Expanding OSCE-related Learning Opportunities For Pre-Clerkship Students: Insights From an Assessment for Learning Curriculum

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ABSTRACT: Pre-clerkship clinical skills courses at many medical schools use objective structured clinical examinations (OSCEs) to assess students' development as it relates to the foundational clinical skills of history taking, communication, and physical examination. The authors report on a curriculum in which OSCEs also serve as a springboard for additional learning by linking them to activities that include patient write-ups, oral presentations, clinical reasoning discussions, clinical question generation, and video review with faculty. The rationale for using OSCEs as an assessment for learning tool is discussed, and some lessons learned are reported.

KEYWORDS: OSCE, medical documentation, oral presentation, clinical reasoning, clinical question

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Pre-clerkship clinical skills courses at many medical schools use objective structured clinical examinations (OSCEs) to assess students' development as it relates to the foundational clinical skills of history taking, communication, and physical examination.[1] In OSCEs, standardized patients (SPs) portray a broad range of patient cases and afford students opportunities to interview and examine a live patient in a simulated, safe, controlled setting, free of the distractions present in real clinical settings.

Faculty at the Frank H. Netter MD School of Medicine (Netter SOM) intentionally designed the pre-clerkship clinical skills course, Clinical Arts and Sciences (CAS), around a series of 2-3 station OSCEs that serve to assess these foundational clinical skills and act as a springboard for other learning activities. The Netter SOM is a fully accredited community-based medical school in the United States with 96 students per class. The first-year CAS course includes 7 formative OSCEs, scheduled monthly to align with the basic science course that follows an organ systems-based structure. The second-year course follows a similar pattern with 6 formative OSCEs. Both first- and second-year students complete a summative OSCE at the end of the academic year. OSCEs occur on Monday, Tuesday, and Wednesday afternoons. Faculty meet with small groups of students once per week on Thursdays for clinical skills instruction and practice. Some Thursday sessions incorporate OSCE-related activities, including patient write-ups, oral presentations, clinical reasoning discussions, clinical question generation, and video review with faculty.

The CAS course also places medical students in a physician's office 1 afternoon a week for the duration of their first 2 years. We found it challenging to introduce complex curricular material in the office setting in a standardized manner due to variability of sites, preceptor workload, and the large number of preceptors that participate in the pre-clerkship office experience. Due to this, much of the formal clinical skills curriculum is delivered on campus on Thursday mornings, and students have the opportunity to practice these skills in the office setting.

The focus of this report is the on-campus clinical skills instruction. Specifically, we aim to describe how we use OSCEs as a catalyst for additional educational experiences that incorporate formative assessment.[2]

Patient Write-ups

Starting with the third formative OSCE, first-year students submit patient write-ups based on one of their patient encounters. Using OSCE cases for patient write-ups has advantages over actual patient encounters. First, cases can be designed at an appropriate level for the learner, adding complexity as students' skills develop.[3] For instance, a first-year case involves an ankle sprain case in which the history of present illness is simple description of the 7 parameters of illness and the content is familiar to many students from personal experience. A more complex case in the second year involves a patient with fatigue. The symptoms do not fit neatly into the 7 parameters of illness, and the student must use the chronology of present illness to obtain a full understanding of the progression of disease and be able to describe it in their note. In addition, specific clues to the diagnosis, such as dark stools, are not mentioned by the SP unless the student specifically asks. This level of control would

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be hard to achieve in an actual clinical setting. The second advantage of using OSCE cases for write-ups is that course leadership can provide faculty with a scoring rubric and an example note for each case to help standardize assessment and feedback. One final benefit is that there is no concern about breech of any patient privacy laws as these are not real patient encounters. Note exchange between faculty and students can proceed by a wide variety of methods when patient privacy is less of a concern.

Lessons learned

The deadline for this assignment requires careful consideration. Pre-clerkship medical students generally need a few days to complete their written documentation, especially when the task is new to them. Consideration of student workload from other courses is also important as well when setting a deadline. However, allowing too much time between an OSCE and a write-up deadline may result in procrastination and/or reduced recall of details of the encounter. It is also important to encourage students to develop the habit of completing medical documentation promptly. With all of this considered, we generally set deadlines for first-year students at about 3-4 days and second-year students at about 1-2 days.

Oral Presentations

A second learning activity that directs learners to simulate the authentic work of a clinical clerk involves using the OSCEs for students to craft and present oral patient presentations. Students are assigned to present the same OSCE case they wrote up in small group on the Thursday immediately following the OSCE. Students deliver their presentations in small groups and get peer and faculty feedback in a safe environment with fewer time constraints than in an office setting. Similar to the write-ups, the use of OSCE cases and an oral presentation rubric allows for standardization of expectations, assessment, and faculty feedback. The oral presentation rubric includes 7 categories of content (history of present illness, past medical history, physical examination, etc) and 4 categories of style (organization, eye contact, speech, timing, etc).

Lessons learned

We found the timing of the sessions to work well for pre-clerkship students—providing them a day or 2 between the OSCE and the oral presentations allows for appropriate preparation and needed rehearsal. We also found it valuable to start these sessions in the first semester of the first year. Starting oral presentations early in medical school has been well received by faculty and students. Students appreciate the ability to practice oral presentations "on campus," as it feels "safe" and helps prepare them for their office experience. Clinical preceptors appreciate students coming to their offices with clinical skills beyond the foundational skills of history, physical, and communication such as oral presentation ability. Preceptors also report satisfaction knowing that students receive ongoing skills development on campus.

Clinical Reasoning Discussions

Starting with the second semester of year 1 and expanded in year 2, Thursday teaching sessions after the OSCEs are also used for clinical reasoning discussions around the OSCE cases. Given that all of the students have seen the same cases, they can each contribute to the discussion. Students in small groups collaborate to refine their case problem representation (summary statement), formulate and prioritize a differential diagnosis, and work on a plan of care (year 2 only) with the help of their faculty facilitator.[4] OSCE cases are designed to have multiple possible diagnoses to promote a robust discussion of disease processes that the students are learning concurrently in their basic science course.

Clinical reasoning instruction promotes the dual-process theory, with curricular elements that highlight both system 1 (intuitive) and system 2 (analytical) thinking.[5] During the OSCEs, second-year students complete a postencounter exercise while waiting for SP feedback. The exercise asks students to list their immediate thoughts about diagnosis.[6] Given the relative immediacy of the task, and the lack of access to library resources when completing this task, this exercise most closely resembles system 1 thinking. We found the pre-clerkship students struggle with this type of quick thinking due to limited medical knowledge and clinical experience.[4] However, we continue to ask students to complete this exercise as we believe the struggle is productive—it helps student to identify gaps in knowledge and stimulates self-directed learning.[7]

This exercise is in contrast to the case write-ups and clinical reasoning sessions that use system 2 reasoning. It is enlightening for students to experience the contrast between their very limited system 1 abilities and their ability to come to a more gratifying differential diagnosis via system 2 thinking. Assessment of student clinical reasoning takes place via faculty review of the assessment and plan section of the case write-up as well as faculty observation of student participation in clinical reasoning sessions.

Lessons learned

We have learned several lessons from these clinical reasoning sessions. First, working through 2 cases in a 2-hour session is a lot to cover. This is particularly true when it includes formulating a plan of care as is done in year 2. Providing a consistent and familiar format for students and faculty improves efficiency. We also learned it takes students several hours to fully prepare for these sessions. At one point, we asked students to complete and submit illness-scripts worksheets to help organize their thinking. Based on student feedback regarding workload, we no longer require students submit these worksheets. We continue to encourage students to use the concept of illness

scripts as they learn disease processes as better categorization and organization of material will allow for improved recall.[4]

The other lesson we have learned has to do with the timing of the OSCEs and clinical reasoning sessions in relation to integration with the basic science course. Our initial course schedule placed the OSCEs at the beginning of the basic science system block. The rationale was students could use the OSCE as a foundation to build upon as they are taught pathophysiology and disease in the basic science course. While this did prove to be an effective strategy in many regards, students lacked the knowledge required for the clinical reasoning sessions. We now schedule the OSCEs toward the end of the basic science system block. Students appreciate applying what they learned in their basic science course in the OSCE and subsequent small-group discussion. However, we never schedule the OSCE the final week of the block as student's workload in preparing for their basic science exam is significant.

Clinical Question Generation and Presentation

The fourth OSCE-related activity students complete is the formulation of clinical questions. Students are assigned an OSCE case for which they develop a foreground or background clinical question, research the question, and present their findings to their small group on Thursday. This provides students the opportunity to engage in a fully self-regulated learning activity that highlights their interests and desire to learn.[8] Students receive several lectures on how to carry out this task prior to their first attempt.

Lessons learned

This OSCE-related activity required more faculty development than the others. While clinical skills faculty generate and answer clinical questions in their practices on a routine basis, many were unfamiliar with the concept of background versus foreground questions, the acronym PICO (Population, Intervention, Comparison, Outcome), search strategies using modern medical informatics, and classification of evidence.[9]

We recently transitioned the instruction and practice related to clinical questions to our scholarship course where biostatistics and literature appraisal are taught instead of the clinical skills course. This change created an avenue for horizontal integration between courses. Another added benefit of the change is that many students now report greater appreciation for the clinical relevance of the scholarship course. Furthermore, the change has decompressed our clinical reasoning sessions, allowing for more in-depth discussions. One downside is the separation from the other activities may not promote whole task learning.[10]

Video Review of OSCEs and Goal Setting With Faculty

The final OSCE-related activity entails video review sessions with faculty. Faculty preceptors usually are not present to observe the students in an OSCE. SPs provide immediate feedback to students on their performance after each formative OSCE station. Students are also given electronic access to their SP completed checklists, scores based on the checklists, and videos. While we encourage students to review their OSCE performance data, that often is not the case. For 1 cohort, scores were reviewed 64% of the time, checklists 42% of the time, and videos 28% of the time. Students who reviewed the data were more likely to have high scores in subsequent OSCEs.[11] To encourage students to review their information, we dedicate 1 Thursday session per semester to student-faculty meetings to review the students' most recent formative OSCE video. Meetings are designed as coaching sessions, which the students articulate self-determined goals for clinical skills mastery.

Lessons learned

The video review sessions are valuable as faculty can provide feedback that is more nuanced and detailed than captured by an SP checklist. Students also often have questions regarding best practices that SPs cannot answer. These sessions have become more productive over several years as we have become more detailed in our expectations for student preparation. The sessions have also been enhanced by faculty development around accessing data, interpreting data, and providing feedback.

Final Thoughts

In summary, we have found the linking of OSCEs to additional learning experiences that integrate in the broader clinical skills curriculum to be the highlight of our pre-clerkship clinical skills course. The OSCE by itself allows us to assess a student's ability as it relates to the Core Entrustable Professional Activity (EPA) for Entering Residency #1—gather a history and perform a physical examination.[12] The OSCE-related activities expand the learning and assessment opportunities to include EPA 2 (prioritize a differential diagnosis following an encounter), 3 (recommend and interpret common diagnostic and screening tests), 5 (document a clinical encounter in the patient record), 6 (provide an oral presentation of a clinical encounter), and 7 (form clinical questions and retrieve evidence to advance patient care).

OSCEs are resource-intensive to deliver, and maximizing the learning from these experiences through the related activities described above has been well received by students, faculty, and administration. Early evidence suggests this benefits our students with 100% of students reporting on the 2018 and 2019 Association of American Medical Colleges Graduation Questionnaire that their pre-clerkship clinical skills course prepared them for their clerkships and electives (compared with 91% nationally). In addition, student performance on the USMLE Step 2 Clinical Skills examination has been close to 2 standard deviations above the national mean on both the communication and the integrated clinical

encounter (ICE) sections for 4 years in a row. The ICE section includes an assessment of clinical reasoning and medical documentation.

Barriers to implementing a curriculum of this type include financials costs and student and faculty time. Multiple OSCEs are costly and require an investment in a clinical skills center and an SP program. The small-group instruction for the related activities requires investments in faculty development and compensating faculty for the time away from their clinical practice. In our opinion, the benefits to student learning and development of clinical competence outweigh these costs.

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All authors made a substantial contribution to the design of the work, drafted or critically revised the manuscript, approved the final version, and took public responsibility for the work.

Ethical Approval

The Quinnipiac University institutional review board determined this study to be exempt from review.

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