



A Novel Nesting Protocol to Decrease Readmission and Increase Patient Satisfaction Following Congenital Heart Surgery[☆]

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ABSTRACT

Background: Pediatric patients post-cardiac surgery have complex care needs requiring extensive discharge education and skill competency by caregivers to transition from the hospital environment to a medical home. The purpose of this quality improvement project was to implement a nesting protocol in the cardiovascular intensive care unit (CVICU) to improve discharge teaching and care coordination, with a goal to reduce readmission rates and increase caregiver satisfaction and understanding.

Methods: A nesting protocol was created to provide clear and consistent guidelines to the multidisciplinary team. Pre- and post-intervention data was collected from caregiver satisfaction surveys, using a Likert scale, to determine understanding of nesting and feeling of preparedness upon discharge. In 2016 and 2017, retrospective chart reviews were performed to evaluate readmission data. SQUIRE 2.0 guidelines were utilized when writing this article (Ogrinc et al., 2015).

Results: Caregivers reported an increase in satisfaction and understanding of the nesting process post-intervention with an increase of 4.48%. Readmission rates did not improve from 2016 to 2017. However, only 6 months of 2017 were reviewed.

Conclusions: Readmission is a significant problem for children with complex CHD. Post-discharge care requires caregivers to understand the medical care that their children require. Pre-intervention data revealed deficiencies in understanding regarding care regimens, infection control, and nutrition, which correlated with the most frequent causes for readmission among this population. The protocol developed addressed multiple issues concerning discharge readiness.

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Background

Pediatric patients post-cardiac surgery have complex needs at the time of discharge. Caregivers are required to learn an extensive amount about the home care of their child over a brief period. To ensure a smooth transition from hospital to home, a period of “nesting” was implemented toward the end of the inpatient stay in the pediatric cardiovascular intensive care unit (CVICU). This time allows caregivers to assume full care of the child for the 24 to 48 h period prior to discharge. This practice ensures competency and improves comfort of caregivers prior to leaving the security of the hospital. It is a time that allows parents to clarify and ask questions about how to care for their child while in a safe, supportive setting.

There is little evidence to support nesting periods for caregivers of children with heart disease. This population requires specialized care both during hospitalization and at home with special attention given

to medications, oxygen saturations and, in some cases, weight monitoring. Caregivers must quickly develop skills that allow safe care of their child and the ability to evaluate the need for notification of the health care team (Nieves et al., 2017). Repetitive review of concepts and practice build caregiver knowledge, skill, and, ultimately, confidence (Nieves et al., 2017). To appropriately evaluate caregiver understanding, it is imperative that nurses observe performance of skills (Nieves et al., 2017). These skills include use of home monitors (pulse oximeter and scale), home oxygen, feeding tubes and pump, measuring appropriate doses of medication, and mixing formula.

Using the teach-back method during observance of skills helps parents to commit these skills to memory. It has been found that “individuals usually remember 20% of what they hear; however, they tend to remember 90% of what they say and do” (Nieves et al., 2017, p. 84). Raines (2017) conducted simulations for infants about to be released from the neonatal intensive care unit (NICU). It was determined that parents benefit from hands-on experience rather than discussion based teaching to optimize readiness for caring for a child at home with complex needs (Raines, 2017). Creating a home-like environment

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also contributes to establishing the reality of caring for a child outside of the hospital (Raines, 2017).

In the CVICU, the practice of nesting has been used prior to discharge for patients with complex congenital heart disease. Nesting had been modeled around the NICU practice. Differences in the units created confusion over how to have caregivers nest with their child in the CVICU. The NICU has a dedicated space resembling a bedroom for nesting caregivers that simulates the home environment. Whereas, in the CVICU, parents need to nest in the intensive care unit (ICU) environment with glass doors providing little privacy. Furthermore, single ventricle patients do not currently have the option of transferring to a step-down unit at this institution. This creates challenges for the most fragile in the post-cardiac surgery population. In addition, children post-cardiac surgery require continued hemodynamic monitoring per the medical team.

Staff nurses reported confusion about the practice and, therefore, were inconsistent in the requirements presented to caregivers. The medical providers expressed frustration regarding delays in discharge due to lack of caregiver preparedness for home. Caregivers also brought up concerns about lack of understanding and the expectations of nesting. As a result, this quality improvement project was initiated with the goal of creating a nesting protocol to increase caregiver satisfaction and reduce readmissions following cardiac surgery.

Methods

Design

This project sought to evaluate the effect of a nesting protocol on caregiver satisfaction and readmission rates following cardiac surgery. The quality improvement project was reviewed and determined exempt by the Phoenix Children's Hospital Institutional Review Board. SQUIRE 2.0 guidelines were utilized to organize the quality improvement project (Ogrinc et al., 2015). Prior to the creation of the new protocol, caregivers were asked to complete a survey during their follow-up appointment with cardiology approximately 2 weeks post-discharge. Results of this pre-survey were accounted for during development of the nesting protocol. After implementation, caregivers who nested using the new protocol were surveyed to assess for improved understanding and satisfaction with the experience.

A nesting pathway algorithm (see Appendix A) was designed by a collaborative team of nurses, advanced practice providers (APP), and physicians to help determine the length of nesting required. Two pathways were created; "bluebird" for shunt dependent, new tracheostomy, and new heart transplant patients and "redbird" for all other cardiac patients requiring a nesting period. The "bluebird" pathway requires a 48 h nesting period and the "redbird" requires a 24 h nesting period. Two care providers are required to nest within the designated time period.

Monitoring parameters were discussed with the multidisciplinary team to determine how patient monitoring could be deescalated to further simulate the home environment. It was determined that patients would need to remain on continuous telemetry and pulse oximetry while in the ICU environment. Nursing assessments would be spread out from every 2 h to every three to 4 h at the attending physician or APP's discretion. To reduce caregiver dependence on hospital monitors, the group decided to utilize a monitoring mode that does not display or alarm in the patient room. However, the monitor would be visible to staff outside of the room and on the central monitoring unit. The group ensured that nurses would still receive necessary alarms on their badge devices.

A set of guidelines was created to provide a consistent resource for staff to reference if any questions should arise. The guidelines were placed in resource binders around the unit and in a shared folder on the hospital network accessible by all CVICU staff. To allow for

consistency among staff, an electronic nesting order set was created. This order set allows providers to order the pathway deemed appropriate for the patient (bluebird or redbird), length of nesting required, amount of nursing assessments, and monitoring required during nesting. This order also allows the provider to specify the dates and times that nesting will occur after it was agreed upon with the designated primary and secondary caregivers.

One of the consistent comments made by caregivers was the lack of understanding of what was required during nesting. To provide clarity, a Caregiver Agreement Form was created to outline nesting expectations as well as dates and times to define the length of nesting expected. This form outlines that caregivers are expected to provide basic care, such as diaper changes and feedings, in addition to more complex care, such as pulse oximeter and home oxygen use. As two caregivers are required to complete nesting, two forms were required to be signed and placed in the patient chart. This form was reviewed by physicians and the legal team before it was made an official hospital form.

Signage was created to place on patient doors during the nesting period to allow multidisciplinary staff to be aware of caregiver responsibilities. As several different disciplines, such as respiratory therapists, physical therapists, and speech therapists visit with patients daily, it was determined that all staff should be made aware of the nesting period to allow for caregiver autonomy and responsibility. Two signs were created; bluebird and redbird nesting (see Appendix B, Figs. B1 and B2). Each sign explains the care expectations specific to the nesting pathway.

Implementation

After the protocol was developed and resources were created, the staff in the CVICU required education on the new nesting practice. An online interactive module was created to reach all nurses, APPs, and support staff in a short period of time. The module explained all parts of the new protocol with special attention to use of the algorithm and specifications of each pathway. Along with an outline of the protocol, the audience was provided patient scenarios to test their knowledge. Education was completed in December of 2016 in preparation for a January 2017 start time. A small taskforce of nurses and an APP who participated in the development of the protocol were selected as experts. These experts were designated as resources for staff members with questions or concerns.

APPs are expected to collaborate with nursing staff to determine the nesting pathway suitable for the patient upon admission to the CVICU. A paper discharge checklist specifying the pathway and the requirements within that pathway is then used by nursing staff. This checklist tracks completion of teaching, ordering of home medications, supplies, and equipment as well as readiness for nesting. All home equipment must be at the bedside and all teaching is expected to be completed prior to the start of the nesting period. Once the checklist is complete and the medical team designates readiness for discharge, nesting is scheduled. Nurses then have caregivers fill out and sign the Caregiver Agreement Form.

Participants

Caregivers of infants with single ventricle physiology post-first stage palliative surgery were chosen as the population to assess as this group has the most complex home needs and longest nesting period. This group also had the closest follow up post-discharge allowing for consistent capture at the two week post-discharge point. The pre-intervention surveying was conducted over a period of 12 months during 2016. A total of 16 caregivers were surveyed in 2016 prior to implementation of the protocol. The same population of single ventricle patients post-first stage palliation was chosen for the post-intervention survey. In order to ensure that the caregivers surveyed were experiencing similar

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