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AMEE GUIDE

The use of simulated patients in medical education: AMEE Guide No 42[1]

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Abstract

Medical training has traditionally depended on patient contact. However, changes in healthcare delivery coupled with concerns about lack of objectivity or standardization of clinical examinations lead to the introduction of the 'simulated patient' (SP). SPs are now used widely for teaching and assessment purposes. SPs are usually, but not necessarily, lay people who are trained to portray a patient with a specific condition in a realistic way, sometimes in a standardized way (where they give a consistent presentation which does not vary from student to student). SPs can be used for teaching and assessment of consultation and clinical/physical examination skills, in simulated teaching environments or *in situ*. All SPs play roles but SPs have also been used successfully to give feedback and evaluate student performance. Clearly, given this potential level of involvement in medical training, it is critical to recruit, train and use SPs appropriately. We have provided a detailed overview on how to do so, for both teaching and assessment purposes. The contents include: how to monitor and assess SP performance, both in terms of validity and reliability, and in terms of the impact on the SP; and an overview of the methods, staff costs and routine expenses required for recruiting, administrating and training an SP bank, and finally, we provide some intercultural comparisons, a 'snapshot' of the use of SPs in medical education across Europe and Asia, and briefly discuss some of the areas of SP use which require further research.

Introduction

Medical training has traditionally depended on patient contact.

> For the junior student in medicine and surgery it is a safe rule to have no teaching without a patient for a text, and the best teaching is that taught by the patient himself.
>
> William Osler 1905 (Osler 1905)

The importance of what can be learned from patients has been written about in relation to both learning and practising medicine. Interesting patients are often presented as case studies and anecdotes. Patient contact is seen as essential to learning medicine by teachers, enjoyed by medical students and, in the few studies which have been carried out with patients, enjoyed by them also (Hoppe 1995; Collins & Harden 1998). Policy documents on medical education from bodies such as the United Kingdom's General Medical Council and the Association of American Medical Schools recommend that medical schools ensure (early) patient contact.

The introduction of early clinical practice in the undergraduate medical curriculum has lead to a need for more patient participation in teaching and learning. However, at the same time, the availability of patients for teaching and learning medicine has been influenced by changes in healthcare delivery. A reduction of inpatient beds and a shift to care in the community and reduced average hospital admission period for patients has had a major impact on the availability of patients to take part in the training of healthcare professionals. Care has shifted from acute settings to chronic disease management delivered from community settings. In addition, increased consumerism has seen a growing reluctance from patients to contribute to the training of professionals (Barrows 1993b; Ker et al. 2005). Furthermore,

Practice points

- Simulated patients (SPs) are a valuable resource for teaching and assessing communication and clinical/physical examination skills in medicine.
- All SPs play roles, they simulate 'real' patients. SPs can also be used to give feedback to students and evaluate performance.
- To use SPs effectively, resources and staff time must be dedicated to recruiting, training and managing an SP 'bank'.
- Not everyone can be an SP: critical to the job of running an SP programme is recruitment, selection and retention of able, suitable and credible SPs.
- Much research has looked at the reliability and validity of SP performance: however, there is a clear need to carry out robust, well-designed studies in order to maximise the effectiveness of SPs.

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increased emphasis on protecting patients from unnecessary harm (Ziv et al. 2003; Gaba 2004) places limits on the nature of patient contact, particularly for relatively inexperienced learners.

Inherent in teaching and learning medicine is assessing a student's clinical competence. This involves the measurement of a wide range of inter-related skills including clinical communication and examination. The bedside clinical examination was the traditional method for assessing a student's skills and knowledge. However, wide variations in the level of difficulty presented by different patients, compounded by variation in the objectively of examiners, lead to problems with reliability in clinical exams (see Collins and Harden (Collins & Harden 1998) for discussion). The reliability, or lack of reliability, of this method of assessment of skills and knowledge is beautifully illustrated in the film 'Doctor in the House' from 1954 (Rank).

Medical student Simon Sparrow, played by a young Dirk Bogarde, is confronted by a patient he knows well in his final clinical exam. The helpful patient proceeds to tell Simon Sparrow his diagnosis in order to help him when questioned later by the examiners. The examiners proceed to discuss Simon's moral character before deciding whether or not he is competent to be passed as fit to practise as a doctor.

As a consequence of these changes in healthcare delivery and attitudes, concerns about reliability and validity in assessment, and ethical issues, alternative approaches to using 'real' patients in teaching, learning and assessing medicine were sought in the 1960s when the concept of simulated patients (SPs) was introduced by Barrows and Abrahamson to support clinical skills learning (Barrows & Abrahamson 1964). SP use was subsequently developed for assessment purposes (Barrows 1968; Stillman et al. 1976; Stillman et al. 1986; Barrows et al. 1987; Harden 1990). Many medical schools (see later for International Comparisons) now have a 'SP bank' of individuals who have been trained in a number of teaching and assessment roles.

> The Simulated/Standardized Patient (SP) is a person who has been carefully coached to simulate an actual patient so accurately that the simulation cannot be detected by a skilled clinician. In performing the simulation, the SP presents the gestalt of the patient being simulated; not just the history, but the body language, the physical findings, and the emotional and personality characteristics as well.
>
> (Barrows 1987)

Simulated patients are now used not only in medicine but across the range of healthcare professional education and training including nursing, dentistry, physiotherapy (Lane & Rollnick 2007), dietetics (Beshgetoor & Wade 2007) and pharmacy (Watson et al. 2006).

Advantages of using SPs

While the introduction of SPs occurred for the reasons outlined above, it is worth stating early on that SPs have many more advantages than just assessment reliability compared to real patients. They are available as and when required. They can be trained in a broad range of clinical cases, thus giving students a variety of experiences that they may not encounter in real patients. They are willing and ready to undergo scenarios many times. Their behaviour is predictable. They can be used in situations where the use of a real patient would be inappropriate (e.g., practising giving a terminal diagnosis). They can be trained to match their role to the student's level of experience and thus provide a safe, learner-centred environment (Ker et al. 2005). They can play the same role again and again while the student practises and learns specific skills. Unlike real patients, they can be trained to give specific behavioural feedback (Kurtz et al. 1998) to students. Their use in teaching has been found to be more effective than didactic teaching for learning consultation skills (Madan et al. 1998). The use of SPs is also accepted and liked by medical practitioners (Bowman et al. 1992) and students (Rees 2004), who prefer working with SPs compared to role-playing with colleagues (Rollnick et al. 2002; Lane & Rollnick 2007).

Disadvantages of using SPs

Later in this guide we will discuss the details of training and managing SPs in more detail but it is worth noting at this point that perhaps the main disadvantage of using SPs is the cost: it involves dedicated staff and financial resources. The other main disadvantage of using SPs is that they are not 'real': however, it is worth reassuring less enthusiastic colleagues that studies indicate that much research shows that well-trained SPs are not usually distinguishable from real patients. For example, Beullens et al. (1997) discuss rates of detection in divergent studies and found SPs were detected by only 0–18% of the physicians. Non-detection is increased where there is a lengthy period between doctors' consent to participate in studies using SPs, and the actual visit, and use of authentic supporting paperwork (e.g., health insurance cards) (Rethans et al. 2007a).

In this guide, we will discuss how SPs can be used in teaching and assessment. Practical tips on how best to use SPs in medical education will be provided as well as an overview of relevant issues to consider when setting up and maintaining a bank of SPs.

Terminology

'Simulated' and 'standardized' patients

A broad definition of a SP is a lay person who has been trained to portray a patient with a specific condition in a realistic way (Wind et al. 2004). A SP, if appropriately trained, should not be distinguishable from a real patient by experienced clinicians (Norman et al. 1982). Indeed, Norman et al. made a direct comparison of resident performance with real and SPs presenting with the same problem. No significant differences emerged in the performance of residents with the real or SPs.

Collins and Harden (Collins & Harden 1998) provide a useful description of different types of SPs:

- Those who are only given an outline of what is expected of them such as in a situation like a physical examination

Box 1. Example of a simple, SP role where the patients use their own background to complement the ''simulated'' medical information.

You are here to see the doctor because of the following problem:
- The skin on your hands is red, itchy, dry and sore, particularly over the joint areas where the skin is now cracking.
- You have had this intermittently for several years, but it previously responded to creams you were given.
- You have had this flare up for a couple of months and it has not responded to E45 or a cream you borrowed from a friend – betnovate.
- You have no other symptoms or skin problems elsewhere.

Background

You are (use own age).

You are a barber/hairdresser. This obviously involves using chemicals like hair dye and perm lotion.

House and family – use your own

Health and other medications – use your own

You are not particularly stressed about anything; you have plenty of friends and are content with life.

You do not smoke or take drugs but have a few drinks socially at the weekends.

If asked:
- You did have mild problems with 'eczema' as a child – not aware of any contact allergy problem.
- You do wash your hands often at work but have always done this and at home too. You don't wear rubber gloves.

Concerns
- You are embarrassed as you feel your hands look 'unclean'.

or procedure where the interaction between the student and patient is minimal.
- Those who are given a short brief or scenario with which they must become familiar but beyond which they are free to respond as they wish. This may mean that roles are adjusted to the patient's own background or personal experience. For example, an SP with this type of role may learn to present a particular set of symptoms and drug history but their occupational and social/family circumstances may be their own. Box 1 gives an example of this type of role.
- Finally, there is the person who is extensively trained and whose every response is carefully thought through and rehearsed.

It can be seen that, within this broad description, there is a continuum of training and preparation. This continuum has, we believe, contributed to the range of terminology used to refer to SPs: including 'simulated', 'standardized' patients.

The terms simulated and standardized patient are sometimes used interchangeably but this is misleading. To differentiate between the two it is useful to think of the SP as one where the emphasis really is on *simulation* (presenting the symptoms and signs of an actual patient), whereas, with a standardized patient, the emphasis is on consistency, on standardization of the simulation process (Norman et al. 1982). Thus, standardized patients are trained to give a consistent presentation which does not vary from student to student and does not vary from standardized patient to standardized patient; where as SPs (presenting the same case) may well show variation. To quote Adamo a standardized patient encounter is an SP encounter but an SP encounter is not necessarily standardized (Adamo 2003).

In fact, a better description for a 'standardized patient' might be a 'standardized SP'. 'Standardized patients' would fall into the third category presented by Collins and Harden above. Standardized patients are used mostly for examinations and for healthcare research where there is a need for a high degree of reproducibility (see later for further discussion of SPs in assessment).

However, one of us (KA) carried out an international survey of SP use. She found that Asian and European educators tend to refer to all SPs as 'simulated' whereas in the US, the opposite is true, simulated and standardized patients are categorised together as 'standardized' patients.

As discussed by Collins and Harden in their early AMEE guide to real patients, SPs and simulators in clinical examinations, the term standardized patient could, in itself, be confusing as it does not indicate whether the patient is real or simulated: people may portray their own problem(s) or ones based on those of other patients (Researchers in Clinical Skills Assessment 1993). However, our experience is that the term standardized patient now tends to be used to describe people without actual disease, who are trained to portray a case in a consistent manner. People with actual disease, who portray their own case are usually referred to as real patients.

Laypeople or professionals?

Simulated patients may be laypeople or volunteer patients, thus differentiating them from professional actors. However, the term volunteer patient can also be confusing as some (volunteer) SPs are paid while others are not (Adamo 2003). Unpaid volunteers incur only reimbursable expenses while actors, who require remuneration, can incur substantial costs (Ker et al. 2005). If paid, non-professional or laypeople, SPs are traditionally paid significantly less than professional actors engaged to play roles. Payment can be a motivating factor for SPs, but low payment gives the message that there is a low value on their contribution to teaching and/or assessment.

Medical schools differ widely in whom they use as SPs. In the UK, some medical schools (e.g., Glasgow, Cambridge) use only professional actors. Others, such as Aberdeen, use a combination of volunteers and professional actors; yet others use only volunteer patients. Similarly, medical schools differ in terms of whether or not they pay non-professional volunteer SPs more than expenses. Some medical schools have different tiers of SPs with more skilled SPs paid more. In Aberdeen, volunteer SPs are used for teaching purposes other than in more complex specialist (e.g., psychiatric) simulations when professional (paid) actors are used (Eagles et al. 2007). Actors are used for some assessment purposes (where complex communication skills such as breaking bad news are being assessed) and where feedback to the student is required, volunteer (unpaid) patients for others such as history taking (see later for a fuller discussion of SPs in assessment). In contrast, in Maastricht lay SPs are used for all teaching and assessment purposes.

While there is much evidence that SPs cannot be reliability discriminated from real patients (Rethans et al. 2007a), there is no published evidence as to the superiority of any one type of SP over another. To the best of our knowledge, there have been no methodologically-robust comparisons

of the use of professional actors versus lay people as SPs. Rather it seems that historical and financial reasons, and local preference, dictate what type of SP is used. Financial resources are probably the greatest influence on whether or not professional actors are used as SPs.

Other terminology

'Patient instructor (PI)' is another term used in the literature, originally introduced by Stillman et al. (1976). Our reading of the literature suggests that this tends to refer to a broader package of training which involves an SP playing a role but also instructing the student on how to manage the consultation or situation more effectively (instruction), then perhaps re-playing the role for further rehearsal (Benbasset & Baumal 2002; William et al. 2006). While this may be construed as an SP who has been trained in giving feedback (see later), in at least one study the 'PI' was not a trained SP but a doctor or a teacher (Benbasset & Baumal 2002) who assumed the role of the patient while the student assumed the role of the doctor. Further explanation of integrating feedback and education from SPs can be found later in this guide ('Using SPs to give feedback and evaluate student performance'). Other specialist terms, used to describe highly specialised patient-instructors, include Gynaecological Teaching Associate (GTA), Gynaecological Educational Professional Patient (GEPP*)* and Genital Urinary Tract patient (Kretzschmar 1978; Beckmann & Meyers 1988; Coleman et al. 2002)

In this guide, we use the general term 'simulated patient' or SP to indicate an individual who is trained to play a role. We use the term 'standardized patient' to indicate an SP who has been trained to give a highly-specified and consistent performance.

Who can be an SP?

The key factors when deciding who can be an SP are ability, suitability and credibility.

Ability

Realistically and consistently presenting a role in the same way has been said to require both above-average intelligence and emotional maturity (Bowman et al. 1992). It is important to ensure that your SPs are able to remember their roles, maintain focus or concentration on delivering their roles over the time period required and realize the importance of sticking to the script/guidance provided. At the very least, SPs must be able to both portray a role and work as a member of the SP team.

Simulated Patients need to remember the medical facts and emotional facts to portray a patient. This is relatively easy for an SP who is free to adjust the role to their real life situation, like family status and previous medical records, rather than present a specific story. Being a standardized patient, who must respond in a certain way and give a performance that is standardized with other SPs, is more demanding in terms of sheer number of facts and instructions to remember.

Box 2. Some psychiatric teaching use of SPs (from Eagles et al. 2007).

- Introduction to psychotherapy with emotionally difficult patients (Trudel 1996)
- Consulting with patients seeking benzodiazepines or opiates (Taverner et al. 2000)
- SPs with schizophrenia for whole class teaching of mental state examination (Birndorf & Kaye 2002)
- Introduction of junior medical students to delirium to aid integration of psychiatric, physical and psychosocial concepts (Chur-Hansen & Koopowitz 2002)
- International videoconferencing to illustrate transcultural psychiatry (Ekblad et al. 2004)

Where the SP is involved in giving feedback to the learner, they must also have the ability to observe and memorize the learner's verbal and non-verbal behaviours. Thus, SPs must have the ability to manage the dual task of performing the role on the one hand, and remembering the students' performance at the same time. They must then be able to give appropriate feedback to the learner. In examination situations where SPs contribute to the assessment of a learner's performance, they need to know the criteria for judging performance. This extended role requires additional training (see 'Using SPs to give feedback and evaluate student performance') and this may not be suitable for all SPs.

Furthermore, some roles are more emotionally complex and demanding than others. Eagles et al. (2001) present a useful overview of the uses of SPs in psychiatry teaching (Box 2) and suggest the use of professional actors in psychiatric teaching where roles are emotionally demanding.

However, there is no robust evidence to support the need for actors to over lay SPs in any role, and evidence suggests that patients who follow a detailed script (and who do not bring their own experiences and characteristics to a role) suffer few negative emotional effects (Naftulin & Andrew 1975a; McNaughton et al. 1999). It is likely however that you will find that only selected SPs are comfortable with, and capable of, role playing emotionally-demanding roles.

Suitability

Attitude. Just as important is attitude: you do not want to recruit an SP who has a negative attitude, or a personal crusade towards the medical profession, or to the healthcare profession which they will be helping to train. It is also important to determine why the individual wishes to be an SP. To enroll an SP who has a negative attitude towards the medical profession into a bank of medical school SPs is likely to lead to difficult situations which could be damaging to students.

Thus, it is essential that you screen for suitability. Your priority is to protect the students' safety while trying to maximize their educational experience (Ker et al. 2005) and develop their confidence. Protocols which ask about criminal records give some protection. Recent Scottish Government legislation (Protection of Vulnerable Groups (Scotland) Act 2007) means all people who have contact with children or students under the age of 18 years must go through Disclosure Scotland (http://www.disclosurescotland.co.uk/), a service

designed to enhance public safety by providing potential employers and organizations within the voluntary sector with criminal history information on individuals applying for posts. First year medical students may be less than 18 years of age so all our SPs must go through this process before they are accepted. Each country has different legislation so it is worth checking in your own country if this type of process exists. If not, as in the Netherlands, you must depend on your own assessment of suitability when recruiting SPs.

Conscientiousness

Conscientiousness is a necessary trait for SPs: someone who commits to a teaching session or a clinical exam but then fails to attend without notice is worse than useless to you. However, no matter how conscientious your SPs may be, for your own peace of mind, we recommend arranging 'reserve' SPs, particularly for assessments. This means unexpected SP illness or delay due to traffic is not a disaster. Being unprepared for the unexpected may result in an untrained member of staff having to play the role of the patient, which has obvious implications for credibility and reliability (see later), as well as being potentially anxiety-provoking for students.

To underpin conscientiousness, it is important that you explicitly outline the responsibilities of being an SP at the time of recruitment. This may be something along the lines of 'being available for xx-xx sessions over an academic term'; 'to attend all training events, etc.

Credibility

Age. Simulated patients can be any age but it is important that the SP looks as much as possible as the actual patient to be simulated. Wallace (Wallace 2007) suggests that it is important to use SPs who are within two years of age of the required role. This is an ideal: in reality you are likely to match SPs to roles in terms of broad age range (e.g., if the role calls for an 18-year-old patient, a youthful-looking 23-year-old SP will be credible).

Brown et al. (2005), Lane et al. (1999), and Woodward (1995a) have all used children as SPs. Brown et al. (2005) found that children as young as nine years could play psychiatric roles. Lane et al. (1999) reported that children as young as seven years of age, trained to present a clinical case, were good role-players. All these studies report positive experiences of working with young SPs. One method of using children as SPs is to recruit a parent and child pair who play themselves but the parent reports simulated symptoms in the child. We used this approach in Aberdeen and found it worked well, particularly with very young children.

In the last ten years, adolescents have made their debut in this role. Trained SP adolescents have been used to allow medical students to practise communication about topics such as risk-taking activities and confidentiality (Blake & Greaven 1999; Blake et al. 2000; Blake et al. 2006a). Adolescent SPs have contributed to the training and assessment not only of medical students but also of junior and senior doctors (Lane et al. 1999; Hardoff & Schonmann 2001).

Whilst it is critical to strive for authenticity and credibility, our experience is that it is much easier to recruit older SPs and SPs who are students than it is to recruit people aged between 20 and 40 years.

Often older SPs are people who have retired from work and thus have time to volunteer for tasks which interest them, such as helping train medical students. Young SPs are usually (non-medical) students, who can be recruited through university or college societies. Our view is that students must be paid for being SPs as this formalizes the arrangement, which encourages conscientiousness. Also, most students welcome an opportunity to earn money! However, one major disadvantage of using students is that they leave after a few years so new students need to be recruited and trained on a rolling programme and of course they are only available when they do not have classes. We have all faced difficulties recruiting men and women aged 20–50 years to our SP programmes, probably because people in this age group are usually in employment or busy with domestic roles.

Difficulties recruiting SPs who span the age range must be taken into account when preparing scenarios.

Ethnicity

As with age, it is important to ensure credibility in terms of ethnicity. If the role depends on the patient being from a particular ethnic background, it is important to recruit SPs from that background.

Recruiting, screening and retaining SPs

There are various ways to recruit SPs. If you are starting small, to perhaps pilot an SP programme, asking colleagues and local community contacts can suffice as a method of recruiting SPs. Our own experience is that once an SP bank is established, volunteers can be recruited through word of mouth, via established SPs.

You can recruit from the general public by placing advertising posters or leaving brochures at strategic places such as hospital and general practice waiting rooms, or community sites such as churches, student organization buildings or resource centres. Adverts in local papers or university bulletin can be useful. At Aberdeen, the local paper has published articles about our SP programme: this lead to people contacting us to find out more about what is required.

Take any opportunity to 'sell' your SP programme: if you are speaking in a public setting, or to a school or patient group. Offer to discuss it further with interested parties after your talk.

If you have any connections with GPs or primary care physicians, they may help you to recruit SPs by approaching patients who they think may be suitable, and who themselves may benefit (e.g., in terms of increased social contact, a useful role in society), from becoming an SP.

Each of these methods of recruitment has advantages and disadvantages. You may decide which approach to use depending on the number of patients you wish to recruit. If only a few SPs are required, word of mouth and your local contacts may suffice. If you wish to recruit many SPs,

Box 3. Steps towards engaging an SP.

Step 1: Screening interview, including questions such as 'why are you interested in becoming an SP?', 'Do you, or a member of your family, have any negative experiences of dealing with illness?'
Step 2: Give the candidate information about being an SP including an opportunity to observe an SP training session and a role-playing session.
Step 3: Reach a mutual agreement to work towards the educational aims of your programme.
Step 4: Have an agreed trial period so you can assess the candidate's suitability and, in turn, they can assess if they enjoy being an SP. Building a trial period into recruitment may also help you disengage the services of an individual SP if issues occur during initial training.

advertisements may be worthwhile if your budget allows. No matter what method(s) of recruitment you decide to use, we stress the importance of screening applicants before accepting them into the SP programme (see later).

The difference between paid and volunteer patients mentioned earlier extends to recruitment. Volunteer patients are usually recruited informally through advertisements in the local paper, poster advertisements in general practice and hospital clinic waiting rooms, medical school open events, approaches to local amateur actor groups or student societies and word of mouth. Actors are more likely to be approached formally via their professional body (e.g., Equity in the UK) or their own advertisements in local service directories.

Screening potential SPs is necessary, and needs to be effected sympathetically (Ker et al. 2005). We advocate meeting potential SPs face-to-face before indicating to them whether they can, or cannot, join the SP bank. You need to determine why someone wishes to become an SP (see 'Who can become an SP'). A screening protocol (a series of questions which you ask all potential SPs) may be helpful as a means of exploring the suitability of an applicant. We suggest that there are four steps towards engaging someone as an SP (Box 3).

Once you have engaged your SPs, there are important considerations in retaining them, and using them effectively. One requirement is to use them repeatedly throughout the year, not just intermittently. This maintains SP interest, skills and motivation. However, it is also necessary to liaise with your SPs to ensure their other commitments (e.g., holiday plans) are taken into account when assigning roles which have to be delivered at defined times during the academic year.

You may wish to motivate your SPs by paying them. This can be useful and may help you attract SPs who are of working age, a group who are hard to recruit to volunteer programmes. However, McNaughton et al. (1999) assert that low pay indicates a low level of appreciation for SP work. We suggest that you should either pay your SPs appropriately (i.e., in accordance with market value, and/or salary for other people who work as teaching assistants) or run a volunteer programme, where motivation is based solely on their wish to contribute to the education of doctors, and this is maintained by learning new skills, meeting new people, having enjoyment and feeling valued (see below). Which approach you decide to take is likely to be due solely to Faculty resource.

Our experience is people who volunteer to be an SP enjoy the social aspect of being an SP as well as the altruistic aspect of helping to train potential doctors. They enjoy discussing their different roles, exchanging experiences of different classes or different OSCE stations, chatting with teachers and examiners during coffee breaks. This social interaction should be encouraged as a way of maintaining interest and commitment.

Recognition of their efforts is critical: an annual reception or dinner, attended by key members of the medical faculty, is one way of acknowledging the contribution of SPs to medical training. Certificates of recognition based on expertise or attendance (Ker et al. 2005) may be another method of recognition. Any method of thanks such as Christmas cards, or 'thank-you' notes, is well worth the effort. Feedback from educators and students as to the added value of SPs to teaching and learning should be shared with the SPs. If you have data on how student performance has improved as a result of working with SPs, then do share this with your SPs.

Types of SP performance

Simulated patients can be used for teaching and assessment purposes. These will be discussed separately.

Teaching

Simulated patients can be used to train students in the following skills (Kinnersley & Pill 1993; Kurtz et al. 1998):

Consultation skills.

- Initiating the session
- Gathering information/history taking
- Giving information (including explaining a diagnosis, giving test results and planning treatment)
- Closing the consultation
- Communication skills in general (e.g., English proficiency of foreign medical graduates; (Friedman et al. 1991).

SPs can be used to train students in relatively simple consultation skills as well as more complex consultation skills, such as discussing medical error (Halbach & Sullivan 2005), sexual history-taking and HIV counselling (Haist et al. 2004), or addressing domestic violence (Haist et al. 2003).

The aim of using SPs is to simulate the range of skills and topics involved in real consultations. Students interact with SPs as though they were taking a history, carrying out an examination or giving information to a real patient.

The examples above clearly illustrate that many different scenarios or roles are needed if SPs are used throughout the medical curriculum. These will range from straightforward history taking scenarios for preliminary consultation skills training with relatively inexperienced students to, for example, complex breaking bad news and psychiatric scenarios for students and doctors further on in their training.

An SP role may cover part of the consultation (e.g., giving a history) to all components of a full consultation including physical examination (see below), and asking questions about treatment and management plans.

The approaches to roles for which an SP may be trained also range widely from, for example, being reasonably passive (being examined by a learner with little interaction on the part of the SP); giving a relatively straight-forward, well-defined history; acting the role of a vague historian where the student has to work quite hard to elicit necessary information; to asking challenging questions and demonstrating complex emotional reactions such as crying or anger. SPs can be trained to portray patients who would probably decline to see students in real life but who are common, such as patients with alcohol problems (Eagles et al. 2001).

Physical examination and procedural skills. In terms of physical examination, where the purpose of teaching (or assessment – see below) is to assess the technique of physical examination or procedural skills, an SPs with normal signs can be used for teaching and learning. If the purpose is to measure a student's ability to identify important physical signs then real patients with these signs will usually be required. However, real patients are not always necessary:

Barrows stated 'The only limitation for topics/cases to be simulated by SPs is in one's mind' and described more than 50 physical findings that can be simulated (Barrows 1999). His list included all pain symptoms and pain syndromes. Barrows showed that even neurological signs as, for example, loss of tendon reflexes, can be simulated by training the SP to exaggerate the reflexes on their 'healthy' side. Barrows also describes many symptoms that at first glance look impossible to simulate but with careful practice can be, such as pneumothorax where the SP is trained to temporarily stop breathing each time the learner puts his or her stethoscope on the affected lung, while at the same time lowering the shoulder of the affected side. However, Stillman cautions the need for considerable expertise if SPs are going to be trained to simulated signs and symptoms realistically (Stillman 1993).

An alternative, sophisticated aid for simulating physical symptoms is use of make-up and/or moulage for wounds, jaundice, etc.

Clearly training SPs to simulate physical signs and symptoms is quite an undertaking (see later for discussion of training SPs). Thus, it may be that you choose to use real patients where real signs and symptoms are required, if suitable real patients can be arranged, or use real patients for some examination skills, SPs for others.

Finally, it is of interest that Kneebone and co-workers have reported several studies using SPs for combined communication and procedural skills training (Kneebone et al. 2002; Kneebone 2005; Kneebone et al. 2005). They linked simple (e.g., venepuncture) or more complex (e.g., virtual reality endoscopy) models with actors to create an authentic simulation that uses all relevant senses (e.g. audio, visual and tactile) in realistic settings. These simulations provided learners with an opportunity to integrate technical, communication and other professional skills essential for effective practice with real patients. SP training included knowledge of key aspects of the procedure to ensure appropriate responses (e.g. time taken for a local anaesthetic to work). Usually students learn communication skills and procedural skills as separate skills: Kneebone and colleagues discuss how combining these skills are not straightforward for learners. This finding is important as it emphasises how important it is to ensure that there are opportunities within your curriculum for learners to practise combining these skills in a safe, simulated environment before they must do so with real patients.

Longitudinal use of SPs for teaching purposes

Mostly, the use of SPs is 'single-case use'; a student has one consultation with the SP. However, this does not reflect real-life practice, particularly general practice and chronic disease management where contact with a patient may be over a number of years, or a number of symptoms/different stages of disease.

Recent evidence suggests that students are better able to learn how to manage chronic disease by seeing the same SPs more than once (Slavin et al. 1995; Wilkes et al. 1998; Brown et al. 2003; Linssen et al. 2007; Linssen et al. 2008; Bokken in press). Furthermore, the same studies identified that repeated consultations are seen as enjoyable and realistic by SPs. Linssen et al. (2008) and Bokken (in press) found that SPs developed specific expectations of students' performance, enjoyed participating in the programme and felt it was more realistic than single-case consultations. Feedback changed and became more detailed as SPs could compare consultations; students' responses to feedback could be experienced during the next consultation. However, the logistics of such a programme should not be underestimated, since it asks for a very detailed planning in terms of training, database management and the logistics of matching SPs to students (see later for further discussion).

Assessment

Objective structured clinical exams. In assessment, SPs are used most commonly in the context of formal examinations, often in the form of objective structured clinical examinations (OSCEs) (Harden & Gleeson 1979; Harden 1990). OSCEs consist of multiple, standardized task-based stations which mainly evaluate clinical and communication skills. In stations using SPs, learners may be expected to perform a physical examination or procedure, or take a history, or give bad news, etc. OSCEs can be used to provide summative and/or formative feedback to learners. These exams provide a means of evaluating clinical and communication skills in a systematic, standardized and measurable way.

Standardized SPs are trained not only to present the same case or symptoms, but to present the same emotional responses or attitudes towards their illness and symptoms, to provide consistent verbal and nonverbal responses during the consultation and in response to questions and actions on the behalf of the learner.

SPs can present in a consistent, standardized manner to ensure that all students face the same test situation.

Additionally, multiple standardized patients can be trained to play the same patient role with relatively little measurement error (van der Vleuten & Swanson 1990). This is extremely helpful in these days of many students sitting clinical (e.g., OSCE) exams, often over multiple sites at the same time. It also overcomes the difficulties of using real patients for assessment purposes as, while they may have the same condition and similar signs, these may change and/or their condition deteriorate; medication may preclude them taking part, as may conflicting commitments (Collins & Harden 1998).

For most assessments, it is likely that a combination of real patients, with clearly abnormal findings, and SPs, with normal signs and predictable, standardized roles, will work best depending on the purpose of the examination and the availability of suitable, real patients.

General practice. SPs are also used for assessment purposes in general practice. The Leicester (England) Simulated Patient Study (Allen et al. 1998) was aimed at general practitioner postgraduate trainees (Registrars) in the last six months of their training, and it is used as an alternative to the submission of a consulting skills video for summative assessment purposes. GP trainees apply to carry out an SP surgery, a date is arranged, and each candidate sees eight SPs during the surgery. The consultations last no longer than 10 minutes and the doctors have a break of 5 minutes between each consultation during which they have an opportunity to complete a 'post-encounter sheet'. This enables them to note down their views on a particular consultation or, perhaps, detail how they may have done things differently. Following each consultation with a candidate doctor each SP completes a patient satisfaction sheet (rating scale) and a clinical checklist (a medical checklist, drawn up by a panel of GPs and phrased in lay terms). Those trainee doctors who fail to demonstrate adequate consulting skills after one eight-patient simulated surgery (pass six of eight consultations) are required to carry out a further eight-consultation surgery.

Incognito or unannounced standardized patients

In most cases, SP involvement in assessment will be overt but SPs can also be used to measure candidate performance in practice, incognito. Practitioners who are visited by these incognito standardized patients (ISPs) are not aware that the consulting patient is not a real patient (Owen & Winkler 1974). Recently Rethans et al. (2007a) showed that more than 21 research projects have been carried out using ISPs. The majority of these projects were conducted in primary care but Gorter et al. (2002) has shown that it is feasible to use ISPs undetected in secondary care. When simulating rheumatic disease, accompanied by fake X-rays and fake laboratory results ISPs were retrospectively identified in only 1% of visits. The training of ISP for this kind of use is quite similar to the use of SPs for assessment purposes.

The use of SPs within healthcare education is generally accepted (Bowman et al. 1992; Lane & Rollnick 2007), as long as SP performance is credible and clinically realistic. There may be cultural variance in the extent to which SPs are seen as acceptable by educators but, to the best of our knowledge, this has not been explored explicitly.

Using SPs to give feedback and evaluate student performance

Feedback

Simulated patients can be trained not just to deliver a role, for teaching or assessment purposes, but also to assess the student's performance and provide feedback to the student (Blake et al. 2000; Blake et al. 2006).

This may be in the form of a feedback sheet or checklist of the precise actions performed by the students during the encounter. The accuracy of SPs in recording checklist items has been found to be good and consistent (van der Vleuten & Swanson 1990).

Evaluation

Training SPs to record student behaviours is quite a different task from training them to judge a student's competence, or lack of competence. This is a much more complex task of evaluation which depends on additional training (how to give feedback) as well as clear guidelines and knowledge about the expected level of competence in students at different levels of training.

Moreover, another factor to be considered when contemplating the use of SPs in evaluation is the 'stakes' of the performance. Is the evaluation formative or summative? SPs can be trained to give formative feedback on communication skills, for example, to support the student in reflecting on their own skills development as a means of enhancing learning. At Aberdeen, we ask SPs to complete a simple, structured formative feedback sheet on their impression of the student's performance in a simulated consultation which is recorded and reviewed by the student's communication skills tutor. The student is given the SP feedback when reviewing their videoed consultation with the tutor, and given the opportunity to discuss this feedback in class as part of the reflective learning process.

The necessity of accurate, consistent evaluation is more critical in summative assessment where pass/fail or grading judgements are required. Training SPs to give feedback or evaluate students realistically doubles the training requirements.

One method, widely used in Scotland, is to ask SPs in OSCE exams for a specific, structured contribution which contributes to the student's overall mark for the station. We ask them to rate the student in role, on a simple question (*'The candidate was sympathetic and I felt able to talk to him/her'*). SPs award the candidate 0 (poor for level of training), 1 (acceptable) or 2 (good). The SP rating typically contributes about 5% of the overall score. Candidates are also assessed on their communication skills by the examiner, who must rate them on a range of specific skills, which vary depending on the nature of the OSCE station. It is important to train SPs to rate the student respond in role rather than bringing

themselves out of role to address any issues which may arise such as discomfort.

Research into SP use

While the focus of this guide is the use of SPs in training healthcare professionals, particularly doctors, it is worth briefly mentioning some of the issues in research into the use of SPs.

To the best of our knowledge, there have been no studies using robust methodology (for example, a randomised controlled trial) to compare SP performance against that of real patients or role-playing with colleagues.

One study compared real patients with an SP (a professional actor) (Eagles et al. 2001). Comparison between groups of students (those working with a real patient versus with the actor) was on the basis of a six-item questionnaire, using a 5-point Likert scale measuring how enjoyable was the session; how information was the session; three questions about knowledge (the causes, symptoms and treatment of alcohol problems) and how helpful was the session in terms of interviewing skills. Responses between groups differed only on the final question, where students rated the actor as significantly better than the real patient with regard to the acquisition of interview skills. However, the actor had come out of role after the interview, and gave students feedback as to his experience of the interview. Thus, the differences between groups could have been due to different student experiences rather than differences between a real patient and an actor. Furthermore, while the sample size in this study was large, no statistical power calculation was conducted. No hard data was used to compare learning and teaching: indeed most of the conclusions as to the equivalence of SPs and real patients have been based on attitude or satisfaction questions developed for each individual study rather than standard data collection tools (Watson et al. 2006).

Papadakis et al. compared role-play with SPs and role-play with fellow students as part of a teaching workshop on smoking cession skills, for first year medical students (Papadakis et al. 1997). In this study, feedback from SPs or colleagues was collected using a standardized form. Students were assessed two weeks later using an SP blinded as to what group the student was in. The SP rated the students on cognitive and communication skills using a rating form. There was no significant difference between groups in terms of their communication skills but those who consulted with an SP rated the experience higher than those who carried out role-play with colleagues. However, the authors questioned the sensitivity of the instrument used to assess students.

Thus, many of the research studies of SP input to teaching have used non-validated, subjective or questionable measures. This risks bias: video or audio-taping is recommended as a method of validating the subjective views. The tape of the encounter can then be used to complete data collection tools (e.g., number of open and closed questions asked by the student or professional; information provided) (Watson et al. unpublished; Watson et al. 2004).

Furthermore, where research studies have used SPs, there is often a lack of detailed information providing detailed information regarding the training SPs received before carrying out their role (Watson et al. 2006), thus curtailing replicability. Many research studies using SPs use only self-report as an outcome measure.

Lane and Rollnick's (2007) recent review of the use of SPs and role play in communication skills training, while not a critique of SP methodology *per se*, highlights numerous other methodological issues, such as small sample sizes, with studies of this approach to teaching and learning.

While SPs appear to be an immensely useful resource for teaching, one which circumvents many of the present day difficulties in accessing and using real patients, there is a clear need to carry out robust, well-designed studies into their use and impact on communication and clinical skills teaching in order to maximise the effectiveness of this methodology.

There is also a clear lack of studies with regard to the training for and the effect of giving feedback by SPs.

Conclusion

Simulated patients have been used in teaching and assessment in medical training for 40 years. Their use in medical education is now worldwide. There are many advantages of using SPs; perhaps most particularly in standardizing teaching and assessment so all students have the same experience. Recruiting, training and using SPs requires expertise and ongoing resources. SP performance requires ongoing monitoring and assessment, both in terms of validity and reliability, and in terms of the impact on the SP his or herself. There has been much research into the use of uses in medical education but the need for robust, well-designed studies is ongoing.

In conclusion, SPs are a valuable addition to the cannon of educational approaches in medicine. Their further exploration and adoption is merited. In this paper and in the AMEE Guide, we have suggested how this can be done.

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Note: The references pertaining to the Guide can be found on the Medical Teacher website (www.medicalteacher.org) and the full Guide is available for purchase from the AMEE website at www.amee.org.

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