Neonatal Emergency Readiness Project (NERP): Development of virtual simulation curriculum to improve emergency department neonatal resuscitation care among interprofessional teams

Fayyaz J, Bravo G, Pirie J, Whyte H, Walsh C

Background

• Neonatal resuscitations (NNR) in the emergency department (ED) represent high acuity, low occurrence events, making it difficult for interprofessional team members to maintain expertise in these essential, yet infrequently practiced, skills.

• A survey of Canadian ED providers experience with NNR revealed that only 4.2% of staff reported ever participating in a NNR, and only 38.7% had formal NNR training.

• Between 75-85% of providers rated their comfort level in caring for neonates, sense of preparedness, and knowledge of managing a sick neonate as poor or very poor.

Objectives

1. To perform a needs assessment to understand the existing gaps in training for neonatal resuscitation care among interprofessional team members in the emergency department at SickKids.

2. To develop a virtual simulation-based neonatal resuscitation care curriculum and conduct usability testing to refine the design of the cases that comprise the online curriculum.

Methods and Rationale

This project involves two phases: (1) needs assessment and (2) curriculum development and refinement.

1) Phase 1: Need assessment:

a) Electronic survey: Interprofessional team members will be surveyed using a RED-cap questionnaire. A mix of forced-response and free-text response questions will capture demographic information and invite participants to describe their personal experiences, reflections, and recommendations.

b) Document review: Data from the ED’s in situ simulation-based competency-based medical education sessions targeting NNR over the past 2 years will be reviewed to identify skill deficits, and to gain additional understanding of faculty’s learning needs. Data will be integrated with the survey responses to create a list of knowledge and skills gaps to address in the development of the VS cases.

2) Phase II: Curriculum development and refinement:

a) Curriculum Development: The NNR curriculum will be comprised of 3 VS cases and will be developed based on Kern et al.’s six-step approach to curriculum development, including problem identification and needs assessment (Phase I), goals and objectives and educational strategies (Phase II), and implementation and evaluation (Phase III, future work).

b) Refinement of the Virtual Simulation Cases through Iterative Usability Testing: While the VS cases will be developed based on best practices in education pedagogy and multimedia design, a mixed-methods usability testing approach will be used to refine the 3 VS cases, with iterative cycles of semi-structured interviews, observations, and usability questionnaires. This design approach, which has been used previously for usability testing of online education and electronic healthcare apps, is an iterative process of implementing a design, learning, and understanding from discussion and feedback, and making subsequent design refinements.

TIMELINE: The total timeline is 18 months as follows: Survey distribution and document analysis (Sept – Nov 2021); Survey analysis (Dec 2021); VS case development (Jan-March 2022); Usability cycle 1 (Apr June 2022); Usability cycle 2 (Jul-sept 2022); Manuscript preparation (Oct-Dec 2022)

IMPACT: This study will result in the development of a VS curriculum in neonatal emergency readiness; an identified priority area for continued improvement within the SickKids PEM department. We will translate our knowledge using the Knowledge to Action loop.

References


Simulate real-world experiences through interactive scenarios.