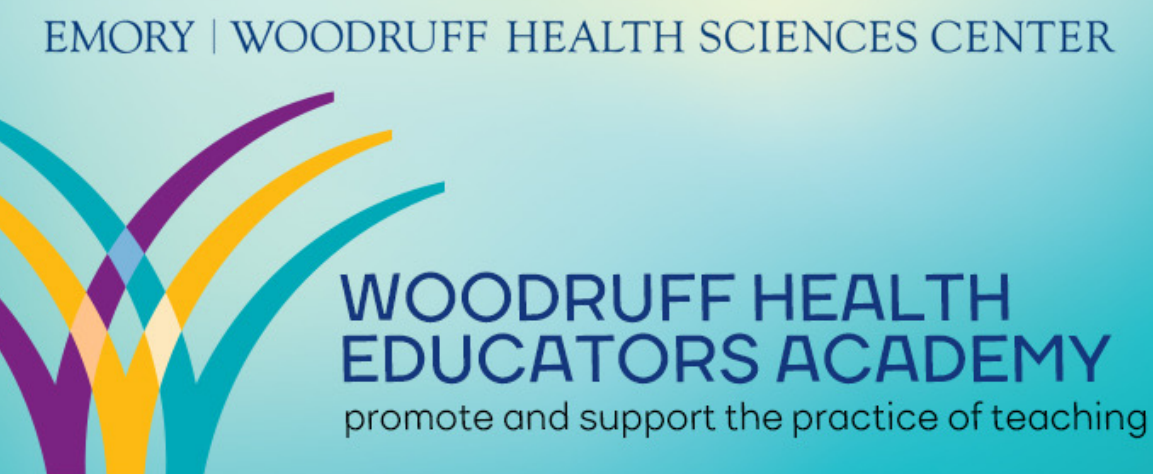


# The State of Critical Care Ultrasound Education in Anesthesiology Critical Care Medicine Fellowship Programs in the United States: A Cross-Sectional Survey Study

Babar Fiza M.D., Emory School of Medicine



## Abstract

Clinical ultrasound training during fellowship has become integral to the modern critical care training experience. However, there is a lack of clear guidelines regarding standardization in the ultrasound curriculum for anesthesiology critical care medicine fellowships. The primary reasons for the lack of standardization are variability in the resources available at each institution, including a lack of experienced faculty or a deficiency in proper equipment. As such, before successfully implementing any standardized curricula, it is imperative to understand these limitations and the prevalent current methods employed to teach ultrasound. Thus, this study aims to understand the general barriers to implementing ultrasound training, the attributes of existing training structures, and how competency is defined at the program level.

## Background & Purpose

Critical care ultrasound has rapidly evolved into a crucial diagnostic adjunct in managing critically ill patients. Bedside ultrasonography is ideal for clinicians working in intensive care unit settings. It enables the clinician to reach diagnoses rapidly and assess responses to interventions in real-time. In addition, bedside ultrasound examination findings can influence clinical management when evaluating critically ill patients.<sup>1</sup> Furthermore, the use of critical care ultrasound may decrease the utilization of conventional diagnostic modalities.<sup>2</sup>

Given this, training in critical care ultrasound has become an integral part of critical care fellowship training. However, while several societies have published consensus statements detailing core competencies in critical care ultrasonography, there still exists a lack of standardization regarding trainee education.<sup>3-5</sup>

## Background & Purpose (cont.)

A wide variation may exist in how critical care ultrasound training is accomplished for anesthesiology critical care fellowships.

Thus, this study aims to explore the current state of ultrasound teaching in anesthesiology critical care medicine fellowship programs.

## Methods

This cross-sectional study will be performed using a web-based survey. The survey was developed based on a systemic review of the critical care ultrasound training schemas utilized to deliver ultrasound training, a review of core competency recommendations by the various intensive care medicine societies, and informal discussions with other program directors.

## Methods (cont.)

Survey questions will be reviewed by the Society of Critical Care Anesthesiologists (SOCCA) working group on critical care ultrasound. This group comprises program directors and associate program directors interested in ultrasound education and expertise in critical care ultrasound. In addition, the pilot survey will be sent out to several critical care anesthesiologists (non-program directors) to test clarity and relevance. (Figure 1).

The survey is divided into several sections, including basic program characteristics and details of how ultrasound training is delivered for example, lectures vs. hands-on training live simulation, or utilization of online simulation modules, etc.

The final section explores the barriers to the educational program, such as the number of program faculty with formal National Board of Echocardiography Certification or a Testamur status in critical care echocardiography.

## Planned Timeframe

Survey Review by the SOCCA POCUS Group	Sep. 2022
Pilot Survey	Nov. 2022
Finalized survey sent to Program Directors	Jan. 2022
Data analysis and manuscript draft	Mar. 2023

## Expected Results

I postulate that we will observe various ultrasound teaching methods as well as the number of minimum examinations required for competency assessments. I hypothesize that the number of faculty with certification or expertise in critical care ultrasound will be similar among the programs. As such, larger programs likely face more significant challenges in expert faculty being able to review all the trainee performed exams.

## References

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Figure 1. Flowchart of The Survey Development

