

Abstract:

Enhancing Clinician Adherence to Cardiac Surgical Unit-Advanced Life Support Protocols
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Background: Cardiac surgery patients present a set of unique challenges in the post-operative period as they are especially vulnerable to complications secondary to arrhythmias, hypovolemia related to bleeding, and tamponade. Such patients are also closely monitored, and many require the support of vasoactive infusions, ventilatory or circulatory support, and frequent assessments. Cardiac arrest following cardiac surgery, a low-frequency but high-risk event, therefore prompts the need for a tailored, evidence-based protocol to address the unique needs of the patient population. One such protocol, Cardiac Surgical Unit-Advanced Life Support (CSU-ALS) has been broadly adopted by the European Resuscitation Council and the Society of Thoracic Surgeons and prompts for emergent sternotomy in less than five minutes for those cases unresponsive to initial interventions. CSU-ALS was implemented at a large academic medical center in central Virginia in December of 2019. The protocol itself requires comprehensive training and skills reinforcement for staff, ranging from bedside nurses to the cardiothoracic surgeons themselves. However, variability at the organization in experience with the protocol and CSU-ALS certification courses required just once every two years means that staff have limited exposure to the tailored emergency response.

Objectives: To enhance clinician adherence to the CSU-ALS protocol and improve performance in responding to post-sternotomy cardiac arrests.

Methods: Implementation of “mini-mocks,” a marriage between traditional classroom-based CSU-ALS coursework, skills practice, and simulation-based learning, hosted with individual staff members and small groups within the cardiothoracic intensive care unit caring for post-sternotomy cardiac surgery patients. The impact of the mini-mock intervention on performance against the CSU-ALS protocol was measured through full-scale, in-situ simulated cardiac arrest events using standardized observation, assessment, and team debrief.

Findings: 91% of eligible ICU nurses completed the mini-mock intervention, exceeding the original goal of 85%. Simulations revealed an average time to re sternotomy of 4:50 and protocol compliance of at least 75% in eight of the twelve (67%) outcomes measured. Anecdotal feedback from attending surgeons, training and simulation participants was found to be overwhelmingly positive.

Conclusion: Variability in the data limits the ability to form a clear pre- and post-implementation comparison of protocol compliance, as simulations used for data collection are themselves a form of intervention. Protocol compliance suggests a continued need for long-term performance improvement and sustainability opportunities related to CSU-ALS protocol training. Finally, to successfully promote compliance with the tailored resuscitation program, organizations must invest in training consistency through a multi-modal approach integrating traditional, lecture-based education and simulation-based learning.