A Delphi Consensus Study for the Development of a Specialty-Focused Ultrasound Curriculum for Fourth-Year Medical Students

Alex M Doherty, M4 and Kimberly M Fender, MD

1 Brody School Of Medicine, 2Department of Emergency Medicine at Brody School of Medicine

INTRODUCTION

The use of Point-of-Care Ultrasound (POCUS) in undergraduate medical education and its adoption by multiple specialties has significantly grown in the past decade.1 There are currently no Entrustable Professional Activities (EPA's) regarding ultrasound, and training across medical schools varies without a universally adopted curriculum.2 A high-yield specialty-focused ultrasound (US) curriculum targeted toward fourth-year students would allow students to hone ultrasound skills prior to residency while also combating the inherent challenges associated with an undergraduate ultrasound curriculum.3

This study aims to propose specialty-specific POCUS milestones defining the most relevant exams, procedures, and pathologies for fourth-year medical students to know before entering residency.4

METHODS

Resident directors were contacted by email at all accredited Emergency Medicine, Family Medicine, Internal Medicine, Surgery, Pediatrics, and Obstetrics and Gynecology programs. A three-round Delphi method was utilized to achieve consensus for POCUS milestones.

Delphi Round 1
List POCUS exams, pathologies, and procedures important for incoming residents in your respective specialty to be familiar with.

Delphi Round 2
Rank the Round 1 results using a 5-point Likert scale of importance.
Topics with >25% agreement were excluded.
Topics with >75% agreement achieved consensus.
Topics with > 25% and < 75% agreement advanced to Round 3.

Delphi Round 3
Re-rank topics on a 5-point Likert scale.
Topics with >75% agreement achieved consensus.

RESULTS

Emergency Medicine

Focused Assessment for Sonography in Trauma – Right Upper Quadrant

5 Exams
4 Pathologies
3 US-guided Procedures
2 US-assisted Procedures

Family Medicine

Knee Joint – Longitudinal View

14 Exams
8 Pathologies
2 US-guided Procedures
2 US-assisted Procedures

Internal Medicine

Cardiac - Parasternal Long Axis

5 Exams
12 Pathologies
1 US-guided Procedures
7 US-assisted Procedures

Obstetrics & Gynecology

Pelvic - Early Fetal Ultrasound

7 Exams
8 Pathologies
0 US-guided Procedures
0 US-assisted Procedures

REFERENCES & ACKNOWLEDGEMENTS

Special thanks to the East Carolina University Center for Survey Research for assistance with reviewing the initial survey questions.

Round 1 yielded responses from 11 EM, 6 FM, 8 IM, and 10 OB-GYN residency directors. 5 EM, 2 FM, 2 IM, and 5 OB-GYN residency directors completed all 3 rounds of data collection.

Pediatrics and Surgery were excluded from the final data. Only 3 respondents for Pediatrics replied with limited input and no surgery residency directors responded.

All regions of the country were represented amongst the various specialties.

DISCUSSION

This study identified specialty-focused POCUS milestones that residency directors believe are important for fourth-year medical students to know before entering their intern year.

These milestones can be incorporated within a transition to residency course, or a longitudinal POCUS course based upon the anticipated specialty to promote the standardization of POCUS education among fourth-year medical students.

To our knowledge, this is the first attempt to standardize a specialty-focused undergraduate medical education POCUS curriculum.

This study was limited by an initial small response rate and attrition during the Delphi rounds.

86% were aware of a POCUS curriculum for residents at their program.

26% were aware of a POCUS curriculum for medical students at their program.

97% believe that interns need a fundamental understanding of how to operate US machine.

94% believe that interns need a fundamental understanding of image Optimization.

80% believe that interns need a fundamental understanding of US physics.