

Use of Standardized Patients as an Assessment Tool at the End of an Ambulatory Care Rotation

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Traditional methods of measuring student performance do not adequately measure all the skills that are developed during PharmD clerkship rotations. Standardized Patients (SPs) are now being utilized as a tool to broaden methods of instruction and assessment of students. This paper describes the use of SPs to evaluate the clinical competence of PharmD students at the end of an ambulatory care clerkship. Students were evaluated based upon their communication skills, therapeutic judgment, and knowledge of technical tasks. Students were given a follow-up survey to assess their comfort with the Objective Structured Clinical Exam (OSCE). This evaluation technique was beneficial to both students and preceptors by providing a method of assessing communication abilities in addition to therapeutic knowledge. Future studies are needed to directly compare this method of evaluation with the traditional "End-of-Block" exam.

INTRODUCTION

In recent years, there has been growing dissatisfaction on the part of faculty, students, accrediting agencies, and the public with traditional methods of determining clinical competence(1). Clinical competence is defined by Nu as, "A complex set of skills that include the abilities to interview, perform physical assessment, make therapeutic decisions, and communicate with a patient and his or her family while demonstrating good interpersonal skills(2)." Written tests provide information about knowledge base, but often fail to assess the ability of students to perform in a clinical situation that requires effective communication with patients, family, and other health-care providers(3,4). As the profession of pharmacy continues to expand its role in patient-oriented services, new methods of evaluating students must be developed to assess their clinical competence.

One of the biggest challenges in assessing pharmacy students occurs during their clerkship rotations. It is difficult to employ objective evaluation techniques to assess clinical competence. Activities that involve direct patient care, such as participation in an anticoagulation clinic, cannot be fully evaluated through a written exam. This problem is often compounded by other service, teaching, and research responsibilities of practice-based faculty that prevent direct observation of student performance at all times. Therefore, there is an inherent risk that students may have deficiencies that are not evidenced in the presence of a clinical preceptor and students may then be allowed to progress academically with these deficiencies(3).

Standardized Patients (SPs) have been used in the medical profession for a number of years as a method of teaching and assessment(5). An SP is defined as a person who has been trained to portray a specific health-related problem in a consistent and accurate manner(6). At times, a "standardized participant", such as a physician or a nurse, is used instead of a patient to train or assess interdisciplinary interactions among

students of various health professions(7). Examples of SP programs in pharmacy education have been described in communication courses, therapeutics courses and labs, and in competency exams(7,8,9). The following paper describes the use of SPs to evaluate clinical competence of PharmD students at the end of a four-week ambulatory care clerkship.

PERFORMANCE ASSESSMENT CENTER

A key to maintaining a successful SP program is securing the financial support to train and pay the SPs, as well as providing necessary equipment and space to facilitate exams. Unfortunately, many institutions have not been able to develop SP programs due to limited funding and a lack of physical resources. Many medical schools have countered these obstacles by creating regional consortia to develop and conduct clinical practice examinations(10). The consortia are generally composed of a number of medical schools that are in close geographic proximity and maintain a core group of SPs. These schools share resources to plan, develop, and administer competency evaluations of medical students at each institution.

In July of 1997, Indiana University School of Medicine received state funding to develop a Health Professions Performance Assessment Center (HPPAC). From this seed money, a multidisciplinary consortium of health-care schools in Indiana was developed. This organization includes the Indiana University Schools of Allied Health, Dentistry, Medicine, Nursing, and Social Work, the Indiana University Purdue University Center for Teaching and Learning, and the Purdue University School of Pharmacy. The HPPAC was developed at a time when the participating schools had all recently under-

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gone, or were in the process of curriculum review and revision. The overall goal of the HPPAC is to combine the resources of the participating schools to improve opportunities for health professions students to demonstrate competency in their field of study, to increase faculty ability to assess program effectiveness, and to enhance the participating schools' ability to compete for external grants related to health professions education.

The center has resources and staff that hire, train, and maintain a pool of SPs for teaching and evaluation. The HPPAC also assists faculty with the development and implementation of innovative teaching and performance assessment techniques such as videotaped encounters with SPs, production of training tapes, and the development of computerized post-patient encounter examinations. The HPPAC maintains a pool of 70 SPs that are trained and coordinated by an HPPAC SP trainer. A wide range of SPs are available to facilitate development of a diverse number of patient cases. SPs are paid \$10.00/hr for training and \$15.00/hr for "performance".

PILOT PROJECT

The following describes the results of a pilot project sponsored by the HPPAC. This project challenged participating faculty to develop a use for SPs in assessing health-professions students. The objectives of this pilot project were: (i) to develop an alternative format of conducting an end of block exam using SPs; (ii) to develop an evaluation tool to objectively assess clerkship student knowledge, communication skills, and patient interviewing techniques; and (iii) to gather feedback from PharmD students about their SP evaluation experience.

METHODS

The ambulatory care clerkship rotation at the Veteran's Affairs Medical Center (VAMC), Indianapolis, Indiana accepts students from Butler and Purdue University who are in their last professional year of the PharmD curriculum. The majority of the students' experience is focused on direct contact with ambulatory care patients.

Students participate in a pharmacy anticoagulation clinic, pharmacy phone triage center, and several specialty clinics (e.g., congestive heart failure clinic, pain clinic, HIV clinic, etc.). Students are also responsible for topic and patient case presentations, written assignments, and participation in journal clubs.

Prior to this study, the traditional method of evaluating student performance was an "End-of-Block" (EOB) examination given at the end of the four-week rotation. The EOB was a written case, representative of a clinic patient that the student may have encountered during the month. Students were instructed to "work-up" the patient problems included in the case and present their plan to the preceptor(s), followed by a question and answer period. This exam identified strengths and weaknesses of student therapeutic knowledge and skills, but it failed to evaluate the interpersonal communication skills used daily while interacting with patients or caregivers. The EOB was graded on a pass/fail basis with only subjective methods of evaluation by the preceptors.

As an alternative to the EOB exam, the pilot project was developed to evaluate student performance with the aid of SPs and video taped encounters. The pilot project used an Objective Standardized Clinical Exam (OSCE) format that was divided into four interactive stations and a written section. An OSCE is an assessment technique, originally developed by medical schools, where students rotate around a circuit of stations and are required to perform various clinical tasks(5,6).

Three of the OSCE stations involved assessment of "technical task" competencies that students were instructed on dur-

ing the four-week rotation. The three tasks were: taking a blood pressure, teaching a patient how to use an inhaler, and teaching a diabetic patient how to draw up and inject insulin. Each of these stations was fifteen minutes in length and involved direct one-on-one interactions between the student and a preceptor. Students were awarded up to five points for each station based on how well they accomplished the specific task. This portion of the OSCE remained somewhat subjective due to lack of standardized methods of evaluating student teaching techniques.

The fourth interactive station involved a mock clinic visit with a SP. Students were given a fifteen-minute period to review a mock medical record that contained the patient's past medical history, prescription profile, laboratory values, physical findings, progress notes, treatment recommendations, and discharge summaries. The SP case was modeled after a real scenario that occurred in the Pharmacy Anticoagulation clinic at the VAMC. The content of the case was chosen to reflect competencies the students were taught during their four-week clerkship rotation (i.e. documenting allergies, assessing drug-drug and drug-food interactions, and patient counseling).

After reviewing the medical record, students performed the clinic visit with the SP. The encounter took place in a room set up to mimic an outpatient clinic examination room. This portion of the OSCE was thirty minutes in length and was videotaped. The combination of videotaping and SPs has become a well-established methodology in teaching and evaluating interpersonal skills in medical educational, (12).

Two SPs were recruited and trained by the HPPAC to portray the anticoagulation clinic patient. The same case was used at the end of every four weeks to control for content variation and to minimize the time and cost associated with training SPs. Previous studies have demonstrated that reliability is not affected by having two or more SPs simulate the same case(11). Students were asked to sign a waiver stating that they would not share the content of the case with their peers.

Appendix A shows the template the SPs were given to rehearse for the student encounter. The SPs were coached prior to the exam to portray a typical patient in an outpatient clinic at the VAMC. The SPs were given specific cues to answer questions accordingly when asked by the student (i.e., allergies, smoking history, alcohol consumption), but were allowed to ad lib when asked questions not specific to the outcome of the case (i.e., military history, number of children, place of employment). The SPs were not given any information about their medications - except that they were taking an aspirin every day. They appeared forgetful and confused when the student asked about any other products and stated, "I just take what it says to on the bottle and don't pay attention to the names." This statement provided the student an opportunity to proceed with further patient education during the interview. As the session progressed, the SPs demonstrated an increased understanding about their therapy.

Following the interview, the students were given sixty minutes to prepare a written care plan based on the scenario they just experienced. In the care plan, students are responsible for identifying the patient's acute and chronic medical and drug-related problems and document their recommendations in writing. The plan should also include goals of therapy, patient monitoring, optional treatments and patient education.

Finally, students were asked to complete a feedback survey following the exam (Appendix B). At the bottom of the survey, they were given the opportunity to write additional thoughts about their evaluation experience. The results of the exam and the feedback survey are discussed below.

Table I. OSCE results

Category	Average Score ^a
Frames of reference	14.33 ±2.11 (71.65%)
Opening	16.29 ±2.28 (81.45%)
Body	14.43 ±2.62 (72.15%)
Closing	13.29 ± 3.81 (66.45%)
Verbal skills	14.81 ±2.87 (74.05%)
Non-verbal skills	15.57 ±2.16 (77.85%)
Problem identification	13.62 ± 1.88(68.10%)
Resolution, plan, follow-up	13.95 ±2.69 (69.75%)
General knowledge	14.29 ±2.08 (71.45%)

^a 20 possible points

RESULTS

Thirty-one students participated in the pilot study from September 1998 to April 1999. Two evaluation forms were used to assess their performance (see Appendix C and Appendix D). Appendix C was a subjective means of providing students with feedback on performing technical tasks (Inhaler education, BP monitoring, and diabetes education). This section was worth eight percent of the overall grade. The average score on this section was 78.04 percent (SD ± 1.04).

The OSCE evaluation form (Appendix D) was used to assess student performance during the patient interview and written care plan. Preceptors evaluated the written care plan while watching the videotape of the student and SP interaction. Students received full credit for a specific task if they addressed it in either the written care plan or the patient interview. For instance, if the student forgot to ask the SP if they had any drug allergies, but later documented the need to address allergies in the care plan, they received credit. Likewise, if the student addressed that topic during the patient interview, but failed to write it in the care plan, they received credit.

The OSCE evaluation form is broken down into nine general sections. The first sections address the communication abilities of the student (*e.g.* frames of reference, opening, body, closing, verbal, and non-verbal communication). The final categories address the therapeutic skills of the student (*e.g.* problem identification, problem resolution, and general therapeutic knowledge). A total of twenty points were possible on each section; average scores are listed in Table I.

Students performed best on the opening portion (*i.e.*, introduction) of the patient interview, but lacked skills in appropriately ending the session. Students were instructed to spend up to thirty minutes counseling the SP. In an effort to cover everything and receive as much credit as possible, students tended to spend more time than was necessary on the interview. At the end of thirty minutes, the interview was

stopped; therefore, they often did not have time to summarize the session or allow the SP time to ask questions or provide feedback about their understanding. To complicate matters, a clock was not available in the mock exam room making it even more difficult for students to allocate their time appropriately. Students performed adequately in the other communication sections. They appeared comfortable with the SPs and greeted them in a professional manner. Body language and other non-verbal communication skills were also exhibited in an appropriate manner. Verbal skills of the students varied; some used language (*e.g.* atrial fibrillation, cardiac, hypertension) that was above the level of comprehension of a typical veteran patient (usually a fifth-grade reading level).

STUDENT FEEDBACK SURVEY

Twenty-eight of the thirty-one students participating in the pilot project completed the ten-question feedback survey. Table II summarizes the results of the survey. Overall, students responded to the OSCE favorably; 92 percent of the students who completed the survey “agreed” or “strongly agreed” that they preferred an OSCE to the traditional EOB exam (three students had not been through an EOB prior to the OSCE). They also felt that they were given enough time to complete the patient visit. A majority of the students (53.4 percent), however, did not feel like they were given enough time to prepare the written care-plan.

Four of the students disagreed with the comment: The exam was a true sampling of the knowledge gained on the rotation. The SP portrayed a person starting on warfarin for the first time. There is a small chance that the PharmD candidate did not have to educate a warfarin naive person during their four-week rotation. However, discussion sessions held throughout the rotation did address methods of counseling such patients.

A surprising 78.6 percent of the students “agreed” or “strongly agreed” that they were comfortable conducting the interview in front of a video camera. It was observed, from viewing the videotapes that many students forgot that the camera was present once they engaged the patient in the teaching session. Likewise, students exhibited a large degree of comfort (93 percent agreed or strongly agreed) working with the SPs and quickly forgot that they were hired actors. They also felt that the SP was a true representation of the typical Veteran patient that they interacted with on a daily basis. Additional comments made by the students are summarized in Appendix E.

DISCUSSION

The OSCE was an effective method of evaluating student performance at the end of a PharmD ambulatory care clerkship rotation. Unlike the traditional EOB exam, the OSCE evaluated stu

Table II. Student feedback survey results

	SA	A	D	SD	NA
I prefer this method of evaluation to a traditional end-of-block exam	8 (28.6)	15 (53.6)	1 (3.6)	1 (3.6)	3 (10.7)
I was given adequate time to interact with the patient	16 (57.1)	8 (28.6)	4 (14.2)	—	—
I had enough time to develop a written care plan	5 (17.9)	8 (28.6)	14 (50.0)	1 (3.6)	—
The standardized patient was a true representation of those in clinic	10 (35.7)	14 (50.0)	3 (10.7)	—	—
I felt comfortable interacting with the standardized patient	10 (35.7)	16 (57.1)	2 (7.1)	—	—
The exam was a true sampling of the knowledge I gained on rotation	5 (17.9)	19 (67.9)	4 (14.2)	—	—
The medical record to be a realistic representation of those in clinic	6 (21.4)	14 (50.0)	8 (28.6)	—	—
The medical record provided enough info, to make recommendations	5 (17.9)	17 (60.7)	5 (17.9)	1 (3.6)	—
I felt comfortable conducting the pt interview in front of a video camera	11 (39.3)	11 (39.3)	3 (10.7)	3 (10.7)	—
I was given adequate instruction prior to the exam and knew my role	3 (10.7)	17 (60.7)	7 (25.0)	1 (3.6)	—

SA = Strongly agree; A = Agree; D = Disagree; SD = Strongly Disagree; NA = Not applicable.

dents not only on their knowledge, but also on the basis of interpersonal communication abilities (clinical competence) learned during their four-week rotation. Standardized evaluation forms and video taping allowed the preceptors to grade the students based on the content and delivery of their interaction with the SP.

It is difficult to compare this method of evaluation to the traditional EOB exam currently used as a standard of measuring student performance. The EOB is very subjective and often ignores the student's ability to interact with a patient or caregiver. The OSCE method however, provides a template for future methods of teaching and evaluation. The length of time and cost of performing such an exam is an important factor in the success of an SP program. An assessment center with adequate resources and training, such as the HPPAC is critical to the successful recruiting and training of SPs.

The OSCE also helps faculty accurately evaluate how students are performing in a real clinic setting. In many clinical settings, faculty preceptors have multiple obligations that prevent them from giving each student their full attention. Preceptors may also have more than one student at a time, making it difficult to identify all student deficiencies during a four-week clerkship rotation.

One weakness of this pilot study is that the students did not always have an opportunity to view themselves on videotape. The OSCE was usually held at the very end of the four weeks, leaving little time for feedback and improvement. Perhaps a pre- and post- OSCE would provide a more accurate assessment of where students need to focus during the month to improve their clinical competence. In the future, OSCE exams for the VAMC ambulatory care rotation will be held earlier to allow the student an opportunity to view their videotape for self-evaluation.

Although not a specific focus of this study, the process used by students when speaking with patients was recognized. There was an overall lack of consistency as to how students conducted the patient interview. Some students started by addressing all the changes that the SP was to make; others spent more time asking general questions of the patient to initially assess their knowledge base. Students were still effective in counseling the SP on the new medication (warfarin). However, future efforts should be directed at looking at the flow of communication during the patient interview process.

CONCLUSION

From our experience, an OSCE is an effective means of assessing student competency at the end of an ambulatory care clerkship rotation. This type of rotation evaluation provided feedback on both knowledge and interpersonal skills to participating students and helped preceptors recognize deficiencies and provide feedback for improvement. Students benefited from the experience of a "hands-on" method of evaluation. Students enjoyed this exam format and benefited from the SP interaction. Future efforts need to look at the cost of conducting OSCEs to determine if they are truly beneficial in an isolated clinical setting.

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APPENDIX A. STANDARDIZED PATIENT INSTRUCTIONS

Instructions: You are a patient being seen for the first time by the pharmacist. You have just seen your heart doctor (Dr. Jones) and she has made some changes to your medications. The pharmacist has been instructed to talk to you about your medications - especially your "blood thinner."

Pertinent Information:

Age: 65 years old
Allergies: Allergic to Penicillin - received it in the service and broke out in a big rash
Social History: Married
Retired
Medical History: Nothing significant, just the recent problems with heart beat. You were in the hospital a couple of weeks ago, but don't know if they really "figured anything out"
Medications: Don't know what each one is for and can't remember all the names. "I just take what it says on the bottle"
Alcohol Use: None
Tobacco: Quit smoking 20 years ago
Diet: You eat whatever you want; wife does most cooking

APPENDIX B. STUDENT FEEDBACK SURVEY

Key: 4 = Strongly agree 3 = Agree 2 = Disagree 1 = Strongly disagree

- | | | | | | |
|---|---|---|---|---|----|
| 1. I prefer this method of evaluation to a traditional End-of-Block examination. | 4 | 3 | 2 | 1 | NA |
| 2. I was given adequate time to interact with the patient. | 4 | 3 | 2 | 1 | NA |
| 3. I had enough time to develop a written care plan. | 4 | 3 | 2 | 1 | NA |
| 4. The standardized patient was a true representation of those seen in clinic. | 4 | 3 | 2 | 1 | NA |
| 5. I felt comfortable interacting with the standardized patient. | 4 | 3 | 2 | 1 | NA |
| 6. The examination was a true sampling of the knowledge I gained on this rotation. | 4 | 3 | 2 | 1 | NA |
| 7. I found the medical record to be a realistic representation of those seen in clinic. | 4 | 3 | 2 | 1 | NA |
| 8. The medical record provided enough info to make sound recommendations. | 4 | 3 | 2 | 1 | NA |
| 9. I felt comfortable conducting the patient | | | | | |

interview in front of a video camera.	4	3	2	1	NA
10. I was given adequate instruction prior to the exam and knew what my role was.	4	3	2	1	NA

APPENDIX C. TECHNICAL TASK EVALUATION FORM

1 = Unacceptable 2 = Poor 3 = Acceptable 4 = Good 5 = Superior

Comments:

- Inhaler Teaching 1 2 3 4 5 Evaluator _____
Comments:
- Diabetes Education 1 2 3 4 5 Evaluator _____
Comments:
- Blood Pressure Monitoring 1 2 3 4 5 Evaluator _____
Comments:

APPENDIX D. OSCE EVALUATION FORM

Key:

1 = Unacceptable 2 = Poor 3 = Acceptable 4 = Good 5 = Superior

NA = Not Applicable

Frames of Reference

Student acknowledges patient's perspective	1	2	3	4	5	NA
Student appears prepared for appointment	1	2	3	4	5	NA
Student assures patient's privacy	1	2	3	4	5	NA
Student considers patient's agenda even if it contests student's agenda	1	2	3	4	5	NA

Opening

Student greets patient by name	1	2	3	4	5	NA
Student introduces self to patient	1	2	3	4	5	NA
Student attempts to make patient comfortable through pleasant words	1	2	3	4	5	NA
Student arranges space to facilitate comfortable interaction	1	2	3	4	5	NA

Body

Student poses open-ended questions to patient	1	2	3	4	5	NA
Student attempts to comfort/reassure patient regarding concerns	1	2	3	4	5	NA
Student responds to patient questions in appropriate depth	1	2	3	4	5	NA
Student is organized in presentation of information	1	2	3	4	5	NA

Closing

Student initiates end of session at appropriate time	1	2	3	4	5	NA
Student initiates end of session in appropriate way	1	2	3	4	5	NA
Student summarizes the session	1	2	3	4	5	NA
Student affirms patient understanding of summary	1	2	3	4	5	NA

Verbal Skills

Word choice (language) is appropriate to patient understanding	1	2	3	4	5	NA
Volume of voice is appropriate to patient	1	2	3	4	5	NA
Pace of speech is appropriate to patient	1	2	3	4	5	NA
Paraphrases/reflects patient's concerns	1	2	3	4	5	NA

Nonverbal Skills

Student maintains eye contact with patient	1	2	3	4	5	NA
Student pauses to elicit patient response	1	2	3	4	5	NA
Student's body language displays interest	1	2	3	4	5	NA
Student actively listens to patient's responses	1	2	3	4	5	NA

Written Care Plan

Student identifies drug and disease related problems	1	2	3	4	5	NA
Problems are prioritized and presented in an organized manner	1	2	3	4	5	NA
Identifies data needed to further clarify and monitor potential problems	1	2	3	4	5	NA
Student considers other issues that may affect patient outcomes	1	2	3	4	5	NA

Problem resolution, therapeutic plan & follow-up

Discusses specific recommendations and considers alternatives	1	2	3	4	5	NA
Commits to specific drug(s) and rational therapy for each problem	1	2	3	4	5	NA
Identifies appropriate therapeutic outcomes and monitoring parameters	1	2	3	4	5	NA
States ADR/Toxicities and selects appropriate monitoring parameters	1	2	3	4	5	NA

General Knowledge

Disease states	1	2	3	4	5	NA
Drug therapy	1	2	3	4	5	NA
Drug products	1	2	3	4	5	NA
Overall depth of knowledge	1	2	3	4	5	NA

Additional Comments

APPENDIX E. STUDENT COMMENTS - FEEDBACK SURVEY

The patient was very good
 I liked the BP, insulin, and inhaler stations
 I like this formal, real life
 The care plan was the worst part
 I like the teaching with patients
 I don't feel one hr is enough time to write a care plan
 I was not sure of the format of the exam in advance
 True sampling of knowledge from this rotation
 The patient did seem like an ordinary patient
 Don't like being taped
 This was a very well prepared examination
 I have never started anyone on warfarin before
 The patient was very professional
 The record seemed disorganized initially
 I enjoyed this as much as you could enjoy a test
 I was not sure what to focus on with the patient
 I liked the practical demonstrations
 Use SPs for the technical task section, also
 Make the test earlier in the day so it's less stressful
 I want a chance to present the care plan
 Not as confusing as a normal patient chart
 Forgot the camera was on after a while
 I was a little unsure about what to ask the patient
 Didn't know there were that many parts until day of
 The exam let me apply practical information I gained
 Maybe do care plan before talking to the patient
 Need more time to write care plan Explain what the exam consists of better
 Need twenty minutes to review the chart
 Chart: easier to read than a normal clinic record
 Time with the patient was long enough
 Four hours is too long for an exam
 It was fun
 Clinical application approach is helpful
 Camera made me nervous
 Info regarding the patient wasn't complete.
 More past medical history would have been helpful.