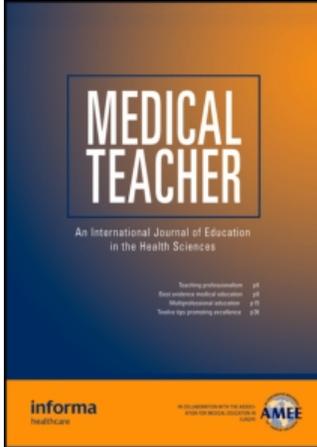


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# An innovative model for teaching complex clinical procedures: Integration of standardised patients into ward round training for final year students

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## Abstract

**Objectives:** Ward rounds are an essential activity for doctors in hospital settings and represent complex tasks requiring not only medical knowledge but also communication skills, clinical technical skills, patient management skills and team-work skills. However, although the need for ward round training is emphasized in the published literature, there are currently no reports of ward round training in a simulated setting with standardized patients.

**Methods:** 45 final year students participated in a ward round training session lasting two hours with three standardized patient scenarios and role-plays. Final year students assumed the role of either doctor, nurse or final year student with role-specific instructions and provided each other with peer-feedback during the training session. Training was assessed using final year student focus groups and semi-structured interviews of standardized patients. Written protocols of the focus group as well as the interviews of standardized patients were content analysed.

**Results:** In the course of five focus groups, 204 individual statements were gathered from participating final year students. Ward round training proved to be a feasible tool, well accepted by final year students. It was seen to offer a valuable opportunity for reflection on the processes of ward rounds, important relevant feedback from standardized patients, peer group and tutors. Semi-structured standardized patient interviews yielded 17 central comments indicating that ward rounds are a novel and exciting experience for standardized patients.

**Conclusion:** Ward round training with standardized patients is greatly appreciated by final year students and is viewed as an important part of their education, easing the transition from observing ward rounds to conducting them on their own.

## Introduction

Ward rounds are an essential duty for doctors within hospital settings (Wray et al. 1986; Norgaard et al. 2004). Conducting ward rounds is a complex task requiring not only medical knowledge but also communication skills, clinical technical skills, patient management skills and team-work skills. Furthermore courtesy, experience, concentration, and a certain amount of stamina are necessary on account of the fact that the round is a potential cause of embarrassment, anxiety, and distress for patients, which can lead to the loss of patients' confidence in hospital staff (Steele & Morton 1978). Besides the patients themselves, three further groups of people must be kept in mind, namely the nursing staff, students, and the doctors (MacLennan 1969). The literature emphasises the need for better preparation for trainees when it comes to this

particular duty (Norgaard et al. 2004). Yet, ward rounds continue to be characterised by suboptimal supervision and insufficient specific guidance of trainees (MacLennan 1969); this may partly explain why only 44 percent of patients receive some form of physical examination, and why observation sheets and medication cards are infrequently reviewed (Wray et al. 1986). In order to introduce final year students to the process of conducting a ward round and additionally provide them with relevant feedback we recently developed a ward round training session with standardized patients.

Within medical education simulation plays an important role (Ziv et al. 2005). It enables the training of specific skills to take place in a sheltered, protected and non-threatening setting. It also offers an opportunity for reflection on common procedures and an optimisation of previously acquired skills (Miller 1987). Communication training with standardized

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## Practice points

- A ward round is a complex clinical scenario for which both basic clinical technical skills and communication skills are required.
- Standardized patients and role-playing have been shown to enhance face validity of skills training.
- Ward round training with the integration of standardized patients and role-playing is feasible and highly regarded by final year students.
- Ward round training has the potential to ease the transition from watching ward rounds on ward to conducting them on one's own.
- Since supervision of students performing clinical competencies is rare, simulated scenarios such as the ward round training introduced here, represent important additional tools within on-ward clinical education.

patients (Barrows 1993) and technical skills training in skills labs have both demonstrated positive results in improved OSCE (objective structured clinical examination) performance (Jünger et al. 2005). Recent efforts have been made to combine communication and clinical skills by integrating standardized patients (Kneebone et al. 2002) and role-play (Nikendei et al. 2005) into technical skills training in order to enhance the face validity of skills training. We integrated standardized patients and role-play to form an innovative model of ward round training in a simulated setting, creating a realistic patient management scenario centring on patient and team interaction.

As far as we are aware, there have thus far been no studies reporting ward round training with standardized patients. The present study aimed to address the following research questions: (1) Is it feasible to simulate a ward round using standardized patients and role-play? (2) What are the main benefits and impressions of this approach from the perspective of (a) final year students and (b) standardized patients?

## Methods

### Setting and scenario preparation

The study took place in the skills-lab of Heidelberg University Medical Hospital, which consists of three teaching suites for basic clinical skills training. Three commonly encountered clinical scenarios were created and learning goals defined (see Table 1). Each scenario was set in one of the three skills-lab suites, each of which was arranged to resemble a patient's room on an Internal Medicine ward. All rooms were equipped with a bed, a bedside table and technical equipment e.g. monitors where necessary. Ward round trolleys with complete patient files and patient medication charts were positioned in front of the suites. Case specific checklists for expected technical procedures and a communication skills checklist were developed. Scenarios and procedures were piloted with two groups of nine final year students.

### Participants

*Final year students.* 45 final year students at Heidelberg University Medical Hospital (26 female, 19 male) with a mean age of 26.3 years, volunteered to participate in the study. The majority of these medical students were currently in the second trimester of their final year. 19 (42%) of the final year students had already conducted ward rounds as part of their medical training.

*Tutors.* Three tutors from Heidelberg University Medical Hospital took part in the study. All tutors were experienced communication and clinical technical skills trainers in the field of Internal Medicine. Each of the three scenarios was supervised by one of the tutors.

*Standardized patients.* Three standardized patients (Barrows 1993) were recruited from the bank of actors used for the communication skills training programme of the Medical Hospital. All standardised patients were experienced and trained in feedback procedures. Each received a training session from an experienced standardized patient trainer in order to prepare them for the following three scenarios.

### Scenario 1 (standardized patient 1) — myocardial infarction

50 year old Mr. Egon Behrens is a stout electrician who has seldom seen a doctor. 4 days ago he helped his daughter move house, which he found exhausting. The morning after, he awoke with severe pain in the left side of his chest and in his back, radiating up to his jaw. His wife called the ambulance as her husband was clammy and terrified. After two days in intensive care Mr. Behrens was transferred to a normal ward and he is now worried about what will happen with that 'stent' that they were talking about. He is unsure whether it is going to remain in his body and whether he will ever be able to work again. He also wonders whether he will now have to stop smoking and when he will finally be disconnected from the ECG-monitor and be allowed to leave the hospital.

### Scenario 2 (standardized patient 2) — poorly controlled diabetes

45 year old Mrs. Vogel is a lively and non-anxious person who runs a grocery shop. She has an answer for everything. The fact that she is considerably overweight doesn't especially bother her. It is the third time now that she has been brought to hospital in a diabetic coma (blood sugar initially 512 mg/dl) and she feels a little embarrassed that she has not regularly been taking her anti-diabetic medication or her drugs for high blood pressure. Consequently her blood pressure is also too high. For the past two months Mrs. Vogel has been troubled by a wound on her left foot which is obviously not healing, but so far, no-one has noticed.

**Table 1.** Learning goals as per Guilbert (1998) for the different clinical scenarios of the ward round training.

|                      | Scenario 1: Myocardial infarction   | Scenario 2: Poorly controlled diabetes  | Scenario 3: Acute myeloid leukaemia  |
|----------------------|---|---|--|
| communication skills | Education about healthy lifestyle: nicotine addiction, weight reduction, etc.; information about further procedures | Dialogue with a non-compliant patient: course of disease, consequential damages, etc.                           | Education about need for further inpatient treatment; instructions for infection with immune-suppression |
| technical skills     | Auscultation of heart and lungs   | Inspection of feet with ulcers  | Focused history taking and physical examination  |
| management skills    | Indication for 24 hour ECG; defining mobility of patients   | Ordering of further laboratory tests; ordering of further tests: examination of eyes, ultrasound, tilting table | Ordering of examinations: urine and blood assessment, monitoring laboratory results, X-ray               |
| knowledge            | Estimation of size of myocardial infarction   | Treatment of diabetes   | Management of infection with immune-suppression  |
| treatment planning   | Prescription for missing medication (clopidogrel); planning of rehabilitation following inpatient treatment         | Commence an insulin-scheme dietary advice; provide oneself with patient's old notes                             | Prescription of empiric antibiotic therapy   |

### Scenario 3 (standardized patient 3) — acute myeloid leukaemia with infection

For the past seven weeks, 33 year old Mrs. Dworschak has been being treated for acute myeloid leukaemia. After five weeks of chemotherapy she was in remission. In order to maintain this success she remained in hospital for a further week, today being the last day of the first cycle of chemotherapy since remission (three more are planned). Yesterday was a sunny but windy day and she went for a walk with her friend in the hospital garden. During the night she was sweating and her morning temperature measured 38.9°C. Besides a slight cough there are no other complaints and Mrs. Dworschak is worried that the 'cancer is back'.

### Running of the sessions

Final year students in groups of nine participated in two ward round training sessions. In order that they could prepare themselves, students were informed by e-mail about the disease with which they were to be confronted during the training. Before actual training began, an introductory plenary session was held with a group discussion including the topics 'What are my experiences of difficult ward round behaviour?', 'What characterizes a good ward round?' and 'What are my concerns about conducting a ward round on my own?' (see Figure 1). Contributions were written on a flip-chart, and classified thematically in such a way that a ward round checklist was developed. Finally, final year students received a printed version of a ward round checklist as per Norgaard et al. (2004). The introductory session ended with instructions for the ward round training detailing its structure, the tasks to be carried out, the checklists to be completed and the feedback process.

During the training session three groups of final year students were rotated between skills-lab suites (see Figure 1). The students assumed the role of either doctor, nurse or final year student with role-specific instructions received in the form of a handout. After roles had been assigned, role-plays began. Doctors' tasks involved acquiring an overview of the patient

case and the related patient files and patient medication charts (see Figure 2). Doctors further had to define the consultation goals, conduct the ward round consultation (see Figure 3) and subsequently re-evaluate the patient's therapy. The re-evaluation included completion of medication charts, directions for the nursing staff and the final year student and the preparation of written notes concerning the proposed management. The nurse completed a case-specific checklist reflecting the case specific learning goals, and the final year student completed a general communication checklist. After completion of the ward round consultation, the doctor received feedback from the standardised patient, the nursing staff with the case specific checklist, the final year student with the communication checklist and the tutor, who summed up various aspects of the doctor's performance. The small group then rotated to the next skills-lab suite.

After the training, a focus group was held, following the recommendations of Barbour (2005). The discussion was opened with standardized introductory questions: 'What was especially helpful about the ward round training?', 'What would you criticise?' and 'What are your suggestions for improvement?' (see Figure 1). Based on these questions, an open discussion took place, which was recorded by a typist. The moderators of the focus groups were involved neither in prior medical training nor in issues of examination or evaluation of the students.

Semi-structured interviews with the participating standardized patients explored the questions: 'How is this different to other forms of communication training?'; 'What are the special challenges?' and 'What could be done better?'.

### Data analysis

Discussion protocols of the post-ward round training focus groups and standardised patient interviews were transcribed and subjected to content analysis by a person active within neither medical student education nor moderation of the focus groups. Contributions were content analysed in terms of structure, time and process (Donabedian 1982).

| student           |       |       |                   |       |       |                   |       |       | duration |
|-------------------|-------|-------|-------------------|-------|-------|-------------------|-------|-------|----------|
| No. 1             | No. 2 | No. 3 | No. 4             | No. 5 | No. 6 | No. 7             | No. 8 | No. 9 | (min.)   |
| Introduction      |       |       |                   |       |       |                   |       |       | 5        |
| group discussion  |       |       |                   |       |       |                   |       |       | 20       |
| <i>scenario 1</i> |       |       | <i>scenario 2</i> |       |       | <i>scenario 3</i> |       |       |          |
| d                 | n     | s     | d                 | n     | s     | d                 | n     | s     | 30       |
| feedback          |       |       | feedback          |       |       | feedback          |       |       | 10       |
| <i>scenario 2</i> |       |       | <i>scenario 3</i> |       |       | <i>scenario 1</i> |       |       |          |
| n                 | s     | d     | n                 | s     | d     | n                 | s     | d     | 30       |
| feedback          |       |       | Feedback          |       |       | feedback          |       |       | 10       |
| <i>scenario 3</i> |       |       | <i>scenario 1</i> |       |       | <i>scenario 2</i> |       |       |          |
| s                 | d     | n     | s                 | d     | n     | s                 | d     | n     | 30       |
| feedback          |       |       | feedback          |       |       | feedback          |       |       | 10       |
| focus group       |       |       |                   |       |       |                   |       |       | 25       |

**Figure 1.** Design of session; d = final year student with doctor's role; n = final year student with nurse's role; s = final year student with student's role.



**Figure 2.** Preparing the ward round in front of the patient's room.



**Figure 3.** Ward round consultation.

## Results

### Focus groups with final year students

Structured post-ward round training focus groups yielded 204 qualitative comments reflecting 20 thematic categories, the most important of which are highlighted in Table 2. Under the aspect of the process employed, the training was judged as being a brilliant, innovative and helpful concept representing the 'most valuable training session during the final year' (student 21) on account of there being 'a lack of opportunities to practice leading a ward round' (student 30). Both setting and standardized patients were considered to have been highly realistic and the extensive and detailed preparation prior to training was valued, although two final year students remarked that it remains a 'simulated artificial situation' (student 30 and 36). The training was seen to offer important feedback from standardised patients, peer group and tutors (e.g. student 4: '... feedback you normally would not get!') that stimulates the learning process (e.g. student 3: '... helps you get better from ward round to ward round!'). The debriefing procedure on the basis of checklists enables a valuable reflection upon the processes of ward rounds 'that makes final year students sensible to the complexity of the procedure'

(student 42): 'I suddenly realized I have no idea of routine procedures at all!' (student 5). As a result, the 'transition from watching ward rounds on ward to conducting them on one's own is eased' (student 4). Future developmental possibilities were seen in different training settings based on role-play alone, with the use of fellow students as patients or with real patients and with varying degrees of difficulty and finally 'in evaluating ward rounds on ward in the conducted manner' (student 22).

Regarding aspects of time, the students remarked that more time is required for the whole session so that a reduction in the number of treated patient cases per session should be considered. Comments on time structure of the session itself revealed that there was too little time in front of the patient's room in which to become familiar with patients' files and medication charts and thus to 'feel safer in conducting the ward round' (student 3).

Regarding the structure of training, it was suggested by final year students that regularly conducted ward round training should be introduced, as for example reflected by an enthusiastic comment from student 17: 'It was great! Do it every week!'. However a more detailed introduction when it comes to how to conduct a ward round was proposed. Role-playing with different roles assigned to final year students were seen to offer a 'valuable reflection on team

**Table 2.** 11 of 20 thematic categories resulting from focus groups ( $n = 45$  final year students).

| process                                    | N  | Main message   |
|--|----|--|
| All round evaluation of training           | 24 | Training extremely helpful for everyday clinical life  |
| Setting                                    | 16 | Highly realistic setting with accurate and detailed preparation                                      |
|  | 2  | Simulated, artificial situation  |
| Standardized patients                      | 8  | Patients absolutely realistic  |
| Feedback procedures                        | 18 | Valuable feedback from patient, peer group and tutor   |
| Evaluation of students                     | 7  | Adequate preparation and follow-up using checklists  |
|  | 2  | Evaluation too extensive   |
|  | 4  | More detailed follow-up including handouts   |
| Personal reflection                        | 19 | Important process in recognizing one's own skills through working autonomously and independently     |
| <b>Time</b>                                |    |  |
| Time frame of session                      | 2  | More time to be generally allowed for  |
|  | 9  | Large amount of material goes beyond scope of session, possible reduction of number of patient cases |
| Preparation in front of the patient's room | 9  | Not enough time to gain an overview of patient files and medication charts                           |
| <b>Structure</b>                           |    |  |
| General offer                              | 13 | Suggestion training to be regularly carried out  |
| Preparation in advance of the training     | 6  | Provision of preparation in form of clinical cases being sent by e-mail helpful                      |
|  | 15 | More introductory instruction  |
|  | 3  | Would be better to carry out ward round without preparation  |
| Patient scenarios                          | 8  | Interesting and relevant patient scenarios   |
|  | 3  | Patient scenarios too complex  |
|  | 3  | More patient scenarios should be created   |

processes' (student 36). It was for the most part valued that patient cases were e-mailed to final year students before the training, though three final year students mentioned that it would be a greater challenge without any preparation and without knowing the patient cases. The patient scenarios themselves were considered to be relevant to current practice and further characterized by 'a high learning potential' (student 6) and ideas for new patient cases were provided (e.g. emergencies, psychosomatic patient scenarios).

#### Semi-structured interviews with standardized patients

A summary of the results of the semi-structured standardized patient interviews yielded 17 central comments. The main difference compared with other kinds of communication training was seen to be the perceived highly realistic nature of the experience i.e. patients wearing a nightgown and lying in bed with staff nearby, talking down to the bed and thus creating feelings of helplessness and illness, leading to a high identification with the patient role. At the same time it was a lot of fun, although the situation made the standardized patients feel more vulnerable as patients. Suggestions for improvement were mainly based on improved time management.

## Discussion

The current study explored the potential of a novel teaching method. An urgent need for ward round training is reported in the literature (Norgaard et al. 2004), since ward rounds are an essential duty of doctors in hospital settings and furthermore, represent a complex task demanding a number of various skills. The proposed training session represents the first conceptual model of ward round training within a simulated setting with the integration of standardised patients and role-plays.

Simulated scenarios such as ward round training represent important additional tools for use in on-ward clinical education, especially considering that the supervision of students performing clinical competencies is rare (Remmen et al. 2000; van der Vleuten et al. 2000; van der Hem-Stokroos et al. 2001; Daelmans et al. 2004; Howley & Wilson 2004) even though coaching, feedback and supervision are known to be associated with improved general satisfaction with clerkships (Remmen et al. 2000). In reality, clinical rotations often seem to be more 'like a black box that leads to trial and error' (Jolly 1994). The simulated setting creates a 'safe zone' and offers an opportunity for reflection on common procedures, and the optimization of previously acquired skills (Miller 1987; Ziv et al. 2005). Additionally, immersion into the role of another person through deputy acting allows students the chance to become familiar with colleague perspectives and insights and further reflect on team processes (Simpson 1985).

In recent studies, in which standardized patients Kneebone et al. (2002) and role-plays (Nikendei et al. 2005) have been integrated into technical skills training, face validity has been shown. Our results show that ward round training proves feasible and is experienced as an extremely valuable and realistic tool supporting important reflective processes and providing relevant feedback for final year students. The training was seen as a tool that has the potential to ease the transition from watching ward rounds on ward to conducting them on one's own. As reported in several studies, structured feedback is an important part of simulation debriefing and seems to be a particularly important factor in improving interpersonal skills (Greco et al. 2001; Ziv et al. 2005). However, the described method will only be able to unfold its full didactic value provided that sufficient opportunity for conducting ward rounds with real patients is offered.

Key issues addressed in the present study were the feasibility of the conceptual model and the participants' subjective response to its potential for teaching and learning. For this reason we selected a standard qualitative approach (Donabedian 1982). The structured focus group approach adopted in the present study is a widely accepted tool for surveying a broad and open-ended range of subjective opinions. Data collected in this manner is considerably more direct and fruitful for guiding and planning how the results are to be acted upon, than formative evaluation data, which whilst highlighting weak spots and problematic areas is often not suitable when it comes to specifying these more thoroughly. In comparison to questionnaires, focus groups thus yield less structured but highly relevant results (Neuendorf 2002; Barbour 2005). Limitations of our study include a limited numbers of participants, the lack of objective measures for the effectiveness of ward round training and an absence of long-term follow up. Longitudinal studies are needed to explore these and related issues in greater depth. Corresponding to a central issue of simulation-based medicine pertaining to which kind of simulation is appropriate at which stage of education (Ziv et al. 2005), a further question to be addressed is whether ward round training should be conducted at an earlier stage of the teaching curriculum.

Standardized patients were also found to appreciate the training and felt it to be very close to a true doctor-patient-interaction. For standardised patients, the ward round training additionally demands the integration of various aspects of acting, namely concentration on communication with a group of people and a physical examination within the same session. Lying in bed poses the challenge of getting the student to 'buy in' to the scenario especially with regards to the sense of intimacy.

We conclude that ward round training with the integration of standardised patients and role-playing is feasible, greatly appreciated by final year students and valued by standardised patients. The success of the training has subsequently led to the integration of ward round training into the final year student curriculum at Heidelberg University Medical Hospital. There is a need, however, for further research, which should look to investigate the effects of ward round training on final year students' performance on the wards.

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