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A Simulation-Based Outreach Program Improves Delivery Room Team Confidence in Neonatal Resuscitation at Rural Community Hospitals

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A Simulation-Based Outreach Program Improves Delivery Room Team Confidence in Neonatal Resuscitation at Rural Community Hospitals

Allison Zanno MD, Misty Melendi MD, Micheline Chipman, RN, MSN, CHSE, Jeffrey Holmes MD, & Alexa Craig MD on behalf of the MOOSE Research Team

Background

- >50% of neonates in Maine are born in community hospitals with 2/3 have less than one birth/day
- State-wide database of infants with HIE* revealed a significant outcome disparity for those born at a community hospital compared to a tertiary care center
- Neonatal resuscitation practices contribute to this difference
- Neonatal resuscitation training decreases neonatal mortality
- Participant skills improve following trainings
- In situ simulation can also be effective at evaluating latent safety threats

*Hypoxic ischemic encephalopathy

Objective

Our goal is to pilot the use of an onsite Neonatal Community Outreach Education Program to improve provider confidence with procedural skills and neonatal resuscitation in the delivery room.

Methods

- The Neonatal Community Outreach Education Program is an in-situ rural simulation training program delivered by a team of neonatologists and simulation experts.
- The entire delivery room team participates, including rural physicians, nurses and respiratory therapists, as well as hospital leadership, including quality and safety officers.
- Procedural sessions include specific skills training in airway management, medication administration, emergency vascular access and neonatal stabilization.
- Three high fidelity scenarios (maximal airway management, moderate respiratory effort, full code) assess medial knowledge, teamwork, communication, and latent safety threats.
- A pre- and post-simulation training provider confidence questionnaire was used at each site with ratings ranging from 1, indicating no confidence with a certain skill, to 5, indicating complete confidence.
- Confidence was analyzed using a t-test.

Manikin and Set Up



Super Tory Manikin

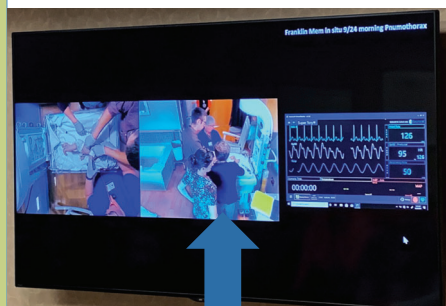


Cyanosis on
Super Tory



Orientation to
Super Tory Manikin

Simulations and Debriefing



SimCapture® and B-Line Systems,
Remote View

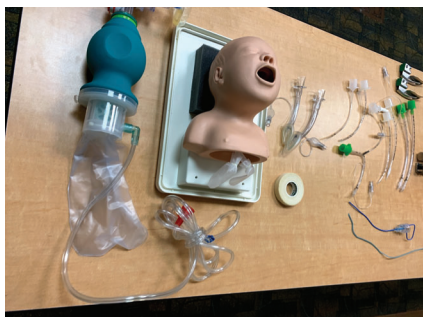


Debriefing Session

A Simulation-Based Outreach Program Improves Delivery Room Team Confidence in Neonatal Resuscitation at Rural Community Hospitals

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Skills Stations



Airway Management

Drawing Up Medications



Umbilical Line Placement



Chest Tube Placement

Results

Self-Efficacy Data

Table 1: Sample of questions from the survey administered anonymously pre and post simulation training. (12 of 14 questions had statistical significance)	Pre-Sim Score (n=39)	Post-Sim Score (n=58)	p-value
I am confident in my knowledge of neonatal resuscitation	3.6 (0.8)	↑ 4.3 (0.7)	<0.001
I am confident in neonatal airway management	3.6 (0.8)	↑ 4.2 (0.7)	<0.001
I am confident in my ability to manage emergency medications	2.8 (1.1)	↑ 3.9 (1.0)	<0.001
I am confident in my ability to perform emergency intravenous access	2.4 (1.2)	↑ 3.6 (1.2)	<0.001
I am confident that my team members have the skills/knowledge to perform NRP	3.5 (0.9)	↑ 4.4 (0.7)	<0.001
I feel confident that my team is a cohesive unit with clear communication	3.7 (0.8)	↑ 4.3 (0.7)	<0.001

Conclusions

- An in-situ simulation based rural community outreach program improves provider confidence in neonatal resuscitation, including procedural skills, in a low-delivery volume setting.
- We anticipate expanding this program to all delivery room hospitals in Maine.

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