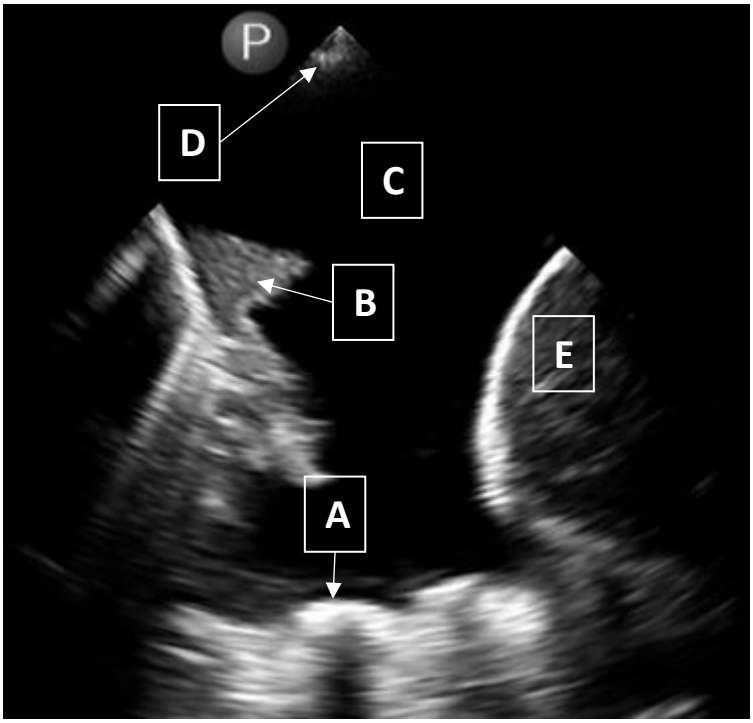
Thoracentesis Quiz

1. Which of the following is the clearest indication for a bedside therapeutic thoracentesis?
   a. Suspected parapneumonic effusion
   b. Multi-loculated effusion
   c. Reaccumulated malignant effusion, asymptomatic
   d. Small recurrent effusion known to be due to heart failure

2. Which of the following is a strict contraindication to a therapeutic thoracentesis?
   a. Overlying skin infection
   b. Mechanically ventilated patient
   c. INR >2
   d. Suspected lung entrapment

3. What is the preferred ultrasound transducer for evaluation of a pleural effusion?
   a. Low impedance
   b. Low amplitude
   c. Low frequency
   d. Low resonance

4. Identity the following structures
   Pleura
   Lung
   Fluid
   Rib - not visualized
   Liver
   Spine



5. What is the minimum distance between the parietal pleura and adjacent structures in all 3 dimensions that is safe for a thoracentesis?
   a. 1cm
   b. 2cm
   c. 3cm
   d. 5cm

6. Which of the following techniques is most likely to reduce the risk of causing an infra-costal bleed while performing a thoracentesis?
   a. Selecting a posterior insertion site with accessible fluid in the medial most location
   b. Use of doppler US to identify infra-costal vessels at the insertion site
   c. First contacting the rib then advancing over it
   d. Infusing platelets to achieve a platelet count of $\geq$100

7. Which of the following techniques is most likely to reduce the risk of re-expansion pulmonary edema while performing a thoracentesis?
   a. Using wall suction to remove fluid
   b. Using a vacutainer to remove fluid
   c. Discontinuing the procedure if the patient coughs
   d. Discontinuing the procedure if increased resistance is felt when removing fluid

8. Which of the following techniques is most likely to reduce the risk of a pneumothorax while performing a thoracentesis?
   a. Identifying an insertion site with a fluid pocket >5cm in all three dimensions from the pleura
   b. Having the patient hum when removing the catheter
   c. Performing the procedure while the patient is fully sedated on mechanical ventilation
   d. Keeping the patient on supplemental oxygen during the procedure

9. A 60-year-old presents to clinic with dyspnea and a cough. They have a history of stage 1 NSCLC that underwent local excision and mediastinal node dissection 1 month ago. A point-of-care ultrasound reveals a moderately sized right sided pleural effusion. Patient is afebrile, HR 90, RR 22, SpO2 90% on room air. The decision is made to perform a bedside thoracentesis. What are the most appropriate lab tests to obtain on the fluid?
   a. Cell count with diff, gram stain and culture, lactate dehydrogenase, total protein
   b. Cell count with diff, gram stain and culture, lactate dehydrogenase, total protein, triglycerides, and cytology
   c. Cell count with diff, gram stain and culture, adenosine deaminase, and cytology
   d. Cell count, gram stain and culture
   e. None, just remove fluid until to relieve respiratory symptoms

10. A 50-year-old is admitted for acute respiratory symptoms and sepsis due to suspected community acquired pneumonia. After two days of broad-spectrum IV antibiotics the patient's fever persists. A repeat chest radiograph demonstrates a moderately sized pleural effusion. A bedside thoracentesis is performed with ultrasound guidance revealing clear yellow fluid and the following pleural fluid results,

    pleural fluid: total protein 6
    pleural fluid: LDH 1100
    pH: 7.15
    glucose: 10
    Gram stain: GPCs in pairs and chains

    What is the next best step in management?
    a. Pursue alternative causes for patient's persistent fever
    b. Continue to monitor clinically on IV antibiotics
    c. Continue antibiotics and repeat chest radiograph in 48 hours
    d. Continue antibiotics and place chest tube for ongoing drainage

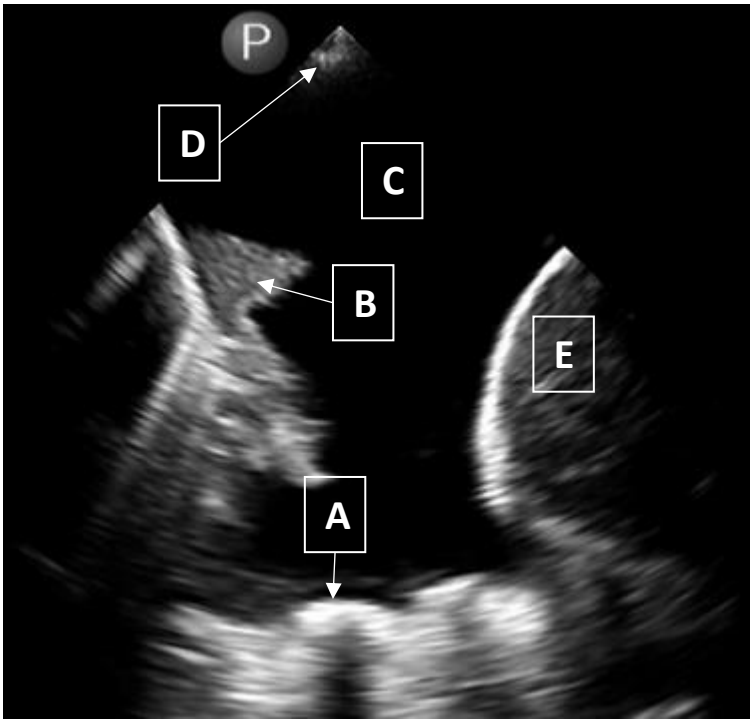
Thoracentesis Quiz: (correct answers bolded)

11. Which of the following is the clearest indication for a bedside therapeutic thoracentesis?
    a. Suspected parapneumonic effusion
    b. Multi-loculated effusion
    c. Reaccumulated malignant effusion, asymptomatic
    d. Small recurrent effusion known to be due to heart failure

12. Which of the following is a strict contraindication to a therapeutic thoracentesis?
    a. **Overlying skin infection**
    b. Mechanically ventilated patient
    c. INR >2
    d. Suspected lung entrapment

13. What is the preferred ultrasound transducer for evaluation of a pleural effusion?
    a. Low impedance
    b. Low amplitude
    c. Low frequency
    d. Low resonance

14. Identity the following structures
    Pleura - **D**
    Lung - **B**
    Fluid - **C**
    Rib - not visualized
    Liver - **E**
    Spine - **A**



15. What is the minimum distance between the parietal pleura and adjacent structures in all 3 dimensions that is safe for a thoracentesis?
    a. 1cm
    b. 2cm
    c. 3cm
    d. 5cm

16. Which of the following techniques is most likely to reduce the risk of causing an infra-costal bleed while performing a thoracentesis?
    a. Selecting a posterior insertion site with accessible fluid in the medial most location

b. Use of doppler US to identify infra-costal vessels at the insertion site
c. First contacting the rib then advancing over it
d. Infusing platelets to achieve a platelet count of ≥100

17. Which of the following techniques is most likely to reduce the risk of re-expansion pulmonary edema while performing a thoracentesis?
    a. Using wall suction to remove fluid
    b. Using a vacutainer to remove fluid
    c. Discontinuing the procedure if the patient coughs
    d. Discontinuing the procedure if increased resistance is felt when removing fluid

18. Which of the following techniques is most likely to reduce the risk of a pneumothorax while performing a thoracentesis?
    a. Identifying an insertion site with a fluid pocket >5cm in all three dimensions from the pleura
    b. Having the patient hum when removing the catheter
    c. Performing the procedure while the patient is fully sedated on mechanical ventilation
    d. Keeping the patient on supplemental oxygen during the procedure

19. A 60-year-old presents to clinic with dyspnea and a cough. They have a history of stage 1 NSCLC that underwent local excision and mediastinal node dissection 1 month ago. A point-of-care ultrasound reveals a moderately sized right sided pleural effusion. Patient is afebrile, HR 90, RR 22, SpO2 90% on room air. The decision is made to perform a bedside thoracentesis. What are the most appropriate lab tests to obtain on the fluid?
    a. Cell count with diff, gram stain and culture, lactate dehydrogenase, total protein
    b. Cell count with diff, gram stain and culture, lactate dehydrogenase, total protein, triglycerides, and cytology
    c. Cell count with diff, gram stain and culture, adenosine deaminase, and cytology
    d. Cell count, gram stain and culture
    e. None, just remove fluid until to relieve respiratory symptoms

20. A 50-year-old is admitted for acute respiratory symptoms and sepsis due to suspected community acquired pneumonia. After two days of broad-spectrum IV antibiotics the patient's fever persists. A repeat chest radiograph demonstrates a moderately sized pleural effusion. A bedside thoracentesis is performed with ultrasound guidance revealing clear yellow fluid and the following pleural fluid results,

    pleural fluid: total protein 6
    pleural fluid: LDH 1100
    pH: 7.15
    glucose: 10
    Gram stain: GPCs in pairs and chains

    What is the next best step in management?
    e. Pursue alternative causes for patient's persistent fever
    f. Continue to monitor clinically on IV antibiotics
    g. Continue antibiotics and repeat chest radiograph in 48 hours
    h. Continue antibiotics and place chest tube for ongoing drainage