

Curriculum for Crouse ICU POCUS Elective

I. Educational Purpose.

POCUS or Point-of-Care Ultrasound refers to a structured ultrasound examination performed at the bedside to answer a focused clinical question (or set of questions). It is a supplement to the physical exam and is not a replacement for a formal echocardiogram or appropriate radiological imaging. This will allow residents to learn a new skill set to improve and supplement their physical examination, which would impact clinical care and management. Additionally, this would provide residents an opportunity for enhanced patient engagement and bedside learning.

II. Learning Venue.

1. Rotation Description. The POCUS elective will include a one-week rotation for senior residents (PGY 3), who will pre-round independently in the Crouse ICU from 7 am to 9 am on all new admissions, including overnight admissions. They will perform bedside ultrasound with available ultrasound device in the ICU with a focus on the area of pathological significance related to the primary diagnosis. Then they will round with the Crouse ICU team and present ultrasound images on rounds to augment clinical care and management. All images captured will be reviewed by the attending or the pulmonary and critical care fellow and supervised in clinical interpretation and, in addition, be utilized for education. The POCUS resident will be responsible for a 30 min presentation (with appropriate PowerPoint or other visual aids) to the ICU team from Monday to Friday between 2:00 pm to 2:30 pm (dependent on the clinical workflow)

Monday: Basic principles of POCUS → Knobology, probe orientation, depth, gain, axis

Tuesday: Lung ultrasound → Lung sliding, A and B lines, pleural effusion, BLUE protocol

Wednesday: Core cardiac views (3 views): PLAX, PSAX, A4C, SC4C, IVC

Thursday: Abdomen: FAST exam

Friday: Vascular: 4-point DVT examination, neck vascular examination

The trainees will be encouraged to develop their image portfolios and store images in a HIPPA-compliant portal that can utilize a hospital-approved thumb drive to save de-identified images. All the images will be reviewed and certified by the core POCUS faculty. The trainees will be responsible for obtaining consent from the patient and permission from the primary team prior to scanning. Images stored in the HIPPA-compliant portal are only to be used for education until they are credentialed. Images can only be used for independent clinical decision-making after being certified/approved by supervising faculty.

- A. **Expectations of R3** – Senior residents are expected to perform bedside imaging on all admissions, including overnight or assigned patients to the POCUS senior resident by ICU attending or fellow. This includes senior residents actively engaging in patient care and clinical management with the aid of ultrasound images. Senior residents have a unique opportunity to learn a new skill set in a supervised and structured hands-on experience. In addition, have an opportunity to teach POCUS.
- B. Teaching Methods. During this rotation, the primary learning process comes from the hands-on experience of performing bedside ultrasound imaging in a supervised and structured manner. The images will be reviewed by ICU attending and provide feedback on the quality of the image and technique of an acquisition. This provides an opportunity for residents to improve their image acquisition skills, interpretation, and clinical correlation.

- C. Expected Reading. The scope of POCUS requires a constant reading. The entire array of available electronic and online resources for images, the technique to acquire images (such as ACP POCUS modules (<https://www.acponline.org/meetings-courses/focused-topics/point-of-care-ultrasound-pocus-for-internal-medicine>), POCUSAtlas (<https://www.thepocusatlas.com>), 5-min sono (<https://www.coreultrasound.com/5ms/>), Consult, Up-To-Date, etc. are commonly used and are available at all computers with Internet access.
- D. Mix of Diseases. Senior residents will encounter patients that have a wide variety of conditions representative of common medical problems.

III. Educational Contents.

The scope of ultrasound is vast, but this rotation would focus on bedside imaging and address one clinical question. The imaging would include scanning of the lung, cardiac, abdomen, and vascular. Each organ would include imaging of basic and advanced skills.

IV. Evaluations.

Their attendings evaluate all residents. This is done using MedHub, our online electronic evaluation process, which mirrors the ACGME's competency/milestone format. The use of our online evaluation system allows a more timely process of evaluation but is never intended to replace personal feedback that would come from attending. In addition, this will enable us to track progress for residents and give more specific feedback on performance areas.

V. Rotation-Specific Competencies.

At the completion of the elective, trainees should be able to:

1. **Patient care:** Know the indications, benefits, and limitations of POCUS.
2. **Medical Knowledge:** Assess relevant anatomy, physiology, and pathology with POCUS.
3. **Practice-based Learning and Improvement:** Advance POCUS knowledge with appropriate precepting, electives, and website resources.
4. **Interpersonal and Communication Skills:** Communicate the results of a scan to the patient and the treatment team, as well as document the results appropriately in the medical record
5. **Professionalism:** Talk to the patient about the risks and benefits of POCUS and alternatives to POCUS, and obtain verbal consent before the scan.
6. **Systems-based Practice:** Utilize POCUS to clarify the diagnosis, decrease procedure complications, and expedite care

FEEDBACK

Senior residents should actively seek feedback when possible and specifically seek feedback regarding their areas of improvement to ensure stable development throughout the week. Attendings are expected to provide feedback every Friday, but active reminders are helpful and encouraged. End of the rotation feedback should be provided by the attending verbally and on MedHub, and this is also an opportunity to let the attending know how they performed and what aspects of the team worked well or could be improved upon.