

Retrospective Study of Risks of Infant Skin Breakdown using the Seton Infant Skin Risk Assessment tool

Deborah A. Vance, MSN, RN; Lead Investigator, Neonatal Intensive Care Unit, Seton Medical Center at Austin; Marcie Moynihan, MSN, RN, CNS; CNS; Melissa Toth, BSN, RNC; Melodye Becker, BSN, RN; Sylvia Huang, RN; Yvonne Huey, RN

Reducing pressure injuries and improving skin care is a basic nursing quality indicator. A simple, evidence-based skin risk assessment tool is needed to focus skin care of high risk infants.

Background/Problem Statement

Reducing pressure ulcers and skin breakdown in hospitals are of immense concern for any age group. The Centers for Medicare and Medicaid Services (CMS) classifies hospital acquired pressure ulcers as a “never event” which must be reported and additional costs during hospitalization will not be reimbursed. While most often the geriatric patient is considered the most vulnerable, neonates, especially those born premature, are also at increased risk for skin breakdown and pressure ulcers because of the immaturity and fragility of their skin. To make decisions about protecting a neonate’s fragile skin, the bedside nurse must assess the risk of skin breakdown.

Few published skin breakdown/skin ulcer risk assessment tools for neonates exist, and they are mostly adaptations from the instruments developed for the adult and pediatric populations. Several of the adult and pediatric subscales involve movement (walking and sitting), activity, and incontinence which are obviously not relevant to infants. Gray (2004) believes that none of these tools are reliable or valid (Gray, 2004), including the widely used Neonatal Skin Risk Assessment Scale (NSRAS) (Huffines and Logsdon, 1997). The purpose of this project was to modify the Seton Infant Skin Risk Assessment (SISRA) tool for assessing pressure ulcer and skin breakdown risk in neonates.

Study Design

A retrospective chart review was conducted assessing neonates with known skin breakdown in three NICUs at different facilities in Central Texas (Levels II, III, and IV NICUs). The risk assessment areas were compared with the findings from the chart review to show applicability of the tool. A descriptive analysis was performed to note any associations in number of wounds to the total of all NICU infants. The investigators obtained a list of all neonatal wound care consults between 2013 and 2014 (time period of the study). The plan was to use this information to assess risk factors needed for inclusion of the SISRA.

Results

Data were collected on 87 babies with 138 wounds out of a total of 1179 babies in the 3 units for this time period. Sixty four percent of the wounds were in male infants. Because of the longer length of stay in the level IV NICU infants, the investigator chose the median values as most

relevant. The median weight at birth of the infants with wounds was 1440 grams and the median post menstrual age (PMA) at birth was nearly 30 weeks.

Table 1

Demographic Information

<i>BABIES WITH WOUNDS</i>	<i># Babies with wounds</i>	87
	<i># Wounds in these babies</i>	138
	Males:	64%
	Hispanic:	45%
	Black:	9%
	Asian:	7%
	White:	34%
	Average weight at birth	1698 grams
	Median weight at birth	(gms) 1440 grams
	Average Post Menstrual Age (PMA) at birth	31 weeks (wks)
	Median PMA at birth	29 6/7 wks
TOTAL babies in units	All PMAs	1179
	< 28 wks	103
	≥ 28 wks & <34 wks	324
	≥ 34 wks	752

Table 2

Types of Skin Breakdown per Site

	Level IV NICU	Level III NICU	Level II NICU	Total	Percent
RT related	11	11	26	48	35
Ostomy	12	-	-	12	9
Rash	8	3	5	16	12
Tape Injury	2	2	2	6	4
Skin tear/other	5	8	5	18	13
IV related	3	8	4	15	11
Diaper dermatitis	17	3	3	23	17
	58	35	45	138	

Based on the results of the comparative, retrospective chart review, the below tool was determined to most appropriately determine risk for skin breakdown in the neonate population.

Table 3

Seton Infant Skin Risk Assessment (SISRA) Scale
(Score based on highest risk per subscale)
For High Risk in any category, go to Intervention Tool (PReSKIN)

	Moderate Risk=1	High Risk=2	Score	Intervention
Post Menstrual Age (PMA)	28 0/7 – 33 6/7 weeks CGA	Less than 28 weeks CGA		Physical attributes
Day of Life	7 - 30 days old	≤7 days old or >30 days in the hospital		
Skin Tolerance/ Perfusion/ Nutrition	>14 days TPN; Weight < 10 th percentile	Vasopressor needed, oxygen >30%, apnea &/or bradycardia, NEC, short gut, infection, edema		REduce Trauma, Nutrition of Cells
Medical Devices – Pressure and Adhesives Used	NC, feeding tubes, catheters, lines, leads	ETT, NCPAP, Chest tubes, Gastric or nephrostomy tubes, ECMO equipment		Surfaces against skin
Activity	Overactivity	Minimal Stimulation, Inactivity, Immobility or Infrequent position changes		Keep turning or active
Moisture	Excessive dryness	Humidity from isolette or respiratory equipment, excessive moisture in skin folds or under tape, diarrhea		Incontinence or Excessive Moisture
Total Score			6-12	

DISCUSSION and SIGNIFICANCE OF RESULTS:

Reducing pressure injuries and improving skin care is a basic nursing quality indicator. A simple, evidence-based skin risk assessment tool is needed to focus skin care of high risk infants.

This new skin risk assessment tool:

- Includes all wounds severe enough to need a wound care nurse assessment and recommendations, where other tools only assess the risk of pressure injuries
- Is less subjective than the previous SISRA
- Is easier to score than the previous SISRA
- Is unique, as each high risk factor leads to specific interventions
- Is tailored more for the NICU infant than the existing NICU risk assessment tools

REFERENCES

Allwood, M. (2011). Skin care guidelines for infants aged 23 – 30 weeks' gestation: a review of the literature. *Neonatal, Paediatric and Child Health Nursing*, 14 (1), 20 – 27.

Agency for Healthcare Research and Quality. (2012, October). *Patient Safety Primer: Never Events*. Retrieved March 24, 2013 from AHRQ Patient Safety Network: <http://www.psnet.ahrq.gov/primer.aspx?primerID=3>.

Association of Women's Health, Obstetric and Neonatal Nurses (AWHONN). (2007). *Neonatal skin care (2nd ed.)*, Evidence-based clinical practice guideline. Washington (DC): Association of Women's Health, Obstetric and Neonatal Nurses (AWHONN).

Duncan, K. (2007). 5 Million Lives Campaign: Preventing pressure ulcers: The goal is zero. *The Joint Commission Journal on Quality and Patient Safety*, 33 (10), 605-610.

Fujii, K., Sugama, J., Okuwa, M., Sanada, H., and Mizokami, Y. (2010). Incidence and risk factors of pressure ulcers in seven neonatal intensive care units in Japan: a multisite prospective cohort study. *International Wound Journal*, 7(5): 323-328.

Gray, M. (2004). Which pressure ulcer risk scales are valid and reliable in a pediatric population? *The Journal of Wound and Ostomy Care Nursing*, 31, 157-160.

Harrison, M. M. (2008). Pressure ulcer monitoring: A process of evidence-based practice, quality, and research. *The Joint Commission Journal on Quality and Patient Safety*, 34(6), 355-359.

Huffines, B., and Logsdon, M.C. (1997). The Neonatal Skin Risk Assessment Scale for predicting skin breakdown in neonates. *Issues in Comprehensive Pediatric Nursing*, 20: 103-114.

McLane, K.M., Bookout, K., McCord, S., McCain, J., and Jefferson, L.S. (2004). The 2003 national pediatric pressure ulcer and skin breakdown prevalence survey: A multisite study. *The Journal of Wound and Ostomy Care Nursing*, 31(4), 168-177.

The National Database. (2010). Retrieved February 28, 2010, from NursingWorld: ANA - American Nurses Association: <http://www.nursingworld.org/ndnqi2>

Schindler, C.A., Mikhailov, T.A., Kuhn, E.M., Christopher, J., Conway, P., Ridling, D., Scott, A.M., and Simpson, V.S. (2011). Protecting fragile skin: Nursing interventions to decrease development of pressure ulcers in pediatric intensive care. *American Journal of Critical Care*, 20(1): 26-35.

Vance, D.A., Demel, S., Kirksey, K.M., Moynihan, M., and Hollis, K. (2015). Delphi Study for the Development of an Infant Skin Breakdown Risk Assessment Tool. *Advances in Neonatal Care*, 15, 150-157.