

F14, Utilizing Rolling Refresher Simulation to Enhance Nursing Skills for Prevention of Respiratory Failure in the Pediatric Cardiac Intensive Care Unit

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Abstract

Purpose: This quality improvement project (QI) evaluated the impact of repeated exposure to in-situ, simulation-based training on cardiac intensive care unit (CICU) staff's time to appropriate intervention and performance of technical skills when responding to a simulated patient's respiratory decompensation.

Background: Respiratory failure is the most common cause of pediatric in-hospital cardiac arrest (IHCA). In 2022, the CICU at Children's Hospital Colorado had a 47% increase in events compared to the prior year, with 55% occurring due to respiratory failure. Pediatric IHCA survival rate to discharge is 41%. Respiratory decompensation is often seen prior to a cardiac arrest. Retention of pediatric advanced life support (PALS) resuscitation skills and knowledge declines post-training with subsequent deviation from the American Heart Association's (AHA) recommended guidelines during resuscitation events. Deviation from these guidelines results in poor patient outcomes.

Setting: Children's Hospital Colorado 22-bed CICU.

Sample: 68 CICU RNs.

Methods: Monthly rolling refresher in-situ simulations focusing on pediatric respiratory decompensation. RN performance was scored by time in seconds to initiate bagging and completion of critical interventions (calling for help, bagging at the recommended rate with appropriate technique). The simulation experiences were unannounced and occurred in an unoccupied CICU room during the RNs scheduled shift over a 3-month period.

Results: RN participation declined from 58.8% (n=40) to 29.4% (n=20) during project implementation. Call for help had clinical significance with a completion increase of 15%. Time in seconds for participants to recognize and begin bagging the mannequin significantly improved ($p < 0.001$) and the average time went from 63.1 seconds in the first month to 20.1 seconds by the last month.

Conclusion: Exposure to rolling refreshers in-situ simulation training for CICU nurses appeared to improve adherence to the AHA-recommended pediatric resuscitation interventions and improved time in seconds to recognize and rapidly intervene in respiratory decompensation scenarios.