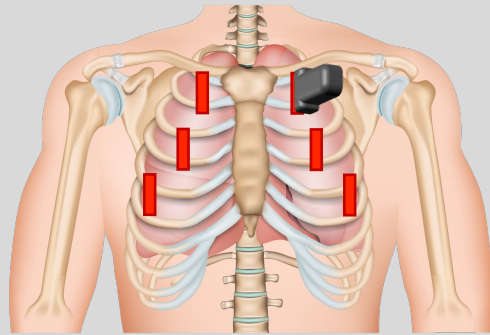


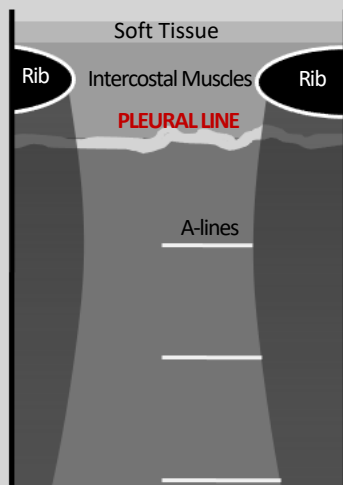
Scanning for PTX with POCUS

To scan the anterior chest in a supine patient, apply the **LINEAR PROBE** in a para-sagittal orientation.

- Slide the probe anteriorly/inferiorly until you can see the **PLEURAL LINE** between two ribs.



- Repeat the exam in (at least) 3 points bilaterally



PNEUMOTORAX is the accumulation of air in the pleural space. It can occur spontaneously or in the setting of trauma, lung pathology, or as a complication of procedures (central venous access, thoracentesis, etc).

TENSION PNEUMOTHORAX is a life-threatening emergency that occurs when the accumulated air increases pressure in the chest, reducing the blood returned to the heart (preload). Tension pneumothorax is a clinical (not radiographic/sonographic) diagnosis.

POCUS (point of care ultrasound) enables rapid, accurate diagnosis of pneumothorax, with sensitivity and specificity greater than portable chest radiograph (CXR). In a [recent meta-analysis](#):

- CXR Sensitivity 46%, Specificity 100%
- POCUS Sensitivity 87%, Specificity 99%

B MODE

Look for LUNG SLIDING & a LUNG POINT using B-Mode



Using 2D/B-Mode, identify the echogenic (white) line that represents the pleura.

- Normally the pleural line appears to "move" or "shimmer" with the respiratory cycle. **LUNG SLIDING** represents the motion of parietal pleura apposed to visceral pleura

- Observing **LUNG SLIDING** rules out PTX *at this particular spot*. The present of B-LINES (vertical lines that radiate down from the pleura) also exclude PTX at this point.

- The **ABSENCE** of **LUNG SLIDING** appears like an unvarying white line (without "shimmering"); this suggests the presence of PTX.



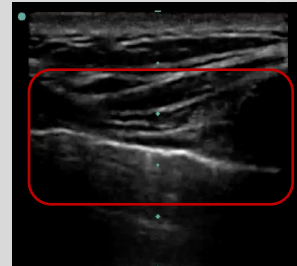
LUNG SLIDING is **PRESENT** (normal)



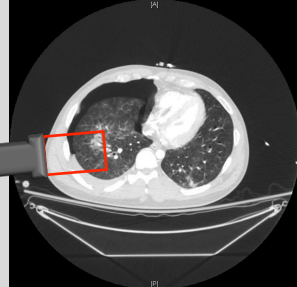
ABSENT LUNG SLIDING (abnormal)

A **LUNG POINT** is the transition point where the pleural layers are beginning to separate due to the presence of a PTX; this is like 1/2 normal sliding and 1/2 no lung sliding.

The presence of a **LUNG POINT** is highly suggestive that PTX is present; however a more thorough exam may be necessary to find a **LUNG POINT**.



LUNG POINT is present here



M MODE

Look for LUNG SLIDING using M-Mode



M-mode imaging can provide additional information about **LUNG SLIDING**. M-mode shows one slice of the image with respect to time.

A **different** echotexture above/below the pleura indicates normal lung sliding.



SEASHORE SIGN indicating **normal** **LUNG SLIDING** at this point

The **same** echotexture above and below the pleura (called **BARCODE SIGN**) indicates the absence of lung sliding, suggesting PTX.



BARCODE SIGN indicating **absence** of **LUNG SLIDING** at this point

POCUS is valuable for the rapid diagnosis of PTX, but it is not infallible. **MIMICS** of pneumothorax on POCUS include:

- mainstem intubation (will have no sliding on one side)
- lobar collapse (may have no sliding in one lobe)
- low tidal volumes (may produce minimal sliding)
- prior pleurodesis (may interfere with sliding)

