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AMEE GUIDE

AMEE Guide No 26: clinical teaching in ambulatory care settings: making the most of learning opportunities with outpatients

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SUMMARY *Increasing student numbers and changes in healthcare delivery are making inpatient settings less ideal for teaching undergraduate students. As the focus of healthcare provision shifts towards ambulatory care, increasing attention must now be given to developing opportunities for clinical teaching in this setting. This Education Guide describes the opportunities to be made available by introducing clinical teaching into ambulatory care venues not usually used for undergraduate teaching as well as different models for maximizing student/patient interaction in traditional outpatient clinics. In general there has been only a limited development of teaching initiatives in such ambulatory care areas as accident and emergency departments, clinical investigation units, radiology and imaging suites or the departments of professions allied to medicine. Each of these venues provides different resources suitable for clinical teaching and has its own advantages and disadvantages. A variety of models for facilitating student groups in these venues can be used. Practical advice is provided for the clinical tutor about to supervise clinical teaching in any of these ambulatory care settings. In contrast the development of a dedicated Ambulatory Care Teaching Centre allows the use of specific instructional strategies and can focus teaching on specific body systems illustrated by clinical volunteers invited to attend from a 'bank' of previous patients with stable clinical conditions. Finally, a teaching programme based on the day surgery unit is described as a way of achieving a variety of educational objectives in a busy resource that may not previously have been used for teaching.*

Introduction

Well-documented changes in hospital practice, patient availability, student expectations and a redefinition of expected learning outcomes are changing the emphasis of clinical teaching away from traditional inpatient settings towards ambulatory care. The early introduction of clinical experience, a feature of innovative curricula (GMC, 2002), has focused attention on the need to provide increased opportunities for clinical teaching. Structured teaching at postgraduate level and opportunities for advanced nursing studies contribute to the need for more clinical teaching opportunities.

In addition to familiar outpatient clinics, other ambulatory care venues that may currently be under-utilized for teaching, such as clinical investigation departments and day surgery units, can be used to provide a variety of clinical experiences and opportunities. An ambulatory care teaching centre (ACTC) may be created for structured, supervised clinical teaching and integrated learning. The increased use being made of the day surgery unit (DSU) and the recent introduction of ambulatory diagnostic and treatment centres (ADTCs) in the UK indicates that the ambulatory setting can be expected to become the focus of increasing attention (Telegraph Group, 2002). It is therefore important that strategies are made so that 'teaching follows the patient' to these new venues (Lawson & Moss, 1993). Maximizing the learning opportunities that the ambulatory setting can provide is now a focus of increasing interest in medical education.

What is ambulatory care?

Ambulatory care refers to any place where patients are seen in hospital without being admitted as inpatients. Although it is easy to think of ambulatory care as just another name for outpatient clinics, it in fact includes all those parts of the hospital where patients come for a consultation, or a diagnostic or therapeutic procedure that does not require an overnight stay.

Teaching in ambulatory care settings

The move towards ambulatory care settings

Changes in hospital practice. ''Medical teaching at both the undergraduate and postgraduate levels is based on the premise that students and residents learn best by participating, under supervision, in the day-to-day care of patients'' (Bentley *et al.*, 1989). However, changes in current patient care mean that hospital wards today provide fewer opportunities for teaching large numbers of students in core

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clinical problems (Fincher & Albritton, 1993; Krackov *et al.*, 1993). As inpatients tend to be more representative of subspecialty conditions or be more critically ill they become less representative of routine medical practice (Fincher & Albritton, 1993; Seabrook *et al.*, 1997).

Patients in hospital are more likely to be under acute active management than convalescing. Contemporary practice and patient expectations are in favour of a shorter hospital stay so more patients with common conditions are being treated as outpatients than as inpatients. Fewer patients suitable for undergraduate teaching are therefore available in a routine hospital ward in sufficient numbers to accommodate the increased numbers of students. In 1970 the average inpatient stay for acute specialties in the UK was 11.3 days but by 1990 this had dropped to 6.1 days. As much as 70% of hospital patient contacts are now in an ambulatory care setting (Lawson & Moss, 1993).

DaRosa *et al.* (1992) estimated that in 1992 ambulatory surgery removed 25–50% of surgical patients from usual educational (inpatient) settings. These changes in healthcare delivery are an encouraging incentive to focus resources for medical education on the restructuring of surgical teaching in ambulatory care settings (Dunnington & DaRosa, 1994).

Changes in student requirements. Increased student numbers mean that less time is available per student for patient contact. Although apparently timetabled for an adequate amount of contact with inpatients, the actual time students spend with patients is probably less than the programme suggests (McKergow *et al.*, 1991; Davis & Dent, 1994). Exposure to a broad educational base of clinical material is not only important for providing clinical training but also has an important role in helping students to make future career decisions (Fincher & Albritton, 1993).

Changes in educational requirements. Recent changes in medical education (GMC, 2002) favour a move from apprenticeship/opportunistic learning to a more structured, systems-based approach using a wider range of healthcare settings. The introduction of learning outcomes has highlighted the wider spectrum of competences required of a doctor which require a wider range of teaching locations if they are to be delivered (Harden *et al.*, 1997, 1999). Adequate exposure to designated core clinical problems should be made equally available to all students (Harden *et al.*, 1984) and opportunities for students to integrate their learning to material presented elsewhere in the course should be provided.

Importance of teaching in ambulatory care settings

The ambulatory care environment is able to respond to these changes and provide an environment where innovations in clinical teaching can be developed. If hospital wards no longer present a balanced overview of patterns of health and disease then, as the King's Fund review concluded, ''increased use of outpatients and general practice for teaching is essential to reflect the true spectrum of health and disease in the community'' (Towle, 1991).

Benefits of teaching in ambulatory care settings

The small number of appropriate patients, the difficulties of structuring their availability and the pressures of service commitments often compromise traditional ward-based teaching. In contrast, outpatient facilities can offer large numbers of patients with common medical conditions more representative of general medical practice (Butterfield & Libertin, 1993). They have a wealth of personal clinical histories and specific physical findings but, unlike hospital inpatients, are not acutely unwell. More space is usually available and there is the possibility of selecting patients appropriate for the students' stage of learning. Increased student numbers can be accommodated. Different skills can be demonstrated and developed in the ambulatory care setting as indicated by Stearns & Glasser (1993). Their paradigm for ambulatory medicine combines elements encountered in routine ward-based teaching (aetiology, history, physical examination, laboratory tests and therapy) with those more likely to be encountered in ambulatory care (continuity, context, health education, economics and responsibility).

Experiences in ambulatory care have been reported as enjoyable and profitable to patients, staff and students (Dent *et al.*, 2001a; McGee & Irby, 1997). Students have been described as having better relationships with patients and teachers (Kalet *et al.*, 1998). Phinney & Hager (1998) describe benefits to fourth-year students in cardiology in clinical skills competence as well as in familiarity with 'high-tech' procedures. Although some researchers (McLeod *et al.*, 1997) found that students' experiences with inpatients were preferable for learning clinical skills and for making diagnoses, others found ambulatory care experience effective in improving both students' knowledge and skills (Frye *et al.*, 1998) and preferable to inpatient experiences (Lynch *et al.*, 1999). In reviewing day surgery unit teaching, Seabrook and colleagues (1998b) found no significant difference in performance in MCQ and OSCE performance between students who had undertaken a day surgery unit course and those who had taken a traditional inpatient surgery programme.

Resources for teaching in ambulatory care settings

Venues

Depending on the size of the facility and the availability of staff willing to teach students, a programme of ambulatory teaching may be possible in a number of venues, some of which may not have been considered previously: outpatient clinics; day surgery unit; accident & emergency department (A&E); clinical investigation unit; and radiology and imaging suites; professions allied to medicine; social work department. However, access for teaching sessions in any area where students have not customarily been taught will require some negotiating (Dent, 2003) (see later section on ambulatory care teaching settings).

Patients

Patients may be available from a variety of sources:

New patients. Patients attending outpatient clinics, the A&E department or clinical investigation and imaging suites may be seen by the students at the time they attend. Alternatively, appropriate patients for student teaching can be selected from those newly referred from their GP for outpatient appointments and invited to specially timetabled teaching sessions.

Clinical volunteers or 'bank' patients. A 'bank' of previous patients may be built up from volunteers whose clinical condition no longer requires particular medical care. These patients can be categorized by their various conditions and invited to share their particular clinical histories and demonstrate physical findings appropriate for the needs of the student group they will meet (Brush & Moore, 1994; Dent *et al.*, 2001b).

Standardized/simulated patients. Although probably more used in the simulated environment of the clinical skills centre (CSC), standardized or simulated patients may occasionally be required in special circumstances to demonstrate particular features of a medical interview such as dealing with an angry patient.

Staff

Programme design and administration. A programme must be devised for the students that makes the most of the learning opportunities each location can provide and learning outcomes must be defined. All too often students are merely accommodated into an existing clinical situation which, because of the size of the student group and the unselected nature of the patients attending, may be less than ideal for student learning (Feltovitch *et al.*, 1987). Thought has to be given to strategies that will help students achieve the maximum educational benefit from the experience including opportunities for vertical and horizontal integration and personal reflection. An ambulatory programme director is required to develop the programme structure, organize student groups, coordinate attendances from appropriate patients or clinical volunteers and help to train clinical tutors.

Clinical tutors. Clinicians with enthusiasm for teaching are required to act as tutors. Seven factors of teaching effectiveness have been described by Irby *et al.* (1991): knowledge; organization and clarity; enthusiasm; group instructional skills; clinical supervision skills; clinical competence; and modelling professional characteristics. In their survey they found the most valued characteristics of clinical teachers to be the active involvement of the learners, the promotion of learner autonomy and the demonstration of patient-care skills.

Staff development. The necessary emphasis on patient welfare and convenience focuses clinical staff attention away from teaching. Skeff (1988) has described a seven-component framework to enhance teaching effectiveness in the ambulatory setting: establishing a positive learning climate; controlling the teaching session; communicating goals; enhancing understanding and retention; using formative and summative methods of evaluating learners; providing feedback; and encouraging self-directed learning.

A reorientation of approaches to clinical teaching may be necessary. Clinicians enjoy teaching in wards but may prefer simply to demonstrate their clinical skills when under pressure in busy outpatient clinics. To take advantage of educational opportunities as they present, clinical tutors in ambulatory care must acquire the mental agility required to capture each 'teachable moment' as it presents (Bowling, 1993). Knowledge of the principles of small-group teaching is necessary. Facilitating such small-group sessions can be described as the educational equivalent of white-water rafting—a skill not all clinicians will normally have acquired. AMEE Education Guide No. 8 (Crosby, 1997) looks at this topic in detail. For example in teaching a psychomotor skill five steps are described: teacher demonstration; teacher demonstrates and describes actions; student attempts; teacher and group give constructive feedback; and student practises.

Staff development sessions will be necessary to enlist and train colleagues. Anderson *et al.* (1997) emphasize that such programmes should not only emphasize the content of the teaching encounter itself but also give equal emphasis to the pre-instructional planning, the role of reflection and the importance of learners and ambulatory care staff collaborating with faculty in planning the learning process. However, other methods of information sharing such as brief handouts and posters may be more popular with clinicians (Ker & Dent, 2002).

Informative brochures have been used to supply 'on-the-spot' information for clinicians who may be called on to teach in an outpatient setting with little advance notice. They contain practical information on the preparation and management of the session and highlight the importance of personal reflection after the event is over (Dent & Hesketh, 2003; Stewart, 2005).

Supplementary resources

Experience has shown that readily available additional resources are as important as patients in clinical teaching situations (Dent *et al.*, 2001a). These resources may include:

- patient case notes or summaries giving a précis of the part of the patient's history relevant for the current session;
- laboratory reports of pertinent investigations to be used in discussion of patient management;
- radiographs, scans and clinical photographs;
- videos, if it is necessary to refer to the medical school's preferred approach to clinical examination;
- diagnostic equipment for students to practise basic clinical skills.

Students

Students from the appropriate phase of the curriculum should be timetabled to attend in groups of an appropriate size that can be accommodated in the setting being used. Junior students may require a more supervised environment such as can be provided by a dedicated ambulatory care teaching centre (ACTC) using clinical volunteers (see later section on the role of an ACTC). Senior students are probably more able to interact with new patients in a less structured ambulatory environment.

Institutional support

All the above will be ineffective without support from the teaching institution. Support for the teaching faculty is mandatory. As Skeff (1988) observed, ''Many faculty members have an intrinsic desire and enthusiasm for teaching, but they are drawn in several directions with

various responsibilities. Without clear emphasis on the importance of clinical teaching in the ambulatory setting, they will understandably spend less time concentrating on this role.'' A secure source of faculty funding must be ensured to finance the developing ambulatory care teaching programme (Bentley *et al.*, 1989).

Ambulatory care teaching settings

Routine outpatient clinics

A scheduled clinic is usually made up of new or review patients or a mixture of both. It may be staffed by one or more doctors including a consultant, trainees, nursing staff and possibly other healthcare colleagues. There is usually a large number of patients attending with common clinical problems appropriate for undergraduate teaching but additional space for teaching may be limited.

Resources. Resources available may include: clinicians, nurses, therapists; GP letters, case notes, laboratory results, radiographs; a vacant consulting room or procedure room.

Opportunities. Opportunities exist for students to: see patients independently; observe decision-making and the selection of appropriate investigations; be supervised in communication and examination skills and attempt simple practical procedures.

Advantages. From the large numbers attending it is easy to select sufficient numbers of appropriate patients for similar conditions to be seen by all students. Independent learning can be encouraged if sufficient rooms are available for students to see patients at their own pace and effective, one-on-one tuition, much valued by students, may be possible.

Disadvantages. A heavy service commitment places time constraints on clinicians who are under some pressure to see the large number of patients appointed to the clinic. In these circumstances a large student group may be difficult to accommodate.

Teaching clinics/standardized clinics

Patients illustrating the core clinical conditions that students are required to see can be invited to a specially scheduled teaching clinic where longer appointment times can be given. It may be possible to create a focused (themed) clinic by inviting patients with similar conditions to create a structured session (Lawson & Moss, 1993). In an attempt to avoid inequalities of clinical exposure, Sullivan and colleagues (2000) used standardized patients as part of a series of multimedia learning modules covering a spectrum of vascular disorders, so achieving uniformity of learning outcomes.

Resources. Resources available may include: more time for focused clinical tuition; invited patients from new referrals or the patient bank; clinical notes and results of investigations.

Opportunities. Opportunities exist for students to: concentrate their learning during this focused session; read around the teaching theme of the session if notice of it can be given in advance.

Advantages. No time constraints or pressures from other clinical commitments on the tutor; independent learning promoted; opportunities for problem-solving can be developed.

Disadvantages. A designated tutor is required to deliver the session; additional time for preparation must also be found by the tutor.

A&E departments

Resources. Resources available may include: assessment areas, resuscitation suite, adjacent radiography facilities, treatment areas and plaster room; a variety of staff of different grades and disciplines; large numbers of patients presenting with common injuries or as medical or surgical emergencies.

Opportunities. Opportunities exist for students to observe: acute assessment, practical procedures, clinical decision-making, multi-professional activity and teamwork; to observe and participate in the large number of healthcare activities going on at any time.

Advantages. Clinical histories and physical findings are at their most acute; role modelling; realistic clinical settings; in many cases it will be the first time these patients meet students.

Disadvantages. Staff may be too busy to spend time with students or to direct them to appropriate patients and leaning situations; some patients will be too ill to have students with them; follow-up of the patients seen may not be possible as they are subsequently admitted to other parts of the hospital or discharged.

Clinical investigation units

Resources. Resources available may include: endoscopy unit, non-invasive vascular laboratory or gait analysis laboratory; staff from various healthcare disciplines; results of investigations.

Opportunities. Opportunities may exist for students to: discuss the reasons for selecting various investigations and their interpretation; observe clinical judgement; observe patient management.

Advantages. Exposure to a particular type of clinical condition or specialist investigation is available; role modelling a career specialty; personal development.

Disadvantages. Patients coming through the department are not necessarily appropriate for the students' stage of learning; opportunities for students to see patients independently are probably difficult to provide.

Radiology and imaging suites

Resources. Resources available may include: 'plain' X-ray suite, contrast studies, MRI and CT scanning suites, nuclear medicine department; radiologists, radiographers and other specialists and technicians; a departmental collection of representative images; a large number of patient in the department.

Opportunities. Opportunities may exist for students to: discuss the indication for various investigations; relate the images to basic sciences such as cross-sectional anatomy; observe patient management; observe clinical reasoning.

Advantages. Concentrated exposure to a particular discipline; role modelling a career specialty; personal development.

Disadvantages. Radiation protection issues.

Professions allied to medicine

Resources. Resources available may include: physiotherapist, occupational therapist, podiatrist, orthotist, prosthetist; large numbers of patients attending.

Opportunities. Opportunities may exist for students to: observe clinical assessment and treatment techniques; practise communication skills with patients before and during treatment.

Advantages. Increased awareness of treatment modalities and their impact on the patient; opportunity to observe how the role of a doctor relates to other healthcare disciplines.

Disadvantages. Only a limited number of students can be accommodated at one time with any one patient.

Ambulatory care teaching centre (ACTC)

See the section on ACTCs later in this guide.

Day surgery units (DSU)

See the section on DSUs later in this guide.

Instructional strategies for maximizing learning opportunities

Strategies are required to facilitate student learning and to identify gaps in student experience. These omissions may occur in both the breadth and depth of their patient encounters in ambulatory care (Gruppen *et al.*, 1993). Various strategies can be adapted for use in ambulatory care venues to help student learning.

Logbooks

The EPITOME logbook (Dent & Davis, 1995) encourages students to record patient interactions and learning in seven categories:

Enquiry or history-taking;
Physical examination;
Interpretation of data;
Task or carrying out a procedure;
Options or differential diagnosis;
Management of the patient;
Education of the patient.

This provides a way of recording clinical experiences and promotes reflective practice. A similar approach using a 'worksheet for ambulatory medicine' (WAM), which incorporates learning objectives, has been described for students to complete during each patient encounter (Roth *et al.*, 1997). These can be used to assess the student's degree of involvement with the course and to indicate the type of clinical cases they have still to see.

Task-based learning

In task-based learning (TBL) a particular task that might normally be carried out in the clinical setting (such as measuring blood pressure) is used to help students learn by understanding the concepts and mechanism underlying the task (Harden *et al.*, 1996). A programme reported from Finland (Virjo *et al.*, 2001) uses a TBL module with ward-based patients to compliment the active, self-directed learning fostered by a PBL programme in the earlier years of the course. The tasks they define that can be adapted for use in the ambulatory care situation include: interview and examine a patient and make records; participate in the discharge of a patient and the associated documentation; participate in consultations with the staff attending; make a home visit with the GP or home care nurse.

Study guides

The role of study guides in facilitating and managing independent learning is well accepted (Laidlaw & Harden, 1990). A two-part study guide used by Mires *et al.* (1998) in obstetrics and gynaecology describes a 'TOPICAL' approach. It contains:

Topics;
Objectives;
Programme;
Issues for learning;
Clinical tasks;
Assessment;
Log book.

Students write their structured case report in the second part or 'response book', which can then be collected for assessment. This integration of learning and assessment aims to promote higher-order learning.

Learner-centred approach

In an attempt to avoid learner passivity in the outpatient setting, a learner-centred model, using the acronym 'SNAPPS', has been described by Wolpaw and colleagues (2003). This requires students to present cases to their tutor using the headings:

Summarize the history and physical findings;
Narrow down the differential diagnosis to two or three possibilities;
Analyse the differential diagnosis by comparing and contrasting the possibilities;
Probe the preceptor with questions about difficulties or alternative approaches;
Plan management for the patient's problems;
Select a case-relevant issue for self-directed learning.

This approach has been found to engage the learner and promote positive interaction with the tutor.

Another method promoting active student involvement in the learning process involves learning contracts. Handbooks incorporating a learning contract, a curriculum of learning objectives and a mechanism for formal review have been used to encourage adult learning styles in senior house officers (Parsell, 1997). In this approach student and tutor agree the content and scope of material to be studied. In a nursing degree course this strategy was found to increase student autonomy and motivation and to promote sharing between students and clinical tutors (Chan & Chien, 2000).

Learning outcomes

The attributes or characteristics that it would be desirable to find in a doctor have been described (Harden *et al.*, 1997; Harden *et al.*, 1999). These can be used to focus teaching and can be identified to a variety of extent in any clinical teaching situation. The 12 learning outcomes described include:

What a doctor is able to do:

- competence in clinical skills;
- competence in practical procedures;
- competence in patient investigation;
- competence in patient management;
- competence in health promotion and disease prevention;
- competence in communication;
- competence in handling and retrieval of information.

How the doctor approaches his/her practice:

- with understanding of basic and clinical sciences and underlying principles;
- with appropriate attitudes, ethical stance and legal responsibilities;
- with appropriate decision-making, clinical reasoning and judgement.

The doctor as a professional:

- an understanding of the doctor's role in the health service;
- an aptitude for personal development.

This approach has recently been adopted by the Deans of the Scottish Medical Schools (Simpson *et al.*, 2002).

Conferences and independent study activities

Before the visit to the ambulatory care venue a discussion with the programme leader can be used to raise student awareness of issues likely to be illustrated by the patient encounters and to highlight areas for independent study. This fosters higher-level thinking and a structured approach to learning. Conferences and independent study activities planned for after the event give students an opportunity to reflect on what they have seen and learned and to plan related self-directed leaning activities (DaRosa *et al.*, 1997).

Microskills for students

Tips to improve student learning skills prior to ambulatory care activities have been described (Lipsky *et al.*, 1999). They focus on:

- Self-orientation—students should set themselves a limited number of personal goals to be achieved during the period. They should be sure that tutors realize what stage of training they have reached.
- Preceptor preparation—students are given advance organizers of the medical conditions of the patients they are to see. Students are encouraged to formulate a diagnosis or management plan and be able to indicate the clinical findings that support it.
- Soliciting feedback—students are encouraged to share self-assessment of their performance with tutors at appropriate times, so encouraging specific feedback from them rather than receiving general statements. Students are encouraged to ask questions related to their clinician's decision-making processes in order to promote dialogue and aid understanding of clinical judgement.
- Reflection—students record key points and questions in a journal for future investigation and discussion in order to promote thoughtful reflective practice.

A five-step 'microskills' model of clinical teaching has been described by Neber and colleagues (1992). The model includes: get a commitment; probe for supporting evidence; teach general rules; reinforce what was done right; correct mistakes. This practical approach can be easily utilized and is especially useful for inexperienced tutors.

Structured model for teaching and learning

A list of step-by-step activities for students to follow when interviewing patients in a follow-up outpatient clinic has been proposed by Kurth and colleagues (1997) as a method of facilitating students' orientation in a new setting and of enhancing their leaning. Activities are grouped into four sections: Preparation—(pre-visit); Practice—(the patient's visit); Evaluation and feedback—(during the visit); Synthesis and analysis—(closing the visit). The model was thought to clarify what was expected of students, to promote active self-directed leaning, to facilitate opportunities for assessment by the tutor and to assist in the acquisition of appropriate skills.

Models for organizing student/patient contacts in outpatient clinics

A variety of different models for organizing student/patient interactions in outpatient consultations have been described (Dent, 2005). These models take into account the number of clinicians present, the size of the student group and the number of rooms available for student use. Each model has advantages and disadvantages. Some are more suitable for use with a single student and others help in managing a large student group. A model can be chosen that best meets the students' requirements.

One student/one clinician

Sitting-in model. In this familiar model the student 'sits in' with the clinician and can usually talk freely to both the clinician and the patient. Students enjoy the 'one-on-one' teaching, the ease of interaction with the clinician and will see the full range of patients attending that clinic. However, the clinic time may be prolonged if the clinician does not control the interactions and conversely a reserved student may participate minimally, becoming a mere passive observer. Such students should be manoeuvred to adopt a more active role and may be encouraged by being asked to assist with various tasks such as completing laboratory request forms.

Apprenticeship model. In a contrasting model the student may be allowed to assume the role of the doctor and interview the patient with the clinician this time acting as the observer. Student/patient interaction in this model is obligatory but as aspects of the consultation may have to be repeated by the clinician the clinic time becomes prolonged.

Team member model. In this model a more senior student is treated like a trainee in the clinical team and interviews and examines patients in a separate room before either being visited by the clinician or reporting back to the main consulting room. In this model the student can interview and examine patients at his or her own pace and can discuss such aspects as the impact of the illness on their lifestyle or domestic circumstances. Meanwhile the remainder of the clinic can proceed at the usual pace with the clinician alone but with intermittent interruptions to review the student's progress. The student will miss the majority of the patients attending during this time and there are fewer opportunities for interaction with the clinician.

Several students/one clinician

Grandstand model. All too often this is the model seen when a large number of students are timetabled for the clinic at the same time and are obliged to crowd round the clinician in a single room to observe the consultation. Although all the students will see all the patients attending, the patients may feel intimidated by the large number of observers and the clinician/patient dialogue may be inhibited. Junior students have a good opportunity to observe the clinician's communication and history-taking skills at first hand but there are limited opportunities for them to interact with patients themselves. It may be possible to demonstrate some examination techniques (Figure 1).

Supervising model. More experienced students can conduct an entire interview and examine the patient in independent rooms with only limited tutor supervision (Figure 2). In this model the clinician selects a patient for each student to see individually in a separate room. After a suitable time (during which other patients can be seen) the clinician then goes to each room in turn to hear each student's account of her/his patient and to supervise various aspects of the interview. Students have time and space to interview and examine their patient and will receive individual feedback on their performance. However, they do not see all the patients attending, the clinician is heavily occupied supervising the students and hearing them present the patient they have just seen and some of the students' time is wasted in waiting for their turn. Inevitably the clinic becomes prolonged.

Report-back model. Senior students may interview and examine patients independently or in pairs before reporting back to the clinician on their consultation and discussing the proposed management (Figure 3). Patients are allocated to students as in the previous model but this time the students return with their patient to the main consulting room and, when all are ready, introduce their patients and present the salient features of their consultation to the clinician and their colleagues. As before, the students have time and space to interview and examine their patient but in this model they will all see something of each other's patients. A disadvantage from the patient's perspective is the probability of waiting first to be seen by the student and second by the clinician. Again the pace of the clinic is slowed.

Breakout model. All the students sit in with the clinician and hear the whole of the interview with a patient and observe the examination and following discussion. A student is then

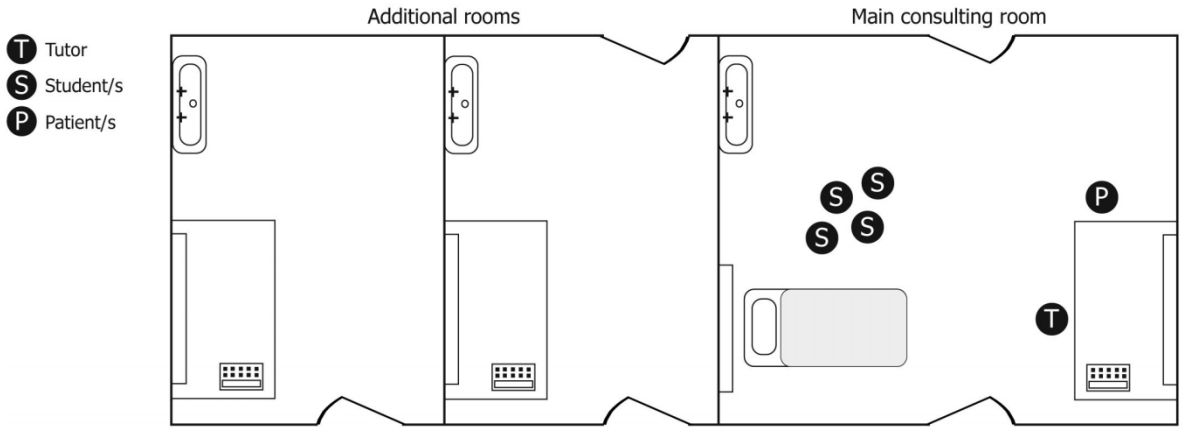

Figure 1. Grandstand model.

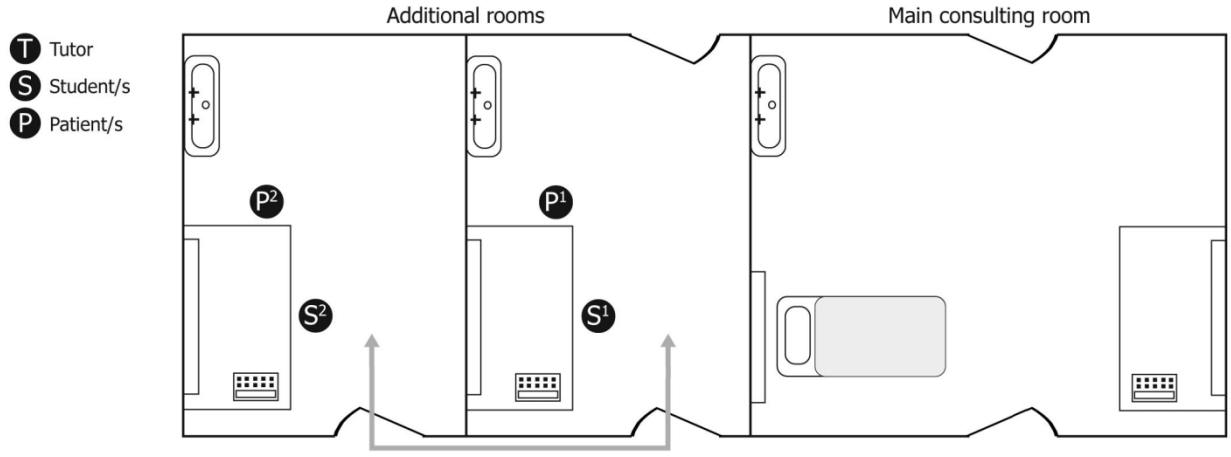

Figure 2. Supervising model.

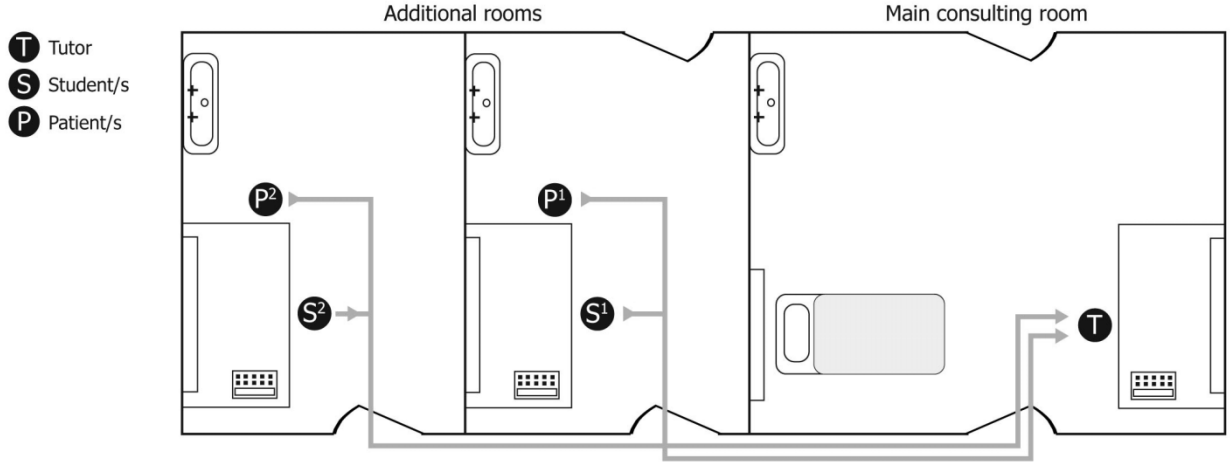

Figure 3. Report-back model.

allocated to that patient and takes him/her to another room to interview and examine unsupervised. During this time the student consolidates aspects of his or her history-taking skills and examination technique and may also have opportunities to complete laboratory request forms or, under supervision, perform a practical procedure such as venepuncture. Subsequent patients are paired with each of the remaining students. This one-on-one experience gives students the opportunity to work at their own pace but junior students will benefit most if feedback on their individual history-taking and physical examination skills is provided (Figure 4).

Several students/several clinicians

Shuttle model. The clinicians consult simultaneously and pass the students between them as cases of interest present. However, some patients will be missed if they attend while the students are engaged with the other clinician.

Division model. The student group is divided between the clinicians in the clinic who may then proceed using any of the previously described models depending how many students are attending. The advantages and disadvantages of these models remain as before.

Flip-flop model. The student group spends half of the time with each clinician who proceeds to use whatever model is preferred but often the 'grandstand' model is the only one that is selected. The teaching session can proceed without pressure as the remainder of the patients attending are being seen by a colleague. At half time the students switch to the other clinician.

Tutor model. The student group remains with one (usually, but not always, the senior) clinician who may then use any of the previous models but feels less constrained by the demands of the clinic as the opportunity is now created to see only selected patients with the students. More time-consuming teaching models can be selected. Patients whom the tutor does not wish the students to see are seen by the other clinicians present while the selected patients are seen in optimal conditions using any of the teaching models described as resources permit.

Role of an ambulatory care teaching centre

Despite their advantages, the large numbers of patients attending ambulatory facilities may actually prohibit the delivery of a structured teaching programme. A shortage of

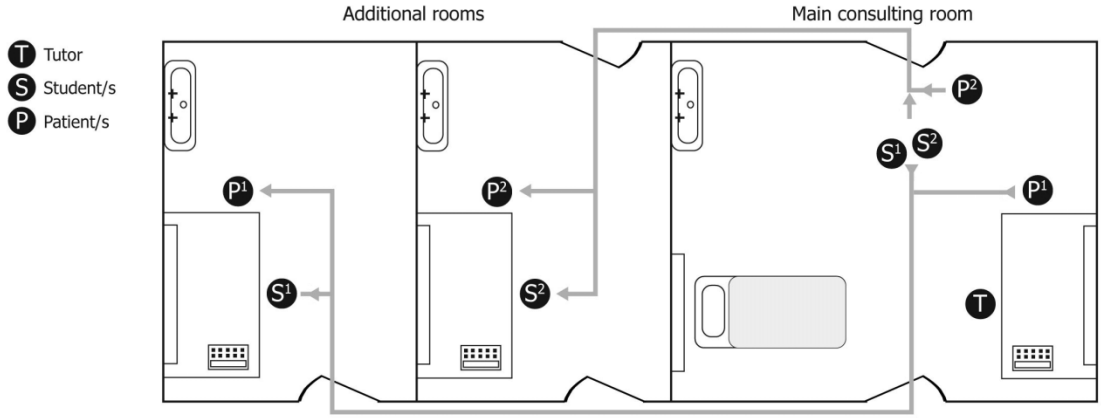

Figure 4. Breakout model.

available teaching space, the volume of clinical work to be done by the available staff and the unselected nature of the clinical conditions represented may make teaching less than ideal, especially for junior students. These difficulties can be resolved by the creation of a dedicated teaching facility in the ambulatory care setting to provide an independent space where teaching and learning can be carried out without the constraints of service commitments or interruptions. Medical conditions required for the students' particular level of study can be seen by selecting patients with appropriate histories or physical findings from the bank of clinical volunteers. This clinical experience can then be integrated with factual material presented elsewhere in the course. Clinical teaching in this ambulatory care teaching centre (ACTC) provides an experience that bridges the gap between initial exposure to clinical contact in the clinical skills centre (CSC) and visits to the less structured environment of routine clinical venues.

Implementation

Twelve tips have been described in the development of an ACTC (Dent *et al.*, 2001b).

Design:

1. Allow development time:
   - to negotiate with hospital managers and potential stakeholders;
   - to determine the nature of tenure of the proposed premises;
   - to discuss the type of sessions envisioned;
   - to decide when to introduce the programme.
2. Integrate curriculum needs and identify organizational constraints:
   - Decide which aspects of the curriculum are going to be covered in this facility and what can feasibly be delivered (Feltovitch *et al.*, 1987).
3. Identify interested parties and their strategic role as a steering group:
   - Share ownership of the project among a group of potential users and those who will take on an administrative role.
4. Find suitable accommodation:
   - An area already familiar to students and within the outpatient department is ideal.
   - A flexible space is best so that a variety of sizes of group and a variety of activities can be accommodated.
5. Secure a budget:
   - A reliable source of centrally provided income is required.
   - Budget for both recurring costs and capital expenditure (Bentley *et al.*, 1989).
6. Acquire suitable resources and equipment:
   - It is necessary to make the facility look realistic and attractive and also for it to be appropriately equipped with additional resource material to reinforce learning.

Implementation:

7. Recruit and train enthusiastic staff:
   - An ACTC programme coordinator is required to timetable students and tutors, to arrange patient visits and to build up and classify a patient bank.
   - Tutors must be familiar with the objectives of the ambulatory care teaching programme.
   - Staff development opportunities will be necessary.
8. Evolve an implementation function for the steering group:
   - Think of ways for future development perhaps involving multiprofessional input or postgraduate utilization.
9. Build up a bank of referred patients or clinical volunteers:
   - Patients referred by clinical colleagues can be asked to volunteer to take part as required.
10. Implement a teaching plan:
    - Divide students into appropriately sized groups and decide how they will be deployed.

- Choose a model for organizing student/patient contacts (see section on 'Models for organizing student/patient contact in routine outpatient clinics') and aim to integrate student learning.

Evaluation:

11. Develop a multifaceted evaluation process:
    - Provide a forum for feedback for all users.
12. Develop a research and development function for the steering group:
    - Opportunities should be taken to evaluate the experiences provided by the ACTC (Irby, 1995).

Resources. New patients or clinical volunteers can be used but interviews with simulated patients are probably best reserved for use in the simulated environment of the clinical skills centre. Other pictorial or practical resource material as mentioned above together with dedicated tutors, support staff and facilitators.

Opportunities. Opportunities are available for students to practise communication and examination skills at their own pace and to integrate their learning. Multiprofessional input appropriate to the students' current programme can be arranged, for instance a dietitian or diabetic nurse can contribute during the endocrinology course. Opportunities may also arise to develop the resources of the ACTC to create a programme suitable for postgraduate trainees or for inter-professional learning.

Advantages. A safe and supportive learning environment is created, which allows students to receive the amount of supervision they require without jeopardizing or hampering patient care. A structured and standardized programme can be delivered ensuring that the same experiences are made available for all students. Delivery of a routine outpatient service is not jeopardized.

Disadvantages. A definite space has to be acquired and appropriately refurbished. A budget is required for maintaining the facilities, for reimbursement of patients or clinical volunteers invited to attend and maybe for staff salaries. A full-time tutor or ambulatory care coordinator will be needed to timetable and organize student and staff attendances, to enlist and brief patients and to facilitate the sessions.

Evaluation

The perceptions of students, tutors and patients on the opportunities for integrated learning provided by the ACTC have been reported (Dent *et al.*, 2001a):

- Students appreciated the unhurried atmosphere, opportunities for personal tuition and feedback and time to practise clinical skills with real patients rather than in simulation. Between 77% and 80% said their history-taking and examination skills were improved as a result.
- Tutors appreciated the absence of other clinical pressures normally present in the ward setting. They liked having additional resource material readily available.
- Patients enjoyed longer times for consultation, contributing to the educational programme and learning more about their medical condition.

Tips on developing an ambulatory teaching resource in a new venue

The introduction of a teaching programme in an ambulatory care venue not previously accustomed to having undergraduate students needs to proceed with some thoughtful planning and discussion between the curriculum planners and the staff of the target venue. Tips on setting up such a programme might include:

Preparation

1. Identify the learning objectives that students can experience in this ambulatory care venue.
2. Secure institutional support and form an implementation/steering group representing all parties.
3. Decide which year of the course will most benefit from the programme and how many students can be accommodated.
4. Decide how appropriate patients for students to see will be selected and briefed.
5. Identify space where students will see the patients.
6. Identify any particular preparation students should undertake to prepare them for clinical experience in that venue.
7. Provide staff development opportunities.

Delivery

8. Provide a study guide or logbook outlining the objectives of the visit and providing space for recording of clinical encounters and reflection.
9. Employ a tutor/supervisor to be based in this new ambulatory care teaching venue.
10. Provide opportunities for student reflection, tuition and assessment.

Evaluation

11. Evaluate feedback from students, tutors and staff.
12. Discuss research and development opportunities with all parties involved.

Experiences with introducing a teaching programme in a day surgery unit

Introduction

Earlier hospital discharge and an increase in day surgery operating have become possible following advances in surgical procedures and anaesthesia. Increasing specialization in teaching hospitals means that inpatients are often unrepresentative of patients seen in general medical practice (Schwartz *et al.*, 1992). In contrast, the DSU is an underutilized teaching resource. In a survey of 227 DSU, Seabrook and colleagues (1997) found only 45% were used for teaching and only 7% had students for more than one day per week. Teaching tended to be unstructured, theatre-based

and centred on shadowing the surgeons present. Nakayama & Steiber (1990) reported that basic surgical skills had not been practised by students prior to graduation.

Lossing & Groetzsch (1992) introduced technical skills instruction in scrubbing, gowning, gloving, instrument handling, suturing, cutting and stapling and were able to demonstrate improved performance in these skills, after training, in fourth-year students using a simulated appendectomy model. However, the operating theatre may present a difficult environment for students, as Lyon (2003) reports. Challenges present in three key domains:

- the physical environment and the emotional impact of surgery as work;
- the educational task;
- the social relations within the operating theatre.

To be successful students must manage the demands of these three domains by adopting adult learning strategies, by identifying student-friendly staff and by presenting themselves as deserving learners who have earned a place in the training queue.

Implementation

A DSU teaching firm has been described (Seabrook *et al.*, 1998a) focusing on active learning and skills development using a multiprofessional team of tutors led by an educationist.

Another programme described from South Australia (O'Driscoll *et al.*, 1998) incorporates opportunities for following patients through day surgery, practical procedure tutorials and problem-based learning tutorials. This was carried out with a high degree of acceptance from DSU staff and patients and without compromising patient care (Rudkin *et al.*, 1997). Twelve tips, similar to those described previously, have been described for the setting up of an integrated teaching programme in the Day Surgery Unit (Dent, 2003).

Opportunities

Opportunities exist for students to:

- practise communication skills, physical examination and procedural skills, especially the theatre skills required of junior doctors;
- practise and observe patient assessment and decision-making including clinical judgment and informed consent;
- participate in multi-professional aspects of patient care including surgery, anaesthesia, bedside nursing procedures and an assessment of patients' social or domestic needs;
- practise common surgical procedures and theatre technique;
- learn from the holistic approach to patient care seen and the opportunity for longitudinal case studies available.

Resources. Resources available may include:

- patients attending for day surgery procedures in a variety of disciplines. A mean waiting time of three hours may exist between arrival and surgery when patients are available for clinical teaching (O'Riordan & Clark, 1997);
- a day surgery reception ward, operating theatre and recovery area;
- staff from a variety of healthcare professions are available: surgeon, anaesthetist, nursing staff and therapists;
- diagnostic, anaesthetic, monitoring and examination equipment.

Advantages. These include:

- a holistic approach to patient-care can be experienced in a short period of time;
- a wide variety of common conditions closely related to general medical practice may be seen;
- continuity of care may be observed from pre-operative assessment through surgery to giving post-operative instructions and the patient's return to community care;
- an appreciation of the multiprofessional approach to patient care can be gained.

Disadvantages. These include:

- the presence of students may impede service delivery. However, only 6% of units studied by Seabrook and colleagues (1997) considered this likely;
- only a limited number of students can attend the actual operation to avoid overcrowding in theatre;
- extra theatre clothes, gowns and gloves are required if students are to practise surgical techniques.

An example of a DSU teaching programme

An integrated programme that reflects real clinical experience has been developed in the DSU.

Part 1

Students initially meet selected patients newly referred to the orthopaedic department with minor operative conditions. They practise communication skills and physical examination under appropriate supervision in an ACTC setting. Clinical judgement and decision-making skills are practised, diagnoses are reached and patients are assessed for suitability for day-case surgery. Issues related to informed consent are discussed.

Part 2

Opportunities are then provided for students to practise relevant surgical procedures. Using facilities in the CSC, the surgical scrub technique is practised. A CAL programme on wound-suturing technique is viewed and suturing practised under supervision as described by Kneebone (1999). This follows a five-stage approach: watching an animated graphic; watching a clinical video; watching a demonstration on a simulated tissue model; doing the procedure on a model; doing the procedure on a patient under supervision.

Part 3

In the DSU students meet a variety of patients with conditions similar to the ones they have already been seeing in the ACTC. They have the opportunity to reassess the indications for the proposed surgery, to assist at the operation and to participate with other healthcare staff in peri-operative care. Finally, students participate in post-operative care and patient discharge procedures. With the agreement of the patients students telephone them the next morning to enquire about their post-operative condition and to check arrangements for dressing changes, GP review or outpatient follow-up. Any clinical problems raised are reported back to the clinician.

By creating a supervised programme in a genuine clinical situation opportunities are created to provide structured learning relevant to several of the curriculum outcomes.

Checklists for effective ambulatory care teaching

It is important to monitor and evaluate the new teaching programme so that it can constantly be refined and improved. The Wisconsin Inventory of Clinical Teaching (WICT) has been shown to be valid and reliable to improve teaching of residents in general internal medicine clinics (Hewson & Jenson, 1990). In this questionnaire residents (trainees) are asked to give ratings to between three and 11 descriptors of aspects of teaching behaviour within six broad categories relating to the attending doctor (consultant) as a: clinical role model; professional mentor; clinical supervisor; instructor; evaluator; consultant (one who may be consulted by the resident).

Tips on getting started as a tutor in an ambulatory care setting

What to do before you start

- Try to attend any staff development session or tutor briefing meetings and read any tutor support material available. Try to 'sit in' on a session with a more experienced tutor.
- Check the students' study guide, if available, and any other course material to see how the session should be integrated to other aspects of the course.
- Review the case records of the patients expected so you are familiar with their history and any physical findings that can be demonstrated.
- Arrive early at the venue for your session to check the layout of the available teaching space and to meet the patients and other staff present. Check the availability of additional resource material in case the patients fail to attend!
- Brief the students about the educational objectives. Consider which learning outcomes you can illustrate in the session.
- If you are planning a session for more senior students to see new patients you will need to make an appropriate selection of about 4–6 new patients from the GP referral letters several weeks in advance.
- Try to select patients who will illustrate core clinical problems.

What happens when you get there?

A variety of models for structuring student/patient interviews can be used in the session depending on the number of students present and the clinical venue being used (see 'Models for organizing student/patient contact in routine outpatient clinics').

What to do when the session is over

- Be sure the students have the opportunity to discuss what they have seen and learned at the end of the session.
- Identify aspects of the learning outcomes that have been illustrated by the patients they have seen and clarify any misunderstandings or uncertainties.
- Thank the patients who took part.
- Finally, consider what you did well in the session and which aspects you might like to improve on next time.

Conclusion

Ambulatory care is becoming a key facet of modern medical practice. As patients are increasingly seen in this environment medical student teaching must seek to develop learning opportunities that utilize this resource. However, simply scheduling students to attend new venues is not the whole answer. Appropriate instructional strategies must be selected and developed to facilitate student learning and maximize the resources and opportunities provided by these venues. Provision must be made to cope with large student groups. Although enthusiastic clinicians may be available to participate, staff development needs must be identified and provided for. Other resources necessary to support the initiative will include a programme director and a reliable budget. Periodic review of the teaching programme in ambulatory care settings by all interested parties will help to ensure that optimal use continues to be made of these valuable resources.

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