



Point of Care Ultrasound in Clinic-Based Family Medicine

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PGY-3 ACADEMIC FAMILY MEDICINE

Faculty/Presenter Disclosure

- Faculty: Craig Olmstead
- Relationships with commercial interests:
 - Grants/Research Support: None
 - Speakers Bureau/Honoraria: None
 - Consulting Fees: None
 - Other: None

Disclosure of Commercial Support

- This program has received no in-kind support.
- Potential for conflict(s) of interest:
 - Not applicable.
- This program has received no commercial financial support.

Mitigating Potential Bias

–Not applicable.

Session Objectives

1. Review the basics of ultrasound and point-of-care ultrasound (POCUS)
2. Introduce basic POCUS techniques of potential clinical value in the non-urgent, ambulatory setting
3. Discuss the reasons for and against considering the adoption of POCUS in clinic-based family medicine at present time

Not Session Objectives

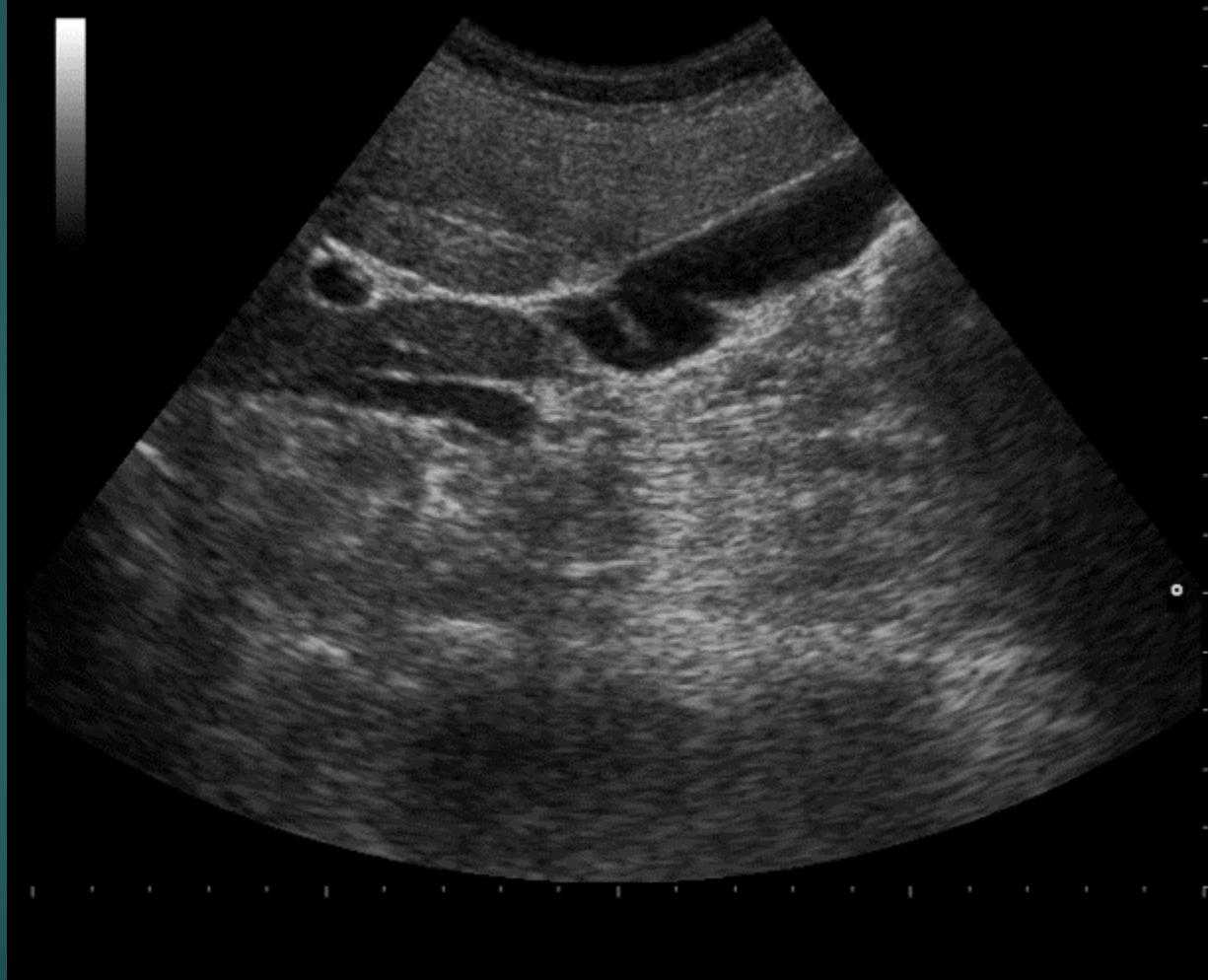
- ▶ This presentation will not be:
 - ▶ Discussing in-depth ultrasound physics
 - ▶ Discussing technical aspects of ultrasounds (probes selection, etc.)
 - ▶ Teaching how to perform or read an ultrasound

Basics of Ultrasound

- ▶ White = lots of echoes from that location (hyperechoic)
- ▶ Black = no echoes from that location (hypoechoic)
- ▶ Grey = some echoes from that location



F 3.5 MHz G 64%
D 15 cm XV 2
PRC 13-3-H PRS 3
PST 5



Advantages of Ultrasound

- ▶ Safety – no ionizing radiation, no magnetic fields
- ▶ Cost – relatively cheap, getting cheaper
- ▶ Portability – handheld devices increasingly available
- ▶ Real-time imaging – can see dynamic processes
- ▶ Flexibility – different scans in different planes can be done without much additional equipment

Disadvantages of Ultrasound

- ▶ Some tissues/substances do not transmit sound
- ▶ Struggles with deeper structures in the body
- ▶ Body habitus impacts image quality
- ▶ Low fidelity anatomic imaging

What is Point of Care Ultrasound?

- ▶ Ultrasound that is:
 - ▶ Done by the managing clinician at the bed(table)side)
 - ▶ Read by the managing clinician
 - ▶ Responded to by the managing clinician

Principles of Point of Care Ultrasound

- ▶ Easy (to learn)
- ▶ Fast (to acquire)
- ▶ Simple (question to answer)
- ▶ Actionable

Reasons to Scan a Patient Using POCUS

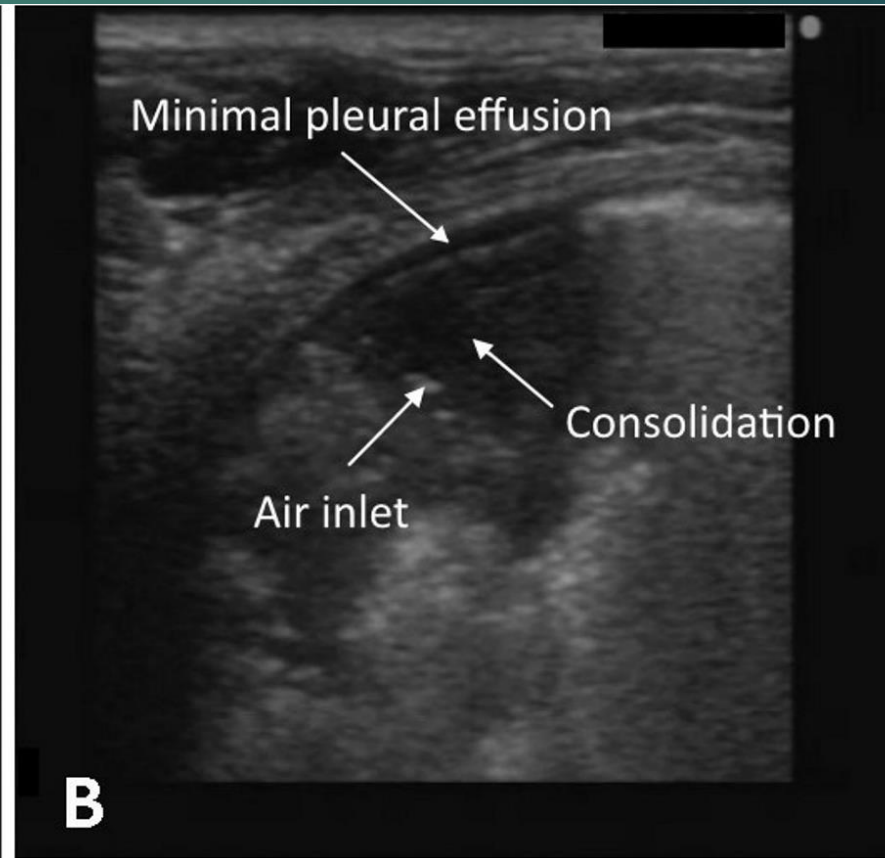
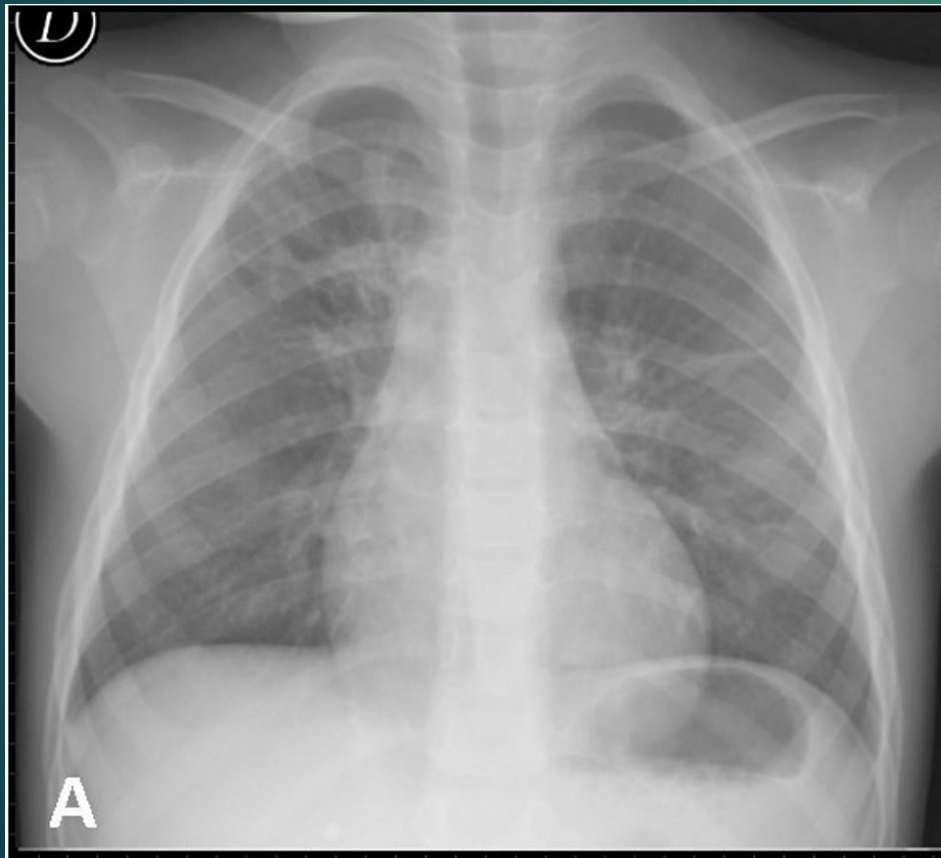
- ▶Diagnostics
- ▶Screening
- ▶Procedures
- ▶Teaching*

Diagnostics



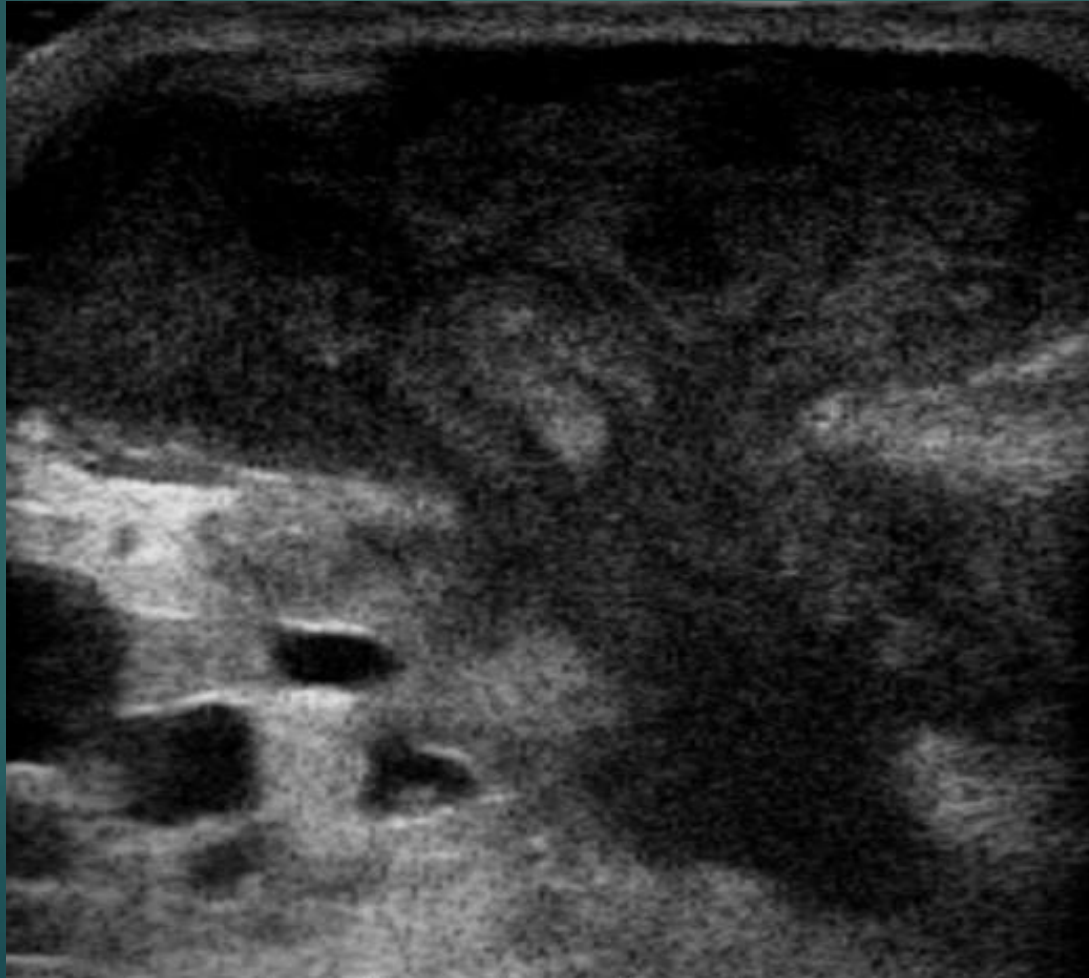
Lung Ultrasound for Pneumonia

- ▶ Simple Question – Is there a bacterial pneumonia?



Cutaneous Lesion Evaluation

- ▶ Simple Question – Is there an abscess or cyst?

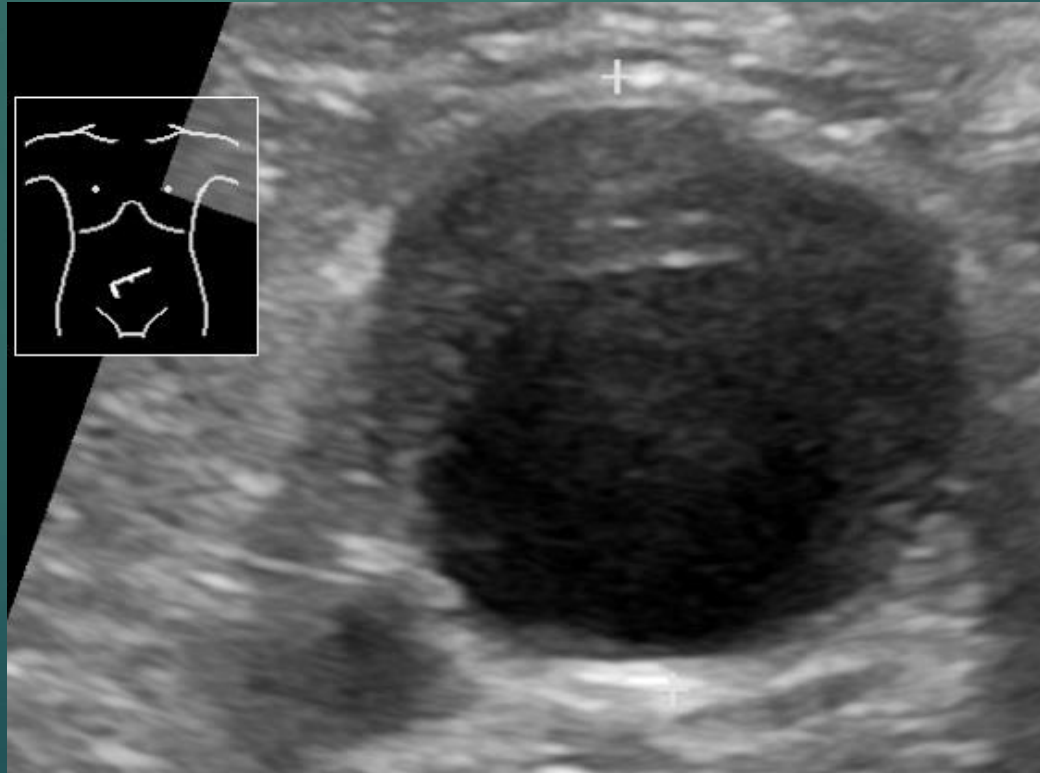


Screening



Abdominal Aortic Aneurysm Screening

- ▶ Simple Question – What is the maximal diameter of their abdominal aorta?



Procedures



Shoulder Injection

- ▶ Simple Question – Where is my needle?
- ▶ https://upload.wikimedia.org/wikipedia/commons/9/95/Ultrasound_guided_injection_of_local_anaesthetic_into_the_subacromial_bursa_-_1471-2474-12-119-S3.ogv

Palliative Paracentesis

- ▶ Simple Question – Where is a large pocket of fluid away from other structures? (Also, where is my needle?)



Principles of Point of Care Ultrasound (Again)

- ▶ Easy (to learn)
- ▶ Fast (to acquire)
- ▶ Simple (question to answer)
- ▶ Actionable

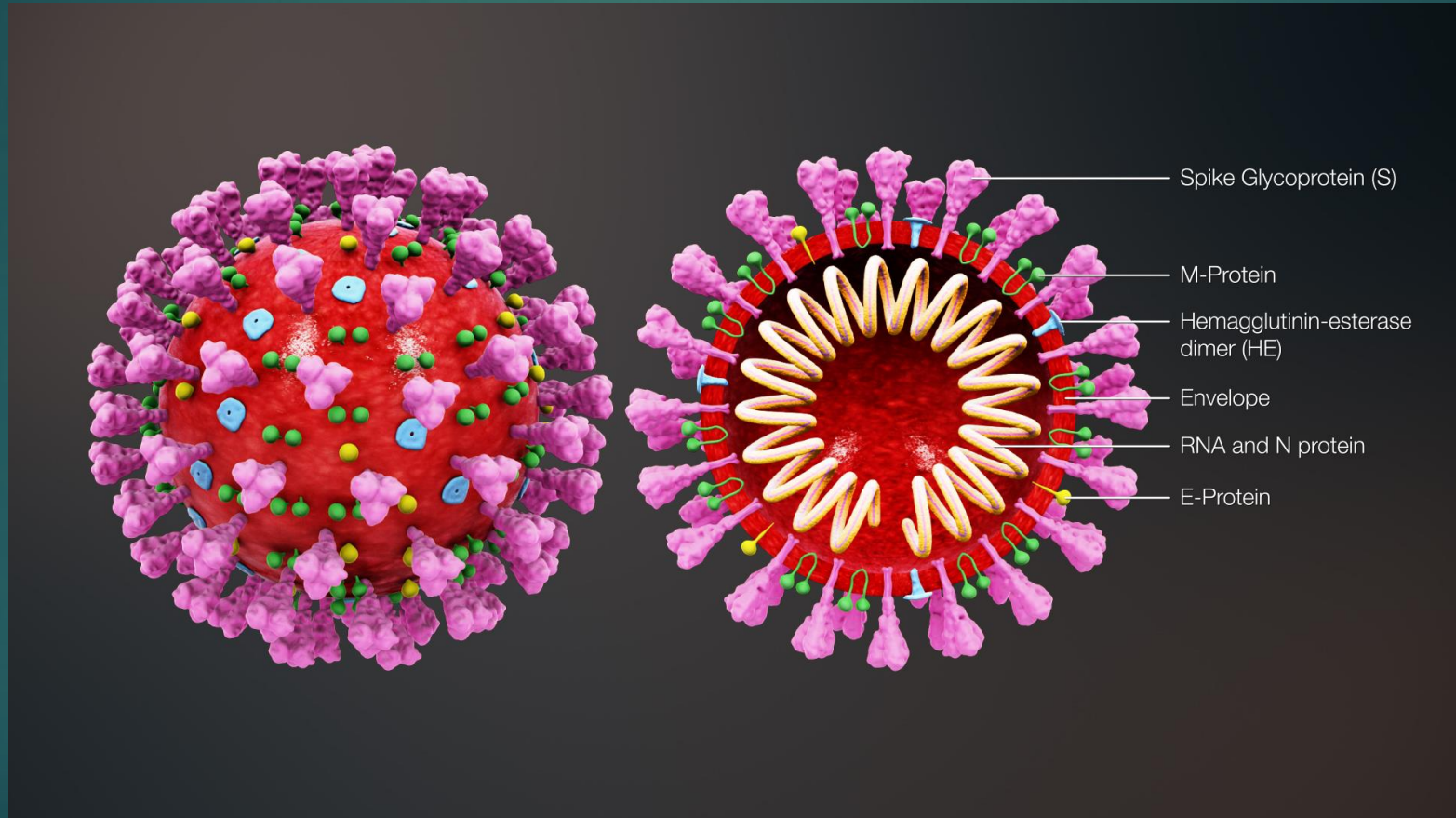
Reasons to Introduce POCUS to Family Medicine

- ▶ Patient care → convenience, compliance, continuity, connection
- ▶ Reduce referrals, ER visits, and alternate diagnostic imaging → reduced system-level costs
- ▶ Anatomy teaching tool
- ▶ Applicability to skills outside of the clinic setting (ER, inpatient, OB)
- ▶ Possibility for expansion of utility → ultrasound is a flexible modality!

Reasons Not to Go Buy an Ultrasound Machine(Yet)

- ▶ Cost (machine, software, supplies)
- ▶ Time (training, scanning time)
- ▶ Lack of supporting research specific to family medicine

New Considerations in the COVID-19 Pandemic



*Ultrasound for COVID-19

- ▶ Not-So-Simple Question – Are there findings consistent with COVID-19 viral pneumonia?

References

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Image Sources

- ▶ Slide #4: https://en.wikipedia.org/wiki/Medical_ultrasound#/media/File:Ultrasound_of_human_heart_apical_4-cahmbcr_view.gif
- ▶ Slide #5: https://commons.wikimedia.org/wiki/Category:Medical_ultrasound#/media/File:Ultrasound_Scan_ND_0125102815_1030210.png – cropped to remove name
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