



Pediatric Skin Integrity Practice Guideline for Institutional Use: A Quality Improvement Project

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Superior skin care is a nurse-sensitive outcome measure (Young, T., & Clark, M. (2009). Re-positioning for pressure ulcer prevention (protocol). The Cochrane Database of Systematic Review (2009) 3). This study sought to decrease incidence and risk of skin breakdown in the pediatric cardiac intensive care unit (PCICU). The study was conducted in a large hospital in upstate New York. A practice guideline was created and guided PCICU nurses on the interventions for potential skin-breakdown issues in their patients. The patients had a significant change in skin breakdown with a one-sided Fisher's Exact Test ($p = .0422$). A logistic regression model showed intervention as a significant factor in reducing incidence of pressure ulcers and length of stay ($p = .0389$).

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SKIN BREAKDOWN, WHICH occurs in patients during the course of their hospitalization, leads to complications that increase health risks, complicate care, and increase the cost of care (Chan, Pang, & Kwong, 2009). The Center for Medicaid and Medicare mandates guidelines for the prevention and treatment of pressure ulcers which, if not implemented, can lead to legal responsibilities and financial implications for health-care centers (Young & Clark, 2009). Care of patients' skin is a nurse-sensitive outcome measure established by the American Nurses Association (Schindler et al., 2011). Current research is trying to find appropriate practices to use for prevention and treatment of pressure ulcers (Braden & Maklebust, 2005). Maintaining skin integrity in the critical-care environment is difficult because of patient acuity and the highly invasive interventions and therapies they receive (Galvin & Curley, 2012). Skin integrity is especially compromised for patients in the PCICU because of immobilization, multiple medical devices attached to the patient, and decreased oxygen saturation and perfusion in the patient.

The study of skin-breakdown prevention is a relatively new trend (Prevention plus: Home of the Braden Scale, 2011). It was not until 1990 that the federal government sponsored an effort to standardize approaches to skin-breakdown prevention and treatment. This effort resulted in several health-care disciplines coming together in 1994 to create clinical-practice guidelines (Bansal, Scott, Stewart, & Cockerell, 2005) that are still utilized today (Bergstrom, Braden, Kemp, Champagne, & Ruby, 1998).

The prevalence, prevention, and treatment of skin breakdown have been studied in adults, but research is lacking for children (Schindler et al., 2011). PCICU patients are at high risk for skin breakdown due to the need for prolonged positioning for invasive procedures, intubation, attachment of various medical monitoring devices, prolonged immobilization, nutritional problems, and decreased sensory perception. In addition, dermatitis and maceration, caused by excessive moisture, and alterations in optimal blood flow to all skin tissues add to the risk for skin breakdown (Sillevis-Smitt, Woensel, & Bos, 2011). Due to the acute condition of the patients in the PCICU, nursing interventions focus on support of vital functions; and skin

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breakdown is generally not the main concern during admission (Sillevis-Smitt et al., 2011). Ensuring that nurses in the PCICU regard preventive skin care as a priority is critical for success in skin-breakdown interventions (Drake, Redfern, Sherburne, Nugent, & Simpson, 2012).

Tools that analyze the risk of skin breakdown help caregivers prioritize initiatives to prevent skin breakdown (McCaskey, Kirk, & Gerdes, 2011). The research surrounding skin-breakdown prevention focuses on adult patients predominantly, with current risk-assessment scales focusing on long-term-care adult patients (Galvin & Curley, 2012). In 1996, Quigley and Curley modified the adult Braden Scale into a 7-category risk-assessment tool for use in the pediatric population and named it the Braden Q Scale (Bergstrom, Braden, Kemp, Champagne, & Ruby, 1998; Bergstrom, Braden, Laguzza, & Holman, 1987; Quigley & Curley, 1996). Each of the 7 subscales is rated from least favorable (1) to most favorable (4). A score of 21 designates a moderate-risk patient, and a score of 16 or less denotes a high-risk patient (Galvin & Curley, 2012). The incidence of pressure ulcers in infants and children is 13.1%; the incidence of pressure ulcers in patients in the pediatric intensive care unit (PICU) is 27% (Noonan, Quigley, & Curley, 2006). The incidence of skin breakdown in the PCICU is currently unknown; however, it is anticipated to be greater than skin breakdown in the PICU because of the decreased oxygenation and perfusion that takes place in most of these patients. The key factors that contribute to skin breakdown in children in the PCICU differ from those affecting children in the general-care units; therefore, it is vital to the maintenance of skin integrity to develop a risk-assessment tool specifically designed for children in an acute state in this specialized setting.

In the absence of any national standards, a lack of standardization in skin care for PCICU patients was identified at a large hospital in upstate New York. There were inconsistencies in skin-assessment practices and documentation; and many of the devices attached to these patients did not have a standard of practice for how often to inspect the skin under these devices and to replace the devices, if necessary. This lack of standardization in skin-care practice and documentation led to inconsistencies in the care of patients.

The aim of this study was to decrease skin breakdown in the PCICU patient population through the standardization of nursing practice. The specific objectives of the study were to create and implement a practice guideline for PCICU nurses and providers, so that they could execute proper interventions for potential skin-breakdown issues in PCICU patients during the acute time period from intubation to extubation, using the best possible practices identified to date. Extension of this tool to the PICU and to other pediatric areas of the hospital is a future goal for this quality improvement project. Further objectives of this study were to identify areas in which research was lacking in risk assessment, interventions, and current treatment options for pressure ulcers in PCICU patients.

Additional objectives were to identify gaps in the literature to guide further evidence-based research towards best practices for pediatric skin care, to decrease the negative outcomes from skin breakdown in the PCICU, to decrease the PCICU patient's length of stay in the hospital due to skin breakdown, to decrease costs for the hospital because of skin breakdown, and to increase PCICU nurses' knowledge of the causes and treatment of skin breakdown in their patients. The question that guided the study was, "Do nurse education and training, coupled with the implementation of an evidence-based, standardized-practice guideline, decrease the incidence of skin breakdown in the PCICU?"

An extensive chart review was completed for a needs assessment, which helped to determine the scope of the problem, as seen in Table 1. The chart review enabled the researcher to obtain expert opinion on nursing interventions and the availability of medical product for this clinical problem. Expert opinion was obtained from three WOCN nurses within the study hospital, and expert opinion was provided from two WOCN nurses who spoke at a national WOCN conference. Input was also received from the PCICU nurse manager and lead attending physician at the hospital site, to take into account the specific patient population. With the help of a wound-ostomy and continence nurse at the study hospital, a guideline for practice, shown in Table 2, was created, which guided PICU nurses on the potential interventions for skin-breakdown issues. The researcher created an educational podcast on the guideline and skin breakdown for PCICU nurses to view. A chart review was completed 6 months after the guideline implementation, and data were collected to evaluate the both the guideline and the educational podcast. The Iowa Model, an evidence-based model for implementing change into organizations, developed by Marita Titler et al. (2001), guided the change process.

Methods

Ethical Issues

The researcher obtained approval for the project from the institutional review board where the researcher studied in the doctor of nursing practice program. The researcher then obtained approval from the research and evidence-based review committee at the hospital where the quality-improvement project was completed. This quality-improvement project presented minimal risk, with no potential harm or discomfort for the study subjects greater than that ordinarily encountered in daily life. The project design protected against potential risks through the nature of the practice-guideline design. The chart review of patient information served only as a needs assessment. The potential benefit to the subjects was that they would have less skin breakdown, which would result in decreased pain, decreased length of stay in the hospital, fewer negative outcomes from wounds, and less cost for the patients and the hospital.

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