training their teachers and a framework for developing excellence as a clinical educator is needed.

Time efficient teaching: Irby & Bowen (2004) described a 3-step approach for time efficient teaching in the clinical environment. All three steps described can be adapted equally well to a one-hour session as a 10-minute teaching session.

Inpatient teaching: Ende (1997) wrote that the role of the inpatient teacher is one of the most challenging in medical education, that of a master, mentor, supervisor, facilitator, or all of the above.

Outpatient teaching: In recent years, the outpatient clinics have become an integral venue to teach clinical medicine. With shorter hospital stays, it has become impossible for trainees to follow and learn the natural history of a disease from the inpatient environment.

Teaching at the bedside: It has been stated that since clinical practice involves the diagnosis and management of problems in patients, teaching of clinical medicine should be carried out on real patients with real problems (Nair et al. 1997).

Work based assessment: Assessment plays a major role in the process of medical education, in the lives of medical students, and in society by certifying competent physicians who can take care of the public. Society has the right to know that physicians who graduate from medical school and subsequent residency-training programmes are competent and can practise their profession in a compassionate and skilful manner.

Giving feedback: It (feedback) is a crucial step in the acquisition of clinical skills, but clinical teachers either omit to give feedback altogether or the quality of their feedback does not enlighten the trainees of their strengths and weaknesses.

How the teacher approaches their teaching: The starting point for any good teacher must be enthusiasm for the subject being taught. This has to be complemented by an eagerness to transmit this enthusiasm to others, which will necessarily result in a positive attitude to learners.

Learning and memory: There is an extensive literature on learning and memory. There appears to be a consensus that different models apply for the learning of knowledge and the acquisition of skills. Clinical teaching must deliver both modalities.

Learning styles: It is apparent that different individuals have different approaches to learning. There have been a variety of attempts to describe these different approaches or learning style. Some classifications focus on the cognitive aspects of learning; some focus on the modalities of learning preferred by the learners; a third group focus on the outcomes of the learning.

Knowing and applying feedback: These principles of feedback include the use of mutually agreed upon goals as a guide to the feedback; addressing specific behaviours not general performance; reporting on decisions and actions not on one's interpretation of the student's motives; and using language that is non-evaluative and non-judgemental.

Role modelling: An important part of clinical reaching is the development of the professional role in the students. Both trainees and faculty) agree that the observation of role models is the most important component in this process.

Soliciting feedback on teaching: Teachers should be encouraged to seek feedback on their teaching from peers and learners, staff development should train teachers in efficiently obtaining feedback and last but not least a teaching consulting or coaching service developed by institutions for clinical teachers would help improve teaching skills of individual teachers as well as the institution as a whole

Workshops: The prototypical faculty development programme is a short, focused series of workshops, most of which focus on practical teaching skills development and the educational strategies directly applicable to those teaching skills.

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