Planning bedside teaching — 2. Preparation before entering the wards

Ken Cox

What is the student ready for?

What do you expect your students to be able to do when you take them into the ward? To converse comfortably with the patient and ask sensible questions? To examine the accessible organs? To be familiar with normal ranges?

How do students get to that stage? Clinical teachers assume that their students arrive on the wards with a range of prerequisite abilities based on applied anatomy, physiology and pathology, and on practised communication skills. Such assumptions usually do not stand up to examination in formal or informal pre-tests. Clinical teachers often complain to basic science teachers, who defensively point to their syllabus and the examination results. Everyone is then free to blame the students for “forgetting”!

How is the student prepared for clinical learning?

Such uncertainties can be averted with careful planning and preparation. How much could have been taught before the students lay hands on a patient? Where can it be taught? On whom? By whom? What is entailed in this phase, and how it is handled varies widely across training programs.

Some medical schools (especially those with few resources and many patients) teach a range of ‘how to examine each organ’ skills on ward or clinic patients, without prior preparation of their students. The teacher may be as little prepared as the students. Not surprisingly, teachers may be idiosyncratic in their expectations, differing widely on exactly what the students are expected to learn, and what standard is to be achieved.

Some medical schools take the preparation very seriously as an area of careful study. “Clinical laboratories” may be set up in which students learn on each other, on healthy people trained as teaching associates (especially for gynaecological examination), and on patients with simulated maladies. Skills are analysed, taught and rehearsed, with explicit assessment of each step. Clinical measurement and clinical error are examined as areas of serious study.

This brief article can set out only the skeleton of the task of preclinical preparation, setting out the questions clinical teachers need to ask.

What is to be learned?

The first step is to ask: What is the full range of clinical abilities to be learned? Clinical practice uses five main skill areas — communication with patients, families and colleagues, perception of clinical evidence, manual procedures, interpretation and reasoning, and management of the processes of clinical care. The second question to ask is: What can be learned before entering the wards? Of these five skill areas, the first and some of the second can readily be learned in the preclinical years.

A list of all the specific clinical abilities in communication and physical examination can begin with the general skill areas, such as:

- conversing with patients, listening and questioning, establishing rapport;
- listening to heart, lungs, percussion note, arterial flow during sphygmomanometry, borborygmi;
- feeling all palpable organs, including blood vessels;
- exploring all accessible orifices with various “scopes”; and
- testing the functions of all testable nerves and reflexes.

The list can then be elaborated, skill by skill, and organ by organ, to set out a sequence which could progressively develop confidence and competence.

Each of the clinical abilities (approach, preparation, steps in the activity, skills, supervised practice) can be examined in turn to separate what can be learned on normal people (such as fellow students), and what must be learned later in the wards on patients with physical signs of disease (direct perceptual evidence of abnormality by seeing, feeling and hearing).

What can students work out for themselves?

Once the clinical skills have been chosen, teachers can plan how to help students discover how to do them, whether in a basic science department or a clinical laboratory. Anatomy students can readily work out the steps in eliciting normal physical signs, for example, how to test the function of each cranial nerve, how best to feel the liver edge, the thyroid, the submandibular salivary gland, the pancreas on the front of the aorta. Physiology students can similarly elicit the evidence of normal heart and valvular function, the breath sounds in different areas, and the measurement of jugular venous pressure.

All are capable of working out the loss of function after injuries to nerve (for example, once the course and function of the radial nerve are known, students can work out how to test whether it has been damaged when the humerus is fractured) or tendon, and the distorted anatomy after fractures and dislocations.

Many of these questions are already raised in basic science departments. The extra step usually required is to go beyond exercises in applied anatomy and physiology to devising and learning exactly how to test those functions and abnormalities clinically. Each medical school must decide for itself whether it is more efficient for students to see an ophthalmoscope and a fundus for the first time in an eye clinic, or on one another during basic science learning.
Teaching in a "clinical laboratory"

If the opportunities for "discovery learning" are not taken up in the basic science departments, the students can be taught the drills and routines of physical examination in an area designed for learning clinical skills. The essential components for the learning of skills in the clinical laboratory are as follows.

1. Identification of the set of clinical abilities to be learned and practised.
2. Agreement among teachers on the steps in physical examination most likely to optimise finding the evidence.
3. Well people on whom to learn—fellow students, recovered patients, volunteer teaching associates and "simulated patients".
4. Resources of equipment for physical examination and use of "scopes", and skilled staff to guide the learning, often with demonstration videotapes to explain each step.
5. Supervision with feedback to ensure the skills have been learned adequately.

An intermediate human subject, between healthy students and ill patients, is the patient who has recovered from the illness but can recount the story and may have some residual signs or can mimic many of the previous signs or restrictions. Some are previous patients or paid associates prepared to accept genital examination and to provide immediate feedback to students or trainees on their performance. Some are "simulated patients", actors or volunteers trained to simulate physical signs or disabilities, as well as to tell the story.

"Programmed patients" were introduced for teaching clinical neurology by Howard Barrows and Steve Abrahamson over 25 years ago. The notion of simulating patients has many advantages, especially in gynaecology. Simulations have many advantages.

1. Planning of a prepared task for which the student is ready. Simulated patients for particular teaching sessions can be available by arrangement.
2. Standardisation of the task to be performed, which can be undertaken by all students, one at a time, rather than all waiting while one occupies the patient's time. The skills to be taught are defined and controllable with identification of exactly what steps are needed, and to what level of performance.
3. Immediate feedback from the perspective of the patient, which is rarely available or elicited in real patient encounters. Rectal and vaginal examination* can be taught in detail with feedback from the simulated patient or teaching associate on technique. Mothers can be trained to teach paediatric interviewing skills. The response of simulated patients in terms of satisfaction, awareness of sympathy, encouragement and interest seems to be similar to genuine patients.
4. Ill patients are not intruded upon, and the genuine patient's consultation is not disturbed.

The limitations of simulations lie in the time and cost of training (up to 25 hours). In the difficulty for the actor to function as patient, teacher and evaluator and in the variation among simulated patients.

Follow-up of technical and interpersonal skills learned by medical students for 90 minutes on simulated patients showed higher long-term retention compared with staff-trained students. Teaching interviewing with real patients may actually be less effective than with simulated patients."

Learning for the first time in the wards

If the abovementioned preparatory teaching opportunities are unavailable, teaching of clinical skills begins in the wards. Clinical teachers usually receive a program identifying the organ to be examined each week. The teacher must find one or two patients on whom examination of the organ can be practised. Few teachers are briefed on agreed technique or on the level of skill expected. The skills of demonstration are covered in a subsequent paper in this series.

Do all students learn all skills?

If you formalise an obligatory set of skills to be mastered, will all students practise all skills under supervision until an acceptable standard is reached? Given a two-hour teaching session which must cover both demonstration of how to do it and practice in doing it by a group of six to eight students, the amount of hands-on time per student is observably low, with many never touching the patient. Weak organisation can result in some skills never having been learned.

One of my co-students had not done a rectal examination before he graduated.

Many students remain at the back of the group for various reasons, and can be left out week after week. Some students hang back with their hands in their pockets and must be dragged forward to participate. I have not found a solution for this reluctance. I worry that their subsequent clinical practice will be similarly incomplete, behind a desk with only rarely examination of patients. Are the behavioural aspects as important as the perceptual in the learning of clinical skills?

Supervised practice which goes no further than asking can you feel the liver surface? or can you hear the murmur? may fail to check carefully exactly what the student has perceived. The skills of supervision are discussed in a later article in this series.

Difficulties students face

Since students cannot cover learning and practice adequately within formal teaching sessions, they must seek out opportunities to practise. But that doesn't happen spontaneously.

Some years ago I was concerned that my clinical students were not visiting the wards except in train with a clinical teacher. Discussion with them brought out their keenness to visit patients, their awareness that they could acquire clinical skills only by practice, and that to practise, they must visit as many ward patients as practicable. But nothing changed! So I set up weekly group discussions in which each student group contained a local general practitioner, a nurse and a social worker. Given the "safe" environment and the openness of the discussion, a flood of inhibitions surfaced. I didn't know what questions to ask. I thought I'd dry up. I'm scared of the nurse in charge of the ward. I don't have anything to offer. I'm just taking from the patient. I feel I'm embarrassing the patients when I examine them. Some are like my grandmother and I can't ask them questions about their bowels or take off their night dress.

Some difficulties seemed to reside in low self-esteem and a sense of worthlessness. Some had serious interpersonal inhibitions and perhaps sexual factors contributing to the blocked behaviour which I didn't know how to alleviate. Some of the blocks were the intimidating atmosphere of the ward and senior nursing staff. The ward is full of activities to which the students feel they can't usefully contribute. Students seem to be just in the way, and even a nuisance (or at least students are likely to see it that way).

Clinical students must learn some unusual abilities in an unusual context. For the first time, students are required to work with data derived from history and physical examination, data derived from a stranger lying in bed. Young people are learning a new social role when they must ask probing and even embarrassing questions of another, usually much older person. Undressing them and examining or treating their bodies is an even greater social jump. Students have little formal preparation or training for these intrusive activities of clinical practice which can embarrass both student and patient.

We expect students to open up relationships rapidly with these complete strangers who differ in age, social and educational background, and in the words used to describe symptoms. Within seconds, or at the most minutes, we expect students to establish rapport, to explore a story of events which may have unfolded over years, and to terminate the relationship gracefully. Students are likely to retreat into silence if they are not sure what to say or do. No one likes to make a fool of themselves. Asian students are particularly likely to stand impassive and silent under questioning, although their inner turmoil must be severe.

With a high turnover of interactions little time is available to get to know each other. Teachers don't remember the names of students they've taught for 8 to 10 weeks. My colleagues needed the photographs of their students before they knew which was which, when end of term scores were being assigned after a 10-week attachment.

Doctors may forget (or never learn) the names of nurses, and use a title (Excuse me, Sister) to bypass their social inadequacy. Students are expected to want to create brief relationships with patients, although teachers may display little
Clear view of transplant procedures


Edited by three experts and written by a mainly North American set of authors, this lavishly illustrated volume sets out in reasonable detail most aspects of organ transplantation with a brief look into future applications of what are still mainly experimental procedures (e.g., bowel transplantation). With an abundance of well designed and clear illustrations and many tables in which much information is encapsulated, it gives an excellent overview of the state of the art.

Because of the book’s size there are many aspects of organ transplantation that are handled in a rather didactic manner. In some areas, for example in the chapter on the biology of organ transplantation and immunosuppression by Listint and Simmon, a huge and still quite imprecisely understood topic is condensed into less than 30 pages. It is evident, therefore, that debate is minimised and a rationalised view of a huge field is presented.

Nevertheless, anyone reading this volume will be left with a clear view of transplantation in all of its many facets without becoming ensnared in minutiae. This book is, therefore, probably most suitable for trainees in general surgery who may be contemplating a final career in some field of transplantation. It is clearly not meant to be a textbook either of the biology of transplantation or of specific applications to certain organs but is basically a more general clinical text.

The feature that most impressed me was the design of the illustrations. These are superb and of a consistently high standard. As a result it has been possible to reduce the text to a quite modest amount. I would recommend this volume to any clinician with a general interest in transplantation but it would also be of interest to non-clinicians as it sets out well the problems faced in translating a complex and still poorly understood science into practical application. With the rapid advances in transplantation I hope that this book will be regularly updated and look forward to seeing new editions as these become needed.

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History taking


During the past 12 years there have been five national symposia on medical history in Australia, now formalised as the biennial conferences of the Australian Society of the History of Medicine. At the July 1991 Conference in Perth, 60 papers of an outstanding range and variety were presented. These have been published in this important volume. Fifty papers are printed in full, 10 in abstract only.

The scope of the papers is breathtaking, ranging from mediaeval plague to repetitive strain injury. There is, as is only to be expected, some emphasis on Western Australia but other parts of Australia are not neglected and there is a significant contribution from New Zealand, with papers on the history of tuberculosis control, women in medicine, school medicine, and the New Zealand hospital system. Biographical sketches include Thomas Braidwood Wilson, Frederic Wood Jones and Eric Galton Saint.

The studies presented on Aboriginal medicine and on the British encounter with the Aboriginal inhabitants of Australia gain an additional fresh perspective when compared with a paper on the French encounter with indigenous people in Quebec. The book also contains five papers on the history of dentistry.

I found three papers of particular interest. Ronald Dymock, under the title "Colonial self-care", provides an intriguing account of the 1849 Tranby Medicine Chest and a list of its contents.

Those of us who "go down to the sea in ships", if only from our library armchairs, will enjoy "Scoury, lemon juice and naval discipline 1750-1815" by Christopher Lawrence of the Wellcome Institute for the History of Medicine, London. A superb paper by Barry Smith, of the Australian National University, on Agent Orange deals with the history of an issue of great significance to contemporary medicine, contemporary politics and contemporary law and reflects poorly on Australian newspapers.

This is number 5 in the series "Occasional papers on medical history Australia". The wish of the editors (Harold Attwood, Frank Foster and Bryan Gandevia) expressed in the first volume in this series (1984) has come true, with a new volume appearing every second year.

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