

## A Flipped-Classroom POCUS Curriculum For Med-Peds Interns

**Purpose:** Point-of-care ultrasound (POCUS) has become a widely accepted and increasingly utilized imaging tool endorsed by numerous professional organizations. As a result, POCUS curricula are increasingly considered a necessary component of Internal Medicine and Med-Peds (MP) residency programs. However, these curricula are time-intensive, requiring significant faculty investment to teach image acquisition and interpretation through didactics and hands-on training. This time commitment is a barrier to POCUS curriculum implementation, particularly for smaller programs with fewer resources. To address this barrier, a novel flipped-classroom POCUS curriculum was developed for MP interns.

**Educational Objective:** To provide MP interns with the knowledge and skills necessary to interpret, perform, and integrate POCUS into their clinical practice to better care for patients.

**Methods:** A literature review was conducted and local POCUS experts interviewed to identify high yield POCUS competencies for MP interns. From these competencies, three common clinical situations were identified in which literature suggests POCUS can improve patient care: 1) evaluation of a patient with dyspnea, 2) identification of pathologic fluid collections, and 3) evaluation of a patient with undifferentiated shock. Lectures were developed, recorded, and then posted via the Canvas online learning system. Lectures were combined with clinical vignettes and short quizzes and organized into modules, with four total modules created (approximately six hours of didactic content). MP interns were then given four blocked off half-day sessions over the course of the year to complete the modules. After completing each module, interns were instructed to practice educational POCUS scans on consenting hospitalized patients. When available, interns were accompanied by a faculty POCUS instructor or by a MP PGY4 with significant POCUS experience.

To evaluate the curriculum, interns were asked to complete a written assessment testing ultrasound knowledge and image interpretation skills prior to the first module. They were then assessed with an OSCE to determine their ability to acquire POCUS images correctly. Participants will repeat this testing one month after completing their final POCUS module. As a control, MP PGY2 residents (who did not participate in this curriculum) completed the same written assessment and OSCE at the beginning of their PGY2 year.

**Results:** To date, all four MP interns have completed three modules, spending an average of 80 minutes interacting with each module. We anticipate approximately 24 faculty hours (or 6 half-days, 1.5 per resident) will be spent implementing the curriculum (eg mentored hands-on scanning). As a comparison, the recently developed UCH IM POCUS curriculum requires 120 faculty half-days (2.4 per resident) for didactic instruction and mentored scanning.

**Conclusion:** Our ability to draw conclusions is limited at this point as we do not yet have post-curricular data. However, this project has demonstrated that creating a POCUS curriculum which relies on a flipped-classroom approach using modules hosted via an online learning platform is feasible. This project has also demonstrated that this approach significantly limits the amount of instructor time required, and should be more sustainable than traditional curricula as the modules will only require small updates over time as POCUS practices evolve."