

Learning Objectives

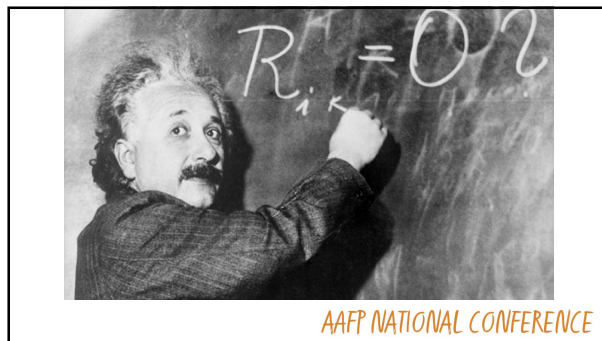
- Define point-of-care ultrasound and describe its uses.
- Learn basic knobology and scanning techniques to optimize image acquisition.
- Apply principles to perform the extended Focused Assessment with Sonography for Trauma (eFAST) Exam.
- Review obtained images for quality assurance.

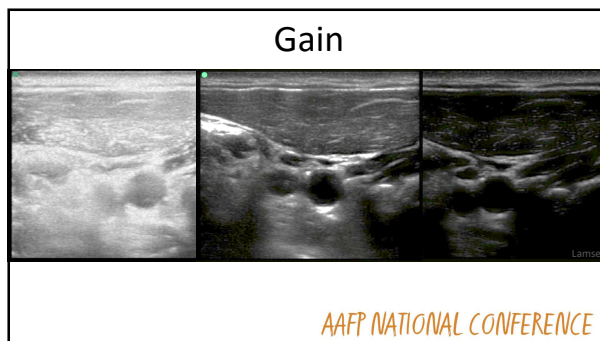
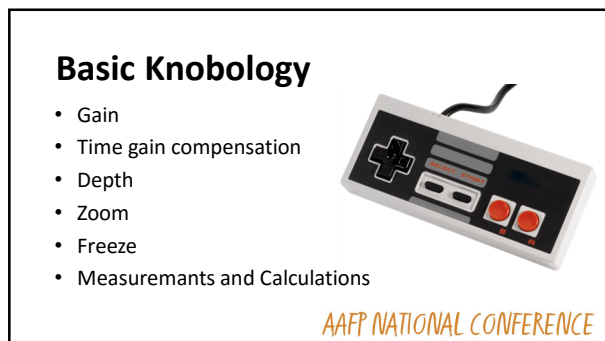
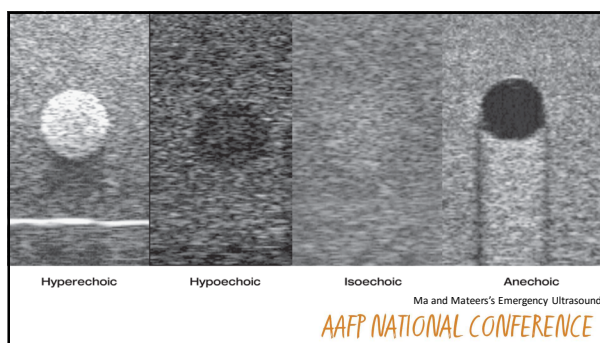
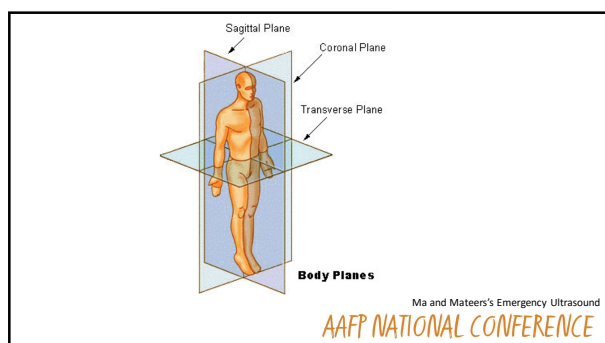
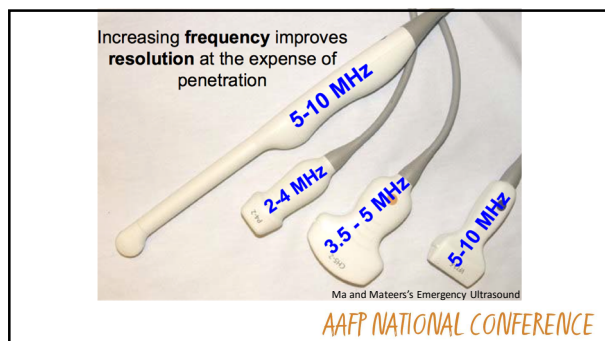
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Point-of-Care Ultrasound

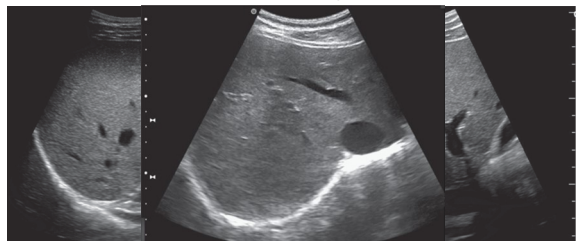
- Clinician performed and interpreted
- Limited exam
- Extension of physical exam
- Helps determine diagnosis and guide clinical practice
- Prioritize patient care
- Patients like it

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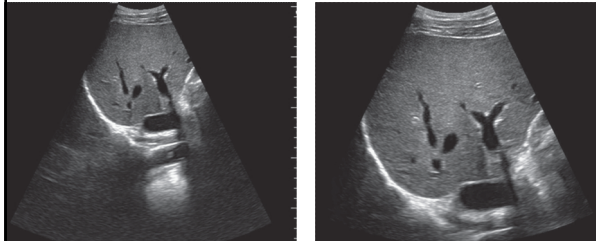
Time Gain Compensation



Ma and Mateer's Emergency Ultrasound

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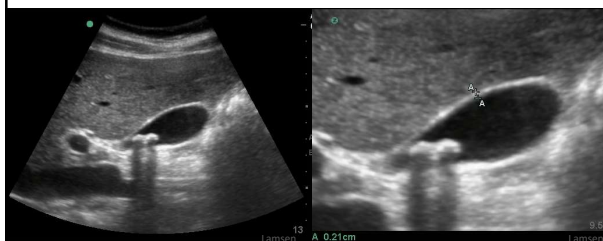
Depth



Ma and Mateer's Emergency Ultrasound

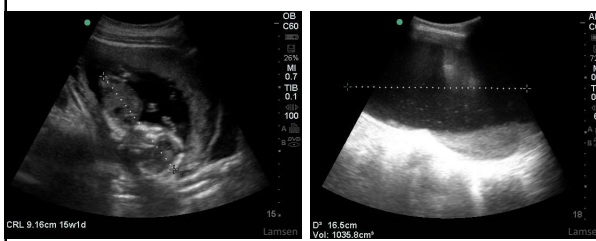
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Zoom



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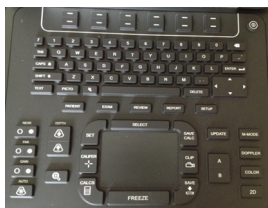
Measurements and Calculations



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Ultrasound Modes

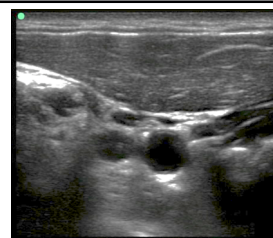
- B-mode
- M-mode
- Color
- Doppler



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Fifty Shades of Grey

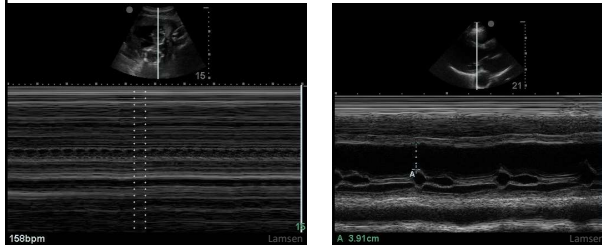
E L James



B-mode

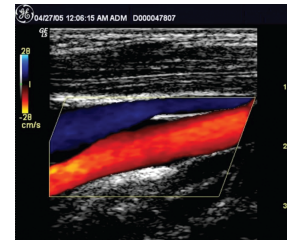
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M-mode



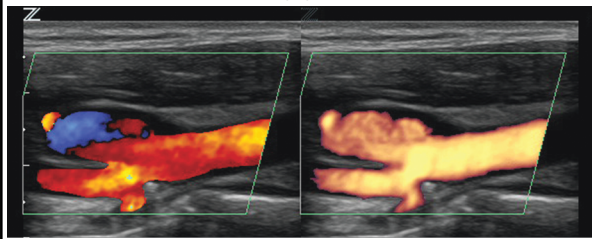
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Color



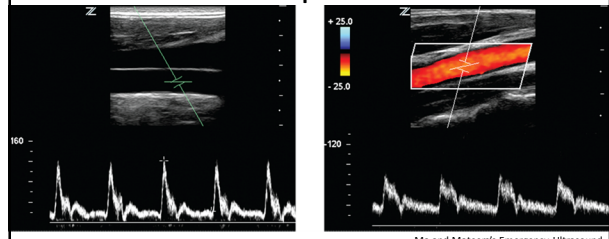
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Doppler



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Duplex



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Artifacts

- Shadowing
- Acoustic enhancement
- Mirror artifact
- Gas
- Ring-down artifact



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Shadowing



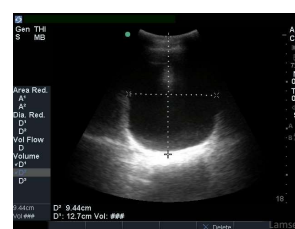
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Posterior acoustic enhancement



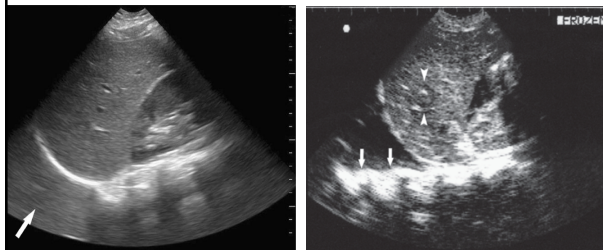
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Posterior acoustic enhancement



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Mirror artifact



Ma and Mateers's Emergency Ultrasound

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Ring-down artifact



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Bowel gas



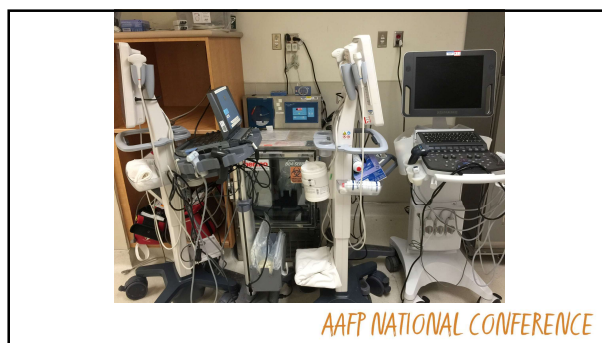
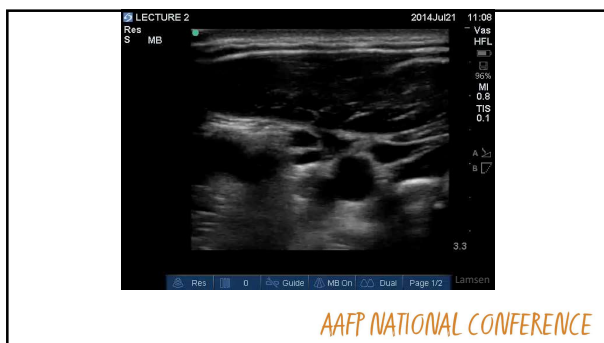
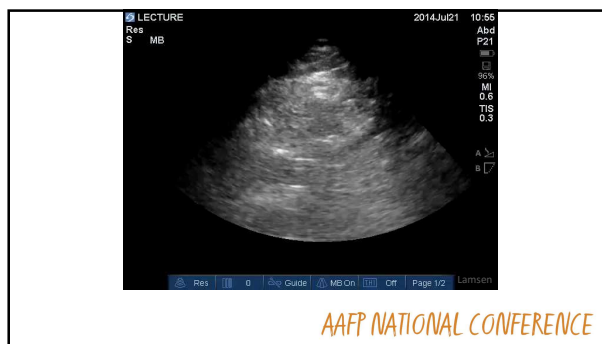
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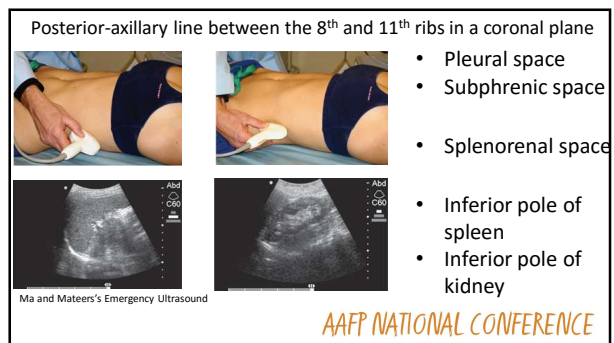
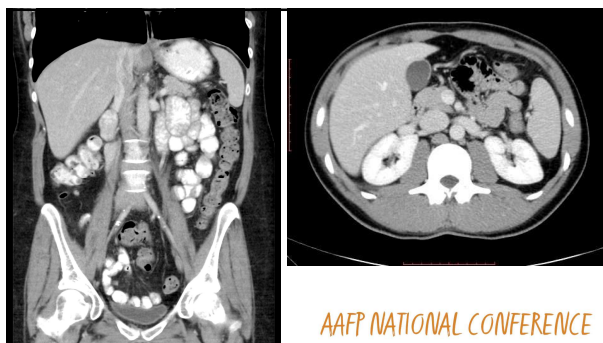
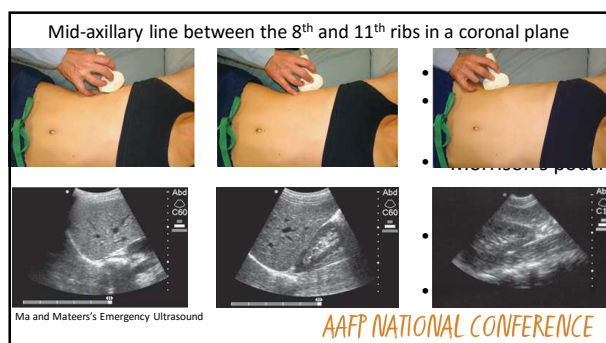
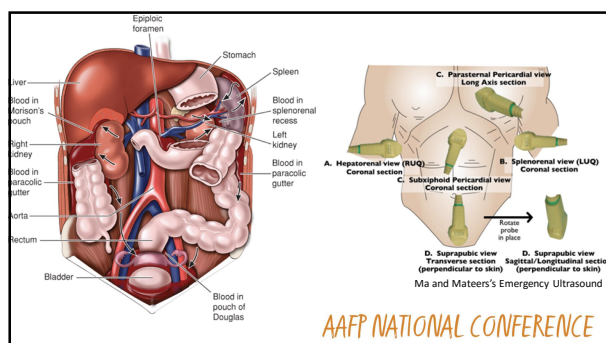
Image Acquisition

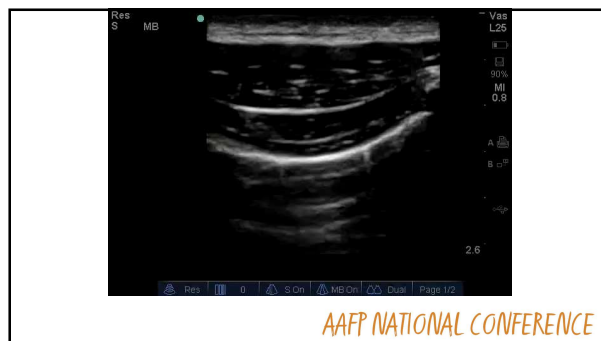
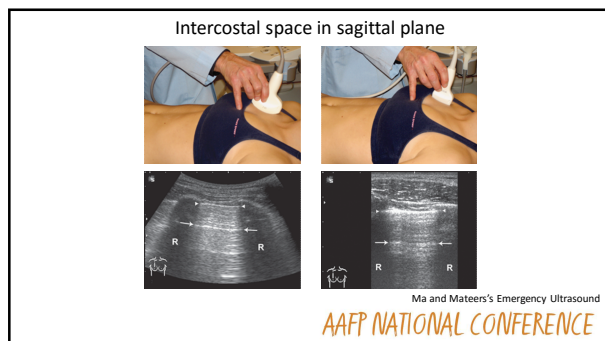
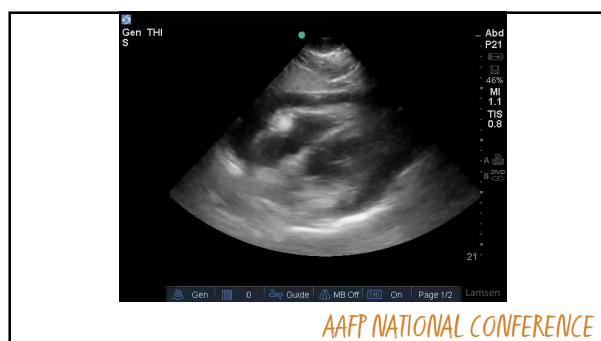
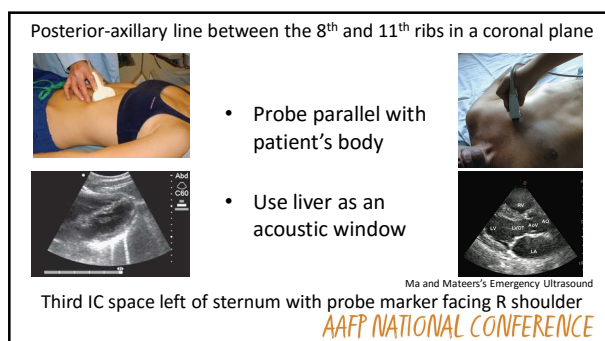
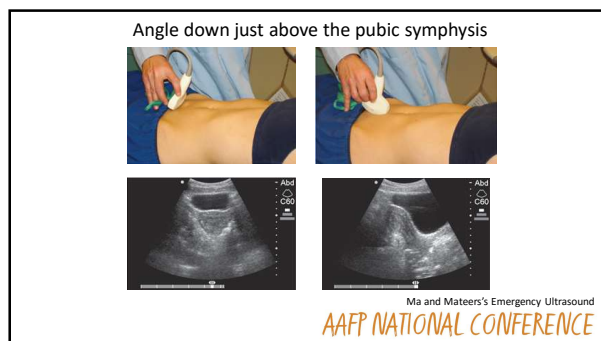
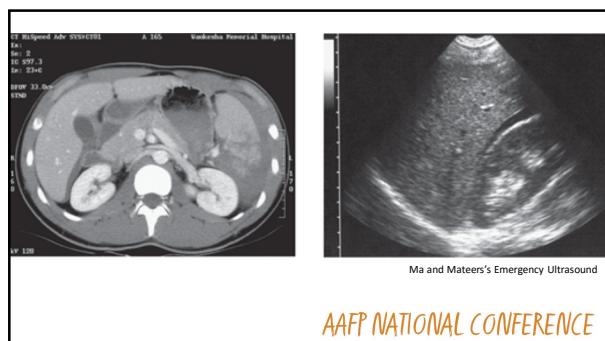
- Gel
- Transducer movements
- Position
- Compression
- Augment



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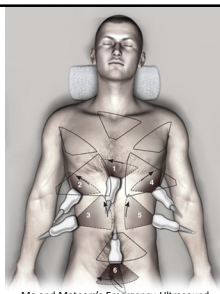




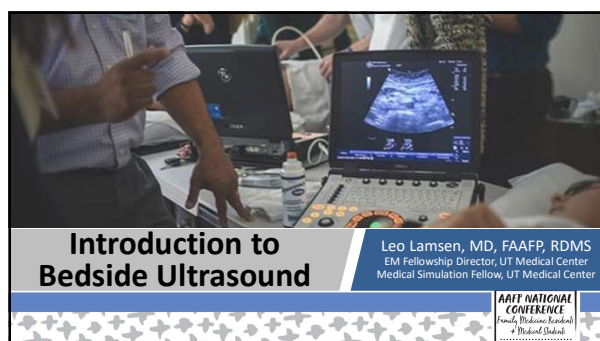


Transducer Positions

1. Subxiphoid
2. Intercostal oblique (right)
3. Hepatorenal
4. Intercostal oblique (left)
5. Splenorenal
6. Pouch of Douglas
7. eFAST views



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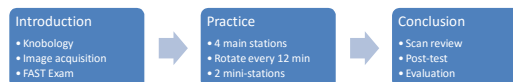


Summary

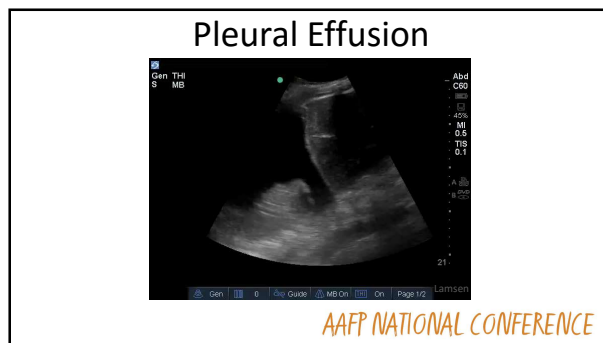
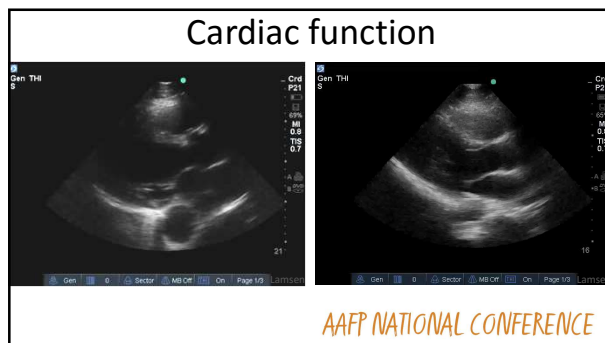
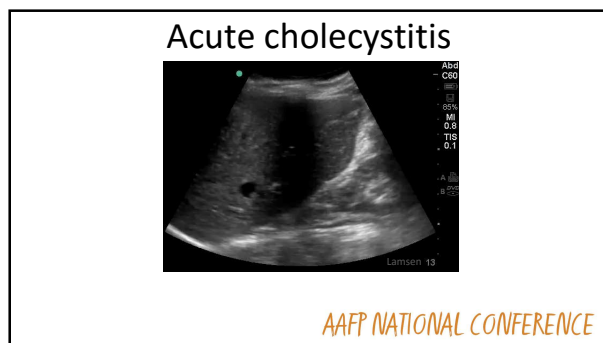
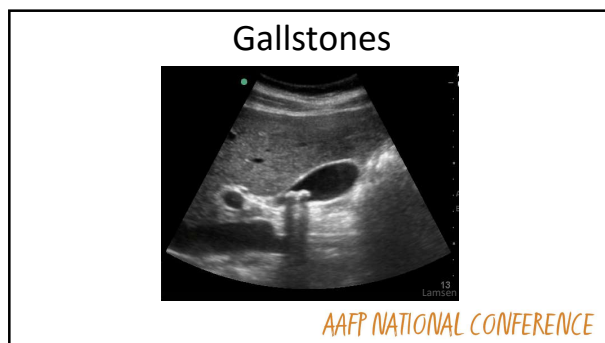
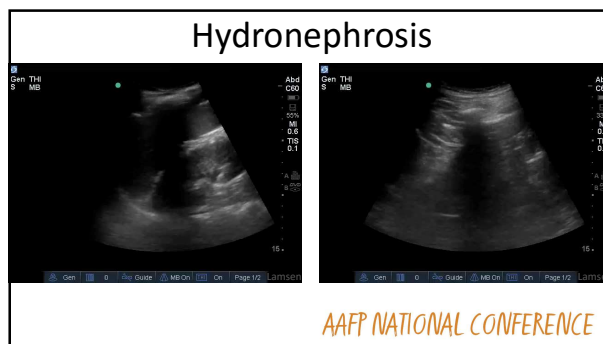
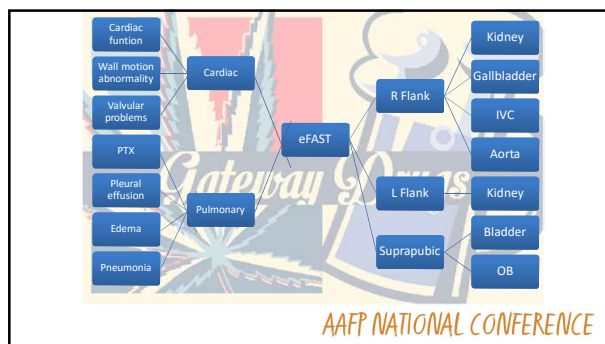
- Probe marker orientation
- Depth and gain are most commonly adjusted
- B-mode is the most commonly used mode
- Don't get fooled by artifacts
- Gel is your friend
- eFAST Exam is used to detect free fluid

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Agenda



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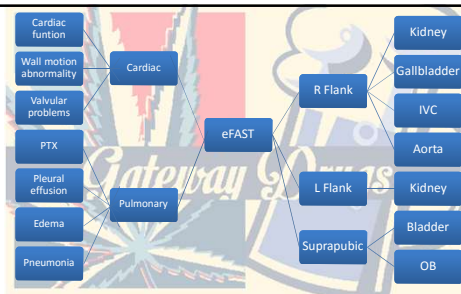
Closed-loop obstruction



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Pregnancy



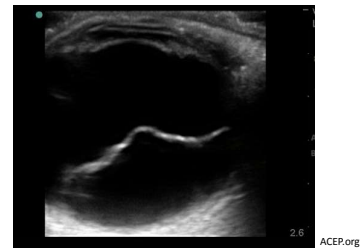
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Humerus fracture



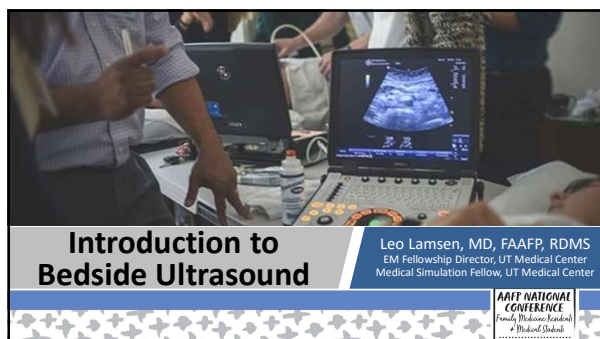
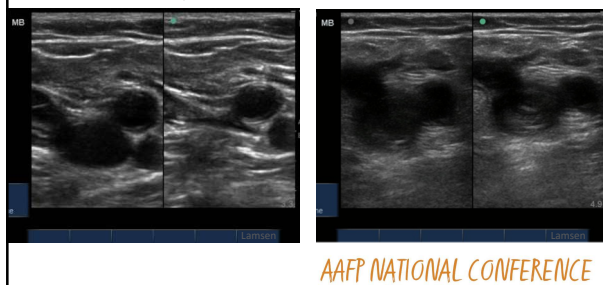
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Retinal detachment



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Deep venous thrombosis



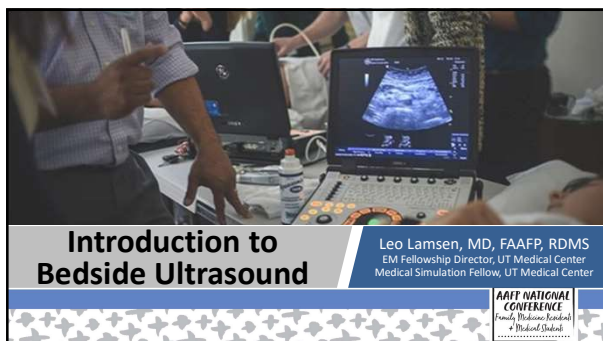
Conclusion

- Ultrasound is the new stethoscope
- The eFAST exam is your gateway ultrasound exam
- Key to learning is knowing where to start
- Practice makes permanent
- Share your skills with others

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Q&A


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Medical Students



References

- Ma OJ, Mateer J, Reardon RF, Joing SA. Ma and Mateer's Emergency Ultrasound, Third Edition. (2013)
- Edelman SK. Understanding Ultrasound Physics, Fourth Edition. (2012)
- American College of Emergency Physicians Policy Statement: Emergency Ultrasound Guidelines. (2008)

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Introduction to Bedside Ultrasound

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