POINT OF CARE ULTRASOUND:
FOR ALL CLINICIANS
Why ultrasound?

- Portable
- Safe
- Repeatable
- Digital
- Decision support
- Battery operated
- Cost-effective
- Multi-use
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<th>Specialty</th>
<th>Ultrasound Applications</th>
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<tr>
<td>Anesthesia</td>
<td>Guidance for vascular access, regional anesthesia, intraoperative monitoring of fluid status and cardiac function</td>
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<tr>
<td>Cardiology</td>
<td>Echocardiography, intracardiac assessment</td>
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<td>Critical care medicine</td>
<td>Procedural guidance, pulmonary assessment, focused echocardiography</td>
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<td>Dermatology</td>
<td>Assessment of skin lesions and tumors</td>
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<td>Emergency medicine</td>
<td>FAST, focused emergency assessment, procedural guidance</td>
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<td>Endocrinology and endocrine surgery</td>
<td>Assessment of thyroid and parathyroid, procedural guidance</td>
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<td>General surgery</td>
<td>Ultrasonography of the breast, procedural guidance, intraoperative assessment</td>
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<td>Gynecology</td>
<td>Assessment of cervix, uterus, and adnexa; procedural guidance</td>
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<td>Obstetrics and maternal–fetal medicine</td>
<td>Assessment of pregnancy, detection of fetal abnormalities, procedural guidance</td>
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<td>Nephrology</td>
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<td>Pediatrics</td>
<td>Assessment of bladder, procedural guidance</td>
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<td>Pulmonary medicine</td>
<td>Transthoracic pulmonary assessment, endobronchial assessment, procedural guidance</td>
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<td>Radiology and interventional radiology</td>
<td>Ultrasonography taken to the patient with interpretation at the bedside, procedural guidance</td>
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<td>Rheumatology</td>
<td>Monitoring of synovitis, procedural guidance</td>
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<td>Trauma surgery</td>
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<td>Urology</td>
<td>Renal, bladder, and prostate assessment; procedural guidance</td>
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<td>Vascular surgery</td>
<td>Carotid, arterial, and venous assessment; procedural assessment</td>
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* FAST denotes focused assessment with sonography for trauma.
Why wait for specialization?

Why not in medical school??
With one machine

- Hypotension, fluid status
- Liver and spleen
- Pneumothorax
- Thoracentesis
- B-lines – pulmonary fluid
- FAST
- Foreign body ID
- AAA
- Central Line placement
- Pregnancy
- Ecocardiography
- Abscess drainage
- DVT
- Peripheral IV placement
- Gallstones
- Paracentesis
- IVC- volume assessment
Usefulness score

- Push clinician toward the right diagnosis
- Push clinician toward the wrong diagnosis
Objectives

- Clinical scenarios – making the case
- Literature support – but is it safe?
- Seeing the larger picture -
  - universal training and quality assurance issues
80 yo with dyspnea

- HR 110  O2 sat 88% 99F
- Pursed lips
- Scattered wheezes
- Decreased air movement
- Distended tender abdominal
- Asymmetric leg swelling
What does the clinician need to know?

- Differential:
  - CHF
  - COPD exacerbation
  - PTX
  - PE
  - Hemorrhage/hypovolemia
  - Pleural effusions
  - Pneumonia
  - Anxiety

- Additional:
  - BNP
  - Ddimer
  - CXR
  - CT
  - LENI
  - EKG
  - Albuterol
  - Lasix
  - Steroids
  - Heparin
What are the pressures on the clinician?

- Time
- Disposition
- Cost
- Outcomes
- Accuracy
- Patient satisfaction
- Quality Measures
What does the clinician need to know?

- CHF vs COPD – A-lines vs B-lines
What does the clinician need to know?

- PTX – lung sliding yes or no
What does the clinician need to know?

- Hemorrhage?
How can point of care ultrasound help?

- PE – R heart size, DVT
How can point of care ultrasound help?

- Bring the physician back to the bedside
- Education
- Visual teaching tool
How can point of care ultrasound help?

- **EXPEDITE CARE - Know the studies**
  - First trimester – decreased LOS, Burgher et al. 1998
  - Biliary colic – decreased return visits, Durston et al. 2001
  - DVT – decreased LOS, Blaivas et al. 2000
  - Trauma – decreased LOS, decreased CT, Melniker et al. 2003
  - Cardiac trauma/AAA – time to OR, Plummer et al. 1992
BUT IS IT SAFE???
Accuracy

- FOCUSED QUESTIONS
  - **Know the studies**
    - First trimester – Stein et al. 2010 Acad Emerg Med
    - AAA – Tayal et al. 2003 Acad Emerg Med
    - DVT - Blaivas et al. 2000 Acad Emerg Med
    - Cardiac function – Moore et al. 2002 Acad Emerg Med
    - Pericardial effusions – Alexander et al. 2004 Am Heart J
Not to minimize competency...

- Develop training program
- Documentation
- Reporting – visible and transparent
- Quality assurance program
- Use on line resources

- In the beginning you have to be perfect
MANDATORY FIRST STEP

CHAMPION OF THE CAUSE
Know the resources

- www.sonoguide.com
- http://hqmeded.com
- http://pointofcare.blogspot.com/
- http://www.sonoworld.com
- http://www.ultrasoundvillage.com
- Emedicine procedures
Thank you

QUESTIONS?