

An Immersive Critical Care Pilot Curriculum for Fourth Year Medical Students

Anne Reihman MD, Tiffany Gardner MD, Gabriel Siegel MD, Anna Neumeier MD, Jason Brainard MD, Jim Lavelle MD, Peter Hountras MD

Rationale:

Critical care experience is a recommended competency by residency program directors [1] but not a commonly offered rotation in medical school. Many medical students will go on to have at least one intensive care unit (ICU) experience as part of their residency medical training; therefore it is imperative that students develop the knowledge and skills needed to successfully manage critically ill patients. As part of future curricular reform at the University of Colorado, all students will be required to complete a rotation in critical care. We thus developed an immersive critical care pilot curriculum for fourth year medical students through structured didactics, simulation learning, and hands-on experience in two different intensive care unit settings.

Methods:

The University of Colorado School of Medicine critical care pilot elective was designed as a four week course for fourth year medical students. Students had the option of rotating through two different intensive care units, including a medical ICU, surgical ICU, and/or cardiothoracic ICU. Each rotation lasted two weeks, and students were assessed on their performance while on the medical wards. Students additionally attended twice weekly didactic lectures lasting 1-2 hours followed by a simulation session to apply the knowledge and skills taught during lecture. Students were given real-time feedback on their simulation performance. There was a multiple choice test given at the beginning and end of the elective to assess improvement over time as well as a “mega-simulation” at the end of the course to allow students to actively demonstrate the knowledge and skills they learning during the elective. All students electively agreed to participate in the elective.

Results:

A total of 10 students participated in the critical care pilot elective over two different sessions. An additional 5 students who were on alternative critical care rotations joined for didactic and simulation sessions. 10 of the 14 students (71%) who responded to the pre- and post-rotation surveys reported having rotated through an ICU. 6 of the 14 students (43%) reported ever managing a ventilated patient prior to the critical care elective. The majority of students reported feeling “uncomfortable” or “very uncomfortable” with the following common critical care issues at the beginning of the rotation: undifferentiated shock, patient needing a mechanical ventilator, choosing initial settings for a patient initiated on mechanical ventilation, differentiating between modes of ventilation, providing a differential diagnosis for common ventilator alarms, and performing an inspiratory hold maneuver on a ventilator and interpreting the results (**Table 1**).

At the end of the course, 100% of the students who responded to the post-rotation survey said they would recommend the course to their classmates. All students reported feeling “very comfortable” or “comfortable” with the clinical issues they previously had felt uncomfortable with (**Table 1**). Overall, students reported that the rotation helped to “demystify the terror of being in the ICU” and “improved... understanding of and comfort with critical care.” Additional positive feedback was given on the use of simulation to assist with learning.

Conclusions:

We successfully created an immersive critical care pilot rotation for fourth year medical students. Through the combined use of medical wards experience, didactic teaching, and simulation learning, students were able to master the basic knowledge and skills needed to successfully care for patients in the critical care setting.

References:

1. Lyss-Lerman, P., et al., *What training is needed in the fourth year of medical school? Views of residency program directors.* Acad Med, 2009. **84**(7): p. 823-9.