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## Review

# Is point-of-care ultrasound a reliable predictor of outcome during atraumatic, non-shockable cardiac arrest? A systematic review and meta-analysis from the SHoC investigators



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## Abstract

**Aims:** To evaluate the accuracy of PoCUS in predicting return of spontaneous circulation (ROSC), survival to hospital admission (SHA), and survival to hospital discharge (SHD) in adult non-traumatic, non-shockable out-of-hospital or emergency department cardiac arrest.

**Methods:** Medline, EMBASE, Cochrane, CINAHL, ClinicalTrials.gov and the World Health Organization Registry were searched for eligible studies. Data analysis was completed according to PRISMA guidelines. A random-effects meta-analysis model was used with I-squared statistics for heterogeneity.

**Results:** Ten studies (1486 participants) were included. Cardiac activity on PoCUS had a pooled sensitivity of 60.3% (95% confidence interval 38.1%–78.9%) and specificity of 91.5% (80.8%–96.5%) for ROSC. The sensitivity of cardiac activity on PoCUS for predicting ROSC was 26.1% (7.8%–59.6%) in asystole compared with 76.7% (61.3%–87.2%) in PEA. Cardiac activity on PoCUS, compared to absence, had odd ratios of 16.90 (6.18–46.21) for ROSC, 10.30 (5.32–19.98) for SHA and 8.03 (3.01–21.39) for SHD. Positive likelihood ratio (LR) was 6.87 (3.21–14.71) and negative LR was 0.27 (0.12–0.60) for ROSC.

**Conclusions:** Cardiac activity on PoCUS was associated with improved odds for ROSC, SHA, and SHD in non-traumatic, non-shockable cardiac arrest. We report a lower sensitivity and higher negative likelihood ratio, but greater heterogeneity compared to previous systematic reviews. PoCUS may provide valuable information in the management of non-traumatic PEA or asystole, but should not be viewed as the sole predictor in determining outcomes.

**Keywords:** Point-of-care ultrasound, Focused echocardiography, Cardiac arrest, Prognosis