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.
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.
ETRICAL 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 is in need of 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 AND ECHOCARDIOGRAMS

In this station, you will be asked to interpret data from a physiologic display and from echocardiogram recordings. You will be presented with 3 separate scenarios. The scenarios will include one case with only physiologic monitors, one case with only echocardiogram recordings, and one combined case with recordings from both physiologic monitors and echocardiograms.

Each scenario will begin with a short case description. A recording of a simulated physiologic monitor and/or echocardiogram recordings will then be shown.

The examiner will ask you questions, and you will verbally respond. Please be specific and concise when providing your responses. A timer at the right bottom corner of the screen will count backwards for the remaining time for the question answering portion of each scenario.

Physiologic Monitors Case (approximately 2 minutes):
In the physiologic monitors scenario, changes will occur in the monitor recording. These changes may occur while the recording is playing, OR you will be shown 2 separate recordings, one before and one after the changes have occurred. The examiner will not provide any additional information about the case.

After you watch the monitor recording, you will have approximately 45 seconds to answer the following 2 questions about the scenario:

1. What changes or abnormalities do you see on the monitor?
2. What is the most likely diagnosis?

Click here to see a sample scenario. 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.

Echocardiogram Case (approximately 2 minutes):
For the echocardiogram case, you will view one or more images. If more than one image is presented, assume it is obtained from the same patient.

After watching the video, you will be asked to:

1. Describe the echocardiographic findings.
2. Provide the most likely diagnosis based on the echocardiographic findings.
3. Explain to the examiner how you would manage this patient and why.

Click here to see a sample video. Answer key is on page 15.

Combined Physiologic Monitor and Echocardiogram Case (approximately 2.5 minutes):
In the combined physiologic monitor and echocardiogram case, you will first be presented with the monitor recording. You will then be presented with echocardiogram images from the same patient. The examiner will not provide any additional information about the case.
After you watch the recordings, you will have approximately 60 seconds to answer the following 3 questions about the scenario:

1. What changes or abnormalities do you see on the monitor?
2. What finding do you see on the echocardiogram?
3. What is the most likely diagnosis?

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 video.](#) 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

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

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

ii. Cubital fossa vessels

A = Brachial artery; V = cubital fossa vein
2. Nerve blocks
   i. Interscalene
ii. Supraclavicular

Supraclavicular block

Brachial plexus

MSM = Middle scalene muscle; SA = Subclavian artery

iii. Transversus abdominis plane (TAP)

TAP block

Transverse abdominis plane

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

![Femoral block diagram](image)

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

v. Adductor canal (saphenous)

![Saphenous block diagram](image)

*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

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

Diagnosis
Aortic Stenosis

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

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).

ANSWER KEY FOR OSCE COMBINED PHYSIOLOGIC MONITOR AND ECHOCARDIOGRAM CASE EXEMPLAR

Question A: Describe changes or abnormalities seen on monitor
Acceptable Response: Sinus tachycardia, hypertension, ST depression

Question B: Identify TEE findings
Acceptable response(s): Wall motion abnormality (anteroseptal, anterior), Dilated left ventricle, Reduced ejection fraction

Question C: Identify most likely diagnosis
Acceptable response: Myocardial ischemia (or myocardial infarction)