Get Some Skin in the Game: Best Practices for Pediatric Skin Care

Elizabeth Kiss  
*St. John Fisher College, ekiss@sjfc.edu*

Christine Cahill  
*University of Rochester*

Follow this and additional works at: [https://fisherpub.sjfc.edu/nursing_facpub](https://fisherpub.sjfc.edu/nursing_facpub)

Part of the Nursing Commons

How has open access to Fisher Digital Publications benefited you?

**Publication Information**

Kiss, Elizabeth and Cahill, Christine, "Get Some Skin in the Game: Best Practices for Pediatric Skin Care" (2015). *Nursing Faculty/Staff Publications*. Paper 16.  
[https://fisherpub.sjfc.edu/nursing_facpub/16](https://fisherpub.sjfc.edu/nursing_facpub/16)

Please note that the Publication Information provides general citation information and may not be appropriate for your discipline. To receive help in creating a citation based on your discipline, please visit [http://libguides.sjfc.edu/citations](http://libguides.sjfc.edu/citations).

This document is posted at [https://fisherpub.sjfc.edu/nursing_facpub/16](https://fisherpub.sjfc.edu/nursing_facpub/16) and is brought to you for free and open access by Fisher Digital Publications at St. John Fisher College. For more information, please contact fisherpub@sjfc.edu.
Get Some Skin in the Game: Best Practices for Pediatric Skin Care

Abstract
Care of patients’ skin is a nurse-sensitive outcome measure established by the American Nurses Association (Young & Clark, 2009). 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). The prevalence, prevention, and treatment of skin breakdown have been studied in adults, but research is lacking for children (Groeneveld et al., 2003). Pediatric patients have different anatomic, physiologic and developmental factors that alter their risk of obtaining and presentation of hospital acquired pressure ulcers (HAPUs), (Noonan, Quigley & Curley, 2013). Medical devices monitoring has become standard of practice for the acute care environment and clinicians have recognized that medical devices placed against the skin or mucosal membranes can lead to pressure ulcer development (Noonan et al., 2013). Medical Device Related (MDR) pressure ulcers are different then pressure ulcers derived on bony prominences because they are produced from unrelieved tissue compression on the site where the medical device is in contact with skin or mucosal membranes (Noonan et al., 2013). Due to the acute nature of the patients in critical care settings, nursing interventions focus on support of vital functions; and skin breakdown is generally not the main concern during admission (Smitt, Woensel, & Bos, 2011). Ensuring that nurses in the critical care area regard preventive skin care as a priority is critical for success in skin-breakdown interventions (Drake, Wendi, Sherburne, Nugent, & Simpson, 2012). Current work is being done by Martha Curley to create a risk prediction tool for MDR HAPUs that will inform and optimize prevention and treatment (Noonan et al, 2013). With this new knowledge, and in the absence of any current national standards it was identified, through a pilot project in a pediatric Cardiac Intensive Care Unit (PCICU) in a large hospital in Upstate New York, that there was a lack of standardization in device related skin care for patients. For the pilot project a practice guideline was created that 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 Fishers Exact Test (P=.0422). A logistic regression model showed intervention as a significant factor in reducing incidence of pressure ulcers, skin breakdown, and length of stay (P=.0389). The current study is looking at the effects of an educational intervention with nurses, and implementation of the skin care practice guideline across all pediatric care areas. Disseminating the results and tools to replicate the practice guideline is essential for implementing current evidence based best practice across pediatrics, and is timely with the anticipation of the release of risk prediction tool for MDR HAPUs.

Keywords
fsc2015

Disciplines
Nursing

Comments
Presented at the American Association of Critical-Care Nurses National Teaching Institute in San Diego, California, May 2015.

This conference proceeding is available at Fisher Digital Publications: https://fisherpub.sjfc.edu/nursing_facpub/16
LEARNING OUTCOMES

- Apply an evidence-based standardized skin care protocol for preventing and managing skin breakdown among pediatric patients
- Examine means for decreasing negative patient outcomes and length of stay
- Develop an audit tool to evaluate patient outcomes
The study of skin breakdown is a new trend

1990: a government-sponsored effort was put forth to standardize approaches to skin breakdown prevention and treatment

Medical Device Related (MDR) Hospital Acquired Pressure Ulcers (HAPUs) have recently been identified as a preventable complication of hospitalization

(Murry et al, 2013)
Superior skin care is a nurse-sensitive outcome measure established by the American Nurses Association.

Centers for Medicaid and Medicare necessitate guidelines for the prevention and treatment of pressure ulcers.

Incidence
- Pediatric patients - 13.1%
- Intensive care - 27%

Presence of Medical devices makes a pressure ulcer 2.4 times more likely in adult patients.

1. Young & Clark, 2009
3. Apold & Rydrych
Incidence of Skin Breakdown

Service

- General Medicine
- Oncology
- Pulmonary
- Cardiac
- General Surgery
- Neurology
- Gastrointestinal
- Trauma

Axis Title

0%
10%
20%
30%
40%
50%
60%
The mechanism of injury and staging is similar for immobility-related and device-related HAPUs

- Immobility-related pressure ulcers: unrelieved pressure in combination with shear or friction over a bony prominence
- MDR HAPUs: cause pressure ulcers through their positioning against patients’ skin

Risk assessment and the focus of prevention differ

Galvin & Curley, 2012
RISK FACTORS

- Patients with medical devices attached to face or occiput
- Nutritional deficits
- Device anchors such as tape, straps etc… cover assessment areas
- Length of Stay > 4 days

- Oxygenation
- Perfusion
- Inotropes & vasopressor use
- Firmer anchoring of device to skin to prevent dislodgement
- Heat and moisture development under device

Young & Clark, 2009
EXAMPLES OF SKIN BREAKDOWN
FINANCIAL BURDEN

- Pressure ulcers result in:
  - Longer Hospitalization
  - More nursing time
  - Higher costs of care

- In 2011, health care costs for treatment of pressure ulcers reached 11.6 billion

- Management of severe pressure ulcers can cost up to $55,000 to treat

(Cox & Rasmussen 2014)
Murray et al conducted a literature review of 32 articles; findings include:

- Patients at greatest risk
- Sources of MDR HAPUs
- MDR HAPUs versus immobility-related pressure ulcers
- Nursing practice considerations through preventative strategies
- Quality monitoring illuminating best practices

(Murray et al, 2013)
PATIENTS AT GREATEST RISK

- Neonate or infant
- Critically ill
  - Particularly cardiac patients, due to inability to properly perfuse
- Developmentally delayed
- Immobile
- Inability to communicate discomfort

(Murray et al, 2013)
SOURCES OF MDR HAPU

- Oxygen Saturation Probe
- Non-Invasive Ventilation Mask
- Orthotics
- Vascular Acess Devices
- Positioning agents
- Electroencephalogram Lead

N= 2745

(Murry et al. 2013)
## DIFFERENTIATION

<table>
<thead>
<tr>
<th>MDR HAPUs</th>
<th>Immobility-Related Pressure Ulcers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Occur over mucus membranes or skin</td>
<td>Occur over boney prominence</td>
</tr>
<tr>
<td>Caused by a medical device</td>
<td>Caused by immobility-related pressure</td>
</tr>
<tr>
<td>Devices impede view of area of breakdown</td>
<td>Related to friction and shear</td>
</tr>
</tbody>
</table>

(Murray et al, 2013)
NURSING PRACTICE CONSIDERATIONS

- Targeting prevention to decrease risk
- Quality monitoring
- Research to illuminate best practices
- Documentation to illuminate efforts
- Nurse’s adaptability to change in practice

(Murray et al, 2013)
RECOMMENDATIONS

- Prevention to decrease breakdown
- Monitoring of MDR HAPUs
- Intervention research to identify best practice
- Frequent and thorough assessment of skin in contact with MDR’s should be performed including:
  - Loosening, rotating and removing devices

(Murry et al. 2013)
Due to the absence of any national standards it has been identified that:

- Lack of standardization in skin care for pediatric patients
- Inconsistencies in skin-assessment practices and documentation
- Devices attached patients do not have a standard of practice for
  - How often to assess skin under devices
  - When to replace devices

(Murry et al, 2013)
In 1859, Florence Nightingale wrote “If he has a bedsore, it’s generally not the fault of the disease, but of the nursing”
Prevalence, prevention, and treatment of skin breakdown has been widely studied in adults

- lacking in the pediatric population
- risk assessment scales focus on adult patients
- Braden Q is based on adult scale and needs further validation
- no current standards of care for prevention of MDR HAPUs

(Galvin & Curley, 2012)
- 800-bed Hospital in Upstate New York, with 72 pediatric beds
- University-based teaching hospital
- Magnet-Designated hospital
- Level 1 trauma center
- Many programs rank among America’s top hospitals
Patient & Family Centered Care

I CARE
Minimize incidence of MDR HAPUs in pediatric patients through the implementation of a skin care protocol

- Nursing Education on MDR HAPUs
- Standardized assessment skin under/around medical devices
- Establishing removal and relocation frequency
- Direction for standardized documentation
- Guidance in differentiating pressure ulcers caused by medical devices vs. immobility
“The assessment should not be just carried out once. The patient should be constantly reassessed.” (Lyder et al, 2004)
Where have we been...

- **PLAN**
  - Provided evaluation of educational and patients needs
  - Identify specific population based breakdown through discussion with Nurse Managers 10/13-12/13
  - Meeting patient specific needs through collaboration
  - Lit. review, attend conferences, meet with all wound care nurses at SMH 12/13-2/14
  - Consulting the experts

- **Information gathering**

- Pilot MDR HAPU PI project completed in the PCCC 1/2012

- Where have we been…
  - Identify specific population based breakdown through discussion with Nurse Managers 10/13-12/13
  - Provided evaluation of educational and patients needs
  - Lit. review, attend conferences, meet with all wound care nurses at SMH 12/13-2/14
  - Consulting the experts

- Pilot MDR HAPU PI project completed in the PCCC 1/2012
WOUND CARE SPECIALIST

Cathy VanHouten, RN WOCN
Where have we been...

Create practice guideline and proposed policy changes and present to Pediatric Associate Director 2/14-3/14

Present guidelines to ICU directors and nurse educators for feedback, modifying as indicated 3/14-10/14

Obtained approval from GCH clinical Council and GCH IPCC 10/14

Approval and buy in from those at the bedside
<table>
<thead>
<tr>
<th>Devices</th>
<th>Interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pulse Oximeter</strong></td>
<td>Adhesive Sensors: Visualize skin under sensors every 8 hours by removing sensors, and assess for areas of erythema/dyscoloration or breakdown. Change sensor site every 8 hours. Reusable Sensors: Visualize skin under sensors every 4 hours by removing sensor and assess for areas of erythema/dyscoloration or breakdown.</td>
</tr>
<tr>
<td><strong>Nasal /High Flow Nasal Cannula</strong></td>
<td>Visualize skin in contact with high flow nasal cannula every 4 hours. Visualize skin in contact with nasal cannula every 8 hours. Assess skin for erythema/dyscoloration or breakdown. Select appropriate size prongs for patient. Make sure cannula is not in contact with nasal septum.</td>
</tr>
<tr>
<td>Devices</td>
<td>Interventions</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>ET Tube</td>
<td>Visualize skin under ET tube every 4 hours, if redness or skin breakdown at lip; change side of mouth ET tube is on.</td>
</tr>
<tr>
<td>Cardiac Monitor Wires and leads</td>
<td>Visualize skin surrounding cardiac monitor wires and leads every shift. Cardiac monitor wires should not be taut against patient's skin. Change cardiac monitor wires, leads and location every 3 days, or sooner if skin breakdown or redness present.</td>
</tr>
</tbody>
</table>
Nursing survey of baseline knowledge of MDR HAPUs 2/15

Pre and post protocol chart review 5/15-1/16

Measure outcomes and compile results 1/16

Collect data on incidence, severity, assess quality of documentation

Measure where the greatest educational needs lie

Where are we going....

STUDY

What impact have we made?
1) I feel confident in my ability to document assessment findings of pressure ulcers.

2) I am able to differentiate between pressure ulcers and other wound types.

3) I am able to identify the impact medical devices can have on skin integrity.
1) A nurse is assessing a pediatric patient. During the assessment, the nurse notes a partial thickness open pressure ulcer without slough on the right heel of the patient. The wound bed does not blanch upon palpation. This pressure ulcer would be staged as stage
A. I
B. II - Correct
C. III
D. IV

2) A nurse is caring for a pediatric patient who is experiencing healing of a full-thickness pressure ulcer. The patient’s pressure ulcer is in the proliferative phase of wound healing. What type of tissue would the nurse expect to see?
A. Eschar
B. Slough
C. Granulation – Correct
D. Purulent drainage
Where are we going....

ACT

- Establish documentation standards in electronic medical record
  - In progress

- Create and implement mandatory viewing of educational podcast
  - 5/15

- Nursing survey of knowledge of MDR HAPUs post implementation
  - 12/15

Use the EMR as a prompt as well as provide accountability
EDUCATING THE NURSING STAFF

Education
  - pressure ulcer identification
  - staging

MDR Pressure Ulcers
  - Significance of problem
  - Evaluation of risk factors in patients
  - Identification of MDR HAPUs
  - Difference between MDR HAPUs and immobility-related pressure ulcers

Instruction of the policy and documentation in the EMR
CHART AUDIT TOOL

- 100 pre-intervention
- 100 post-intervention

<table>
<thead>
<tr>
<th>Medical record number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient Age in Months</td>
</tr>
<tr>
<td>Diagnosis – 1=Asthma, 2=Pneumonia, 3=Fracture</td>
</tr>
<tr>
<td>Length of Hospital stay in days</td>
</tr>
<tr>
<td>Patient Race</td>
</tr>
<tr>
<td>Gender 1=M, 2=F</td>
</tr>
<tr>
<td>Patient mobility</td>
</tr>
<tr>
<td>Braden Q score</td>
</tr>
<tr>
<td>Device attached to patient</td>
</tr>
<tr>
<td>Skin breakdown</td>
</tr>
<tr>
<td>Pressure ulcer (stage) 1=yes, 2=No</td>
</tr>
<tr>
<td>Pre-existing wound</td>
</tr>
</tbody>
</table>
CONCLUSION

- The implementation of standardized care and education of MDR HAPUs is needed to address this preventable nurse-sensitive outcome measure.
- Documentation in EMR provides accountability and incorporates assessment of pressure ulcers into nurses’ standard workflow.
- Dissemination of this PI project through conferences and publication in a peer reviewed journal will contribute to the limited research in this area, improving outcomes.