The Feasibility of Using Simulation to Assess Parent Learning: High Risk Technology Dependent Children

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Children dependent upon long term mechanical ventilation post discharge from an acute care center are at high risk for readmissions, morbidity, and mortality directly related to the care they receive in the home environment. Parents are expected to act as caregivers yet are inadequately prepared to provide the level of care needed in the home setting prior to their child’s discharge home. The primary goal of the PAWS (Parental Airway Assessment with Simulation) program was to assess parent learning and confidence in managing these children in the home setting post discharge. The Simulation Model for Improved Learner and Health Outcomes (SMILHO) framed the assessment program’s development, implementation, and evaluation which focused on airway management using an on-site simulation-based assessment focused on observation and evaluation of parental clinical skills. This program implemented a multi-step simulation-based assessment intervention over a 6-8-week period and included a home visit to assess learning in the home environment. Results support that all eight families enrolled in the program demonstrated both an increase in skill acquisition over time as well as increase in self-reported confidence in their ability to care for their child post discharge from the acute care setting.

Over the course of the program, families were exposed to multiple simulation sessions that demonstrated a significant increase in skill level across all content presented with a p value = 0.006. The Pearson correlation value for skill acquisition across all four skills was $r = 0.92$ indicating a robust positive correlation between parent education, including both existing institutional education programs and focused simulation scenarios, and rigorous debriefing post simulation. Observational changes over time in all eight parent groups additionally included decreased set up time needed for the parents to assemble needed supplies and overall preparation to perform skills. Parents could facilitate skill mechanics with ease over time and were able to manipulate the medical supplies and equipment with greater self-assuredness with each subsequent skill session. Overall, families showed positive increases in all four skills evaluated.

Post program completion, parents demonstrated a 22% increase in self-reported confidence in caring for their child following discharge using an administered pre-post Family Assessment Survey.

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**Abstract Summary:**

Simulation was utilized to assess and supplement current skill acquisition a parent population required to care for a technology dependent child in the home post discharge. The program was run over a 6 week period and included a home assessment visit following discharge.

**Content Outline:**

1. Simulation is successfully used to deliver and assess skill acquisition in healthcare providers
   - Demonstrated success in healthcare education
   - Mode of delivery is directly linked to adult learner

2. Parents of technology dependent children are expected to assume the role of a high level provider
   - Parents are not prepared to provide the level of care their children need
   - Pediatric outcomes are directly dependent on quality care in the home setting
3. Simulation can bridge this gap and can provide parents with the same level of education we consider standard with our healthcare providers

- Repetition and direct feedback improves parent skill demonstrations

- Parent skill and confidence increased significantly

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**Professional Experience:** I practice as a Neonatal Nurse Practitioner in a high risk NICU and personally have had a child ventilator dependent for 10 years. This life experience drove me to develop my DNP project so that patients and families in similar circumstances could potentially benefit from more directed discharge education and planning. I completed my doctorate at the University of Michigan focused on high risk families and simulation. I am the simulation director at the University of Detroit and teach pediatrics.

**Author Summary:** Dr. Whalen is a neonatal nurse practitioner at the University of Michigan and is an Assistant Professor at the University of Detroit Mercy where she holds the dual role of Simulation Director. She earned her BSN from Saginaw Valley State University, her MSN/NNP from SUNY Stonybrook University, and her DNP from the University of Michigan.