EDITORIAL

Echocardiography in Intensive Care Unit: We Need a Certification Program

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The traditional use of ultrasound technology in the intensive care unit (ICU) was by ultrasonologists and cardiologists. Like in advanced countries, critical care ultrasonography (USG) and echocardiography are rapidly finding their place in noncardiac ICUs in India. The use of ultrasound and echocardiography in the ICU by critical care physicians is a focused one and serves their need to know the key abnormalities which can impact the ICU management of critically ill patients. Ultrasound and echocardiography in ICU are also frequently used for vascular access and other invasive procedures to improve patient safety and procedure success. The noninvasive nature of ultrasound and echocardiography makes them an ideal tool for monitoring dynamic hemodynamic parameters in ICU patients. With increasing evidence of the advantages of using ultrasound and echocardiography in patient diagnosis, invasive bedside ICU procedures, and hemodynamic management, it is generally recommended that the use of these machines should be learned and practiced by all critical care physicians.[1]

The domains of training programs in critical care medicine in India by the regulatory bodies, namely the National Medical Commission and the National Board of Examination in Medical Science, and the national societies like the Indian Society of Critical Care Medicine, include training in critical care ultrasound.[2–4] The use of these technologies does require critical care physicians to have the knowledge, training, and skills to use these machines. There is a plethora of questions that need to be addressed if we have to train a sizable population of critical care physicians to make an impact and create a pool of future trainers in our country.

In this issue of the *Journal of Acute Care*, Kanchi et al. have raised a very pertinent question about the need for a certification program for echocardiography in ICU.[5] The authors begin by providing the theoretical and practical aspects of critical care ultrasound and echocardiography. Evaluation of left ventricular systolic function and estimation of cardiac output are well described in the article and are adequately supported by clear illustrations. Other uses of critical care ultrasound and echocardiography listed are for making a diagnosis of persistent hypoxia causes, infective endocarditis, myocardial ischemia, aortic pathology, pericardial tamponade, and pulmonary embolism. Additional uses mentioned are for differentiating between causes of hypotension in ICU patients and assessing right atrial pressures from inferior vena cava diameter. Diagrammatic depictions clearly explain the use of focused assessed transthoracic echocardiography protocol as a rapid diagnostic modality in the ICU. Similar depictions of transesophageal views explain their diagnostic utility.

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In India, we face a number of unique challenges for training and the use of ultrasound and echocardiography in the ICU. The operators of critical care ultrasound are derived from diverse specialties ranging from experts to relative novices with only a few days of training. The avenue of training in ultrasound and echocardiography is usually in-house or from brief "hands-on" workshop sessions during medical conferences. Some prefer to undertake a well-structured short course in basic and advanced echocardiography.

Currently, there are no national guidelines for training critical care physicians in critical care ultrasound and echocardiography. The issue of how to train critical care physicians, ways of assessment of competency, and award of certification remains largely unanswered in our country. This makes training future critical care physicians a challenge. Although there are few international guidelines for the training of critical care ultrasound and echocardiography, not many countries have been able to adopt them fully for their training needs. The role of critical care ultrasound and echocardiography is still evolving, and there are agreements and disagreements on its indications and use.[6] Even the best centers in the world have a deficiency in terms of a formal curriculum and limited availability of faculty with training in ultrasound.[7,8]

There are not many publications on the topic of critical care ultrasound and echocardiography or the challenges of ensuring uniformity in training in a vast and diverse country like India. Kanchi et al. have addressed the issue of training in critical care ultrasound and echocardiography in this issue of the *Journal of Acute Care*.[5] The article lays down the framework of a well-structured, objective, and clear nonresidential certificate course. The course curriculum, competencies, record keeping, and mentorship are well laid out. The course is founded on training in five domains, namely USG for vascular assessment, lung, airway, and transthoracic and transesophageal echocardiography, each having its core

competencies. The need for national/societal consensus on the curriculum and how best to train and certify is becoming a top priority in our country. The training and certification program proposed in the article by Kanchi et al. may well become a foundation document for future training in critical care ultrasound in our country.[5]

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