

Perioperative Mechanical Circulatory Support Symposium

Mitigating Diagnostic Errors With Point-of-Care Ultrasonography: A New Framework

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Introduction

Point-of-care ultrasonography (POCUS) refers to the use of portable ultrasonography devices that can be used at the bedside by health care professionals in a variety of settings to augment diagnosis, manage disease, and expedite patient care as well as guide invasive procedures. The rate of adoption of POCUS is outpacing current safeguards, and a new framework will be necessary to mitigate diagnostic errors as multiple clinicians acquire and implement POCUS skills.¹ Given the prevalence of medical diagnostic errors, it will be crucial to incorporate approaches that address the risk of those errors.

Current Limitations and Opportunities for Improvement

Echocardiography in critically ill patients can be technically difficult to perform and interpret at the bedside. Critically ill patients may have suboptimal views for a multitude of reasons, including limited positioning; the presence of multiple surgical sites, tubes, and drains; and the presence of mechanical circulatory devices. Similarly, the quality of the images generated depends on the quality of bedside ultrasonography equipment available. Preparation and training for POCUS continues to be variable. Point-of-care ultrasonography training may include workshops of varying lengths that are solely didactic or that include only hands-on simulation training. They may be limited to workshops lasting 4 hours or less or 2-day courses culminating in a certificate. Although most conferences and workshops include objectives to outline their educational goals, it is less likely that the training will include an organized check-off skills station and testing to ensure that a specific baseline competence has been achieved. Furthermore, there is a general lack of skills validation after implementation at the bedside. It will be necessary to ensure competence in accurate image acquisition, correct interpretation, and correct management decisions to increase appropriate implementation of POCUS.

Future Directions

A focus on detection and mitigation of factors that contribute to harm from error with the increasing use of POCUS will be necessary moving forward. Error reduction can be achieved by implementing steps to prevent error in the first place and reducing risk of harm from error. The latter requires detection efforts aimed at developing processes to identify barriers (eg, feedback on diagnostic errors, lack of supportive leadership and administrative practices), contributing factors, biases, and delays in advancing skills. The individual practitioner who uses POCUS must understand the entire process of acquiring images and applying interpretations as well as the risk and consequences of inaccurate interpretation. Mitigation efforts will require development of interventions such as providing

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education on bias awareness, implementing practices to counter biases, and establishing methods to reduce barriers. Interventions will require ongoing training of both individuals and teams; continued correlation with clinical exams, implementation of second reads; timely ordering of formal follow-up exams; and development of diagnostic checklists to guide clinicians, such as POCUS image-acquisition assessment tools² and other reproducible diagnostic workflow checklists.^{3,4} Incorporation of this multiprong approach will better ensure quality assurance as multiple health care professionals engage in the use of POCUS to provide timely and often emergent bedside care. Multidisciplinary collaboration is imperative to detect and mitigate errors in critical care echocardiography and to reduce preventable diagnostic errors (Fig. 1). Efforts to enhance collaboration across clinical settings will require creating a culture of psychological safety that allows for open communication between colleagues across multiple settings to effectively channel knowledge and resources. An environment that promotes access and exposure to frequent ultrasonographic scanning opportunities and constructive feedback regarding skills and errors is needed. Such an environment will also require an ongoing commitment from both consultants and administration

Abbreviations and Acronyms

POCUS Point-of-care ultrasonography

to engage in the process of optimizing communication and escalation processes to enhance access to optimal patient care and availability of tangible resources, such as ultrasonography equipment, training resources, and appropriate staffing models that support the development of POCUS skills.

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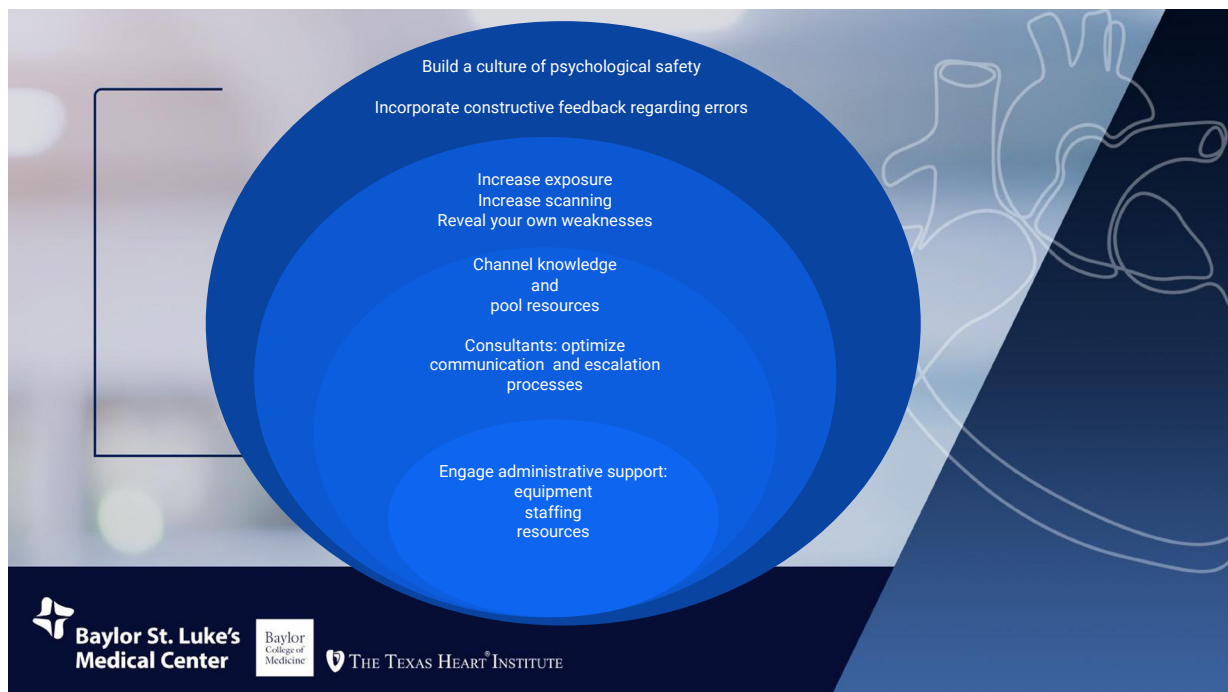


Fig. 1 Efforts to mitigate diagnostic errors

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