An Online System to Help With Mock Oral Examination Administration

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OBJECTIVE: Describe an online system used to collect data, compute statistics, and provide reports for mock oral examinations.

DESIGN: Forty general surgery residents, program directors, and faculty serving as examiners completed a survey regarding their experiences with the online mock oral examination system.

SETTING: General surgery residency programs and national surgical conferences.

PARTICIPANTS: General surgery residents, program directors, and faculty.

RESULTS: System users had very positive attitudes toward the online system in terms of usability and reporting functions.

CONCLUSIONS: The mock oral exam management online system is a useful tool that eases the burden of managing a mock oral exam session. (J Surg Ed 76:1167−1173. © 2019 Published by Elsevier Inc. on behalf of Association of Program Directors in Surgery.)

KEY WORDS: surgical education, certifying examination, mock orals, feedback

COMPETENCIES: Medical Knowledge, Interpersonal and Communication Skills, Practice-Based Learning and Improvement

INTRODUCTION

The American Board of Surgery Certifying Examination (CE) is the ultimate step toward board certification in general surgery. The purpose of the examination is to evaluate medical and surgical decision-making abilities. First-attempt pass rate on the CE is an important metric of a training program's effectiveness and quality.

Many surgery residency programs help residents prepare for the CE by offering mock oral examinations which closely mimic the actual conditions of the CE. In a survey of the Association of Program Directors in Surgery membership, Kimbrough et al.[1] found that 95% of respondents use mock orals sessions and 98% require postgraduate year 5 residents to participate. Forty-six percent of programs offer mock oral examinations 2 to 3 times per year, while another 24% offer exams more than 4 times per year. The majority of programs employ 3 examination rooms with 2 examiners asking 4 scenarios in each room.

BENEFITS OF MOCK ORAL EXAM SESSIONS

Faculty[1] and residents[2] believe mock oral exam sessions are very important or essential for trainees. Benefits of mock oral exam sessions for residents include identifying strengths and weaknesses in fund of knowledge and practice developing oral presentation skills. Several researchers have reported improvements on CE first-attempt pass rates associated with implementation of mock oral exams at various institutions.[2-7] In addition to being beneficial to residents, mock oral exam sessions may also benefit programs by identifying strengths and weaknesses in curricula.

CHALLENGES OF MOCK ORAL EXAM SESSIONS

As noted in the report by Kimbrough et al.,[1] program directors reported the greatest barriers to offering mock oral exam sessions are a lack of faculty to serve as examiners (56%) and availability of test scenarios (28%).

An additional challenge is offering high-quality and timely feedback to examinees. The 2 surgery residency programs in San Antonio, Texas (University of Texas Health Sciences Center at San Antonio and San Antonio Military Medical Center) have been performing joint

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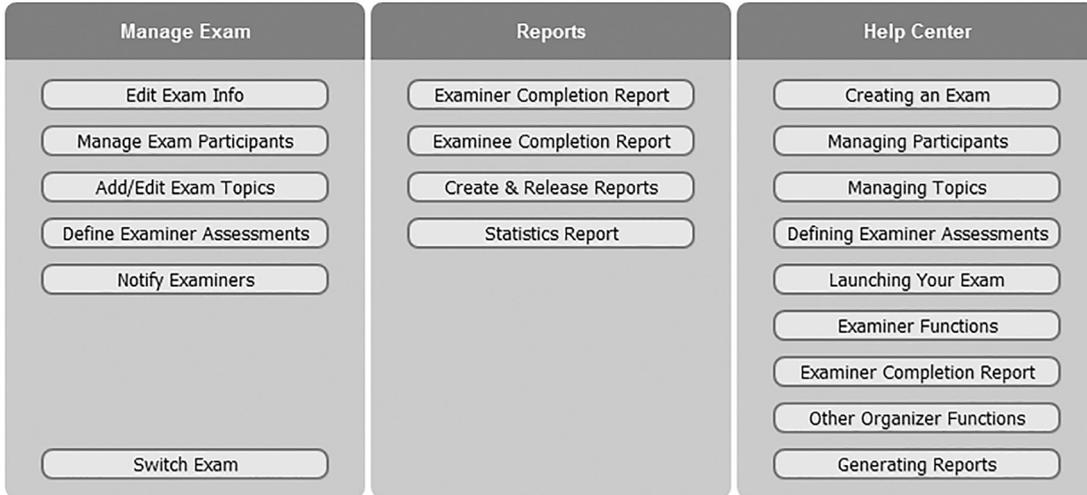
FIGURE 1. Organizer menu detailing available functions and Help Center which guides the organizer through the exam setup process.

FIGURE 2. Interface used to create an exam scenario (topic).

ReTool

Assess an Examinee

TEST EXAM

Assessment for: Alpha, Andrea

Case C2: Rectal Carcinoma

Description
62 yo male referred by PCP for rectal bleeding and a mass on digital rectal exam.

Discussion
History
No significant past medical / surgical history, No family history of cancers.

Examination
~~Adjunctive chemotherapy~~
- Ileostomy takedown
- Screening for recurrence

Score*:

Fail	Indeterminate	Pass
○	○	○

Comments:

Verbal/Nonverbal Communication Feedback:
☐ Poor eye contact
☐ Poor posture
☐ Stalling
☐ Needs to stay focused
☐ Says "uh" or "um" too often

[Save]　[Back]　[Cancel]

FIGURE 3. Interface used by an examiner to enter evaluation data for an examinee.

mock oral exam sessions for several years. Historically, residents were given written feedback reports after an administrator was able to compile examiners' handwritten scores and notes. The transcription process is labor-intensive and took several weeks to complete. According to Kimbrough et al., this is not uncommon as 30% of the programs they surveyed provide written feedback and that most programs (70%) reported a time delay of a week or more.[1] This time delay can also be detrimental to learning.[8]

ONLINE MOCK ORAL EXAM SESSION MANAGER

Given the importance of providing rich and timely feedback, we developed an online application designed to streamline the mock oral exam session administration process. The application can be viewed in any web browser on desktop, laptop, and mobile devices.

Exam setup is completed by an organizer at the institution hosting the event. Figure 1 shows the menu options available to the organizer. The exam setup process involves uploading exam participants (i.e., examiners, examinees, and program directors) and entering scenarios or selecting scenarios that were developed and shared by organizers of other events. The Help Center features videos to guide the organizer through each phase of exam setup. Figure 2 shows the interface for entering an exam scenario (topic). The topic description can be formatted in various ways and can include bulleted lists to guide examiners through various decision trees. The topic can also contain discussion points and references which can be hyperlinked to online resources. The discussion points and references are displayed in the report available to examinees

FIGURE 4. Examiner main menu page showing evaluation progress and list of evaluations entered.

at the end of the exam. When the exam has been created, the organizer notifies examiners that the exam scenarios are ready for them to study prior to exam administration.

On the day of the event, examiners enter evaluation data for each examinee in real-time (Fig. 3). Evaluation data include the score for the scenario (pass, indeterminate, or fail; however, the system can accommodate other scoring schemata) and comments (either typed or transcribed using the speech-to-text function available on most mobile devices). The examiner's menu (Fig. 4) displays the number of assessments the examiner has entered and allows the examiner to edit assessment data.

Upon exam completion, the organizer initiates the functions which generate score and feedback reports for examinees and their program directors. Examinees and program directors access these reports by logging into the mock orals management system.

Examinee reports (Fig. 5) show the individual's data compared to all other examinees who participated in the event. Data include the number of points earned on the exam, exam score, pass/fail result, and rank. Additionally, examinees receive detailed feedback for each scenario, which includes score and comments.

Program directors have access to all individual examinee reports for residents at his/her institution. Additionally, program directors receive reports that aggregate data for all residents at his/her institution and comparative data to other programs who also participated in the mock oral exam session (Fig. 6). Comparative data show median scores on each topic, rank, and percentile rank. Scenarios are color-coded to show potential curricular strengths and weaknesses (i.e., green indicates scenarios that residents from the institution scored ≥51 percentile, yellow indicates scoring 26-50 percentile, red indicates scoring 0-25 percentile).

FIGURE 5. Examinee report.

SYSTEM UTILIZATION AND PARTICIPANT RECEPTION

At the time of writing, this system has been used 6 times: Southwestern Surgical Congress conference in Maui, Hawaii (April 4, 2017), San Antonio City-Wide Mock Orals (March 26, 2018). Southwestern Surgical Congress conference in Napa, California (April 10, 2018), San Antonio City-Wide Mock Orals (June 11, 2018), Southeastern Surgical Congress conference in Charlotte, North Carolina (February 23, 2019), and Pittsburgh City-Wide Mock Orals (March 2, 2019).

Following the first implementation of this system at the Southwestern Surgical Congress conference in 2017, we asked participants to complete a short survey regarding their experiences. Respondents included 11 out of 16 (69%) examinees, 21 of 32 examiners (66%), and 8 of 9 (89%) program directors. Figure 7 contains the results of this survey. The vast majority of examiners (95%) found

the system to be easy to use. All examinees and 88% of program directors found the report to be useful. Only 38% of program directors said they would use the results to make programmatic changes at this point; however, 75% said they would make changes if more programs participated in the mock oral exam session. The vast majority of examinees, program directors, and examiners said the system should be used to offer mock oral exam sessions at future meetings (90%, 88%, 95%, respectively) and the Southwestern Surgical Congress should encourage participation in future meetings (90%, 88%, 95%, respectively).

CHALLENGES

While most users report that the system is user-friendly, we have encountered 2 main challenges. First, the system sends automated notifications to examiners, examinees, and program directors via email. Some users, particularly

FIGURE 6. Program Director report.
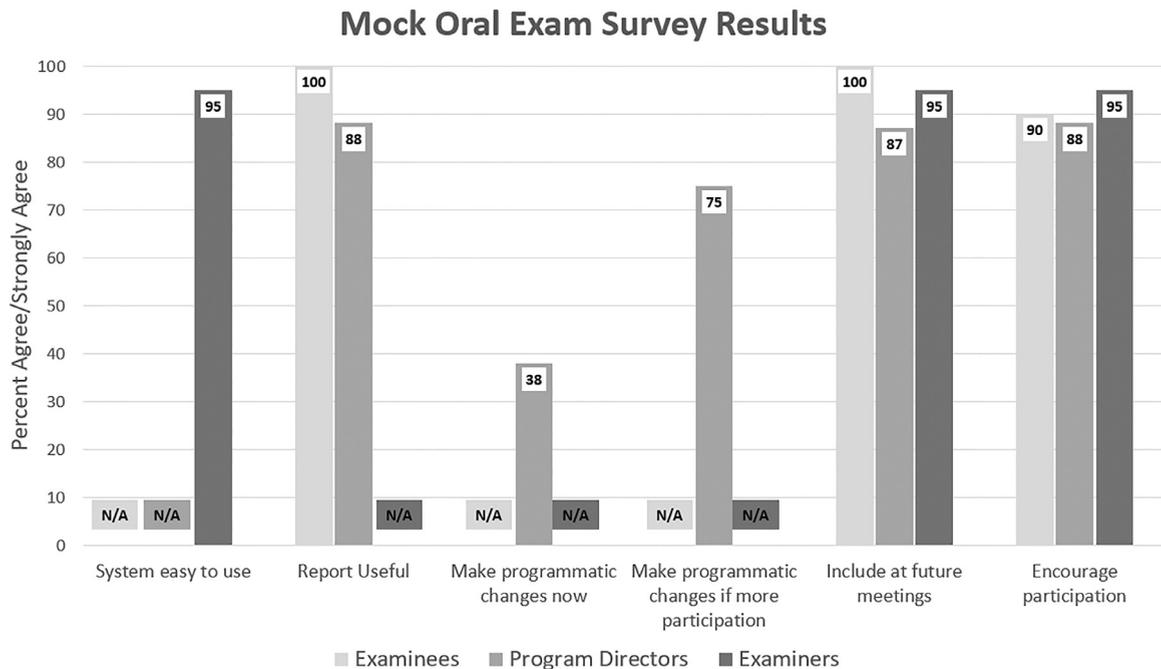
Mock Oral Exam Survey Results

FIGURE 7. Reactions to mock oral exam manager system implemented at Southwestern Surgical Congress 2017 conference.

those with military or Veteran's Administration email addresses, may not receive these emails due to those institutions' mail servers blocking some outside email traffic. While it is unlikely that these large government institutions will make policy changes to accept email from the mock orals system, we have found that sending notification emails from a nonautomated source (e.g., a university email account) can resolve this problem.

Second, because the system is web-based, access is dependent upon connection to the internet——either via WiFi or cellular data. During the administration of mock orals at the Southwestern Surgical Congress conference in Maui, many examiners were using laptop computers but the hotel WiFi signal was not strong enough to reach some areas of the exam space. During the administration of mock orals for the Pittsburgh area programs, examiners who were logged into the host institution's "guest" WiFi network were blocked from accessing the website. Access problems that are due to WiFi restrictions can be resolved by using a mobile device which can access the internet via cellular data. The bandwidth required to enter evaluations is minimal because the system is mainly transmitting text-based data; there are very few graphics and there is no video or audio.

CONCLUSIONS

The mock oral exam management online system is a useful tool that eases the burden of managing a mock oral exam session. One benefit is the ability to share scenarios among programs and exam events, thus creating a repository of validated exam questions and allowing for nationwide comparison of resident performance. Additionally, providing feedback is timely and virtually labor-free.

SUPPLEMENTARY INFORMATION

Supplementary data associated with this article can be found in the online version at https://doi.org/10.1016/j.jsurg.2019.03.021.

REFERENCES

1. Kimbrough MK, Thrush CR, Smeds MR, et al. National landscape of general surgery mock oral examination practices: survey of residency program directors. *J Surg Educ*. 2018;75:e54–e60.

2. Higgins RM, Deal RA, Rinewalt D, et al. The utility of mock oral examinations in preparation for the American Board of Surgery certifying examination. *Am J Surg*. 2016;211:416–420.

3. Guzman E, Babakhani A, Maker VK. Improving outcomes on the ABS Certifying Examination: can monthly mock orals do it? *J Surg Educ*. 2008;65:441–444.

4. Subhas G, Yoo S, Chang YJ, et al. Benefits of mock oral examinations in a multi-institutional consortium for board certification in general surgery training. *Am Surg*. 2009;75:817–821.

5. Aboulian A, Schwartz S, Kaji AH, de Virgilio C. The public mock oral: a useful tool for examinees and the audience in preparation for the American Board of Surgery Certifying Examination. *J Surg Educ*. 2010;67:33–36.

6. Greenawald L, Shaikh M, Borab Z, et al. A 5-year review of feedback on the Philadelphia-area mock ABS certifying examination. *J Surg Educ*. 2014;71:e11–e15.

7. Fingeret AL, Arnell T, McNelis J, et al. Sequential participation in a multi-institutional mock oral examination is associated with improved American Board of Surgery certifying examination first-time pass rate. *J Surg Educ*. 2016;73:e95–e103.

8. Kulik JA, Kulik C-LC. Timing of feedback and verbal learning. *Rev Educ Res*. 1988;58:79.