

POCUS in cardiac arrest: an update

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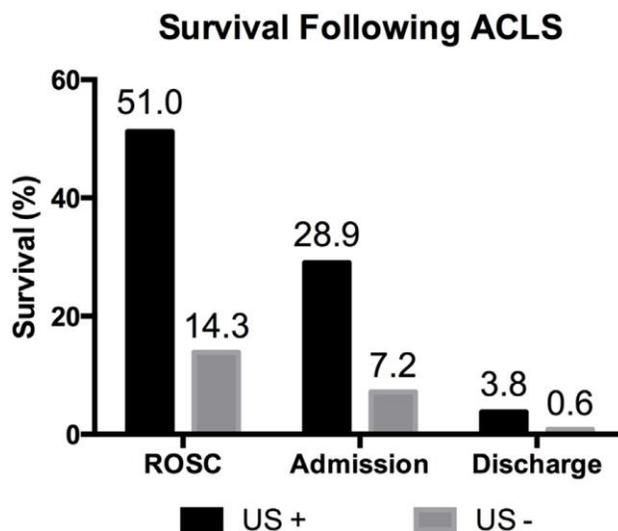
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The use of bedside ultrasound during cardiac arrest to determine if there is cardiac standstill seems simple enough...but is it? Here, we review recent literature on the subject.

Hu K, Gupta N, Teran F, Saul T, Nelson BP, Andrus P. Variability in interpretation of cardiac standstill among physician sonographers. *Ann Emerg Med.* 2018;71(2):193-198.

Authors asked 127 physicians who use bedside ultrasound (emergency medicine, critical care, and cardiology attendings, fellows, and residents) to determine whether ultrasound clips showed cardiac standstill or not. Participants were shown 15 6-second clips and given 20 seconds to vote. There was only moderate agreement among participants ($\alpha = 0.47$). Much of the disagreement arose from clips in which there was valve movement without myocardial contraction. This disagreement is likely related to variable definitions of standstill in the literature. The authors conclude that “consensus definitions of cardiac activity and standstill would improve the quality of cardiac arrest ultrasonographic research and standardize the use of this technology at the bedside.”

Gaspari R, Weekes A, Adhikari S, et al. Emergency department point-of-care ultrasound in out-of-hospital and in-ED cardiac arrest. *Resuscitation.* 2016;109:33-39.



This multi-center, prospective, observational study was designed to determine the association between cardiac activity on bedside ultrasound and survival. Twenty hospitals enrolled 793 patients who suffered out-of-hospital or in-ED arrest with PEA or asystole. The primary outcome was survival to hospital admission and secondary outcomes included survival to hospital discharge and ROSC. Authors did not report neurologic outcomes among survivors. Findings are summarized in Figure 2. Among patients with no

cardiac activity on ultrasound, 0.6% (3 patients) survived to hospital discharge. The presence of cardiac activity on ultrasound was associated with survival while the absence of cardiac activity was strongly associated with non-survival. Lack of cardiac activity on ultrasound combined with asystole had a PPV of 0.99 for non-survival to hospital discharge. They found increased survival to discharge in patients who had pericardiocentesis (15.4%) and thrombolysis (6.7%). Authors conclude that ultrasound is valuable in identifying patients with higher likelihood of survival and those who may benefit from pericardiocentesis or thrombolytics and suggest that in patients with asystole, lack of cardiac activity on ultrasound can help inform decisions to terminate resuscitation.

For more, listen to Ultrasound Podcast's 2-part interview with lead author Romolo Gaspari:

<http://www.ultrasoundpodcast.com/2016/01/state-of-the-evidence-cardiac-arrest-echo-reason-trial-with-romolo-gaspari-foamed/>

<http://www.ultrasoundpodcast.com/2016/01/cardiac-arrest-echo-from-reason-trial-part-2-with-romolo-gaspari-foamed/>

Huis in 't veld MA, Allison MG, Bostick DS, et al. Ultrasound use during cardiopulmonary resuscitation is associated with delays in chest compressions. Resuscitation. 2017;119:95-98.

In this study, authors video-recorded cardiac arrest resuscitations to see if the use of ultrasound during pulse checks leads to delays in resumption of chest compressions. They observed resuscitation of 23 patients, with a total of 123 pulse checks and found that the use of ultrasound increased the pulse-check duration by 8.4 seconds (95% CI, 6.7-10.0 [p<0.0001]). Based on these results, authors do not discourage the use of ultrasound during resuscitation, rather encourage providers to be mindful of the duration of CPR interruptions.

For more, listen to Ultrasound Podcast's interview with author Mike Allison:

<http://www.ultrasoundpodcast.com/2017/08/dont-lolly-gag-around-ultrasound-probe-pulse-check/>