

UTSW Pediatric Emergency Medicine Fellowship Ultrasound Rotation

Clinical Ultrasound Faculty – UTSW Division of Pediatric Emergency Medicine

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Overview

During the PEM-2 year, each fellow will be provided an experience in point of care bedside ultrasonography which will include time spent at the Children's Medical Center's and Parkland Memorial Hospital's emergency departments. This experience is intended to enhance the fellows' understanding and clinical use of point-of-care ultrasound in the ED by providing the essential knowledge and mastery of skills through extensive hands-on training under the guidance of Ultrasound Faculty from the UTSW Division of Pediatric Emergency Medicine and the UTSW Department of Emergency Medicine.

Each fellow is expected to review assigned learning material (online lectures, articles, and on-line resources) BEFORE attending the corresponding ultrasound teaching sessions. Fellows will be expected to schedule 3 sessions (roughly weekly) with Dr. Cooper, which will include didactic lectures focusing on pediatric-specific ultrasound topics and Quality Assurance (QA) reviews of scans done in the CMC ED. Additionally, fellows will attend the UTSW Department of Emergency Medicine weekly ultrasound Quality Assurance (QA) conference. Each conference will include an interactive discussion in the morning and hands on practice on real patients at Parkland Hospital based on this learning material, so it is imperative that each learner come prepared.

The remainder of the rotation includes several scanning shifts at CMC and Parkland to reinforce and master these ultrasound skills. The ultrasound faculty will guide them through each of the various US applications and offer their technical skills in obtaining ultrasound images and interpreting the results.

Goal

Incorporate limited bedside ultrasound into clinical practice.

Objectives

- 1) Understand basic ultrasound physics.
- 2) Learn ultrasound machine operation and "knobology".
- 3) Recognize the indications for and limitations of ED bedside ultrasound.
- 4) Perform bedside abdominal, cardiopulmonary, musculoskeletal, obstetrical, ocular, soft tissue and vascular ultrasound exams and obtain standard views for each application.
- 5) Accurately interpret ultrasound images and video clips

Scheduling

1) Pediatric-specific POCUS sessions will be scheduled roughly weekly with Dr. Cooper at the start of the rotation. PEM fellows must also attend the Parkland weekly Ultrasound QA sessions during which time we review ultrasounds completed in the ED during that week. **Parkland** QA sessions typically occur on Wednesdays, with exceptions due to holidays and COVID scheduling limitations.

2) Bedside POCUS teaching will typically be done with US faculty (and US fellows at Parkland) following the educational sessions. These sessions will focus on using real patients in the emergency department to learn the ultrasound skills taught that week.

3) Each PEM fellow on the PEM POCUS rotation will be expected to schedule at least **twelve** 8-hour ultrasound scanning shifts in the ED during the 4-week ultrasound rotation performing bedside ultrasounds. Shifts should be split roughly equally between CMC and Parkland. At least 6 of these shifts must be done while an ultrasound faculty is on clinical shift. The time spent during the pediatric-specific POCUS sessions scheduled with Dr Cooper can count toward your shift total. These shifts may also be assigned with an ultrasound fellow from October-June (for Parkland shifts). You should send a copy of your planned shifts to Dr Cooper on the Friday prior to the start of the rotation, otherwise a schedule will be made for you. **Feel free to call, email or text for additional help, shifts and questions.**

Ultrasound applications

PEM fellows will learn Core diagnostic and procedural applications. For those interested, advanced diagnostic or procedural applications can be discussed but typically would be reserved for those seeking a POCUS fellowship.

<u>Core diagnostic</u>	<u>Core Procedural</u>	<u>Advanced diagnostic</u>	<u>Advanced Procedural</u>
eFAST	Vascular Access	DVT	Nerve blocks
Soft tissue	abscess drainage	Gallbladder	Arthrocentesis
Renal & Bladder	foreign body removal	MSK	Paracentesis
Cardiac	lumbar puncture	Ocular	Thoracentesis
Thorax	nerve blocks	Airway	Pericardiocentesis
First trimester Ob		Testicular	
IVC		Gyn	
Ped Abdomen (HPS, Intuss., appy)		Aorta	

Required Ultrasound Scans

- PEM-1 and PEM-2 prior to the US rotation: 50 scans recommended
- AT LEAST 125 scans during the PEM-2 Ultrasound rotation.
- 200 by the end of PEM-2 year.
- 325 by April 1st of PEM-3 year.

Minimum in each of the following by the end of PEM-3 year:

- EFAST: 25
- Echo: 25
- Thorax: 25
- Soft tissue: 25
- Bladder: 10
- IVC: 10
- Pediatric Abdomen: 25
- Ob/Gyn: as opportunity allows
- US-guided PIV: 10

Didactic Schedule

- Week 1
 - Parkland*: Physics, eFAST, Abdominal (Renal, Gallbladder)
 - CMC: Pediatric eFAST considerations, Pediatric Abdomen
- Week 2
 - Parkland: Aorta, Echocardiography, IVC, DVT
 - CMC: Pediatric echo, Pediatric IVC, Pediatric soft tissue
- Week 3
 - Parkland: Ob/gyn, vascular access
 - CMC: Pediatric thorax, Landmark journal article discussion
- Week 4
 - Parkland: RUSH, Journal Scan
 - CMC: none, transition to Ob rotation

*Note: Many of the CMC lectures have been given by Dr. Cooper during PEM fellow conferences – if you are comfortable with those lectures, we can make better use of our time learning something else. At times, the PEM fellow rotation schedule will not align with the Parkland EM resident schedule, and therefore you may join the rotation on later weeks. If that happens, the CMC lecture schedule will be adjusted accordingly to cover topics as needed. During Parkland week 4 QA, each learner is expected to present a recent journal article (within the last 2 years) in journal scan format (no slides necessary). During week 3 at CMC, we will plan on discussing a “landmark” pediatric POCUS article of the rotator’s choice. Also, the fourth week of your rotation will be spent with the obstetrics service. You are encouraged to use that opportunity, if able, to obtain your Ob scans.

Outside Resources

1. Ultrasound articles and podcasts: www.ultrasoundgel.org
2. Ultrasound example clips: www.thepocusatlas.com
3. Ultrasound technique videos: www.5minsono.com
4. POCUS appendicitis technique: <https://vimeo.com/152378669>
5. POCUS for intussusception: <https://vimeo.com/37877537>
6. How I will give you feedback: <https://www.sonoclipshare.com>

Rotation Materials

You will be sent One Drive or Teams links to required lectures and reading materials and other POCUS resources. Please view/read them prior to the corresponding educational session. Be prepared for an interactive discussion based on this material. You will be called upon to answer questions to reinforce important concepts.

Evaluation and Feedback

Each fellow will be evaluated at the end of the rotation based on collective input from faculty sonographers with whom the resident has worked (CMC and Parkland). Emphasis will be placed on timely and professional participation in all required shifts and ultrasound review sessions. The fellow will also be evaluated on their technical skills and their ability to record and interpret this information efficiently. During the last ultrasound review session, a written test covering pertinent materials will be administered.

Failure to complete all of the rotation requirements including failure of the final test will result in the formation of an Action Plan, to be implemented at the discretion of the ultrasound and PEM fellowship faculty. This may include continued QA attendance, additional scanning sessions, and a retest.

Fellows will also be asked to evaluate the Ultrasound rotation. Feedback is always welcome during the rotation and will be taken into consideration for improving the rotation. **For any problems or concerns, please do not hesitate to contact any of the ultrasound faculty at any time during your rotation.**