

students, the simulated "patient", and observers come together to discuss their findings¹⁴.

How are these educational programmes assessed?

One study questioned postgraduate students attending a course in resuscitation skills and found that the proportion of students who identified themselves as being "uncomfortable" with specific resuscitation skills (attaching a defibrillator, delivering shocks, leading an cardiac arrest team) fell significantly after completion of the course¹⁵. Obtaining student opinion however is a limited, and potentially biased, method of assessing an intervention; student opinion alone is not sufficient. However in conjunction with other methods of assessment it is important to know that any new educational intervention is acceptable to students. Also, it is important to obtain and to reflect on the feedback of patients or simulated patients involved. The ultimate result is that of improvement of patient safety: a study assessing the impact of introduction of the Advanced Life Support in Obstetrics (ALSO) course in Tanzania found a reduction in the rate of postpartum haemorrhage (PPH) from 32 to 18% and halving of the rate of severe PPH from 9 to 4.3%.

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How to Teach Practical Skills in Medicine: Bridging the Gap from the Course to the Patient, and Teaching on the Job

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One of the disadvantages of clinical skills laboratories is the lack of "real life" scenarios which might bridge the gap between the simulated laboratory and clinical settings. While technical skills are important in learning a practical procedure, effective communication with a patient is essential in order to competently complete the procedure. Taking "blood" from an orange is one thing; drawing blood from an 80 year old woman with dementia at 3am is another experience entirely. Various techniques have been developed which bridge the gap between the clinical skills laboratory and clinical settings, usually using simulated patients (SPs) or a simulated environment.

Simulated patients

Simulated Patients (SPs) are defined as "actors trained to provide a consistent performance of a clinical role and to offer structured, learner-centred feedback"¹. SPs can be used in a variety of settings. Firstly, SPs may be used in skills labs, and there are now many examples of these. One purpose-built suite in St Mary's Hospital, London is described in published literature. Here ceiling mounted video recorders and playback equipment explored how both teachers and learners responded to the use of stimulated patients in the teaching of practical procedures such as suturing

or catheterisation. In one example, simulation of wound closure used a pad of simulated skin attached to the "patients" arm and covered with a drape in order to simulate a real wound²⁻³.

Simulated environment

Alternatively, skills labs may be developed to simulate a clinical environment: simulating a domestic environment to mimic a home visit by a general practitioner, a simulated accident and emergency to run resuscitation procedures (with the addition of appropriate equipment and tape recordings to further add reality) or a theatre "scrub area" to teach students how to scrub, gown and glove⁴. The disadvantage of using simulated patients or environments is that, although students perceive the procedure to be more realistic, they are still aware that the "procedures" are carried out in a non-clinical environment.

In response, one group developed a quasi clinical scenario using a portable recording device to record students performing procedures on SPs in the Minor Procedures Room in the Accident and Emergency Department of a hospital¹. The recording device was linked to two miniature cameras mounted on a drip stand, providing different views of the procedure. Student assessment

was positive ("you always know it is simulation, but much better than just models" "it's an intermediate step, bridging the gap between clinical skills lab and seeing a patient") and feasible (preparation time 20 minutes, time to remove equipment 10 minutes, though in case of clinical need equipment could be relocated in one minute¹).

Further simulation

An alternative method to bridge the gap between the clinical skills lab and real life is to use actors more directly as the patients themselves. Pelvic examination is traditionally taught on pelvic models or, with consent, on patients in clinics or under anaesthesia. Teaching associates, in contrast, are "women trained to teach pelvic examination while themselves being examined" usually "working in pairs with one acting as patient and the other as instructor"⁵. Teaching associates have been used in the US, Canada and Australia, are acceptable to medical students, and are an effective method of teaching. A UK study showed that students using this method to teach speculum and bimanual pelvic examination scored higher in objective assessment than those taught traditionally, both on communication and technical skills⁵.

While some might question the ethics of recruiting and supporting (or paying) teaching associates, another variation of this theme has emerged with the concept of the "expert patient". The National Health Service (NHS) in the UK has encouraged the development of the expert patient scheme in the management of chronic illnesses. Here patients, with the diagnosis of a chronic illness such as diabetes or arthritis, can run courses in management of the chronic disease following training as lay leaders. The hypothesis is that the lived experience of the disease is as valuable, if not more so, than the knowledge of a medical professional in some aspects of the disease. (ref). In medical education the expert patient has been evaluated in the education of students of physiotherapy. One theme that emerged was that the students were anxious about their role in this session and what to take from a relatively unconventional educational session. Education on the lived experience of a disease would provide valuable exposure to the realities of the disease that may not be appreciated from routine learning opportunities.

Teaching of practical skills within clinical practice

Sir William Osler taught to "have no teaching without a patient for a text, and the best teaching is that taught by the patient himself." This holds true even into the 21st century. At a certain point all students will have to leave the safety of the teaching laboratories (simulated or not) and venture into the wider world of clinical medicine. The learning environment is one of the most important features to facilitate learning and dictates how teaching is perceived within the clinical area.

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| 1. Demonstration: | instructor demonstrates the skill at normal speed. |
| 2. Deconstruction: | Instructor demonstrates the skill by breaking it down into simple steps. |
| 3. Formulation: | Instructor demonstrates the skill while being "talked through" the steps by the student. |
| 4. Performance: | Student performs the skill and describes the steps. |

Figure 1 Peynons four steps to teaching a practical skill

A culture of training

It is important when teaching practical skills in clinical medicine that a "training culture" exists which can support both trainers and trainees in their aims. Clinical work has many barriers to teaching⁸. The development of a training culture creates an educational environment, which can motivate both the trainer and trainee and

maximise their educational opportunities⁹. One example is that of the cardiovascular unit in Papsworth hospital in the UK, where the working paradigm is "whenever there are opportunities to train, you train"⁷. Practically, this means that on the job training occurs actively on every level from junior to senior trainee, and safe, graduated practice leads trainees through progressive steps of learning. These learning steps are based on the theory that the "best performance is achieved by the combination of an objective a little further away than one thinks one can achieve combined with a relentless expectation from above that one will achieve it". This is a variation of Peynons theory of how to teach practical skills (Figure 1).

Multi-disciplinary team learning in a clinical setting

Since 1996 the Faculty of Health Science in Linköping (Sweden) has run a training ward in an eight bedded Orthopaedic surgical unit which is permanently staffed by one doctor and one nurse. A multidisciplinary team of students (1-2 medical, 2-3 nursing, 1 physiotherapy, 1 occupational therapy and either 1 community care or 1 medical laboratory technology student) is assigned to the ward every 2 weeks, and this team works in shifts throughout the day and night. The aims of this mandatory assignment are to simulate and develop multidisciplinary co-operation, team work and knowledge of different professional competencies and skills. Questionnaire-based feedback from students confirms that students believe that they improve their understanding of the skills of other health care professions¹⁰.

Medical education is changing. Much has been written on the assessment of practical skills or competencies but less is known about how to teach these skills. The aim of this review was to provide up to date information for educators to provide them with the knowledge of best practice in teaching practical medical skills both to undergraduate and postgraduate students.

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