

Curricular Integration of Point-of-care Ultrasound in Medical Education in India: An Immediate Need



Sushrut Ingawale^{1,*}, Vineet Upadhyaya², Vineet Chandak³

Received: 24 December 2025; Accepted: 05 February 2026

ABSTRACT

Point-of-care ultrasound (POCUS) has become an essential bedside imaging tool in modern medical practice, enabling rapid, real-time, and cost-effective assessment for cardiac, pulmonary, abdominal, and vascular conditions, as well as guidance for invasive procedures. Its value is well established in emergency and critical care settings, yet formal POCUS training is currently absent from the undergraduate as well as postgraduate medical curriculum in India. This gap persists despite the widespread applicability of POCUS across clinical disciplines and its proven role in improving diagnostic accuracy and patient safety. Major barriers to POCUS integration in Indian medical education include limited awareness among physicians, inadequate infrastructure and equipment, lack of trained faculty, curriculum deficiencies, and regulatory challenges. Additional constraints, such as limited time during clinical rounds and the absence of standardized quality assurance, further hinder adoption. This article highlights the urgent need for structured and uniform POCUS education within the competency-based medical education (CBME) framework. It proposes the "POCUS Megaphone Strategy," a comprehensive approach encompassing problem identification, curriculum and faculty development, trainee-focused training programs, infrastructural strengthening, and policy-level advocacy. Integrating standardized POCUS training under the National Medical Commission will equip future Indian physicians with essential bedside imaging skills and significantly enhance the quality and safety of patient care.

Journal of The Association of Physicians of India (2026); 10.59556/japi.74.1592

INTRODUCTION

Point-of-care ultrasound (POCUS) has become an indispensable tool in modern medical practice, providing real-time, cost-effective imaging for cardiac, pulmonary, and abdominal assessments, as well as vascular access and guidance for invasive procedures.^{1,2} Particularly in emergency settings, the utility of POCUS is demonstrated by protocols such as the extended focused assessment with sonography for trauma (eFAST). Despite its significant benefits, formal POCUS training is currently absent from the Indian medical curriculum.³ There is an urgent need for structured and uniform formal POCUS education to equip medical students and residents with the necessary skills for its effective application in clinical practice.

TOP BARRIERS TO POCUS TRAINING IN INDIAN MEDICAL EDUCATION

Limited Awareness and Understanding

A substantial number of Indian doctors are not fully aware of the benefits and applications of POCUS due to the lack of formal training. A foundational level of competence and practice is essential before

a physician can independently use and interpret POCUS.^{1,3}

Infrastructure and Resource Constraints

The limited availability of POCUS machines in clinics and hospitals significantly hinders their widespread implementation. Although studies across the globe have identified a lack of handheld ultrasound devices as one of the top barriers, there are limited studies in the Indian context to estimate this burden.⁴

Curriculum and Training Gaps

Nonavailability of trained personnel is a major hindrance to implementing POCUS.^{5,6} Most studies across different countries have identified a lack of training and a lack of direct supervision as the top barriers.⁴ An Indian study among neonatologists who had access to POCUS revealed that only 25% of them had undergone structured training.³

Regulatory and Accreditation Challenges

The Pre-Conception and Pre-Natal Diagnostic Techniques (PCPNDT) Act, 1994, aimed at preventing female feticide, also poses a potential regulatory hurdle.⁵ Despite its major role in preventing female feticide, compliance

with these stringent regulations may deter many family physicians from adopting POCUS in clinics.

Other Barriers

As highlighted by Wong et al., lack of time to perform POCUS during rounds and lack of quality assurance processes necessitating an expert to confirm the findings were a few other barriers.⁴

THE NEED FOR POCUS TRAINING IN INDIAN MEDICAL EDUCATION

Point-of-care ultrasound has widespread utility across clinics, emergency departments, and hospitalized patients, including those in critical care for various diagnostic and therapeutic purposes.¹ However, a resident survey revealed that its use is mainly adopted by learners for eFAST and vascular access.⁷ Adopting POCUS for basic procedures such as paracentesis, thoracentesis, fluid taps, and central vascular access would advocate for patient safety by reducing complications. Furthermore, training in advanced examinations such as airway interpretation, renal ultrasound, IVC ultrasound, cardiac POCUS, and lung POCUS would enhance bedside management of critically ill patients. In the United States, the Accreditation Council for Graduate Medical Education (ACGME) mandates that emergency medicine programs

¹PGY-3 Internal Medicine Resident, Department of Internal Medicine, Frank H Netter MD School of Medicine, Quinnipiac University, North Haven, Connecticut, USA; St. Vincent's Medical Center, Bridgeport, Connecticut, USA; ²Junior Resident, Department of Radiodiagnosis and Interventional Radiology, All India Institute of Medical Sciences, New Delhi; ³Medical Student, Department of General Medicine, Seth Gordhandas Sunderdas Medical College and King Edward Memorial Hospital, Mumbai, Maharashtra, India; *Corresponding Author

How to cite this article: Ingawale S, Upadhyaya V, Chandak V. Curricular Integration of Point-of-care Ultrasound in Medical Education in India: An Immediate Need. *J Assoc Physicians India* 2026;74(7):82–84.

complete a designated POCUS course, with established evaluation tools such as the Rapid Assessment of Competency in Echocardiography (RACE) and the Assessment of Competency in Thoracic Sonography (ACTS) to gauge proficiency.⁸ It is the need of the hour to formalize POCUS education among medical trainees, both undergraduate and postgraduate, to ensure the highest level of patient care and safety.

STRATEGIES TO INTEGRATE POCUS TRAINING

We propose the “POCUS Megaphone Strategy” (Fig. 1) as a comprehensive approach to enhance awareness, foster knowledge acquisition, shift attitudes, and integrate POCUS practices into clinical medicine.

The first step in addressing the issue is a comprehensive identification of the problem, which constitutes an ongoing process that is complemented by timely interventions. Subsequently, a series of interventions is implemented, categorized as follows: curriculum and faculty development, medical trainee-focused POCUS programs, and infrastructural adaptations. Analogous to the control mechanism of a megaphone switch, these interventions require reinforcement through policy-level support to ensure sustained effectiveness.

Identification of the Problem

Accurately identifying the gaps in POCUS knowledge, skills, and availability within the

clinical setting is a foundational step. This includes assessing current competency levels among healthcare providers, the availability of equipment, and existing barriers to POCUS adoption, such as limited training opportunities and a lack of standardized protocols. Through surveys, audits, and needs assessments, this diagnostic phase helps to pinpoint areas for improvement and guides the targeted design of interventions. By continually re-evaluating these factors, the program can adapt to emerging needs, ensuring that interventions remain relevant and effective.

Curriculum and Faculty Development

This involves integrating POCUS training into the medical curriculum, with modules tailored to different levels of clinical expertise. Faculty development programs are essential to train educators in POCUS techniques, ensuring consistency and quality in teaching. Continuous faculty workshops and certifications further enhance teaching capacity and keep instructors updated with evolving POCUS practices.

Medical Trainee-Focused POCUS Programs

Structured POCUS training programs are developed for medical trainees, incorporating didactic sessions, hands-on practice, and case-based learning. These programs include competency assessments to track progress and ensure skill proficiency. Mentorship and supervised clinical applications support trainees in translating

knowledge into practice within real-world clinical settings. Collaboration with healthcare institutions for resource sharing and seeking international partnerships for expertise and equipment support can enhance POCUS training.

Infrastructural Adaptations

Establishing dedicated ultrasound labs with high-quality machines, simulation stations, and handheld POCUS devices creates an environment conducive to immersive training. These resources facilitate diverse, hands-on experiences that are essential for mastering POCUS. Allocating designated spaces for POCUS workshops and providing access to digital resources for remote learning further support skill development and program accessibility.

Advocacy and Policy Change

Regulatory bodies should establish world-class POCUS accreditation standards to ensure providers are competent in standard views, recognizing anatomical features, artifacts, diagnostic findings, and understanding limitations. Clinical case-based assessments and peer evaluations should precede certification. Showcasing success stories from institutions that have implemented POCUS training can mitigate resistance.

CONCLUSION

Point-of-care ultrasound is a versatile imaging modality with applications beyond the emergency department, including cardiology, pulmonology, obstetrics, gynecology, and gastroenterology. It is imperative to integrate

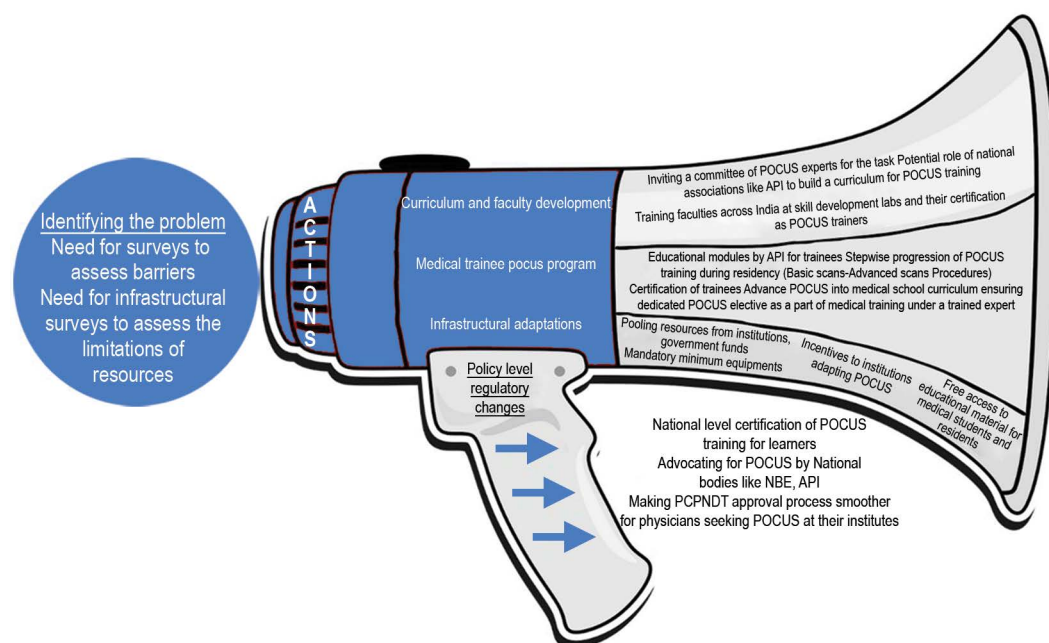


Fig. 1: The POCUS megaphone strategy for integrating point-of-care ultrasound into the medical curriculum

internationally recognized POCUS training into the CBME curriculum for medical students and residents, by the National Medical Commission (NMC) of India. This integration will ensure the future generation of doctors is proficient in POCUS, ultimately enhancing patient care across various medical fields.

ORCID

Sushrut Ingawale  <https://orcid.org/0000-0002-6938-6672>

REFERENCES

1. Díaz-Gómez JL, Mayo PH, Koenig SJ. Point-of-Care ultrasonography. *N Engl J Med* 2021;385(17):1593–1602. DOI: 10.1056/NEJMr1916062
2. Ingawale S, Hotchandani H, Upadhyaya V. POCUS: an emerging bedside tool. *Futuristic Trends Med Sci* 2024;3:139–155.
3. Rath C, Nagpal R, Suryawanshi P. Point-of-care ultrasound in neonatology in India: the way forward. *Indian Pediatr* 2023;60(5):351–357.
4. Wong J, Montague S, Wallace P, et al. Barriers to learning and using point-of-care ultrasound: a survey of practicing internists in six North American institutions. *Ultrasound J* 2020;12(1):19.
5. Deshpande S, Suryawanshi P, Sharma N, et al. Survey of point-of-care ultrasound uptake in Indian neonatal intensive care units: results and recommendations. *J Neonatol* 2019;33(1–4):13–21.
6. Kozyk M, Strubchevska K, Wasvary M, et al. S2140 A cross-sectional study assessing the prevalence of point-of-care abdominal ultrasound use among physicians. *Am J Gastroenterol* 2024;119(10S):S1528.
7. Thomas V, Abraham S, Balakrishnan J, et al. Point-of-care ultrasound training in Indian emergency medicine programs: a resident's perspective. *Int J Acad Med* 2017;3.
8. Ramgobin D, Gupta V, Mittal R, et al. POCUS in internal medicine curriculum: quest for the holy-grail of modern medicine. *J Community Hosp Intern Med Perspect* 2022;12(5):36–42.