

ABCDE and F in the first five minutes: point-of-care ultrasound for improving diagnostic accuracy in time-critical emergency presentations

Ankur Masani^{1*} 

Consultant and Head, Sterling Hospitals, Vadodara, India

Correspondence to: Ankur Masani

*Consultant and Head, Sterling Hospitals, Vadodara, India.

Email: drankurmasani@gmail.com

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Background: The first hour of emergency care, often termed the golden hour, is critical for patient survival. Within this period, the first five minutes, the golden window is particularly important for identifying and managing life-threatening conditions. Point-of-Care Ultrasound (POCUS) has evolved into a rapid, non-invasive extension of clinical examination, providing real-time physiological information at the bedside. Despite its proven utility, POCUS is frequently underutilized or delayed until after initial stabilization, potentially missing crucial diagnostic opportunities.

Objective: To evaluate the impact of performing structured POCUS within the first five minutes of emergency assessment on diagnostic accuracy, time to life-saving intervention, and early clinical decision-making in patients presenting with undifferentiated hypotension, trauma, or acute dyspnea.

Methods: A prospective observational study was conducted over three months in a high-volume tertiary emergency department. A total of 150 consecutive patients presenting with undifferentiated hypotension, trauma, or acute dyspnea were included. Patients were categorized into two groups: Group A, where POCUS was performed within the first five minutes of assessment, and Group B, where POCUS was performed after five minutes or not performed. Primary outcomes included time to diagnosis, time to intervention, diagnostic concordance with final diagnosis, and physician confidence in clinical decision-making.

Results: Patients in Group A demonstrated significantly improved outcomes compared with Group B. Early POCUS facilitated rapid identification of critical conditions, including cardiac tamponade, pneumothorax, hypovolemia, and pulmonary embolism. This resulted in reduced time to definitive interventions, such as pericardiocentesis, thoracostomy, thrombolysis, and targeted fluid resuscitation. Early ultrasound integration also enhanced team communication and increased physician confidence during resuscitation. Incorporating POCUS into the ABCDE approach as "F" (Focused Ultrasound/FAST) improved diagnostic precision without delaying standard resuscitative measures.

Conclusion: Structured POCUS performed within the first five minutes of emergency assessment is feasible, safe, and clinically impactful. Early protocol-driven ultrasound improves diagnostic accuracy, accelerates critical interventions, and supports timely decision-making in high-acuity presentations. Wider implementation through training and workflow integration may further enhance emergency care during the golden window.