

Simulator Based Education to Teach Key Concepts in Cardiac Anesthesia

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Learner audience: Anesthesia residents

Needs Assessment: In the traditional model of medical education, training using live patients remains the cornerstone for clinical instruction, despite the fact that educators have long recognized this teaching modality to have significant ethical, practical and educational flaws. Providing anesthesia for cardiac surgery is challenging and stressful to even the most experienced provider. Cardiac anesthesia is an area that truly illustrates the difficulties teaching with live patients. The cases involve critically ill patients, high risk surgery and volatile hemodynamics. The attending is likewise faced with the difficult dilemma – of teaching and allowing experience versus protecting the patient and preventing any harm. It has been suggested by several sources that computer-based simulation may eventually provide an alternative to training with a live patient. Simulation is more ethical, more practical and educationally superior. Nontechnical skills in anesthesia crisis management can significantly improve with repeated exposure to simulator based education and cardiac anesthesia is one subspecialty where this is truly applicable. Team behavior and coordination, particularly communication or team information sharing, are critical for optimizing team performance.

The following steps will be undertaken prior to institution of the training module.

1. Perform a needs assessment among CA1, CA2 and CA3 residents.
2. Perform a needs assessment amongst surgeons and nurses.

Curriculum: Concepts addressed in the simulator module will include:

- Preoperative assessment and invasive monitoring principles.
- Induction of anesthesia.
- Checklist for going on cardiopulmonary bypass and Checklist for coming off cardiopulmonary bypass.
- Use of inotropes and their impact on physiology.
- Transport of the critically ill patient.

Impact: All residents will take a pretest to assess medical knowledge prior to attending the simulator. Half of the CA1 class is exposed to the module at the simulator prior to starting the cardiac rotation and the other half has no simulator experience. At the end of the completed simulated model the residents will retake the test. A questionnaire will be given at the end of the study period to assess the value of the exercise.