Four Standardized Patient Cases for the Infectious Diseases Fellow

Anna Person, MD*, Cody Chastain, MD, Laura Skaug, MFA, Lisa Rawn, MA, Patty Wright, MD

*Corresponding author: anna.k.person@vanderbilt.edu

Abstract

Introduction: Standardized patient simulation has become an essential tool for undergraduate and graduate medical education for both training and assessment of learners. It has been less consistently used for more advanced learners, including infectious diseases fellowship trainees. Methods: Four standardized clinical scenarios were developed to provide an opportunity to observe infectious diseases fellows in a standardized clinical environment in order to evaluate history-taking, physical exam, diagnostic, and counseling skills. Case topics were chosen to emulate key encounters related to infectious diseases care. Full case descriptions, standardized encounter tools, and assessment rubrics were developed and implemented in concert with simulation experts and standardized patients from the Vanderbilt Center for Experiential Learning and Assessment. A faculty member observed each learner simulation, provided qualitative verbal and written feedback, and assessed learner performance utilizing assessment rubrics based on 5-point Likert scales. Results: Between 2012 and 2015, 18 first- and second-year infectious diseases fellows were evaluated using the simulation, which was well accepted as an educational tool by both fellows and faculty. Implementation of these tools helped identify individual learner opportunities for improvement as well as common educational gaps that subsequently led to systemic program interventions. Discussion: Standardized patient simulation provides an additional tool for fellow assessments as well as infectious diseases fellowship program evaluations. These cases may be used in other institutions to assess fellows or other learners, unify assessment across programs, or provide a template for alternative assessments.

Keywords

Standardized Patient, Infectious Diseases Fellowship, HIV Infection, Prosthetic Joint Infection, Fever in a Returned Traveler, Interferon-Gamma Release Assays

Educational Objectives

In completing these exercises, the learner should be able to:

1. Obtain an appropriate and complete history for common infectious diseases patient presentations.
2. Perform an appropriate physical exam adapted to the presenting complaint.
3. Generate an appropriate differential diagnosis.
4. Provide counseling regarding disease pathophysiology, natural history, prognosis, and treatment strategies.

Introduction

The use of simulation has become common in teaching and assessment in undergraduate and graduate medical education. Standardized patient (SP) scenarios allow for specific clinical presentations to be simulated with direct faculty oversight in order to provide both formative and summative assessment. SP encounters also provide opportunities to assess educational topics that are essential to learner education or difficult to capture during clinical workflow in a controlled environment. The use of SP simulation has been reported in specialized medical specialty training, including adolescent medicine, plastic surgery, psychiatry, radiation oncology, and trauma surgery.1-5 SPs have also been used to assess specific topics or
skills, such as communication skills, cross-cultural care, medical error disclosure, and risk behavior assessment.\textsuperscript{6-9}

While these tools have been used at the medical student and resident level in many settings, they are less commonly used in fellowship training. Specifically, SP evaluation has not been commonly utilized in infectious diseases fellowship training, either in practice or in the literature. Infectious diseases care often includes thorough history taking, risk behavior assessment, and extensive counseling in order to optimally care for acute, chronic, and/or communicable infectious diseases. MedEdPORTAL includes multiple presentations and SP scenarios to facilitate teaching and evaluation related to infectious diseases among a wide range of learners,\textsuperscript{10-13} but these resources do not specifically address infectious diseases fellow trainees or the depth of evaluation necessary in specialty care. Our cases add to the multiple scenarios available in MedEdPORTAL and the literature to teach and/or assess medical knowledge and practice related to infectious diseases specialty care, while remaining adaptable to a wider array of learners.

**Methods**

The target audience is infectious diseases fellows during Accreditation Council for Graduate Medical Education required training periods. These cases may be adapted to other learner groups as well.

Four SP simulations were developed and utilized at our institution. Resources included as appendices include standardized scoring rubrics, patient information to be used as door signs during SP simulations, and a thorough description of the SP case. The case of S. Dickerson describes a patient with a methicillin-resistant \textit{Staphylococcus aureus} infection of a prosthetic joint in need of counseling regarding outpatient therapy (Appendices A, B, & C). The case of K. Fletcher describes a patient who returns from Central America with a febrile illness and needs an appropriate history and physical examination, counseling, and diagnostic and therapeutic recommendations (Appendices D, E, & F). The case of E. Hale describes a patient with newly diagnosed human immunodeficiency virus (HIV) who is in need of extensive counseling as well as assessment of personal safety and support resources (Appendices G, H, & I). Finally, the case of A. Kaplan describes a patient who has been referred for latent \textit{Mycobacterium tuberculosis} infection and needs an appropriate history and physical examination as well as counseling regarding diagnostic test results and therapeutic recommendations (Appendices J, K, & L).

Logistically, SP simulations may be best utilized in settings where both dedicated clinical space and trained SPs have been used for other training programs. Dedicated staff and SPs may assist in preparing and conducting assessments. These scenarios may be used at any point during fellowship training, although ideally, fellows will have had sufficient time to amass clinical knowledge and skills so that both formative and summative assessment may be performed. In our case, they are performed in the spring of each year. Infectious diseases faculty observe and assess fellow performance on tasks using standardized assessment rubrics. Performances on defined tasks are measured using a 5-point Likert scale (1 = poor, 3 = adequate, 5 = excellent), with opportunities for written and verbal qualitative feedback. Likert scales are used here to allow for gradations of performance for each fellow.

A trained SP educator at Vanderbilt’s Center for Experiential Learning and Assessment led training for the SPs applicable to these specific cases. Certain cases (Appendices G, H, & I) were written to allow for either a male or female SP and can be further adapted to each program’s needs. The SPs met several times prior to the fellows’ exam and rehearsed the details of the case with the SP educator, as well as reviewed the cases on their own. To complete their training prior to the exam, the Infectious Diseases Program Director, Dr. Person, went through each case with the SP posing as the infectious diseases fellow, as a trial run of exam day. SPs were provided with patient prompts—questions to ask to highlight important aspects of the material within each case. There was no time limit for when the SP had to prompt the fellow, but SPs tried to incorporate all questions during the course of the interview in as natural a way as possible. All SPs were instructed to ask these prompts unless the fellow had already addressed the issue.

The text provided to the SPs for each case included in-depth descriptions of the clinical scenario at hand. This included detailed data on vital signs, physical examination findings, and microbiology data. The
purpose of the detailed nature of the cases was for the SP to be fully equipped with the complete clinical scenario so she/he could better respond to the fellow's queries and have a more holistic sense of the purpose of the visit. This level of detail was based on feedback from the SPs during the training sessions, and they asked further questions during the training if they had them. Other programs may choose to adapt the level of detail to whatever they feel would be helpful for their SPs.

These SP scenarios were utilized during infectious diseases fellowship training at Vanderbilt University in the 2012, 2013, and 2014 academic years. These assessments were performed in April of each academic year and included both first- and second-year infectious diseases fellows. Two cases were used each year, so that by the end of the second year of fellowship, each fellow would have completed all four cases. These assessments were a required component of fellowship assessment. SPs with prior training and expertise may be most effective in implementing these scenarios. Furthermore, simulation experts who can troubleshoot implementation may be helpful as well. Infectious diseases faculty involved in clinical assessment of infectious diseases fellows should be recruited to participate in these exercises. While SP simulation may be facilitated in any clinical space, a simulation center optimized for objective structured clinical examinations would be ideal. No special equipment is required other than standard medical equipment that may be found in an outpatient clinical exam room.

Staff, including SPs, should review the scenarios prior to simulation to optimize the assessment experience. Clinical faculty who will serve as assessors should review the SP scenarios and faculty assessment rubrics prior to SP exercises so that they are familiar with the expectations of learners as well as the anticipated responses of SPs. While SPs and simulation center staff will vary in regard to the amount of time necessary for preparation, the preparatory time commitment for faculty assessors is anticipated to be small. Fellows should be observed during SP simulations by infectious diseases faculty, typically via observation glass or video monitoring. SPs trained in assessment and feedback may participate in this process as well. Assessment should be provided in written and verbal forms, with both quantitative and qualitative feedback. Infectious diseases fellows should be debriefed immediately and in person after each case in order to optimize impact and reception of feedback, if possible.

SP scenarios and assessments are inherently limited, as they do not involve actual patients or clinical situations; as such, fellow performance may vary in these exercises when compared to real-life scenarios. Furthermore, these cases review only four of the many clinical scenarios and diagnoses that are important for infectious diseases fellows to master. Other scenarios may be equally important to the learning and assessment of fellows. These scenarios have been developed for infectious diseases fellows, but their use in other learner levels (i.e., medical students, residents, postfellowship infectious diseases physicians) has not been evaluated to date. The value and applicability of these scenarios may differ in other geographic locations than the original institution.

Results

Between 2012 and 2015, 18 fellows were assessed using SP simulation. Fellows generally performed well on measured tasks ($M = 3.75-4.65$, $Mdn = 3-5$, range 2-5). However, fellows performed less well on two specific tasks: “screening for depression and suicidal ideation and inquiring about coping mechanisms and support systems in a newly diagnosed HIV patient” ($M = 2.85$, $Mdn = 2.5$, range 1-5), and “screening for HIV and other immunosuppressed conditions in a patient with latent tuberculosis infection” ($M = 3$, $Mdn = 3$, range 1-5). Identification of these educational gaps has led to educational program modification. Simulation has been viewed favorably and generally accepted as an educational and assessment tool by both infectious diseases faculty and fellows.

Discussion

While SP simulation has proven to be a useful tool across multiple medical training groups, additional groups of learners and programs may benefit from this approach. These cases may be used and adapted for other infectious diseases fellowship programs. Such an approach may provide opportunities to unify education and assessment approaches across graduate medical education programs. In addition to fellow
education and assessment, our experience has demonstrated that such an approach may identify broader educational gaps that may be addressed through program intervention. In the future, additional cases may be developed in order to address other diagnoses and skills that are necessary to develop and assess during infectious diseases training.

One limitation of these data is that we do not have data regarding interrater reliability. Faculty raters received a brief orientation preceding the SP exam regarding logistics of the exam but did not receive specific instructions or training in evaluation. Thus, we were unable to assess their ability to provide equivalent ratings. The small number of fellows and the fact that only two cases were used per year limited our ability to assess for interrater reliability. Going forward, faculty evaluators will be given more specific feedback about what criteria must be met by fellows in order to receive poor, adequate, or excellent scores, and all scores will be reviewed by one individual to assess for outliers in the scoring of fellows. Despite current lack of interrater reliability data, we do not feel that this lessens the utility of the cases as a tool for fellowship programs to use and adapt to for their own unique needs. Ultimately, SP simulation may provide opportunities to standardize educational learning and assessment across infectious diseases fellowship training programs.

Anna Person, MD: Assistant Professor, Department of Medicine, Division of Infectious Diseases, Vanderbilt University School of Medicine

Cody Chastain, MD: Assistant Professor, Department of Medicine, Division of Infectious Diseases, Vanderbilt University School of Medicine

Laura Skaug, MFA: Standardized Patient Educator, Center for Experiential Learning and Assessment, Vanderbilt University School of Medicine

Lisa Rawn, MA: Standardized Patient Educator, Center for Experiential Learning and Assessment, Vanderbilt University

Patty Wright, MD: Associate Professor, Department of Medicine, Division of Infectious Diseases, Vanderbilt University School of Medicine

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Ethical Approval
Reported as not applicable.

References


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