Learning Medicine

The clinical years

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Students suddenly emerge from what may sometimes seem to be two years of non-clinical frustration into an apparently bright and exciting world of clinical medicine, a world which all too easily collapses in a sense of anticlimax. The anticlimax occurs partly because the pace of learning suddenly slows and method and approach become more important than fact. Learning is from patients with a haphazard selection of diseases and not from well structured books and lectures. Teaching is geared to helping students discover for themselves and is only an intermittent refinement and gloss on the product of the student's own initiative and application. More importantly, the anticlimax may occur because getting alongside patients who are ill and often tired may not be easy and some students find it very hard.

Clinical education is a composite of learning facts, acquiring practical skills, taking responsibility, and developing the ability to make decisions. Medicine is a curious mixture of art and science, its clinical bedside method a sharp contrast to the exactness of science and to the complexity of laboratory and radiological investigation. Yet failure to become competent at this stage in listening to and examining patients may result in failure ever to acquire a solid foundation in practical clinical skills. At this early stage of the course there is time to practise non-complex but in fact not so simple skills over and over again without great pressure to amass a pile of detailed theoretical knowledge of disease.

Several schools start the clinical course with a nursing attachment, a most appropriate introduction to clinical medicine. For one week each student keeps the hours of a nurse and undertakes the same duties, learning the ward routine and discovering the teamwork essential to good medical care. The nursing week ensures that future generations of doctors will not be deluded into thinking that patients in hospital are kept clean, tidy, fed, and cooperative without a great deal of effort. This introduction should help to stifle at birth any temptation to medical arrogance.

Medical students have much to learn from nurses; even as recently qualified doctors they learn to rely heavily on the judgment and experience of the ward sister. The ward sister in charge of the ward is a key person in every clinical student's life (sometimes *for* life, but that's another matter). Time spent in developing a harmonious working relationship is time well spent.

There is a tendency to react to what may seem to be a slow and pedestrian start to clinical medicine either by indulging, to the detriment of attendance on the wards, in all the sparetime pursuits dropped on the approach to the 2nd MB or by withdrawing into the library. The practical skills of medicine can no more be acquired by reading books than a driving test can be passed by studying the Highway Code. Sometimes students

are discouraged by having to wait around for their teachers: neither teachers nor students should keep the other waiting. It is true that teachers have a normal day's clinical work to fit in around their teaching and that emergencies upset the best laid plans, but the remedy is largely one of good organisation.

The firm

Most clinical teaching is arranged by attachment of a group of students to a clinical "firm" for apprentice type training on the hospital wards. Firms differ considerably in structure according to specialty and hospital but a medical or surgical firm may typically consist of one or two consultant physicians or surgeons, a senior registrar (the preconsultant stage of training) or a registrar (the first stage of specialist training), a senior house officer (who has completed at least two house officer posts after qualification), and one or two preregistration house officers, who are in their first year of supervised practical training immediately after passing the MB degree.

The firm admits patients partly from the outpatient clinics, to which patients are referred by their general practitioners for a second opinion, and partly from among those admitted directly as emergency cases at the request of a general practitioner or through the accident and emergency department from the street. The firms in a specialty divide up the week between them so that one firm is always on duty for emergency intake ("on take") night and day, weekday and weekend. When on take all the firm except the consultant but including one of the students lives in the hospital; the consultant is available by telephone when not in the hospital. Intake duty is an excellent opportunity to learn because students see new patients and are taught hour by hour as acute conditions develop.

Each patient in hospital (inpatient) is allocated to a student. The number of students on each firm should not be so great that each student is responsible for fewer than four patients at any time, which means that the optimum number of students per firm is usually about five; at some medical schools there are too many students for the number of patients. The students learn primarily by "clerking" their own patients—that is, making notes of what the patient has noticed about the illness (the clinical history); by examining the patient fully (to discover the physical signs); and by following the patient's progress day by day, noting any change in the symptoms and signs, the results of investigations, and the treatment given.

If the patient has special investigations the student attends, if the patient has an operation the student assists in the operating theatre, and if the patient has a baby the student delivers it. Assisting in theatre generally means holding the wound open with retractors and cutting stitches. Students take blood from patients for tests, a chore which they sometimes resent but which enables them to develop a skill while contributing to the patient's care.

Far from considering a student to be an invasion of their privacy most patients appreciate the interest and friendship of their "young doctor," except perhaps when he or she is very new and armed with a syringe and needle. Patients are pleased to

have someone at hand who has more time than the doctors and nurses to explain, sympathise, and encourage, and they are diverted by taking an interest in the hopes and prospects of "their" student. Both students and their critics outside hospital often fail to give due credit for the valuable contribution which medical students make to patients' welfare, a contribution which requires time, trouble, and sensitivity. Students may also directly help in the assessment and management of their patients by discovering details about the history of the illness or by being the first to notice new developments. The questions and comments of students also keep the doctors on their toes.

Teaching

Teaching on the firm takes place partly on ward rounds, partly in seminars, and partly in the outpatient clinics. Each consultant probably does two "business" rounds each week, on which the patients under his care are re-examined and discussed with the registrar and house officers. Another round is likely to be devoted entirely to teaching and testing the students on the patients under their care. The registrar or senior registrar teaches formally at least once a week besides minute by minute teaching of the student on emergency intake and is available to answer questions informally day by day about any of a student's allocated patients.

Larger group teaching takes place in clinical meetings (sometimes known by their North American name of grand rounds), radiology meetings (at which the week's x ray films are discussed with the radiologist), and histopathology meetings, when the structure of tissue removed at biopsy or operation is shown by the pathologist and discussed. When patients die a postmortem examination is carried out by a pathologist, if the relatives agree, and both students and doctors are able to confirm and extend the diagnosis made in life.

All in all there is much going on but students need to participate actively if they are to learn as much as they can. Each condition needs to be read up when it is seen and a note kept of the diseases covered so that gaps can be filled in by reading later. During clinical training it simply is not feasible to see patients with all the conditions about which some knowledge is expected, and no reasonable examiner expects a student either to have seen or to know everything.

Reading is made much more interesting if textbooks are supplemented by a regular look at editorial articles in the three major weekly general medical journals, the *British Medical Journal*, the *Lancet*, and the *New England Journal of Medicine*. The editorials are readable, concise discussions of new or controversial aspects of important conditions. Examiners read the same editorials (some write them and would be flattered to be both read and remembered).

The specialties taught

Students normally spend two or three months each on a surgical and a medical firm at the beginning of the clinical course and a similar period towards the end. Clinical medicine is learnt best through taking responsibility. One of the most valuable experiences is to undertake towards the end of clinical training a "shadow" house officer post in medicine and in surgery, each for about four weeks; this is best done on a firm which has no other students at the time, which usually means going to a hospital distant from the main teaching hospital. The shadow understudies the house officer, taking personal responsibility for the day to day care of a few patients (under supervision), and quickly learns practical procedures such as setting up intravenous infusions and bladder catheterisation. A similar but more taxing assignment is to stand in for a house officer as student assistantship at a time of holiday or sickness; students are paid for undertaking these assistantships.

About three months of the clinical course is occupied with

pathology, which includes chemical pathology (the biochemistry of disease), histopathology (the microscopic structure of diseased tissues), haematology (the study of diseases affecting blood and bone marrow), microbiology (including the study of bacteria and viruses), and immunology (the role of antibodies in disease). Without a knowledge of disease processes it is very difficult to understand and to interpret clinical signs and symptoms. The blood, body fluids, and tissue samples taken from patients in the course of diagnosing their illnesses are analysed in pathology laboratories. Pathology in relation to sudden death or death in suspicious circumstances is the basis of forensic medicine, which also embraces the relationship between medicine and the law, an aspect of medical teaching usually included in the pathology teaching.

The other major clinical specialties—obstetrics (the care of pregnant women) and gynaecology (the specialty devoted to diseases confined to women), paediatrics (child health), and psychiatry (the care of patients with mental illness)—are also taught by attachment to firms.

Other specialties occupy a smaller part of the students' time and are taught primarily by attendance at outpatient clinics, teaching rounds, lectures, and demonstrations. General understanding of these "minor" specialties is expected rather than much detailed knowledge: they include neurology (disorders of motor and sensory function of the brain, spinal cord and peripheral nerves); rheumatology and rehabilitation, alias physical medicine (medical disorders of joints, such as arthritis, and rehabilitation of patients with physical disabilities); genitourinary medicine, alias venereology (sexually transmitted diseases); dermatology (skin diseases); geriatrics (the care of the elderly); ophthalmology (eye disease); otolaryngology, more easily remembered as ENT (disorders of ear, nose, and throat); orthopaedics (disorders of bones and joints requiring surgery); urology (conditions of the kidneys, ureters, and bladder amenable to surgical treatment); and anaesthetics. These many specialties can easily turn the curriculum into a disjointed hotchpotch and so far as possible their teaching is integrated into the major medical and surgical teaching firms.

Attachments to an accident and emergency department are popular because they entail contact with a wide variety of conditions. Students see new patients in the front line and feel at last that they are doing something useful by stitching wounds and undertaking other minor procedures.

Some teaching takes place out of hospital, notably in general practice and community medicine. Newer schools such as Southampton, Nottingham, and Leicester tend to put a larger emphasis on teaching outside hospital than the older schools. The purpose is not to train medical students to become general practitioners (although half of the students will eventually go into general practice) but to show in surgeries and in patients' own homes a different range of disease, an approach appropriate to handling patients with minor everyday illnesses, and the different pattern of working conditions outside hospital. Insight, not instruction is the keynote, a counterbalance to the rarified atmosphere of hospital, an awareness essential for all those concerned with the partnership of care between hospital and general practice. Community medicine and community health are specialties concerned with the prevention of disease and with the health of populations; planning of health services out of hospital is one important aspect of its work.

Electives

The curriculum might well seem overcrowded with too little opportunity for individual preference, interest, and experience. This generally is so. One university, Southampton, attempts to overcome this criticism by devoting the major part of the fourth year (the second clinical year) to a project. Opinions differ widely whether the acquisition of clinical skills suffers from such a long period of project work. Most schools offer a shorter elective period (usually two to three months) in which students

may undertake any medically related study at home or abroad. Most students take the opportunity to see medicine in a different setting in another country and often obtain practical experience at the same time. Some take the opportunity to repeat parts of the curriculum or to obtain further experience of particular specialties which interest them but play only a minor part in the undergraduate course, such as radiology or mental handicap.

Assessments

Schools adopt different systems of assessing students' clinical progress. Most still put the major emphasis on a final MB examination divided into two sections: pathology, taken 6-12 months before the end of the clinical course, and medicine, surgery, obstetrics and gynaecology, and clinical pharmacology and therapeutics, taken together at the end. The important conditions covered in the "minor" specialty attachments are included in the major subjects.

The final MB examination in pathology comprises multiple choice questions, essay questions, and practical examinations. The examinations in medicine, surgery, and obstetrics and gynaecology also include multiple choice and essay papers but put great emphasis on clinical examinations at the bedside, which test practical skill in talking to patients, examining them, and making a diagnosis. Oral examinations are also held. However brilliant their theoretical knowledge, students generally cannot pass the final MB if they fail a clinical examination.

Students are also assessed generally on their performance in each part of the course, sometimes by a practical or written examination. These assessments are used to certify satisfactory completion of the course and do not contribute to the mark in the final MB at most schools. Nevertheless, all parts of the course must be satisfactorily completed before students are allowed to enter the final MB examination. Some schools, such as Birmingham, spread assessment formally over the whole course so that a major final examination has become a relic of the past, at least for all except the weakest students.

Personal Paper

Subarachnoid haemorrhage

MAY DUDDLE

I never do things by halves: 20 years ago it was a malignant melanoma; seven years ago it was pancreatitis after mumps (most undignified at my age, and painful); and five years ago it was a subarachnoid haemorrhage.

It began in a classic way: I was bending down cutting the grass edges in my father's garden in Cornwall one Saturday morning, when suddenly something happened in my head. I straightened up thinking I was dizzy with bending down, but it did not clear and, most frightening of all, my right arm and leg jerked slowly without volition. That still makes no sense—it should have been the left side—but it made a worse nightmare of the following hours because of my conviction that the left side of the brain must have been affected and I would have speech problems—particularly difficult for a psychiatrist. I began to be aware of a dull ache in the region of my right temple and, worse, an ache at the back of my neck, and I could no longer touch my chin on my chest—neck rigidity—an odd sensation.

I went into the house and the telephone rang. It was a friend crying off from the sail we had arranged for the afternoon because there was no wind. I did not try to stop him, realising I would be unable to sail—ever again?

My husband came in from the garden and I said, "I'm sorry, I'm afraid something has happened." (Why do women always have to apologise?) By this time I think I knew what it was, and he, a neuropathologist with a special interest in cerebral vascular disease, soon guessed too. I went to lie down and we debated what to do. It was Saturday and near Easter; we were 350 miles from home. Our first impulse was to get in the car and

flee back to those whom we knew could help. That seemed ill advised, so my husband rang all the colleagues he could get hold of (not too many because of the holiday) for advice and support. Finally, we decided to make for Plymouth, the nearest neuro-surgical centre. I went first, however, to a nearby hospital for a lumbar puncture to clinch the diagnosis. I think I first really accepted the diagnosis when the registrar held up the pink lumbar puncture fluid for me to see. Until then I did not believe it could really be happening to me.

Worst of all was the journey by bumpy ambulance 50 odd miles through a gale and a snow storm, with an ambulance attendant who had a streaming cold. I kept thinking that the bleeding was going to start again and that I would get pneumonia after my operation by catching the cold. After the lumbar puncture the pain in temple and neck was worse, and it was only because I asked for some Distalgesc tablets before the journey that it was at all bearable.

Diagnosis

Then I had carotid angiography, mercifully under general anaesthetic, and the diagnosis was aneurysm at the junction of the right posterior communicating and internal carotid arteries. I remember the surgeon telling me this. I was lucky to have a young American neurosurgeon who respected my need to know what was happening. He explained the pros and cons of an early operation, and they decided to operate next day (day 5), much to my relief. Waiting for rebleeding while they delayed operation to minimise the risk of vascular spasm would have been purgatory.

The next few days are hazy. I remember going for a brain scan to check whether things were satisfactory but thought this happened before the operation, not after. I remember calling a nurse when I had a severe chest pain but have no recollection

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