OSCE EXAMPLE SCENARIOS

This document provides example scenarios for skills described in the APPLIED Examination - Objective Structured Clinical Examination (OSCE) Content Outline.

Each example consists of the materials that will be given to the candidate prior to entering the exam room for that skill. For each of the Communication and Professionalism skills, a specific scenario is presented. For each of the Technical Skills, the general instructions for each scenario are presented.
DISCUSSION OF TREATMENT OPTIONS AND 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 the last 6 months.

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. Patient reports mild shortness of breath with vigorous exertion. Review of symptoms are 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.

Your patient has some concerns about postoperative analgesia. The members of your anesthesia group routinely offer general anesthesia and regional anesthesia as part of the anesthetic plan for rotator cuff surgery. You are meeting with the patient in the preoperative holding area.

TASK STATEMENT:
Your task is to discuss the anesthetic options for the procedure with the patient and obtain informed consent. Your institution does not employ written informed consent (verbal consent is sufficient). You should NOT repeat your colleague’s history and physical examination.
PERI-PROCEDURAL COMPLICATIONS

You provided general anesthesia for Peyton Osce, an otherwise healthy patient who received a laparoscopic inguinal herniorrhaphy. The anesthetic was relatively uneventful with the exception that towards the end of the case the surgeon commented that the patient was inadequately relaxed.

Both arms were tucked at the patient’s side, and you monitored neuromuscular function using train-of-four stimulation of the facial nerve. At the time of the surgeon’s comment, all four twitches of the train-of-four were equal, and you administered 20 mg of rocuronium.

Immediately after the injection, the heart rate increased from 80 to 128. You examined the syringe that was injected and realized that instead of injecting 2 ml of rocuronium, in the darkened operation room you picked up the wrong syringe and actually injected 2 ml (0.4 mg) of the glycopyrrolate that was drawn up for neuromuscular blockade reversal.

You informed the surgeon that the sudden tachycardia was a result of this medication error. You elected not to administer additional rocuronium. The heart rate slowly returned to baseline, and the rest of the anesthetic was uneventful, as was the PACU course.

The patient is now ready for discharge and is alert and comfortable. The surgeon has informed the patient that there was a medication error, and that you will be discussing this error with the patient.

TASK STATEMENT:
Your task is to discuss this medication error with the patient.
ETHICAL ISSUES

You are working in the operating room on call and have just started your Sunday evening call shift. You have been assigned to take care of Chris Osce, a patient with suspected acute appendicitis who requires an urgent appendectomy. The patient has multiple serious co-morbidities, including metastatic melanoma, coronary artery disease, and poorly controlled hypertension.

In the past, the patient has expressed wishes to not be resuscitated and a Do-Not-Resuscitate (DNR) status has been in place for one month.

The patient was evaluated by one of your colleagues during the previous shift, who discussed the usual conduct of general anesthesia but did not address the DNR status. An internist has also evaluated the patient and concluded that no further pre-anesthetic testing is necessary; you concur.

Current vital signs are HR 101; BP 165/95; RR 22; SaO2 98% on room air; pain score of 3 out of 10.

The operating room is almost ready for the patient to come back and you will be providing anesthesia. You have determined that endotracheal intubation is required as a part of the anesthetic plan. The patient has asked specifically to discuss DNR status with you as the anesthesiologist who will care for the patient.

TASK STATEMENT:
Your task is to discuss how to manage the patient’s DNR status in the perioperative period. You do NOT need to obtain formal informed consent for general anesthesia or discuss other aspects of anesthetic care not related to DNR status.
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 16; 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.
The hospital administrators are concerned about a lower than desired proportion of first case on-time starts in the main operating rooms. Your partner, Dr. Taylor Osce, has been tasked by the department chair to design and implement a quality improvement (QI) project to improve the proportion of cases starting on time.

Dr. Osce has never conducted a QI project and needs some direction. You have only a few minutes between cases available to talk, but Dr. Osce wants to get a general idea from you about the steps needed to perform a QI project.

**TASK STATEMENT:**
Your task is to explain to your colleague the general steps of how to design and implement a quality improvement project. The discussion should **NOT** focus on the specifics of on-time OR starts, but rather on your general approach to any QI project.
INTERPRETATION OF MONITORS

In this station, you will be asked to interpret data from a physiologic display. You will be presented with three separate scenarios.

Each scenario will begin with a short case description. A recording of a simulated physiologic monitor will then be shown.

In each scenario, changes will occur in the monitor recording. These changes may occur while the recording is playing, or you will be shown two separate recordings, one before and one after the changes have occurred. The exam facilitator will not provide any additional information about the case.

After you watch the monitor recording, you will have approximately 60 seconds to answer the following two questions about the scenario:
   A. What changes or abnormalities do you see on the monitor?
   B. What is the most likely diagnosis?

The exam facilitator will ask these questions once the monitor has frozen, and you will verbally respond. Please do not answer until the monitor freezes, as the facilitator may not be able to hear over the sound of the monitor. Please be specific and concise when providing your responses. A timer at the right bottom corner of the screen will count backwards for approximately 60 seconds to apprise you of the remaining time for the answering portion of each scenario. Once you have finished your response, you can ask the facilitator to move on to the next scenario. However, once you have moved forward you will not be able to go back to previous scenarios.

Each recording will be played only once; you will NOT have the opportunity to go back and review the recordings.

Each scenario is separate and has no connection with the preceding or subsequent scenario.

Click here to see a sample scenario. The answer key is on page 15.

Physiologic monitor simulation software has been used to create the monitor recordings.

Click here to see an example of the physiologic display and definitions of display labels.
INTERPRETATION OF ECHOCARDIOGRAMS

In this station, you will be asked to interpret data from echocardiograms. You will be presented with 3 separate case scenarios.

Each scenario will begin with instructions and a short case description, if relevant. After you watch the echocardiogram recordings, you will be asked questions about the scenario by an exam facilitator. The scenarios will include 1 image identification, 1 short case, and 1 long case.

IMAGE IDENTIFICATION (APPROXIMATELY 45 SECONDS):
For the image identification, you will view a single echocardiogram loop with labeled structures. Click here to see a sample video.

After watching the video, you will be asked to:

1. Select the proper name of the view from a list of standard views.
2. Identify each of the labeled structures.

SHORT CASE (APPROXIMATELY 2 MINUTES):
For the short case, you will view 1 or more echocardiogram loops. If more than 1 loop is presented, assume it is obtained from the same patient. Click here to see a sample video.

After watching the video, you will be asked to:

1. Select the proper name of the view(s) from a list of standard views.
2. Provide the most likely diagnosis based on the echocardiographic findings.
3. Discuss the echocardiographic findings that support your diagnosis.

LONG CASE (APPROXIMATELY 2.5 MINUTES):
For the long case, you will view multiple echocardiogram loops from the same patient. Click here to see a sample video.

After watching the video, you will be asked to:

1. Select the proper name of the view(s) from a list of standard views.
2. Provide the most likely diagnosis based on the echocardiographic findings.
3. Explain to the exam facilitator how you would manage this patient and why.
4. Discuss the echocardiographic findings that support your diagnosis.

You will provide all answers verbally to an exam facilitator. A timer at the right bottom corner of the screen will count backwards to apprise you of the remaining time for the answering portion of each scenario. Once you have finished your response, you can ask the exam facilitator to move on to the next scenario. However, once you have moved forward you will NOT be able to go back to previous scenarios. Each scenario is separate and has no connection with the preceding or subsequent scenario.
The facilitator is not a physician and will NOT provide additional information about the cases or the images. You will be scored remotely by an anesthesiologist with experience in echocardiography.

Click here to view the full sample video. The answer key is on page 15.

List of Echocardiogram Views

a. Midesophageal Four Chamber
b. Midesophageal Two Chamber
c. Midesophageal Long Axis
d. Midesophageal Ascending Aortic Long Axis
e. Midesophageal Ascending Aortic Short Axis
f. Midesophageal Aortic Valve Short Axis
g. Midesophageal Right Ventricular Inflow-Outflow
h. Midesophageal Bicaval
i. Transgastric Midpapillary Short Axis
j. Descending Aortic Short Axis
k. Descending Aortic Long Axis

ADDITIONAL RESOURCES:

Click on the following links to access additional resources related to the interpretation of echocardiograms.

- Key TEE Views
- Pathologies
- University of Toronto Virtual Transesophageal Echocardiography
- Open Anesthesia Basic Course in TEE
APPLICATION OF ULTRASONOGRAPHY

Candidates who take the virtual APPLIED Exam will not participate in this skill station.

In this station, you will be asked to complete 3 separate tasks related to the use of ultrasound for vascular access or nerve blocks.

For each task, you will be required to produce an image using an ultrasound probe that you will manipulate. The examiner will operate the ultrasound machine, and you may request that the examiner adjust the depth or the gain.

You can instruct the standardized patient to position himself or herself as appropriate. The patient should remain supine for all vascular access tasks.

For each task, you will generate an image that would support the conduct of a specified vascular access or nerve block procedure. You may be asked to generate an in-plane or out-of-plane view. Once you are satisfied with the image, you will ask the examiner to freeze the image. You will then be asked to identify structure(s) in the image, as directed by the examiner.

You may be asked to identify the optimal needle positioning for vascular access or nerve block, as well as the optimal needle tip location to deposit local anesthetic.

To complete the 3 tasks in the allotted time, you should spend no more than 2 minutes and 30 seconds on each individual task.

Your 3 tasks are to produce images to facilitate the following procedures, including identification of the appropriate structures. (NOTE: For the actual examination, the specific procedures and structures will be listed, so that you will know which procedures will be examined before entering the examination room. The specific procedures that could be examined are included in the content outline.)

PROCEDURE 1 (E.G., VASCULAR ACCESS):
Identify probe orientation
Demonstrate optimal needle positioning for vascular access
Identify structure 1
Identify structure 2

PROCEDURE 2 (E.G., NERVE BLOCK):
Identify probe orientation
Identify structure 1
Identify structure 2
Demonstrate optimal needle tip location to deposit local anesthetic

PROCEDURE 3 (E.G., NERVE BLOCK):
Identify probe orientation
Identify structure 1
Identify structure 2
Demonstrate optimal needle tip location to deposit local anesthetic
View sample ultrasound images of each structure on the following pages:

1. Vascular cannulation
   i. Internal jugular vein

   ![Internal Jugular Vein Image]

   SCM = Sternocleidomastoid muscle; IJ = Internal Jugular vein; CA = Carotid artery; ASM = Anterior scalene muscle

   ii. Cubital fossa vessels

   ![Cubital Fossa Vessels Image]

   A = Brachial artery; V = cubital fossa vein
iii. Femoral vessels

2. Nerve blocks
   i. Interscalene

FV = Femoral vein; FA = Femoral artery; FN = Femoral nerve

SCM = Sternocleidomastoid muscle; IJV = Internal Jugular vein; ASM = Anterior scalene muscle; MSM = Middle scalene muscle; CA = Carotid artery
ii. Supraclavicular

Supraclavicular block

![Image of Supraclavicular block with labels: Brachial plexus, MSM, SA, Pleura, Lung, First Rib. Legend: MSM = Middle scalene muscle; SA = Subclavian artery.]

iii. Transversus abdominis plane (TAP)

TAP block

![Image of TAP block with labels: EOM, IOM, TAM, Peritoneum. Legend: EOM = External oblique muscle; IOM = Internal oblique muscle; TAM = Transverse abdominis muscle.]

EOM = External oblique muscle; IOM = Internal oblique muscle; TAM = Transverse abdominis muscle.
iv. Femoral block

Femoral vein; FA = Femoral artery; FN = Femoral nerve

v. Adductor canal (saphenous)

Saphenous block

A = Femoral artery; N = Saphenous nerve
vi. Popliteal

**Popliteal Sciatic block**

A. Popliteal Sciatic nerve before its division. B. Popliteal Sciatic nerve beyond its division.

SM = Semimembranosus muscle; ST = Semitendinosus muscle; BF = Biceps femoris muscle;
CPN = Common peroneal nerve; TN = Tibial nerve; PA = Popliteal artery; PV = Popliteal vein
ANSWER KEY FOR OSCE PHYSIOLOGIC MONITORS CASE EXEMPLAR

Question A: What changes or abnormalities do you see on the monitor?
Acceptable response(s): ST elevation on the ECG leads II and V5 along with hypertension and tachycardia.

Question B: What is the most likely diagnosis?
Acceptable Response: ST elevation myocardial infarction (STEMI)

ANSWER KEY FOR OSCE ECHOCARDIOGRAM CASE EXEMPLAR

IMAGE IDENTIFICATION

View Name*
- Transgastric Midpapillary Short Axis

Structures*
- Circle: Anterolateral papillary muscle
  - (or anterior papillary muscle, or lateral wall)
- Arrow: Right ventricle

SHORT CASE

View Name*
- Midesophageal Four Chamber

Abnormal Finding*
- Atrial Septal Defect (ASD)

Echo Findings That Support Diagnosis
- Apparent gap in interatrial septum
- Color Doppler flow from left to right atrium across defect
- Dynamic/aneurysmal interatrial septum
- Enlargement of the right atrium
- Bowing of the interatrial septum into the left atrium in ventricular systole
- Possible Tricuspid dilation
- Possible Right Ventricular enlargement

Description
These images show a midesophageal 4 chamber view with a color Doppler sector on the interatrial septum. There is color flow from left to right atrium suggesting an ASD. The interatrial septum is highly mobile and borderline aneurysmal and the right atrium is enlarged from chronic volume overload from the left to right shunt. There may be tricuspid dilation (without regurgitation) or right ventricular enlargement, though these are less obvious/borderline findings.
LONG CASE

Loop A

View Name* -- two answers are acceptable
  • f. Midesophageal Aortic Valve Short Axis or
  • g. Midesophageal Right Ventricular Inflow-Outflow

Loop B

View Name*
  • c. Midesophageal Long Axis

Diagnosis*
  • Aortic Stenosis

Management Plan*
  • Volume bolus
  • Vasopressor to improve SVR (phenylephrine)
  • Heart rate control
  • Refer for surgical or percutaneous intervention on aortic valve

Echo Findings That Support Diagnosis
  • Thickened/Calcified/Sclerotic Aortic Valve
  • Poorly mobile Aortic Valve (all cusps but especially non-coronary cusp)
  • Thickened or hypertrophied left ventricle

Description
These images show a classic picture of a thickened and calcified aortic valve with poorly mobile leaflets, especially the non-coronary cusp. The left ventricle is hypertrophied, likely from longstanding pressure work in the setting of aortic stenosis. There is characteristic acoustical shadowing blocking imaging below the valve (right ventricle in A, RV outflow tract in B).
Interpretation of Monitors Physiologic Display Description

ECG Waveform: Source: ECG

Plethysmograph Waveform: Source: Plethysmograph

Arterial BP Waveform: Source: Non-invasive Blood Pressure

Capnograph Waveform: Source: Inspiratory/Expired Agent Concentration

Non-invasive Blood Pressure: NBP Auto 2 min 12:49 PM

Heart Rate and Pulse: Inspiratory/Expired Oxygen Concentration

Subdued values represent alarm limits
Label Definitions

• Pressures (mmHg)
  • ABP = Arterial Blood Pressure
  • CVP = Central Venous Pressure
  • MABP = Mean Arterial Blood Pressure
  • Mean = Mean Pressure
  • NBP = Noninvasive Blood Pressure
  • PAP = Pulmonary Artery Pressure
  • PAOP = Pulmonary Artery Occlusion Pressure
  • SBP/DBP = Systolic/Diastolic Blood Pressure

• Gases
  • CO$_2$ = Carbon Dioxide
  • etCO$_2$/inCO$_2$ = End tidal/Inspired Carbon Dioxide (mmHg)
  • imCO$_2$ = inspired Minimum Carbon Dioxide (mmHg)
  • etO$_2$/inO$_2$ = End tidal/inspired Oxygen (%)
  • etSEV/inSEV = End tidal/Inspired Sevoflurane (vol%). Same for isoflurane & desflurane
Label Definitions

• Cardiac
  • C.O. = Cardiac Output (L/min)
  • ECG = Electrocardiogram
  • HR = Heart Rate (beats per minute)
  • Pulse = Heart Rate (beats per minute)
    • Source plethysmograph, if not available, then arterial blood pressure
  • NBP Mode = Auto versus Manual NBP control

• Respiratory
  • awRR = Airway Respiratory Rate (breaths per minute)

• Temperature (Celsius)
  • Tperi = Peripheral Temperature
  • Tbld = Blood Temperature

• Neuromuscular Blockade Monitoring
  • TOF% = Train of four ratio (Percent)
  • TOF = Train of four count (0 to 4)
  • PTC = Post tetanic count (0 to 4)
Simulation Features

• The physiologic display may report “Saturation Signal Low” in the plethysmograph waveform field. This indicates either low oxygen hemoglobin saturation (less than 60%) or decreased blood pressure (systolic blood pressure less than 60 mmHg) or both.

• Heart rate and pulse sources are defined by color. They include the electrocardiogram (green), plethysmograph (yellow) and arterial blood pressure (red).

• The physiologic display includes a set of alarm windows located at the top of the display. Alarm conditions will be presented in yellow (advisory) and red (critical) boxes.

• Limitations in simulation do not allow perfect replication of physiologic signals. If difficult to decipher a physiologic signal, seek clarification from the examiner.