

Lung Pathology



Aims

- Review of basic lung ultrasound concepts
- Highlight common diagnoses within the BLUE protocol
- Examples of pathology

STEP 1
Examine upper and lower
BLUE points for lung sliding

STEP 2
Look for anterior
A or B-lines



A lines

- Transverse
- Normal reverberation artefact

AV, CHEST 2013Oct28 05:38
Gen THI
S MB

Abd
C60
←
52%
MI
0.7
TIS
0.2

A
B

4.7

Gen 0 ECG... MB On THI On Page 1/2

B-lines

- Radial
- Imply high lung water
- Obliterate A-lines
- 1-2 (posteriorly) are of no significance
- Absent in pneumothorax
- Present in ARDS, LVF, pneumonia

B F 3.5 MHz G 94%
D 13 cm XV C
PRC 13-4-L PRS 3
PST 2

0:00:00.36

ABDO

CA431



RIGHT BASE



Lung sliding

- Means apposition of parietal and visceral pleura
- Absent in pneumothorax
- Also inflammatory adherences, very low tidal volume, apnoea, one lung ventilation

AV, CHEST 2013Oct28 05:38
Gen THI
S MB

Abd
C60
←
52%
MI
0.7
TIS
0.2

A
B

4.7

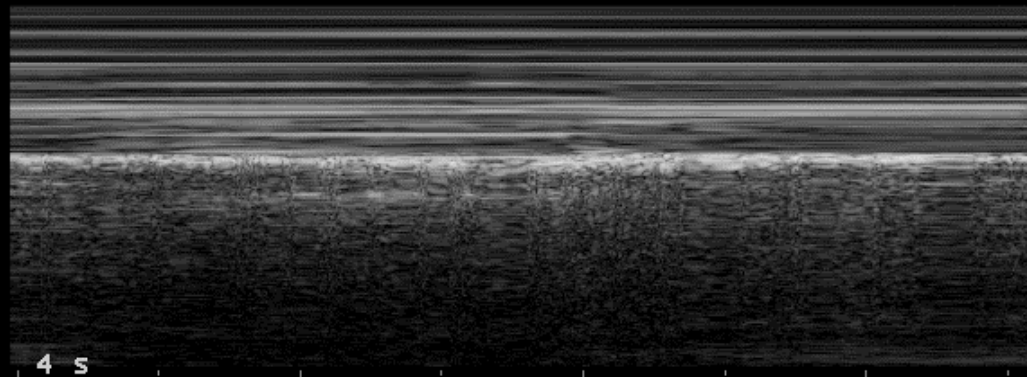
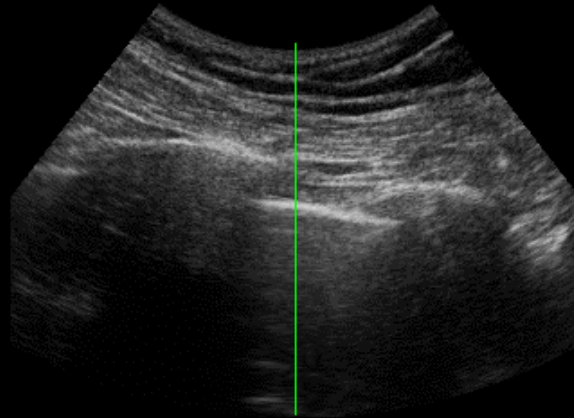
Gen 0 ECG... MB On THI On Page 1/2



B F R G 52%
TEI D 8 cm XV 1
PRC 15-2-H PRS 3
PST 2

M G 52%
PRC 15-2
PST 2

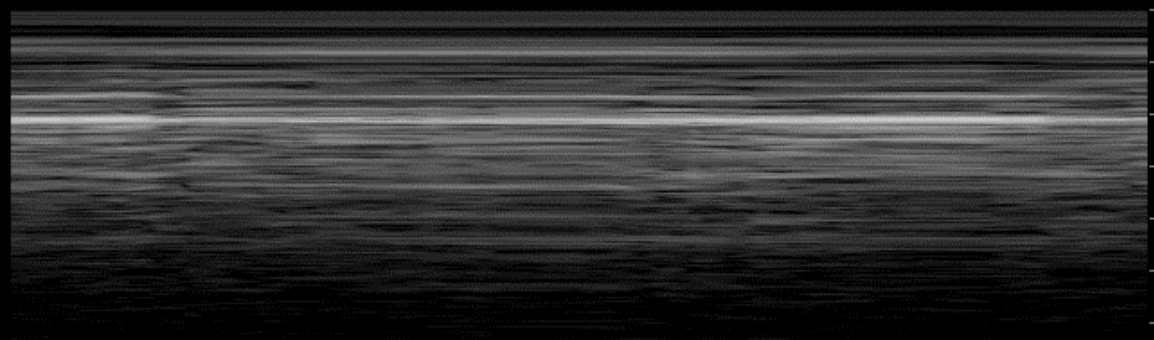
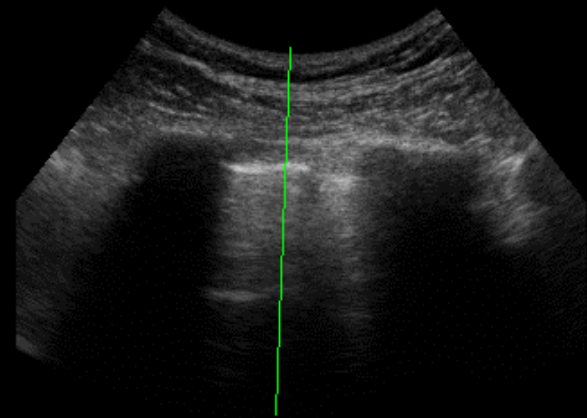
FACTORY CA431



B F R G 52%
TEI D 8 cm XV 1
PRC 15-2-H PRS 3
PST 2

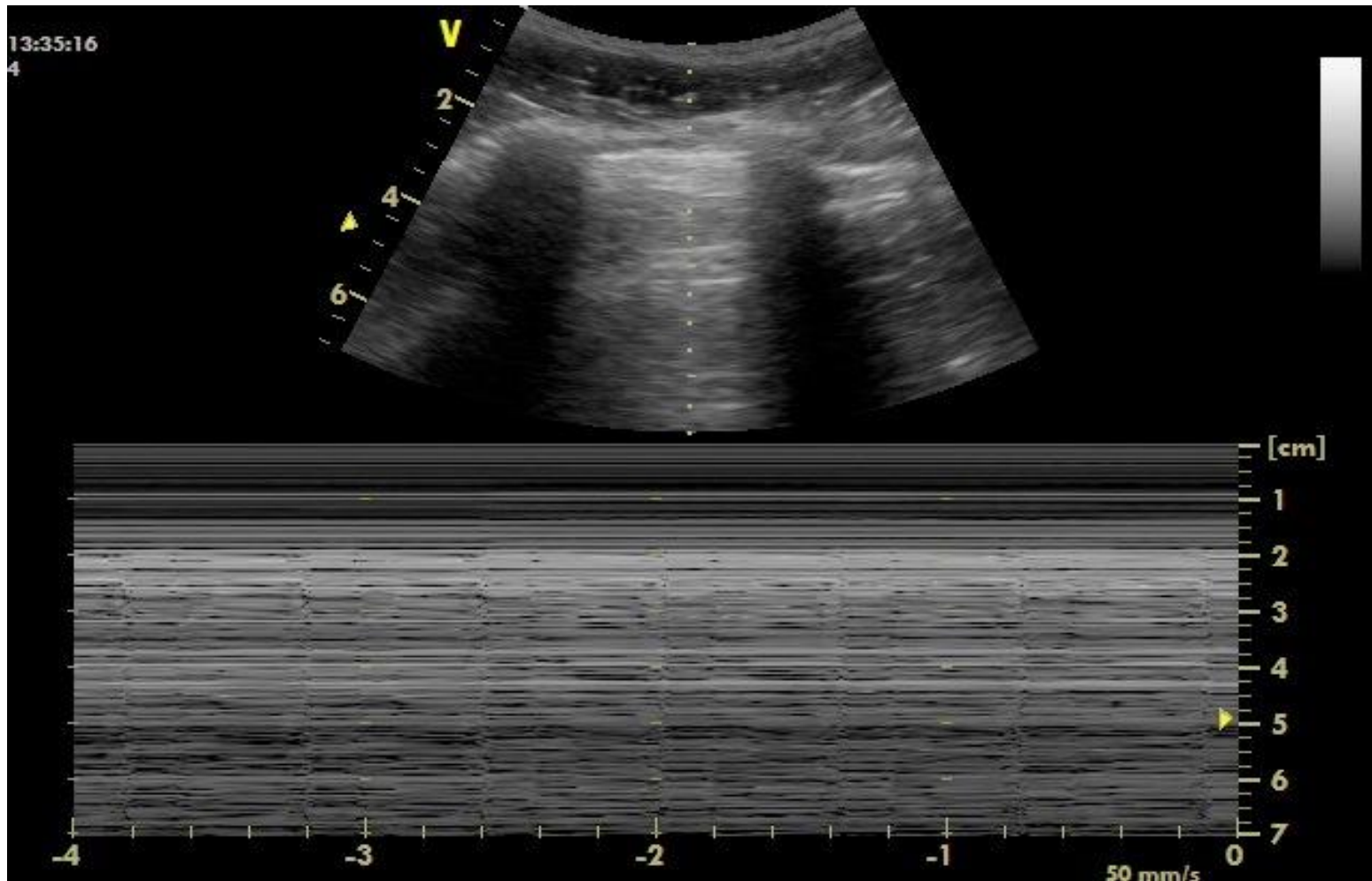
M G 52%
PRC 15-2
PST 2

FACTORY CA431

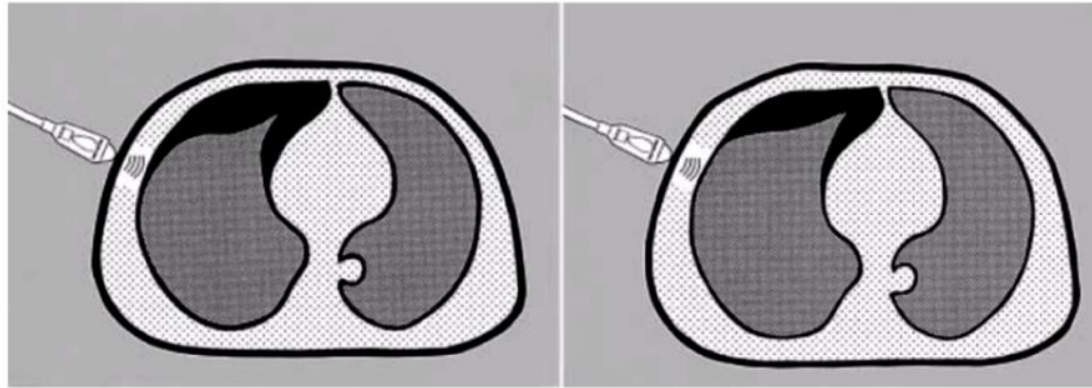


4 s

Lung pulse – T lines

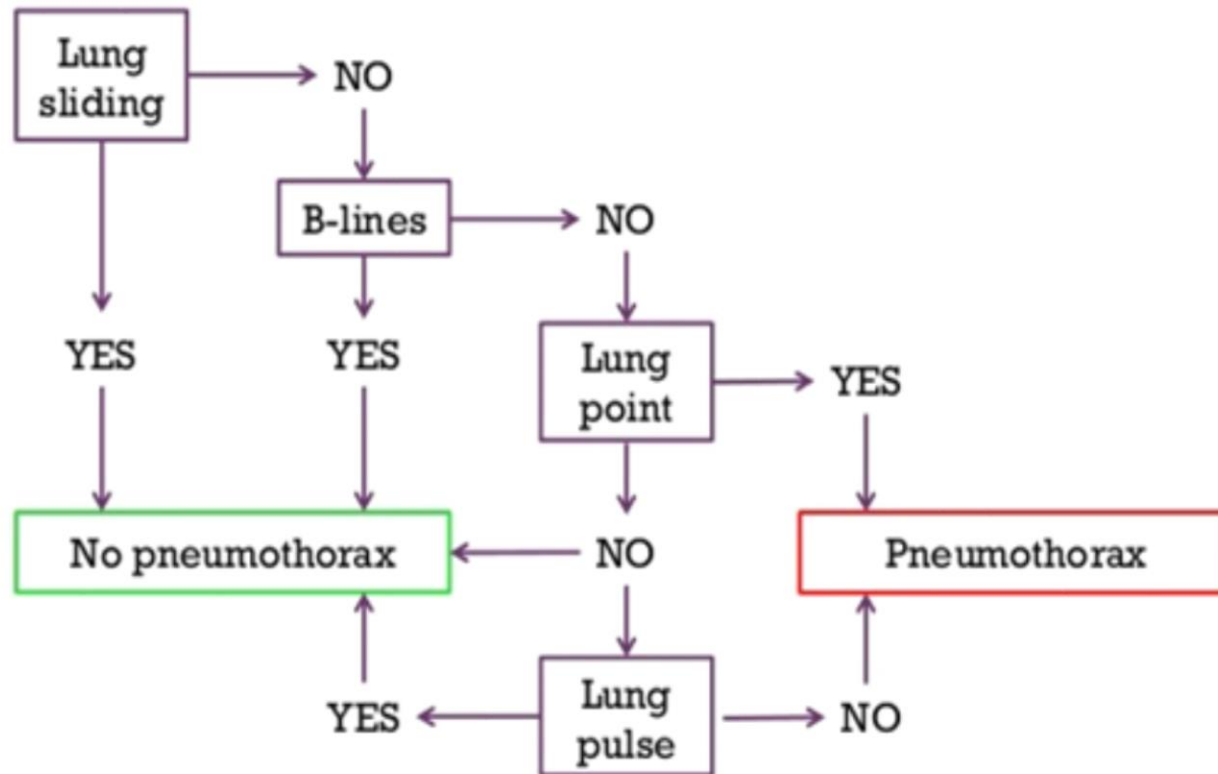


Lung point



Pneumothorax

Pneumothorax US algorithm



Alveolar-Interstitial syndrome

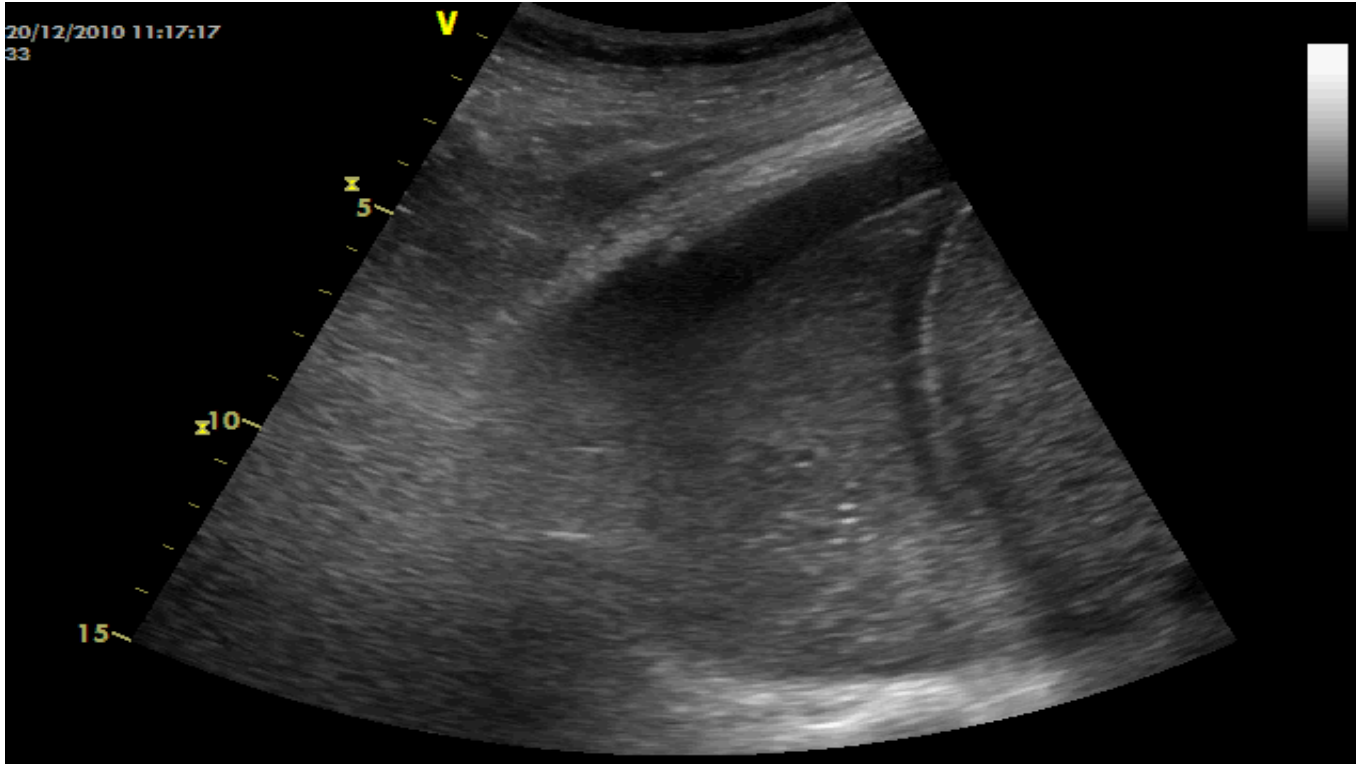
- Predominantly Alveolar (<3mm)
 - High extravascular lung water/ARDS
 - Cardiogenic pulmonary oedema
- Predominantly Interstitial (>7mm)
 - Inflammatory pneumonia
 - Pulmonary fibrosis
 - Lymphangitis



Cardiogenic pulmonary oedema vs ARDS

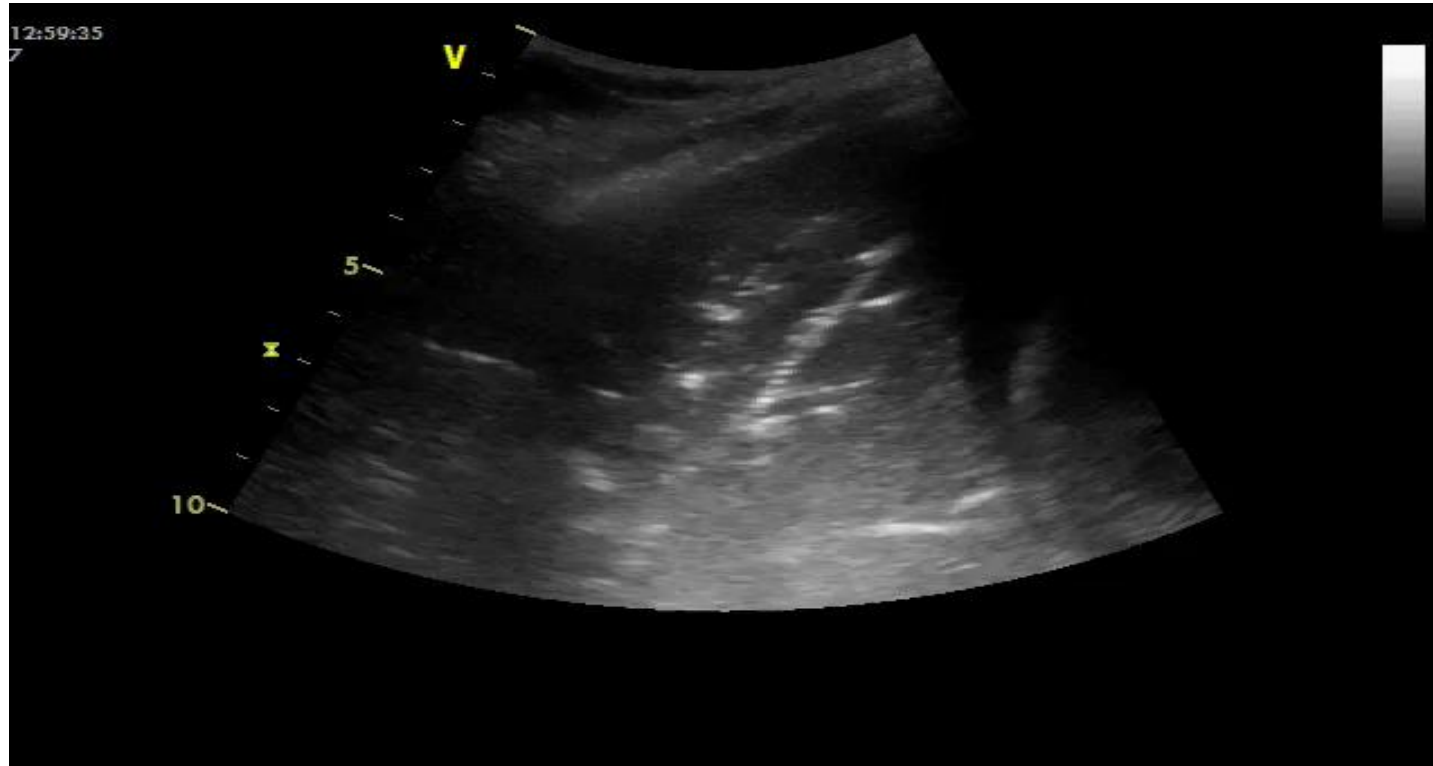
- Symmetry
- Homogeneity
- Sub-pleural consolidation
- Resolution on diuresis
- (echo findings)

Consolidation



Consolidation







Collapse (with effusion)



More pleural effusions



SEPTATED EFFUSION

2013Dec16 09:02

Gen THI
S MB

Abd
C60
21%
MI
0.7
TIS
0.1



A
B

15

EMPYEMA

2017Mar20 12:24

Gen THI
S MB

Abd
C60



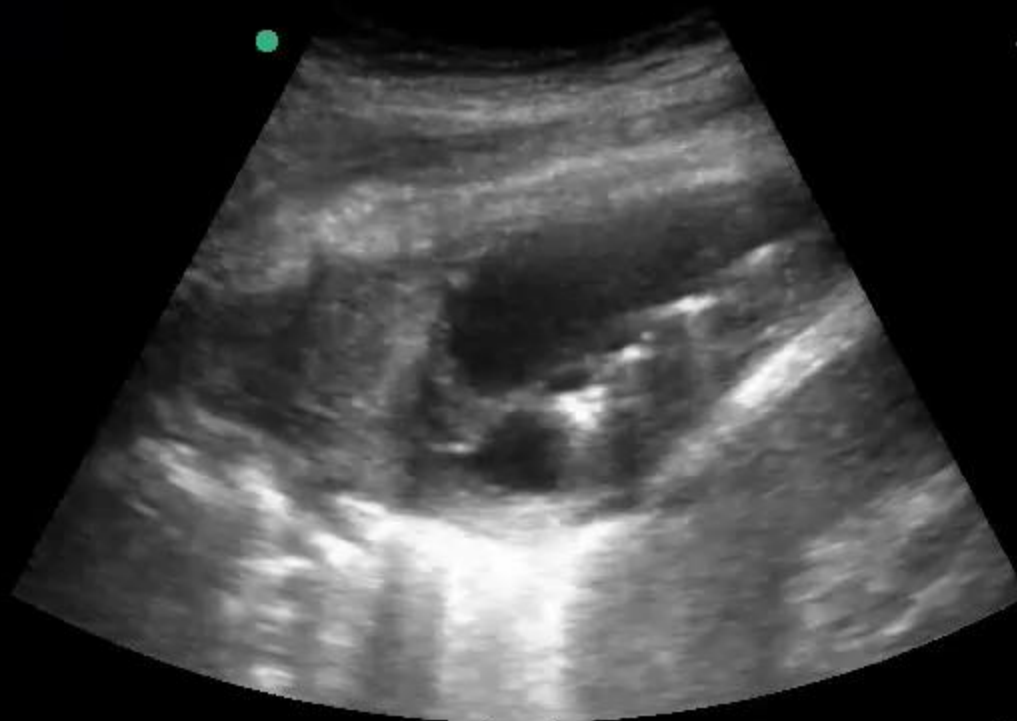
32%

MI

0.8

TIS

0.1



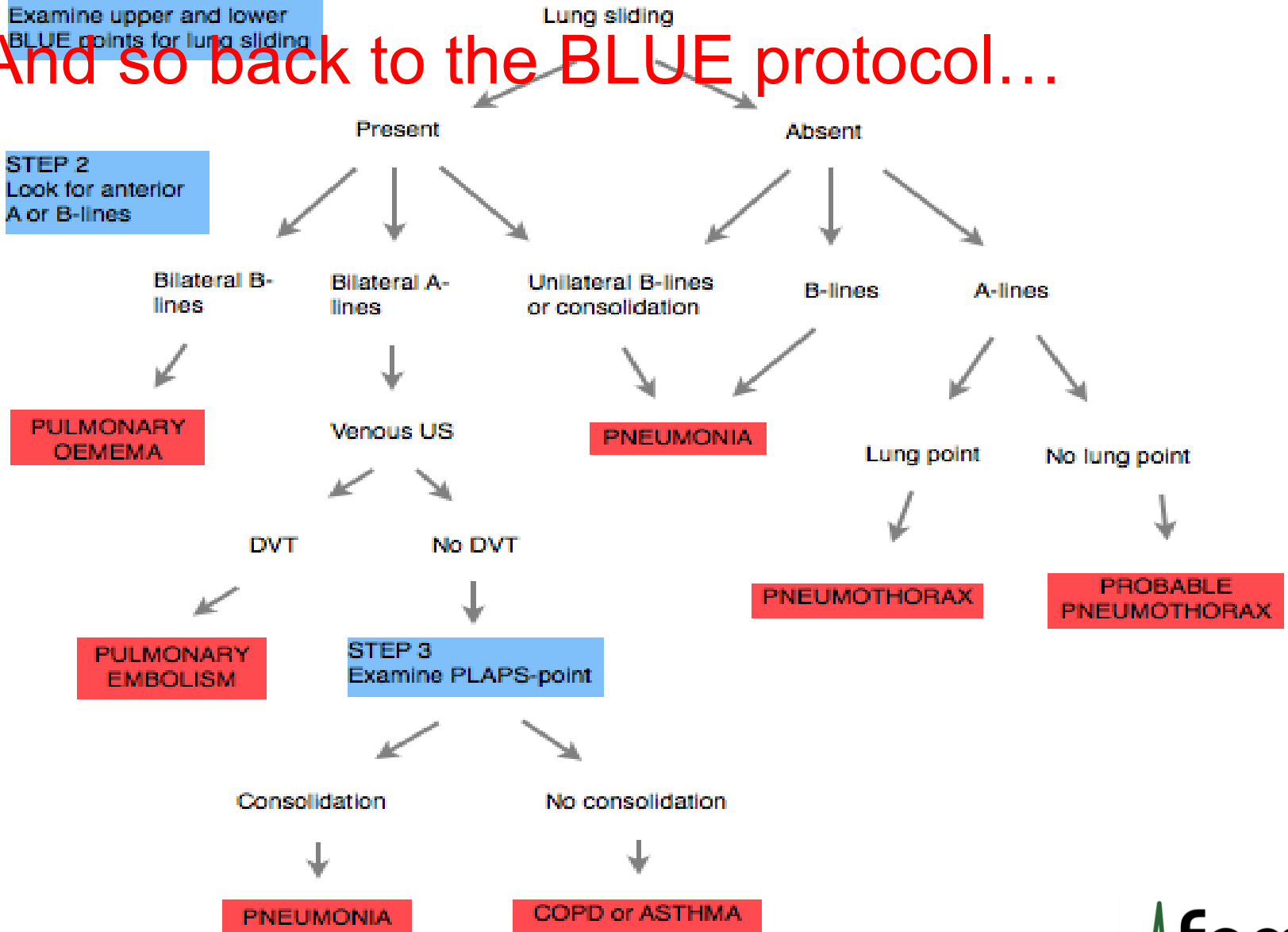
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Gen 0 Guide MB On THI On Page 1/2

And so back to the BLUE protocol...

STEP 1
Examine upper and lower BLUE points for lung sliding

STEP 2
Look for anterior A or B-lines



Summary

- Lung ultrasound is sensitive and specific for lung pathology
- The BLUE protocol provides a framework to reliably pick up common pathology