

regional anesthesia, should not take their expertise in perioperative echocardiography for granted, but humbly adopt this new diagnostic modality under the prism of continuing training and education.

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**Reply to Drs Saranteas
and Panou**

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To the Editor:

We thank Drs Saranteas and Panou¹ for their letter to the editor in response to our recent articles on the emerging role of point-of-care ultrasound (PoCUS) for the regional anesthesiologist and specifically regarding our article on focused cardiac ultrasound (FoCUS).^{2,3} We appreciate their knowledge and perspective as cardiologists and agree that there are certain limitations associated with FoCUS. Although we do acknowledge these limitations in our article, our goal of this series is to encourage regional anesthesiologists proficient in ultrasound-guided regional anesthesia to add this to their clinical toolbox by learning these exceedingly relevant PoCUS skills. Despite these limitations, we stand by the many strengths of FoCUS as a bedside tool to augment the clinical examination. Focused cardiac ultrasound can answer simple, yet potentially lifesaving “yes or no” clinical questions, such as whether there is the presence of severe aortic stenosis, significant hypovolemia, a significant cardiomyopathy, or a massive pulmonary embolism.³ Although FoCUS is not a continuous monitoring device such as an arterial line or pulmonary arterial catheter, the benefits of FoCUS come from it being a noninvasive technology that can be performed repeatedly, reliably, and rapidly at the bedside in any location within the perioperative setting. Several studies have demonstrated that this skill is rapid and effective in the hands of a skilled clinician, with 1 study showing that image interpretation with a pocket-sized ultrasound machine can be successfully performed in approximately 10 seconds for any basic FoCUS view, and it takes approximately 60 seconds to obtain all

FoCUS views in addition to visualization of the pleura.⁴ Although the patient size, positioning, and positive-pressure ventilation can make imaging a challenge, we do address ways to troubleshoot these issues in the article.

The support for FoCUS has grown significantly over the last decade as multiple organizations, including the American Society of Echocardiography,⁵ World Interactive Network Focused On Critical UltraSound,⁶ and the European Association of Cardiovascular Imaging,⁷ have acknowledged its role as a meaningful bedside assessment tool. And, although specialists such as cardiologists might be concerned that FoCUS could lead to a decrease in comprehensive trans-thoracic echocardiograms, it has actually been demonstrated that PoCUS often leads to earlier requests for advanced diagnostic testing, resulting in a more rapid definitive diagnosis of pathology.⁸ We agree that adequate training is required to be able to confidently identify subtle pathology; however, as stated in our article, it has been shown that novices with limited training (50 examinations) can reliably diagnose important and life-threatening cardiac conditions such as pericardial effusions, left ventricular dilatation, hypertrophy and failure, and right ventricular dilatation.⁹

As more medical professions continue to gain early exposure to PoCUS in their medical schools¹⁰ and residency training,¹¹ there will be an increased awareness of the many strengths as well as limitations associated with FoCUS at the bedside. Ultimately, FoCUS should be seen as one of multiple bedside tools to assess the hemodynamically unstable patient, and all imaging should always be put in clinical context. Although treatment should never be based solely on bedside ultrasound imaging, it does the patient a disservice if we do not use bedside ultrasound to aid in the clinical decision-making process.

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