

Association for Surgical Education

Cost and logistics for implementing the American College of Surgeons objective structured clinical examination



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Cost;
Safety

Abstract

BACKGROUND: The American College of Surgeons has developed a reliable and valid OSCE (objective structured clinical examination) to assess the clinical skills of incoming postgraduate year 1 surgery residents, but the cost and logistics of implementation have not been described.

METHODS: Fixed costs included staff time, medical supplies, facility fee, standardized patient (SP) training time, and one OSCE session. Variable costs were incurred for additional OSCE sessions. Costs per resident were calculated and modeled for increasing the number of test takers.

RESULTS: American College of Surgeons OSCE materials and examination facilities were free. Fixed costs included training 11 SPs for 4 hours (\$1,540), moulage and simulation material (\$469), and administrative effort for 44 hours (\$2,200). Variable cost for each session was \$1,540 (SP time). Total cost for the first session was \$6,649 (\$664/resident), decreased to \$324/resident for 3 sessions, and projected to further decline to \$239/resident for 6 sessions.

CONCLUSIONS: The cost decreased as the number of residents tested increased. To manage costs, testing more trainees by regional collaboration is recommended.

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Previous studies have shown that residents enter a surgical residency with significant variation in knowledge and skills.^{1,2} This variability can impact the safety and quality of care that is rendered to patients. In recognition of the role played by the residents in patient safety and to promote good educational practices, the Accreditation Council for Graduate Medical Education (ACGME) has implemented new requirements for resident supervision that became

effective in July 2011. According to these requirements, all clinical interactions between residents and patients must be appropriately supervised.³ Hence, there is a strong need to systematically evaluate the abilities of entering residents in a standardized manner and develop a program that can be used to remediate them, if necessary, early in their training. Existing assessments such as the multiple choice examinations can inform regarding a resident's medical knowledge, but clinical skills are more appropriately assessed by an objective structured clinical examination (OSCE). The American College of Surgeons (ACS) has developed a reliable and valid OSCE to assess the clinical skills of incoming postgraduate year 1 (PGY1) surgery residents,² but the cost and logistics of implementation have not been described previously. This information is important for program directors

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who wish to implement the ACS OSCE for assessing PGY1 surgery residents entering their program. A brief description of the ACS OSCE follows.

An ACS task force comprising of surgeons, professional surgical educators, and experts in the design of assessment instruments developed the ACS OSCE. Ten critical or life-threatening cases were selected to assess resident's ability to assess the problems, determine priorities of care, and perform appropriate diagnostic and management decisions. In each scenario, performance is measured on history taking, physical examination, physician-patient communication and professionalism, diagnostic process, and management. Standardized patients (SPs) assess trainee performance metrics at each station by using checklists and global rating forms. Residents complete separate checklists that are used to assess diagnostic and management skills. The validity and reliability of the ACS OSCE have been investigated in a multi-institutional study and have been shown to have moderate reliability (alpha coefficient = .6) and therefore the ACS recommends that it be primarily utilized for formative feedback. Since the development of the ACS OSCE, new ACGME regulations require closer supervision of residents (direct supervision) based on assessment of their abilities and therefore we decided to use ACS OSCE in our intern boot camp as one of the criteria to assess residents' ability to manage critical scenarios.²

The use of an OSCE for assessing skills and knowledge has been well established. The original OSCE was described by Harden et al⁴ in 1975 in response to the need to have an objective method of assessing clinical skills in the United Kingdom. While medical knowledge could be tested using multiple choice questions, objective examinations to test clinical skills were lacking at that time. The aim of the OSCE, as envisioned by Harden, was to control the variables and complexities of the clinical examination. This was achieved by having students go through 16 "stations" lasting 5 minutes each, during which time a candidate was tested on different aspects of a clinical scenario. The aims of the examination and scoring methodology were well defined and several different skills were tested including the examinee's ability to perform a history and physical examination and the ability to evaluate and manage medical problems. Over time OSCEs have evolved. Many examinations are now comprised of multiple stations lasting from 10 to 15 minutes each during which a trainee interacts with either a real or a SP in simulated clinical cases. These interactions are then used to assess medical knowledge and patient care skills as well as competencies such as professionalism and communication.

OSCEs have gained widespread acceptance for teaching and assessing medical students in the United States including high-stakes examinations such as the United States Medical Licensing Examination (USMLE). They are also used in the Canadian licensing examinations⁵ but have not been commonly employed in resident curricula in surgery. However, their inclusion in resident training could provide a standardized tool, as recommended in the ACGME Tool Box, to

evaluate knowledge and skills of surgery residents across a spectrum of critical clinical scenarios. OSCE-based assessments provide a rich source of data which enable specific feedback to improve resident clinical performance and may also be one of the methods that are used to assess when a resident is able to progress to indirect supervision. The purpose of this article is to familiarize program directors with the cost and logistics of implementing the ACS OSCE, the utility of using the OSCE to assess the baseline knowledge and skills of the entering PGY1 residents, and the potential to use the OSCE to meet ACGME supervision requirements.

Methods

The 10-station OSCE was administered to all incoming PGY1 general surgery residents including categorical, designated preliminary, and nondesignated preliminary residents. Case scripts and instruction manuals were obtained from the ACS. SPs were hired through the medical school SP program. Residents completed answer sheets for diagnosis and management. SPs scored residents to evaluate professionalism and communication. The ACS did not provide a passing score because this OSCE is intended for formative feedback. We developed a criterion-based pass score based on percent correct answers. A debrief session after the OSCE for residents included a didactic component on appropriate diagnostic and management algorithms for managing critical scenarios. The SP debriefing session provided feedback on how to improve subsequent administrations of the ACS OSCE.

Total costs were calculated as the sum of fixed and variable costs. Fixed costs were defined as those costs that were incurred to conduct the first OSCE session and included staff time in planning and proctoring the event, medical supplies, facility fee, SP training time, and SP time for one OSCE session. Variable costs were defined as the costs incurred for conducting additional OSCE sessions. The costs incurred were further categorized as those related to personnel time, SP training and acting time, and cost of materials and supplies. The costs were then calculated per resident and modeled for increasing number of examinees.

Results

The OSCE materials were obtained free of cost from the ACS. These materials included video and case scripts to train SPs, a manual of educational materials on a Digital Video Disc that included recommendations for moulage and was supplemented with photographs and material lists, and checklists for assessments.

Our institutional simulation center was used to administer the OSCEs and had clinical examination rooms suitable for conducting OSCE. The rooms were equipped with automated audio and video recording equipment and each trainee was provided with access to recordings of their own performance after completion of the session. All these

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