Getting to Know You

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Not So FAST!
Do-it-Yourself Ultrasound Training for Pediatric Residency Programs

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Disclosures

There are no disclosures to make.
Objectives

• Introduction to Point-of-Care Ultrasound (POCUS)

• Pediatric POCUS Training Program
  – Key Leaders
  – Curriculum Development
  – Equipment
Who are we?

Responses to PollEverywhere questions
POCUS in Pediatrics

- 2000’s – PEM & PICU
- 2015 – AAP published 1st POCUS Guidelines

PEM departments should have training, credentialing, privileging & QA processes
POCUS in Medical School

- Established POCUS Programs
  - CU & RVU – coupled with anatomy sections

No POCUS in Pediatric Residency!
Program Development

1. Key Leaders
2. Goals
   - Curriculum
3. Equipment
Key Leaders

- **POCUS Champion(s)**
  - PEM
  - PICU
  - Cardiology
  - Affiliated Hospital - EM, etc.

- **Residency Leadership**
  - PD, APD’s
  - Chiefs
  - Schedulers
Goals → Curriculum

- **Who?**
  - Educator(s)
  - Trainees

- **What?**
  - Indications/disciplines
    - Soft tissue, echo, FAST, CVL/PIV, etc.

- **How?**
  - Educational Method
    - Didactic
    - Hands-on scanning time
    - Image review
    - Evaluation

- **When?**
  - Schedule
Equipment

- Ultrasound machines
- Models/Educational Tools
Questions?
Not So FAST!

Solving the $Equipment$ Problem

APPD SPRING MEETING
MARCH 23RD, 2018
Considerations

Best Machine For Your Use

- Ease of Use
- Image Quality
- Image & Report Management
- Special Features
- Cost
- Portability
- Warranty
- Durability
Use the machines you have!

PED/ED
PICU
NICU
Cardiology
Anesthesia
Radiology
Machine Cost

Large Range:

From $2k for handheld Butterfly IQ that plugs into Iphone

To $50k for laptop sized machine with multiple probes

Must also think about cost of image archiving, gel, warranty, replacement, etc.
Ease of Use

• Great Image Quality Makes any Machine Easier to Use
• KEY for Novice Users
• Presets
  – Selecting Presets
  – Need Presets By Study (FAST, MSK, SST, Lung…)

• Think about which exams you will do
  – Be sure to buy appropriate transducer(probe) type
  – May need multiple transducers which can ↑ cost
Portability

• Must define “portability”
  – Battery Powered Cart
  – Hand Carry Portable (Laptop)
  – Handheld Portable

• Battery Powered
  – Run All Features
  – Run Limited Features
  – Battery Life

• Most “laptop models” require a stand or table to use.
Machines:
Find your table!
Not So FAST!
Do-it-Yourself Ultrasound Training
For Pediatric Residency Programs

APPD SPRING MEETING
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Applications of POCUS in Pediatrics

Vascular
- Central lines
- Arterial lines
- Peripheral IV

Lung
- Pleural effusion
- Pneumothorax
- Consolidation

Soft Tissue
- Foreign body
- Abscess

Abdomen
- FAST exam
- Appendicitis
- Pyloric stenosis
- Intussusception

Cardiac
- Pericardial effusion
- Systolic function
- Volume status

Musculoskeletal
- Fracture
- Effusion

Ocular
- Optic nerve sheath diameter
ACEP Pathways for POCUS Training

Didactics

Residency Training
Attends residency curriculum covering emergency ultrasound curriculum

Practicing Physician
Attends introductory emergency ultrasound course or courses that cover core emergency US applications

Experiential

Training in residency per Emergency Medicine Residency Ultrasound Guidelines and ACGME Milestones

Performs ultrasounds under supervision over-reads, gold standards confirmatory testing or patient outcome review within departmental ultrasound plan

Proficiency

Residency Director and/or Ultrasound Coordinator certifies ultrasound training categorized by the ACEP emergency ultrasound proficiency guidelines and ABEM “The Model of the Clinical Practice of Emergency Medicine”

Ultrasounds are obtained with documentation and review to meet ACEP emergency ultrasound proficiency guidelines. Ultrasound available for departmental and hospital examination.
Experiential POCUS Training

Normal Findings
• Patients
• Healthy Volunteers

Abnormal Findings
• Patients
• Models
POCUS Training Models

• **Commercially Available Simulators**
  • **Pros:** consistent results, long-lasting
  • **Cons:** expensive
  • **Manufacturers:** Blue Phantom, Simulab, SonoSim

• **Do-it-Yourself Models**
  • **Pros:** cheap, customizable
  • **Cons:** messy, inconsistent results, short-lived
Models:
Find your table!
Panel Discussion
Sample Curriculum - CU

- **Interns**
  - Introductory lecture (1 hour per session)
  - Supervised hands-on scanning (3 hours per session)
    - 3:1 learner to expert instructor ratio

- **2nd & 3rd Year Residents**
  - PICU education
  - PEM Academic Half-Day
  - Future: 1-2 week elective

**Session 1:**
1. Lecture: Ultrasound basics, EFAST
2. Hands-on scanning

**Session 2:**
1. Lecture: Soft Tissue & MSK
2. Hands-on scanning
Please fill out an evaluation!

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