SPECIAL ARTICLE

International Evidence-Based Recommendations for Focused Cardiac Ultrasound

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Background: Focused cardiac ultrasound (FoCUS) is a simplified, clinician-performed application of echocardiography that is rapidly expanding in use, especially in emergency and critical care medicine. Performed by appropriately trained clinicians, typically not cardiologists, FoCUS ascertains the essential information needed in critical scenarios for time-sensitive clinical decision making. A need exists for quality evidence-based review and clinical recommendations on its use.

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Dr Bowra is a member of the Medical Advisory Board of Signostics Pty Ltd. Dr Neskovic is an advisor to Medtronic and AstraZeneca and has received consultative honoraria from these companies. Dr Neskovic has received honoraria from Merck and research funds from GE Healthcare. Dr Sloth is an uncompensated member of the Medical Advisory Board of GE Vscan and an uncompensated lecturer for Philips. All other members declared no conflict of interest. No direct sponsorship of any kind has been provided by any commercial or industrial source. No honoraria have been given to any of the panel members.

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Methods: The World Interactive Network Focused on Critical UltraSound conducted an international, multispecialty, evidence-based, methodologically rigorous consensus process on FoCUS. Thirty-three experts from 16 countries were involved. A systematic multiple-database, double-track literature search (January 1980 to September 2013) was performed. The Grading of Recommendation, Assessment, Development and Evaluation method was used to determine the quality of available evidence and subsequent development of the recommendations. Evidence-based panel judgment and consensus was collected and analyzed by means of the RAND appropriateness method.

Results: During four conferences (in New Delhi, Milan, Boston, and Barcelona), 108 statements were elaborated and discussed. Face-to-face debates were held in two rounds using the modified Delphi technique. Disagreement occurred for 10 statements. Weak or conditional recommendations were made for two statements and strong or very strong recommendations for 96. These recommendations delineate the nature, applications, technique, potential benefits, clinical integration, education, and certification principles for FoCUS, both for adults and pediatric patients.

Conclusions: This document presents the results of the first International Conference on FoCUS. For the first time, evidence-based clinical recommendations comprehensively address this branch of point-of-care ultrasound, providing a framework for FoCUS to standardize its application in different clinical settings around the world. (J Am Soc Echocardiogr 2014;27:683.e1-e33.)

Keywords: Cardiac sonography, Echocardiography, Cardiac ultrasound, Crit Care echocardiography, Emergency ultrasound, Critical ultrasound, Point-of-care ultrasound, Guideline, RAND, GRADE, Evidence-based medicine

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The history of echocardiography began with the collaboration of Drs. Edler and Hertz in Lund in 1954.[1] It has since evolved into a highly sophisticated and powerful tool. Comprehensive standard echocardiography provides information on virtually all aspects of heart morphology and function, disclosing numerous derangements in cardiovascular physiology. However, image acquisition and interpretation of comprehensive standard echocardiography require extensive training. Until recently, this technology was provided only to stable patients able to reach an echocardiography laboratory.

With the advent of mobile, portable, and pocket-sized ultrasound machines, this imaging modality is now readily available in emergency and critical care settings in time-sensitive scenarios in which it is immediately needed. Ease of use, availability of diagnostic information within a short time, high-quality imaging in most patients, and low complication rates have led to the widespread use of echocardiography in the perioperative, critical care, and emergency medicine environments. For many years, the scientific community has affirmed that ultrasound imaging is within the scope of practice of