ABA THE AMERICAN BOARD OF ANESTHESIOLOGY
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OSCE EXAMPLE SCENARIOS

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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; SaO_2 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.

Practice-Based Learning and Improvement

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 and Echocardiograms

In this station, you will be asked to interpret data from a typical bedside physiologic display monitor and from transesophageal echocardiogram (TEE) or point of care ultrasound (POCUS) recordings. You will be presented with 3 separate scenarios. The scenarios will include one case with only physiologic monitors, one case with only TEE or POCUS recordings, and one combined case with recordings from both physiologic monitors and TEE or POCUS recordings.

Each scenario will begin with a short case description. A recording of a simulated physiologic monitor and/or TEE or POCUS recordings will then be shown. Each scenario is separate and has no connection with the preceding or subsequent scenario.

An exam facilitator will guide you through this station. The exam facilitator will read aloud all of the scenario questions, and you should respond verbally. Please be specific when providing your responses. A timer at the right bottom corner of the screen will count down the remaining time for the question answering portion of each 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 examiner who will review your recorded examination.

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

Physiologic Monitor Case (approximately 2 minutes):

In the physiologic monitor 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 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 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 video. SAMPLE A.
The answer key is on page 18.

Go to the Display Chart, on page 19, to see an example of the physiologic display and definitions of display labels.

TEE or POCUS Case (approximately 1.5 minutes):

For the TEE or POCUS case, you will view one or more images. If more than one image is presented, assume they are obtained from the same patient.

After you watch the recording, you will have approximately 60 seconds to answer the following 3 questions about the scenario:

1. Describe the findings on the TEE or POCUS exam.
2. What is the most likely diagnosis based on the TEE or POCUS findings?
3. What is your management plan for this patient?

Click here to see a sample video: SAMPLE B.
The answer key is on page 18.

Combined Physiologic Monitor and TEE or POCUS Case (approximately 2.5 minutes):

In the combined physiologic monitor and TEE or POCUS case, you will first be presented with the monitor recording. You will then be presented with TEE or POCUS 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. Describe the findings on the TEE or POCUS exam.
3. What is the most likely diagnosis?

Click here to see a sample video: SAMPLE C.
The answer key is on page 18.

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, nerve blocks, or point-of-care ultrasound exam.

For this station, you will generate images that would support the conduct of a specified vascular access or nerve block procedure, or a point of care ultrasound examination. 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 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 select the appropriate transducer (linear vs. curvilinear vs. phased array).

You can instruct the standardized patient to position themselves as appropriate.

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

In order 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 of appropriate quality to achieve the therapeutic or diagnostic procedures listed, including identification of the appropriate related structures.

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

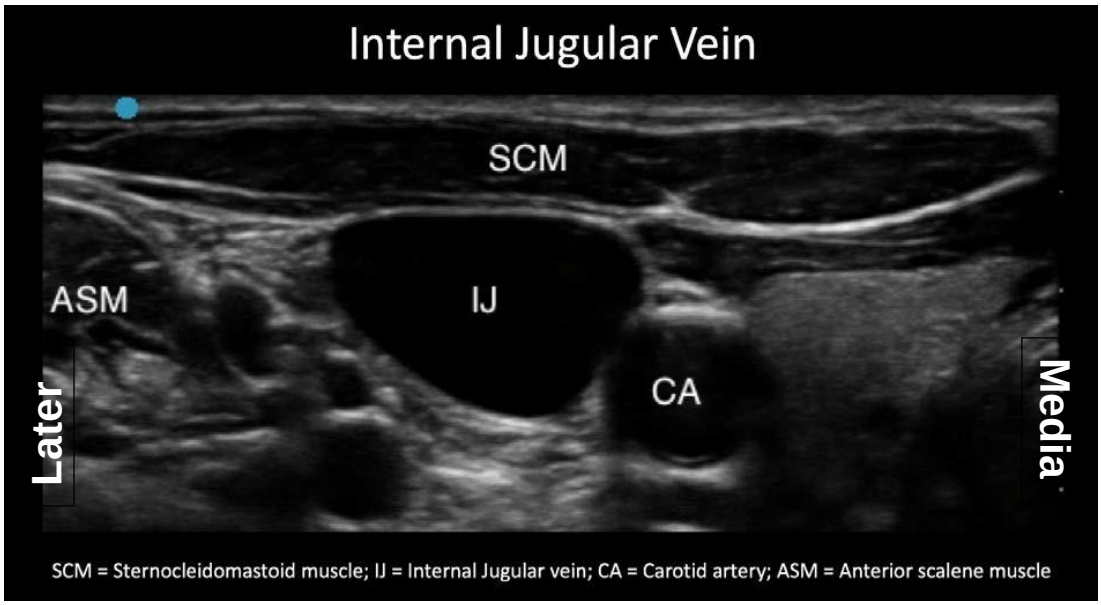
TASK 2 (E.G., NERVE BLOCK):
Identify probe orientation
Identify structure 1
Identify structure 2
Demonstrate optimal needle tip location to deposit local anesthetic around _____

TASK 3 (E.G., POCUS):
Identify probe orientation
Identify structure 1
Identify structure 2
Demonstrate the location for a Color-flow Doppler sector to assess the _____ valve

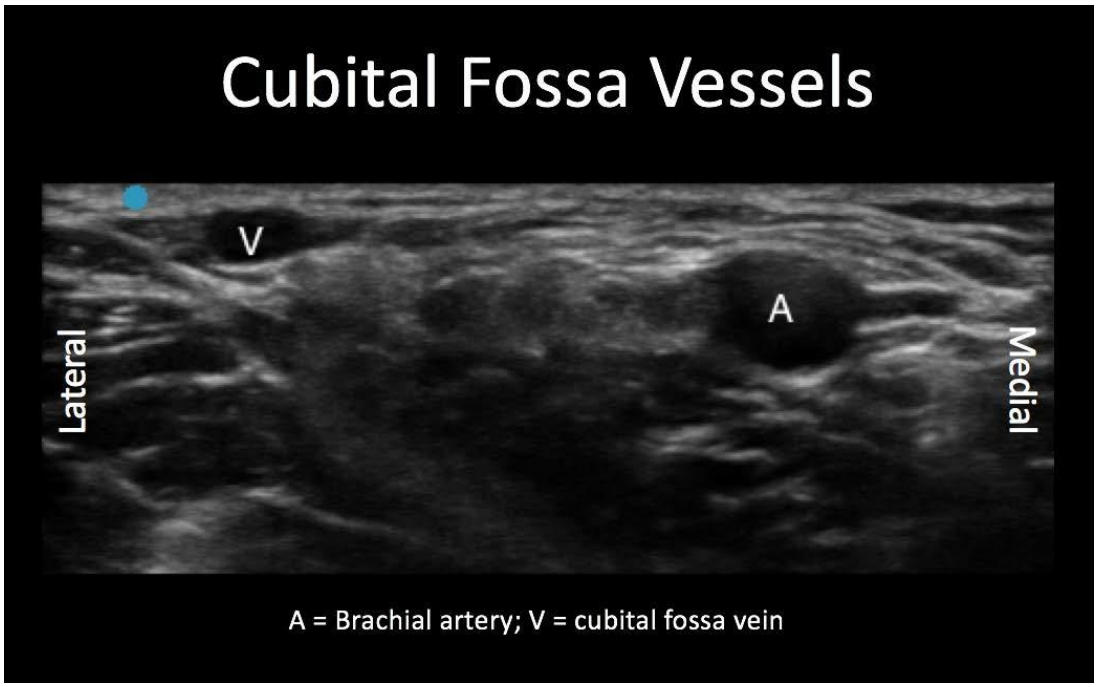
View sample ultrasound images of each structure on the following pages:

1. Vascular cannulation

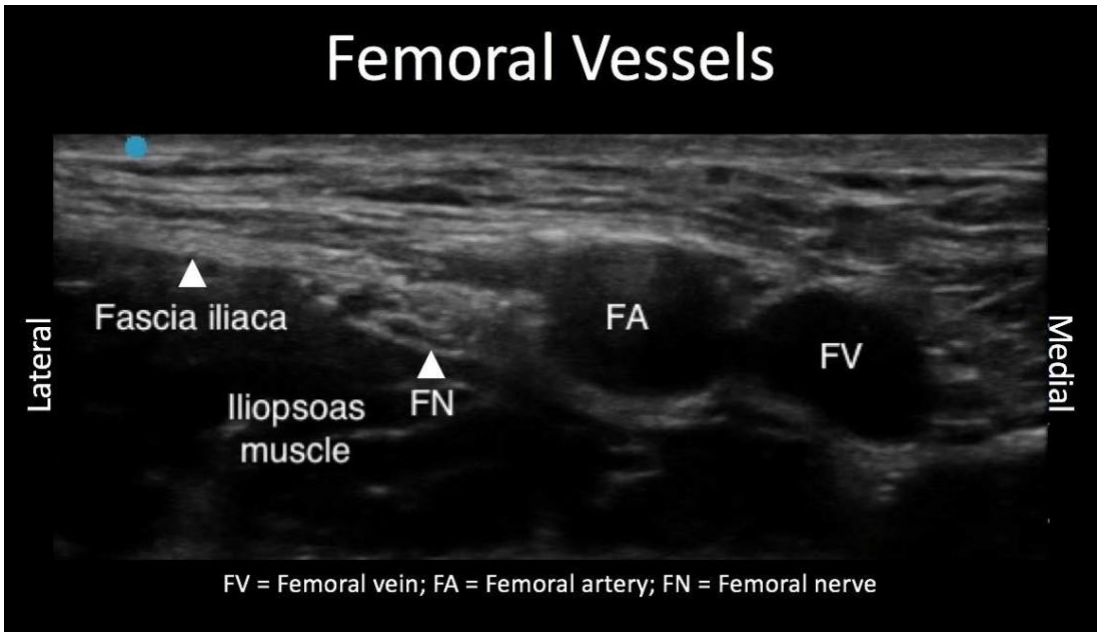
   i. Internal jugular vein



   ii. Cubital fossa vessels

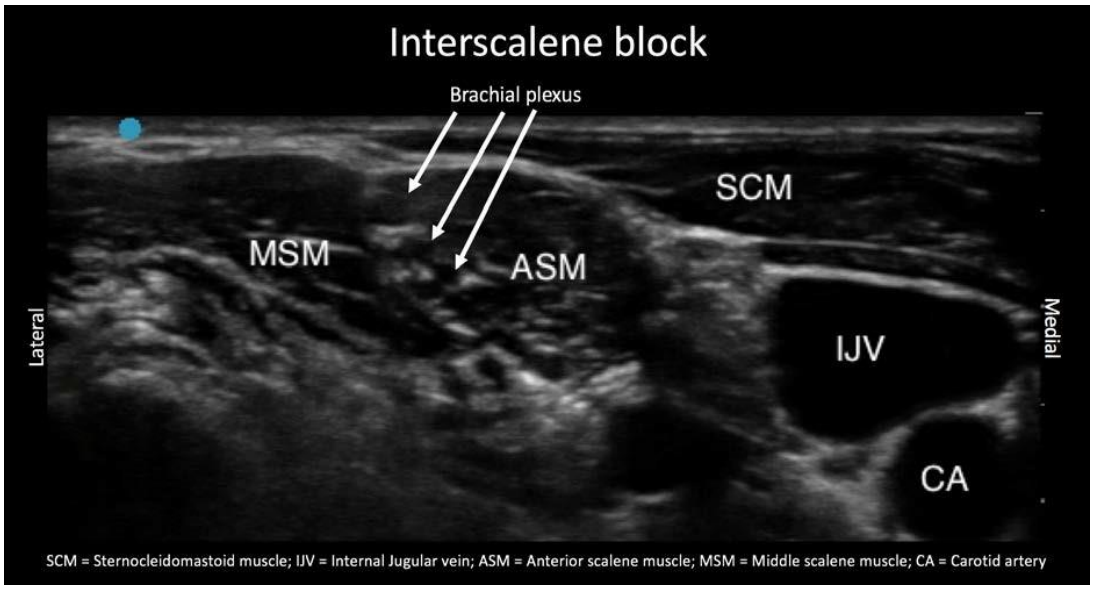


iii. Femoral vessels

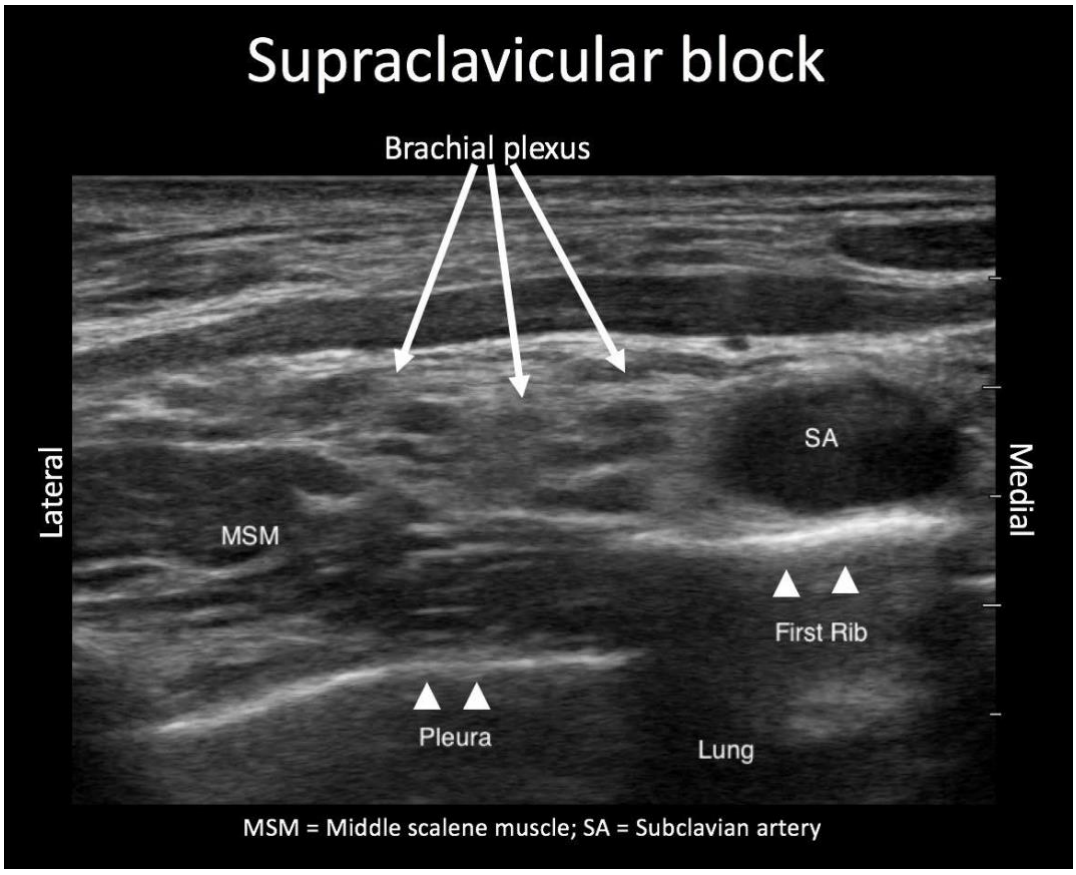


2. Nerve blocks

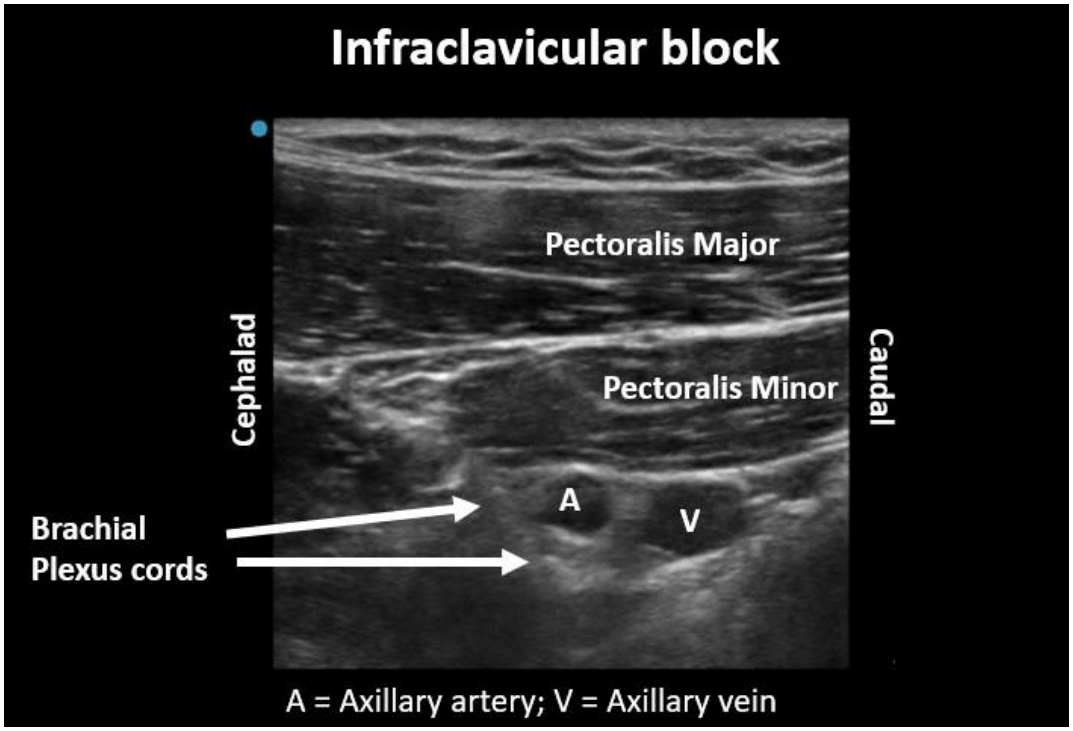
i. Interscalene block



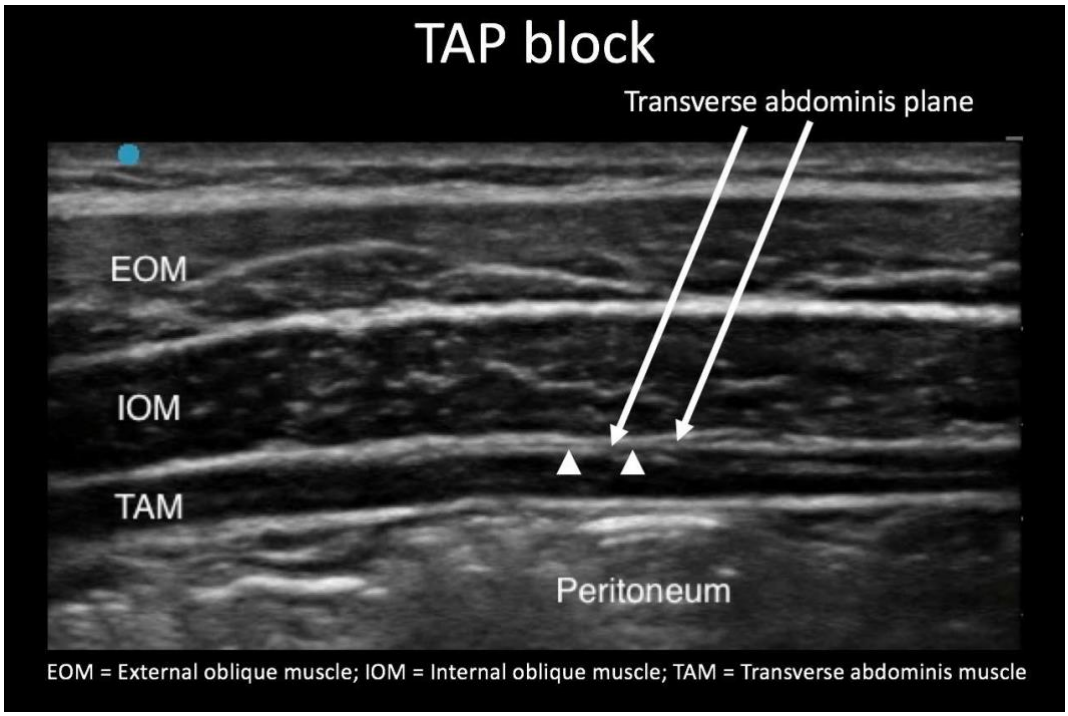
ii. Supraclavicular block



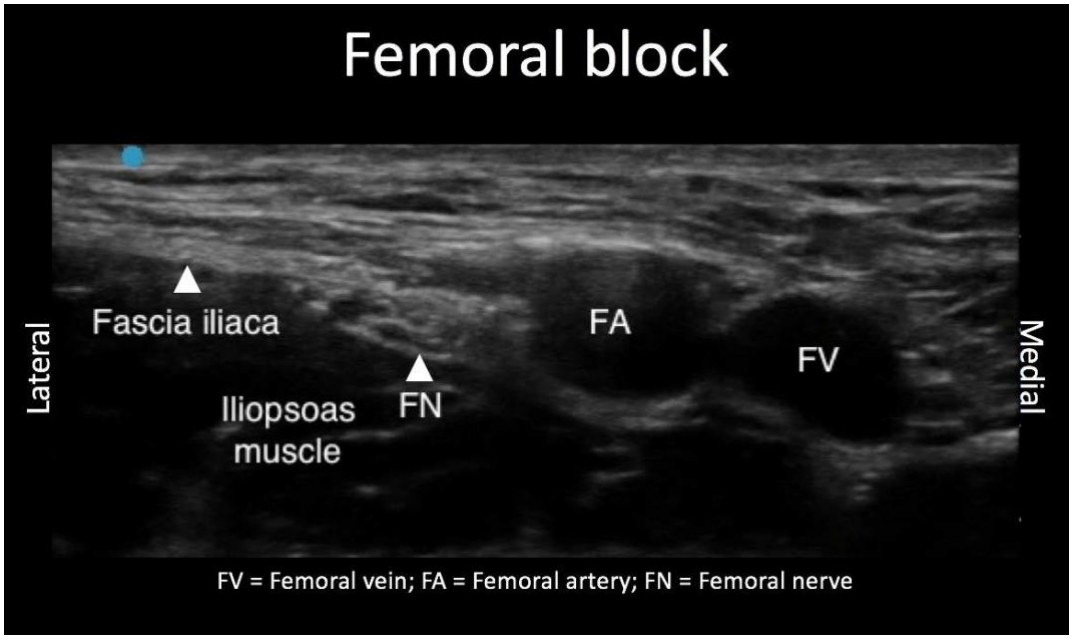
iii. Infraclavicular block



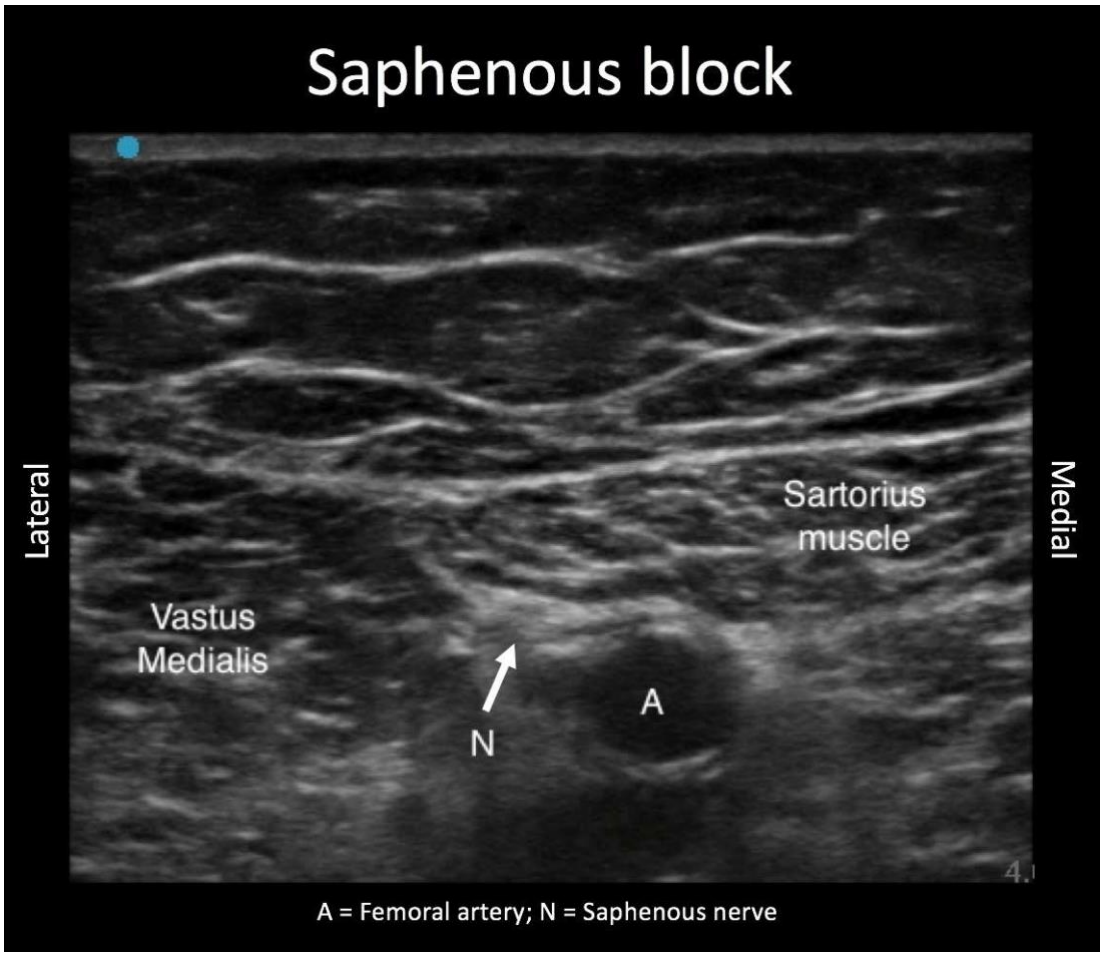
iv. Transversus abdominis plane (TAP) block



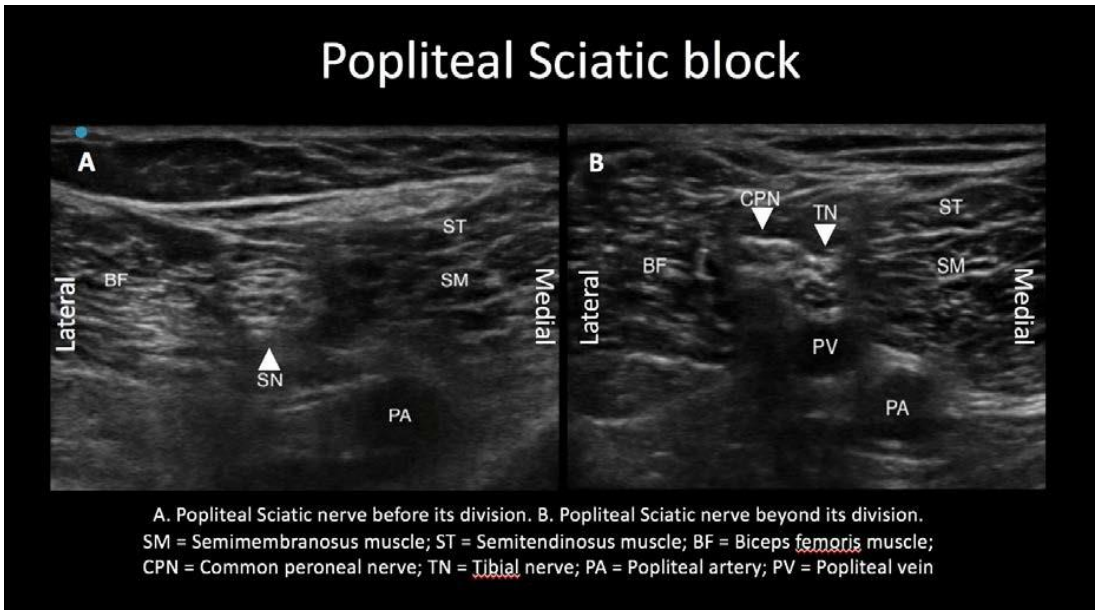
v. Femoral nerve block



vi. Adductor canal (saphenous) block

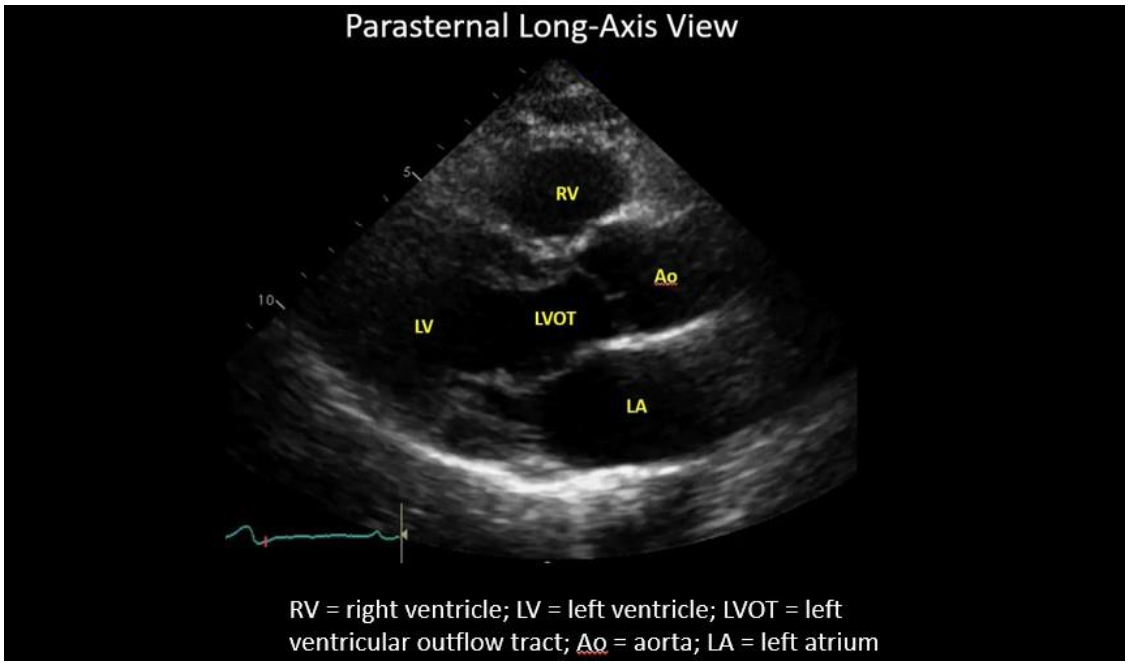


vii. Popliteal (sciatic) nerve block

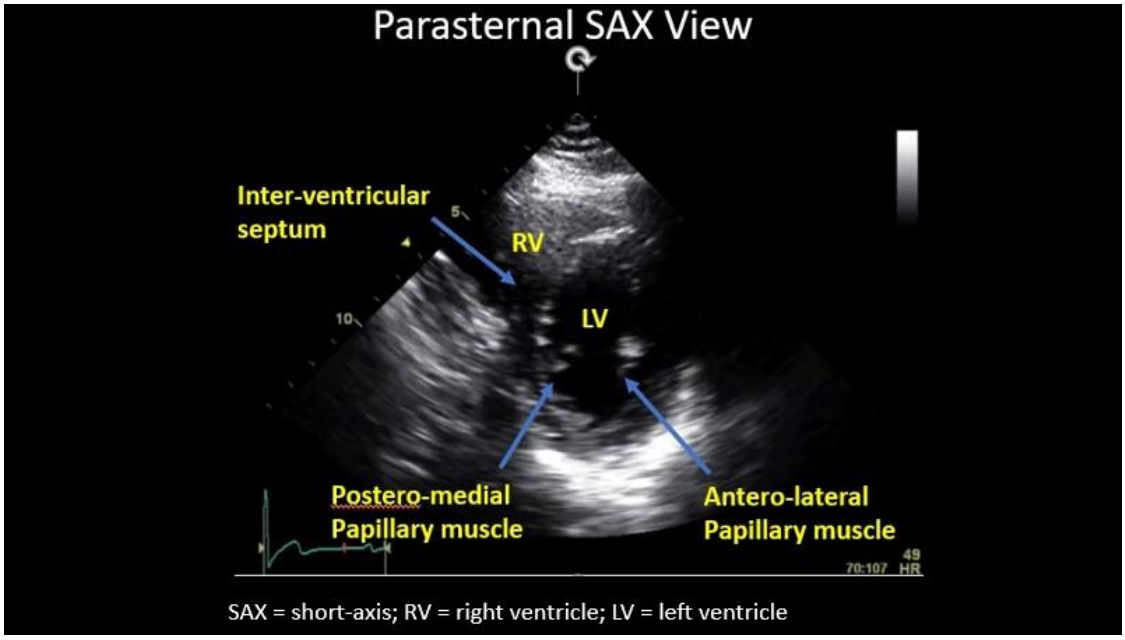


3. Point of Care Ultrasound

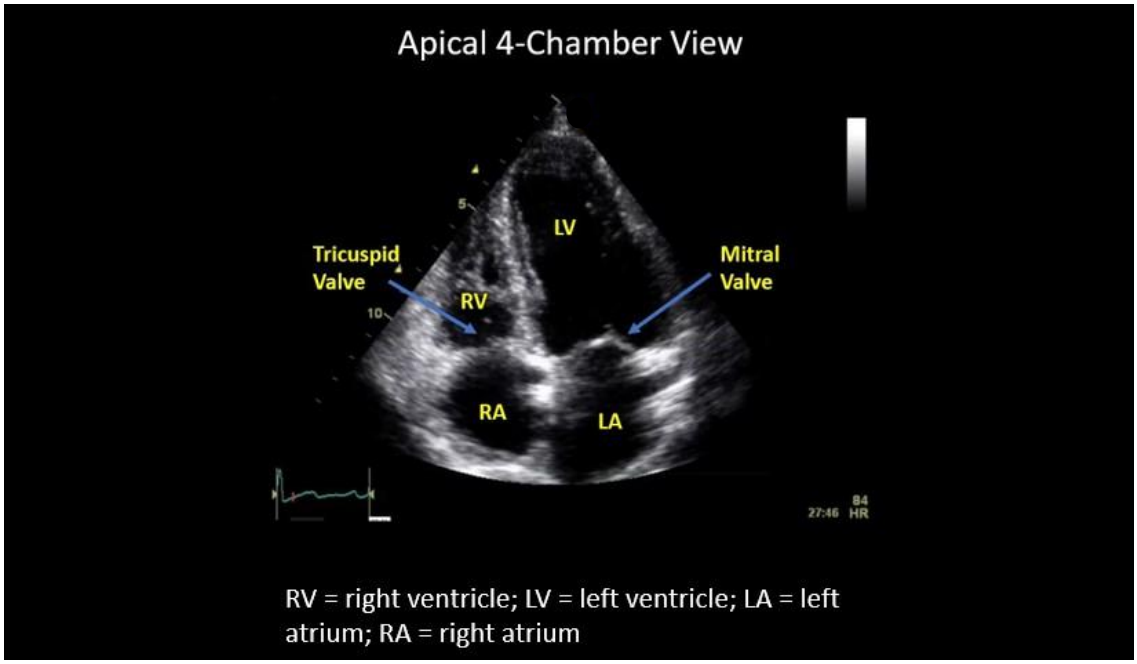
i. Parasternal long-axis (LAX) view



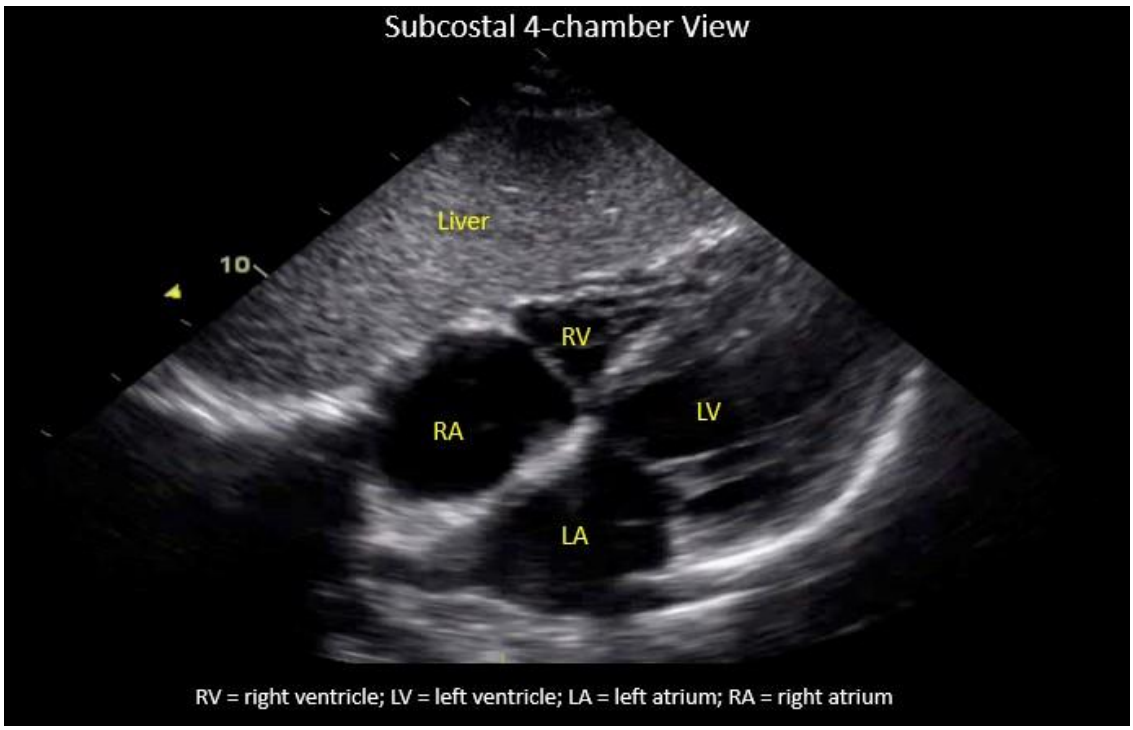
ii. Parasternal short-axis (SAX) view



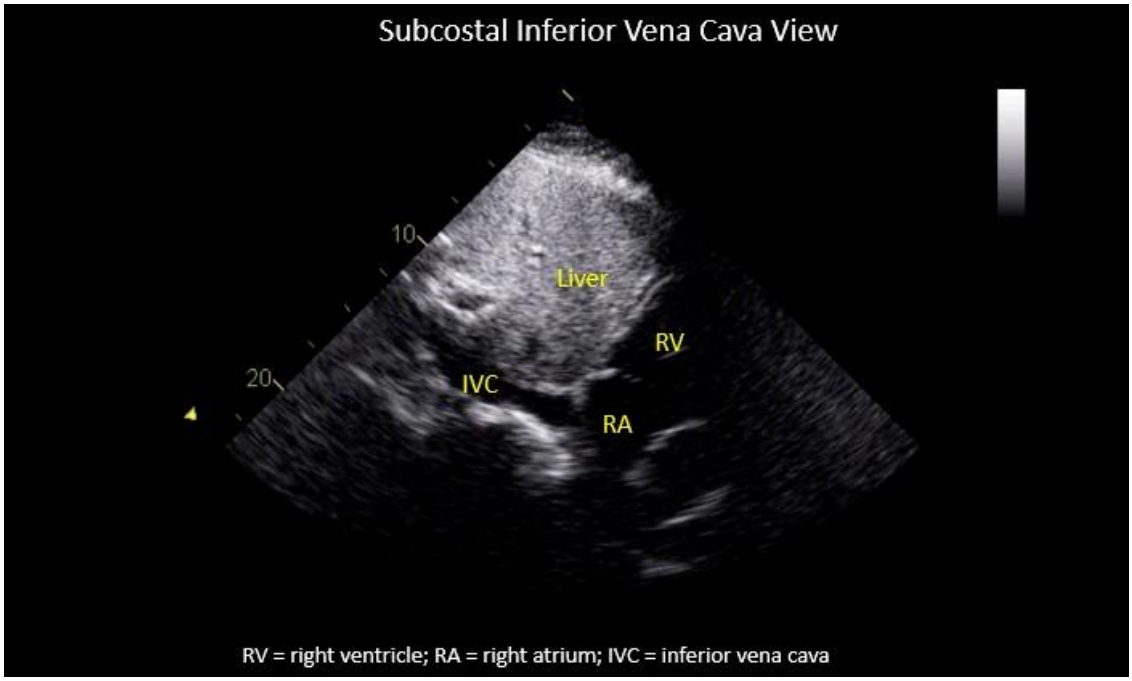
iii. Apical 4-chamber view



iv. Subcostal 4-chamber view



v. Subcostal inferior vena cava View



Answer Key for Physiologic Monitors case exemplar:

What changes or abnormalities do you see on the monitor?

- ECG rhythm changes from normal sinus rhythm to likely nodal/junctional rhythm with inverted P wave immediately before QRS wave.
- In addition, there is hypotension most likely resulting from loss of atrioventricular synchrony.

What is the most likely diagnosis?

- Junctional/nodal rhythm, atrioventricular (AV) dissociation, loss of AV synchrony

Answer Key for Echocardiogram case exemplar:

Describe the findings on the echocardiographic exam.

- Aortic valve is trileaflet and shows leaflet thickening, calcification, and reduced excursion (particularly the non-coronary cusp).
- Left ventricular hypertrophy
- These images show a classic picture of degenerative aortic valve stenosis with associated left ventricular hypertrophy, most likely resulting from longstanding left ventricular pressure overload. The images also show characteristic acoustic shadowing from the thickened or calcified valve that cause dropout of the ultrasound image beyond this structure (right ventricle in image on left, right ventricular outflow tract in image on right).

What is the most likely diagnosis based on the echocardiographic findings?

- Aortic Stenosis

What is your management plan for this patient?

- Fluid bolus to optimize preload
- Vasopressor to increase blood pressure (e.g. phenylephrine, vasopressin, norepinephrine)
- Avoid tachycardia
- Refer for further evaluation of aortic stenosis severity and consideration of surgical or percutaneous valve replacement

Answer Key for Physiologic Monitor and Echocardiogram case exemplar:

What changes or abnormalities do you see on the monitor?

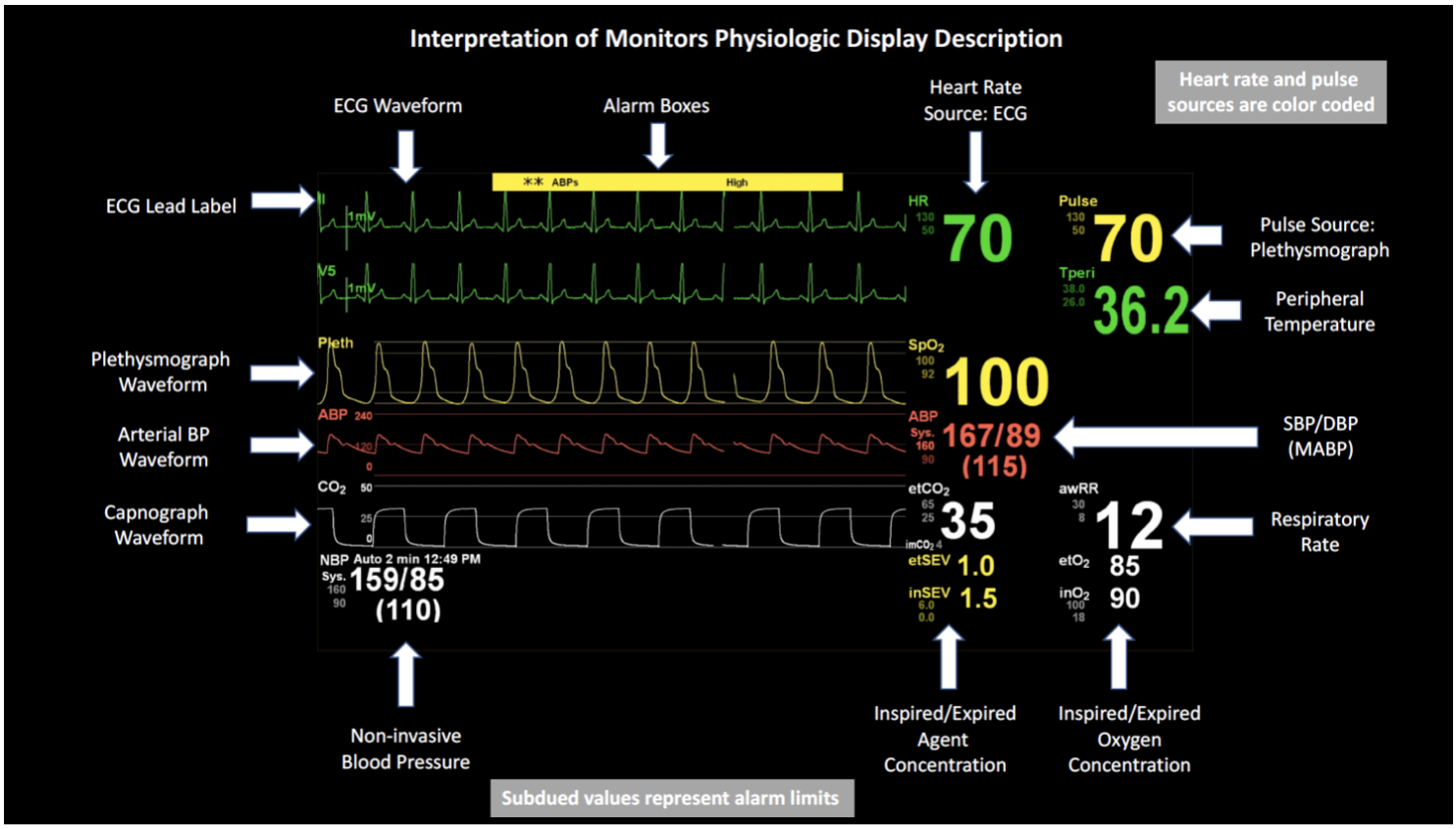
- Hypertension, tachycardia, and ST segment depression in leads II and V_5.

Describe the findings on the transesophageal echocardiography exam.

- This is a transgastric midpapillary short axis view of the left ventricle.
- There are regional wall motion abnormalities, with inferoseptal and anteroseptal akinesia and anterior hypokinesia.
- Globally reduced left ventricular systolic function, left ventricular ejection fraction approximately 30-40%

What is the most likely diagnosis?

- Myocardial ischemia likely resulting from increased myocardial oxygen demand secondary to hypertension and tachycardia (e.g., light anesthesia)
- The pattern of wall motion abnormality, if new, likely represents ischemia in the territory of the left anterior descending coronary artery and possibly the posterior descending coronary artery.



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

- CO2 = 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

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)

LABEL DEFINITIONS

- 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.