

UNIVERSITY OF MICHIGAN HEALTH SYSTEM · DEPARTMENT OF EMERGENCY MEDICINE  
**PEDIATRIC EMERGENCY MEDICINE FELLOWSHIP PROGRAM**

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**Rotation:** Adult EM Ultrasound  
**Institution:** University of Michigan Health System  
**Duration:** Two (2) to Four (4) Weeks  
**Fellow Training Year:** PD trained fellows (Yr. 2 or 3)

**Supervising Faculty:** David Barton, MD

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**EDUCATIONAL GOALS:**

1. To train PEM fellows in the appropriate application of focused ultrasonography in the Emergency Medicine setting. *Competencies: MK, PC, SBP*
2. Develop clinical skill in the performance and interpretation of sonographic images used in various EM applications. *Competencies: MK, PC*
3. Understand indications for and limitations of emergency ultrasound in emergency medicine practice. *Competencies: MK, PC, SBP, PBLI, P*

**EDUCATIONAL OBJECTIVES:**

1. Develop skills with basic and advanced ED ultrasound techniques. *Competencies: MK, PC*
2. Learn and demonstrate skill using US for rapid assessment of aortic caliber. *Competencies: MK, PC*
3. Learn to use US in Focused Assessment using Sonography in Trauma (F.A.S.T.) and fracture detection. *Competencies: MK, PC, SBP*
4. Utilize US in Shock/arrest assessment (rule out cardiac tamponade/E.M.D./hypovolemia/right ventricular outflow obstruction/global and regional wall motion assessment). *Competencies: MK, PC*
5. Use US in Pregnancy: Verification of first trimester IUP (transvaginal scanning with Dr. Barton only). Third trimester bleeding and Trauma evaluation. *Competencies: MK, PC*
6. Learn to use procedural ultrasound: central and peripheral vascular cannulation /foreign body (F.B.) and abscess localization /paracentesis/ thoracentesis / pericardiocentesis / joint effusion detection and arthrocentesis/ lumbar puncture/ETT localization. *Competencies: MK, PC*
7. Demonstrate skill in US to detect biliary disease. *Competencies: MK, PC*
8. Learn and demonstrate ultrasound skill in renal/bladder assessment: collecting system obstruction, transplant assessment/resistive indices, bladder volume. *Competencies: MK, PC*
9. Learn and demonstrate ultrasound skill in detection of appendicitis and SBO. *Competencies: MK, PC*
10. Learn and demonstrate ultrasound skill in detection of proximal lower extremity DVT's. *Competencies: MK, PC*
11. Understand the use of US to assess musculoskeletal problems. *Competencies: MK, PC*
12. Understand the use of US in ophthalmologic problems (intraocular pressure). *Competencies: MK, PC*
13. Understand the use of US in scrotal assessment (traumatic and nontraumatic states). *Competencies: MK, PC*
14. Develop skills in teaching ultrasound techniques to others (third and fourth year residents). *Competencies: PC, SBP, PBLI, P, IC*
15. Learn approaches to dissemination of US skill to an Emergency Department. *Competencies: SBP, PBLI, P, IC*
16. Improve understanding of the basic science behind ultrasonography and technology. *Competencies: MK*

Accreditation Council for Graduate Medical Education (ACGME) Core Competency Key:

PC = Patient Care; MK = Medical Knowledge; PBLI = Practice-Based Learning and Improvement; IC = Interpersonal and Communication Skills; P = Professionalism; SBP = Systems-Based Practice

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17. Learn current issues within the field of ED ultrasound. *Competencies: PBLI, MK*

**DESCRIPTION OF CLINICAL EXPERIENCE:**

Fellows on this rotation spend 14 shifts in the emergency department under the supervision of Emergency Ultrasound Faculty (UMHS or HMC) with the main goal of learning to perform ultrasound examinations to augment EM patient care. Fellows confirm the month's schedule with Dr. Barton in advance (one month). Fellows should contact Dr. Barton to distribute shifts between faculty as necessary. During that time, fellows will care for adult patients and will prioritize assignment to those patients likely to require ultrasound examination such as trauma, abdominal pain (suspected biliary/aortic/appendiceal disease), flank pain, cardiorespiratory compromise/arrest, vaginal bleeding, leg swelling, possible abscesses/foreign bodies, and procedural ultrasound (including vascular access). Additionally, fellows may scan selected patients seen by other physicians. Fellows will be expected to perform ultrasounds on such patients and obtain confirming studies when clinically feasible. Fellows will be expected to assume primary clinical responsibility for some adult patients (approx. 4-5 per shift) which will include evaluation, orders, medical documentation and disposition. Additionally, fellows will spend time working with licensed sonography and echocardiography technicians 1-2 X during this month. Fellows spend 1-2 hours with Dr. Barton (and staff) in a simulated ultrasound skill training session prior to this rotation. Fellows are also released for PEM conference series on Wednesday and one ½ day once/month on Tuesday/Thursday to attend track programs as determined by schedule timing/track assignment

**Ultrasound Lab Sessions:** Fellows will be required to spend time with ultrasonography technicians in the Departments of Cardiology, Vascular Surgery and Radiology to augment the residents' experience in abdominal imaging, echocardiography, and pelvic imaging.

- 8 hours- Echocardiography (Treadmill/Dobutamine/Diagnostic)  
(Contact Beth Grim 712-5225 to arrange ahead of time)
- 8 hours-Vascular scanning (AAA's, DVT's, ...)  
(Contact Kelley Sexton 712-8143 to arrange ahead of time)
- 4 hours- Radiology Dept. Ultrasound (Pelvic scanning/ED cases)  
(Contact: Sue Conkel (manager) 712-4173 or Allyson Krause (coordinator) 712-5251)

**Documentation/Ultrasound Portfolio:** Fellows will document all of their ultrasound scans with hard copy of representative images, an interpretation and confirmatory readings. The material will be saved as an ultrasound portfolio for future credentialing.

**DESCRIPTION OF DIDACTIC EXPERIENCE:**

**Written didactics/Examination:**

At the conclusion of the month, the fellow will complete a written examination.

Preparation: Read one of the following 3 Emergency Ultrasound textbooks:

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- Ma & Mateer- Emergency Ultrasound (Recommended) **OR**
- Heller & Jehle - Ultrasound in Emergency Medicine **OR**
- Simon & Snoey- Ultrasound in Emergency and Ambulatory Medicine

*\*A loaner copy of the Ma & Mateer text is available.*

**Optional reading:**

- Roberts & Jones - Handbook in Ultrasonography
- Assorted CD-ROMs and Videos

**Website Project:** Fellows must complete a brief Web-based Ultrasound Project. This material must be turned in to Dr. Barton. It will be added to the UMHS EM Ultrasound website ([sitemaker.umich.edu/emergus](http://sitemaker.umich.edu/emergus)). Possible projects include:

- Case study: A case study should include a brief history, ultrasound images in JPG or GIF format, and a brief explanation of the findings and their significance.
- Topic review: A review of current literature covering a specific emergency medicine ultrasound area or question.
- Instructional presentation: Create a self study PowerPoint presentation that explains how to perform a specific emergency medicine ultrasound application.
- Contribution to the Ultrasound PDA Database.

**Research (optional):** Participate on any active research projects of interest.

**Summary of Requirements:**

1. Review of text-based didactic material.
2. Spend 20 hours total observing Echo/ultrasound technicians in the following areas:
  - a. Abdomen Ultrasound
  - b. Pelvic Ultrasound
  - c. Vascular Applications
  - d. Cardiology/Stress Echo
3. Completion of log book of examinations including a minimum number of the following studies:
  - a. FAST - 10
  - b. Abdominal Aorta - 10
  - c. Renal - 10
  - d. Gallstone/RUQ - 10
  - e. Pregnancy - 8
  - f. DVT, Bladder, Abscess - 2 each
4. Completion of a web-based ultrasound project
5. Completion of EM ultrasound written examination- contact Dr. Barton to schedule.

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**EVALUATION PROCESS:**

Fellows will be evaluated by assessing the following elements: Review of exams by the attending staff, observance of technique, fellow initiative, web site project quality and a written post test exam. The written exam will cover topics in the reading assignments. Specific problems identified through verbal or written communication between the Program Director and the adult EM Ultrasound faculty will be immediately brought to the attention of the involved fellow. Final evaluation is completed using the six core competencies completed in writing by adult US/emergency medicine faculty after this rotation via the UMHS MedHub online evaluation system. Fellows likewise evaluate their experiences after this rotation as well. Evaluations are forwarded to the Program Director and made available in aggregate to individual fellows via the MedHub system at all times. Formal review of fellow's evaluations occurs at quarterly PD/Fellow meetings.

**FEEDBACK MECHANISMS:**

Specific problems or notations of excellence identified through verbal or written communication to the Program Director regarding the fellow are immediately brought to the attention of the involved fellow. Fellows receiving an overall poor performance grade (less than satisfactory evaluation for rotation) are notified immediately and meet with the PD. Fellows who receive notation for improvement in some areas (but pass the overall rotation) are given a work plan for educational intervention with specific timeline for completion and reevaluation. Fellows who do not pass an overall rotation will meet with the PD for remediation work plan, including timetable for reevaluation, UMHS notifications as required by GME and will repeat an additional adult EM month. Monthly evaluations are placed in the fellow's file and are available for review at any time by the fellow, but are also reviewed during quarterly meetings with the PD. Fellows are encouraged to review their MedHub evaluations regularly and at least monthly.

Reviewed			06/30/2009	4/2011			
Revised	08/2008	11/2008		4/2011	07/05/2011		
Initial(s)	MN	MN	MN	MN	sb		

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