

Pediatric Emergency Ultrasound

Enhance your knowledge and skills in the following areas:

- Physical principles of clinical ultrasound in the pediatric patient
- Basic ultrasound use of controls and sonographic equipment
- Trauma ultrasound in the pediatric patient
- First trimester obstetric ultrasound
- Ultrasound-guided vascular access
- Soft tissue/musculoskeletal ultrasound
- Procedural applications specific to the pediatric patient

Course Objectives:

This workshop offers two full days of intensive ultrasound education and hands-on use of ultrasound as a diagnostic tool in the evaluation of the pediatric patient. This course is taught by emergency physicians who utilize ultrasound in the evaluation of pediatric patients on a daily basis. At the conclusion of this course, participants should be able to demonstrate how, when, and why to use ultrasound while caring for the pediatric patient. In addition, participants will describe how to negotiate organizational support for the use of ultrasound at their institution.

Course Schedule:

Day 1

8:00-8:30	Introduction and Course Objectives
	The lecturer will go over the specific objectives of the course: ultrasound physics, instrumentation, primary emergency ultrasound indications. Discuss the role of Emergency Ultrasound and what differentiates emergent ultrasonography from formal consultative studies, including the relative advantages and pitfalls.
8:30-9:20	Physics and Instrumentation
	Basic physics needed to operate the machine, understand image generation and optimization, recognize and understand ultrasound artifacts.
9:20-10:30	Ultrasound Instrument Orientation (Hands-on)
	Initial orientation to ultrasound instrumentation. One instructor and machine per 5 students. Emphasis on gain, depth, focus, TGC, image optimization, general machine navigation and hard copy generation.
10:30-11:30	Rapid Trauma Ultrasound Exam and Cardiovascular Applications
	Learn the FAST exam for trauma. Review normal and abnormal scans in thoraco-abdominal trauma. Review the literature including the recommended algorithms (Key

Clinical Pathway) for emergency department application. Review the limitations of this exam in general and in pediatric trauma.

Basics on cardiac and pericardial imaging to include primary and secondary windows, recognition of pericardial effusion and tamponade, as well as application and limitations for cardiac arrest.

11:30-12:15 Emergency Pelvic Ultrasound

Compare test characteristics of transabdominal and transvaginal ultrasound in patients with pregnancy related problems. Describe the technique used when performing transvaginal ultrasound. Review a clinical pathway using emergency ultrasound in patients with suspected ectopic pregnancy.

12:15-1300 Lunch

13:00-16:00 Hands-on Stations

Trauma / Cardiovascular Ultrasound
(Station 1)

In depth, repetitive review of the FAST and cardiac exams. Next, individual skills evaluation for transducer positioning, target organ identification, and hard copy image capturing for each of the following: RUQ, cardiac, LUQ, Pouch of Douglas, and one secondary cardiac view (other than subxiphoid).

Emergency Pelvic Ultrasound
(Stations 2&3)

Using real models, the participants will learn to perform transabdominal and transvaginal ultrasound of the uterus and recognize normal findings on pelvic ultrasound.

16:00-16:30 Documentation and Quality Assurance

Establish an approach to documentation of emergency ultrasound exams in the medical record and in a quality monitoring database. Review an approach to quality monitoring designed to decrease variability in study quality and improve overall performance. Discuss techniques and qualities needed to develop a successful emergency ultrasound program.

Day 2

08:00-0900 IV Access

Review the literature supporting ultrasound-guided venous access. Demonstrate the ultrasound-guided approach to central and peripheral access. Review the advantages and limitations of long and short axis approaches to vessel cannulation.

09:00-10:00 Soft Tissue/Musculoskeletal US

Briefly review the literature in support of ultrasound for soft tissue infections and foreign bodies. Demonstrate the use of ultrasound for differentiating abscess from cellulitis, identification of foreign bodies, fractures and other soft-tissue injuries. Review examples of pathology for each.

10:00-11:00 Other Procedural Applications in Pediatrics

Review the literature behind pulmonary ultrasound for pneumothorax, bladder ultrasound prior to catheterization, as well as ultrasound-guided lumbar puncture, thoracentesis, paracentesis and pericardiocentesis. Demonstrate technique for performing these applications.

11:00-12:00 Lunch

12:00-1600 Hands-on Stations

IV Access

(Station 1)

Practice vessel cannulation under real-time ultrasound guidance using models.

Soft Tissue/Musculoskeletal

(Station 2)

Practice scanning models to identify imbedded foreign bodies, distinguish abscess from cellulitis and identify fractures.

Other Procedures

(Station 3)

Using patient models, participants will learn to perform pulmonary ultrasound, quantify bladder volume, and apply ultrasound guidance to lumbar puncture.