The Usage of Mock Oral Examinations for Program Improvement

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OBJECTIVE: Mock oral examinations are often used to prepare residents for the American Board of Surgery certifying examination. Another potential use of these examinations is to identify programmatic weaknesses. Results from a multi-institutional mock oral examination were evaluated to determine if specific areas of weakness within each of the participating programs could be identified to facilitate program development.

DESIGN: A mock oral examination was administered annually consisting of 3 examination rooms per resident with 3 cases in each room. Case categories included core general surgery and subspecialties and cases were changed yearly. Each case included facets of patient management from history and physical examination, and differential diagnosis to postoperative care and professional behaviors.

SETTING: General Surgery programs at 3 academic medical centers—Northwestern University, Rush University, and University of Illinois at Chicago.

PARTICIPANTS: A total of 259 resident examinations of fourth- and fifth-year general surgery residents over a 7-year period.

RESULTS: A total of 2331 individual resident cases were evaluated with an overall case pass rate of 50.2% across all 3 programs. The weakest case category for each program was different (A = vascular 40.0% pass, B = trauma 41.4% pass, and C = breast 30.0% pass). All programs scored above their mean in gastrointestinal and abdominal surgery and below their mean in vascular surgery. Within vascular surgery, the weakest facet of patient management also differed between programs (A = select tests 44.3% pass, B = complications 57.0% pass, and C = history and physical 55.4% pass).

CONCLUSIONS: A standardized mock oral examination is able to identify topic areas of relative strength and weakness that differ between programs. These results can be used to define focused areas for improvement within training programs, guide rotation schedules, and improve didactic curricula. (J Surg Ed ▮:▮▮▮-▮▮▮. © 2017 Association of Program Directors in Surgery Published by Elsevier Inc. All rights reserved.)

KEY WORDS: academic medical centers, curriculum, program development, certification

COMPETENCIES: Medical Knowledge, Patient Care

INTRODUCTION

Mock oral examinations are often used to prepare residents for the American Board of Surgery (ABS) certifying examination. The premise for these examinations is that they provide residents with a realistic simulated experience to help them prepare to pass the certifying examination. Mock oral examinations provide the residents with a focused incentive to remain diligent with ongoing study plans especially when the examinations are performed in a public setting in front of other residents and faculty.[1] Performance on a mock oral examination has also been shown to correlate with passing the certifying examination.[2-4]

Another potential use of these examinations is to identify programmatic weaknesses. When graduates take the actual certifying examination, they only receive summative feedback—pass or fail. When residents fail, it can be difficult to determine if this is related to their global approach to the examination, organization and coherency of their answers, or specific topic areas of deficient knowledge or judgment. A well-designed mock oral that examines the major topic areas included in the ABS certifying examination may be able to help identify specific areas or types of questions that create problems for a program's graduates. These findings may identify areas of training where there is limited exposure to appropriate patients or where the curriculum could benefit from increased discussion of particular topics.

Previous work by Longo and Friedman[5] suggested that mock orals could be used to identify program weaknesses.

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 http://dx.doi.org/10.1016/j.jsurg.2017.05.003

They identified a weakness in breast disease in their own residents and changed the rotation schedule to improve exposure. Our institutions participate in multi-institutional collaborative that gives mock orals annually to all senior residents in our programs. This offers the opportunity to investigate the ability of a mock oral examination to identify not only difficult areas for the entire group but to determine if topic-specific differences can be identified between institutions to allow focused approaches to curriculum development. Results from our multi-institutional mock oral examination were evaluated to identify specific areas of strength and weakness within each of the participating programs and describe patterns of errors that can inform appropriate curricular change.

METHODS

Citywide Mock Orals

Mock oral examinations are offered annually in the spring to all fourth- and fifth-year general surgery residents at the 3 institutions participating in our local consortium. The examination is designed to broadly simulate the experience of taking a high-pressure oral examination such as the ABS Certifying Examination. It is structured similarly with each resident tested in 3 separate examination rooms each staffed with 2 examiners asking three 7-10-minute cases so that they experience a total of 9 cases during the examination. The residents are examined by faculty from a different institution who are blinded to the resident's home institution and year of training. The actual questions do differ somewhat from the ABS Examination in that they are more structured and do not allow for flexibility on the part of the examiners. This standardization allows for detailed formative feedback about errors, which the residents can use as study aids.

Cases are written each year by a writing committee composed of 2 to 3 volunteer faculty from each of the 3 institutions. Continuity of the process is maintained by having some of the faculty spend multiple years on the committee including 2 who have been part of this since its inception. Every year there are 2 to 3 general surgery cases covering areas such as surgical oncology, hernias, benign esophageal disease, appendicitis, and biliary tract disease. There is one case each year from each of 5 core categories—trauma, colorectal, critical care, breast, and vascular. Some years also include a case about endocrine surgery, pediatric surgery, or both. Questions within each case are divided into 9 sections—taking history and performing physical examination; establishing a differential diagnosis; selecting appropriate tests; and interpreting test results, treatment options, surgical approach, and operative management; and managing complications, postdischarge care, and professional behaviors. Each section contains one or more questions about that concept and not every case addresses every section. Examiner scripts are rigidly structured for consistency with clearly defined correct answers and examples of common incorrect answers. In some cases a hint or clarification from the examiner is specifically written into the script to help guide a lost resident back on to the correct path. Although the general categories remain stable, the individual question topics change every year. For example, for 1 year the vascular question might be a ruptured aortic aneurysm and the next it may be a cold leg or a deep venous thrombosis. As each resident takes the examination twice (fourth and fifth year of training) this provides them with a broader range of topics to test their knowledge. Question topics are often recycled and updated every 3 to 5 years to limit the work required of the writing committee. Prior to the examination, each year all cases are piloted with junior faculty or fellows to ensure clarity and check length.

Each question is scored as pass or fail. Within each section the resident must pass a designated number of questions to pass the section. For each case, the resident must pass a specified number of sections to pass the case. Some cases have critical fail questions. These are questions that address a point critical to the outcome of the patient or where the action suggested by the resident will result in harm to the patient. If they fail this type of question, the examiners are instructed to complete the rest of the case as if nothing has changed but the resident receives an automatic fail for the case no matter what they score on the rest of the questions. During resident debriefing after the examination, these are specifically discussed so that residents understand why their response was considered dangerous.

The scoring for each case is determined by the consensus of the question writing committee. The overall examination is designed to be somewhat harder than the actual certifying examination to encourage the residents to be thoroughly prepared for their actual board examination experience. The goal of the mock oral examination is to help residents identify their weak areas and provide them detailed formative feedback to aid studying. This study was conducted using deidentified data from all 3 institutions from examinations given between 2008 and 2014. The study was reviewed by the Institutional Review Board that designated it as exempt.

Clinical Case Exposure

Mean case totals for the graduating chief residents from each institution were acquired from an aggregated report retrieved from the Accreditation Council for Graduate Medical Education case log system by each institution and divided by the number of chiefs in the program. This was used as a marker for clinical exposure and was consistent across the years of the examination for individual institutions.