Butterfly™
The New Image of Health

Case study

Why every medical student should have a point-of-care ultrasound device

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℞ only. Butterfly iQ/iQ+™ is a portable ultrasound system designed for external ultrasound imaging by trained healthcare professionals. Prior to using the device and its accessories, carefully read the User Manual thoroughly including the intended use, warnings, contraindications and operating instructions.

The Rise of POCUS

iQ+, Butterfly's handheld, whole-body probe.

The future of bedside assessment

The use of point-of-care ultrasound (POCUS) has become widespread across nearly every specialty in medicine.[1,2] It is an accurate, noninvasive, portable diagnostic imaging modality that will only continue to expand as it becomes more cost-effective and user-friendly. Bedside ultrasound augments the physical examination and the physician's ability to safely, efficiently, and accurately diagnose and treat patients. In fact, the Agency for Healthcare Quality and Research recommends routine use given its excellent safety profile.[1] Moreover, The American Medical Association's Resolution 802 affirmed that "ultrasound imaging is within the scope of practice of appropriately trained physicians and that the recommended training and education standards be developed by each physician's respective specialty."

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POCUS enhances a student’s understanding of basic medical knowledge and clinical skills.

Challenges to Implementation

One of the challenges to routine implementation of POCUS is a lack of early training. Presently, medical schools do not consistently integrate POCUS education into their curriculum.[4] Typically, physicians rely on postgraduate training to acquire POCUS skills.[5] Consequently, incoming residents often lack the theoretical and practical sonographic capabilities relevant to daily clinical practice.[2] POCUS enhances the traditional learning and understanding of basic anatomy, physiology, and pathophysiology principles; augments physical examination; and improves diagnostic accuracy as well as procedural acumen and safety.[6]

Numerous obstacles often preclude implementing POCUS into undergraduate medical curricula. These include the availability of ultrasound equipment and ultrasound-trained faculty in addition to curricular flexibility. At the Lewis Katz School of Medicine at Temple University, we overcame these challenges by placing a handheld point-of-care ultrasound device into every student's hand.

The moment during the class of 2025's white coat ceremony in which students were told they would all receive their own Butterfly device.

Integrating POCUS the Right Way

The concept of point-of-care ultrasound (POCUS) continues to gain momentum within the medical world, supported by the growing body of evidence demonstrating its safety and utility.[3] Early integration of POCUS training into medical education as part of a structured and standardized curriculum enables students to acquire the basic skills and foundation for advanced training during residency.[2]

In 2021, medical students at the Lewis Katz School of Medicine became the first in the eastern U.S. to receive personal handheld POCUS devices. Distributing Butterfly iQ+ probes to our incoming students has been instrumental to the success of our POCUS curriculum.

Overcoming obstacles

From the beginning, my colleagues and I believed in the value of a longitudinal POCUS program integrated across the four-year undergraduate medical education experience. However, we needed to foster support from our leadership.

1. **Cost and availability of ultrasound equipment.**
   Hands-on experience is fundamental to learning POCUS. Our immediate challenge to developing a robust POCUS program was the prohibitive cost of traditional cart-based ultrasound models.

2. **Curricular time constraints.**
   Additions and changes to the curriculum come at the expense of other educational content.

3. **Lack of ultrasound-trained faculty.**
   POCUS remains novel among most practicing physicians. Furthermore, training educators is time intensive.

> **POCUS reinforces what is taught in anatomy and physiology.**

The Solution: A POCUS Partner

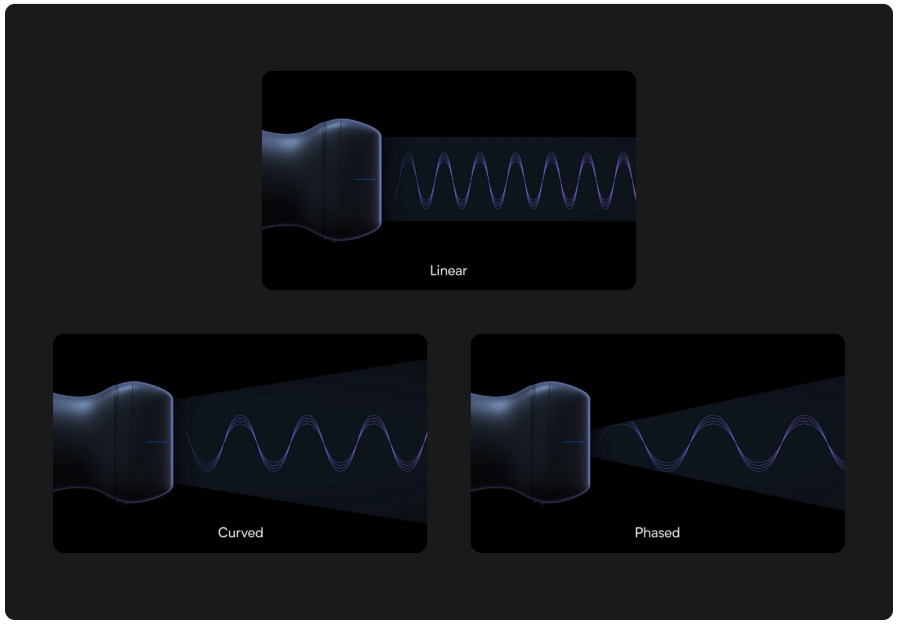
Success requires a champion to implement a new POCUS program. At Temple, we were fortunate to earn the support of our leadership as well as a generous donor looking to invest in medical technology and educational innovation. Collaborating with Butterfly Network enabled us to address the key challenges mentioned above.

Value

We needed a cost-effective and reliable means to provide routine practical training and education. The Butterfly probes provided the appropriate solution in conjunction with the company's educational platform.

Versatility

A thorough POCUS education requires students to have regular experience with the three traditional ultrasound transducers. The Butterfly device remains the only one with this technology.

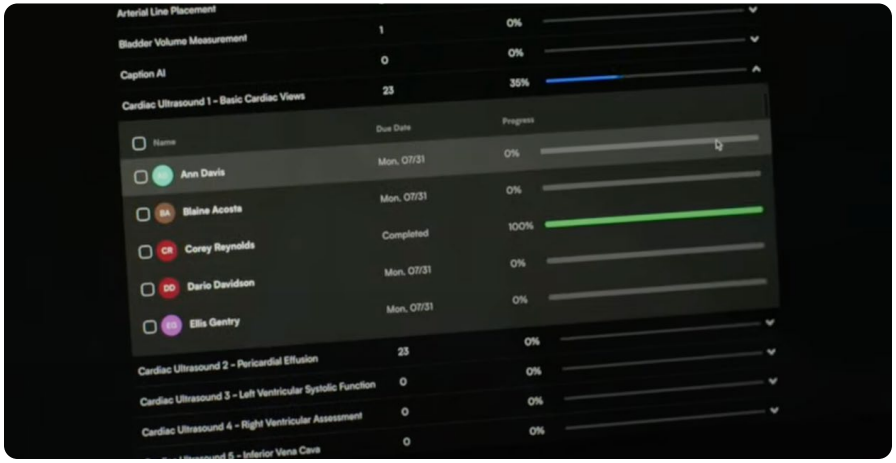


Support and easy integration into curriculum.

Availability of POCUS-trained faculty remains a challenge. The technological and educational support provided by Butterfly helps overcome this limitation. At Temple, our POCUS program mirrors the overall organ systems-based curriculum. For example, we teach a focused cardiac exam during their cardiovascular block. The Butterfly Academy facilitates our program through asynchronous learning. Students prepare with online videos prior to class, where we focus solely on hands-on training.

Better access to skilled instruction.

The clinical years of medical education introduce a unique challenge to POCUS education. Students are scattered across health systems without access to uniform POCUS education. The cloud-based storage offered by Butterfly facilitates standardization. Assigning students specific scans during each rotation allows ongoing training and valuable feedback via remote quality assurance review.



Building a Competitive Advantage with POCUS

Impact throughout our health system

Our medical school and health system have collaborated with Butterfly to expand POCUS training and incorporate it clinically. Our health system POCUS working group brings together educators, clinical departments, and hospital administrators to facilitate the integration of POCUS, including a newly developed Internal Medicine POCUS fellowship to complement the pre-existing EUFAC-accredited Advanced Emergency Medicine Ultrasonography fellowship.

Our POCUS initiatives at Temple have improved the clinical training of our medical students, residents, and fellows as well as the quality of care that we provide our patients. It has enhanced our institution's reputation by hosting POCUS educational events, including the Philadelphia Regional POCUS conference and the Philly UltraFest. These regional residency and medical student symposia highlight the educational and patient care advantages of POCUS. In addition, POCUS research has expanded within our health system. For example: a 2021 COVID pneumonia study highlighted the diagnostic superiority of lung ultrasound over chest X-ray, and a more recent study demonstrated that handheld ultrasound exams delivered the same diagnostic accuracy as traditional cart-based models.

Staying Ahead of the Technology Curve

POCUS programs bridge the gap between medical education and clinical practice. POCUS has dramatically improved bedside medicine:

Faster Time-To-Treatment.
Provides immediate clinically relevant information.

Informed Diagnostics.
Augments the physical examination. Improves diagnostic accuracy.

Safer Care.
Reduces procedural complications as well as exposure to radiation and contrast. Alleviates the need to transport unstable patients.

By incorporating point-of-care ultrasound training into undergraduate medical education, we better prepare our future physicians to provide safe, effective, and evidence-based medical care.

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