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Adoption of Point-of-Care Ultrasound Is Outpacing Safeguards

Hazard #2—2020 Top 10 Health Technology Hazards

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EXECUTIVE SUMMARY



A lack of oversight regarding the use of point-of-care ultrasound (POCUS)—including when to use it and how to use it—may place patients at risk and facilities in jeopardy.

POCUS refers to the use of medical ultrasound by the treating clinician at the bedside. It is a powerful tool for diagnosis and for guiding interventional procedures in many clinical environments. POCUS scanners are typically highly portable, comparatively inexpensive, and easy to use—features that have fueled the technology's rapid and broad adoption throughout medicine.

At many healthcare facilities, however, safeguards for ensuring that POCUS users have the requisite training, experience, and skill have not kept pace with the speed of adoption. The lack of sufficient oversight increases the potential that patients will be adversely affected by problems associated with use, or lack of use, of the technology.

Patient safety concerns include POCUS not being used when warranted, misdiagnoses, inappropriate use of the modality, and overreliance on POCUS when a more comprehensive exam by an imaging specialist is indicated.

Policies and procedures should address institution-wide concerns, including user training and credentialing, exam documentation, and data archiving. And they should address specialty-specific issues, such as developing exam protocols that conform to established guidelines and recommendations.



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Problem

1. Point-of-care ultrasound (POCUS) is the fastest-growing segment of the diagnostic ultrasound market, and its use is expanding throughout medicine.
2. A lack of oversight regarding the use of POCUS—including when to use it and how to use it—may place patients at risk and facilities in jeopardy.

3. POCUS is a powerful tool for diagnoses and for guiding interventional procedures in many clinical environments. Current devices are comparatively inexpensive and easy to use, leading to their rapid and broad adoption.

4. At many healthcare facilities, however, the safeguards needed to ensure that all POCUS users have the requisite training, experience, and skill to use the technology appropriately and effectively have not kept pace with the speed of adoption.

a) There are no universal guidelines or recommendations regarding POCUS use, training, licensure/credentialing, or competency testing. The only existing guidelines are those that have been developed for specific clinical applications. Some healthcare systems have created relevant policies and procedures, but those may not be consistent between users, disciplines, or individual facilities.

b) Similarly, POCUS training is inconsistent, with some users having greater exposure to the technology than others.

c) The lack of sufficient oversight, policies, and procedures increases the potential that patients will be adversely affected by problems associated with use, or lack of use, of the technology.

d) Patient safety concerns include POCUS not being used when warranted, misdiagnoses, inappropriate use of the modality, and overreliance on POCUS when a more comprehensive exam by an imaging specialist is indicated.

ECRI Institute Recommendations

Facility-wide Oversight

1. Healthcare facilities should consider instituting a multidisciplinary POCUS committee tasked to provide oversight, with the goal of standardizing the use of the technology throughout the facility or healthcare system.

2. The committee should include relevant stakeholders to establish policies and procedures that address:

a) Training: Didactic and practical user training should include ultrasound physics and instrumentation, specialty-specific clinical utilization, scanning techniques, and exam interpretation.

b) Competency: Competency in using POCUS scanners may be demonstrated using formal testing instruments and/or demonstration of scanning skills.

c) Credentialing: Credentialing processes and criteria for POCUS users should be defined, including initial credentialing requirements and ongoing maintenance of the clinician's credentials.

d) Interpretation: The qualifications required for staff to interpret POCUS data and provide formal reports should be defined. Interpretation competency may be demonstrated using case reviews, observation of interpretations by others, and supervised interpretations.

e) Communicating/documenting POCUS results:

(1) Policies and procedures should describe who is responsible for communicating the results, how the results are communicated, and when and how results are to be incorporated into the electronic health record (EHR).

(2) Policies and procedures should also address how to respond when a POCUS exam is equivocal or

the findings are of uncertain significance. The circumstance might, for example, warrant consultation with an appropriate imaging specialist, such as a radiologist or cardiologist.

(3) Documentation requirements and methods should be outlined. Data—including images, preliminary findings, and final reports—should be archived in a timely manner and available for review as needed.

f) Continuing medical education: Periodic training and quality assurance processes, including case reviews, should be established.

g) Processing: Cleaning and disinfection procedures for scanners, probes, and accessories should be specified.

h) Technology management: Scanners and accessories must be maintained and serviced as recommended by the vendor, including software updates and cybersecurity measures. The location of scanners must be tracked and recorded. Inventory—including probes, which are frequently damaged—must be maintained to meet clinical demands.

i) Technology acquisition: The purchase of POCUS scanners should follow established facility procurement procedures. Standardization of vendors and models can yield cost savings, as well as offer benefits associated with staff training, routine device maintenance, and other technology management activities.

j) Billing and reimbursement: Billing policies and procedures should be standardized to facilitate reimbursement for POCUS procedures. Local coverage determinations, Medicare policies, and third-party payer policies should be considered.

Department-Level Responsibilities

1. Individual departments that use POCUS should be responsible for creating policies and procedures that comply with those of the facility, as well as for establishing specialty-specific guidelines and recommendations.

2. Departments should establish policies and procedures to address:

a) Scope of practice: Define the specific clinical POCUS assessments that may be performed, including the indications for the exam.

b) Clinical availability: Establish requirements to ensure that the technology and a competent user are available when POCUS is indicated.

c) Scanning protocols: Describe anatomy/body regions to be assessed, required images, and indications for additional modes such as M-mode and Doppler.

3. Departments in disciplines that do not have established guidelines should work with the POCUS committee to modify existing guidelines for their specialty.

Background

1. POCUS imaging refers to the use of medical ultrasound by the treating clinician at the bedside—as opposed to referring the patient to an imaging specialist—when an ultrasound exam is indicated.

a) The main benefit of POCUS is that it allows clinicians to quickly determine whether an abnormality is present so that they can immediately make patient management decisions.

b) Because patients don't need to be referred to imaging specialists, they don't need to make an additional appointment for the imaging exam and wait for the diagnosis to be provided to their treating physician. The result is more time-efficient and effective patient care.

2. POCUS scanners come in a variety of formats—including handheld, tablet, and laptop models—all of which are highly portable and battery operated.

3. These devices are generally inexpensive and easy to use, which has led to their rapid adoption. The speed of adoption, however, has outpaced the healthcare industry's ability to establish appropriate safeguards to ensure that all POCUS users have the requisite training, experience, and skill to use the technology appropriately and effectively, as well as to correctly interpret the findings.

a) There are no universal guidelines or recommendations regarding POCUS use, training, licensure/credentialing, or competency testing. Those that exist have been developed for specific clinical applications.

(1) Many professional societies have established guidelines or recommendations for their specialties.

(2) Some healthcare systems have created policies and procedures, but those may not be consistent between users, disciplines, or individual facilities.

(3) Similarly, POCUS training is inconsistent, with some users having greater exposure to the technology than others.

(a) Currently, training guidelines and competency expectations are specialty- or application-specific.

(b) Comprehensive ultrasound training is mandatory in some residencies, such as for emergency medicine and OB/GYN, and is included in some residency programs for other disciplines, such as internal medicine and anesthesia.

(c) POCUS education is included in many, but not all, medical school curricula.

(d) Even so, a great many users have not received comprehensive education or training in POCUS technology.

b) The lack of sufficient oversight, policies, and procedures increases the potential that patients will be adversely affected by problems associated with use of the technology.

4. Reports in the literature describe patient safety concerns related to:

a) Not using POCUS when it is indicated

b) Misdiagnoses

c) Improper application (i.e., using the modality for the wrong clinical indications)

d) Overreliance on POCUS findings—a POCUS exam may not obviate the need for a more comprehensive imaging examination done by imaging specialists.

5. Several published reports describe litigation and legal awards from the misuse of POCUS, including failure to perform a POCUS exam when one was clinically indicated and available. Legal cases have the potential to affect a facility's finances and reputation.

RELATED RESOURCES

2020 Top 10 Health Technology Hazards

Member Resources

The following resources are accessible to members of ECRI Institute's Health Devices, Health Devices Gold, and SELECTplus programs.

1. Advantages of cart-based point-of-care ultrasound scanners. *Health Devices* 2018 Sep 5.
2. Cleaning and disinfecting diagnostic ultrasound transducers: our recommendations. *Health Devices* 2018 Jul 25.
3. Evaluation background: cart-based point-of-care ultrasound scanners. *Health Devices* 2018 Aug 29.
4. Evaluation background: handheld point-of-care ultrasound scanners. *Health Devices* 2017 Sep 13.
5. Evaluation background: tablet-style point-of-care ultrasound scanners. *Health Devices* 2016 Mar 23.
6. Point-of-care ultrasound scanners: an introduction. *Health Devices* 2015 Apr 8.
7. Point-of-care ultrasound scanners: key purchasing considerations. *Health Devices* 2015 Aug 12.
8. Recommendations for reducing work-related musculoskeletal disorders in diagnostic ultrasound users. *Health Devices* 2016 Aug 17.
9. Work-related musculoskeletal disorders: point-of-care ultrasound users may be at risk too. *Health Devices* 2016 Aug 17.

References and Additional Resources

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2. American College of Emergency Physicians:
 - a) Standard reporting guidelines: ultrasound for procedure guidance. 2015 May.
 - b) Ultrasound guidelines: emergency, point-of-care, and clinical ultrasound guidelines in medicine. *Ann Emerg Med* 2017 May;69(5):e27-54.
3. American College of Rheumatology. Position statement: musculoskeletal ultrasound. 2018 Aug.
4. American Institute for Ultrasound in Medicine. AIUM practice parameter for the performance of point-of-care ultrasound examinations. *J Ultrasound Med* 2019 Apr;38(4):833-49.
5. Appropriate use criteria for handheld/pocket ultrasound devices [policy statement]. *Ann Emerg Med* 2018 Oct;72(4):e31-e33.
6. Arntfield RT, Millington SJ, Ainsworth CD, et al. Canadian recommendations for critical care ultrasound training and competency. *Can Respir J* 2014 Nov-Dec;21(16):341-5.
7. Brown GM, Otremba M, Devine LA, et al. Defining competencies for ultrasound-guided bedside procedures: consensus opinions from Canadian physicians. *J Ultrasound Med* 2016 Jan;35(1):129-41.
8. Lucas BP, Tierney DM, Trevor PJ, et al. Credentialing of hospitalists in ultrasound-guided bedside

procedures: a position statement of the Society of Hospital Medicine. *J Hosp Med* 2018 Feb;13(2):126-35.

9. Mathews BK, Zwank M. Hospital medicine point of care ultrasound credentialing: an example protocol. *J Hosp Med* Sep 2017 Sep;12(9):767-72.

10. Society of Critical Care Medicine Ultrasound Certification Task Force. Recommendations for achieving and maintaining competence and credentialing in critical care ultrasound with focused cardiac ultrasound and advanced critical care echocardiography.

11. Williamson JP, Twaddell SH, Lee YC, et al. Thoracic ultrasound recognition of competence: a position paper of the Thoracic Society of Australia and New Zealand. *Respirology* 2017 Feb;22(2):405-8.

12. Zwank MD, Gordon BD, Truman SM. Refining the wild wild west of point-of-care ultrasound at an academic community hospital. *J Am Coll Radiol* 2017 Dec;14(12):1574-7.

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