STANDARDIZED PATIENTS IN MEDICAL EDUCATION: AN ANNOTATED BIBLIOGRAPHY

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# TABLE OF CONTENTS

Introduction .................................................................................................................. 1

Section 1. Commentaries on the Uses of Standardized Patients (SPs) ...................... 2
  1A -- Consensus Conference on The Use of SPs in Medical Education ................ 3
  1B -- Overview of the Use of SPs in Medical Education ......................................... 4

Section 2. Preliminary Work With Asymptomatic Standardized Patients (SPs) ....... 5
  2A -- Simulated Patients in Neurology .................................................................... 6
  2B -- Simulated Patients in Obstetrics and Gynaecology ....................................... 8
  2C -- Paraprofessionals as Simulated Patients ....................................................... 10

Section 3. Initial Uses of Standardized Patients (SPs) With Real Physical Findings .. 13
  3A -- Evaluating the Use of SPs Using Real and Simulated Patients .................... 14
  3B -- Evaluating Initial Uses of SPs With Real, Physical Findings ...................... 15

Section 4. Real Patients With Musculoskeletal Disorders ......................................... 17
  4A -- SPs With Musculoskeletal (MSK) Findings ................................................... 18

Section 5. Standardized Patients (SPs) Functioning in Multiple Roles as Patients,
  Teachers, and Evaluators ....................................................................................... 26
  5A -- SPs as Patients, Teachers, and Evaluators ................................................... 27

Section 6. Standardized Patients (SPs) That Evaluate Physicians’ Performance in
  Blinded Encounters ............................................................................................... 31
  6A -- SPs as Unannounced Patients in Physician-Blinded Encounters ............... 32

Section 7. Standardized Patient (SPs) Education Specialists/Trainers .................... 35

Section 8. Objective Structured Clinical Examination (OSCE) Studies Utilizing Standardized
  Patients (SPs) ........................................................................................................ 36
  8A -- Selected Bibliography of Review Articles Utilizing SPs in OSCEs ............... 37
  8B -- Selected Bibliography of OSCE Studies ....................................................... 37

Appendix A. Index of First Authors ........................................................................ 42
Introduction

Nearly three decades ago, Howard Barrows recognized a need to evaluate medical students’ clinical performance. In an effort to address this need, Barrows developed an assessment technique that utilized trained actors. The actors, or “programmed patients”, were trained both to simulate neurological disorders and to evaluate medical students’ clinical abilities when performing a complete neurological examination. In the 1970's, Stillman and her colleagues contributed to Barrow’s innovation by utilizing actual patients with real cardiovascular and pulmonary findings. These individuals were referred to as “patient instructors” (PIs), and were taught to evaluate and provide feedback to medical students on their history taking and physical examination skills. In subsequent studies, Stillman also referred to simulated patients as PIs. In this context, PIs are non-physicians trained to function in the role of patient, teacher and evaluator. Today, these individuals are referred to as “standardized patients” (SPs), a term first coined by Geoff Norman. SP encounters are a valuable addition to medical education and are used in medical schools around the world. However, SPs are not a substitute for direct contact with patients in a clinical setting, but supplement students’ experience and allow practice of clinical skills.

This working report is an annotated bibliography of articles on trained “patients” in medical education. I identified articles by searching Medline, CINAHL, and Health. To compensate for any database limitations, I manually searched through journal and article citations to obtain a more complete list of the literature in this area. The articles I included in this annotated bibliography were chosen according to their relevance and applicability in the field of medical education. I selected articles based on the following criteria: 1) they were published during the period 1964 - 1995 (most of the relevant articles were published in the 1970’s and the 1980’s); 2) they contained one or more of the keywords: patient educator, patient instructor, programmed patient, simulated patient, standardized patient, medical education, and continuing medical education; and 3) the trained patients were used in one-to-one encounters with medical students, residents, and/or practicing physicians. Although I tried to be as thorough as possible in my literature search, this bibliography is by no means exhaustive in scope.

This review of the literature on SPs and their application in medical education, shows that these individuals are utilized in medical schools in one of two ways:

1) as an adjunct to the course curriculum in which SPs function as patients, instructors, and/or evaluators of medical students’, residents’, or practicing physicians’ clinical skills in one-to-one encounters

2) as trained evaluators in certifying and licencing examinations, such as objective structured clinical examinations (OSCEs) or clinical performance examinations (CPEs).

In my literature search on trained patients, I focussed primarily on their use as patients, instructors, and/or evaluators of medical students’ clinical skills. This domain is addressed in the first six sections of this report. The seventh section focuses on the training and recruiting of SPs. Although the use of trained patients in OSCE testing is an important utilization of SPs, I did not concentrate on this topic due to time constraints and the enormity of this literature. The last section of this report, however, does highlight this literature and includes a selected bibliography of these studies.

Within each section the citations are listed in alphabetical order by first author which have been compiled into a first author index (please see Appendix A). For each citation, I have provided a brief synopsis or annotation that gives a general overview of the paper. I do have more extensive summaries if anyone wishes to use them.
Section 1. Commentaries on the Uses of Standardized Patients (SPs)

Section 1 provides an overview of Standardized Patients (SPs) in medical education. The first part of this section begins with a brief review of a consensus conference on the utilization of SPs in medical schools around the world. In 1993, the Association of American Medical Colleges (AAMC) held a Consensus Conference on *The Use of Standardized Patients in the Teaching and Evaluation of Clinical Skills*. The conference was well-attended by experts in the field of SPs, medical school faculty, and curriculum deans. The conference proceedings focused on the use of SPs in medical schools, and did not discuss the use of SPs for certifying or licensing examinations, such as an Objective Structured Clinical Examination (OSCE). Three papers emerged from this conference: 1) H.S. Barrows, 2) J.A. Colliver and R.G. Williams, and 3) P.L. Stillman.

The second part of this section includes two review articles that address the use of standardized patients in medical education. The first paper is a survey on the use of SPs in medical schools across North America. The second paper reviews large scale studies utilizing SPs in OSCEs.
Part 1A--Consensus Conference on The Use of Standardized Patients in Medical Education

Barrows HS.
An overview of the uses of standardized patients for teaching and evaluating clinical skills.

This paper discussed the author's personal experience with SPs over the last thirty years. The author reviewed a variety of issues on the uses of SPs in medical education, including: (1) the terms and roles associated with SPs; (2) the value of utilizing simulated patients instead of real patients in teaching and assessment; (3) the evolution and development of SPs; (4) the use of SPs in clinical practice examinations (CPX); and (5) the growing acceptance of SPs in medical schools.

Colliver JA, Williams RG.
Technical Issues: Test Application.
Academic Medicine, 1993; 68: 454-460.

This paper addressed some of the technical issues involved in the application of SPs. The authors posed eighteen questions that addressed these issues. Each question was followed by a response consisting of empirical evidence and commentary. These questions ranged from queries into the authenticity of SPs to evaluations of the reliability of SP-based testing. The authors commented on the lack of systematic evaluation of the more traditional methods of clinical competency in medical schools. The authors concluded that examinations utilizing SPs give as good or better assessment of students' clinical performance than do traditional procedures.

Stillman PL.
Technical issues: logistics.
Academic Medicine, 1993; 68: 464-468.

The author reflected on her extensive experience with SPs over the last two decades. In her discussion she addressed several technical issues, including: (1) the logistics of using SPs in teaching medical students; (2) the use of SPs in the assessment of students' clinical performance; (3) objective instruments and/or checklists that allow the SPs to record and evaluate students' clinical competency; (4) the use of SPs in the assessment of students' interviewing skills; (5) the use of SPs to evaluate students' written communication skills; (6) the importance of explicitly defining what will be tested in the SP encounter; (7) the variations in inter-station exercises; (8) the development of cases for SPs; (9) the selection and training of SPs; (10) the different ways to generate students' performance scores; (11) the faculty's role in teaching medical students; and (12) the implementation of SPs on a national level.
Part 1B—Overview of The Use of SPs in Medical Education

Stillman PL, Regan MB, Philbin M, Haley HL.

Results of a survey on the use of standardized patients to teach and evaluate clinical skills.


The authors conducted a survey that documented the extent of SP use in teaching and evaluating roles in North American medical schools. The response rate was 95%, with 136 of 142 curriculum deans responding, of those, 70% reported using use SPs in some way. The most frequent utilization of SPs (62%) was to train students in breast and pelvic examinations, the least frequent use (24%) was to teach or evaluate complete physical exam. At 68 of the 94 schools utilizing SPs a non-physician trains the SPs, while at 53 colleges MD trainers are used, and at the other 27, the author who develops the patient case trains the SPs.

The authors also addressed other relevant results of the survey, including: (1) the wide variations in the use of SPs in medical education; (2) the training and selection procedures used to prepare SPs for teaching and evaluating; (3) the administration involved in starting and maintaining an SP program along with the faculty participation required to make a program successful and cost effective; and (4) the strengths and weaknesses of the surveyed programs.

van der Vleuten CPM, Swanson DB.

*Assessment of Clinical Skills with Standardized Patients: State of the Art.*


This paper provides a comprehensive review of large scale studies of the psychometric characteristics of objective structured clinical examinations (OSCEs) that utilize SPs. The review begins with some background definitions and terminology essential for understanding the literature. The inclusion criteria for studies included in the review are discussed.

The review is organized into four main sections: (1) reproducibility of SP-based tests; (2) validity of SP-based tests; (3) impact of SP-based tests on the educational process; (4) recommendations for future SP-based testing.

This review confirmed several important findings, including: reliability analysis consistently indicated that the main source of measurement error across studies were variations in students' performance from station-station (content specificity); scores on short SP-based tests—less than three to four hours of testing time—are not meaningful because they are not adequately reproducible; and SPs are just as good, less expensive, and more readily available than physicians as assessors of student’s clinical performance.
Section 2. Preliminary Work With Asymptomatic Standardized Patients (SPs)

In the 60's, Howard Barrows recognized a need for a consistent, reproducible, patient-oriented method to examine medical students' clinical skills. In an effort to remedy this deficiency, he introduced the first simulated patients and referred to them as "programmed patients". These programmed patients were trained to simulate neurological disorders and then evaluate medical students as they performed a complete neurological examination.

In the 70's, to provide more systematic teaching and evaluation of basic physical examination skills, Stillman and her colleagues developed a strategy that used simulated patients; at this time they were referred to as Patient Instructors (PIs). These individuals were nonphysicians trained to function in the multiple roles of patient, teacher, and evaluator by using their own bodies as teaching material.

The development of an evaluation tool utilizing lay people and actors produced an abundance of literature. Unfortunately, many of the researchers in this field used different terminology when referring to the same concepts. This disparity resulted in a myriad of confusion. To reduce this confusion, several concepts will be defined that are used throughout this annotated bibliography:

**Standardized Patients (SPs):** In the 1980s, Geoff Norman coined the phrase "Standardized Patients" to replace the term simulated patient along with some of the ambiguity associated with it. This technique provides a standard for patient problems that would not vary from student to student. SPs can be both simulated patients or actual patients.

**Simulated Patients:** This term refers to well people trained to accurately portray a patient’s illness in a standardized way. The first simulated patients were Barrows’ "programmed patients".

**Actual Patients:** These are people trained to present their own illness in a standardized way. These individuals typically have stable physical findings. Patients have been used with the following conditions: cardiovascular disease, Human Immunodeficiency Virus (HIV) infection and full blown autoimmune disorders (AIDS), neurological disorders, pulmonary disease, respiratory problems, and musculoskeletal Disorders (MSDs).

**Patient Instructors (PIs):** This term originally referred to patients with chronic but stable conditions in several disciplines, including cardiology, respirology, rheumatology, and neurology. In later studies, the term referred to simulated patients who were nonphysicians trained to function in the multiple roles of patient, teacher, and evaluator by using their own bodies as teaching material.

The following section includes selected literature on the preliminary work with asymptomatic SPs. The section begins with the use of simulated patients in various medical specialties, including neurology and obstetrics and gynaecology. The section ends with a closer look at the initial types of simulated patients used in medical education.
Part 2A--Simulated Patients in Neurology

Barrows HS, Abrahamson S.

This study was undertaken to obtain a consistent, reproducible appraisal of students' clinical performance. In this landmark article, the authors investigated an assessment technique that utilized "programmed patients" to evaluate clinical neurology skills. This technique involved training an actress to simulate a neurological disorder, and to evaluate medical students' clinical abilities when they performed a complete neurological examination.

This study documented the development and implementation of the programmed patient and emphasises the importance of this type of assessment technique. Preliminary results indicated that the use of programmed patients provided a standardized appraisal of students' clinical performance.

The authors concluded that the student's encounter with the programmed patient was a very effective evaluation tool that benefits both the faculty and the students. Faculty are given the opportunity to review the examination results with each student. This, in turn, may help determine some of the strengths and weaknesses in the students' skills and in the neurology program, as a whole. In addition, students may benefit by the patient-oriented nature of this type of appraisal.

Additional Reading:
The following book provides a more detailed account of the development and use of programmed patients in medical schools.

Barrows HS.
Simulated Patients (programmed patients): The development and use of a new technique in medical education.
Laguna JE, Stillman PL.
Teaching undergraduate medical students the neurological examination.

Preliminary studies indicate that family physicians find it difficult to perform neurological examinations on patients with neurological conditions. To address this difficulty, a program was developed at The University of Arizona College of Medicine (UA) to ensure that medical students were competent performing a comprehensive neurological examination prior to their neurology clerkship.

In the UA neurology program, simulated patients were specially trained in the dual role of teacher and evaluator. These simulated patients, referred to as practical instructors, portrayed patients with normal neurological examinations, in addition to providing standardized assessments and individualized instruction to medical students.

In this study, 82 medical students performed a pretest examination, where they practiced their neurological techniques on practical instructors, and a post-test examination, where they were formally evaluated by practical instructors on their neurological exam skills. The results indicated that the mean score on the post-test (91.7) was significantly higher \( p = .001 \) than the mean score on the pretest (78.9). In addition to improving their examination techniques, medical students found the sessions both valuable and advantageous in helping them assess their proficiency in performing a complete neurological exam.

The authors concluded that the students' neurological skills acquired from this program contributed to the improved quality of the clerkship experience for the students. This program forms a strong rationale for the utilization of practical instructors, particularly in other specialty areas.
Part 2B--Simulated Patients in Obstetrics and Gynaecology

Kerr MG, Templeton AA, Parboosingh J.
Simulated patients as a learning resource in the study of reproductive medicine.  

Preliminary investigations have identified a need to develop better communication and clinical problem solving skills in medical students. This paper discussed the use of simulated patients to facilitate undergraduate learning in reproductive medicine.

The first step of this study identified a wide range of reproductive problems commonly experienced by women. Once these health concerns were identified, the investigators set prerequisite skills required by students to deal with these concerns competently. Simulated patients were used to promote active student learning and expose students to difficult and uncommon reproductive problems in a non-threatening patient encounter. Simulated patients included three female actresses trained to accurately portray a reproductive patient. The simulators were never physically examined by the medical students.

SPs encountered students in numerous settings, such as: 1) one student of a tutorial group would be assigned to an SP while the others would be exposed to a real patient. After the patient encounter, the simulator would provide feedback to the entire group about the encounter; 2) tutorial groups would jointly interview the simulated patient; 3) one student would encounter the simulated patient while the other tutorial members viewed the interview through a one-way mirror; or 4) the patient encounter would be videotaped and viewed later by the entire tutorial group. In this way, SPs provided an objective assessment of students’ interviewing skills and problem solving abilities.

The authors demonstrated that simulated patients helped emphasise the importance of good communication skills, appropriate assessment, treatment, and patient management. The authors discussed future plans to train a simulated couple to prepare students for dealing with couples experiencing reproductive or sexual problems.
Kretzschmar RM
Evolution of the Gynecology Teaching Associate: An Education Specialist.

The author critically appraised the traditional teaching approach to the gynaecologic examination, that is, the triangular setting consisting of the patient, the student, and the faculty instructor. The author identified several inadequacies in this approach including: a) the training and consequently the channels of communication between the student and instructor were hindered because of the patient's presence; b) the examination was difficult to evaluate due to the internal nature of the exam and because an untrained patient would be unable to evaluate this procedure; the emphasis of this training was on the technical skills and the interpersonal aspect of the encounter was not addressed; the patient was passively involved and did not comment on the student's performance; and the triangular nature of the session was anxiety-provoking for the student.

The author described the initial changes made to the gynaecological training program at the University of Iowa. In 1964, instructional training in the medical interview was introduced to augment the educational process. A number of women were recruited and trained to simulate various gynaecologic conditions. These professional patients were interviewed by students and, once the interview was complete, they provided direct and immediate feedback to the student about their communication skills.

In 1972, after several years of experimentation, a new gynaecology instruction program was developed. The program utilized an education specialist, referred to as a gynaecological teaching associate (GTA), who functioned as both a patient and an instructor. The GTA emphasized the importance of good communication skills along with the technical skills that are necessary to perform a quality pelvic exam. The changes introduced by the GTA greatly enriched the students' learning experience of the pelvic exam. In addition, the GTA provided a sensitive non-threatening environment to learn difficult and sensitive clinical skills.

The paper also included a discussion on the unique qualities of the GTA, the recruitment and training of the GTA, the educational impact of the GTA technique, and the evaluation of this new program. The author concluded that the GTA technique was an effective method for teaching students the gynaecologic exam.
Part 2C--Paraprofessionals as Simulated Patients

Stillman PL, Sabers DL, Redfield DL.
The use of paraprofessionals to teach interviewing skills.

This study was undertaken to evaluate the interviewing skills of pediatric students (clerks). Two simulated mothers were recruited and specially trained to assess the clerks interviewing techniques. These non-physicians were instructed so that they could provide a standardized history of a common ambulatory condition experienced by a child.

Every first-year pediatric clerk conducted a videotaped interview with one of the trained mothers. After completion of all interviews, the clerk reviewed the videotaped encounter with the trained mother who provided individualized feedback to the clerk about his/her performance. The Arizona Clinical Interview Rating (ACIR) Scale was developed to provide health professionals, including the trained mothers, with an objective, reliable tool to appraise students' interviewing skills.

Preliminary results indicated that the pediatric clerks who participated in this study and received constructive feedback by the trained mothers were rated significantly higher on the interview process than those who did not receive evaluative feedback. This study was a first attempt at utilizing paraprofessionals--trained mothers--in the assessment of medical students, and the results were so impressive that further research has been conducted.
Stillman PL, Sabers DL, Redfield DL.
Use of trained mothers to teach interviewing skills to first-year medical students: A follow-up study.

In order to gain a better understanding of the added value of utilizing paraprofessionals (trained mothers) in the evaluation of medical students' interviewing skills the present study was conducted. The study's objective was to investigate the effectiveness of using trained mothers to teach and evaluate interviewing techniques on students' skills acquisition.

As an adjunct to the first-year interviewing course, half the students participated in a treatment interview with one of the trained mothers. Immediately following the interview, students received personalized feedback on the content—the amount of information obtained from the patient—and process—the interviewer's interpersonal skills and attitudes toward the patient—of interviewing. By the completion of this course, all first-year students had had an evaluative interview where they were scored for content and process using The Arizona Clinical Interview Rating (ACIR) Scale.

The results indicated that students exposed to the trained mothers improved their interviewing skills significantly more than comparable students who did not participate in the treatment interviews with these paraprofessionals.

The authors concluded that the exposure to a trained mother is an efficient and valuable way to teach interview skills to students. In a follow-up study conducted by the authors one year later, results confirmed that one interview with a paraprofessional was sufficient for optimal student learning. Furthermore, the students' newly acquired skills are retained for at least a period of a year.
Stillman PL, Sahers DL.
Using a competency-based program to assess interviewing skills of pediatric house staff. 

In an attempt to provide more systematic teaching and evaluation of basic interviewing skills of pediatric residents (house officers), Stillman and her colleagues developed a strategy that used non-physician mothers to present the medical history of their children. This paper discussed the development of an objective assessment technique to evaluate students’ interview skills along with the initial implementation of a competency-based program at the University of Arizona College of Medicine (UA).

This program was established to implement a minimum level of competency for interview techniques of pediatric house officers. Based on the evaluations by the trained mothers, house officers who performed poorly (below a preset standard) received remedial training on their interview skills.

The authors concluded that as a result of this program, wide variations in the competency of pediatric house officers were diminished. These data form a strong rationale for the use of non-physician mothers in the systematic evaluation of house officers’ interview skills.

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**Additional Reading:**

This book is an excellent resource for anyone interested in the methodology pertaining to non-physicians, such as PIs and SPs, in medical schools.

Ruggill JS, Laguna JE, Sabers DL.
*The non-physician in medical education.*

The following paper provides another account of the utilization of simulated patients in conducting a complete physical examination.

Stillman PL, Ruggill JS, Sabers DL.
Use of practical instructors to teach and evaluate the complete physical examination. 
Section 3. Initial Uses of Standardized Patients (SPs) With Real, Physical Findings

Although SPs with simulated abnormalities are readily used in medical education, it is also advantageous to use patients with real physical findings. Real patients add value to student learning in the following ways: students receive hands-on experience with common and important medical problems during their residency; students are exposed to real patients in a non-threatening encounter; patients with real findings can determine whether appropriate pressure is applied during palpation and whether the correct structure is palpated; and students gain a better understanding of the adverse impact the disease has on the patient's activities of daily living along with the psychosocial ramifications.

The first article in this section addresses the issue of whether to use real or simulated patients in the evaluation of medical students. The next three studies provide an overview on the initial uses of SPs with real, physical findings. This is followed by a short bibliography on the utilization of SPs with other physical conditions, including HIV infection and AIDS.
Part 3A--Evaluating the Use of SPs Using Real and Simulated Patients

Norman GR, Tugwell P, Feightner JW.

A comparison of resident performance on real and simulated patients.

Preliminary work on the use of simulated patients provide support for the validity of using simulated patients in assessing medical students' interpersonal skills. This study was undertaken to investigate other aspects of clinical competence that were not considered in these earlier studies.

To test the validity of the use of simulated patients, the authors compared medical students' performance with real and simulated patients presenting a similar clinical problem at the same point in time, conducted under similar circumstances. Four real patients with chronic but stable illnesses were selected for the study from rheumatology, neurology, respirology, and gastroenterology specialties. These patients were briefly instructed so that they would present a consistent picture of the initial onset of their condition. Four simulated patients were also trained, using Barrows standard methods, to present the same clinical problems as the real patients.

The results indicated that 67% of the residents correctly identified the patients as real or simulated. However, several residents commented that they would have been unable to detect the patient's true identity if they were presented with either a simulated or a real patient alone. The authors noted that generalizing the study results were limited to the scope of family practice and internal medicine residents due to the type of subjects and conditions included in the study. The authors also suggested that future investigations into physicians' and students' clinical behaviour would be more beneficial if it took place in real life practice as opposed to simulated test encounters.
Part 3B--Evaluating Initial Uses of SPs With Real, Physical Findings

Rutala PJ, Stillman PL, Sabers DL.

**Patient instructors as evaluators of house staff clinical competence.**
*Annual Conference on Research in Medical Education*, 1980; 148-153.

This study reports on a new program at the University of Arizona that endeavours to objectively quantify key components of clinical competency. The purpose of this paper was to evaluate medical students’ competence in basic clinical and diagnostic skills. Seven chronically ill patient instructors (PIs) with stable cardiovascular or pulmonary findings were specially trained to assess students’ examination techniques, the identification and description of the PIs physical findings.

The authors described the methodology involved in training PIs and the development of both a performance checklist, detailing essential examination maneuvers, and a content checklist, recording all the physical findings upon examination.

Results indicate that students who performed the most thorough examinations were not necessarily those who were able to identify the PIs condition most accurately. This study was the first attempt at utilizing PIs to obtain data in a numerically objective manner. The authors concluded that there was no evidence to suggest that the current program design allowed for the prediction of students’ performance in real life settings.

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Rutala PJ, Stillman PL, Sabers DL.

**Evaluation of house staff clinical competence using patient instructors.**

This study was undertaken in order to assess and evaluate the clinical competency of medical students in an objective manner. Specially trained symptomatic patients with stable abnormal cardiovascular or pulmonary conditions assessed students’ examination techniques as well as their ability to identify and describe abnormalities. PIs also provide students with immediate individualized feedback about their performance, which gives students the opportunity to correct any of their deficiencies.

This study demonstrated that PI evaluation was sensitive enough to differentiate levels of medical training and showed that, as a student’s level of medical training increased so did his/her ability to assess the patient’s condition. The authors concluded that the PIs assessment of medical students’ clinical competency should be an essential element in the students’ overall evaluation.

**Additional Reading:**
The following paper provides a brief overview of the preceding study.

Rutala PJ, Stillman PL, Sabers DL.

**House staff evaluation using patient instructors: a brief report.**
Stillman PL, Ruggill JS, Rutala PJ, Sabers DL.

**Patient instructors as teachers and evaluators.**


In order to reliably and objectively evaluate students' clinical performance the present study was undertaken. The paper begins with valuable historical information on the development of innovative methods to teach and assess PIs' evaluation skills. The PIs, who were non-physicians trained to function as patients, teachers, and evaluators, had stable cardiovascular and pulmonary findings. In this study, PIs were instructed to evaluate the thoroughness and competency of the students' performance and ascertain whether the positive findings were identified and palpated correctly.

The authors discussed the development of two evaluation instruments, performance and content checklists, that PIs used to assess medical students' examination techniques. This study confirmed that PIs can be used to objectively evaluate students' performance. The authors discussed the PI program at the University of Arizona and its expansion into other specialty areas including rheumatology, neurology, and ophthalmology. The authors also commented on the added value of using symptomatic PIs over asymptomatic patients.

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**Further Reading:**

In more recent investigations, SPs with other physical conditions have been utilized. I have included two such studies for future reference, both used real patients afflicted with HIV infection and/or full blown AIDS.

Curtis JR, Paauw DS, Wenrich MD, Carline JD, Ramsey PG.

**Ability of primary care physicians to diagnose and manage Pneumocystis carinii pneumonia.**


Paauw DS, Wenrich MD, Curtis JR, Carline JD, Ramsey PG.

**Ability of primary care physicians to recognize physical findings associated with HIV infection.**

*JAMA*, 1995; 274: 1380-1382.
Section 4. Real Patients With Musculoskeletal Disorders

The advantages of using real patients over simulated actors led to their implementation in medical schools. The University of Arizona (UA) was the first medical school to publish literature on the utilization of real patients in rheumatology education. Eric Gall and Paula Stillman performed much of the preliminary work with real patients in the late 1970's and early 1980's. As a result of their work, a patient instructor (PI) program was developed at UA in 1977. The program was designed to measure and upgrade medical students' clinical examination skills utilizing trained arthritic patients. PIs with stable arthritis were trained to assess medical students' and physicians' musculoskeletal (MSK) examination skills and abilities to identify correctly the patient's physical abnormalities.

Initial results from this program indicated that utilizing PIs was an effective way to assess and improve medical students and physicians MSK competency. Subsequent studies support the use of PIs as valuable educational tools in assessing the skills of medical students and professionals.

The following section includes nine articles on the use of patients with “real” MSK findings in medical education. This section was of particular interest to ACREU in this literature search, and thus, you will find this section contains much more detailed annotations.
Part 4A--SPs With Real Musculoskeletal (MSK) Findings

Anderson KK, Meyer TC.

The use of instructor-patients to teach physical examination techniques.

This study was performed to determine the feasibility of utilizing instructor patients (I-Ps) with stable physical findings to teach basic skills to medical students prior to their first clinical encounters with real patients. The patients recruited to be I-Ps included 16 individuals; 4 with neurological disorders, 4 with respiratory conditions, 4 with cardiovascular diseases, and 4 with musculoskeletal (MSK) disorders.

The study consisted of various stages: 1) faculty recruitment; 2) development of teaching materials; 3) recruitment of patients; 4) training of the I-Ps; 5) I-P instructional sessions; 6) sessions in which faculty evaluated and rated student performance. The participants recruited for this study were second-year medical students. Students were assigned to an experimental group (N=46) or a control group (N=41). The experimental group were exposed to a 2½ hour I-P session (4 students: 2 I-Ps) that consisted of reviewing the patient’s medical history and performing the appropriate regional examination on the I-P. For example, the MSK exam would be performed on the patient with a MSK disorder. Feedback and suggestions were received on their performance by the other I-P. The control group, who were randomly selected students, received the customary training for one of the regional exams provided by their MD course instructor.

The evaluative process occurred approximately five weeks after the I-P sessions when faculty rated the medical student’s performance on each element of the examination. All 87 students from both the experimental and the control group were evaluated in the performance of the regional exam.

The results indicated that the medical students who received training by the I-Ps (the experimental group) performed more proficient regional examinations than those students who received training from the physician instructors (the control group). The largest difference between the groups existed in the performance of the MSK examination, where the experimental group performed significantly better than the control group (p < .01).

There were several study limitations. Among them, patients received minimal training, between 3 and eight hours of physician instruction and, most importantly, the I-Ps were never tested for inter-rater reliability.
Gall EP, Stillman PL, Rutala PJ, Sabers DL, Gooden A, Ruggill JS, Boyer JT.
The arthritis patient instructor in competency board teaching and evaluation of rheumatic diseases care by health professionals.

This abstract discussed the development of a new program at the University of Arizona (UA) that trained specially selected patients with advanced stable arthritis to teach the conduct of the MSK exam to medical students. Preliminary results on the training and assessment of this new patient instructor (PI) program are reviewed.

PIs were well trained to evaluate the competency of health professionals. They were taught: 1) to perform the MSK exam; 2) to recognize previously determined physical findings, including bony changes; and 3) to develop proper care plans once the diagnosis is reached.

To sustain the PIs optimum level of performance, the authors recommended that considerable effort should be taken to ensure their inter- and intra-rater reliability. The authors concluded that PIs were a unique approach to the assessment and instruction of health professionals. Moreover, the PI method can provide excellent opportunities both for CME and peer review interventions.

Gall EP, Boyer JT, Meredith KE, Gooden A.
Assessment of physical examination skills by the patient instructor.

The purpose of this study was to measure and upgrade the MSK examination skills among students and physicians. PIs, 6 patients with stable MSK disorders, were specially trained to evaluate the performance of the MSK exam. The PIs performed these tasks reliably (.84 inter-rater reliability) and competently.

The clinicians who participated in this study included practicing physicians (N=57), house staff (N=43), and medical students (N=147). The PIs assessed the clinicians' examination techniques using a performance checklist, and the clinicians' ability to identify the patients' abnormalities using a content checklist. After the examination was complete, the PIs provided the clinicians with evaluative feedback.

The findings indicated that, as a result of the PI sessions, all three groups of clinicians performed significantly better (p<.01) on their MSK examinations than they had prior to the encounter. The authors concluded that utilizing PIs was an effective method for assessing and improving clinicians' examination skills.
Gall EP, Boyer JT, Riggs GE, Meredith K, Gooden A.


The purpose of this study was to assess the MSK examination techniques of physicians by utilizing PIs. This abstract reported on the previously mentioned PI program established at the UA.

Six PIs with uncomplicated arthritis were trained to give reliable histories and to evaluate the competency of physicians when they performed a MSK examination. The authors determined that PIs were reliable, with an inter-rater reliability of .84 ($\hat{r}$ coefficient), in their instruction and evaluations. The PIs used two checklists, one to score “performance” (examination techniques) and the other to score “content” (identification of the PI’s physical findings).

The study participants consisted of physicians (N=33) who examined 3 different PIs over a six month period, for a total of 96 physician-PI encounters. The results indicated that physicians’ performed the MSK exam with increasing proficiency over the study period, both their content ($p<.04$) and performance ($p<.001$) scores increased between PI visits. Altogether, 112 referrals were made to allied health professionals (61 physiotherapist, 6 occupational therapy, 4 counselor, and 19 patients had no referrals), 144 physician specialist referrals (12 patients had none), and 76 surgical procedures were proposed, many of which were deemed unnecessary.

The study demonstrated that referrals to allied health professionals, other than physiotherapists, were underutilized. The authors concluded that the PI sessions improved the physicians’ ability to perform a comprehensive MSK exam.
Gall EP, Meredith KE, Stillman PL, Rutala PI, Gooden MA, Boyer JT, Riggs GE.

The use of trained patient instructors for teaching and assessing rheumatologic care.


Research investigations have indicated the training that primary care physicians receive in diagnosis, joint examination, and treatment of common MSK disorders is inadequate. Yet, these same physicians provide 95% of all rheumatologic care. These results are not only disturbing, but have created a concern for the quality and adequacy of fundamental rheumatology training in medical schools. To help remedy these training deficiencies, a PI program was developed at the University of Arizona (UA) in the department of rheumatology.

This landmark article addressed several important issues including the need for improved rheumatologic training, the development of the PI program, the advantages of using real patients over simulated actors, the extensive training PIs receive, and the development of two evaluative checklists. These checklists included a performance checklist (used by PIs) composed of all exam procedures and used for teaching and student evaluation, and a content checklist (used by the student/health professional) that allowed for the assessment of joint normality including inflammation, ROM, and alignment.

This paper also investigated the rheumatology skills and knowledge both students and physicians possess in an effort to identify and possibly improve deficiencies through the use of PIs. The PI program consisted of 5 patients, PIs, with stable arthritis who were trained in history-taking and the conduct of the MSK exam. PIs functioned as patients, teachers, and evaluators of medical students' clinical skills.

Over the three year study period, 144 clinicians participated including preclinical and transfer students, clerks, house staff, and primary care physicians. Two smaller studies were conducted within the larger project. The first study investigated the impact of perusing the performance checklist prior to the examination. A subset of students (N=17) were not given a copy of the checklist and subsequently performed 48.6% of the manoeuvres adequately, while another group was exposed to the checklist and performed 81.9% of the manoeuvres appropriately (p< .01). The second study explored the difference in clinicians' performance and content scores resulting from repeated encounters with the PIs. The results indicated that clinicians' scores significantly improved (p< .05) across repeated PI exposures.

The authors confirmed that to maintain PI skills and in turn, the programs' integrity, ongoing evaluation and training of PIs is essential. The authors suggested that as PIs gain experience both their inter-judge (across PIs) and intra-judge (within PIs) reliability coefficients increased (average .91). This result emphasized the need for continual reliability checks.

The authors concluded that PIs provided students and physicians with consistent, reliable, practical instruction to clinicians for the conduct of MSK exams. PIs also provide a unique perspective into the knowledge and skills clinicians possess or lack in the field of rheumatology.
Laing TL, Gruppen LD, Branch VK.
The effect of patient educators with Rheumatoid Arthritis on Medical Students knowledge, confidence and attitudes. (abstract)
Arthritis and Rheumatism, 1994; ACR Poster Session: S197.

A patient educator program was introduced at the University of Michigan to teach second-year medical students the MSK examination. The objective of this study was to determine the effect of arthritis patient educators (PEs) on medical students’ knowledge, confidence, and attitudes.

The 20 patients with rheumatoid arthritis were recruited for this study, all of who received intensive training including, approximately one hundred hours of small group learning, home study, written exams, and practice sessions. The PEs were trained to teach and evaluate the conduct of the MSK examination with special emphasis on identifying characteristic arthritic findings.

Second year medical students participated in two hour teaching sessions with the PEs. The sessions consisted of the PEs teaching students how to examine and recognize characteristic MSK abnormalities in arthritic patients. A qualitative questionnaire, measuring students’ knowledge, confidence, and attitudes, was administered to students prior to and immediately after the training sessions.

Results indicated that students enjoyed the encounters with PEs, and would recommend the sessions to other students. The authors concluded that trained PEs: 1) teach students how to perform an accurate and comprehensive MSK exam; 2) teach students how to identify characteristic arthritic findings; and 3) teach students how to be more empathetic in their approach to chronic arthritis sufferers.

The majority of patients with MSK disorders are treated by family practitioners (32%), internal medicine specialists (23%), and orthopaedic surgeons (17%) while very few are cared for by rheumatologists (5%). Thus, it becomes essential to evaluate the diagnostic abilities and quality of care received by patients with MSK disorders from family physicians (FPs). In order to assess FPs’ clinical judgement defined both as database collection and development of an assessment and plan for care in a primary care setting, this descriptive study was undertaken.

The authors described an SP program, an extension of Gall and Stillman’s initial PI program at the UA, that utilized SPs to unobtrusively assess the clinical judgement of FPs. SPs (N=5) with stable arthritic conditions received thirty hours of training to deliver accurate medical histories and reliable evaluations of FPs’ history-taking and examination skills. SPs completed their assessments of the FPs after the SP-encounter so that the physician did not suspect the SPs were not real patients.

In a brief twenty minute SP-encounter, 26 FPs, including residents and faculty located in a clinic setting, were visited by SPs who functioned as unrecognized observers. SPs evaluated the FP’s ability to collect diagnostic information, to formulate an assessment, and to develop a plan for the patient care work up. The data obtained from the SPs, who completed validated history and physical exam checklists, and that of the FPs, who completed a progress note for the patient, were compared and the results of this were given to the FPs in the form of evaluative feedback.

The findings yielded several surprising results. Among these findings were: 1) only 4% (1/23) of FPs inquired about the psychosocial consequences of the disease on the SPs; 2) most (25/26) of the FPs inquired about the SP’s chief complaint; 3) 37% (16/26) of the FPs did not palpate the involved area, and of those who did, 52% performed the task adequately while 11% did so inadequately; 4) 85% did not refer the SPs to a specialist.

The authors noted that the SPs were realistic (88% of the FPs did not know the identity of the SPs) and accurate in their evaluations (85% to 88% of the FPs reported that the SP assessments were correct). The authors concluded that skilled physicians often make reasonable diagnosis without much input from the patient’s history and physical examination. However, the authors noted that the study was limited in that only a short appointment with an SP was used for evaluation of the FP.

N.B. There were several areas within the paper where the data in the tables did not correspond with the data reported within the body of the paper.
McClure CL, Gall EP, Meredith KE, Gooden MA, Boyer JT.
Family practice and internal medicine clinical judgment in a university setting.

This study was performed to determine whether there were differences in the clinical judgement of simple arthritic conditions between family practice (FP) and internal medicine (IM) residents, as measured in a brief physician visit. SPs were used to evaluate the performance of the medical residents through blinded observations. That is, residents did not know the identity of the SPs.

Over the three year study period, SPs (N=4) with stable arthritis visited 29 FP (with a total of 62 SP-encounters) and 33 IM residents (with a total of 50 SP-encounters). Data was obtained through a history checklist providing information relevant to the condition, for example, disease onset or present symptoms, a physical exam checklist including information that measured the physician’s assessment and treatment plan, for example, ability to state diagnosis, prognosis, and educate the patient, and an audit of the progress note developed from the first two checklists incorporating information that reflected the physician’s ability to develop an assessment, plan for care, and accurate diagnoses for the patient.

Results indicated that SPs were credible and undetectable by residents 96% of the time. Also, IMs performed a more detailed examination on all levels, but there were no significant differences in the proportion of total diagnosis that were considered reasonable between the FP (72%) and IM (77%) residents. In addition, FP residents spent less time on the patient encounter (20 vs 30 minute appointments), ordered fewer diagnostic tests (1.42 vs 1.88/exam) and x-rays (0.35 vs 1.02/exam) than IM residents. Referral rates were very similar for both residents (.15 for FP vs .16 for IM) contrary to other studies where FPs made less referrals.

These data demonstrated that of the residents who performed MSK examinations on the SPs, 68% of FPs inspected the involved area and 71% palpated this region, while 62% of IMs inspected and 79% palpated the involved area. These results suggested that residents’ who performed MSK examinations did so proficiently and implied that those who feel less confident performing these skills avoided inspecting and palpating the affected region.

The authors concluded that although no outcome was measured--only a brief new encounter was evaluated--it may be possible to arrive at the same diagnosis with less expenditure of resources. This was illustrated by the lack of significant differences in proportions of total diagnosis that were considered reasonable by both the IM and FP residents, even though the IMs performed more extensive exams and spent more time with the patients.
Riggs GE, Gall EP, Meredith KE, Boyer JT, Gooden A.

**Impact of intensive education and interaction with health professionals on patient instructors.**

*Journal of Medical Education, 1982; 57: 550-556.*

This study was undertaken to investigate the impact of intensive training, numerous MSK exams, and stressful patient-physician on PIs’ behaviour/personality traits.

The study participants originally included 8 patients with stable rheumatoid arthritis, which reduced to 5 (all were female). The 3 patients who left the study were male and had experienced outside difficulties that prevented them from continuing in the study. The study patients, referred to as PIs, were given a personality inventory (the Taylor-Johnson Temperament Assessment) and an individual interview prior to their involvement, and every six months afterward for a twenty-four-month period. During this time, PIs participated in approximately one hundred examinations and, although they may have experienced some fatigue they continued to be highly motivated about the program.

Results indicated that in the two years, all the PIs believed they had grown intellectually and emotionally as a result of the program. This program taught the PIs that they still had valuable societal contributions. PIs enjoyed teaching, felt a sense of worth in instructing students, and had more self-confidence in their interactions with physicians. In addition, there is a need to emphasize increased patient education and to include the patient as a partner on the medical team.

The authors concluded that PIs found the patient educator program beneficial. This study confirmed that early in the process of training, PIs should be carefully monitored to identify any negative impacts and to remedy these difficulties through patient counseling.
Section 5. Standardized Patients (SPs) Functioning in Multiple Roles as Patients, Teachers, and Evaluators

Numerous studies have shown that SPs provide consistent practical training to medical students, residents, and physicians. In addition to these unique qualities, trained SPs can provide valuable instruction, evaluation, and immediate feedback to health care professionals. It is well established that trained SPs are accurate in evaluating and recording medical students' clinical performance and interviewing skills. In several studies, the results indicate that SPs are about as accurate as physicians (80% precision) in their evaluations of residents' clinical skills.

The following section includes six articles on the use of SPs as patients, teachers, and evaluators of medical students' clinical competency. This section concludes with a selected bibliography of medical education studies that utilize SPs in multiple roles.
Part 5A--SPs as Patients, Teachers, and Evaluators

Ainsworth MA, Rogers LP, Markus JF, Dorsey NK, Blackwell TA, Petrusa ER. 
JAMA, 1991; 266: 1390-1396.

The purpose of this paper was to investigate the use of SPs to help overcome the problems associated with current methods of developing and evaluating clinical skills in medical students. A formal SP program at the University of Texas Medical Branch (UTMB), Galveston, was developed in 1976. The program was originally designed to supplement students’ experience and allow them to practice their clinical skills utilizing SPs. The success of the program led to the Faculty of Medicine’s decision to use SP-based encounters as an adjunct to basic science and clinical faculty observations, to ensure faculty involvement in the assessment of medical school graduates. SPs were primarily used to assist in the instruction of fundamental medical interviewing and physical examination skills that reduced faculty observation time of students.

Testing with SPs allows the faculty to prospectively identify critical skills for trainees and establish explicit performance criteria for clinical competency. The authors noted that more research is needed on reproducibility of performance if licensing decisions will be influenced by SP-based encounters. They also discussed cost and practicality issues with SP-based programs, suggesting that these types of programs can be cost-effective as an adjunct to traditional one-on-one teaching sessions.

Connell KJ, Sinacore JM, Schmid FR, Chang RW, Perlman SG. 
Assessment of clinical competence of medical students by using standardized patients with musculoskeletal problems. 
Arthritis & Rheumatism, 1993; 36: 394-400.

In order to assess whether SP-based tests could be structured to provide reliable, valid, and useful information about medical students’ overall clinical competence in the assessment of MSK problems, the present study was undertaken.

Two specially-trained, non-physician actors portrayed one of two rheumatology cases, polyarticular (RA) arthritis and gout. During a videotaped SP-encounter, SPs completed a history and physical exam checklist on the performance of 19 junior medical students. Videotaped encounters were viewed by an external rater (an occupational therapist). After the SP-based test, a rheumatology faculty member conducted a structured interview to assess students overall clinical competence on the case.

The results indicated that no student approached the highest possible score on either test (gout case- max score 11, \( \bar{x}=3.73, \text{SD}=1.36 \); RA case- max score 12, \( \bar{x}=4.70, \text{SD}=1.21 \)) and students, as a group, received less than \( \frac{1}{2} \) the possible points on 5 important aspects of diagnostic reasoning.

The authors concluded that rheumatology medical education is severely lacking and should be reconsidered. On a more positive note, the authors’ investigations demonstrated that SP-based tests identify students’ strengths and weaknesses in a way that is similar to an intensive and structured interview with an experienced faculty.
Gold G, Hadda C, Taylor B, Tideiksaar R, and Mulvihill M.
A **standardized patient program** in a mandatory geriatrics clerkship for medical students.

This paper was undertaken to investigate the frequency with which students are observed by faculty and
to discuss the implementation of a geriatric SP program (GSPP). Preliminary investigations indicated that
most of the fourth-year medical students at Mount Sinai School of Medicine in New York, had received
little if any direct faculty observation, 36% of the students had never been observed while obtaining a
complete history, and 24% were observed only once. Similarly, 26% of the students had never been
observed while performing a physical examination on a real patient and 39% were observed only once.
The GSPP was established in 1991 in an effort to remedy this lack of faculty evaluation, while providing
students with more direct feedback on their history taking and clinical exam skills.

Altogether, 64 medical students completed the GSPP. The SP cases took place in examination theatres,
were observed by faculty, and were videotaped for future evaluation. After the encounter, students
received immediate feedback on their performance along with a copy of the taped encounter that they
could later review.

The authors concluded that the GSPP provided students with direct feedback on their clinical skills and
many of the students (76%) rated the SP experience positively. The authors noted that SPs were a
valuable adjunct to the geriatric curriculum.

Stillman PL.
**Expanding the role of non physician teachers and evaluators.**
*Journal of the American Medical Womens Association, 1984; 39: 54-56.*

The author, one of the foremost experts in the area of simulated patients, discussed the increase in
utilization of PIs in medical schools. A PI program, established at the University of Arizona, was
described in detail along with several recent developments.

The paper included several key topics, including: (1) PIs that were trained to teach and evaluate students’
interviewing skills; (2) asymptomatic PIs trained to instruct and assess students’ performance of a
complete physical examination; (3) symptomatic PIs, with stable abnormal findings, trained to teach and
evaluate students’ examination techniques in addition to the students’ ability to identify and describe the
patients’ abnormalities; and (4) PIs trained to simulate a complete clinical encounter and evaluate
students’ clinical competence.

The paper concluded with a discussion of the cost effectiveness and benefits of such a program. Several
administrative and quality assurance issues were addressed. The author suggested that PIs are a valuable
evaluation tool for any medical school.
Stillman PL, Burpeau-Di Gregorio MY, Nicholson GI, Sabers DL, Stillman AE. 
Six years of experience using patient instructors to teach interviewing skills.  
*Journal of Medical Education*, 1983; 58: 941-946.

It is well documented that medical students are lacking in their ability to obtain a complete and precise medical history, an integral component of clinical diagnosis. In an attempt to remedy these deficiencies, a PI program was developed at the University of Arizona (UA). This paper chronicled the development, growth, and results of the UA program over a span of six years. When the program was initially developed, PIs were trained mothers who provided a medical history about their “child.” The success of the program expanded the role of PIs to include the simulation of both adult and psychiatric patients.

Over this six year period, data were collected on six classes of second-year medical students who were exposed to PIs in three different specialty interviews. At the end of every interview, PIs provided individualized feedback on the students’ performance with suggestions on improving their interviewing skills.

Results obtained from these data indicated that the UA program was an effective method for teaching and evaluating interviewing skills by: 1) providing standardized evaluation of students which allows for within group comparisons; 2) offering students personalized feedback and suggestions on areas and ways of improvement; and 3) ensuring students achieve a minimum level of competence in their interviewing techniques.

Stillman PL, Swanson DB. 
**Ensuring the clinical competence of medical school graduates through standardized patients.**  
*Archives of Internal Medicine*, 1987; 147: 1049-1052.

A lack of careful systematic evaluation of medical student’s clinical training and abilities has resulted in deficiencies in some fundamental clinical skills. The purpose of this paper was to report on the investigations into the current problems with the clinical training provided to medical students in addition to the deficits in the evaluation of these skills. The authors suggested that SPs can help solve some of these problems.

SPs are described as non-physicians that are specially trained to function as patients, teachers, and evaluators in a realistic clinical encounter. SPs provide valuable training, ensure exposure to common illnesses, and allow monitoring of the patient-student encounter.

This paper discussed the collaboration between six New England medical schools on the development of a list of critical competencies that students must master before they graduate from medical school. This list was created to guide the development of an assessment battery. SPs will also be utilized in this assessment process. They will simulate physician-patient interactions and evaluate students clinical and interviewing skills. The authors noted that preliminary studies indicated that the SP approach is advantageous for ensuring that medical school graduates possess competent clinical skills.

29
Additional Reading:

In addition to the preceding papers that utilize SPs as patients, teachers, and evaluators, I have also provided a reference list of selected literature on this domain.

Callaway S, Bosshart DA, O’Donell AA.  
Patient simulators in teaching patient education skills to family practice residents. 

Stillman PL, Haley HL, Regan MB, Philbin MM.  
Positive effects of a clinical performance assessment program. 

Stillman PL, Regan MB, Swanson DB.  
Impact of several variables on physical examination skills of medical students.  

Stillman PL, Ruggill JS, Sabers DL. 
The use of practical instructors to evaluate a complete physical examination.  

Stillman PL, Sawyer WD.  
A new program to enhance the teaching and assessment of clinical skills in the People’s Republic of China. 

Swanson DB, Stillman PL.  
Use of Standardized patients for teaching and assessing clinical skills. 

Woodward CA, Neufeld VR, Norman GR, Stillman PL.  
Symposium: Simulated patients in evaluation of medical education and practice.  
*Proceedings of the --- Annual Conference on Research in Medical Education*, 1983; 22: 238-244.
Section 6. Standardized Patients (SPs) That Evaluate Physicians' Performance in Blinded Encounters

MSK disorders are among the most frequent causes for visits to primary care physicians second only to common colds. People with musculoskeletal disorders rely on family physicians to provide the appropriate care and, if necessary, the referral on to a rheumatology specialist or orthopaedic surgeon. However, recent investigations have identified deficiencies in physician's management of these conditions. These deficiencies have led to a growing concern for the quality and adequacy of rheumatologic care. One way to measure physician behaviour in practice is through blinded observations.

In these studies, unannounced SPs are utilized to observe and evaluate physician's or resident's clinical performance. During the SP encounter, the health care provider is not aware that they are being evaluated; this provides a more accurate measure of the physician's actual performance with a patient. Physician consent is often obtained prior to the blinded meeting, however, the physician is not told exactly when the encounter will take place. Although there are numerous ethical and practical issues to consider in these studies, results indicate that field observations of this type identify "true" deficits in physician's overall behaviour. In most situations, SPs go undetected and, when asked to identify SPs, physicians can rarely differentiate real patients from simulated actors. This suggests that SPs are clinically realistic in their portrayal of patients.

The following section includes selected literature on the use of SPs as unannounced patients in physician-blinded encounters. These studies provide support for the realism of SPs. In particular, they establish that physicians cannot distinguish SPs from real patients in most clinical encounters.
Part 6A--SPs as Unannounced Patients in Physician-Blinded Encounters

Carney PA, Dietrich AJ, Freeman DH, Jr., Mott LA.

This randomized control trial assessed the effects of different continuing medical educational (CME) activities on the cancer-control skills of physicians. Various techniques were used in the CME program, including role playing, interactive small group discussions, lectures, trigger tapes, and videotaped clinical encounters.

Unannounced SPs provided cross-sectional observations one year after the CME intervention of those physicians who received the intervention and those physicians who did not. The results indicate that the physicians who received the intervention performed better in those areas where the program had used performance-based learning techniques.

Day RP, Hewson MG, Kindy P, Jr., Van Kirk J.

This longitudinal descriptive study investigated the performance of medical residents’ as measured in a general internal medicine clinic by unannounced SPs. Students’ performance was rated by SPs using a medical skills checklist and interpersonal skills checklist, and by the clinic’s staffing physician with a clinical reasoning skills checklist.

Forty-eight first, second, and third year internal medicine residents consented to an audio taped encounter with an unidentified SP. The data presented in this paper were collected over eighteen months and involved 48 consultations.

The authors concluded that students’ performance, measured in a blinded setting, does not improve with additional years of medical training. More specifically, strategic management skills (SMS) did not significantly increase over the three-year residency training. SMS is a meta-skill incorporating interviewing skills, psychosocial abilities, clinical reasoning skills, and a treatment plan. These management skills are not specifically taught in the medical curriculum; students must try to learn SMSs themselves. The authors concluded that in order for residents to possess SMSs, they must be explicitly taught during their residency training.
Rethans JJ, Drop R, Sturmans F, van der Vleuten C.
A method for introducing standardized (simulated) patients into general practice consultations.

Most research in medical education has focussed on assessing the competency of physicians’ clinical skills rather than evaluating actual performance in practice. This pilot study was performed to assess the performance of general practitioners and to investigate the feasibility of introducing SPs into a physician’s practice where the physician has a fixed patient list. The authors began with a detailed discussion of the methodology involved in introducing SPs, undetected, into the physician’s practice and was followed by specific guidelines on the individual SP consultation.

Altogether, 137 physicians agreed to participate in the pilot study, however, only 39 were selected. Over the four month study period, each of the physicians was visited by 4 different SPs (for a total of 136 consultations) who each simulated a different medical condition.

The results indicated that SPs were considered realistic and were not detected in any of the consultations. The authors concluded that the SP method of assessment described in this paper was feasible in actual practice. Participating physicians felt that the SPs were accurate in their evaluations and appreciated their useful feedback.

The authors concluded that the SP methodology described in this paper was feasible in actual practice. The authors noted that by using undetected SPs more insight was gained into what actually goes on in the patient-physician encounter.

Russell NK, Boekeloo BO, Rafi IZ, Rabin DL.
Unannounced simulated patients’ observations of physician STD/HIV prevention practices.

This study was performed to investigate sexually transmitted disease (STD) and human immunodeficiency virus (HIV) prevention practices of physicians obtained by unannounced simulated patient evaluators (SPEs).

SPEs (N=8) were trained to portray a sexually active woman who wanted an initial consultation, with no physical exam, to discuss her concerns about contracting STDs. This case was specifically designed to prompt STD/HIV prevention counseling by the physician. Altogether, 65 physicians participated in the study and, of those, only 12% accurately detected the SPEs.

The findings indicated that many physicians did discuss the SPEs’ risk for STD/HIV, however, most discussed the patient’s risk in very general terms. This study confirmed the low rates of STD and HIV prevention indicated in previous studies using physicians’ self-reports. The authors concluded that there are deficiencies in physicians’ assessments and preventative counseling practices.
Additional Readings:

In addition to the preceding studies that utilize unannounced SPs in physician-blinded encounters, I have also provided a reference list of selected literature on this domain.

Burri A, McCaughan K, Barrows HS.  
The feasibility of using the simulated patient as a means to evaluate clinical competence of practicing physicians in a community.  

Carney PA, Dietrich AJ, Freeman DH, Jr., Mott LA.  
The periodic health examination provided to asymptomatic older women: An assessment using standardized patients.  

Kinnersley P, Pill R.  
The potential of using simulated patients to study the performance of general practitioners.  

Norman GR, Neufeld VR, Walsh A, Woodward CA, McConvey GA.  
Measuring physicians' performance by using simulated patients.  

Owen A, Winkler R.  
General practitioners and psychosocial problems: An evaluation using pseudopatients.  
Section 7. Standardized Patient (SP) Education Specialists/Trainers

In the last three decades the steady increase in the use of SPs in medical schools has resulted in the emergence of SP trainers. SP trainers are the individuals responsible for recruiting, selecting, and training SPs to perform the patient role. SP trainers work with the medical faculty to develop SP cases and they take responsibility for managing SP resources.

Although SP trainers are crucial in sustaining the integrity of SP programs, very little has been published on the topic. Most of the literature focuses on SPs and their application in medical schools, with sporadic publications on different training methods for SPs.

This section was added to demonstrate the need for scientifically rigorous training programs for standardized patients (SPs). I have not included annotations on these articles, but rather I have provided a selected bibliography of the citations. This bibliography simply highlights some of the more important papers in this literature.

Selected Bibliography of Papers on SP Trainers

Smees SM.
Standardized Patients: A trainer's perspective.  

Smees SM.
Training Standardized patients for different types of OSCE stations.  

Smees SM, Robb AK, Philbin MM, Haley HL, Stillman PL.
Results of a Survey: Profile of non physician standardized patient trainers at Canadian and American Medical Schools.  
Section 8. Objective Structured Clinical Examination (OSCE) Studies Utilizing Standardized Patients (SPs)

In my review of the literature on SPs and PIs, I focussed primarily on the use of real patients in medical education for the purpose of teaching and evaluating medical students' clinical skills. However, in my effort to locate this literature, I came across an array of related articles on the evaluation and examination of medical students' clinical competence.

In an attempt to improve on traditional medical examinations--typically, pen and paper tests--Harden and his colleagues developed an Objective Structured Clinical Examination (OSCE). The OSCE involves the rotation of examinees around a multi-station circuit where they are required to perform a variety of clinical tasks. These include taking a patient's history, performing a physical examination, interviewing a patient, ordering or interpreting diagnostic results, and educating the patient. In these examinations, SPs are trained to simulate a specific case in a consistent way. Predefined checklists and rating forms are used by faculty and/or SPs to score examinee performance in a standardized manner. In general, the OSCE results in improved feedback to students and faculty.

The widespread acceptance and use of SPs in objective structured clinical examinations (OSCEs) and clinical performance examinations (CPEs) is well documented. There is an abundance of literature on SP-based assessment of students' performance: van der Vleuten and Swanson referenced over 50 articles in their review of SP-based testing, Colliver and Williams cite over 60, and the National Board of Examiners (NBME) listed 209 articles in their review. SP-based testing measures important skills emphasized in clinical training.

Due to time constraints and the enormity of this literature, I have not included annotations on these articles. Rather, I have provided a selected bibliography of these citations including three review articles and forty-five study citations. The criteria I used for selecting these articles differed from the previous sections. This criteria included: 1) published during the period 1964 - 1995; 2) contained the keywords: patient educator, patient instructor, programmed patient, simulated patient, standardized patient, medical education, and continuing medical education; and 3) SPs utilized in OSCEs (Objective Structured Clinical Examinations) and CPEs. Please note that this bibliography is by no means exhaustive in nature.
Part 8A--Selected Bibliography of Review Articles Utilizing SPs in OSCEs

Colliver JA, Williams RG.
Technical issues: Test application.
Academic Medicine, 1993; 68: 454-460.

National Board of Medical Examiners (NBME).
Clinical skills evaluation database.

van der Vleuten CPM, Swanson DB.
Assessment of clinical skills with standardized patients: State of the art.
Teaching and Learning in Medicine, 1990; 2: 58-76.

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Part 8B--Selected Bibliography of OSCE Studies

Barrows HS, Colliver JA, Vu NV, Travis TA, Distelhorst LH.
The clinical practice examination: 6 years experience.

Battles JB, Carpenter JL, McIntire DD, Wagner JM.
Analyzing and adjusting for variables in a large-scale standardized-patient examination.
Academic Medicine, 1994; 69: 370-376.

Bouhuijs PA, van der Vleuten CP, van Luyk SJ.
The OSCE as a part of a systematic skills training approach.

Clauser BE, Ripkey D, Fletcher B, King A, Klass D, Orr N.
A comparison of pass/fail classifications made with scores from the NBME standardized-patient examination and Part II examination.
Academic Medicine, 1993; 68: S7-9.

Cohen R, Reznick RK, Taylor BR, Provan J, Rothman A.
Reliability and validity of the objective structured clinical examination in assessing surgical residents.

Colliver JA, Barrows HS, Vu NV, Verhulst SJ, Mast TA, Travis TA.
Test security in examinations that use standardized-patient cases at one medical school.
Colliver JA, Morrison LJ, Markwell SJ, Dawson-Saunders E, Barrows HS.
Three studies of the effects of multiple standardized patients on intercase reliability of five
standardized-patient examinations.
Teaching and Learning in Medicine, 1990; 2: 237-245.

Colliver JA, Vu NV, Marcy ML, Travis TA, Robbs RS.
The effects of examinee and standardized-patient gender and their interaction on
standardized-patient ratings of interpersonal and communication skills.

Colliver JA, Vu NV, Markwell SJ, Verhulst SJ.
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## APPENDIX A

### Index of First Authors

| Ainsworth MA | 27 |
| Anderson KK  | 18 |
| Barrows HS   | 3, 6, 37 |
| Battles JB   | 37 |
| Bouhuijs PA  | 37 |
| Burri A      | 34 |
| Callaway S   | 32, 34 |
| Clauser BE   | 37 |
| Cohen R      | 37 |
| Colliver JA  | 3, 37, 38 |
| Connell KJ   | 27 |
| Curtis JR    | 16 |
| Day RP       | 32 |
| Elliot DL    | 38 |
| Feickert JA  | 38 |
| Ferrell BG   | 38 |
| Friedman M   | 38 |
| Gall EP      | 19, 20, 21 |
| Gold G       | 28 |
| Harden RM    | 38, 39 |
| Jansen JJ    | 39 |
| Kerr MG      | 8 |
| Kinnersley P | 34 |
| Kirby RL     | 39 |
| Kretzschmar RM | 9 |
| Laguna JE    | 7 |
| Laing TL     | 22 |
| McClure CL   | 23, 24 |
| McKnight J   | 39 |
| National Board of Medical Examiners | 37 |
| Newble DI    | 39 |
| Norman GR    | 14, 34 |
| Owen A       | 34 |
| Pauw DS      | 16 |
| Perlman SG   | 27 |
| Researchers in Clinical Skills Assessment | 39 |
| Rethans JJ   | 33 |
| Reznick RK   | 39 |
| Riggs GE     | 25 |
| Roberts J    | 39 |
| Ruggill JS   | 12 |
| Russell NK   | 33 |
| Rutala PJ    | 15, 39, 40 |
| Shirar LE    | 40 |
| Smee SM      | 35 |
| Stillman P   | 41 |
| Stillman PL  | 3, 4, 10, 11, 12, 16, 28, 29, 30 |
| Swanson DB   | 30 |
| van der Vleuten CPM | 4, 37 |
| Vu NV        | 41 |
| Williams RG  | 41 |
| Woodward CA  | 30 |
| Williams RG  | 41 |
| Woodward CA  | 30 |