

Standardized Patient Use Outside of Academic Medicine: Opportunities for Collaboration Between Medicine and Pharmacy

Michael S. Monaghan and Ross E. Vanderbush

*Department of Pharmacy Practice
University of Arkansas for Medical Sciences
Little Rock, Arkansas, USA*

Ruth M. Allen

*Department of Educational Development
University of Arkansas for Medical Sciences
Little Rock, Arkansas, USA*

Jeanne K. Heard, Mary Cantrell, and Jay Randall

*Department of Medicine
University of Arkansas for Medical Sciences
Little Rock, Arkansas, USA*

Background: Utilization of standardized patients (SPs) in academic medicine is well known, but little has been done with SPs in pharmaceutical education. We present a new application for SPs in pharmacy education, and discuss how resources, costs, and expertise may be shared between the two academic disciplines to maximize SP use.

Description: We developed a "pharmacy Objective Structured Clinical Examination (OSCE)" used to evaluate clinical skills associated with pharmacy education and practice. The SPs in pharmacy were more standardized participants, because they could portray a physician, nurse, or patient. Program development, evaluation, and implementation was accomplished in conjunction with the college of medicine's SP program.

Evaluation: Comparable to academic medicine's OSCE experience, interrater reliability data showed good to excellent agreement between raters and Cronbach's coefficient alpha ranged between 0.54 and 0.79.

Conclusions: This program represents another use of medical SPs that can benefit both academic disciplines.

Teaching and Learning in Medicine, 10(3), 178–182

Copyright 1998 by Lawrence Erlbaum Associates, Inc.

Because of the success of standardized patients (SPs) in academic medicine, other health professions are beginning to adopt their utilization in the educational process. In dentistry, SPs have been employed in the education of basic skills in communication, physical examination, diagnosis, treatment planning, and record keeping. In chiropractic education, SPs have been used to assess students' interaction with patients and their ability to perform in the clinical setting.

Standardized patient encounters are a part of the medical licensure process in Canada, and these encounters are currently being evaluated for a similar use in the United States.¹ This infers that all schools of medi-

cine must employ SP encounters in some fashion to familiarize students with this methodology. As of 1993, 80% of medical schools were already using SPs.² Financial expenditures associated with SP use continue to be a concern, and the development of regional consortia sharing resources, costs, and expertise has been recommended.³

Approximately 35% of U.S. schools of medicine and osteopathic medicine are located in the same proximity with a school or college of pharmacy. This article presents a new application for SPs in pharmaceutical education, and discusses how resources, costs, and expertise were shared between the aca-

demical disciplines of medicine and pharmacy in order to maximize SP use.

Background

Pharmaceutical education is attempting to change to a more clinical, patient-focused orientation based on the concept of pharmaceutical care. Pharmaceutical care involves the use of a treatment plan for the purpose of achieving patient-specific outcomes that will positively affect the quality of life. As in academic medicine, it is the experiential component of the curriculum that allows pharmacy students to synthesize didactic information within the realm of practice, providing the necessary preparation for the development of clinical skills.

Because more emphasis is being placed on clinical skills associated with the practice of pharmacy, more emphasis should be placed on the evaluation of student performance in the clinical arena. The prototype evaluation method in pharmacy for the evaluation of clinical skills should (a) assess the student's knowledge base in all areas of activities experienced during the clinical clerkship, (b) assess the student's problem-solving skills under actual clinical conditions, (c) assess the student's communication skills, (d) serve as a diagnostic tool for identifying both students' and clerkship sites' deficiencies, (e) be conducted in an actual clinical environment, and (f) be objective and minimize errors of assessor judgement. The American Council on Pharmaceutical Education, the accrediting body in pharmacy, further recognizes that clinical evaluation should measure cognitive learning, mastery of essential practice skills, and the ability to use data in realistic problem solving. Unfortunately, few existing evaluation methods in pharmacy education provide this range of application. So, members of the pharmacy faculty, familiar with medicine's use of SPs, approached the SP program (SPP) in the college of medicine, seeking help in developing a "pharmacy Objective Structured Clinical Examination (OSCE)." The college of medicine uses an OSCE to evaluate clinical skills demonstrated by sophomore students. Pharmacy faculty wanted to develop and validate an assessment instrument, similar to the OSCE, using SPs, which would consistently measure comprehensive student performance on adult medicine clerkships. To differentiate conversationally from the college of medicine's OSCE, the program was called the Pharmaceutical Care Encounters Program (PCEP).

Program Development

The SP in pharmacy education is more of a standardized participant, because he or she can be a physi-

cian, nurse, or patient with whom pharmacists interact. The standardized participant is trained to present a case involving a clinical or professional practice competency in a reproducible way. The pharmacy student is asked to perform a clinical task involving the standardized participant. Examples of potential clinical tasks include providing drug information to a nurse, optimizing pharmacotherapy through physician interaction, or counseling a patient on the appropriate use of metered dose inhalers.

Cases were developed with the staff of the SPP in the college of medicine and a panel of clinical pharmacy practitioners. The pharmacy practitioners described an encounter from their clinical experience that focused on the competency in question. Following a similar format to that used for the OSCE, case writers defined the case scenario, directions to the student, directions to the SP, and performance criteria used for evaluating student performance.

Case content was determined by defining the specific practice competency on which each encounter was based. These specific professional practice competencies were those developed by national pharmacy organizations. Each case was designed to provide a controlled, standardized testing condition utilizing validated performance criteria. Case checklists were then used by a faculty grading panel to score student performance.

All examinations were administered in an ambulatory care center selected to duplicate the clinical environment. For each administration, 10 stations, defined as the encounter between the SP portraying the clinical case and the student, were used. The time allotted to complete each was 18 min. Both the number and length of stations were based on research from academic medicine.^{4,5} Stations were divided into two sections, a preparatory section and a counseling section; 9 min were allocated for each section. Nine minutes were determined to be approximately twice the time for most faculty to complete the tasks. This fact, combined with data from academic medicine, set total station time at 18 min.

In the preparatory section, students read the directions to the station, which defined the clinical task for that particular station. At the end of 9 min, students were instructed to enter the counseling section of the station. It was within the counseling section that students provided pharmaceutical care advice to the SP portraying a physician, nurse, or patient. For stations involving physicians, 4th-year medical students or physician residents were used. For those involving a nurse, actual nurses were used. Actors portrayed patients. All SPs were trained by the case writer and a trainer from the SPP. The goal of training was to ensure a standardized stimulus to all students.

Because this was the first large-scale attempt to use SPs in pharmacy education, reliability data was

needed. Inconsistency in grading is the factor generally responsible for unacceptable reliability levels of most clinical and written examinations.⁶ To address this, all counseling sections were videotaped and scored by three faculty according to the performance criteria indicated in the checklists. As in medicine, case checklists were composed of indicator/item behaviors scored using a binary scale (yes/no). The university's Objective Test Scoring and Performance Rating (OTS/PR) system was used to process data. Each item on a checklist was valued at 5 points. The number of items varied by station, and each station was treated as an independent unit (question) of the entire PCEP, as each station assesses a different skill. Interrater reliability on each case was calculated by the OTS/PR system as an intraclass correlation, expanded by Spearman-Brown's formula, to reflect the number of raters rating students' performance on a case, as recommended by Ebel.⁷ Because each station was tested as an independent test question, reliability of the examination process was calculated using each station as if it were a question/item on an objectively scored test and estimated by Cronbach's coefficient of internal consistency, alpha.⁸ An example of performance data for a single administration of the PCEP is shown in Table 1. Cronbach's coefficient alpha from these initial examinations ranged between 0.54 and 0.79.

After the initial program development in adult medicine, the PCEP was expanded to include a 10-station examination centering on clinical skills associated with ambulatory care. Examples of station tasks from the two examinations are listed in Table 2.

To date, approximately 260 students have been evaluated using the PCEP. Generally students believe the PCEP approach is a better evaluation of their clinical skills than the preceptor ratings that were previously used. Further, students believed that this examination process delineated their deficiencies, which was perceived positively because it allowed them time to remediate prior to licensure examinations.

OSCE and PCEP Differences

Table 3 lists major program differences between SP examinations that evaluate clinical skills in medicine (OSCE) and pharmacy (PCEP). The college of medicine uses a 12-station OSCE designed to evaluate basic skills in physical examination, history taking, and interpersonal communication of sophomore students. The students are evaluated by faculty observers who provide educational feedback following the student-SP encounters. The PCEP is structured more for the evaluation of problem solving, like some other non-OSCE SP-based examinations in medi-

Table 1. An Example of Performance Data Generated Using Standardized Patients in the Evaluation of Clinical Skills Associated With Pharmacy Education and Practice.

Station	Number of Indicators	Maximum Points Possible	M	SD	M as %	Interrater Reliability
1	4	20	7.62	5.09	38.1	0.91
2	6	30	16.29	10.80	54.3	1.00
3	4	20	10.40	3.18	52.0	0.79
4	13	65	47.22	13.51	72.6	0.97
5	5	25	15.10	5.75	60.4	0.95
6	6	30	23.52	2.36	78.4	0.50
7	12	60	42.86	9.78	71.4	0.98
8	5	25	11.44	7.51	45.8	0.91
9	12	60	54.29	5.03	90.5	0.81
10	4	20	12.57	3.43	62.9	0.89

Table 2. Examples of Station Tasks Used in the Evaluation of Clinical Skills in Pharmacy Education

Recognizing a disease-drug interaction and making recommendations to the prescriber.
Defining the drug of choice and therapeutic endpoints to assess success of drug therapy.
Selecting appropriate drug based on patient-specific parameters/comorbidity.
Eliciting a medication history/polypharmacy assessment.
Performing an appropriate drug/social history to assess risk factors.
Educating a patient on the appropriate use of a metered dose inhaler.
Recommending an appropriate patient-specific over-the-counter medication.
Recognizing therapeutic duplication and formulating a means of reconciliation.
Recognizing a drug-drug interaction and making a pharmacologic recommendation to correct for the interaction.
Recognizing a treatment failure and intervening appropriately.

Table 3. Major Differences Between Standardized Patient Examinations Evaluating Clinical Skills in Medicine (OSCE) and Pharmacy (PCEP)

	OSCE	PCEP
Standardized patient (SP)	Information provider	Information receiver
SP role	Patient	Patient or healthcare professional
Station format	SP encounter only	Student preparatory section and SP encounter section
Additional information (patient chart, text books, etc.)	None	In preparatory section
Telephone use	None	10%–20% of stations
Faculty in stations	Yes	No
SP training time and costs	More intense/costly 2 SPs x 6 hours x \$12.00 = \$144.00	Less intense/less costly 1 SP x 2 hours x \$12.00 = \$24.00

9 The SP in an OSCE provides information, either verbally or through physical signs. In the PCEP, the SP is more of an information receiver, portraying a health professional receiving drug information or a patient receiving counseling. The OSCE in the college of medicine employs a station length of 7.5 min, with no preparatory station section. The PCEP uses a separate preparation section associated with each station. This time is used by students to generate responses to the tasks posed in the directions to the stations. Charts, if necessary, are supplied in the preparatory sections. Pharmacists in practice generally have time to generate an answer. Therefore, the PCEP is modeled in the same manner. Also, because telephones are used in pharmacy practice, 2 of the 10 adult medicine and one of the ambulatory care examinations include telephone stations. All PCEP examinations are videotaped for retrospective grading. Therefore, no faculty are present in stations.

In pharmacy examinations, SPs are not just simulated patients. Healthcare practitioners (e.g., nurses and medical students/residents) who already possess an in-depth level of knowledge are used. Very little additional training is required for the SP to understand the station scenario and his or her role. Therefore, an average of only 1 to 2 hr is needed for training, minimizing the expense of utilizing an SP-based examination. For the college of medicine's OSCEs, an average of 6 hr is required for training each SP, and the college trains two SPs for each station, for back-up purposes. Because of the difference in SP knowledge levels, the college of medicine's OSCE training costs are six times greater than those associated with the PCEP (see Table 3).

One concern with less training time is SP performance reliability or a loss in the quality of training. This concern can be addressed by examining interrater reliability data. As demonstrated in Table 1, the use of three raters confirmed that SP reliability is satisfactory, with a median rater correlation of 0.91 in this example data set. This degree of good to excellent agreement between raters was consistently achieved during the development stages and meets the level of agreement necessary for appropriate clinical assessments.⁵

Other SP Uses

Since initially developing the PCEP examinations, the SP model has been incorporated into the pharmacy curriculum as methods of instruction. Two courses, communications and physical assessment, now use SPs in their associated laboratories. In communications, SP encounters provide several advantages over the traditional pharmacy course using a non-SP-based communication laboratory.¹⁰ The instructor can design a core set of SP encounters to ensure that students see a desired range of interpersonal challenges. Students have the opportunity to learn how to deal with difficult situations in a controlled environment, providing practice communicating with difficult persons. The SP can give feedback to the student concerning his or her interpersonal skills, providing the necessary practice for competent patient counseling. Standardized patients were used in demonstration and discussion sessions, time in/time out sessions, and counseling sessions. Additionally, SPs were used in a communication station examination to generate a final laboratory grade.

The advantages of SP use in the instruction of physical assessment is well known in academic medicine. With the new practice model for pharmacy, pharmacists must discuss physical assessment findings with other health care practitioners. This requires some knowledge of physical assessment skills and the information that may be obtained through physical assessment. Therefore, physical assessment is a recommended course in the new model of pharmaceutical education. Standardized patients were incorporated in a physical assessment course for pharmacy students and in a continuing education course for practicing pharmacists. The objectives were to (a) instruct participants on how to perform patient interviews, including medication histories and a review of systems; (b) define the purposes of inspection, percussion, palpation, and auscultation; (c) teach basic physical assessment skills; (d) provide a means of practicing these basic physical assessment techniques; and (e) increase the participants' ability to discuss physical findings as a means of evaluating drug therapy.

Benefits to Medical Education

This collaboration between academic medicine and pharmacy benefited the college of medicine SPP in a number of areas. Financial benefit was derived from consulting fees. Each time SPs were added in pharmacy education, a consulting fee was paid to the SPP for their assistance. The PCEP in the college of pharmacy funded a 12-month part-time position in the SPP. This position was for a trainer who coordinated all of the SP activities in the college of pharmacy as well as assisted the associate director in coordinating medicine's SP use. The two colleges shared equipment as well. Pharmacy owns 20 video cameras employed in the original generation of validity and reliability data for the PCEP. These cameras are now shared and used by the SPP for videotaping the OSCE stations and other SP-related activities. Further, the SPP now has a set of validated pharmaceutical stations that may be incorporated into future OSCEs.

Summary

Expanding the use of SPs to other professions/educational schools on campus is a means of generating revenues for an SPP and a way to share resources between colleges. Our PCEP program represents one use of medical SPs that may be expanded to other pharmacy programs across the nation as well as improve relationships between professional programs on campus. Locally, other professional schools on our campus have seen our collaboration and are exploring the use of SPs in their educational programs.

References

1. Reznick RK, Blackmore D, Dauphiné WD, Rothman AI, Smee S. Large-scale high-stakes testing with an OSCE: Report from the Medical Council of Canada. *Academic Medicine* 1996;71(1, Suppl.):S19–S21.
2. Anderson MB, Stillman PL, Wang Y. Growing use of standardized patients in teaching and evaluation in medical education. *Teaching and Learning in Medicine* 1994;6:15–22.
3. Stillman P, Swanson D, Regan MB, et al. Assessment of clinical skills of residents utilizing standardized patients. A follow-up study and recommendations for application. *Annals of Internal Medicine* 1991;114:393–401.
4. Swanson DB, Stillman PL. Use of standardized patients for teaching and assessing clinical skills. *Evaluation and the Health Professions* 1990;13:79–103.
5. Swanson DB, Norcini JJ, Grosso LJ. Assessment of clinical competence: Written and computer-based simulations. *Assessment and Evaluation in Higher Education* 1987;12:220–46.
6. Newble DI, Hoare J, Elmslie RG. The validity and reliability of a new examination of the clinical competence of medical students. *Medical Education* 1981;15:46–52.
7. Ebel RL. Estimation of the reliability of ratings. *Psychometrika* 1951;16:407–24.
8. Cronbach LJ. Coefficient alpha and the internal structure of tests. *Psychometrika* 1951;16:297–334.
9. Solomon DJ, Speer AJ, Perkowski LC, DiPette DJ. Evaluating problem solving based on the use of history findings in a standardized-patient examination. *Academic Medicine* 1994;69:754–7.
10. Barrows HS. *Simulated (standardized) patients and other human simulations: A comprehensive guide to their training and use in teaching and evaluation*. Chapel Hill, NC: Health Sciences Consortium, 1987.

Received 5 May 1997

Final revision received 20 November 1997

Copyright of Teaching & Learning in Medicine is the property of Lawrence Erlbaum Associates and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.