CAEP Innovation Case Report Form

Name of Innovation (limit to 1 clearly defined project)	Interprofessional neonatal resuscitation skills training for an ED team at an urban, academic hospital
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Does this project have it's own website?	No
What is your division or department's website?	www.emergencymedicine.utoronto.ca
Description of the Innovation (500 words max) – see Glassick's Criteria	**Interprofessional neonatal resuscitation skills training for an ED team at an urban, academic hospital using *in-situ* simulation** **Overview** Opportunities for emergency department (ED) staff to learn neonatal resuscitation skills in an interprofessional environment are limited. We describe here a novel *in-situ* interprofessional simulation-based training exercise designed as a targeted, accessible and effective way to close this educational gap. **Educational objectives** After participating in the team training exercise participants will be able to: 1.Demonstrate the following neonatal resuscitation skills: i. Perform initial assessment of a neonate in distress ii. Perform positive pressure ventilation iii. Perform chest compressions iv. Obtain intravenous access in a neonate v. Perform the sequence of reassessments and interventions in a neonate

2. Demonstrate the following actions/principles of crisis resource management:
   i. Call for help early
   ii. Clear closed-loop communication
   iii. Identify a leader and maintain role clarity
   iv. Anticipate, share and review your plan
   v. Distribute the workload, monitor and support team members

Background

In September of 2010, Sunnybrook Health Sciences Centre (SHSC) opened a Neonatal Intensive Care Unit (NICU) on its central campus. Historically, SHSC has served primarily an adult population.[1] In 2008/2009, paediatric volumes at SHSC were less than a tenth of average paediatric volumes at other hospitals in the Greater Toronto Area.[2] In a recent published study, 67.3% of ED staff at SHSC rated their neonatal resuscitation skills and sense of preparedness.[3] Staff members' self-reported knowledge, skills and neonatal resuscitation experience were self-rated as poor or very poor on a 5-point Likert scale. Furthermore, comfort with neonatal resuscitation and sense of preparedness for the critically ill infant was poor or very poor. These findings are concerning because all practitioners in the SHSC ED must be able to respond to a neonatal emergency. Given the multidisciplinary nature of the ED, simulation-based education, designed with interprofessional collaboration in mind, is well-suited for delivering continuing education to improve staff members' neonatal resuscitation skills.

Methods

Capitalizing on the principles of situated learning theory, an *in-situ*, interprofessional, neonatal resuscitation skills simulation-based training exercise has been developed. Situated learning theory stipulates that learning is inextricably tied to the context in which it is learned.[4] Hence, *in-situ* simulation whereby *learning takes place in the real clinical environment using the same equipment and supplies used for real patients* is ideal for clinical teams striving to advance practical skills.[5] The educational offering will consist of regular, one-hour team simulations held during the established departmental continuing education rounds event. All ED staff including physicians, registered nurses and physician assistants are invited to participate. The first 30 minutes will be dedicated to hands-on skills practice with a task trainer and a neonatal mannequin

(NeoNatalie, Laerdal Medical) in which learners may practice assessment, positive pressure ventilations and chest compressions. The next 30 minutes will consist of a 10-minute team neonatal resuscitation exercise followed by a 20-minute team debriefing session. Four learners function as a team to perform the initial steps of basic neonatal resuscitation using the NeoNatalie mannequin. To improve contextual fidelity, a computer monitor will display simulated vital signs and broadcast the typical auditory alerts of a cardiorespiratory monitor. Learners not actively participating in the resuscitation may observe via a video feed from a neighbouring conference room. The subsequent team debriefing will take place in the conference room. The facilitator will utilize the previously published advocacy-inquiry technique of debriefing to guide learners through three phases of debriefing: reaction, exploration and summarization.

Results

The educational effectiveness of the team training simulation intervention will be assessed according to Kirkpatrick's framework for program evaluation. Learner satisfaction will be assessed through completion of a post-simulation evaluation. Evaluations will also assess learner's perceptions of knowledge and skills retention and perceived impact on individual and team clinical practice.

Implications

Previous research shows that interprofessional, simulation-based training improved participants' perceptions of preparedness for paediatric resuscitation.[5] The impact of this interprofessional, neonatal resuscitation training exercise will be evident once learner's evaluations are reviewed. Ideally, the improvement of patient outcomes is the ultimate goal of such an educational intervention but is much harder to demonstrate. That being said, unlike traditional didactic forms of continuing medical education, this is a novel interprofessional simulation-based intervention that increases the opportunity for ED staff to advance their practical skills.

References

1. *Sunnybrook Health Sciences Centre welcomes the Women and Babies program.* Toronto: Canada Newswire; 2010.
2. Canadian Institute for Health Information. Child Health Network Emergency Task Force: emergency

	departments and children in Ontario. In: *CIHI analysis in brief*. Ottawa Canadian Institute for Health Information; 2008. 3. Kester-Greene N, Lee JS. Preparedness of urban, general emergency department staff for neonatal resuscitation in a Canadian setting. *CJEM* 2014;16(5):414-420. 4. Paige J, Daley B. Situated Cognition: A Learning Framework to Support and Guide High-fidelity Simulation. *Clinical Simulation in Nursing* 2009;5:e97-e103. 5. Allan CK, Thiagarajan RR, Beke D, et al. Simulation-based training delivered directly to the pediatric cardiac intensive care unit engenders preparedness, comfort, and decreased anxiety among multidisciplinary resuscitation teams. *J Thorac Cardiovasc Surg*. 2010;140 (3):646-652.
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