Reference Pages

Bladder POCUS Reference Sheet

Biliary POCUS Reference Sheet

DVT POCUS Reference Sheet

Cardiac POCUS Reference Sheet

Lung POCUS Reference Sheet



Point-of-Care-Ultrasound Across Medical Specialties

Beverly DiCorso, PA-C
IPAS Healthcare in the Heartland Fall CME Conference
10/21/2025

Objectives



At the end of this session, attendees will be able to:

1. Identify at least 5 uses of POCUS that can utilized across different medical specialties.
2. Differentiate between 3 different types of ultrasound probes and their common uses.
3. Discuss necessary clips to be obtained for 5 different POCUS studies.
4. Demonstrate use of POCUS for 5 different types of scans.
5. Apply at least 5 uses of POCUS to real-world clinical scenarios.

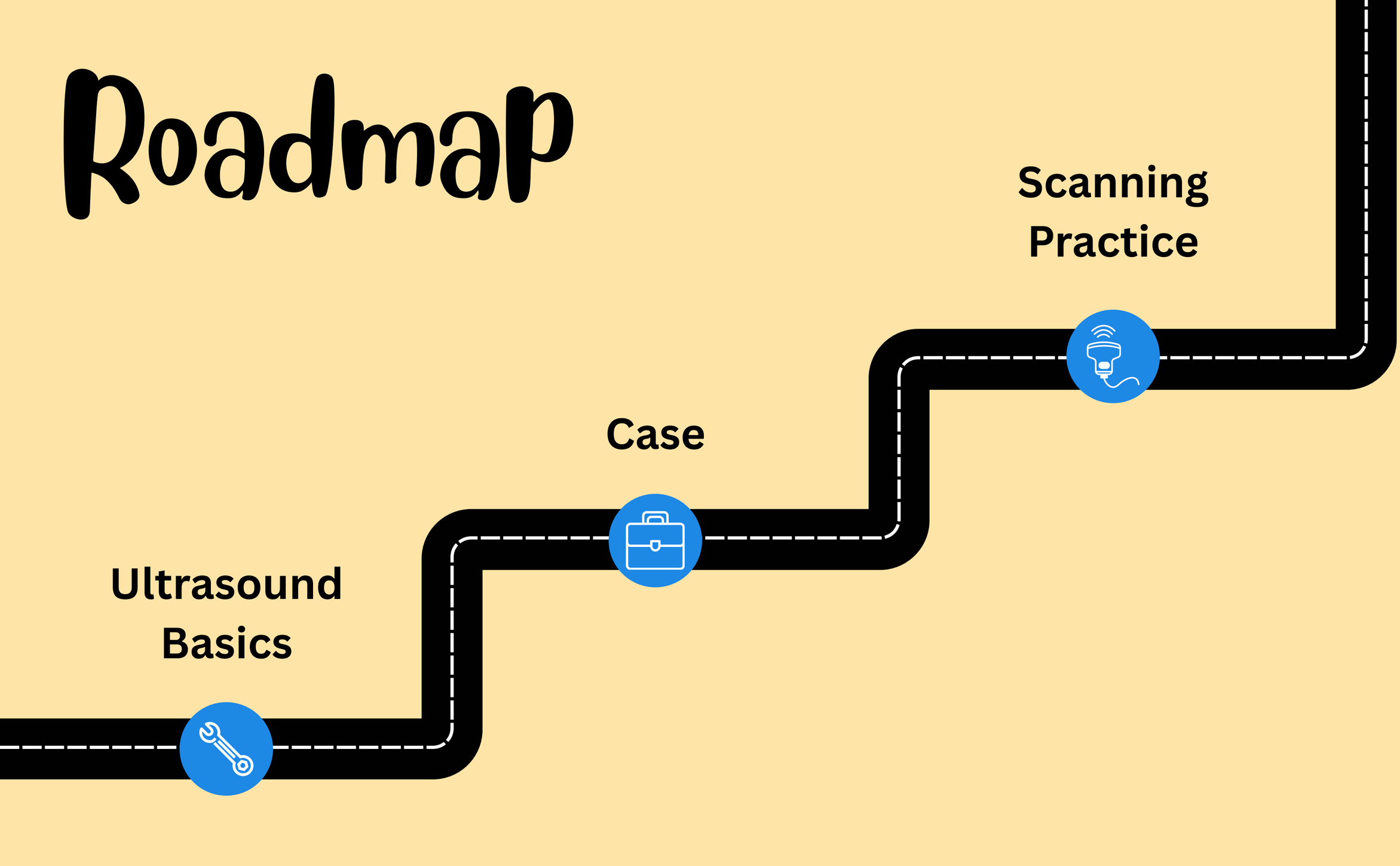


Roadmap

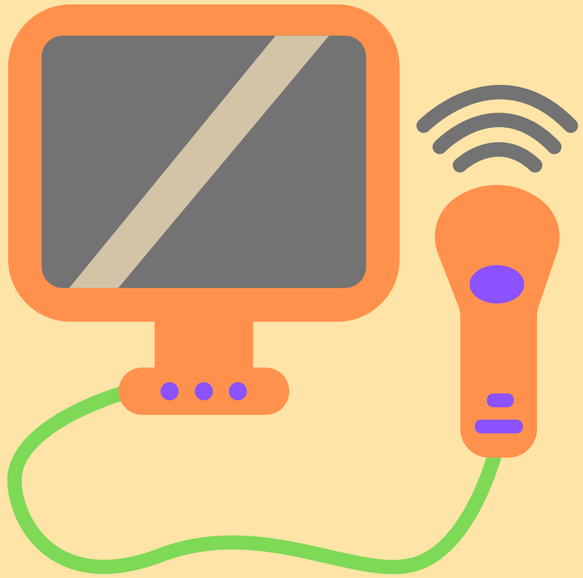
Ultrasound Basics

Case

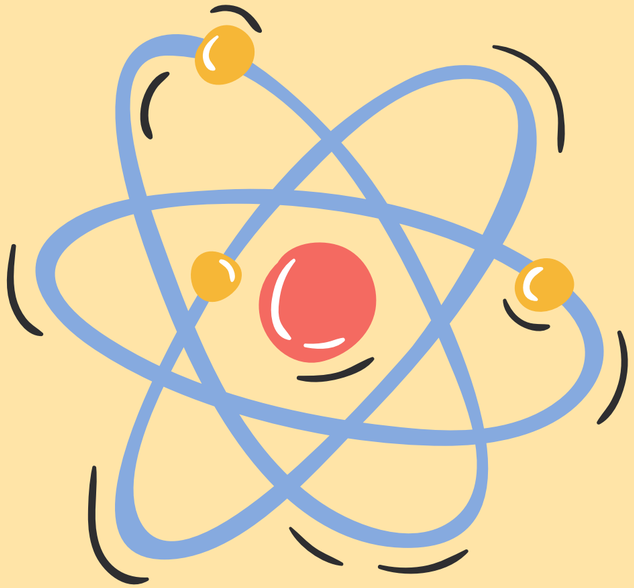
Scanning Practice



Ultrasound Basics



Physics of Sound



01 Sound

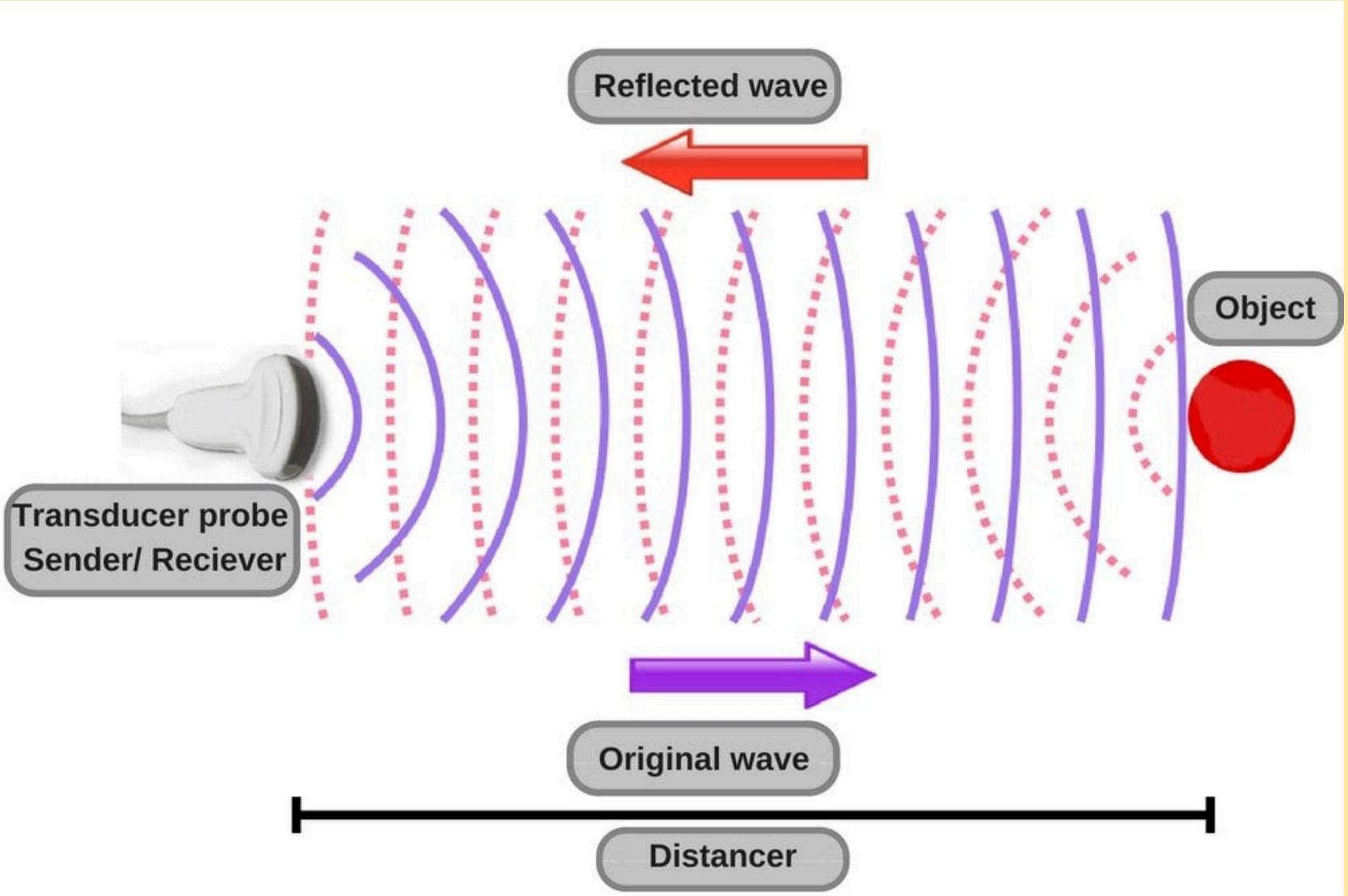
02 Frequency

03 Wavelength

04 Amplitude

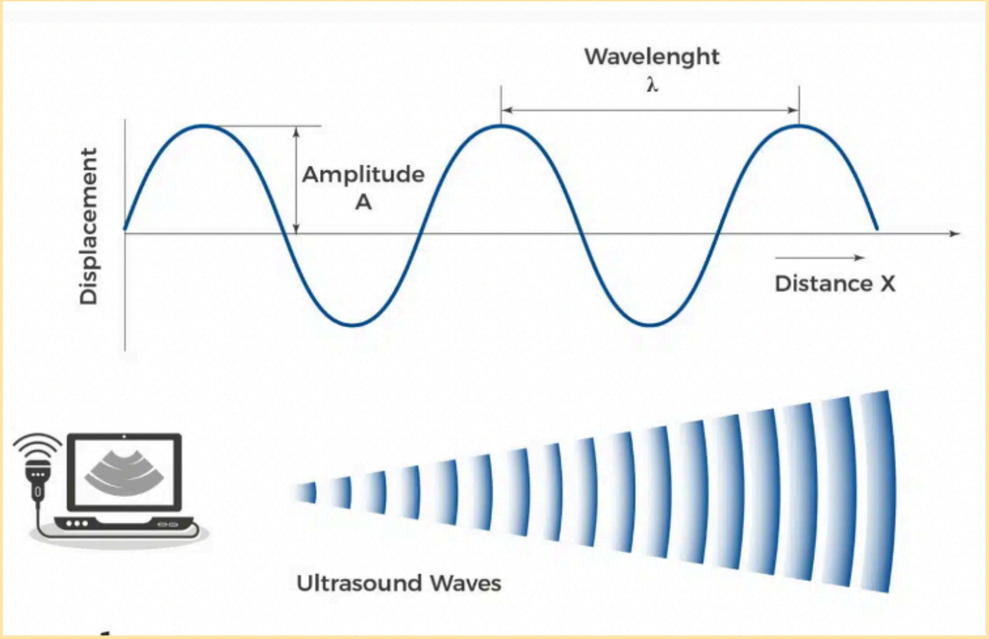
05 Distance

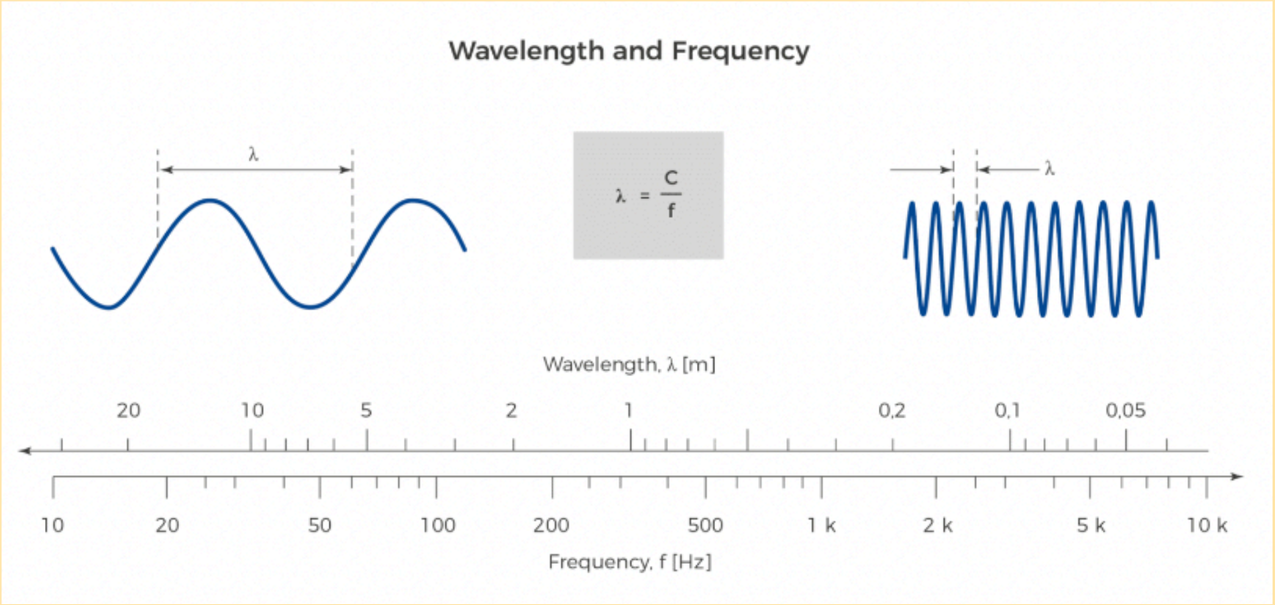
Sound = energy carried as wave



Frequency = image resolution

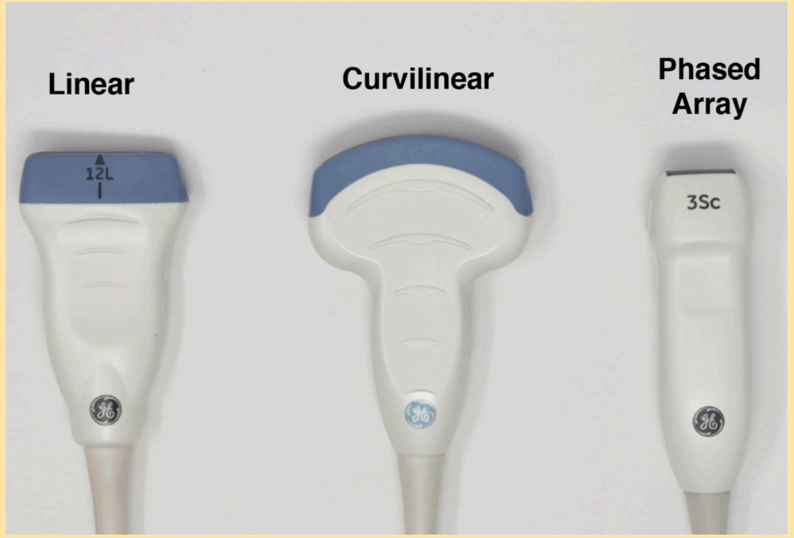
Wavelength = depth

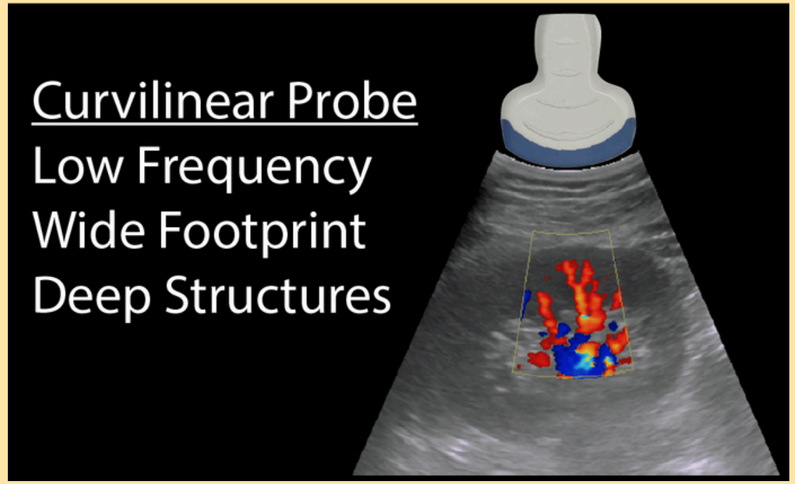


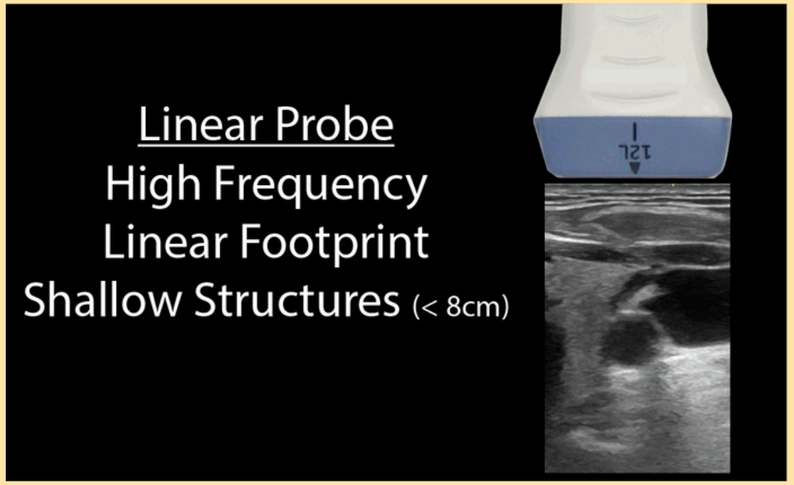


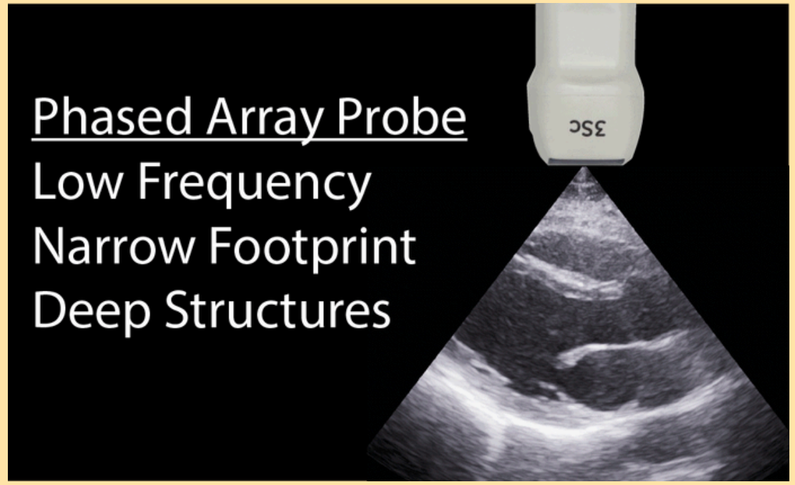
This is why Frequnecy & Wavelength are Important!

- **Linear** → Superficial
  - Soft tissue, MSK, Eye, Lung, Vasculature
- **Cuvilinear** → Deep
  - Abdomen, OB
- **Phased array** (aka cardiac probe)
  -

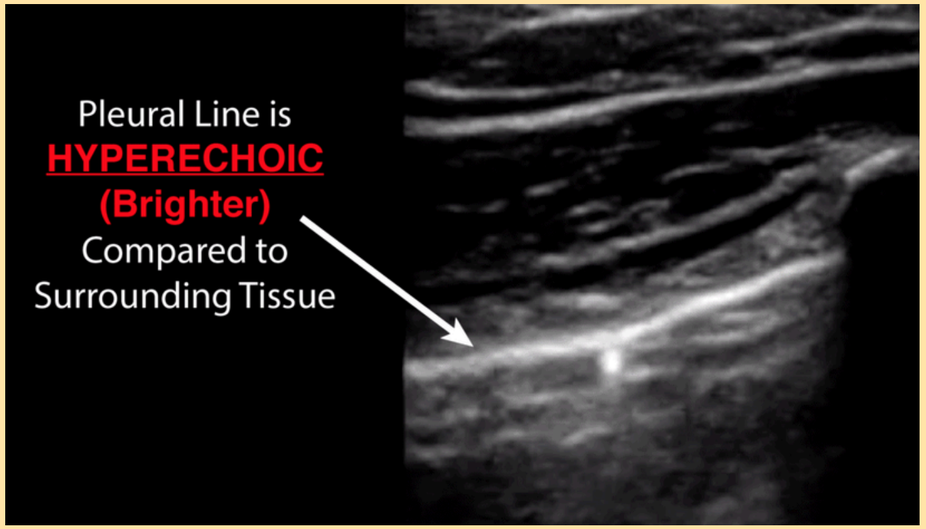


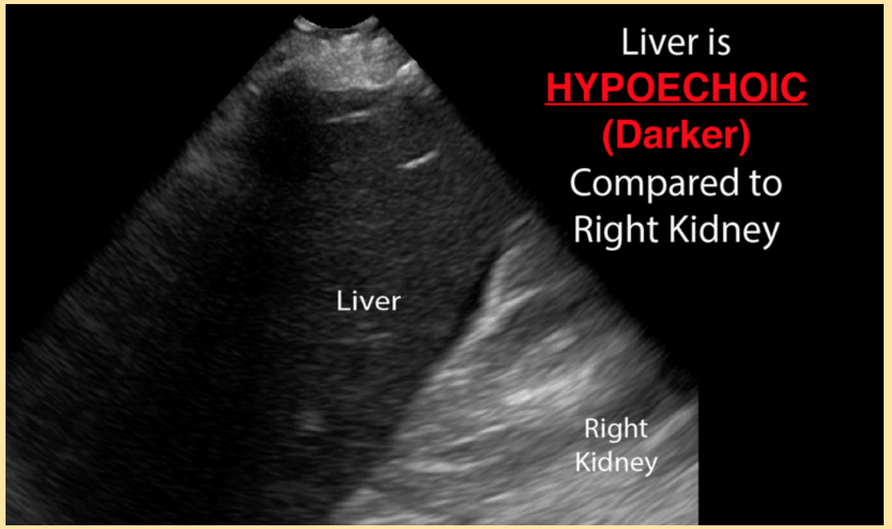


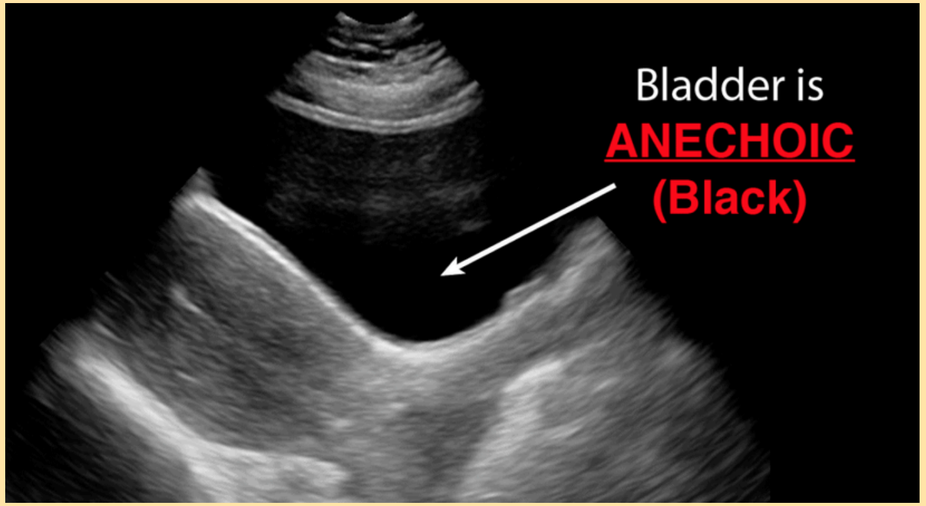




Amplitude = brightness / echogenicity

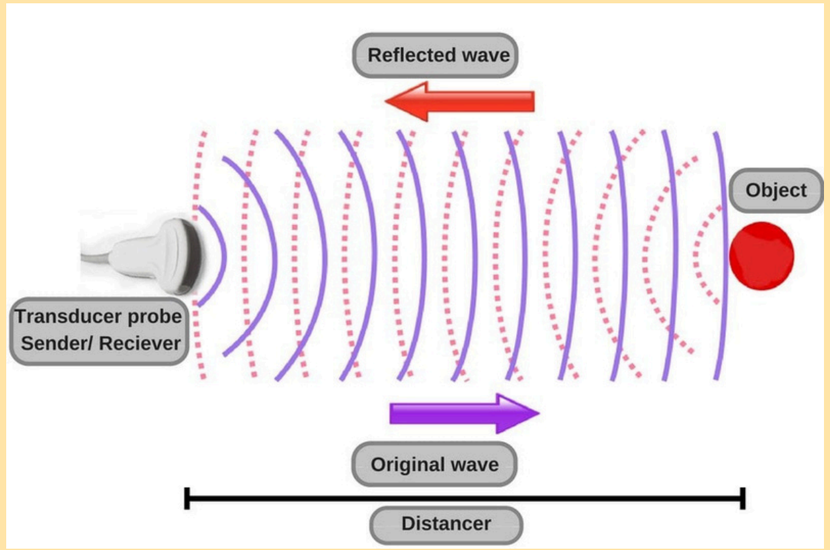




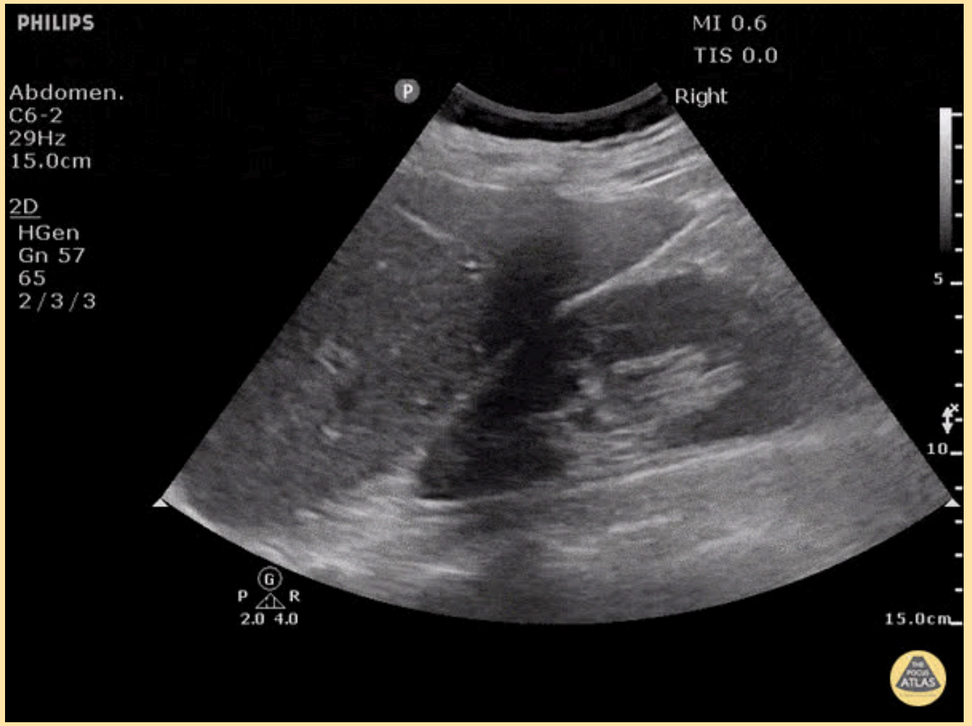




Time = distance



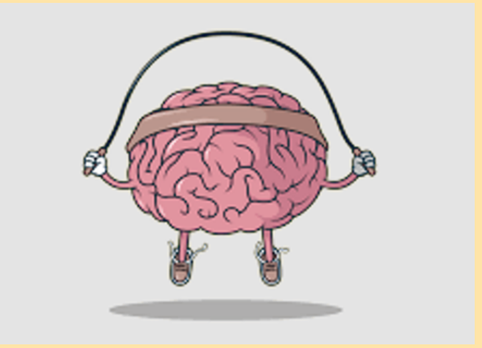
Near Field (superficial, closest to the probe)



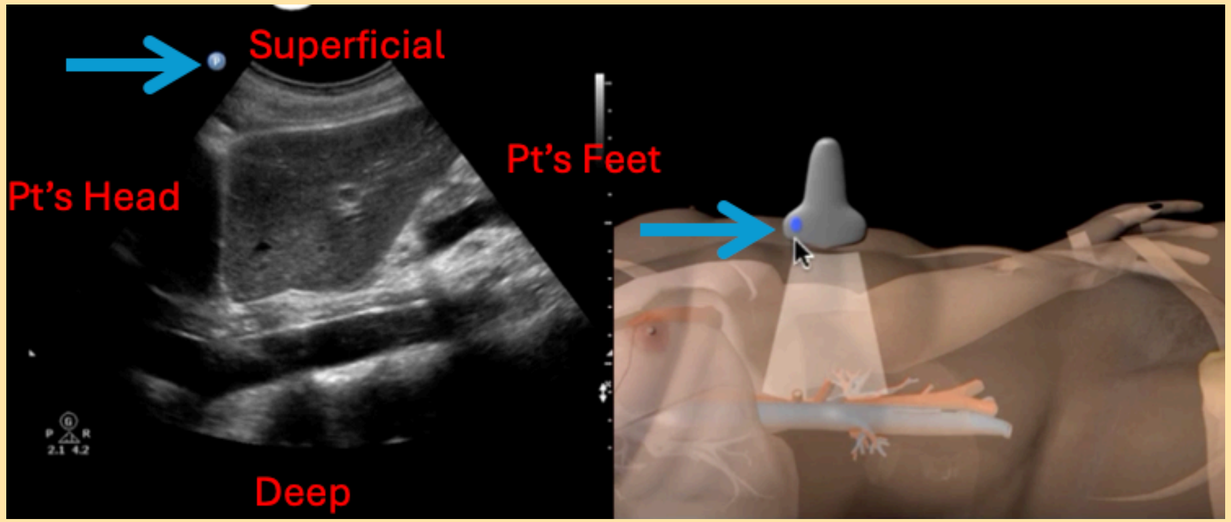
Far field (deep, farthest from the probe)

Orientation

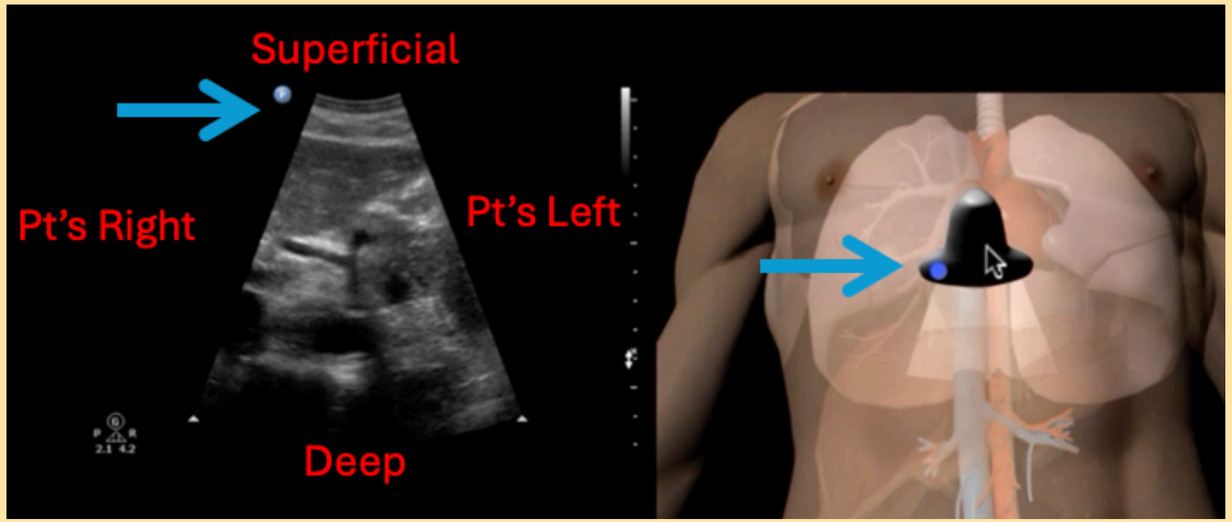




Long Axis

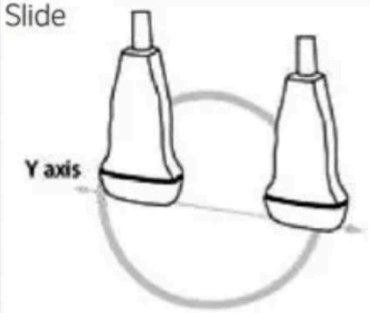
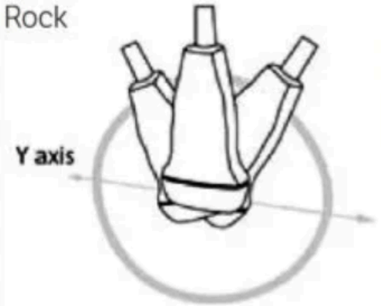
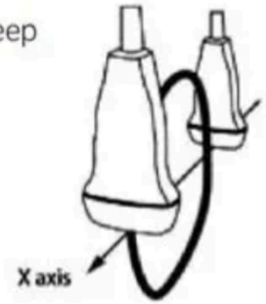
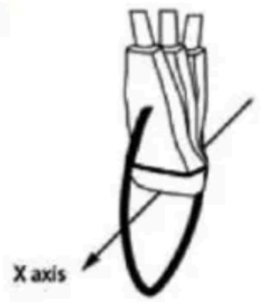
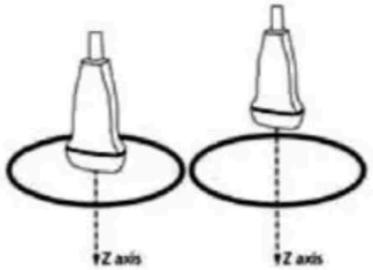
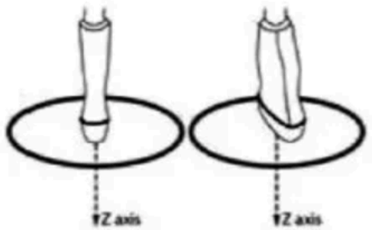


Short Axis



Probe Movements

Table 1. Redefined Set of Fundamental Transducer Motions

Slide		Motion in the long axis of the probe across the body with a consistent angle of insonation at 90° to the target
Rock		Motion in the long axis of the probe along a fixed point on the body while changing the angle of insonation away from 90°
Sweep		Motion in the short axis of the probe across the body with a consistent angle of insonation at 90° to the target
Fan		Motion in the short axis of the probe along a fixed point on the body while changing the angle of insonation away from 90°
Pressure/compression		Pressure on the probe into the body, compression of the body by applying force on the probe toward the patient's body
Rotation		Movement around the compression axis in a clockwise or counter-clockwise direction

Bahner et al. 2016


TIME FOR A
CASE

Urgent Care

Larry - 70 year old male

CC: Abdominal pain

HPI: Hasn't urinated all day; ran out of a medication a few days ago

Exam: Lower abdominal distention & discomfort

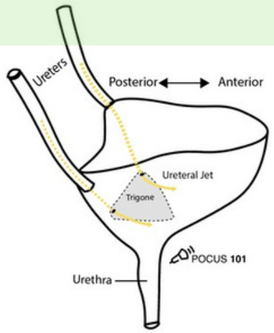
Bladder POCUS Reference Sheet

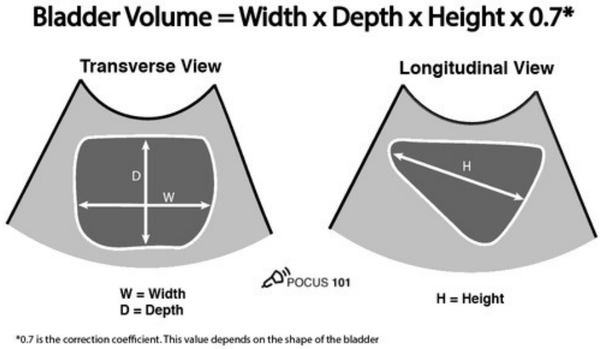
Questions you can answer with POCUS:

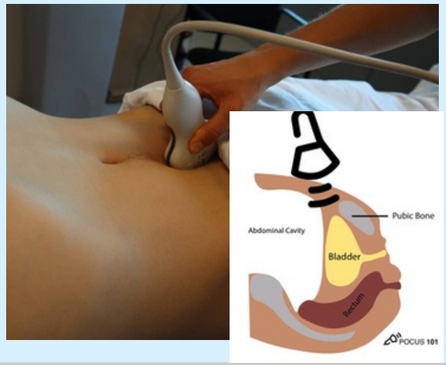
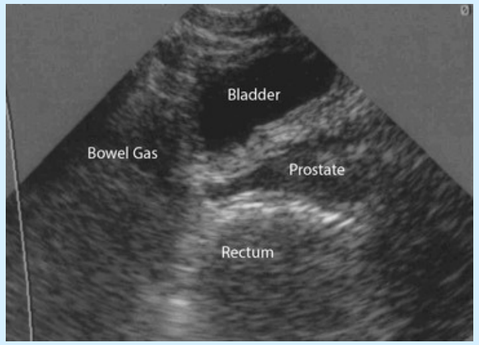
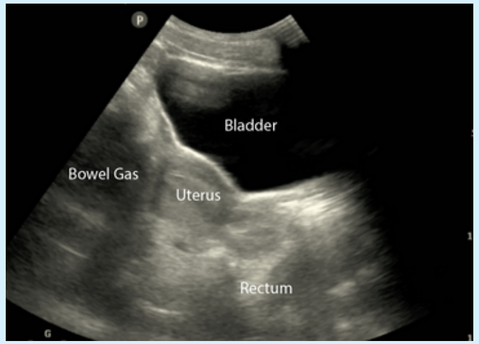
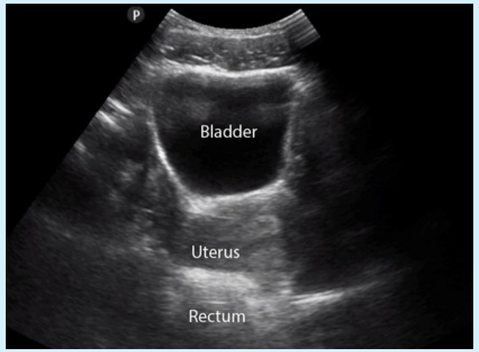
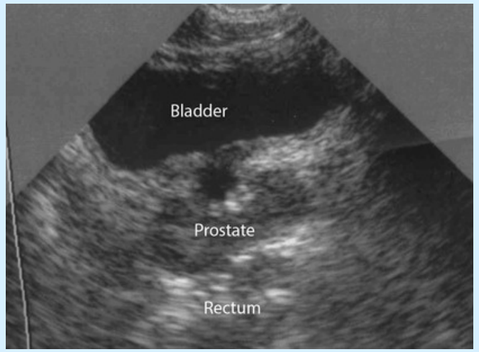
1. Estimate bladder volume (decompressed vs retention)
2. Visualize urinary catheter, bladder stones, mass, debris/blood, obstruction (absence of ureteral jets)

Patient Positioning & Probe

1. Supine
2. Curvilinear Probe





Clips to obtain	Probe positioning				
Bladder long axis	• Indicator towards pt's **head** Probe just • superior to the pubic symphysis				
Bladder short axis	• Indicator towards pt's **right** • Probe just superior to the pubic symphysis				

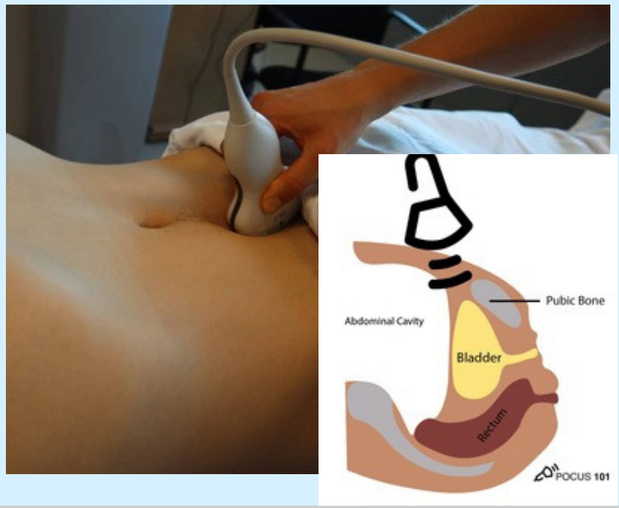
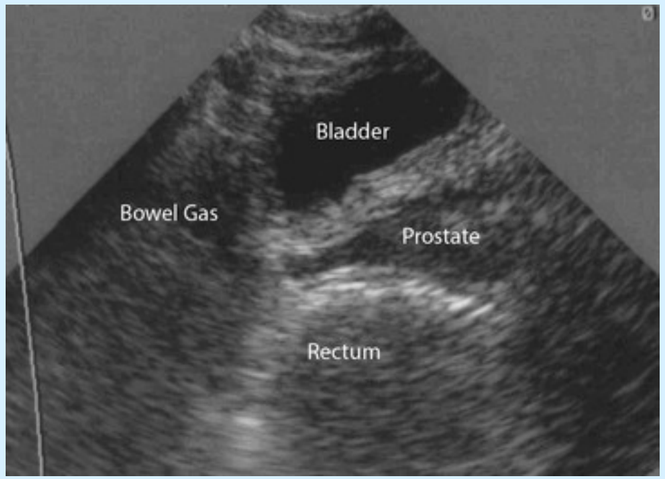
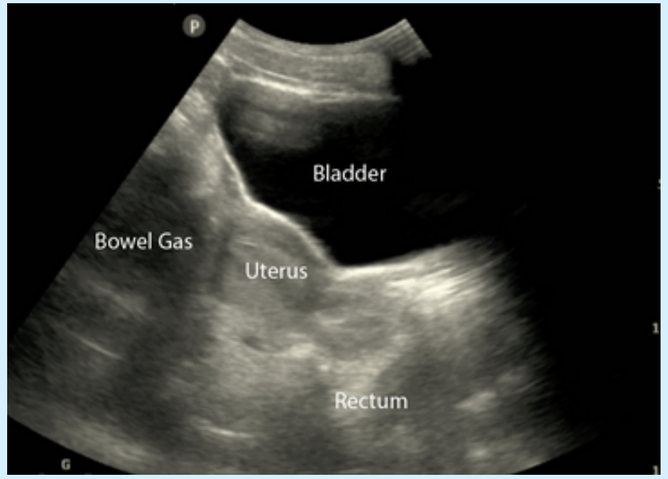
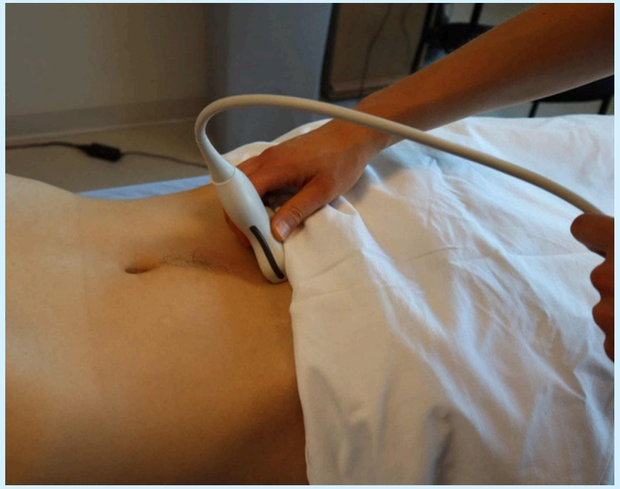
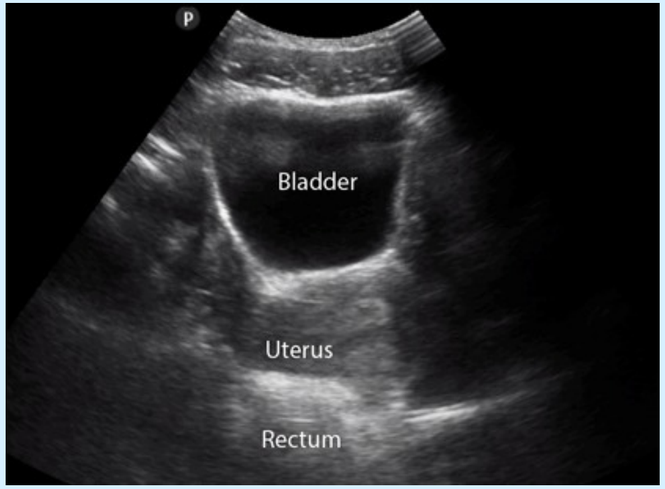
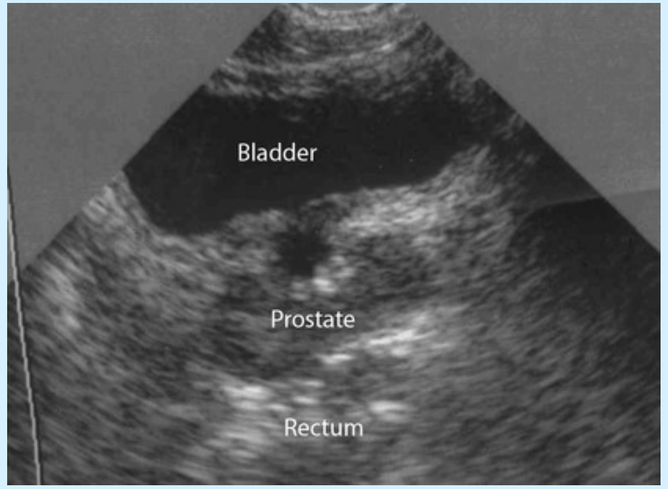
Note. Adapted from https://www.pocus101.com/bladder-ultrasound-made-easy-step-by-step-guide/

Questions you can answer with POCUS:

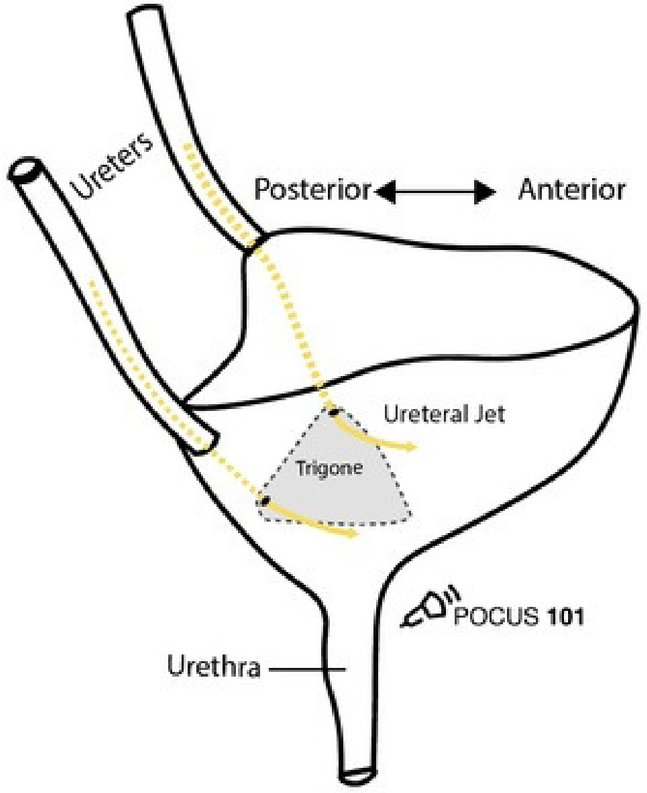
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2. Visualize urinary catheter, bladder stones, mass, debris/blood, obstruction (absence of ureteral jets)

Patient Positioning & Probe

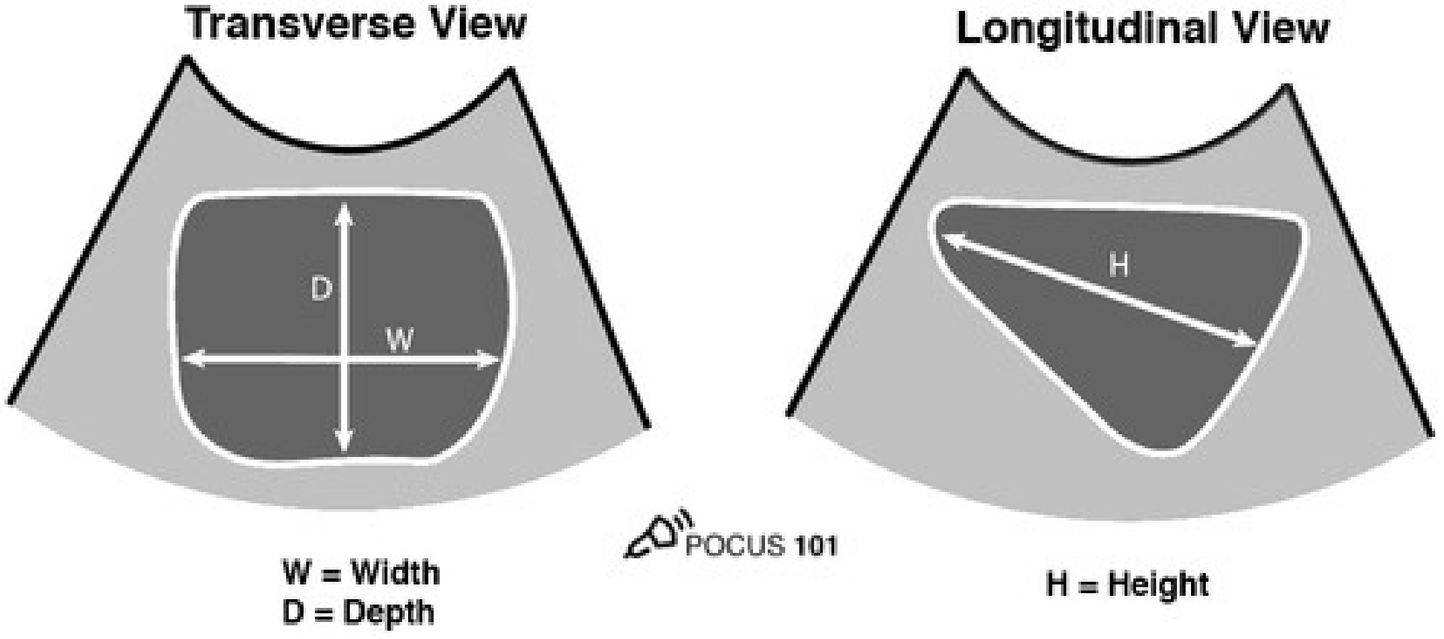
1. Supine
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Clips to obtain	Probe positioning			
Bladder long axis	• Indicator towards pt's **head** Probe just • superior to the pubic symphysis			
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Note. Adapted from https://www.pocus101.com/bladder-ultrasound-made-easy-step-by-step-guide/



Bladder Volume = Width x Depth x Height x 0.7*



*0.7 is the correction coefficient. This value depends on the shape of the bladder

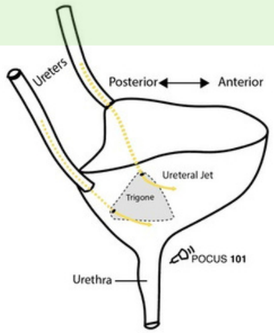
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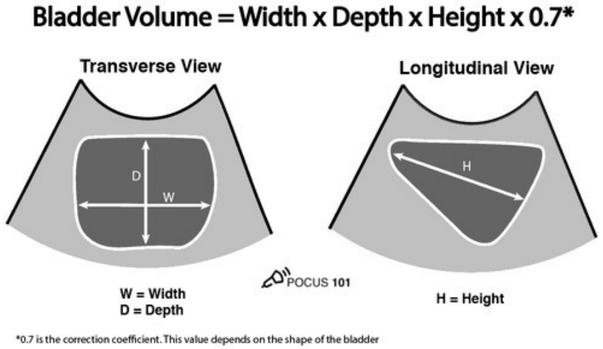
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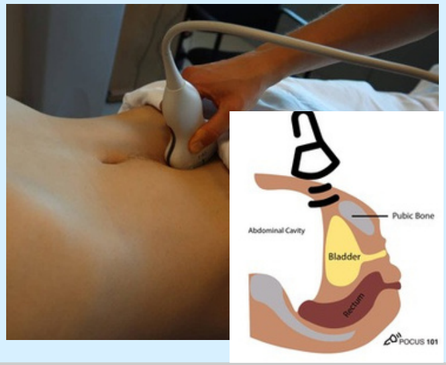
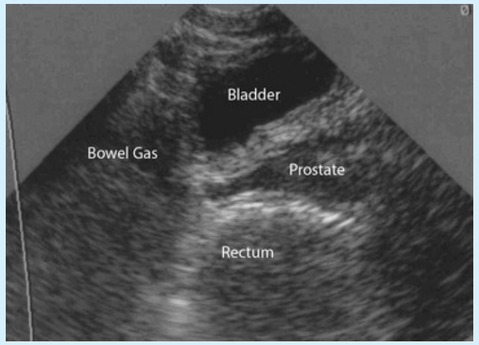
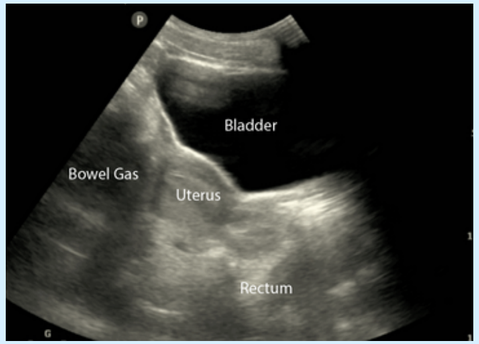
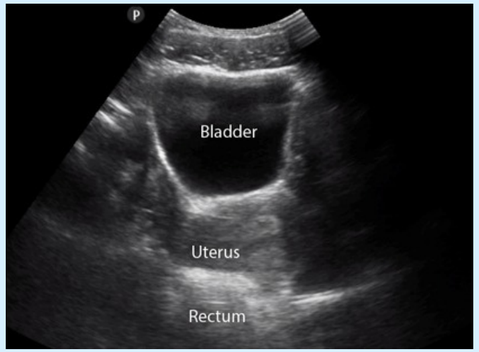
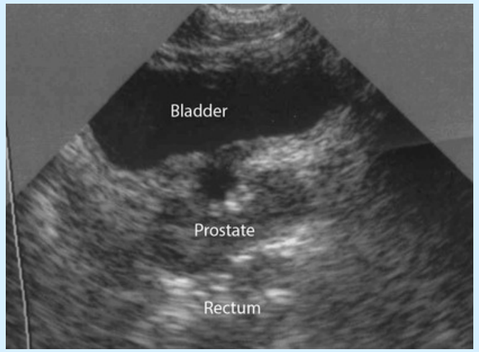
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Patient Positioning & Probe

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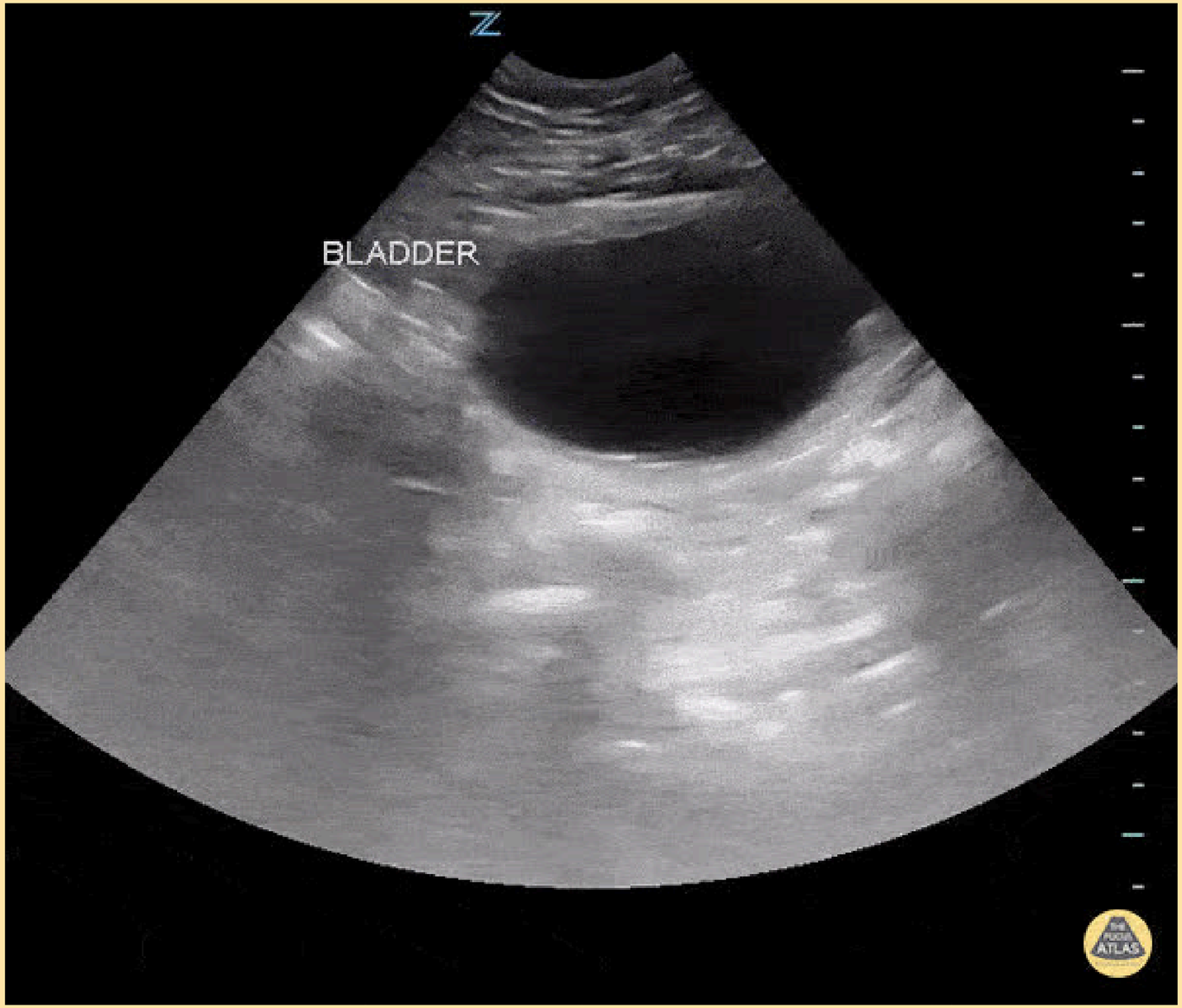




Clips to obtain	Probe positioning				
Bladder long axis	• Indicator towards pt's **head** Probe just • superior to the pubic symphysis				
Bladder short axis	• Indicator towards pt's **right** • Probe just superior to the pubic symphysis				

Note. Adapted from https://www.pocus101.com/bladder-ultrasound-made-easy-step-by-step-guide/

Larry’s Bladder



Biliary POCUS Reference Sheet

Questions youcan answer with POCUS:

1. Is there presence of gallstones / slude?
2. Is there evidence of acute cholecystitis?
3. Is there evidence of choledocolithiasis?

Patient Positioning& Probe

- Supine; roll pt to LLD to assess mobility of stones
- Curvilinear Probe

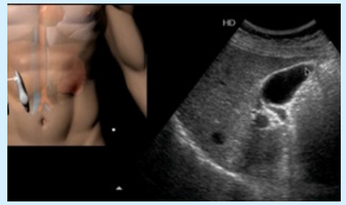
***Abbreviations**

GB = Gallbladder
CBD = Common Bile duct
PV = Portal Vein
HA = Hepatic Artery
Pt = Patient
LLD = Left lateral Decubitus

Clips to Obtain

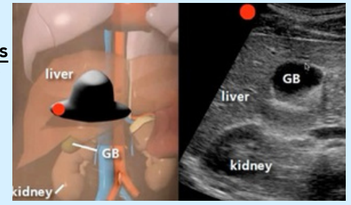
GB Long Axis

- Indicator towards pt's head



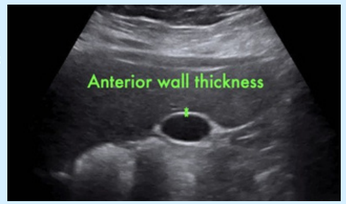
GB Short Axis

- Indicator towards pt's right



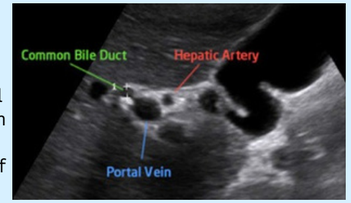
Anterior Wall Thickness

- Short axis
- >3 mm abnormal

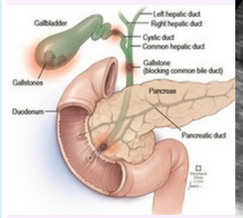


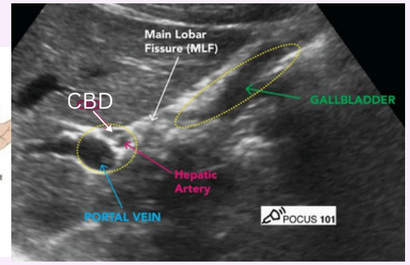
CBD

- Short or long axis
- >6 mm abnormal
- Add 1 mm for each decade of life >60



Anatomy

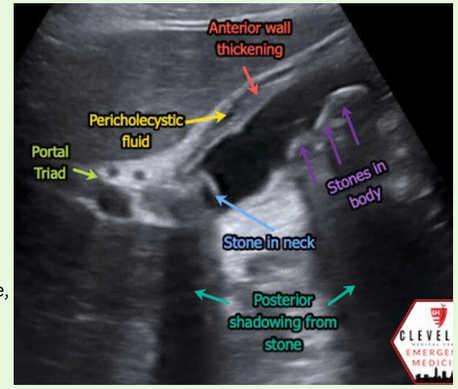




Criteria for Cholecystitis:

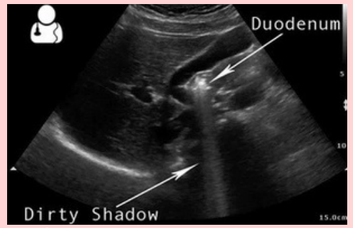
1. Sonographic Murphy sign
2. Presence of gallstones
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(Usually 2 or more, but clinically correlate)



Findings





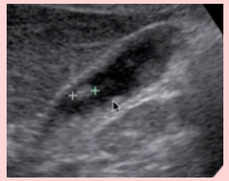
Left: Polyp - defies gravity, non-mobile, no shadowing
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Can't find the gallbladder?

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Questions youcan answer with POCUS:

1. Is there presence of gallstones / slude?
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Patient Positioning& Probe

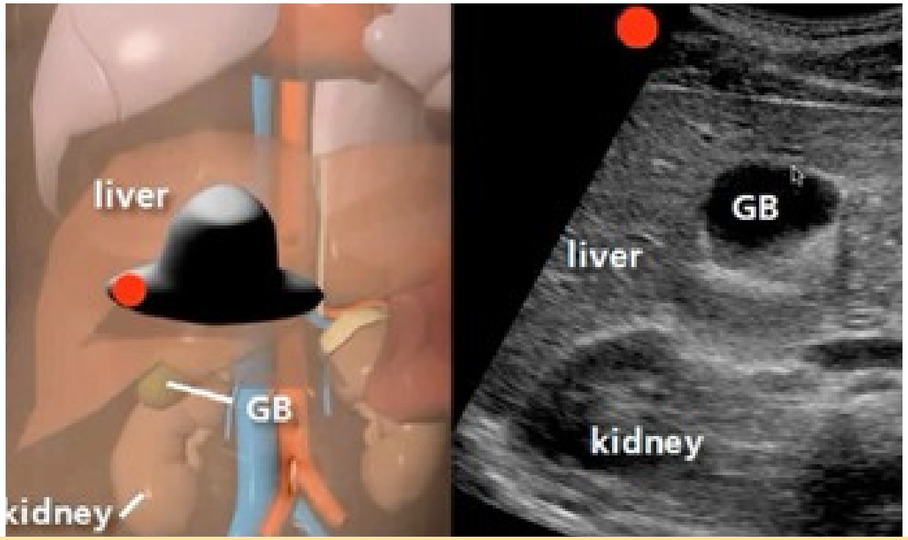
- Supine; roll pt to LLD to assess mobility of stones
- Curvilinear Probe

Clips to Obtain

GB Long Axis
Indicator towards pt's head

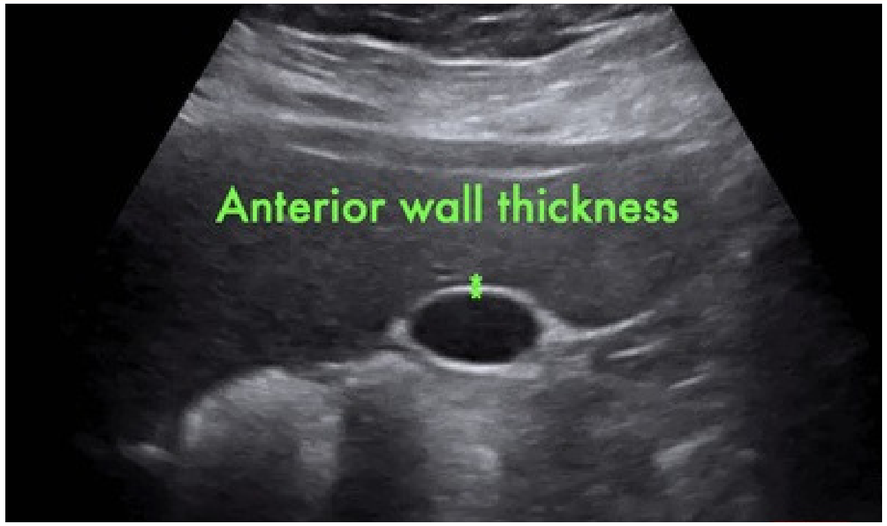


GB Short Axis
Indicator towards pt's right



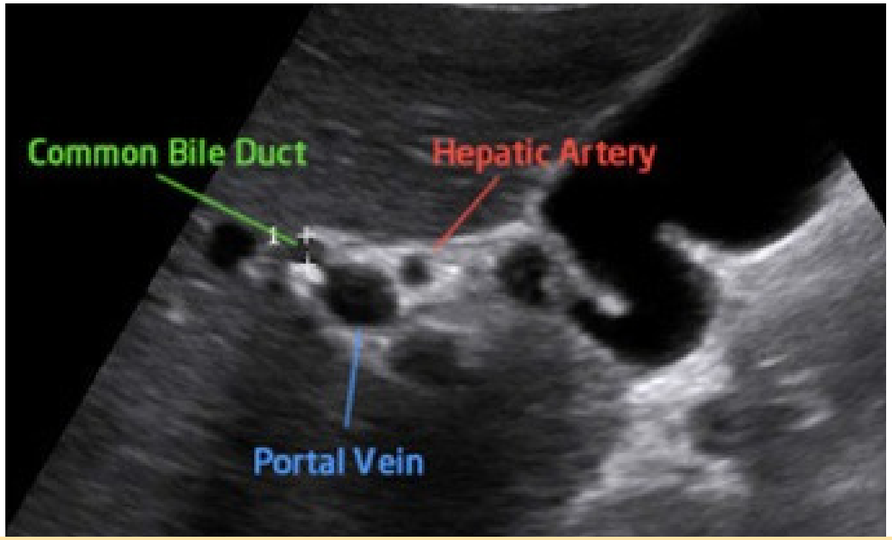
Anterior Wall Thickness
Short axis

>3 mm abnormal



CBD
Short or long axis

>6 mm abnormal. Add 1 mm for each decade of life >60



Biliary POCUS Reference Sheet

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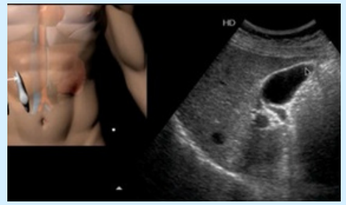
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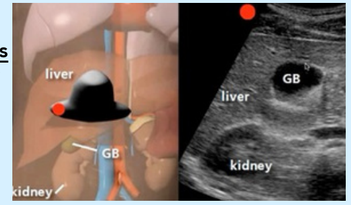
GB Long Axis

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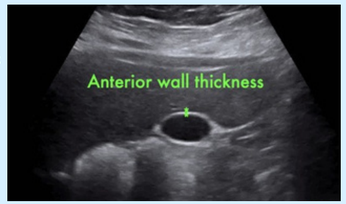
GB Short Axis

- Indicator towards pt's right



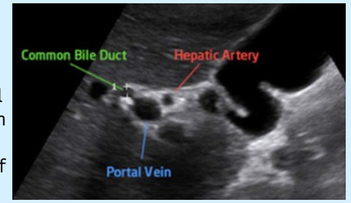
Anterior Wall Thickness

- Short axis
- >3 mm abnormal

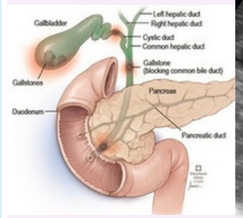


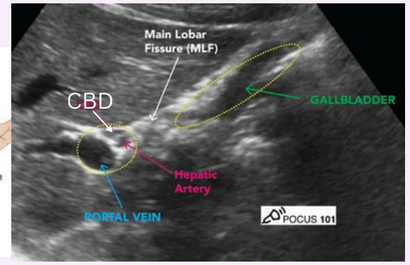
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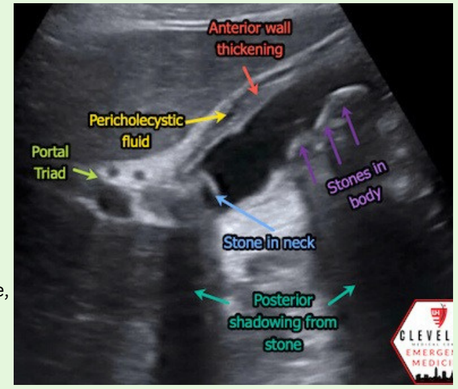




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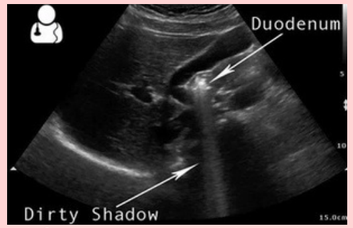
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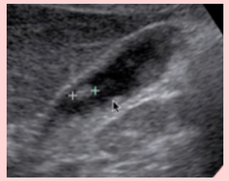
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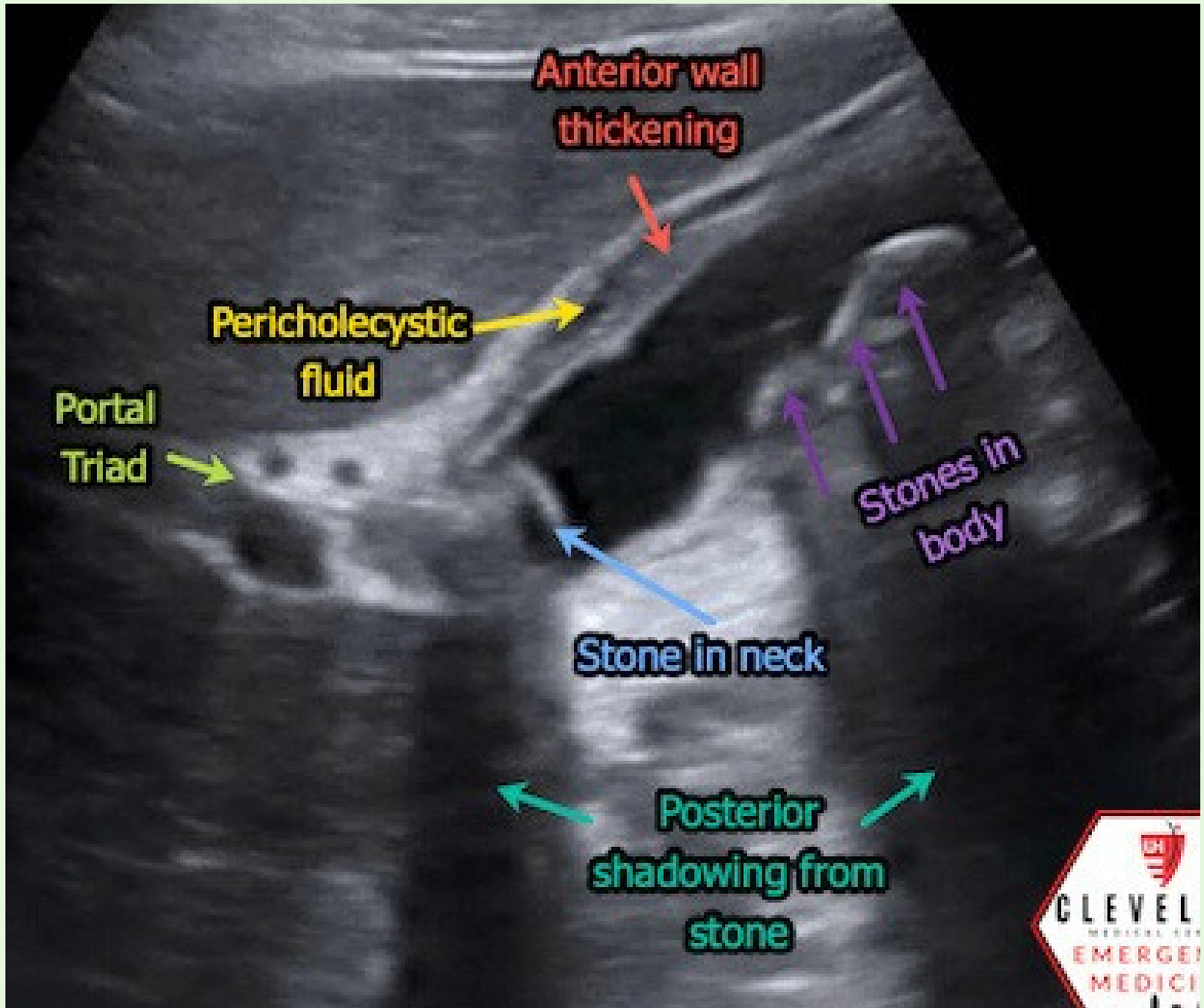


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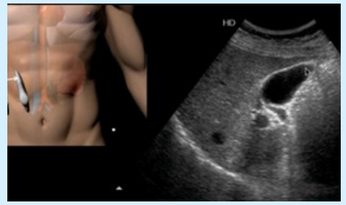
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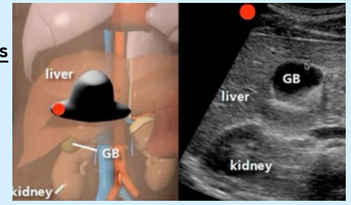
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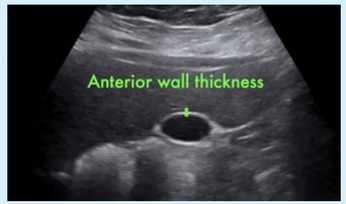
GB Short Axis

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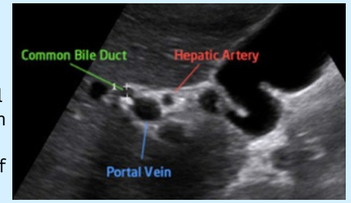
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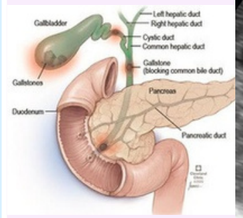


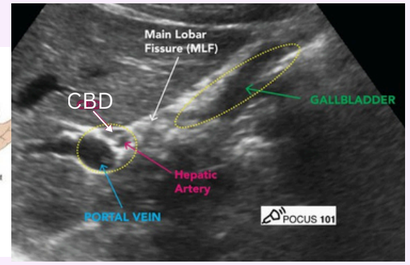
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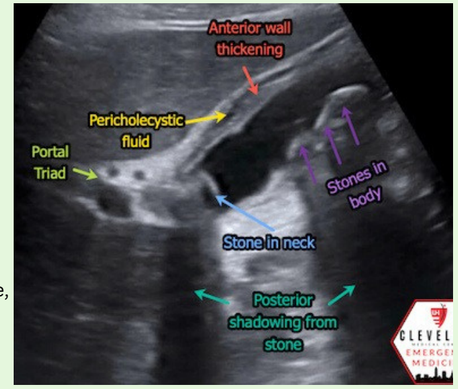




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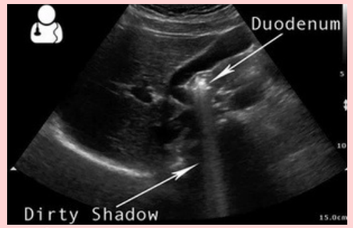
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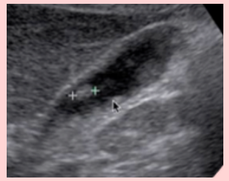
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Primary Care

Larry - 70 year old male

CC: Hospital follow up appointment

Exam: Right lower extremity edema

Question POCUS can help answer:

- Is there a DVT?

Patient Positioning & Probe:

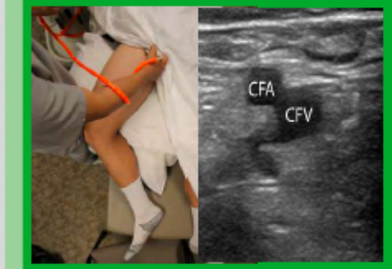
- Supine, frog legged
- Linear Probe
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Deep Vein Thrombosis Ultrasound Pocket Card

POCUS 101

Deep Vein Thrombosis Scanning Sites

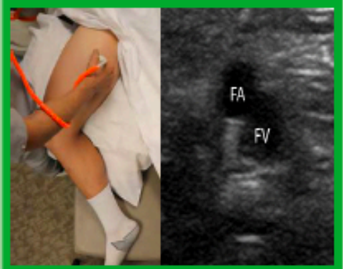
Common Femoral Vein



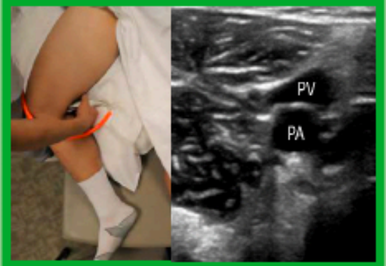
Great Saphenous Vein



(Superficial) Femoral Vein

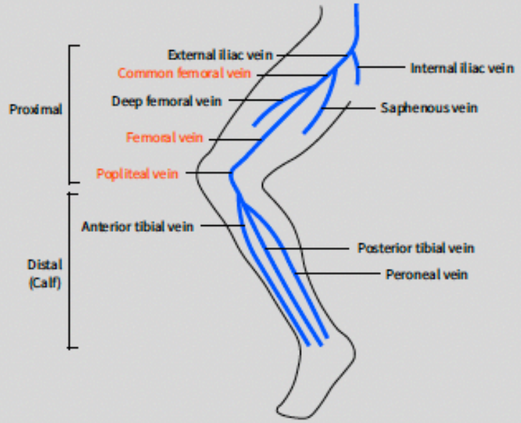


Popliteal Vein



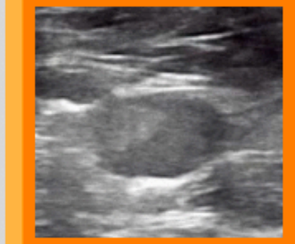
Popliteal Vein Trifurcation



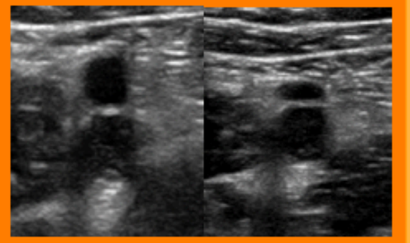


Deep Vein Thrombosis Pathology

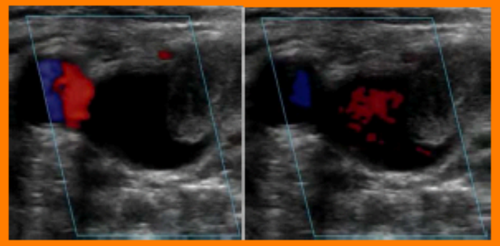
Direct Clot Visualization



Non-Compressibility

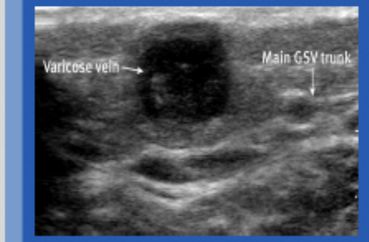


Augmentation with Color Doppler

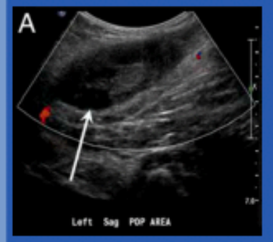


Deep Vein Thrombosis False Positives

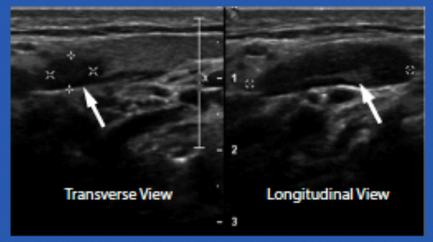
Superficial Thrombophlebitis



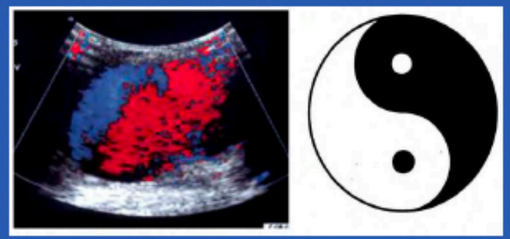
Baker's Cyst



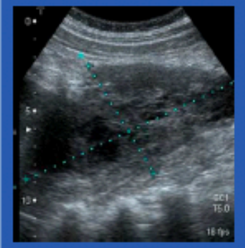
Lymph Node



Pseudoaneurysms



Groin Hematoma



Question POCUS can help answer:

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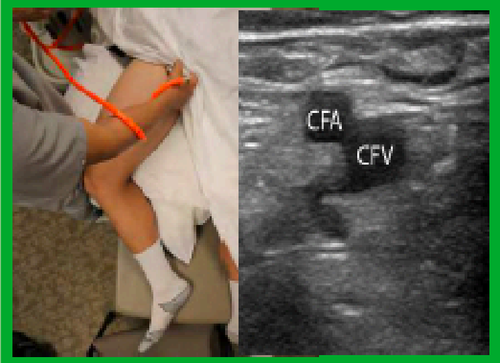
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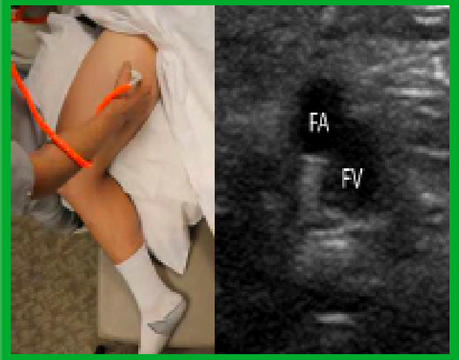
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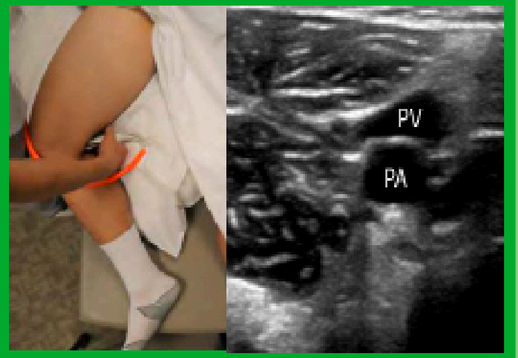
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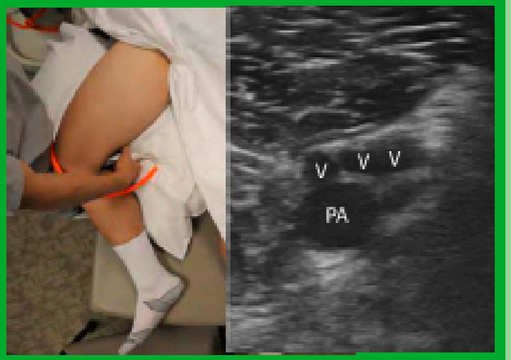
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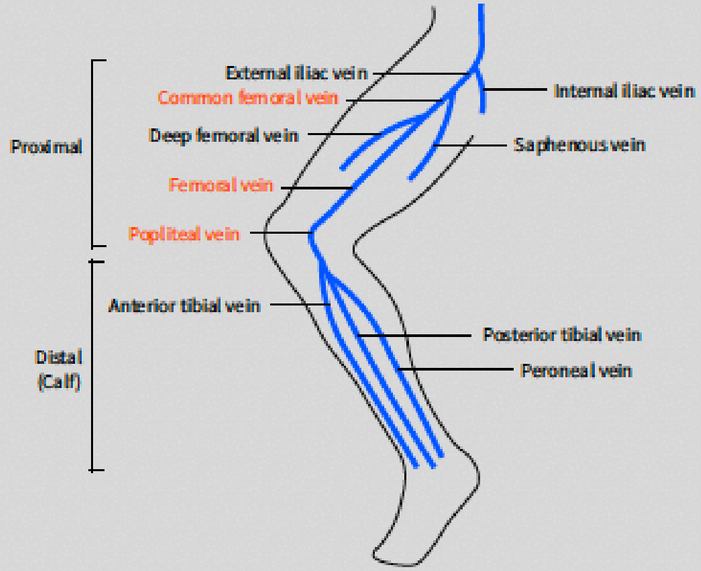


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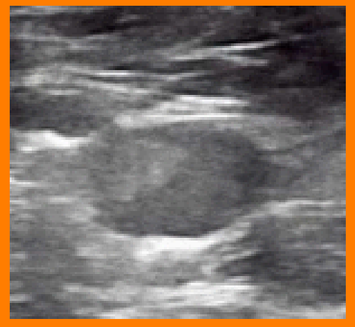
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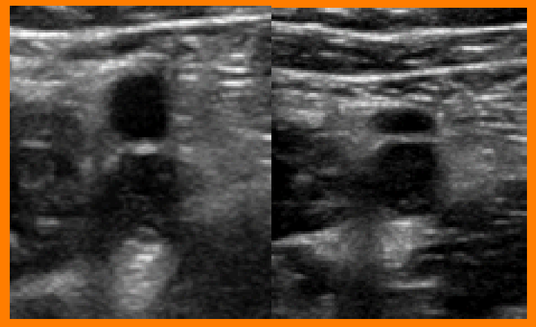


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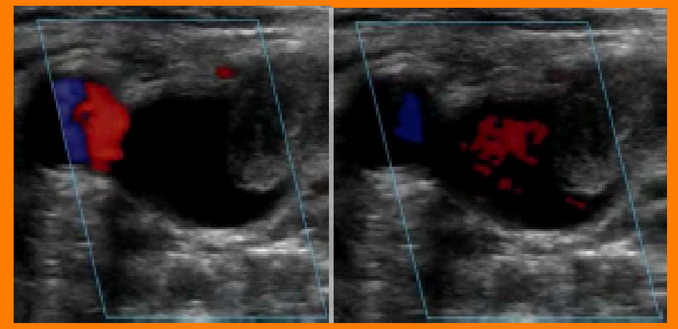
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Augmentation with Color Doppler



Deep Vein Thrombosis False Positives

Question POCUS can help answer:

- Is there a DVT?

Patient Positioning & Probe:

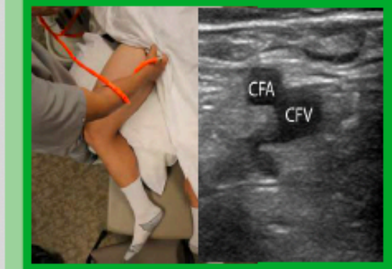
- Supine, frog legged
- Linear Probe
- Indicator towards pt's right

Deep Vein Thrombosis Ultrasound Pocket Card

POCUS 101

Deep Vein Thrombosis Scanning Sites

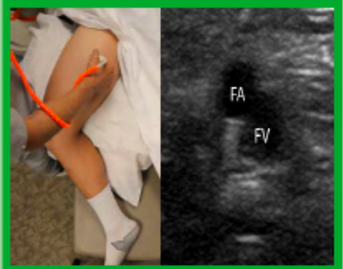
Common Femoral Vein



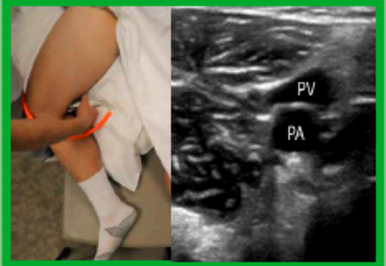
Great Saphenous Vein



(Superficial) Femoral Vein

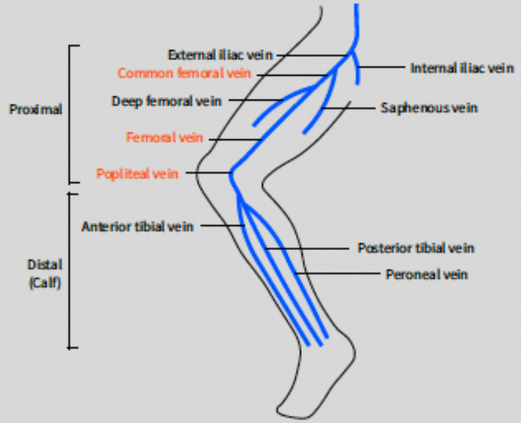


Popliteal Vein



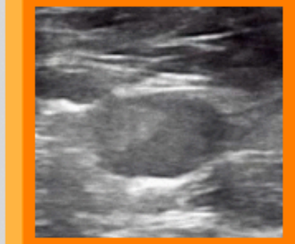
Popliteal Vein Trifurcation



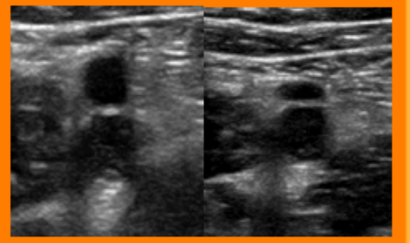


Deep Vein Thrombosis Pathology

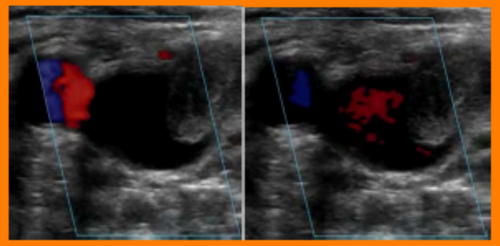
Direct Clot Visualization



Non-Compressibility

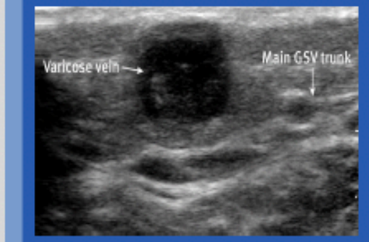


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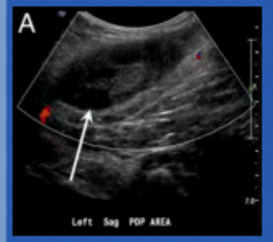


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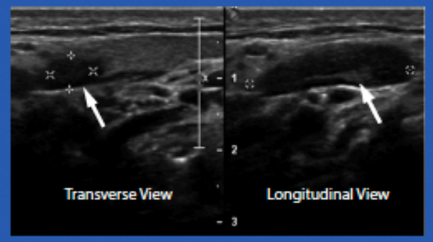
Superficial Thrombophlebitis



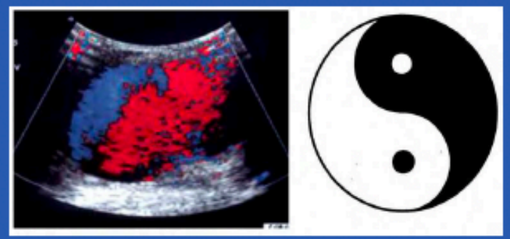
Baker's Cyst



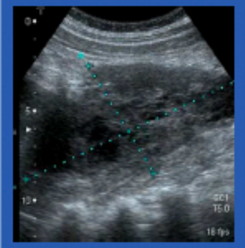
Lymph Node



Pseudoaneurysms



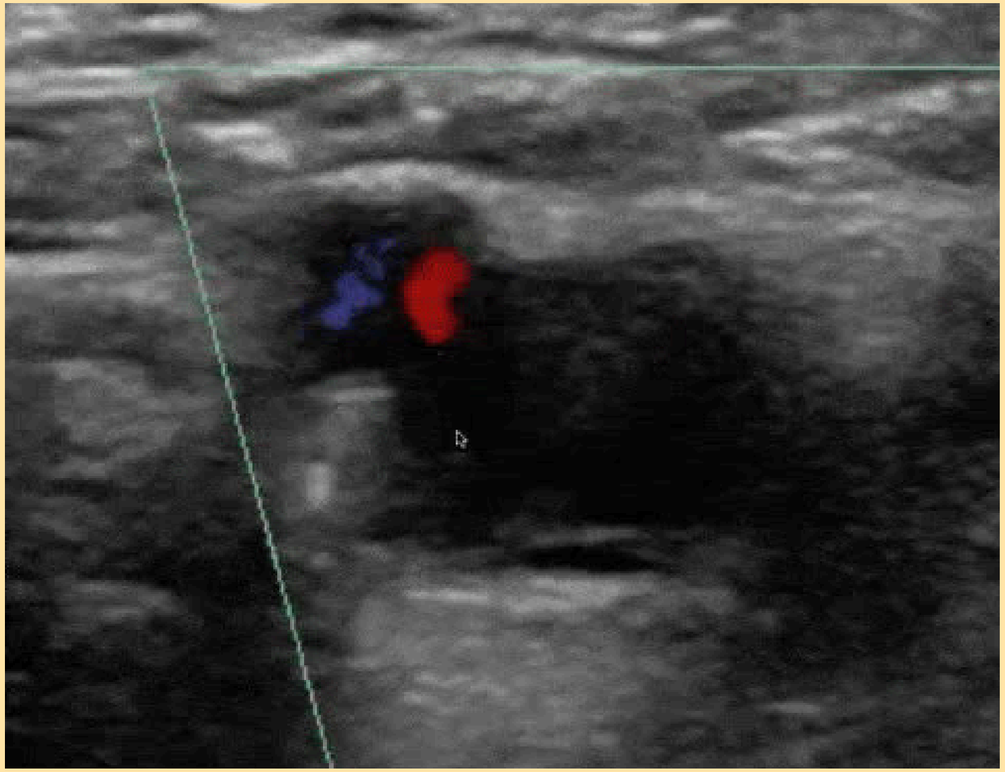
Groin Hematoma



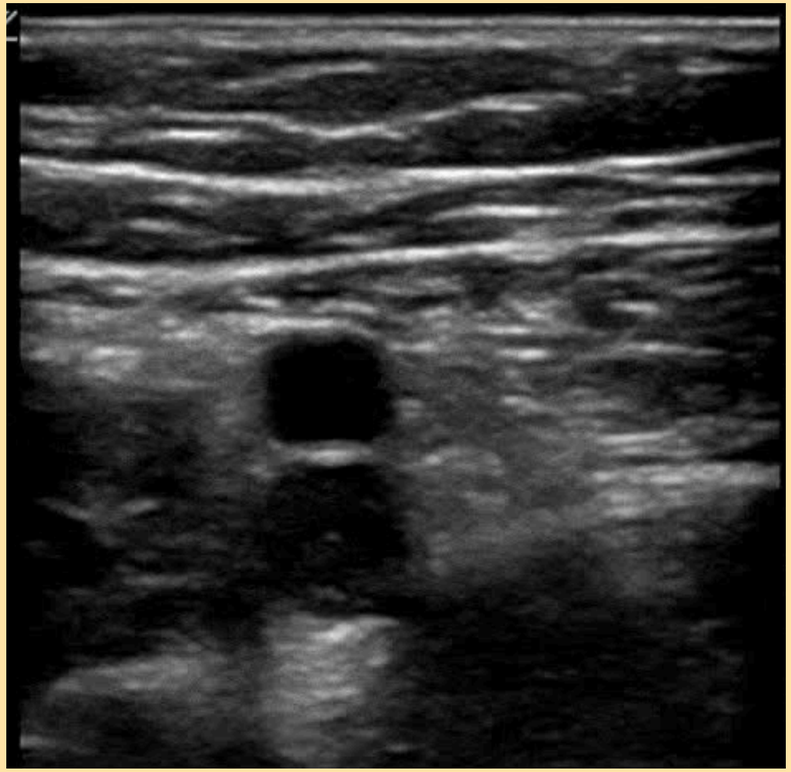
Larry’s Right DVT Scan



Visible Clot in Common Femoral Vein



Obstructed Common Femoral Vein



Clot extends to femoral vein (vein not compressing despite so much force that the artery is)

Question POCUS can help answer:

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Patient Positioning & Probe:

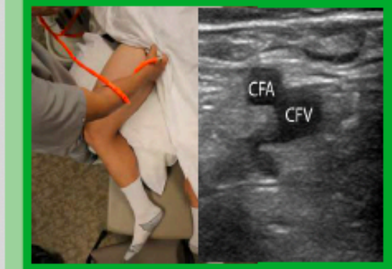
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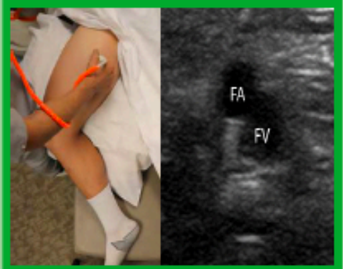
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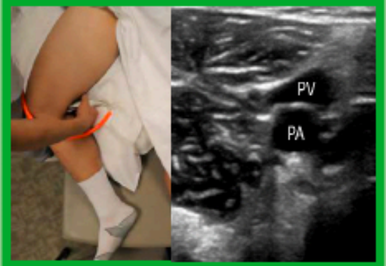
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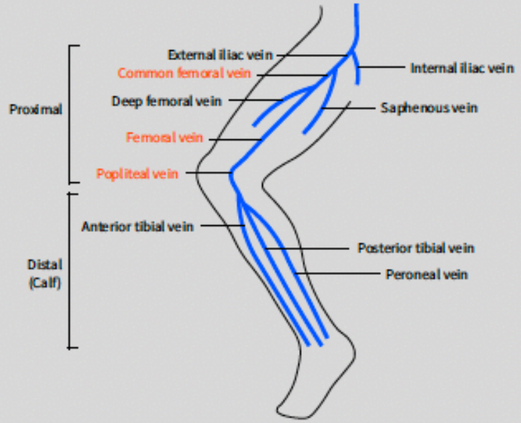


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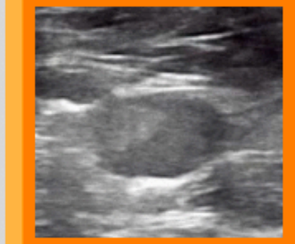
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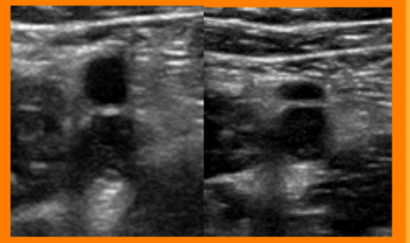


Deep Vein Thrombosis Pathology

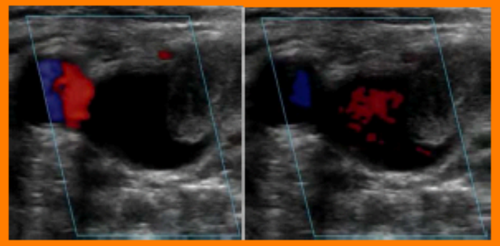
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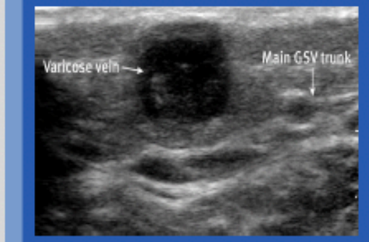


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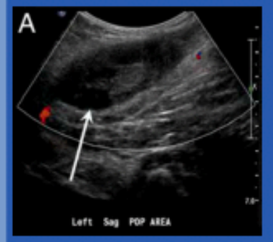


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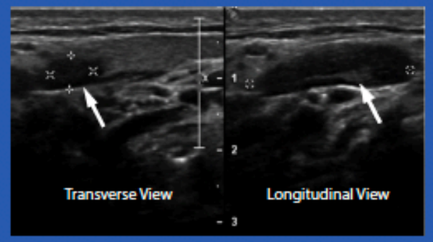
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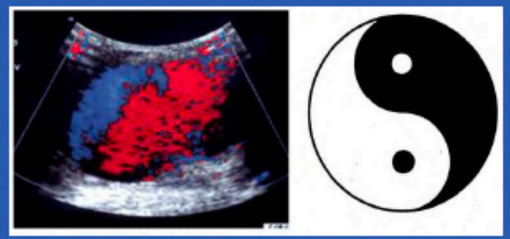
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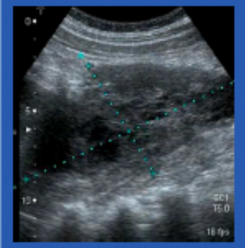
Lymph Node



Pseudoaneurysms



Groin Hematoma



Emergency Department

Larry - 70 year old male

CC: Shortness of breath, recently diagnosed with DVT, not on any anticoagulation yet

Exam: Tachycardic, hypoxic, right lower extremity edema, clear lung sounds

Cardiac POCUS Reference Sheet

Abbreviations:
LLD = Left Lateral Decubitus
Pt = Patient
LV = Left Ventricle
RV = Right Ventricle
LA = Left Atrium
RA = Right Atrium
PSLA = Parasternal Long Axis
PSSX = Parasternal Short Axis
A4C = Apical 4 Chamber
SX = Subxiphoid
IVC = Inferior Vena Cava
IV + Intraventricular
MV = Mitral Valve

Questions you can answer with POCUS

1. **Effusion:** Presence of pericardial effusion / tamponade?
2. **Ejection:** LV ejection fraction - Normal, hyperdynamic, or reduced
3. **Equality:** What is the equality of the size of the chambers / is there evidence of RV strain?
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Patient Positioning & Probe

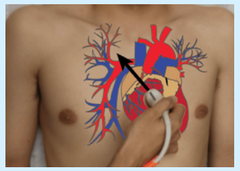
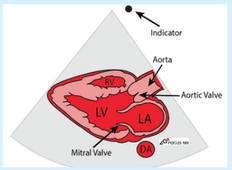
- Supine, HOB 30°
- Difficult views
  - LLD to bring heart closer to chest wall
  - Deep breath & hold
- Phased array (cardiac) Probe

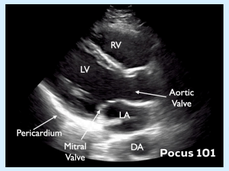
Clips to Obtain

Questions to ask with each view

PSLA

Indicator to pt's right shoulder

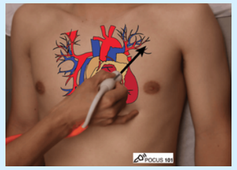
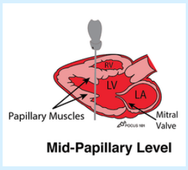



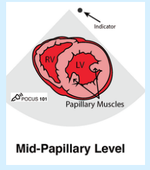


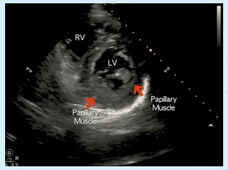
- What is the **LV EF**?
  - Assess change in thicness of the endocardium with contraction
  - Normal: MV makes contact w/ IV septum
  - Reduced: ↓ change in thickness of endocardium / movement of MV
  - Hyperdynamic = LV walls "kissing"
- Is there **pericardial effusion**?
- Are teh RV, aoritc outflow tract, & LA in a **1:1:1 ratio** or are any dilated?

PSSX

Indicator to pt's left shoulder

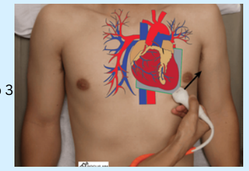
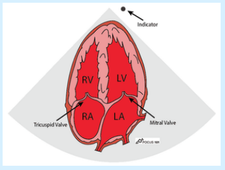


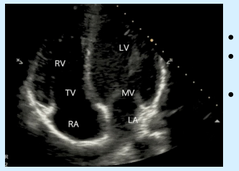


- Is there **right heart strain** (D-Sign)?
- Is there a **focal wall motion defect**?

A4C

Indicator to 3 O'Clock Position

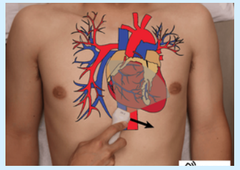
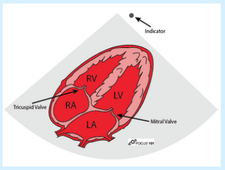



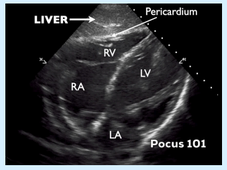


- Are any of the 4 **chambers dilated**?
- Is there **RV strain** (bowing of IV septum into LV)?
- Is there McConnell's sign (stunned RV with apical sparing 2/2 it being pulled by LV, can be seen in PE with RV strain)?

SX

Indicator towards 3 O'Clock postion

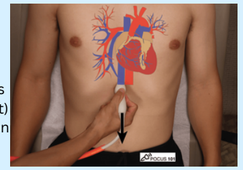
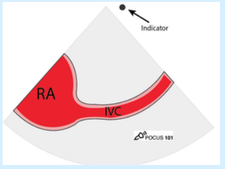



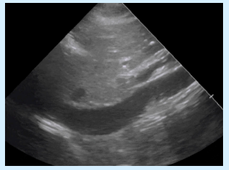


- Is there **pericardial effusion**?
- Is there evidence of **cardiac tamponade**?
  - RA systolic collapse → RV diastolic collapse → IVC dilation

IVC

Indicator towards pt's head (or feet) depending on institution

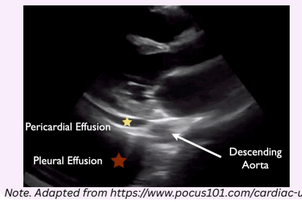



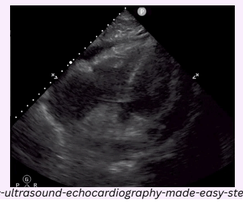


- As you rotate the probe 90°, watch the IVC dump into the RA & the hepatic artery dump into the IVC
- Measure IVC 2 cm back from RA
- How **collapsible** is the IVC when the pt does a quick sniff/inhale?

Pathology

Pericardial effusion






D-Sign

- Bowing of IV septum into LV in PSSX

Note on IVC Diameter & Collapsibility

- Used to aid in determining **fluid status** and whether a patient can **tolerate IV fluids**
- **Measure** diameter & collapsibility **2 cm from right atrium**
- If **hypotensive**...
  - **>50% collapsible** → can **tolerate IV fluids**
  - **<50% collapsible (plethoric / plump)** → **avoid** giving **IV fluids** (consider cardiogenic shock)
- Fluid Status (always consider clinical picture)
  - Very collapsible IVC → may indicate intravascular depletion
  - Normal collapsibility (~50%) → may indicate euvolemia
  - Barely collapsibe IVC → may indicate hypervolemia

Note. Adapted from https://www.pocus101.com/cardiac-ultrasound-echocardiography-made-easy-step-by-step-guide/

Cardiac POCUS Ref

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Clips to Obtain

PSLA







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Patient Positioning & Probe

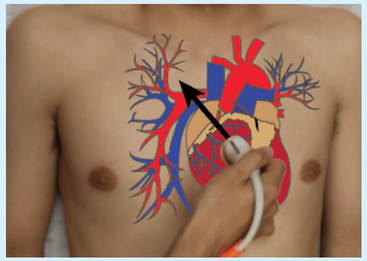
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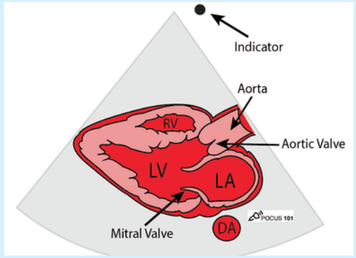
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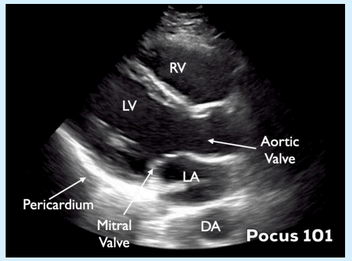
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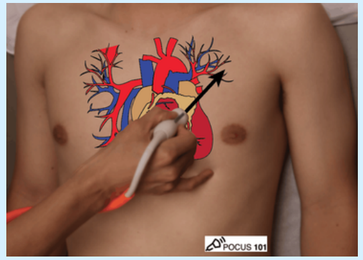


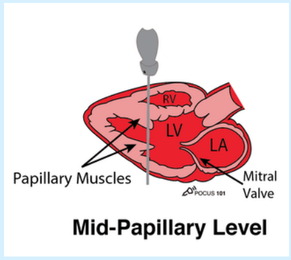


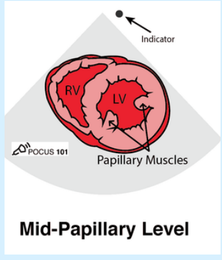
- What is the **LV EF**?
  - Assess change in thicness of the endocardium with contraction
  - Normal: MV makes contact w/ IV septum
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- Is there **pericardial effusion**?
- Are teh RV, aoritc outflow tract, & LA in a **1:1:1 ratio** or are any dilated?

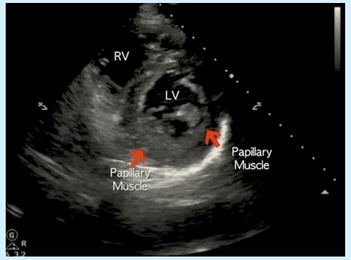
PSSX

Indicator to pt's left shoulder





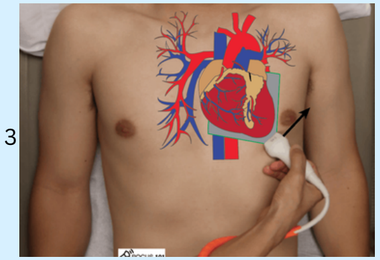


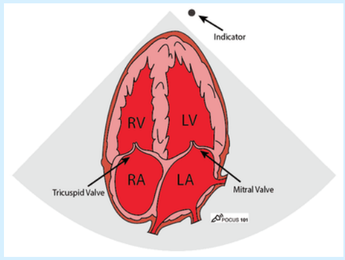


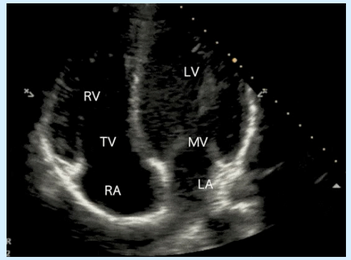
- Is there **right heart strain** (D-Sign)?
- Is there a **focal wall motion defect**?

A4C

Indicator to 3 O'Clock Position



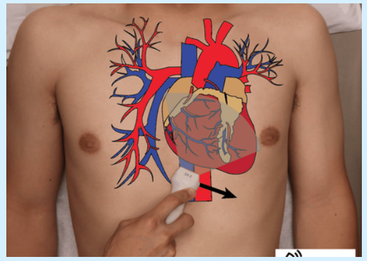


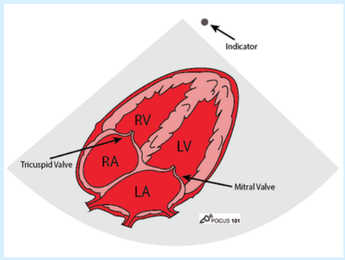


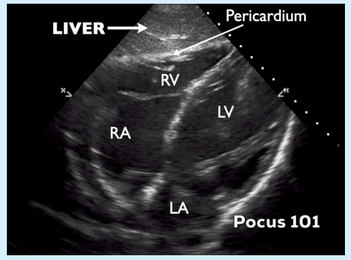
- Are any of the 4 **chambers dilated**?
- Is there **RV strain** (bowing of IV septum into LV)?
- Is there McConnell's sign (stunned RV with apical sparing 2/2 it being pulled by LV, can be seen in PE with RV strain)?

SX

Indicator towards 3 O'Clock postion



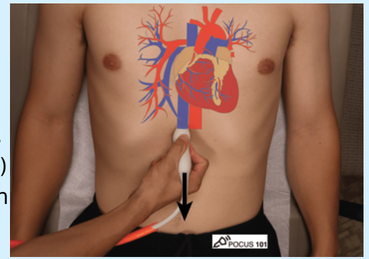


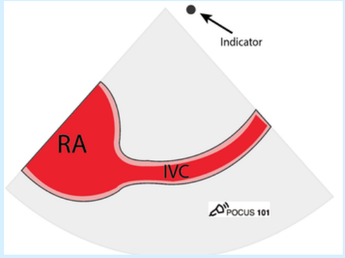


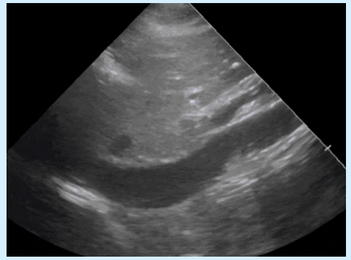
- Is there **pericardial effusion**?
- Is there evidence of **cardiac tamponade**?
  - RA systolic collapse → RV diastolic collapse → IVC dilation

IVC

Indicator towards pt's head (or feet) depending on institution

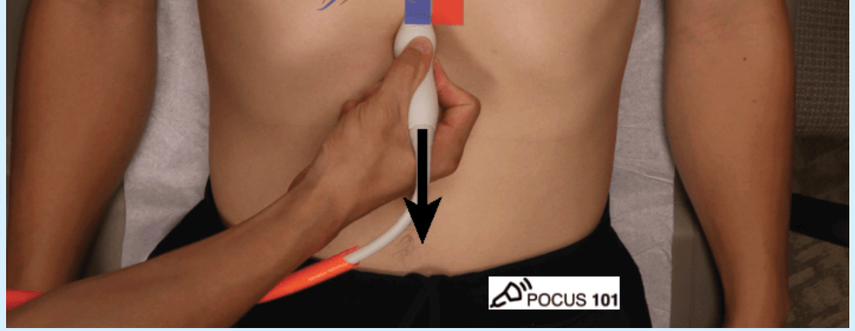


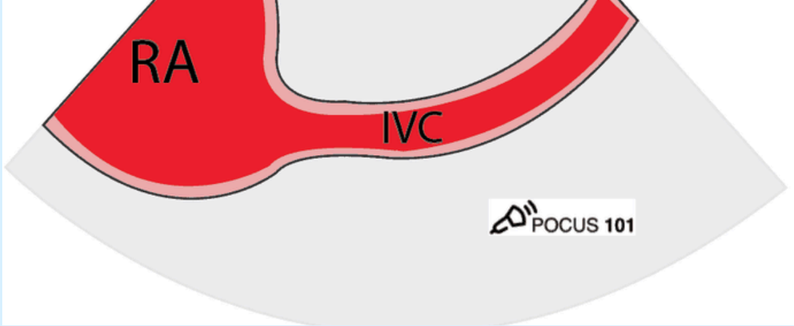


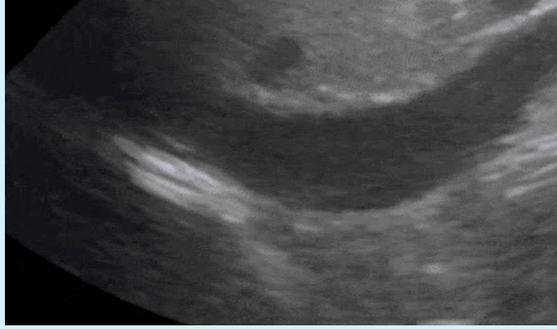


- As you rotate the probe 90°, watch the IVC dump into the RA & the hepatic artery dump into the IVC
- Measure IVC 2 cm back from RA
- How **collapsible** is the IVC when the pt does a quick sniff/inhale?

wards pt's
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pending on
nstitution

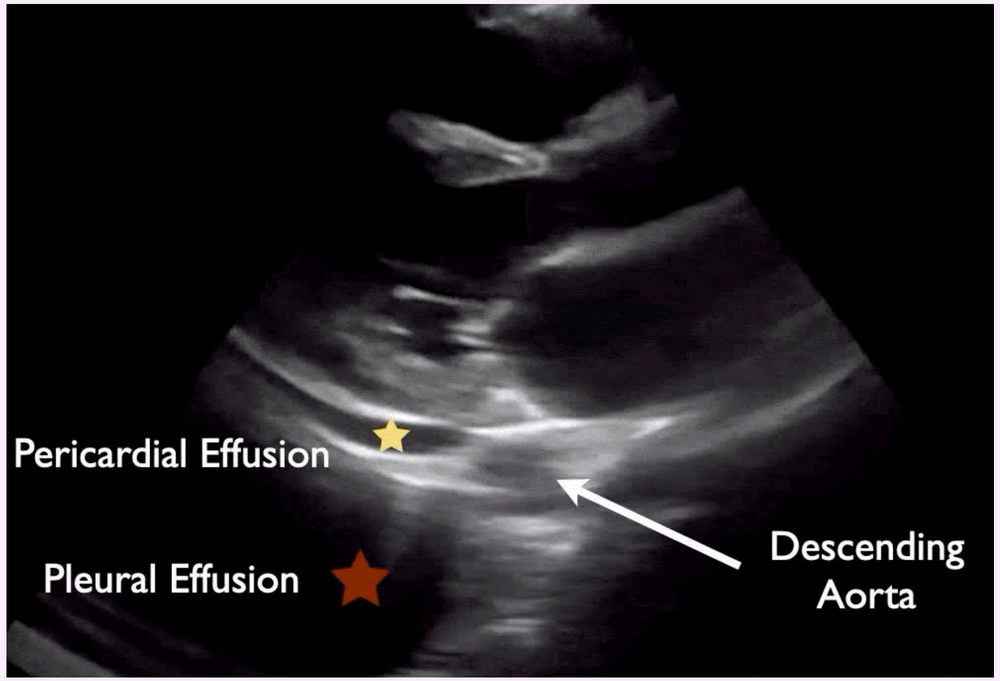


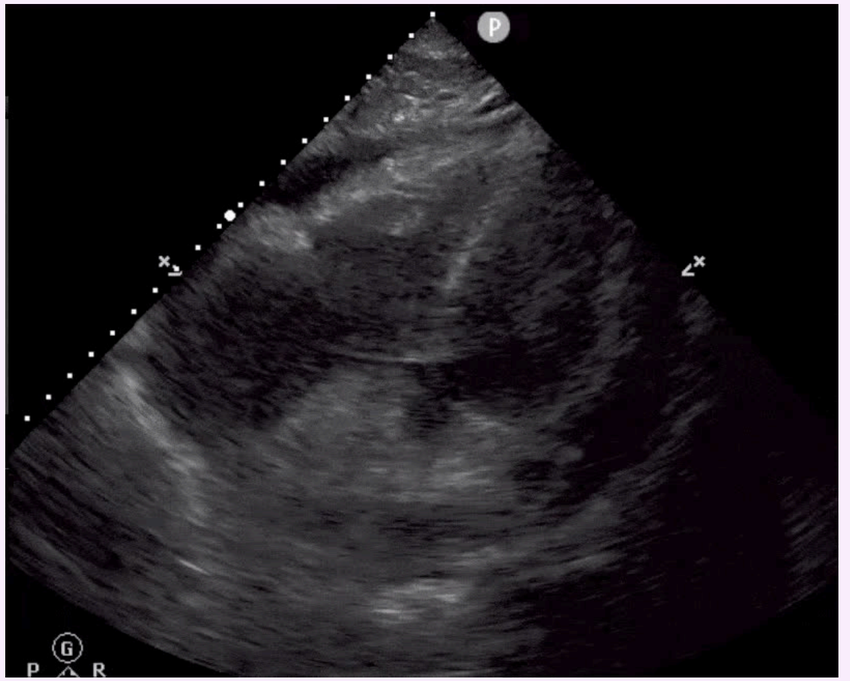




Pathology

Pericardial effusion





D-Sign

- Bowing of IV septum into LV in PSSX



ote. Adapted from https://www.pocus101.com/cardiac-ultrasound-echocardiography-made-easy-step-by-step-guide/

Cardiac POCUS Reference Sheet

Abbreviations:
LLD = Left Lateral Decubitus
Pt = Patient
LV = Left Ventricle
RV = Right Ventricle
LA = Left Atrium
RA = Right Atrium
PSLA = Parasternal Long Axis
PSSX = Parasternal Short Axis
A4C = Apical 4 Chamber
SX = Subxiphoid
IVC = Inferior Vena Cava
IV + Intraventricular
MV = Mitral Valve

Questions you can answer with POCUS

1. **Effusion:** Presence of pericardial effusion / tamponade?
2. **Ejection:** LV ejection fraction - Normal, hyperdynamic, or reduced
3. **Equality:** What is the equality of the size of the chambers / is there evidence of RV strain?
4. **Entrance:** IVC diameter (normal collapsibility, plethoric, or collapsible)
5. **Exit:** Aortic outflow diameter (normal vs dilated)

Patient Positioning & Probe

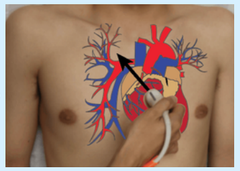
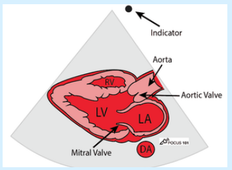
- Supine, HOB 30°
- Difficult views
  - LLD to bring heart closer to chest wall
  - Deep breath & hold
- Phased array (cardiac) Probe

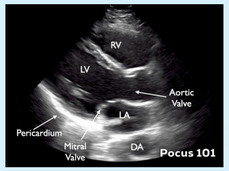
Clips to Obtain

Questions to ask with each view

PSLA

Indicator to pt's right shoulder

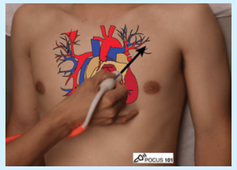
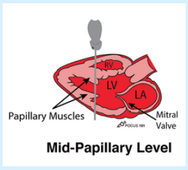



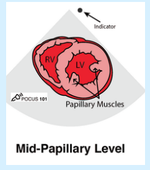


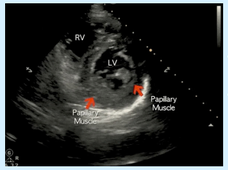
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  - Normal: MV makes contact w/ IV septum
  - Reduced: ↓ change in thickness of endocardium / movement of MV
  - Hyperdynamic = LV walls "kissing"
- Is there **pericardial effusion**?
- Are teh RV, aoritc outflow tract, & LA in a **1:1:1 ratio** or are any dilated?

PSSX

Indicator to pt's left shoulder

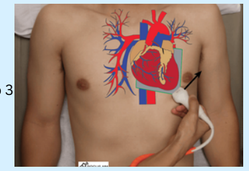
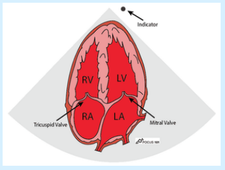


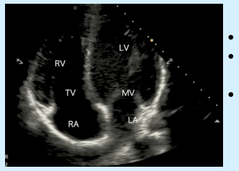


- Is there **right heart strain** (D-Sign)?
- Is there a **focal wall motion defect**?

A4C

Indicator to 3 O'Clock Position

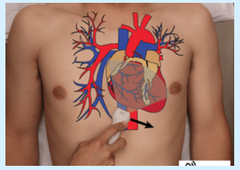
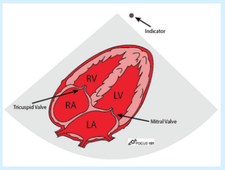



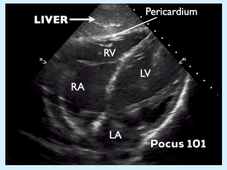


- Are any of the 4 **chambers dilated**?
- Is there **RV strain** (bowing of IV septum into LV)?
- Is there McConnell's sign (stunned RV with apical sparing 2/2 it being pulled by LV, can be seen in PE with RV strain)?

SX

Indicator towards 3 O'Clock postion

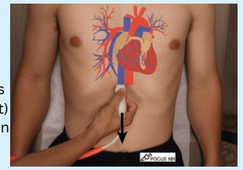
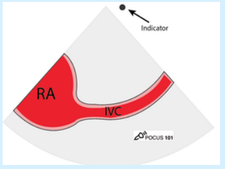



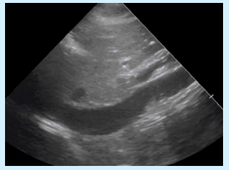


- Is there **pericardial effusion**?
- Is there evidence of **cardiac tamponade**?
  - RA systolic collapse → RV diastolic collapse → IVC dilation

IVC

Indicator towards pt's head (or feet) depending on institution

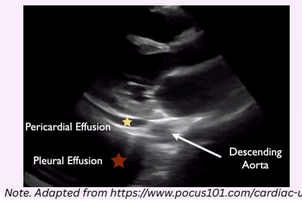



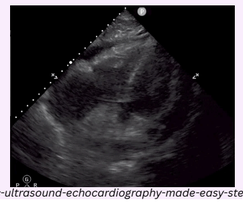


- As you rotate the probe 90°, watch the IVC dump into the RA & the hepatic artery dump into the IVC
- Measure IVC 2 cm back from RA
- How **collapsible** is the IVC when the pt does a quick sniff/inhale?

Pathology

Pericardial effusion






D-Sign

- Bowing of IV septum into LV in PSSX

Note on IVC Diameter & Collapsibility

- Used to aid in determining **fluid status** and whether a patient can **tolerate IV fluids**
- **Measure** diameter & collapsibility **2 cm from right atrium**
- If **hypotensive**...
  - **>50% collapsible** → can **tolerate IV fluids**
  - **<50% collapsible (plethoric / plump)** → **avoid** giving **IV fluids** (consider cardiogenic shock)
- Fluid Status (always consider clinical picture)
  - Very collapsible IVC → may indicate intravascular depletion
  - Normal collapsibility (~50%) → may indicate euvolemia
  - Barely collapsibe IVC → may indicate hypervolemia

Note. Adapted from https://www.pocus101.com/cardiac-ultrasound-echocardiography-made-easy-step-by-step-guide/

Lung POCUS Reference Sheet

Questions you can answer with POCUS

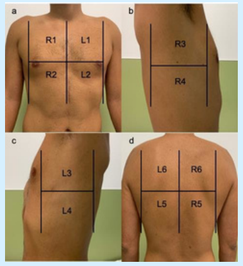
1. Is there lung sliding or lung point
2. Are there A-lines / B-lines
3. Is there pleural effusion?
4. Is there consolidation?

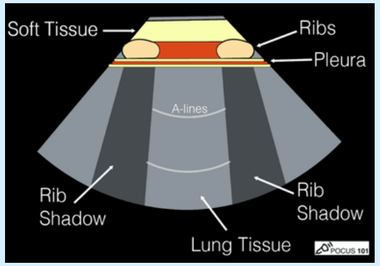
Patient Positioning & Probe

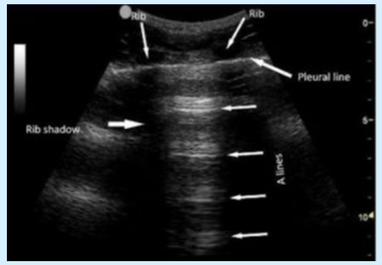
- Supine or upright - depends on the clinical scenario (i.e. trauma, CHF exacerbation)
  - Remember how gravity will affect images
- Linear Probe
- Indicator always towards pt's head

***Abbreviations:**
US = Ultraound
c/f = concern for
PTX = Pneumothorx
PNA - Pneumonia

Lung Scanning Zones

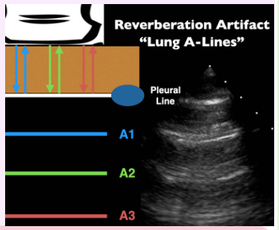






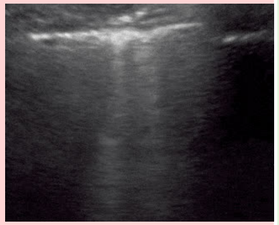
A-lines

- Horizontal lines
- Indicate **A**ir in the lungs
- Artifact from US waves bouncing between probe and pleural line



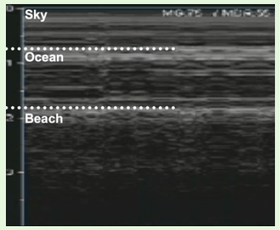
B-Lines

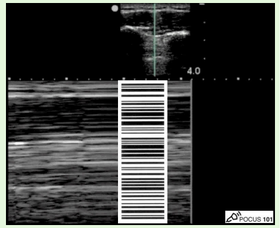
- Verticle lines
- More than 3 B-lines in one zone (**B**ad) → increased density, such as thickening or filling of fluid of the lung tissue
  - One zone - foacl PNA
  - Diffuse B-lines - interstitial syndrome



Assess lung sliding along the pleural line

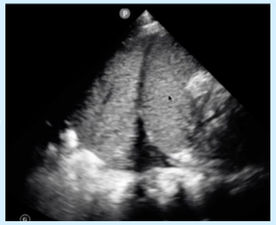
- Twnikling / sliding of pleura = normal
- No lung sliding = c/f PTX in the right clinical context
- Lung point = exact tranition point when pleural loses contact
- M-mode
  - Sandy beach = lung sliding (top)
  - Barcode sign = no lung sliding (bottom)





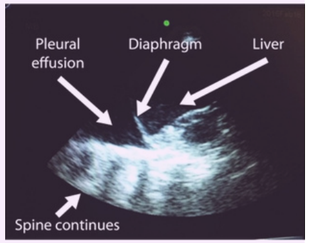
C-Profile

- **C**onsolidation
- Hepatization - Lung looks live liver (bad)



Pleural effusion

- **Positive spine sign** because fluid in thorax transduces US waves down to spine
- When thorax is filled with air, this scatters US waves & they never make it to the spine



Note. Adapted from POCUS 101, EMSono

Lung PO

Questions you can answer with POCUS

1. Is there lung sliding or lung point
2. Are there A-lines / B-lines
3. Is there pleural effusion?
4. Is there consolidation?

Patient Positioning & Probe

- Supine or upright - depends on the clinical scenario (i.e. trauma, CHF exacerbation)
  - Remember how gravity will affect images
- Linear Probe
- Indicator always towards pt’s head





Questions you can answer with POCUS

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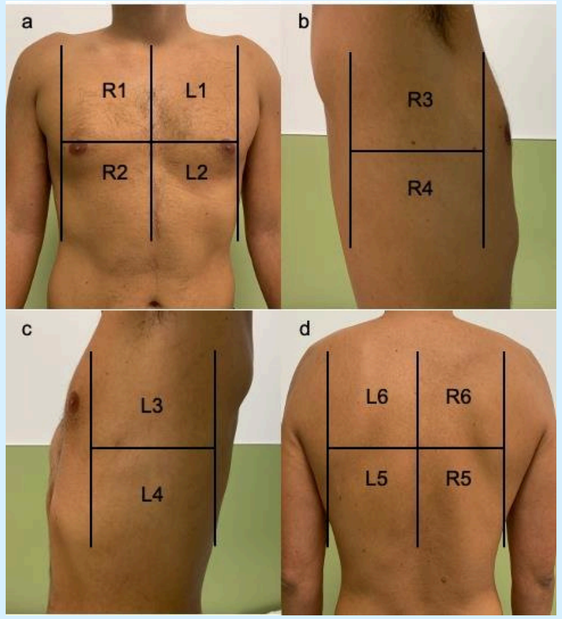
Patient Positioning & Probe

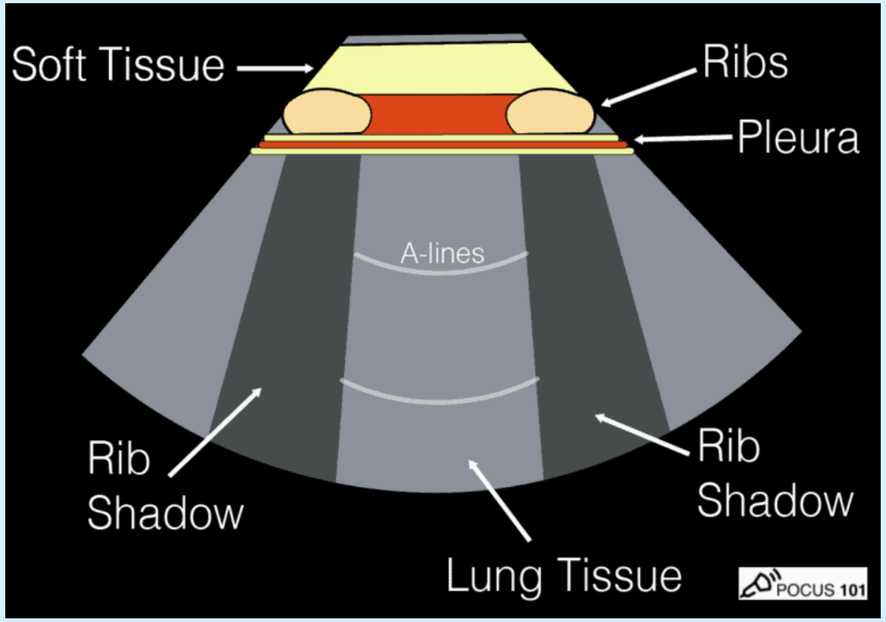
- Supine or upright - depends on the clinical scenario (i.e. trauma, CHF exacerbation)
  - Remember how gravity will affect images
- Linear Probe
- Indicator always towards pt's head

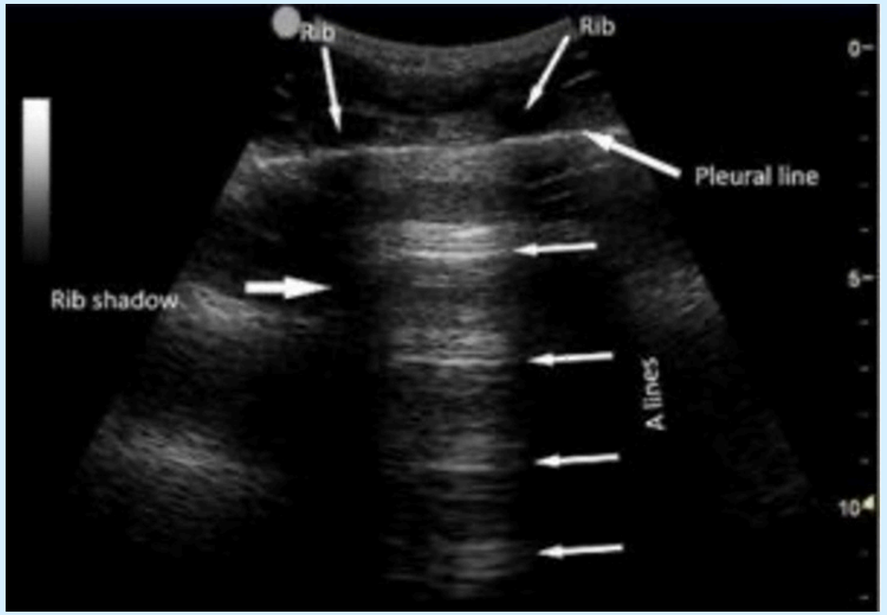
***Abbreviations:**

US = Ultraound
c/f = concern for
PTX = Pneumothorx
PNA - Pneumonia

Lung Scanning Zones







A-lines

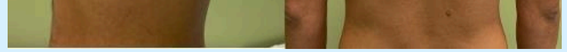
- Horizontal lines
- Indicate **A**ir in the lungs

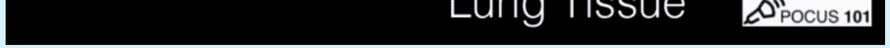


Assess lung sliding along the pleural line

- Twnikling / sliding of



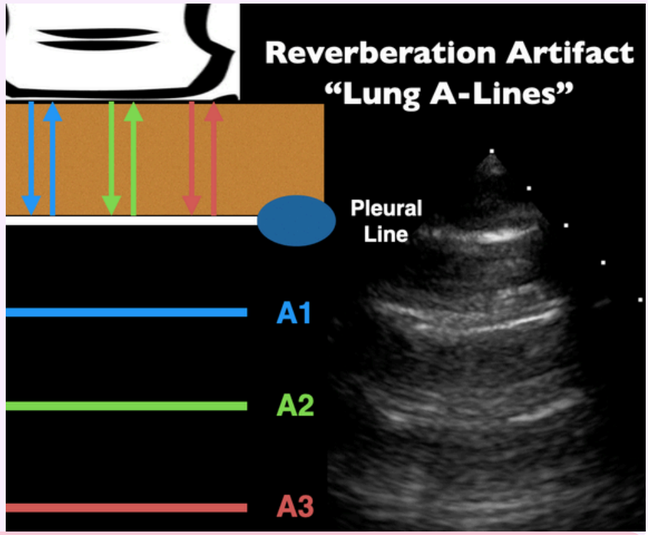






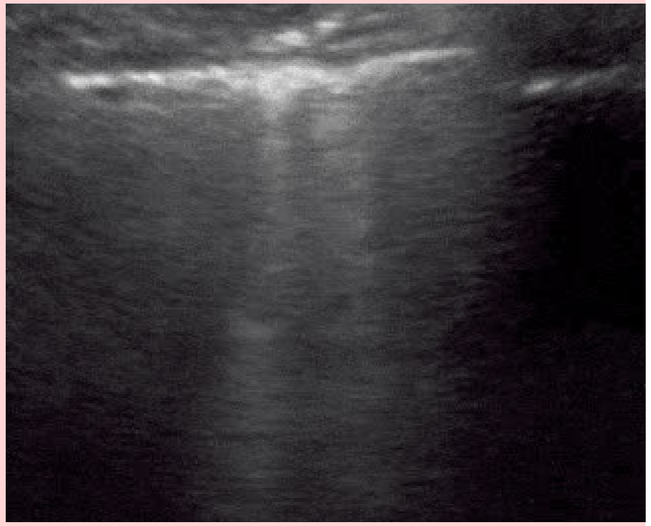
A-lines

- Horizontal lines
- Indicate **A**ir in the lungs
- Artifact from US waves bouncing between probe and pleural line



B-Lines

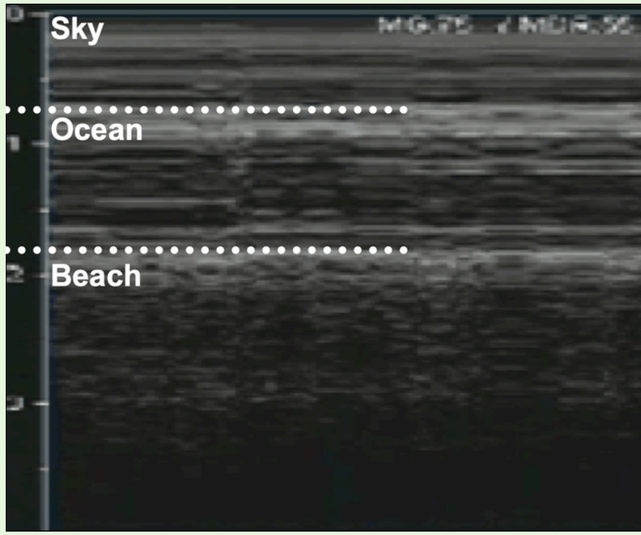
- Verticle lines
- More than 3 B-lines in one zone (**B**ad) → increased density, such as thickening or filling of fluid of the lung tissue
  - One zone - foacl PNA

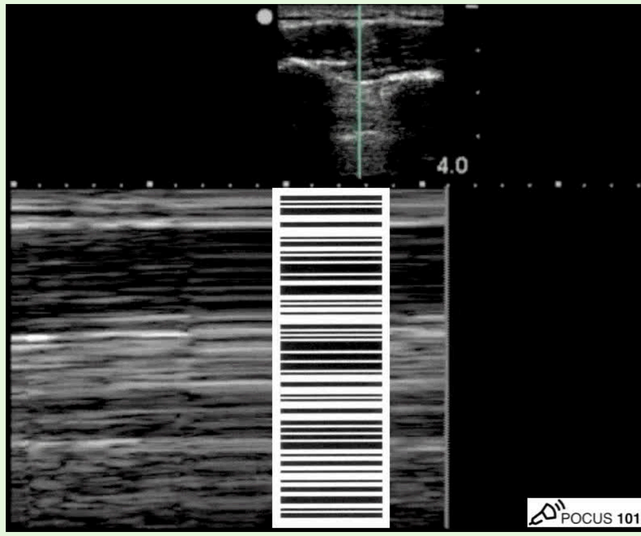


- Diffuse B-lines - interstitial syndrome

Assess lung sliding along the pleural line

- Twnikling / sliding of pleura = normal
- No lung sliding = c/f PTX in the right clinical context
- Lung point = exact tranition point when pleural loses contact
- M-mode
  - Sandy beach = lung sliding (top)
  - Barcode sign = no lung sliding (bottom)





Pleural effusion



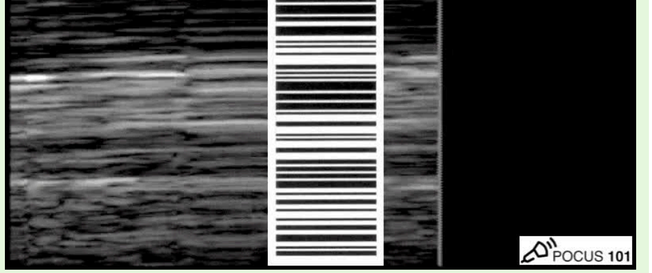
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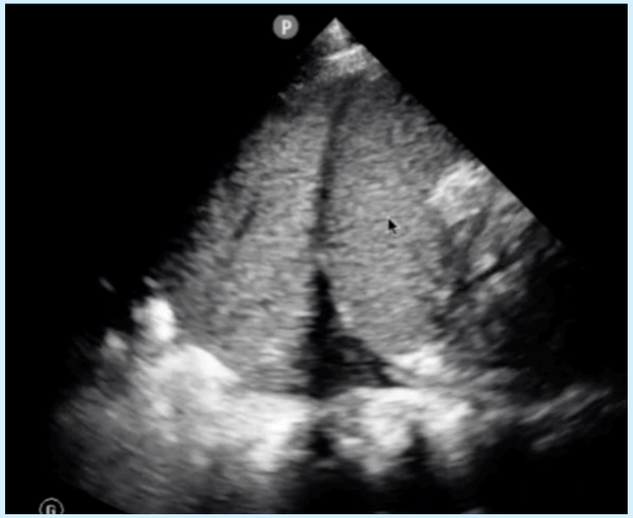
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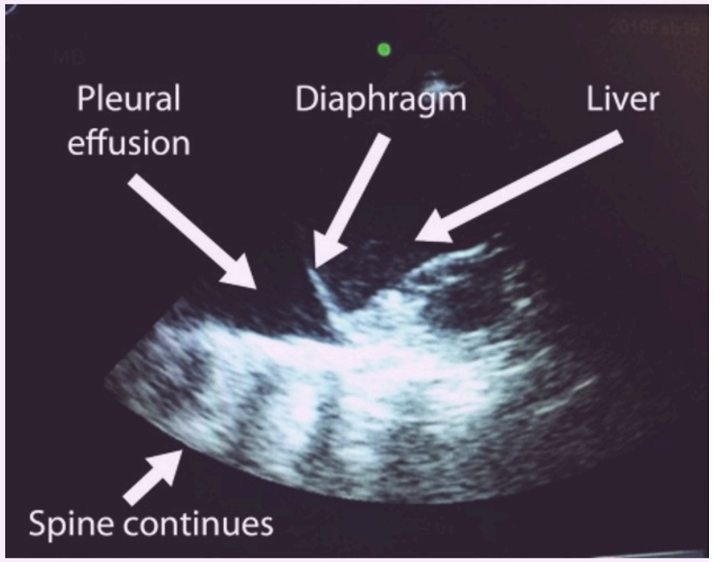
C-Profile

- **C**onsolidation
- Hepatization - Lung looks live liver (bad)



Pleural effusion

- **Positive spine sign** because fluid in thorax transduces US waves down to spine
- When thorax is filled with air, this scatters US waves & they never make it to the spine



Note. Adapted from POCUS 101, EMSono

Lung POCUS Reference Sheet

Questions you can answer with POCUS

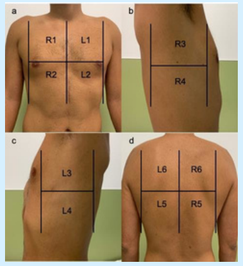
1. Is there lung sliding or lung point
2. Are there A-lines / B-lines
3. Is there pleural effusion?
4. Is there consolidation?

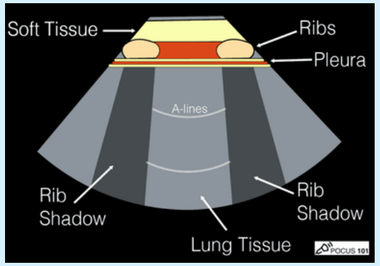
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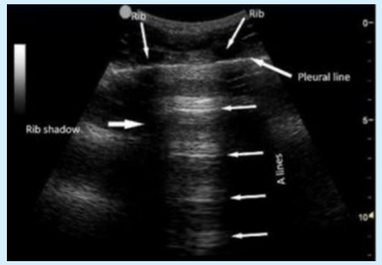
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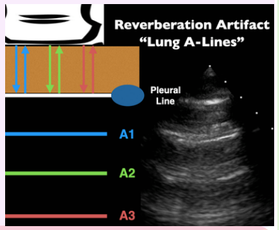






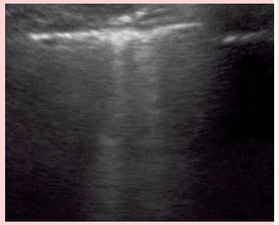
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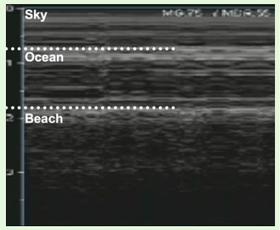
B-Lines

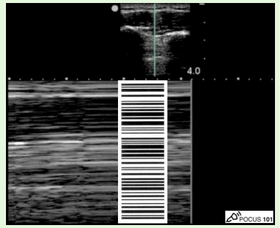
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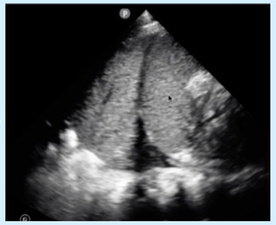
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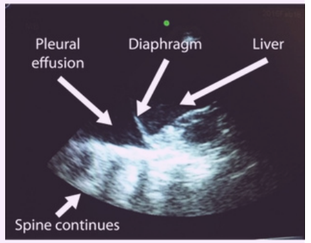
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The END

Now let’s get to more scanning fun!



References

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