
AMERICAN SOCIETY OF ECHOCARDIOGRAPHY POSITION PAPER

Echocardiography in Emergency Medicine: A Policy Statement by the American Society of Echocardiography and the American College of Cardiology

The Task Force on Echocardiography in Emergency Medicine of the American Society of Echocardiography and the Echocardiography and TPEC Committees of the American College of Cardiology represented by William J. Stewart, MD, Pamela S. Douglas, MD, Kiran Sagar, MD, James B. Seward, MD, William F. Armstrong, MD, William Zoghbi, MD, Itzhak Kronzon, MD, Janel M. Mays, RN, RDCS, Alan S. Pearlman, MD, Ingela Schnittger, MD, Jeanette A. St. Vrain, RDCS, and Richard E. Kerber, MD

The Council of Emergency Medicine Residency Directors Task Force on Curriculum Development has advocated that all teaching programs train emergency medicine (EM) physicians to perform limited ultrasound examinations of several structures of the body, including the gallbladder, kidneys, aorta, liver, diaphragm, spleen, pancreas, bowel, heart, retroperitoneum, ureters, and bladder. Mateer et al¹ recommended a training period for EM physicians of 40 hours of instruction, including a total of 150 ultrasound examinations, of which cardiac studies would probably comprise 25 to 50 examinations.

BACKGROUND

Physicians Interpreting EM Echocardiographic Studies Need Appropriate Experience

Similar to training guidelines for noncardiac ultrasonography,² standards for training at various levels of clinical competency have been established by national organizations.³⁻⁹ The time-tested consensus for independent competence in echocardiography (Level 2 training) includes a minimum of 6 months of echocardiography education, involving 300 studies with a wide variety of abnormalities (Table 1). The recommendations of Mateer et al¹ are therefore far from adequate.

From the American Society of Echocardiography and the American College of Cardiology.

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Reprint requests: William J. Stewart, MD, FACC, The Cleveland Clinic Foundation, 9500 Euclid Avenue, Desk F-15, Cleveland, OH 44195. E-mail: Stewartw@cesmtp.ccf.org.

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Which Medical Problems Require Emergent Echocardiography?

The American College of Emergency Physicians Board of Directors Policy Statement¹⁰ dated June 1997 states that it is important to provide emergency diagnosis in pericardial tamponade and electro-mechanic dissociation, which represent truly emergent and potentially lethal cardiovascular conditions. *However, even these apparently straightforward conditions may be misdiagnosed or misinterpreted by persons who have insufficient training. Cardiac ultrasonography, even for "quick look" or "limited" examinations, requires substantial training to avoid diagnostic errors.* Furthermore, these diagnoses and others often demand immediate, and frequently surgical, intervention; therefore accurate diagnosis is of paramount importance. Whoever renders the official interpretation should be an authority with training and experience *sufficient to make decisions and recommend treatment* on the basis of the data. A disservice may result if those performing the definitive interpretation do not have appropriate skills and experience. For quality assurance and medicolegal purposes, persons whose diagnoses determine a definitive course of action need adequate ultrasonography equipment, durable record-keeping materials, reliable storage and retrieval of images, continuing medical education for physicians and sonographers, competency maintenance, and continuous quality improvement.⁷

Use of Echocardiographic Laboratory "Extenders"

The cooperation of persons already skilled in echocardiographic services should be secured to improve emergency response time and efficiency. In addition, high-quality equipment should be available.² Another valuable resource is the echocardi-

graphic laboratory “extender,” of which 2 varieties exist. An echocardiographic laboratory extender can be a sonographer with clinical training that includes a minimum of 6 months (960 hours) of hands-on experience, 6 months (960 hours) of didactic training,^{5,6} and registry certification of competence in echocardiography. Alternatively, an echocardiographic laboratory extender can be a physician with Level 1 training in echocardiography through an echocardiographic program that lasts a minimum of 3 months and entails 150 echocardiographic examinations with a wide variety of pathologic conditions.^{3,9} If possible, this training should be done in an accredited echocardiographic laboratory. Echocardiographic laboratory extenders may be physicians of any specialty, including cardiology fellows, anesthesiologists, internists, family physicians, cardiologists pursuing nonechocardiographic careers, or EM physicians.

Practice of Emergency Echocardiography with Echocardiographic Laboratory Extenders

The circumstances of each patient must be considered when determining the acceptable level of extender expertise. In most EM situations, the echocardiographic laboratory extender should function to acquire images and facilitate review by a Training Level 2 or 3 echocardiographer, either in person or even via telemedicine.¹¹ Only in situations of dire emergency should the echocardiographic laboratory extender function alone to provide diagnostic information for clinical decisions; such occasions should be limited to unavoidable emergent circumstances with a potentially lethal condition. The usual criteria for competence and expertise justifiably can be softened if the patient’s needs are better met through an immediate interpretation of an echocardiogram by someone with limited experience than through a delayed interpretation by someone with more echocardiographic expertise. We expect that such situations will be unusual, and the urgency should be weighed carefully against the advantages of greater expertise. When the extender does provide the initial interpretation, the Training Level 2 or 3 echocardiographer should still overread the study as soon as possible to review the initial diagnoses.

POLICY

In summary, to enhance access to services, ensure quality control, and maximize benefit to patients, the American Society of Echocardiography (ASE) and the American College of Cardiology (ACC) recommend that all EM departments, in collaboration with appro-

Table 1 Published guidelines for minimum training in echocardiography for physicians

Training level	Cardiac echocardiographic and Doppler studies (total no.)	Time (mo)	Competence
1	150	3	Basic, educated consumer
2	300	6	Competent reader
3	750	12	Laboratory director

These guidelines represent a consensus from several national groups, including the American College of Cardiology, American Heart Association, American College of Physicians, Society of Pediatric Echocardiography, and American Society of Echocardiography.³⁻⁹

priately trained (Training Level 2 or 3) persons and the laboratories in their institution, establish an effective system for the performance of echocardiography that conforms to ACC/ASE guidelines and includes the following:

1. Readily available, high-quality echocardiographic equipment should be used.
2. An effective program of continuous quality improvement, adequate record-keeping, and storage and retrieval facilities should be used to permit full archiving and review of EM echocardiographic studies.
3. Echocardiographic laboratory extenders, sonographers, or physicians with Level 1 training in echocardiography who can assist with emergent image acquisition should potentially be used.
4. Physicians who meet current guidelines for independent echocardiographic interpretation (Level 2 or 3 training) should be available to perform and interpret EM studies. Under unusual circumstances in which a life-threatening condition such as pericardial tamponade or electromechanic dissociation is suspected and a Training Level 2 or 3 echocardiographer is not immediately available, the ACC and ASE support the concept of a Level 1-trained physician or registered sonographer acting as an echocardiographic laboratory extender to provide the acquisition and initial interpretation, with subsequent review by the Training Level 2 or 3 echocardiographer as soon as possible. However, these circumstances should be uncommon.

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