Internal Medicine Ultrasound Curriculum Outline

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Before Curriculum Implementation

• Bolus Training
• No Image QA outside of the ED
• No formal requirements
• Competency not assessed
• Ultrasound use on wards (outside of procedures) sporadic/undocumented
1. INTRODUCTION TO ULTRASOUND
Applications, Strengths/Limitations, General Principles, Modes, Probes and Artifacts, Key “Home Screens”, and Scanning Tips

2. LUNG
Pleural Effusion (PLEF)
Pneumothorax (PTX)
“Interstitial Syndrome”/”B-Lines”

3. HEART
Cardiac Motion (vs Standstill)
Pericardial Effusion and Size
Systolic Fxn/Gross Assessment of Contractility
Chamber Size/Proportions/LVH
Basic Valvular Disease (MR/AI/AS)

4. IVC
CVP Estimate/Intravascular Volume Assessment
IVC Size, Respiratory Variation

5. KIDNEY/BLADDER
Hydronephrosis
Renal Size/Echogenicity
Bladder Volume/Post-void Residual
Ascites (pelvic)

6. VASCULAR
Proximal Lower Extremity DVT
Core/Basic Curriculum

7. LIVER/GALLBLADDER/SPLEEN
Liver Size/Hepatomegaly
GB tenderness/Gallstones
Spleen size/Splenomegaly
Ascites (RUQ/LUQ)

8. AORTA/PERIPHERAL ARTERIES
AAA
Peripheral pulse identification
Doppler review

9. MSK/NERVES/SOFT TISSUE
Abscess vs Cellulitis
Foreign Body Localization
Rib Fracture/Long Bone Fracture
Joint Effusions (Knees, Elbows)
Edema vs Adipose

10. PROTOCOLS FOR SICK PATIENTS
FAST exam, RUSH protocol, POCUS in Codes

11. INTEGRATED HEART/LUNG/IVC
CLUE Protocol, FATE Protocol

12. GUIDED PROCEDURES
CVL
Thoracentesis
Paracentesis
Knee arthrocentesis
PIV
Core/Basic Curriculum: Expected Milestones by Year

• **End of PGY1**
  • “Homescreen” acquisition + basic interpretation
    • PLAX
    • Lung -2nd ICS
    • IVC/Aorta- transverse/long
  • RUQ (PLEF/Ascites)
  • IJ/carotid or femoral vein

• **End of PGY2**
  • 2/4 cardiac views
  • Renal-Hydronephrosis
  • AAA
  • Joint Effusion
  • Procedures (CVL, Thora, Para)

• **End of PGY3**
  • 4/4 cardiac views + valves
  • DVT
  • Gallstones
  • 8-zone Lung Protocol
  • RUSH protocol/Codes

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Ultrasound Equipment

• Wards
  • *Pocket-sized* Ultrasounds (for each Ward Team)
  • Laptop-sized Ultrasound for Procedures/Detailed Exams

• Outpatient Clinic
  • Laptop-sized Ultrasound

• MICU/SSU/CCU/ED
  • Cart-Based Ultrasounds
Resident Ultrasound Didactic Training (>30 hours)

- **Noon Conference** Didactics (45 min, 1/block)
  - Covers core curriculum
    - May move towards online lectures
- **Morning Report** (5-10 min, 2-4x/block)
  - Multiple Small Feedings
    - Interesting cases
    - Optional topics
    - Repetition of core content
- Supplemental “FOAMed” and “Just-in-time” Resources

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Hands-on Training

• Popular POCUS elective (2-4 weeks)
  • Weekly Bedside “Gel” Rounds

• Standardized Patients and Simulator Practice
  • 2 hours, 3x/year during ambulatory block
  • Milestones (by PGY level) assessed by OSCE each year

• Procedure Phantom Lab
  • 3 hours, 1x/year
http://goo.gl/forms/
Imaging Requirements

• All scans *should be* SAVED and LOGGED

• Need 25 scans in an application to be *eligible* for sign-off.
  • Once >150 total ultrasound scans logged/signed off, can request an assessment for any application when ready (even if <25 scans).

• Sign-off includes adequate:
  • Images obtained/number of views/correctly interpreted
  • Score (80% or higher) on knowledge assessment
  • Performance on bedside OSCE
• Challenges
  • Low Utilization of Equipment
    • Solutions: Increased training, *pocket-sized devices*
  • Faculty Training
    • Solutions: Scanning vs non-scanning track
  • Logging
    • Solutions: Smartphone use, Team Competition

• Successes
  • Increased Participation in Research
  • Numerous “Ultrasound for the Win” Cases