University of Pittsburgh School of Medicine

Point-of-Care Ultrasound (POCUS) Basics Mini-Elective

Spring 2020

Course Dates:	January 7, 14, 28, February 4 Tuesdays, 1:00-2:30 PM **OR** January 9, 23, 30, February 6 Thursdays, 1:00-2:30 PM
Maximum Students:	24 (4 per instructor per session)
Class Year:	MS1
Course Director:	Emily Lovallo, MD Assistant Professor of Emergency Medicine Assistant Director, Ultrasound Services Department of Emergency Medicine Marek Radomski, DO Assistant Professor of Emergency Medicine
Contact Information:	Emily Lovallo, MD Assistant Professor of Emergency Medicine Assistant Director, Ultrasound Services Department of Emergency Medicine lovalloem2@upmc.edu 412-647-8287
Registration:	Betsy Nero, Office of Medical Education betsy@medschool.pitt.edu

Description:
During this 4 session mini-elective, students will learn about ultrasound physics, the basics of POCUS image acquisition, and how to correlate sonographic anatomy with physical exam skills. Students will be scanning each other in small groups.

MS1 students who have already completed the Fall Ultrasound Basics Mini-Elective are not eligible for this course.

Requirements:
Active participation in all four sessions

Office of Medical Education

www.omed.pitt.edu

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COURSE OUTLINE
Point-of-Care Ultrasound Basics Spring Session

Course Director:
Emily Lovallo, MD, Assistant Professor of Emergency Medicine
Marek Radomski, DO, Assistant Professor of Emergency Medicine

Contact Information:
Emily Lovallo, MD, lovalloem2@upmc.edu, 412-647-8287

Location:
Lecture: Students should **meet in LR 1 at 1:00 for the didactic session** and then break into exam rooms for **scanning—Scaife SP Center, M Floor Exam Rooms 4, 5, 6, 7, 10, 12**

Session 1:
Session 1 is intended to introduce the student to the ultrasound machine, and to learn the basic principles of point-of-care ultrasonography.

Session 1 Objectives:

1. Define ultrasound
2. Describe the ALARA principle as it relates to diagnostic imaging.
3. Demonstrate the basic functions of the ultrasound machine.
4. Describe how to select the proper transducer for the intended application.
5. Demonstrate how gain, frequency and depth affect image acquisition
6. Understand and demonstrate transducer orientation with respect to the acquired image.
7. Demonstrate understanding of differences in appearance of tissue on ultrasound and terminology associated with these differences (anechoic, hypoechoic, hyperechoic, isoechoic)
8. Understand and identify common ultrasound artifacts.
9. Demonstrate understanding of the basic principles described above to obtain images of the liver, gallbladder, and kidney,

Session 2:
Session 2 will focus on the cardiovascular system (heart and major vessels).

Session 2 Objectives:

1. Understand the basic anatomy of the heart
2. Obtain views of the heart including subxiphoid, apical 4 chamber, parasternal long axis, and short axis views
3. Identify the pericardium, mitral, tricuspid, aortic and pulmonic valves
4. Demonstrate how to measure the LV posterior wall and aortic outflow tract
5. Develop essential knowledge for performing a transthoracic echocardiogram

Session 3:
Session 3 examines the abdomen, kidneys, ureters and bladder.

Session 3 Objectives:

1. Describe the anatomy of the abdominal aorta and its major branches
2. Obtain views of the liver and gallbladder
3. Obtain views of the pancreas
4. Obtain views of the kidneys
5. Obtain views of the bladder
6. Understand the relation of the bladder to the uterus and/or prostate
7. Measure the bladder size and estimate the bladder volume
8. Attempt to visualize ureteric jets using power Doppler

Session 4:
Session 4 will involve anatomic structures of the head and neck.

Session 4 Objectives:

1. Obtain views of the thyroid
2. Evaluate the carotid sheath
3. Demonstrate the course of the IJV and carotid artery in relation to adjacent structures
4. Demonstrate how changes in IJV diameter occur with valsalva and body inclination
5. Demonstrate the anterior and posterior chambers of the eye.
6. Identify the optic nerve sheath, retina and lens