Abstract

Introduction: Objective structured clinical examinations (OSCEs) have traditionally been used by medical schools and residency training programs to assess baseline knowledge. Most OSCEs include complex stations and the use of standardized patients. Our objective was to create a medical knowledge assessment tool for pediatric residency training programs that could be easily implemented without the need for a simulation center, ancillary staff, or the use of expensive or technical equipment. Methods: This PL-3 (or PGY-3) modified OSCE consists of a 15-station, 59-question written exam that includes free-text responses to brief clinical scenarios, interpretation of X-rays and other visual images, and one interactive station. The format is case based, highlighting the importance of clinical application of theoretical knowledge. Results: More than 300 PL-3 residents have completed the examination in the 16 years since initiation. Surveys of residents have revealed that the exercise is extremely educational and that the subsequent discussions foster a positive learning environment. Discussion: This modified OSCE adds to the body of literature on OSCEs and related assessment tools by providing educators with an assessment tool that is easily adaptable and effectively addresses one of the critique of OSCEs, that they are traditionally resource intensive.

Keywords
OSCE, Objective Structured Clinical Examination, Pediatrics, Assessment Tool

Educational Objectives

By the end of this modified OSCE exercise and ensuing discussion, the learner will be able to:

1. Demonstrate knowledge of the standard immunization schedules at different ages.
2. Discuss the assessment and management of neonatal hyperbilirubinemia.
3. Interpret and manage the results of a tuberculin skin test.
4. Identify the distinguishing features of different systemic dermatologic conditions.
5. Identify and manage common pediatric dermatologic conditions.
6. Identify radiographic surgical and urologic abnormalities.
7. Manage newborn umbilical complications.
8. List the different presentations and diagnosis of inborn errors of metabolism.
9. Interpret a peripheral blood smear in the setting of anemia.
10. Discuss the presentation and management of sickle cell disease.
11. Identify and manage undescended testes and other male genitourinary abnormalities.
12. Identify etiologies of irregular menses.
13. Discuss the differences of phorias and tropias by history and examination.
14. Discuss the evaluation and management of attention deficit hyperactivity disorder.
15. Provide advice regarding potential breast-feeding challenges.
Introduction

Objective structured clinical examinations (OSCEs) have traditionally been used by medical schools and residency training programs to assess baseline knowledge. In recent years, the scope has been expanded to include assessment of trainee competency. In addition, some programs have assessed interval improvement with administration of sequential OSCEs. Most OSCEs include complex stations and the use of standardized patients. Our objective was to create a medical knowledge assessment tool for pediatric residency training programs that could be easily implemented without the need for a simulation center, ancillary staff, or the use of expensive or technical equipment.

Our novel assessment tool can be used to assess medical knowledge and clinical competence in a group of trainees. The format is case based, highlighting the importance of clinical application of theoretical knowledge. The associated appendices created by the program directors at Children's Hospital Los Angeles outline the tool currently used in our program for PL-3 residents.

This modified OSCE is the third in a series, our PL-1 and PL-2 exercises having been published previously on MedEdPORTAL. It adds to the body of literature on OSCEs and related assessment tools by providing educators with an assessment tool that is easily adaptable. It also effectively addresses one critique of OSCEs, that they are traditionally resource intensive.

Methods

Our PL-3 modified OSCE consists of a 15-station, 59-question written exam that includes free-text responses to brief clinical scenarios, interpretation of X-rays and other visual images, and one interactive station (Appendices A & B).

Our assessment tool is administered over 2 afternoons, which allows half of our PL-3 class to attend each session without significantly impacting coverage for clinical duties. Depending on the number of stations one elects to use (we use all 15), a block of approximately 2 to 4 hours is needed, with 5 minutes allotted for each station. In response to the questions (Appendix C), each resident records his or her responses on the provided answer sheets (Appendix D). One station is interactive, utilizing faculty or chief residents who role-play as parents and subsequently rate the residents on their interactions and knowledge. No other personnel are needed, and beyond the provided additional resources (Appendices E & F), further required supplies are minimal.

At the end of the session, all the forms are collected, and the program director then spends approximately 90 minutes reviewing each scenario in detail with the entire group. The correct answers for each scenario are discussed, and residents are able to ask questions and solidify understanding of the material. The exams are graded based on a preestablished scoring guide, with a maximum of 5 points per station and 75 points for the entire exam if all 15 cases are used. The time required for the grading process is approximately 2 to 3 hours and is often performed by a chief resident. The average score of the class is calculated based on the individual scores for that year, and those in the lowest quartile are assigned a multiple-choice take-home exam with topics that are similar to those addressed and reviewed in the initial examination. Thus, the tool may also be used to help demonstrate competency within the Accreditation Council for Graduate Medical Education’s medical knowledge domain.

Results

More than 300 PL-3 residents at our institution have completed the examination since its initiation. The annual average class score over the past 16 years of administration has ranged from 43 to 58 points (with a maximum allowable score of 75 for 15 stations). Given that the individual questions and their complexities have been modified every 2 to 3 years based on the program directors’ evaluation of the material, it is impossible for us to compare individual years of data. However, residents who achieve low scores on the modified OSCE are encouraged to address their specific deficiencies with a more structured learning plan.
In our program, we administer a PL-1 and PL-2 modified OSCE towards the end of the academic years (typically in April or May, respectively). The attached PL-3 version is administered in September of the graduating year, allowing residents time to address any identified weaknesses. Based on positive feedback and interest among the housestaff, we have recently added a second examination in the spring of the PL-3 year.

We have noted no correlation between individual scores and subsequent performance on standardized examinations (e.g., American Board of Pediatrics in-training or certification examinations); this could be due to the differences in format of the exams (case-based written responses vs. multiple-choice options). The implementation of the modified OSCEs at our institution has been one tool amongst others used to help the collective education of our residents and to allow our large program of 90 residents to consistently achieve a board certification pass rate of greater than 96% (well above the national mean) for the past 17 years. Of interest, when surveyed anonymously after the exams, residents have repeatedly stated that the exercise is extremely educational and that the subsequent discussions foster a positive learning environment. Feedback and requests from the residents also contributed to our recent decision to add a second examination in the spring of the PL-3 year.

Discussion
The questions and topics were developed by our program directors (who are all general pediatricians) to reflect clinical scenarios that our residents routinely face during their continuity clinic or inpatient training. The questions include concepts that the program feels are essential for the learner to master prior to progressing to the next year of training. While it is not expected that the residents be able to answer each question correctly, the experience exposes them to scenarios commonly encountered by physicians during their training and provides an opportunity to learn the material. The questions can be updated or changed to address important topics as the field of medicine changes. In addition, the overall class results can be used by the program to assess and revise the educational curriculum as needed. Low scores on specific topics are shared with appropriate faculty for emphasis in clinical and didactic sessions. We also use the annual American Board of Pediatrics in-training exam scores to determine if there are particular areas that should be added to the exercise.

This exercise can be easily adapted for trainees in a variety of specialties by using scenarios appropriate for each program. Additional important skills and content identified by individual programs (e.g., prescription writing, patient handoffs, and installation of infant car seats) can be incorporated into these sessions. Individual resident results can be used to tailor reading assignments, while class results can be used to modify program curricula as necessary. The exam has been administered annually for over 16 years at our institution, and the results have been used to modify our educational curriculum and assist trainees with their clinical experience and knowledge application.

One limitation of our examination is that in a single afternoon, it is impossible to test the residents on all topics relevant to their training. However, our modified OSCE focuses on clinical scenarios that the trainees encounter regularly. Time constraints also limit the use of standardized patients for the interactive scenarios.

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Disclosures
None to report.

Funding/Support
None to report.
Ethical Approval
Reported as not applicable.

References


Received: August 1, 2015 | Accepted: March 3, 2016 | Published: April 22, 2016