

## Medical student attitudes and perceptions of Point of Care Ultrasound curriculum and assessment methods: a multisite survey

Attitudes et perceptions des étudiants en médecine à l'égard du programme de formation et des méthodes d'évaluation en échographie au chevet : une enquête multisite

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Published ahead of issue: Nov 19, 2025. CMEJ 2025 Available at <https://doi.org/10.36834/cmej.81602>

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## Introduction

Point of Care Ultrasound (PoCUS) is ultrasound performed at the bedside by clinicians and is becoming standard of care across a range of medical specialties.<sup>1,2</sup> Several Canadian medical schools have incorporated PoCUS training into undergraduate medical education (UGME).<sup>3</sup> PoCUS curricula provide students with ultrasound knowledge that also supports the learning of anatomy, human physiology, clinical reasoning, and the development of procedural skills.<sup>4</sup>

In 2018, the Canadian Ultrasound Consensus for Undergraduate Medical Education (CanUCMe) Group, a panel of ultrasound and educational leaders across Canada, developed a consensus list of 85 learning objectives and other curricular elements to be considered for inclusion in Canadian medical school PoCUS curricula.<sup>4</sup> These elements were selected to help trainees develop a uniform and strong foundational understanding of PoCUS.<sup>4</sup>

However, the curricular elements proposed for inclusion were not informed by empiric evidence of student performance, and furthermore, there exists a paucity of research examining medical students' attitudes and perceptions regarding PoCUS skills appropriate for UGME. Students' preferences in assessment can influence their

learning strategies, study behaviours, and perceptions of educational quality.<sup>5</sup> To address this gap, we will explore fourth-year medical students' attitudes and preferences toward the UGME PoCUS curriculum and its assessment methods, as well as their perceived skills and confidence in performing PoCUS.

## Methods

We will deploy an anonymous online survey at four Canadian medical schools that have integrated PoCUS into their UGME curricula. These institutions include the University of Saskatchewan, the University of Ottawa, the Schulich School of Medicine & Dentistry, and Memorial University. Institutional approval for this study was obtained from the Ottawa Hospital Research Institute (OHRI) in April 2025, including research ethics approval by the Ottawa Health Science Network Research Ethics Board (OHSN-REB). Subsequent institutional reviews were completed and approved by the University of Saskatchewan, Memorial University, and the Schulich School of Medicine & Dentistry through their respective Committees of Medical Education and/or Research Ethics Boards. The OHRI approval is available upon request from the corresponding author.

We developed the survey in collaboration with national PoCUS education leaders, with questions aligned with the CanUCMe Group's recommended curricular elements.<sup>4</sup> It underwent three rounds of revision and peer review before being piloted by second- and third-year medical students. A final round of survey revision was subsequently completed prior to final distribution.

Eligible participants will be fourth-year medical students, selected due to their longitudinal exposure to the entirety of their respective PoCUS curricula. Participants will be surveyed on their exposure to PoCUS education, satisfaction with PoCUS training, self-rated PoCUS skills, and attitudes towards PoCUS assessment methods. A sample of questions are provided in Table 1 and the complete survey instrument is available in the appendix.

*Table 1. Sample questions included in the survey.*

Sample Question Number	Question Text
Question 1	How have you been exposed to PoCUS during your medical training program?
Question 2	What level of general PoCUS proficiency should medical students achieve upon graduation?
Question 3	How would you perform in an OSCE (Objective Structured Clinical Examination) station (includes describing the scan to the patient, ensuring their comfort, performing the scan, optimizing the image, interpreting findings, and integrating into patient care) on the following PoCUS applications. These applications include, but are not limited to, scanning for pneumothorax, B-lines, and free fluid in the abdomen, among others.

Perceived confidence and skill will be rated using Likert scale responses. The survey will be administered using Microsoft Forms. Distribution will follow a modified Dillman method, with invitations sent via email through institutional listservs.<sup>6</sup> Reminder emails will be sent at two- and four-weeks post-initial invitation. The survey will be open for eight-weeks following initial invitation. Participants who complete the survey will receive a \$20 electronic gift card as a token of appreciation. Data will be securely stored in an encrypted Excel file on a password-protected server hosted by the University of Ottawa.

We will calculate descriptive statistics using quantitative analysis. Proportions and averages will be calculated for,

respectively. We will present Likert scale responses as the percentage of respondents selecting each option. For normally distributed data, we will report means and standard deviations; for non-normally distributed data, we will report medians with interquartile ranges. We will analyze qualitative data through thematic analysis. Survey distribution is planned for September to November 2025. Data analysis will be conducted between December 2025 and January 2026, with manuscript preparation targeted for completion by February 2026.

## Conclusion

While medical schools have implemented varying degrees of PoCUS education into their medical school curricula, there is limited research examining medical students' attitudes and perceptions regarding which PoCUS skills are appropriate for UGME. Findings from this study will provide valuable insight to facilitate the alignment between curriculum design and learner needs.

**Conflicts of Interest:** None.

**Funding:** This project is supported by a \$5,000 grant from the Ontario Medical Students Association (OMSA) Medical Student Education Research Grant (MSERG) and \$6,000 in funding from the Department of Emergency Medicine, The Ottawa Hospital, University of Ottawa

**Authorship:** All authors have each signed their own attestation statement that they meet the requirements of authors. The lead author, in addition to their own attestation as an author, has signed an attestation that all authors listed on this paper meet the requirements for authors.

**Edited by:** Marcel D'Eon (editor-in-chief)

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