OSCEs: The Final Step in a Staged Primary Exam System

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Disclosure

All three presenters are salaried employees of the ABA
Staged Exams Timeline: 2005 - 2012

• ABA’s primary certification examination system has included both a written and an oral exam since **1938**
  
  "The first ABA oral exam was administered by the Directors and five guest examiners on October 12, 1938." From A History of the ABA: 1938-2003

• In **2005**, the Board began discussing changes to the traditional exam system by expanding the number, type and timing of the examinations

• In **2009** the Board approved the transition to a new staged exam system
The Staged Exam System

• The ABA’s Staged Exam System includes:
  
  • **BASIC** Exam – 200-item written exam administered midway through residency training
  
  • **ADVANCED** Exam – 200-item written exam administered after completion of residency training
  
  • **APPLIED** Exam – Administered after passing the ADVANCED Exam
    
    • Standard Oral Exam (**SOE**)  
    
    • Objective Structured Clinical Exam (**OSCE**)
Why Add an OSCE?

- ABA first discussed adding an OSCE to its primary examination system in 2005
- **Key question for the Board:** Could OSCEs measure something important and different than the current written and oral exams?
- **Miller’s Pyramid of Assessment** had become a well-recognized and widely used model for the development and assessment of medical competence
  - Defines four stages of capability: “knows,” “knows how,” “shows how,” and “does”
Why Add an OSCE?

• Nearly 4 decades of experience with the OSCE has amassed substantial evidence of the usefulness of this approach in testing the higher “shows how” level of competency.

• In the field of anesthesiology, there is evidence that use of the OSCE for assessment of physicians captures information about examinees that is not captured by either written or oral examinations.
Why Add an OSCE?

• Between **2005** and **2012** the board explored and debated whether and how to incorporate OSCEs into its staged examinations system

  • ABA directors and staff visited Royal College of Anaesthetists in the UK

  • Israeli Board of Anesthesiology leaders visited the ABA in Raleigh

• Decision to incorporate OSCEs into the APPLIED exams was approved in January **2012**
OSCE Development Timeline: 2012

Full Steam Ahead . . .

• OSCE Task Force established in May 2012
• OSCE Development Advisory Panel appointed in November 2012
  • Advisory panel members drawn largely from the simulation community
OSCE Development Timeline: 2014

Smooth Sailing...

• Original OSCE Blueprint finalized in Fall 2014

• Three (3) Content Domains were included:
  • Communication and Professionalism
  • Monitoring and Data Interpretation
  • Resuscitation and Management of Critical Illness
OSCE Development Timeline: 2014

... Until Pilot Testing

• Using a scenario template, three relatively high-fidelity scenarios developed and trialed at ABA offices in Fall 2014

• Lessons learned:
  • High fidelity difficult to achieve
  • Scenarios too complicated
  • Scenarios tended to mimic SOEs
What Next?

• ABA directors discussed new direction to pursue more limited number of domains with a simplified approach

• **Spring 2015**, ideas for potential scenarios based on additional topics in current SOE
Learning from Others

• **June 2015**: ABA directors and staff observe NBME process in Philadelphia – major lessons include
  - Selection, training and roles of standardized patients
  - Scenario development process
  - Scoring system
Moving Forward

• OSCE content outline revised to better reflect what is feasible and what is not well-covered in current SOE

• Domains mapped to ACGME Milestones

• Board delays first administration of the OSCEs, originally scheduled for 2017, until March 2018
  • “Do it as fast as we can do it right”
Scenario Development and Testing

- **2015** Board appoints OSCE Examination Development Task Force to:
  - Finalize OSCE content outline
  - Develop prototype OSCE scenarios
  - Pilot test and validate prototype scenarios

- **2016** Task Force transitions to OSCE Committee
  - Additional members recruited (25 members total + committee chair)
  - Members divided into five skill groups
OSCE Content Outline

• Two major content domains:
  • Communication & Professionalism
    • 6 skills/tasks
  • Technical Skills Related to Patient Care
    • 3 skills/tasks
OSCE Content Outline

A. Communication and Professionalism
   1. Informed Consent
   2. Treatment Options
   3. Peri-procedural Complications
   4. Ethical Issues
   5. Communication with Other Professionals
   6. Practice-based Learning and Improvement

B. Technical Skills
   1. Interpretation of Monitors
   2. Interpretation of Echocardiograms
   3. Application of Ultrasonography
OSCE Exam

• 7-station circuit
  • 5 communications & professionalism scenarios
  • 2 from technical skills

• Stations
  • 8 minute encounter
  • 4 minute preparation period
  • 84 minutes total
OSCE Blueprint

<table>
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<th>OSCE Exam Structure</th>
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<tr>
<td>Informed Consent (IC)</td>
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<tr>
<td>Peri-procedural Complications (PC)</td>
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<tr>
<td>Communications with Other Professionals (COP)</td>
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<td>Treatment Options (TO)</td>
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<td>Ethical Issues (EI)</td>
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<td>PBLI</td>
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<td>Interpretation of Monitors (IoM)</td>
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<tr>
<td>Interpretation of Echocardiograms (IoE)</td>
</tr>
<tr>
<td>Application of Ultrasonography (AoU)</td>
</tr>
</tbody>
</table>

1 station from each of these 3 task areas
1 station from across these 2 task areas
1 station in this task area, which includes 1 vascular cannulation and 2 nerve blocks
2 stations from across these 3 task areas
OSCE Committee

- Skill groups charged with developing 5 scenarios in each task area for 2018 administration

- Face-to-face meetings
  - 3 in 2016, 2 in 2017
  - SPs assist with pilot testing and provide input into SP script
  - Early career diplomates recruited to serve as “candidates” and provide feedback on draft scenarios

- Webinars
  - Skill groups meet to review and revise scenarios
  - Skill group leaders meet monthly to discuss scenario development status and provide input into project plan

- All scenarios to be finalized in 2017
OSCE Scenarios

- Informed Consent

**OSCE CONTENT OUTLINE: A.I.**

**INFORMED CONSENT**

Addison Osce is a 68-year-old patient who is scheduled for an arthroscopic left-sided rotator cuff repair. The patient reports stiffness and pain in the shoulder for 6 months. The patient was evaluated last week in the preoperative evaluation clinic and your colleague has approved the patient for anesthesia.

Past medical history is significant for hypertension and mild COPD. No labs were drawn preoperatively. ECG is normal. There is no evidence of heart disease. The patient reports mild shortness of breath with vigorous exertion. Review of symptoms is otherwise negative.

Medications include lisinopril (last dose yesterday), PRN albuterol and PRN Vicodin® (hydrocodone and acetaminophen).

Prior surgical history includes an open reduction of a right distal radius fracture 20 years ago.

Physical exam is unremarkable, with a reassuring airway examination.

Vital signs: HR 85, BP 148/84.

No allergies.

The patient is appropriately NPO.

The patient has already agreed to proceed with general anesthesia after speaking with your colleague who will be providing general anesthesia in the operating room. Your anesthesia group also routinely offers a nerve block as part of the anesthetic plan for rotator cuff surgery. The block is performed pre- or postoperatively by a separate regional anesthesia team that you are leading today. You agree that regional analgesia is appropriate in this patient. A separate informed consent for general anesthesia has already been obtained by your colleague.

**Task Statement:**
Your task is to obtain informed consent for the nerve block. Your institution does not employ written informed consent (verbal consent is sufficient). You should **NOT** repeat your colleague’s history and physical examination.
OSCE Scenarios

• Communication with Other Professionals

OSCE CONTENT OUTLINE: A.5.
COMMUNICATION WITH OTHER PROFESSIONALS

You are scheduled to provide anesthesia for a 62-year-old patient for an elective facelift under general anesthesia.

When you evaluate the patient in the preoperative area, you find that the pulse is irregular and rapid. You obtain an ECG which shows atrial fibrillation. After interviewing the patient and reviewing the medical record, you are confident that this is new-onset atrial fibrillation.

The patient denies any cardiac symptoms other than intermittent palpitations that have occurred over about the last month. During the palpitations, the patient needs to sit down and rest until they pass. The patient denies any other cardiac history other than long-standing hypertension treated with hydrochlorothiazide.

No other testing or laboratory work is available.

Vital signs: BP 105/67; HR 130 and irregular; RR 18; oxygen saturation 97% (room air).

In your clinical judgment, this elective procedure MUST be postponed so that the patient can be evaluated by a cardiologist and optimized for surgery, if necessary. You will meet with Dr. Jordan Osce, the surgeon who scheduled the case, prior to the start of the case to discuss your concerns.

Task Statement:
Your task is to present your recommendation to postpone the surgery to Dr. Osce and determine the best course of action. The discussion is taking place in a consultation room shortly prior to the scheduled start of the case. You will NOT have any direct interactions with the patient as part of this scenario.
Pilot Testing

• Scenarios pilot tested during 2016 and 2017 SOE weeks and OSCE Committee meetings
  • Examiners, committee members and early career diplomats serve as candidates
    • Feedback provided to skill groups
  • OSCE Committee and examiners score performances

• Project plan includes “full-scale” OSCE administration pilot test in November and a second one in late January, if needed
Purpose of OSCE Scoring

• Determine exam results – pass/fail

• Provide feedback for failing candidates

• Evaluate the test reliability and validity
### A.1 - Informed Consent Scoring Rubric

**CONSENT FOR SCENARIO NAME**

**Note to Examiner:** The focus of the Informed Consent scenario is to address critical elements of informed consent, including ☐, but **NOT** to discuss ☐.

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<th>Analytic Scoring Rubric</th>
<th>Scenario Specific Scoring Guidance for Examiners</th>
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<td>Scoring Elements</td>
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<td>Y M N</td>
<td>Delivers patient-centered care by …</td>
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<td>Y M N</td>
<td>Explains conduct of proposed procedure</td>
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<tr>
<td>Y M N</td>
<td>Explains relevant benefits of proposed procedure</td>
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<td>Y M N</td>
<td>Explains relevant more common/less severe risks of proposed procedure</td>
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<tr>
<td>Y M N</td>
<td>Explains relevant less common/more severe risks of proposed procedure</td>
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<tr>
<td>Y M N</td>
<td>Explains alternatives to proposed procedure</td>
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<td>Elicits questions and responds appropriately in lay terms</td>
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<tr>
<td>Y M N</td>
<td>Elicits … consent without …</td>
</tr>
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**Holistic Scoring Rubric:**

Over the course of the entire encounter with this patient in this clinical setting, how often did the candidate demonstrate the level of communication skills and professionalism that you expect of an ABA diplomate?

- Consistently
- Frequently
- Occasionally
- Rarely
Measurement Model

Multi-facet Rasch Model (Many-facets Rasch Measurement Model)

• Latent variable vs. ordinal observation
• Ordinal observation is an interaction between elements
  - Candidate ability
  - Examiner severity
  - Station difficulty
Statistical/Psychometric Softwares

• Facets

• General statistical software (e.g., SAS, R, SPSS)
Run Facets

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Model = ?,?,?,?,RS1,1

Rating (or partial credit) scale = RS1,R4,G,O
1=, anchorvalue1,A
2=, anchorvalue2,A
3=, anchorvalue3,A
4=, anchorvalue4,A

Labels =
1,Candidate ; # candidates
1=CandidateName1
2=CandidateName2
...

2,Examiner,A ;# examiners, # anchored
1=ExaminerName1, Anchorvalue
2=ExaminerName2
...

3,Station,A
1=InformedConsent, Anchorvalue
2=TreatmentOptions, Anchorvalue
...

data=OSCE2017pilot.csv
OSCE Scoring Example – Candidate-Examiner-Station Map
Table 7.1.1 Candidate Measurement Report (arranged by MN).

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<th>Total Count</th>
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<th>Fair(M) Average</th>
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Mean (Count: 4)  
S.D. (Population)  
S.D. (Sample)  

Model, Populn: RMSE .29 Adj (True) S.D. .60 Separation 2.03 Strata 3.04 Reliability .80  
Model, Sample: RMSE .29 Adj (True) S.D. .71 Separation 2.42 Strata 3.55 Reliability .85  
Model, Fixed (all same) chi-square: 19.7 d.f.: 3 significance (probability): .00  
Model, Random (normal) chi-square: 2.6 d.f.: 2 significance (probability): .27
### OSCE Scoring Example – Examiner Measure

**Table 7.2.1 Examiner Measurement Report (arranged by MN).**

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With extremes, Model, Poplin: RMSE .94 Adj (True) S.D. 1.00 Separation 1.07 Strata 1.76 Reliability .53
With extremes, Model, Sample: RMSE .94 Adj (True) S.D. 1.04 Separation 1.11 Strata 1.81 Reliability .55
Without extremes, Model, Poplin: RMSE .73 Adj (True) S.D. 1.00 Separation .91 Strata 1.55 Reliability .43
Without extremes, Model, Sample: RMSE .73 Adj (True) S.D. 1.00 Separation .91 Strata 1.61 Reliability .48
With extremes, Model, Fixed (all time) chi-square: 43.6 d.f.: 24 significance (probability): .00
With extremes, Model, Random (normal) chi-square: 17.9 d.f.: 23 significance (probability): .76
Table 7.3.1 Station Measurement Report (arranged by MN).

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Model Populn: RMSE .33 Adj (True) S.D. .23 Separation .70 Strata 1.27 Reliability .33
Model, Sample: RMSE .33 Adj (True) S.D. .30 Separation .93 Strata 1.57 Reliability .46
Model, Fixed (all same) chi-square: 7.9 d.f.: 4 significance (probability): .10
Model, Random (normal) chi-square: 2.8 d.f.: 3 significance (probability): .43
### Table 7.1.1 | Examinee Measurement Report (Arranged by MN)

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### Additional Information

- With extremes, Model, Populin: RMSEA .76 Adj (True) .50 1.55 Separation 2.05 Strata 3.06 Reliability .81
- With extremes, Model, Sample: RMSEA .76 Adj (True) .50 1.55 Separation 2.05 Strata 3.06 Reliability .81
- Without extremes, Model, Populin: RMSEA .58 Adj (True) .50 1.34 Separation 2.31 Strata 3.41 Reliability .84
- Without extremes, Model, Sample: RMSEA .58 Adj (True) .50 1.34 Separation 2.31 Strata 3.41 Reliability .84
- With extremes, Model, Fixed (All same) chi-square: 17379.5 d.f.: 2726 Significance (probability): .00
- With extremes, Model, Random (Normal) chi-square: 8244.4 d.f.: 2726 Significance (probability): .00

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ABMSCONFERENCE

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Questions?
Thank You!