ILCOR 10 Steps to improve IHCA – a Case Study of Stopping Preventable IHCA in the Intensive Care Unit Setting

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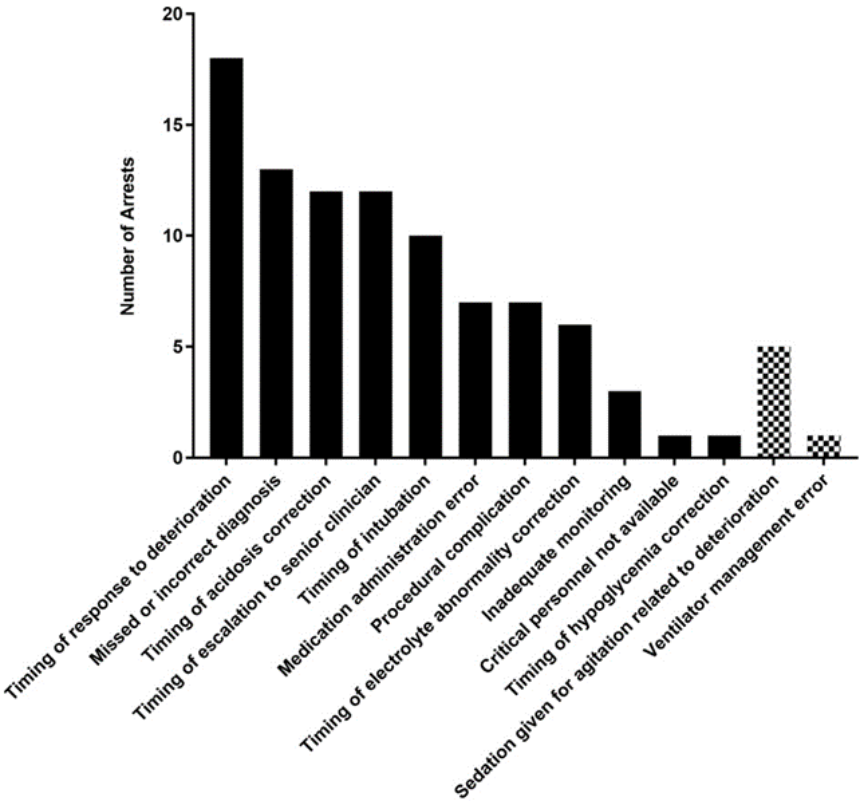
Background: Identifying and intervening early for patients at risk of clinical decompensation on hospital wards has been an important focus of quality improvement efforts to prevent IHCA. To date, however, there has been less focus on preventable IHCA in the intensive care unit (ICU) setting. Potentially owing to an assumption that patients in the ICU are already optimally monitored and cared for by a well-staffed and highly qualified care team. Further, patients in the ICU commonly have abnormal vital signs and laboratory values, making traditional trigger systems less reliable. In this case study, we describe an effort to identify themes of preventability for ICU IHCA and a program to stop preventable IHCA in the ICU.

Steps Taken: The effort to stop preventable IHCA in the ICU included two phases.
In the first phase, a multidisciplinary ICU team of experts and frontline providers reviewed all arrests occurring in the ICU and identified



1) was the arrest preventable and
2) were there any common themes of preventability. [1]

In the second phase, themes of preventability identified were leveraged to create an ICU-specific trigger and response system to stop preventable IHCA. This system involved a number of triggers that could be activated by members of the care team and would prompt a huddle of all care team members at the patient's bedside. At the bedside, the team would review a card that identified common diagnoses and pitfalls to consider. A card is included as Appendix A below. [2]

Challenges: A number of challenges arose during the pursuit of this initiative. It was sometimes difficult to determine preventability of an ICU IHCA based on retrospective chart review alone. Key contextual details were likely not fully

recognized. When possible, individuals involved with the clinical care of the patient prior to the IHCA were interviewed, but this was complicated and required substantial resources.
The trigger and response system implementation also faced challenges. Foremost, ICU nursing staff were often reluctant to activate the system, which they noted was frequently due to concerns about harming the nurse-physician relationship. As above, it is difficult to automate a trigger system in the ICU as vital signs and laboratory exam findings are often abnormal, however reliance on human activation created inertia.

Results: The first phase of the project yielded a number of themes of preventability for ICU IHCA. Most commonly these included a delayed response to clinical deterioration, a missed or incorrect diagnosis, and delayed escalation of deterioration to a senior clinician. These are shown in the figure. Of the reviewed arrests, 25% were felt to be potentially preventable.
In a formal statistical analysis, there was no effect of the implemented trigger and response system on ICU IHCA rates overall, however there were fewer potentially preventable arrests in the ICU after introduction of the trigger and response system

Outlook: Cardiac arrests in the ICU are often predictable and preventable. Common themes of preventability exist. An intervention targeted at these themes did not reduce the number of ICU IHCA, but did result in fewer preventable ICU IHCAs. A key barrier to the implementation of the intervention was reluctance of nursing staff to activate the trigger in the absence of clear trigger criteria and out of concern for souring the nurse-physician relationship.

References

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2. Moskowitz A, Berg KM, Cocchi MN, et al. A Trigger and Response System for Preventing Cardiac Arrest in the ICU. *Crit Care Explor*. Oct 2021;3(10):e0557. doi:10.1097/cce.0000000000000557

Appendix A