



Point-of-care-ultrasound (POCUS) in Canadian hospitals during the COVID-19 pandemic: a cross-sectional survey

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To the Editor,

Point-of-care-ultrasound (POCUS) is useful for bedside evaluation of lung conditions. While the findings of lung ultrasonography are often non-specific,¹ it provides diagnostic results comparable to computerized tomography (CT) of the chest without the added burden of patient transport, radiation exposure, and additional cost.^{1–4}

Following institutional ethics approval (22 July 2020), we deployed a cross-sectional electronic practice survey (Electronic Supplementary Material, eAppendix) to healthcare providers in Canadian hospitals to describe how POCUS was used in the management of COVID-19 patients and the influence of COVID-19 on POCUS training in Canadian hospitals. The survey was developed according to established methodology⁵ using a literature review, focused discussion, and pre-testing on three provincial POCUS leaders. The survey included multiple-choice questions reported in aggregate and open-ended questions analyzed by thematic content analysis—deductively for pre-established constructs and inductively for common themes.

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The survey was distributed through several professional societies between 3 September 2021 and 30 March 2021. Responses were obtained from 252 respondents representing emergency medicine (96/252; 38%), anesthesiology (80/252; 32%), critical care (31/252; 12%), family medicine (29/252; 12%), and other (16/252; 6%). Respondents were credentialled through the Canadian Point of Care Ultrasound Society^A (109/252; 43%), the National Board of Echocardiography^B (21/252; 8%), and other (14/252; 56%); 116 respondents were not credentialled in POCUS.

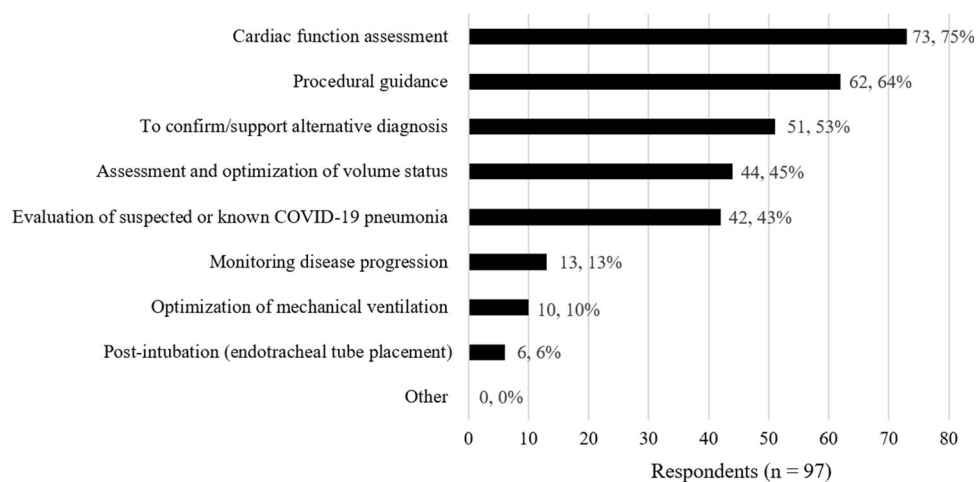
Of those using POCUS during the COVID-19 pandemic, respondents described using POCUS in the emergency department (142/234; 61%), perioperatively (59/234; 25%), in the ICU (55/235; 24%), on the ward (22/234; 9%), and in other locations (16/234; 7%). Fourteen respondents (14/234; 6%) did not use POCUS at all during the COVID-19 pandemic.

Of those reporting POCUS use during the COVID-19 pandemic, most respondents (88/97; 91%) reported that POCUS sometimes or always helps in the clinical assessment and/or management of patients suspected of having or having COVID-19. The most useful applications (respondents chose up to three) of POCUS in the clinical assessment and/or management of potential or suspected COVID-19 patients were reported to be assessment of cardiac function (73/97; 75%), procedural guidance (62/97; 64%), confirmation of alternate diagnosis (51/97; 53%), assessment and optimization of volume status (44/97; 45%), and evaluation of COVID-19 pneumonia (42/97;

^A *Canadian Point of Care Ultrasound Society*. Available from URL: <https://www.cpocus.ca> (accessed August 2021).

^B *National Board of Echocardiography, Inc.* Available from URL: <https://www.echoboards.org> (accessed August 2021).

Figure Point-of-care-ultrasound applications rated as the most useful in the clinical assessment and/or management of COVID-19. Data are given as *n*, %.



43%) (Figure). Several respondents reported examples of POCUS being useful, including “We are trying to minimize taking people to the *x-ray* suite, especially post-intubation; using ultrasound to confirm tube placement.” and “It has allowed for simultaneous diagnosis and drainage of bilateral pleural effusions... by one operator, hence saving over seven sets of personal protective equipment”.

When asked to rank the utility of imaging modalities for the clinical assessment of COVID-19, weighted averages were similar between chest CT (2.9/4), chest radiography (2.8/4), lung POCUS (2.4/4), and focused cardiac ultrasound (FOCUS) (2.1/4). Respondents described sometimes using POCUS as a substitute for other imaging modalities during the COVID-19 pandemic; one third of respondents (32/97; 33%) used POCUS instead of chest radiography and 10/97 (10%) used POCUS instead of a chest CT.

The project highlighted the use of POCUS in Canadian hospitals during the COVID-19 pandemic. Of note, most of those using POCUS described its greatest utility in the assessment of cardiac function, procedural guidance, and the evaluation of alternate diagnosis more so than for the specific diagnosis of COVID-19 pneumonitis. These findings illustrate the versatility and wide-ranging value of POCUS in hospital care. As it has been reported to meaningfully improve care, we submit that hospital and departmental leadership should support the use of POCUS in Canadian hospitals by adopting existing specialty-specific guidelines and recommendations regarding high quality POCUS training and clinical integration.

Disclosures None.

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