

Ultrasound at the point of care – Grown up and moving out!

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The use of ultrasound at the point of care evolved from its earlier use in cardiology, radiology, obstetrics, and trauma. It has since come of age in Canadian Emergency Medicine after its introduction 2 decades ago. It has been adopted by many other front-line specialties and has set up home among many groups of clinicians as point-of-care ultrasound (POCUS).^{1,2} The updated Canadian Association of Emergency Physicians (CAEP) position statement on POCUS provides clear and timely guidance on its use, and sets out recommendations on scope of practice, training and competency, quality improvement, program management, and research for POCUS in adult and pediatric emergency medicine in Canada.³

POCUS is the use of ultrasound at the patient's bedside by clinical providers, performed to answer a focused clinical question, or to improve the safety of a procedure.¹ In emergency medicine, its uses can be further categorized as resuscitative, diagnostic, therapeutic/monitoring, or procedural.³ POCUS is not a replacement for radiologist-performed diagnostic imaging; rather it is a unique real-time, clinical-diagnostic approach, using similar technology. Despite occasional reminders of old turf wars and instances of professional overreach,⁴ numerous national and international organizations representing emergency medicine, critical care, internal medicine, pediatrics, and hospital medicine have released position statements for the use of POCUS within their clinical specialties. Those developed by POCUS users universally acknowledge and support the development of standards

within their respective specialties. This self-regulation is predicated on the fact that POCUS is a distinct imaging modality with a range of both diagnostic and procedural applications that differ from specialty to specialty and is, thus, most appropriately developed, studied, refined, and overseen by experts within each discipline.⁵

Research informs the use of POCUS across a spectrum of metrics beyond test performance characteristics, including system and patient outcomes. This robust literature base serves to provide evidence confirming the utility and benefits of the continued innovation and growth of POCUS. This issue's accompanying POCUS in emergency medicine position statement includes a summary of key evidence (Appendix 2) supporting our recommendations.

The development of a broadly endorsed Canadian emergency medicine curriculum for POCUS⁶ and the aligned CAEP position statement³ appropriately identifies a core scope of practice reflecting clinical priority as well as evidence for clinical impact: extended Focused Assessment with Sonography for Trauma; assessment for abdominal aortic aneurysm; identification of first trimester intrauterine pregnancy; thoracic ultrasound for identification of pneumothorax, hemothorax, pleural effusion, and interstitial lung syndrome; focused cardiac ultrasound; and ultrasound-guided vascular access.

Of all potential barriers to POCUS use, the most commonly identified limiting factor is a lack of training.⁷

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To train and maintain the skills of POCUS users, funding, access to courses in regional and rural areas, and longitudinal quality improvement initiatives will be necessary.

While the evidence suggests that a handful of POCUS applications can be learned through short, well-designed training interventions,⁸ the majority of applications require a significant training commitment.⁹ Patient safety is paramount, guiding our recommendation for training that includes knowledge-based education and supervised practical experience, objective assessment of skills and knowledge, and ongoing governance and skills maintenance. After all, in the era of competency-based medical education, clinicians should demonstrate proficiency in the POCUS applications they choose to use (in addition to adhering to standards relating to documentation and clinical integration).

We applaud the many collaborative relationships within and across disciplines that currently shape POCUS practice. We support calls for high standards and strive to make our recommendations achievable by strengthening our networks, building training capacity, and sharing resources with our colleagues. These multidisciplinary networks will prove invaluable as POCUS use grows throughout health care, addressing items that span transitions in care such as inconsistencies in terminology. For example, referring to POCUS findings as nondiagnostic (or as informal studies) is confusing and unhelpful; terminology must be clarified to reflect the unique and valuable role of POCUS in patient care.

Lack of access to saved POCUS images and a low awareness of emergency medicine training in POCUS have also been identified as primary barriers to consultant use of POCUS findings.¹⁰ Emergency departments can take steps to improve the perceived status of POCUS among our colleagues by joining departments that have adopted image archiving systems to store select POCUS images. Again, such initiatives are most likely to thrive if they are born through collaboration with the specialties involved in the care of those patients. Furthermore, the miniaturization of ultrasound technology with its associated arrival of ultraportable handheld devices, and the development of machine learning will continue to challenge conventions in image generation, interpretation, documentation, and archiving.¹

The development of POCUS in emergency medicine has improved the ability of front-line physicians to provide safe, focused, diagnostic inquiry and to guide invasive procedures in a timely manner 24 hours per day, 7 days per week. POCUS has a rich ancestry of parent specialties, yet has now grown up, moved out, and is owned by no one discipline. We must continue to collaborate with colleagues in all specialties, encouraging the widespread uptake and use of POCUS to improve patient care.

Keywords: Emergency medicine, governance, point of care ultrasound

Competing interests: All authors are actively involved in point of care ultrasound committee work and education with CAEP and other Canadian institutions. D.J.K. is on the medical advisory board of Clarius Mobile Health.

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