

Spring 5-19-2017

Pediatric Intensive Care Unit Skin-Care Team

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Konstantin, Anna Therianos, "Pediatric Intensive Care Unit Skin-Care Team" (2017). *Master's Projects and Capstones*. 508.
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Pediatric Intensive Care Unit Skin-Care Team

Anna Konstantin

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Pediatric Intensive Care Unit Skin-Care Team

Abstract

In the United States, pressure injuries (PIs) cost \$9.1–\$11.6 billion per year and claim more than 60,000 patient lives. The large Northern California hospital where this CNL project was conducted has had an 8.33% incidence of hospital-acquired PIs at or greater than stage two in the pediatric intensive care unit (PICU). Pressure injury prevention was not a high priority for the nursing staff; nurses were unaware of current PI prevention protocols or the PI prevalence in the PICU. The goals are to reduce PIs by 20% in 3 months, increase PI nursing education, and improve patient outcomes. Nursing skin-care rounds were conducted weekly and pressure injury prevention plans were established for high risk patients. The bedside nurses and skin-care champions reassessed the plans and adjusted them as needed. PICU nurses watched short videos and received formal training on Skills Day and during huddle and informal training through handouts. Pressure injury incidence remained at 8.33% after 10 weeks. However, following the skin-care project intervention, 67% of the nurses agreed they were more knowledgeable about PI prevention methods, and 55% of the nurses agreed they felt more comfortable with them. Finally, 66% of the nurses in the PICU strongly agreed that a unit-specific skin-care team would be beneficial in preventing PIs.

Clinical Leadership Theme

The clinical nurse leader (CNL) theme targeted in this project is assuming a leadership role to deliver patient-centered care, evaluating that care, and designing a change strategy to improve the care environment (American Association of Colleges of Nursing, 2013).

Statement of the Problem

In the United States, pressure injury costs \$9.1–\$11.6 billion per year and more than 60,000 patient deaths can be directly attributed to pressure injury yearly (Agency for Healthcare Research and Quality, 2014). According to Schuler, Schols, and Halfens (2013), the prevalence of pressure ulcers in pediatric patients ranges from 3 to 35%. The location of this CNL project is a large Northern California hospital. This hospital submits quarterly information regarding pressure injury in our hospital to the National Database of Nursing Quality Indicators (NDNQI). According to Press Ganey Associates (2016), the hospital had 8.33% hospital-acquired pressure injuries at stage two and greater in the pediatric intensive care unit (PICU); the hospital's average was two percent for the same time period. While conducting skin-care rounds, it became obvious that pressure injury (PI) prevention was not a high priority for the nursing staff; nurses were unaware of current hospital protocol for PI prevention, current PI prevention products, and the prevalence of PI in the PICU (see Appendix A for fishbone diagram for causes of PI).

Project Overview

The author developed a nurse-led skin-care team to help bedside nurses prioritize pressure injury (PI) prevention in the PICU. The team is made up of PICU bedside nurses who will become skin-care champions. The team members will be experts in the current hospital PI prevention protocols and will be able to identify and utilize all the available PI prevention tools available at the hospital. The skin-care team will conduct weekly rounds on all the patients in the PICU and establish a prevention plan, treatment plan, or make a referral to the surgical team if needed (see Appendix B for data collection tool). They will support the bedside nurse to implement and adjust the created plan to fit patients' changing needs. The skin-care unit champions will act as a resource for other nurses in the PICU whenever skin-care questions or

issues arise. Having a skin-care team will remind nurses of the importance of PI prevention and give them access to a resource nurse if any questions or concerns arise. The skin-care team will work closely with the medical and ancillary staff to adjust a patient's plan when needed. The bedside nurse will also gain confidence in adjusting the PI prevention plan.

The project aim statement is as follows: the hospital will reduce pressure injury acquisition in the PICU by 20% within three months. The goals are to reduce pressure injuries, increase nursing education regarding PI prevention and current protocols, and improve patient outcomes.

Rationale

After the team conducted a thorough microsystem assessment, the unit's strengths and weaknesses became clearer (see Appendix C for SWOT analysis). This PICU has highly skilled and motivated nursing staff, many involved parents, a supportive medical and surgical team, five hospital-wide advanced practice nurses with experience caring for difficult wounds, a hospital-wide wound care committee, a strong nurse educator, and a hands-on management team. But the PICU also has a high-risk patient population, an unpredictable environment with a constant need for reassessing priorities, an insufficient budget for education, no budget for a wound care nurse, overworked staff, and a unit that is often understaffed. All these factors make prioritizing PI prevention and treatment difficult.

To maintain a unit-specific skin-care team, an estimate 15 hours per week of skin-care rounding and follow-up are needed, as well as 8 hours of specific pressure injury (PI) prevention training per year. The 8 hours of training would be required to train and update a total of eight team members, equaling 788 paid hours/year (see Table 1). The total cost to the hospital would

be \$164,105.76 per year (see Table 2 and Table 3). To show the cost/benefit of PI reduction, the project goal will be a 20% reduction in PI.

Pressure injuries have a significant effect on patient morbidity, mortality, and quality of life. Pressure injury treatment costs an average of \$10,700 per case (Agency for Healthcare Research and Quality, 2014), and the hospital had 1,637 PICU patient admissions in 2014 and a hospital acquired pressure ulcer (HAPU) rate of 8.33% (Press Ganey Associates, 2016; Virtual Program Performance Report, 2016). If the hospital could reduce its HAPU rate by 20%, this would result in a cost saving of \$29,778,100 per year (see Table 4). This is a net benefit of \$29,614,000 per year, and, for every dollar spent, the hospital would save \$180.

Pressure injuries and HAPUs in the PICU are a big problem and cost the hospital a lot of money. The financial benefits are clear, but just as important is the comfort and health of the vulnerable population in the PICU. A skin-care-specific team could save the hospital money and reduce patient morbidity and mortality while increasing quality of life.

Paid Hours per Year for the PI Team

Table 1

Calculations for Paid Hours Per Year

15 hours/week x 52 weeks/year + 8 hours/year	788
--	-----

FTE Calculation

Table 2

FTEs Needed

788/2080 (hours that equal 1.0 FTEs)	0.4
--------------------------------------	-----

Cost to Hire 2.1 FTEs

Table 3

Calculations of Annual Salary with Benefits for FTEs

Paid hours per year	788
Hourly rate x hours worked per year	\$72.25 x 788

Annual salary for 1.0 FTE (before benefits)	\$150,280
Annual salary for 1.0 FTE x 30% (estimated cost of benefits)	\$150,280 x 0.30
Cost of benefits for 1.0 FTE	\$47,084
Annual salary + estimated cost of benefits for 1.0 FTE	\$150,280 + \$47,484
Annual cost of salary with benefits for 1.0 FTE	\$195,364
Annual salary with benefits for 1.0 FTE x 0.4 FTEs	\$164,105.76

Cost of PI and PI Reduction

Table 4

Calculations of Annual Salary with Benefits for FTEs

PICU admissions per year x 8.33% HAPU rate	13,636 HAPU/year
Cost for 1 HAPU treatment x 13,636	\$145,905,200.00
HAPU reduction by 20% (8.33% x 0.2 = 1.66)	1.7%
Percentage x PICU admissions per year (1.7 x 1637)	2783 patients
Number of Patients where HAPU was prevented x cost per HAPU	\$29,778,100.00 savings per year

Methodology

Implementing a practice change can be difficult; however, using a change concept coupled with theoretical process knowledge, the author can increase the probability of success. Roger's change concept looks at six elements: (a) relative advantage, (b) compatibility, (c) simplicity, (d) trialability, (e) observability, and (f) evidence (as cited in Butts, 2004). The CNL project rates high in compatibility, trialability, and evidence; however, work is needed on relative advantage, simplicity, and observability.

It might be difficult for bedside nurses to see the relative advantage of implementing PI prevention tools, which can be time consuming if their patient currently is not facing a PI. To combat this issue, the plan is to use pictures of PIs acquired in the PICU. Moreover, the skin-care champions will be given some strong talking points to use while teaching and rounding on patients. Many products and weight redistribution tools currently exist in the PICU, making it difficult to know which products or tools to start with. To help improve the simplicity of the

project, the plan is to develop a quick reference guide and have skin-care champions on each shift available to help clarify and address any issues that might arise. Finally, pictures will be taken of PIs that occur in the PICU and follow up with daily photos that show how well the products/treatments are working. Nurses frequently change assignments, making it difficult to appreciate the benefits of PI treatments.

Including the above ideas into a well-developed spread plan will ensure success. With an already developed clear aim statement and initial spread plan; the author will work on refining the spread plan to include informal reports from the bedside nurses and increasing communication. The implementation of e-mail, huddle, the PICU education day, and skin-care champions will hopefully improve the flow of information/communication.

In order to evaluate the effectiveness of the unit based skin-care team the quarterly information regarding pressure injury in the hospital (NDNQI data) will be compared from one quarter to the next. Hopefully there will be a reduction in PIs in the quarters where a unit based skin-care team existed.

Data Source/Literature Review

The literature search began with the following PICO statement:

P: Pediatric patients in the pediatric intensive care unit (PICU)

I: Skin-care champions

C: Standard bedside nursing care

O: Reduction in pressure injuries in the PICU

In the search, the terms “skin-care champions” and “pressure ulcer prevention pediatrics” were used to get results. The additional terms: “pressure ulcer,” “pressure ulcer pediatrics,” and “pressure ulcer PICU” were used. The search began without narrowing the results by specific

dates but later searched only for articles within the last 5 years. Many articles were uncovered that discussed skin champions and verified the prevention of pressure injuries using techniques planned for this CNL project.

Schluer (2017) discussed how pediatric patients are different from adults with regard to pressure injury risk. The factors that increase the risk of PI for children include their limited communication skills, developmental age, and current illness/injury. A child's skin is more likely to be underdeveloped, leaving it more vulnerable to cellular injury. A child's skin is also more permeable and loses water more easily. PI can increase this water loss, leading to electrolyte imbalances and dehydration. Special care must be taken to assess individual patient risk and patient-specific prevention should be utilized. A study conducted in Switzerland to determine the risk factors for developing pressure injury in children over the age of 1 suggested that limited mobility and improper positioning were the greatest factors in older children developing pressure injuries. In addition, more than a third of all pressure injuries were caused by devices, such as pulse oximeters (Schluer, Schols, & Halfens, 2013).

Parnham (2012) noted that assessing the level of risk for a PICU patient and implementing appropriate pressure injury prevention techniques can reduce pressure injuries. Conducting a thorough pressure ulcer risk assessment and PI prevention plan can ensure that proper preventive strategies are utilized. Preventative care should focus on skin assessment, repositioning, and pressure redistribution devices, and PI prevention should remain a top priority (Parnham, 2012). A study was conducted in a PICU in the northwest of England to examine how the initial lowest Braden Q Scale scores related to the risk of pressure injury development (Tume, Siner, Scott, & Lane, 2014). They found that this tool was high in sensitivity and specificity in children aged between three weeks old and eight years old if the children did not

have congenital heart disease. The tool performed moderately well on infants and children up to 14 years of age with congenital heart disease. These findings support the original validation paper for the Braden Q Scale. Using the Braden Q Scale to assess the level of risk for the PICU patients at the hospital would be supported by these data.

Multiple studies have implemented a skin-care team in some form, resulting in a reduction in PI. The Children's Hospital of Pittsburgh developed a skin-care team in its PICU (Pasek et al., 2008). This team was made up of professional staff nurses, a nurse leader, and an advanced practice nurse. The team performed weekly rounds and consulted with a wound- and ostomy-certified nurse when necessary. Overall, the team assisted the PICU in managing skin-care issues. At Great Ormond Street Hospital for Children in London, the nursing quality practice educator worked with the tissue viability team to reduce pressure injuries (Kipps, 2014). The intervention of the new team included making regular rounds, initiating a risk assessment tool, implementing a pressure ulcer prevention bundle, and utilizing new prevention technology, such as an interactive teaching program for staff and a root cause analysis tool, as well as working closely with the nurses, patients, and families on using repositioning and pressure reducing tools. The new pressure ulcer prevention team managed to reduce the pressure injury rate by 35%.

As the data above show, a unit-based skin-care team that conducts weekly rounds, utilizes a wound- and ostomy-certified nurse when needed, focuses on patient risk assessment, and engages a PI prevention plan can reduce PIs in the pediatric population. Having a team to manage skin-care issues and educate nursing staff on PI prevention will improve patient outcomes and reduce hospital costs.

Timeline

The skin-care PI prevention plan form will be developed by the beginning of February 2017 before weekly rounds begin. The clinical nurse specialist and the author will then start weekly rounds. The time will be used to show the benefits of PI prevention and generate interest in the project. During rounds, any issues that arise regarding the duties of the skin-care team will be identified and corrected, such as ascertaining the best day and time to make our rounds based on the unit workflow and how many nurses are required to fill the needs of a 23-bed PICU. An e-mail will be generated to identify any bedside nurses interested in joining the skin-care team. A team of eight will be established by mid-March. The nurse educator and the author will develop an educational plan for the new team members to bring their skills up to an acceptable level and familiarize them with the process. All educational material will be completed by March 15. The team members will be trained by April 2017 and scheduled for their new duties (see Appendix D for Gantt Chart).

Expected Results

The data collected for the NDNQI pressure injury study revealed a high number of hospital-acquired pressure injuries at stage two and greater in the PICU. The microsystem assessment exposed a lack of monetary resources for the skin-care team, a need for PI prevention education for the nursing staff, and a great desire by the nurses to prevent PI among our vulnerable pediatric patients. The author expects a reduction in hospital-acquired pressure injuries at stage two and greater at the next NDNQI data collection round. The author also expects the nurses to feel more knowledgeable about PI prevention. To that end, the plan is to conduct a survey using Survey Monkey software to assess the nurses' level of confidence in their knowledge before the commencement of this project and at its completion.

Nursing Relevance

Implementing a unit-based skin-care team has many benefits for the bedside nurse. First, the nurses will have a specialized team to assist with skin assessments, PI prevention plan development, and nursing education. Patients will receive full skin assessments from the specialized team once a week with the focus on prevention of PI. This assessment will relieve some pressure from the bedside nurse, who is usually the only person responsible for identifying PIs that occur in the PICU or at home, in a long-term care facility, or in another unit in the hospital. Frequently, a PI will occur in a different unit or a long-term facility, but because it was not noted in the patient's chart until after admission, the hospital will be blamed and reimbursement from the Centers for Medicare & Medicaid Services may be withheld. The nurse who discovers the PI will then be viewed with suspicion and likely feel some guilt about the PI. The nurse may also experience some disciplinary consequences by the management team. Having a specialized team will help protect the nurses. Only after a reduction in HAPUs to zero can there be an assessment of the implications for the patients and nurses. The specialized skin-care team will also encourage more collaboration and coordination in care between all the health care team members, which will lead to a healthier hospital environment.

Summary Report

The project goal is to reduce pressure injury acquisition in the PICU by 20% within 3 months and increase nursing knowledge about current hospital PI prevention protocols. This Northern California hospital is a level-one pediatric trauma center and provides inpatient care to almost 10,000 patients each year (Konstantin, 2015). The hospital's purpose is to "provide exemplary, comprehensive healthcare services for critically ill children in a family-centered environment" while striving "to create a supportive community that fosters optimal health of the pediatric patient, the professional growth of staff, and multidisciplinary collaboration" (PICU

Leadership Group, 2016). The center has more than 30 subspecialties in pediatrics, including neurosurgical services, sports medicine, oncology, and urology (Konstantin, 2015).

The PICU is a 23-bed unit that provides critical postoperative care for a variety of patients, including neurosurgical, cardiovascular, and orthopedic patients (Konstantin, 2015). Approximately 1,500 patients per year are admitted to the unit, which has an average daily census of 15.89 (PICU Leadership Group, 2016).

The plan to establish a unit-based skin-care team was developed in stages. The skin-care PI prevention plan was developed by February 6, 2017, before weekly rounds began. The clinical nurse specialist (CNS) and author started weekly rounds on February 7, 2017, and final rounds were conducted on April 11, 2017. The team used this time to show the benefits of PI prevention and to generate interest in this project. During rounds the team performed full skin assessments on the patients in the unit and developed a PI prevention plan. If any issues were present, the team addressed them and collaborated with the bedside nurses, medical or surgical team, and any ancillary staff involved in care. Rounds were well-received and successful. Nurses began to seek me out, along with the CNS, with their questions and concerns. The bedside nurses' feedback has generated other projects, including a skin-care drawer with all frequently used products and a protocol revision for our Bipap patients (high incidence of PI resulting from Bipap masks).

The author identified nine bedside nurses interested in joining the skin-care team but was unable to add them because of budget constraints; they were made skin-care champions in the interim. The author provided education on current PI prevention protocols to those nurses and many of the bedside nurses. The nurse educator and author recorded two educational videos for

the nurses to watch. The author also developed and taught a pediatric skin-care session for our yearly skills day. Finally, three education sessions during huddles were conducted.

Pressure injuries cost \$9.1–\$11.6 billion per year and cause many patient deaths (Agency for Healthcare Research and Quality, 2014). Pressure injury prevalence is 8.33% in the PICU; the hospital rate is 2%. During the microsystem assessment, it was clear that many nurses were unaware of current policies and procedures. The nurses were also unaware of current PI prevention products, which change frequently.

There were three educational flyers created and distributed throughout the unit (see Appendix D). A poster and PI game was made and used to teach at skills day and huddles (see Appendix E). The author used the current protocol and carried the most frequently used PI prevention products.

The NDNQI quarterly data was used as a baseline for PI incidence in the PICU prior to implementation of the unit-based skin-care team. After 10 weeks of team intervention and staff education, the CNS and the author used the NDNQI data collection tool to survey the patients in the PICU; the PI incidence remained at 8.33% after the 10 weeks (see Appendix F for data collection tool and summary of results). The author was unable to reach the goal of a 20% reduction in PI incidence for three possible reasons: (a) the intervention did not last a full 3 months, (b) education time was not optimal, and (c) the unit census was very low the day of follow-up data collection.

The nurses were also surveyed to determine whether they felt more knowledgeable and comfortable about implementing PI prevention techniques after the 10 weeks. The author asked the bedside nurses whether they believed a unit-based skin-care team would be beneficial. A survey was created using Survey Monkey and distributed on Facebook and e-mail. The author

also used hard copies of the survey to reach additional staff members (see Appendix G for full survey results). When asked if they felt more knowledgeable about PI prevention today than they did before the skin-care team project, 67% of the nurses agreed that they were more knowledgeable, and 24% strongly agreed. When asked if they felt more comfortable implementing PI prevention methods now than they did before the skin-care team project began, 55% of the nurses agreed. Finally, 66% of the nurses in the PICU strongly agreed that a unit-specific skin-care team would be beneficial in preventing PIs. Thus, although the goal of a 20% reduction in PIs was not reached in the PICU, the interest and support of the PICU nurses was gained. The author was also able to show how a skin-care team could benefit the PICU patients.

Sustainability is a concern for the project. A nurse who can take the lead has not been found, so a plan needs to be developed. The five factors of sustainability are as follows: (a) modification of the program, (b) a champion, (c) fit with the organization's mission, (d) perceived benefits by the staff, and (e) support from stakeholders (N651 CNL Role Synthesis: Module 11, sustainability, n.d.). After analyzing these factors, the author has champions and staff buy-in, but needs to modify the program to fit the currently available resources.

Fleischer, Semenic, Ritchie, Richer, and Denis (2016) conducted a study evaluating the long-term sustainability of evidence-based practice (EBP) improvements in different hospitals. They found that hospitals with the highest rates of sustainability had unit leaders who frequently maintained priorities and reinforced expectations using six activities: (a) extending initial implementation of EBP guidelines 9 to 12 months until completion, (b) including EBP guidelines in all training and educational sessions, (c) making use of verbal and visual reminders, (d) holding guided conversations about the new EBP guidelines, (e) monitoring unit performance

and providing frequent feedback, and (f) integrating the new EBP guidelines into existing programs.

The plan is to use this information to continue education in the PICU about PI prevention and treatment and to develop an educational plan for new hires. Further, the author will start reporting both PI incidence in the PICU as data become available and PI bundle compliance. A visual aid will be created to signal nurses when a patient is at high risk for PI and include a PI topic in the huddles once a month. The skin-care champions will assist with these tasks and support bedside nurses with any issues that may arise. Currently, there is no extra funding for this project; the plan is to have bedside nurses assist with these projects as they have available time. The author has received approval from the management team to continue weekly rounds and develop the PI plan for high-risk patients. This plan will be reassessed after 3 months and any increase efforts in education and unit support will be implemented as needed.

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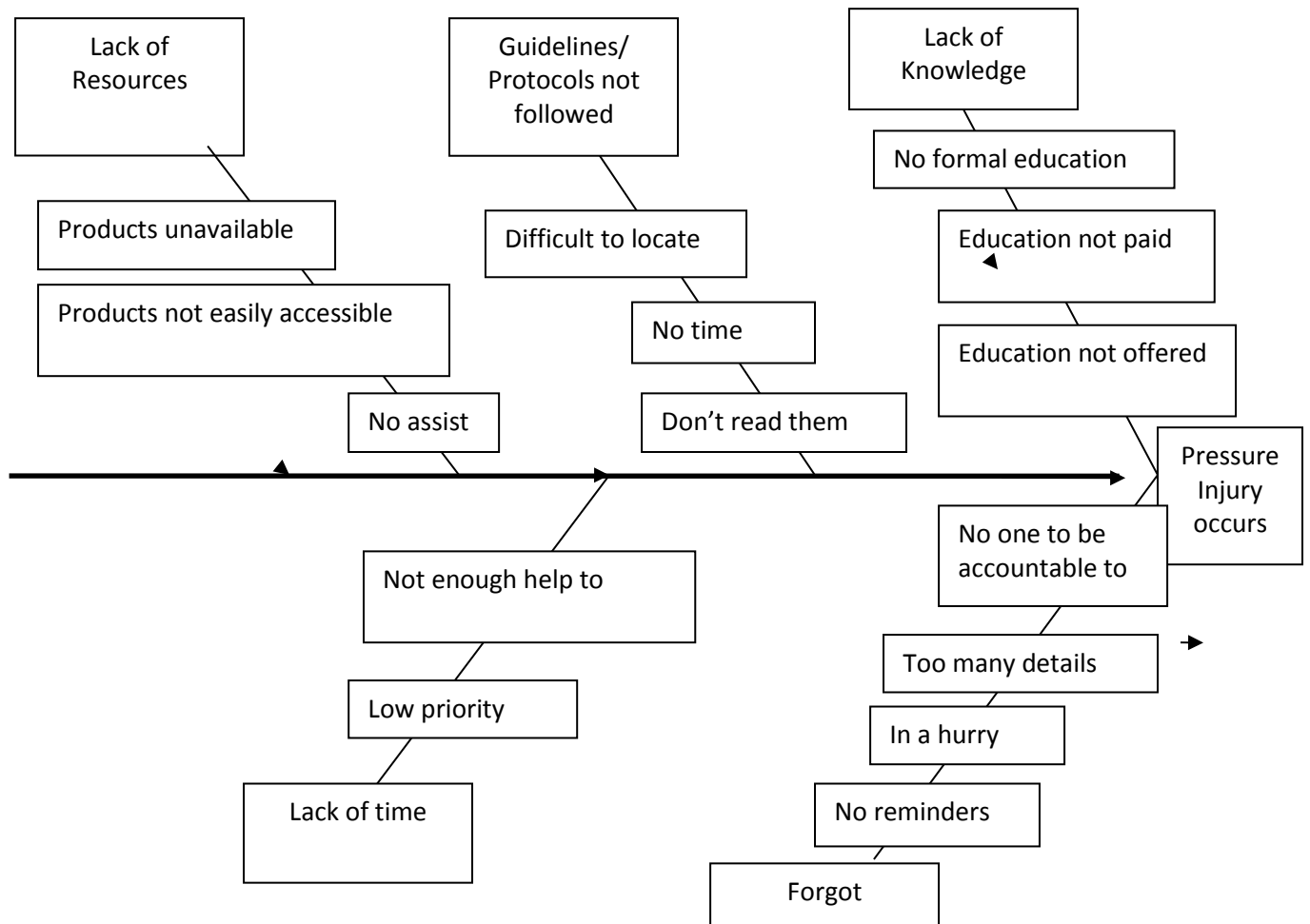
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Appendix A

Fishbone Diagram for Causes of Pressure Injury Occurrence

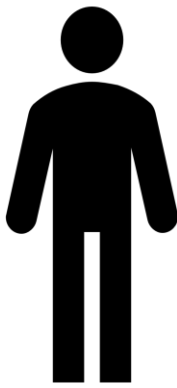


Appendix B

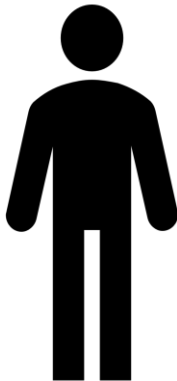
- Date/time/initials _____
- Admission risk score (Braden Q) _____
- Current risk score (Braden Q) _____
- Current bed type _____
- Current redistribution used _____
- Current nutritional support _____
- Current repositioning prescribed _____

Assessment Findings

Front



Back



Current Detailed Plan

Reviewed By:

Tuesday	
Wednesday	
Thursday	
Friday	
Saturday	
Sunday	
Monday	

Appendix C

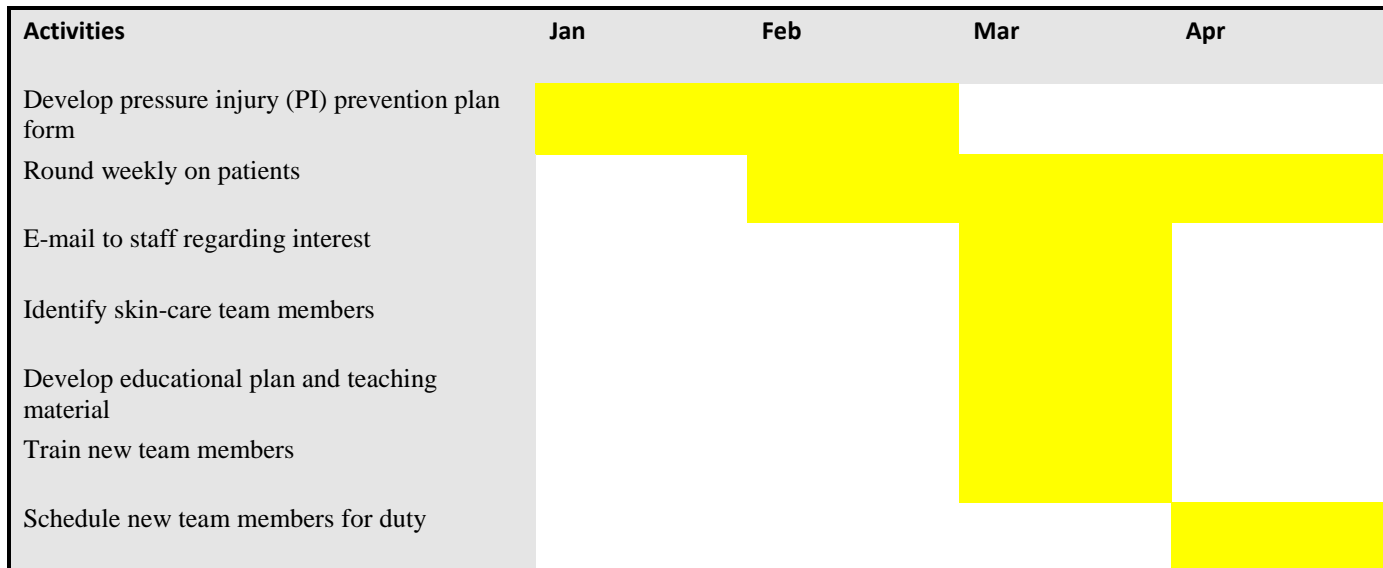
SWOT Analysis

Strengths	Weakness
<p>Highly skilled and nursing staff</p> <p>Many involved parents</p> <p>Supportive medical and surgical team</p> <p>Five hospital-wide advanced practice nurses</p> <p>Hospital-wide wound care committee</p> <p>Strong nurse educator</p> <p>Hands-on management team</p>	<p>High-risk patient population</p> <p>Unpredictable environment with a constant</p> <p>Need for reassessing priorities</p> <p>Insufficient budget for education</p> <p>No budget for a wound care nurse</p> <p>Overworked staff</p> <p>Unit that is often understaffed</p>
Opportunities	Threats
<p>Advanced practice nurses willing to assist</p> <p>Parents willing to assist with care</p> <p>Wound care committee support</p> <p>Nurses want more education and to reduce PI</p>	<p>No one willing to take the lead</p> <p>No incentives to maintain extra work</p>

Appendix D

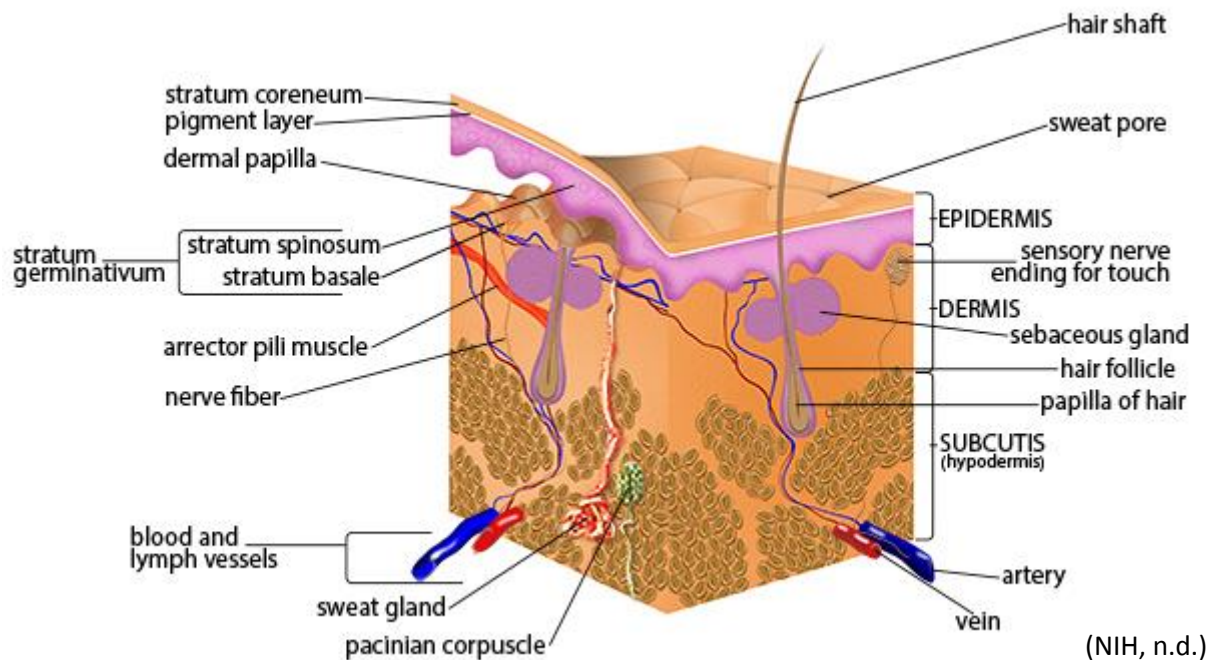
Gantt Chart

Skin-Care Team Development Timeline					
Project Lead: Double click to edit					
WBS	Task Name	Start	Finish	Duration	Percent Complete
1	Develop pressure injury (PI) prevention plan form	1/24/2017	2/6/2017	10	100%
2	Round weekly on patients	2/7/2017	4/14/2017	49	100%
3	E-mail to staff regarding interest	3/7/2017	3/7/2017	1	100%
4	Identify skin-care team members	3/7/2017	3/28/2017	16	100%
5	Develop educational plan and teaching material	3/1/2017	3/14/2017	10	100%
6	Train new team members	3/15/2017	3/31/2017	13	0%
7	Schedule new team members for duty	4/1/2017	4/3/2017	1	0%



Appendix D

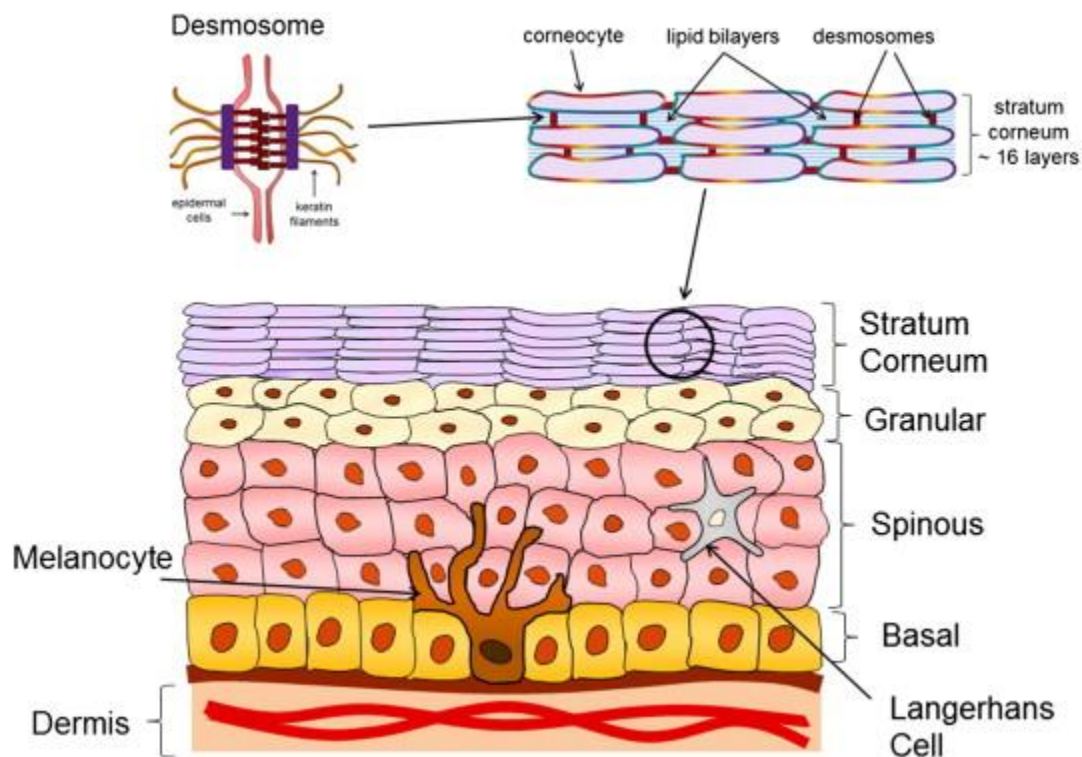
Skin Anatomy and Function



The skin is the largest organ in the body. It protects the body from heat, light, injury, and infection. The skin also helps regulate body temperature, gathers sensory information from the environment, stores water, fat, and vitamin D, and plays a role in the immune system protecting us from disease (NIH, n.d.).

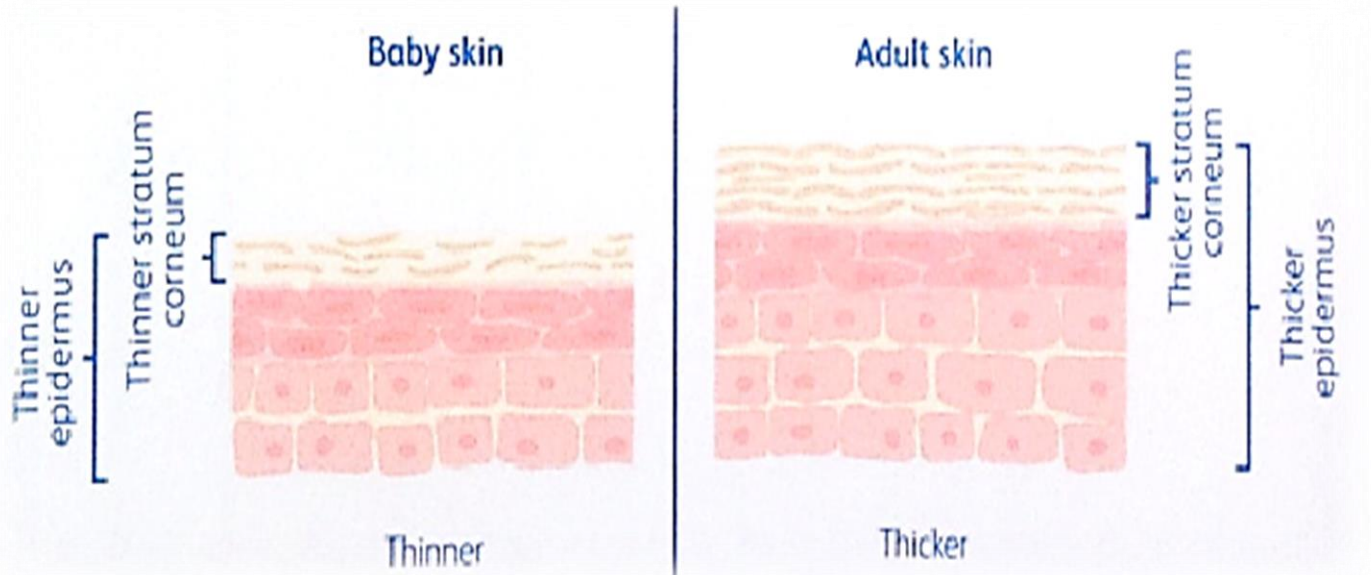
Skin Anatomy and Function

The functions are provided by three major layers, the stratum corneum, viable epidermis and dermis, and specialized cells within them. The granular, spinous and basal layers of the viable epidermis are responsible for generating and renewing the stratum corneum and are involved with wound healing. The epidermis also contains Langerhans cells and melanocytes. The skin barrier provides innate immune functions.



(Visscher & Narendran, 2014).

Neonatal and Pediatric Skin



- Larger BSA- Children have a proportionately larger body surface area (BSA) than adults do. The smaller the patient, the greater the ratio of surface area (skin) to size.

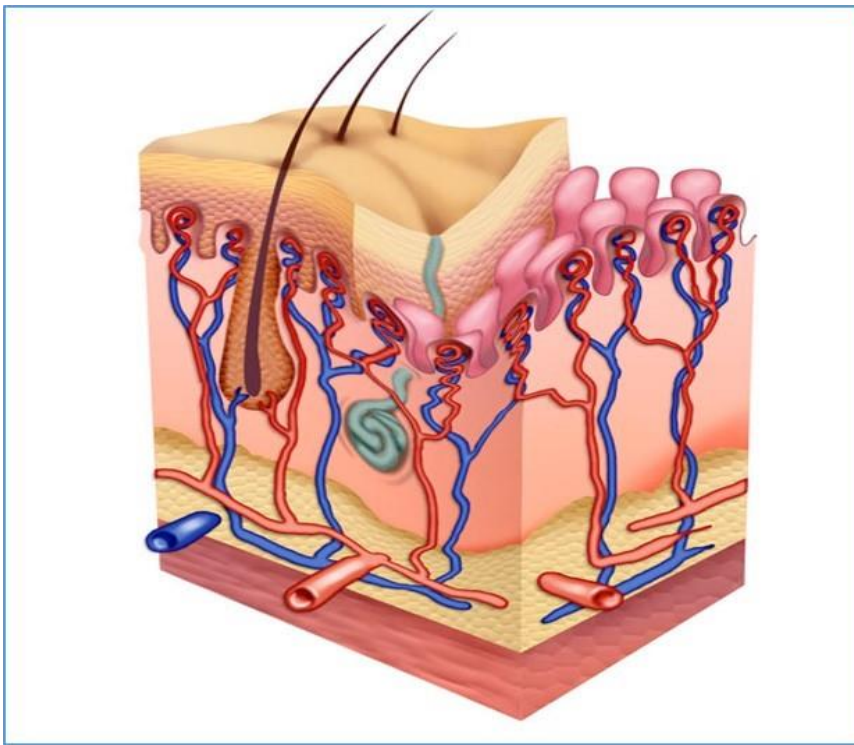
As a result, children are at greater risk of excessive loss of heat and fluids; children are affected by more quickly and easily toxins that are absorbed through the skin.

- Thinner skin- Children have thinner skin than adults. Their epidermis is thinner and under-keratinized, compared with adults. As a result, children are at risk for increased absorption of agents that can be absorbed through the skin and much more susceptible to skin injury (Press Ganey Associates, 2017).

. Pressure Injury

- A pressure injury is localized damage to the skin and underlying soft tissue usually over a bony prominence or related to a medical or other device. The injury can present as intact skin or an open ulcer and may be painful. The injury occurs as a result of intense and/or prolonged pressure or pressure in combination with shear. The tolerance of soft tissue for pressure and shear may also be affected by microclimate, nutrition, perfusion, co-morbidities and condition of the soft tissue (Press Ganey Associates, 2017).

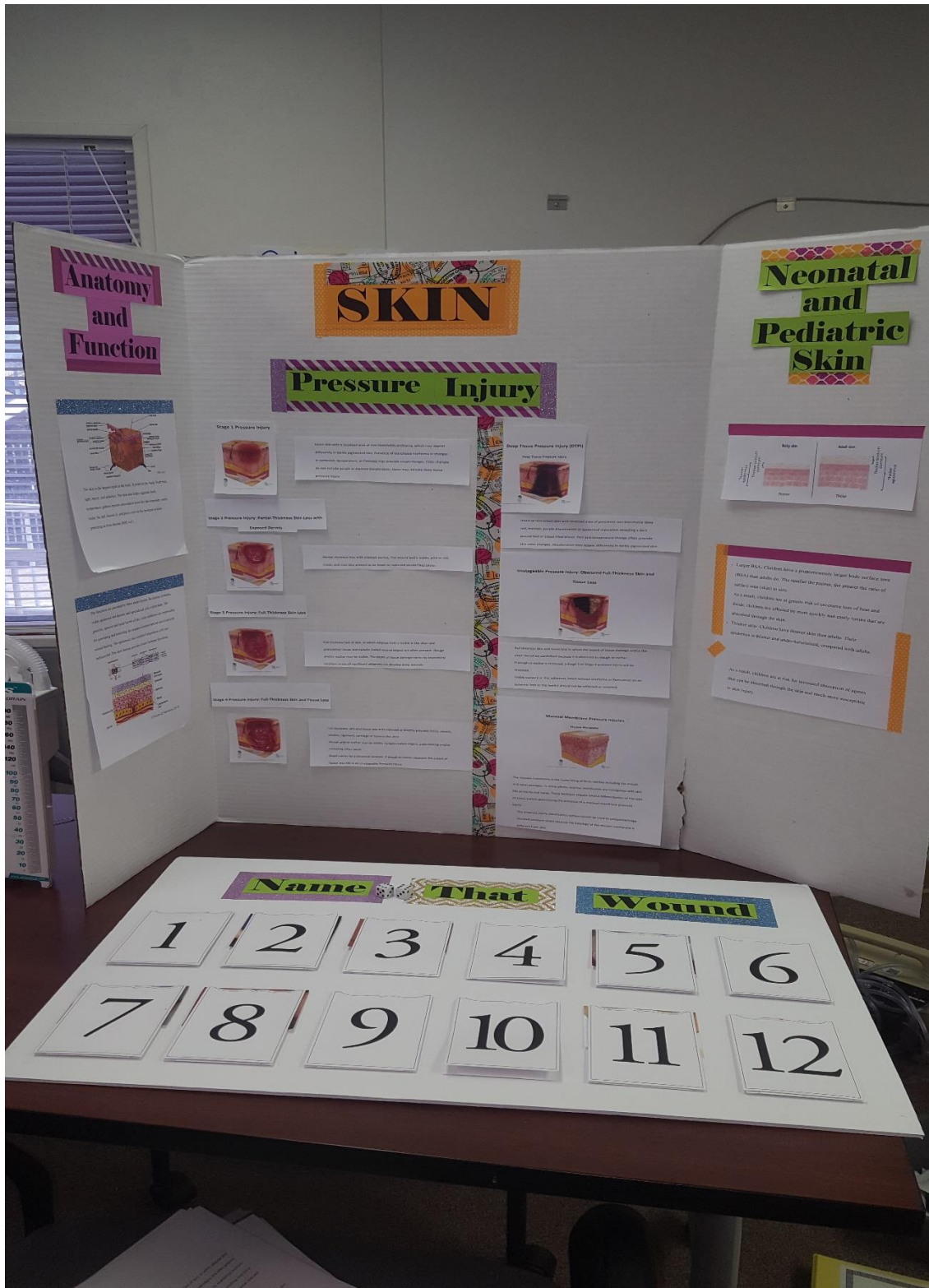
- **Pressure** - Pressure is the force (per unit area) exerted perpendicular to the skin surface.² Pressure damages the skin and underlying tissues by (1) directly deforming and damaging tissue; (2) compressing small blood vessels hindering blood flow and nutrient supply and (3) through ischemia-reperfusion injury. When pressure is redistributed over a greater surface area, the pressure is less intense in any one area.³



(Press Ganey Associates, 2017)

- **Shear** - Shear stress is the force (per unit area) exerted parallel to the tissue. Shear strain is the actual distortion or deformation of tissue as a result of shear stress. Some shear strain occurs at rest. Shear strain is intensified in certain clinical situations (e.g., raising the head of the bed > 30 degrees; dragging rather than lifting while repositioning). One layer of tissue slides over another deforming adipose and muscle tissue and disrupting blood flow (Press Ganey Associates, 2017).

Appendix D



Appendix F

NDNQI® Pressure Injury Data Collection Form C

Complete one form for each patient (whether patient has pressure injury or not)

Survey date _____

Patient ID _____

1. Age _____ Years (for >1. If >90 record 90); _____ Months (for age 1 mo. to 11 mos.) _____ Days (for newborns 0 to 30 days); _____ Gestational age at birth (NICU only)	2. Gender _____ Female _____ Male
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Restraint Information

3. Restraint in use? <input type="checkbox"/> Yes <input type="checkbox"/> No – skip to Pressure Injury section	5. Restraint category <input type="checkbox"/> Acute medical/surgical restraint <input type="checkbox"/> Behavioral health care restraint <input type="checkbox"/> Other <input type="checkbox"/> Unknown	6. Justification for restraint (<i>check all that apply</i>) <input type="checkbox"/> Prevent falling out of bed w/out assistance <input type="checkbox"/> Prevent removing equipment/ therapeutic modalities <input type="checkbox"/> Reduce harm to self <input type="checkbox"/> Reduce harm to others <input type="checkbox"/> Other <input type="checkbox"/> Unknown – clinical justification can't be determined
4. Restraint type (<i>check all that apply</i>) <input type="checkbox"/> Limb (including soft or leather) <input type="checkbox"/> Vest <input type="checkbox"/> Other		

Pressure Injury Skin and Risk Assessment

7. Skin assessment documented w/in 24 hours of <u>admission</u> ? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Pending (admitted w/in last 24 hrs)	8. Pressure injury risk assessment documented w/in 24 hours of <u>admission</u> ? <input type="checkbox"/> Yes <input type="checkbox"/> No – skip to #10 <input type="checkbox"/> Pending (admitted w/in last 24 hrs) – skip to #19	9. <u>Admission</u> risk assessment scale and score? <input type="checkbox"/> Braden Scale <input type="checkbox"/> Braden Q Scale <input type="checkbox"/> NSRAS Scale <input type="checkbox"/> Norton Scale <input type="checkbox"/> Other –assessed risk using another scale or other risk/clinical factors Admission Score _____
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10. How long ago was the <u>last</u> pressure injury risk assessment performed? (Exclude risk assessment at time of survey) <input type="checkbox"/> >0 – 12 hours <input type="checkbox"/> >12 – 24 hours <input type="checkbox"/> >24 – 48 hours <input type="checkbox"/> >48 – 72 hours <input type="checkbox"/> >72 hrs. – 1 week <input type="checkbox"/> > 1 week <input type="checkbox"/> Never assessed <input type="checkbox"/> risk – skip to #19	11. <u>Last</u> risk assessment scale & score? (Exclude risk assessment at time of survey) <input type="checkbox"/> Braden Scale <input type="checkbox"/> Braden Q Scale <input type="checkbox"/> NSRAS Scale <input type="checkbox"/> Norton Scale <input type="checkbox"/> Other – assessed risk using another scale or other pt. risk/clinical factors Last Score _____	12. Based on <u>last</u> assessment, is patient “at risk for pressure injuries”? <input type="checkbox"/> Yes – based on risk assessment score, OR <input type="checkbox"/> Yes – based on other pt. risk/clinical factors <input type="checkbox"/> No – skip to #19	13. Pressure injury prevention w/in past 24 hours for “at risk” patient? <input type="checkbox"/> Yes <input type="checkbox"/> No – skip to #19 <input type="checkbox"/> Pending (admitted w/in last hrs.) – skip to #19
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Types of prevention interventions in use within past 24 hours for “at risk” patient

14. Skin assessment documented? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Documented contraindication	15. Pressure redistribution surface use? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Documented contraindication <input type="checkbox"/> Unnecessary for pt. <input type="checkbox"/> Pt. refused	16. Routine repositioning as prescribed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Documented contraindication <input type="checkbox"/> Unnecessary for pt. <input type="checkbox"/> Pt. refused	17. Nutritional support? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Documented contraindication <input type="checkbox"/> Unnecessary for pt. <input type="checkbox"/> Pt. refused	18. Moisture management? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Documented contraindication <input type="checkbox"/> Unnecessary for pt. <input type="checkbox"/> Pt. refused
--	---	---	---	---

Number of Pressure Injuries (PI)

Pressure Injury Table (attach another page if greater than 5 pressure injuries)

Location and Injury Number		Stage Each Pressure Injury								Present on admission		Present on arrival to unit		Rel Medical	
		1	2	3	4	Unstageable PI	DTPI	Mucosal Membrane PI	Non-Visible Pressure Injury	Yes	No (hospital acquired)	Yes	No (unit acquired)		Yes
*Location	Injury #														



NDNQI® Pressure Injury Survey Unit Summary Form A

Hospital ID Code: _____ Unit name: PICU

Survey Date: 4/11/17

Data Collection Method:

Restraint and Pressure Injuries – Same Day (use Form C)

Pressure Injuries – Separate Day (use Form B)

Unit Survey Summary:

12 Unit Census at start of survey

12 Number of patients included in the survey

Number of patients excluded from survey because:

0 Not on unit

0 Refused

0 Unsafe for patient condition

0 Actively dying and Pressure Injury prevention no longer a therapeutic goal

Unit acquired Pressure Injury reporting (were the surveyed patients assessed for unit acquired Injuries):

Yes

No

Pressure Injury risk assessment scale used on this unit:

Braden Scale

Braden Q Scale (pediatric)

Neonatal Skin Risk Assessment Scale (NSRAS)

Norton Scale

Multiple scales on this unit (e.g., adult Braden and peds Braden Q)

Other

Appendix G Survey Monkey Results

1. I am more knowledgeable about pressure injury prevention today than I was before the skin-care team project.

- Answered: 33
- Skipped: 0

	strongly disagree	disagree	agree nor disagree	agree	strongly agree	Total	Weighted Average
S	0.00% 0	0.00% 0	9.09% 3	66.67% 22	24.24% 8	33	4.15

2. I am more comfortable implementing pressure injury prevention methods now than I was before the skin-care team project began.

- Answered: 33
- Skipped: 0

	strongly disagree	disagree	agree nor disagree	agree	strongly agree	Total	Weighted Average
S	0.00% 0	3.03% 1	18.18% 6	54.55% 18	24.24% 8	33	4.00

3. I am more knowledgeable about pressure injury classifications now than before the skin-care team project began.

- Answered: 32
- Skipped: 1

	strongly disagree	disagree	agree nor disagree	agree	strongly agree	Total	Weighted Average
S	0.00% 0	3.13% 1	25.00% 8	50.00% 16	21.88% 7	32	3.91

4. I am more knowledgeable about pressure injury treatment now than before the skin-care team project began.

- Answered: 31
- Skipped: 2

	strongly disagree	disagree	agree nor disagree	agree	strongly agree	Total	Weighted Average
S	0.00% 0	3.23% 1	3.23% 1	67.74% 21	25.81% 8	31	4.16

5. I believe a unit specific skin-care team is helpful in preventing pressure injury.

- Answered: 32
- Skipped: 1

	strongly disagree	disagree	agree nor disagree	agree	strongly agree	Total	Weighted Average
S	0.00% 0	3.13% 1	0.00% 0	31.25% 10	65.63% 21	32	4.59

6. I would like to have a unit specific skin-care team in the PICU.

- Answered: 33
- Skipped: 0

	strongly disagree	disagree	agree nor disagree	agree	strongly agree	Total	Weighted Average
S	0.00% 0	0.00% 0	12.12% 4	24.24% 8	63.64% 21	33	4.52