



Symposium on Educational Excellence 2024

Enhancing simulation: creating a longitudinal multidisciplinary critical care simulation curriculum

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Keywords

Fellowships and Scholarships; High Fidelity Simulation Training; Internship and Residency; Unnecessary Procedures; Critical Care; Curriculum; Procedural education; Interprofessional Education

Abstract

Background: The use of simulation in medical education has exponentially expanded over the past two decades (1). Medical simulation has a growing body of literature supporting its effectiveness in teaching skills to learners (1,2,3). This is especially important in critical care, where there are high risk procedures performed regularly. Residents are having an increasing diversity of experiences before beginning critical care fellowship and this leaves fellows with a wide range of skill sets. There have also been an increasing number of high profile error cases in critical care (4). With residents being exposed to a smaller number of procedures in residency there exists an ethical dilemma of how to ensure procedural competency without doing unnecessary procedures on patients during training (4,5). One way to bridge this gap is to provide simulation opportunities for all fellows in critical care training programs (2,3,4,5). This will ensure all of our fellows leave fellowship with a similar skill set regardless of educational background and prior training opportunities. While simulation curriculum exists for many residency programs there isn't a longitudinal curriculum teaching both technical procedural skill and non-technical communication and crisis management tasks.

Innovation

Our goal is to create a longitudinal simulation curriculum for critical care fellows that will provide both technical procedural skills including for high risk, rarely performed procedures in addition to crisis management and communication skills. We have developed a curriculum incorporating ICU nurses who work closely in these high intensity situations to facilitate improved interprofessional team dynamics.

Learning Outcomes

At the end of the simulation training curriculum fellows will:

1. Demonstrate increased confidence in their procedural skill across a range of procedures
2. Demonstrate improvement in measured skill with each procedure taught in the curriculum using validated assessment tools.
3. Integrate crisis management skills in high intensity situations including code blue and massive transfusion resuscitations.

Methods

We have developed twelve high fidelity simulation sessions that include: Basic Procedures (central line, arterial line, thoracentesis, paracentesis), QI Error Identification, Difficult Airway I & II, Code Blue, Massive Transfusions, Percutaneous Tracheostomy, Moderate & Deep Sedation, Bronchoscopy, Chest Tubes, ECMO Cannulation & Management, and High Risk Procedures (Transvenous pacer, Minnesota tubes, Pericardiocentesis). These simulation sessions are in the introductory bootcamp and then throughout the academic year. Each simulation will be assessed with either a previously validated assessment tool or will be used to validate an assessment tool when none exists in the literature. We will assess fellow skill level using these assessment tools before and after simulation training as well as longitudinally during fellowship.

Impact & Applications

We aim to see measured improvement in fellow skill and comfort with all procedures expected of critical care physicians. The goal is to first disseminate this curriculum locally to incorporate the other critical care fellowships at OHSU and then nationwide to improve access to procedural and communication-based training for all critical care fellows. This will improve the standard procedural training of fellows nationwide and reduce the inequities as procedural opportunities have changed dramatically at residency programs.

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