

# Protecting Perineal Skin Integrity of Critically Ill Neonates.

Rogers, S. RN<sup>1</sup>; Chan, B. MD<sup>3</sup>

Acknowledgements: Hinkley, S.<sup>2</sup>; Henderson, C. RN<sup>1</sup>; Gardner, M. RN<sup>1</sup>; Strevay, D, RN<sup>1</sup>; Baserga, M. MD<sup>3</sup>; Jones, C. RN<sup>1</sup>, Yoder, S. RN<sup>1</sup>; Pratt, C. OT<sup>1</sup>; Shafter, K. OT<sup>1</sup>; Warner, V. RN<sup>1</sup>; Tibbets, V. RN<sup>1</sup>

<sup>1</sup>University of Utah Hospital, Women's Children's Services, Salt Lake City, UT; <sup>2</sup>Clinical Data Analyst; University of Utah Newborn ICU Developmental Team; <sup>3</sup>University of Utah, Neonatology Division, Salt Lake City, UT  
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## Problems

- An underdeveloped stratum corneum (the protective outer layer of skin) combined with loose stools from required high caloric fortified feeds in critically ill neonates, especially in preterm infants, make perineal skin breakdown or diaper rash a common problem in the Neonatal Intensive care. <sup>1</sup>
- Diaper rash creates entry for bacterial and fungal overgrowth.
- Open perineal sores cause neonatal discomfort and parental emotional distress.
- We lack standardization in skin assessment, documentation, prevention and treatment of diaper rash.

## Aim Statement

- Reduce the incidence of severe diaper rash days among our NICU neonates by 20%.

## Methods

- A multi-disciplinary committee identified diaper rash etiologies via Ishikawa **cause-and-effect diagram**.
- A **Key driver diagram** (Figure 1) mapped out the interventions to be tested.
- Developed, educated and implemented the evidence-based **Perineal Skin Care Bundle** (Figure 2).
- The primary outcome measure was the number of severe diaper rash (Excoriation) per 100 patient-days between June 2017-March 2019
- The incidence of severe diaper rash were displayed on U charts (Figure 3).

## References:

- Ligi et al. Iatrogenic Events in Admitted Neonates: A Prospective Cohort Study. *Nacet* 2008.
- Nistet al. A Quality Improvement Approach to Enhance Skin Care in the Neonatal Intensive Care Unit. *Advances in Neonatal Care*. 2016; 16(5).

Figure 1: Key Drivers Diagram

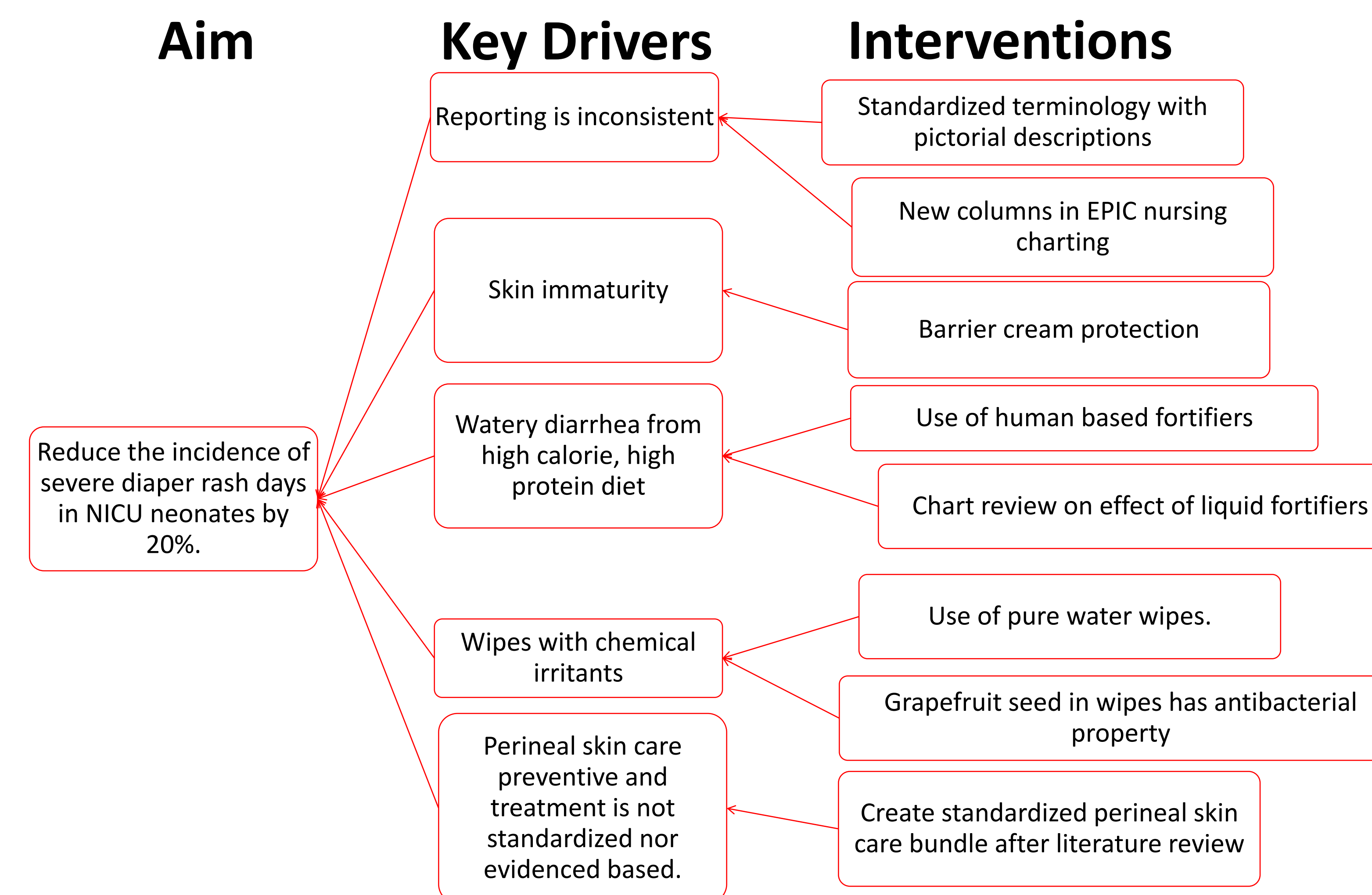


Figure 2: Perineal Skin Care bundle

Perineal Skin Care Guidelines for Diaper Dermatitis (AKA Butt Care) for Babies > or equal to 30 Weeks Corrected Age			
	Image	Skin Assessment	Treatment
Plan A Prevention		Intact skin, no erythema	Criticald Clear (petroleum)
Plan B		Intact Skin, Erythema, no Candida	Criticald paste • "Butt Bath" every 24 hrs • Evaluate plan after 72 hrs • If no improvement or skin breakdown move to Plan C
Plan C		Bleeding, Excoriation, Denuded skin	Begin "Crusting technique" • Butt Bath every 24 hrs • Evaluate plan after 72 hrs. • If no improvement continue "crusting". • If improved then return to Plan B
Plan D		Candida lesions skin intact Candida lesions with skin breakdown	Antifungal cream applied every diaper change. • If no improvement in 24 hrs, change antifungal Apply antifungal Allow to dry Apply Criticald paste over antifungal

**Instructions:**

- Diaper change every 3-4 hrs
- Use water wipes
- Avoid vigorous scrubbing
- Apply Criticald Clear on both perineal area and on diaper

**Crusting Instructions:**

- Apply a thin layer of pectin powder to skin, brush off excess. Powder will stick to open skin.
- Apply thick layer of pectin-based paste on top of pectin powder by pressing into place vs spreading
- Repeat for 2-3 layer

**With each diaper change:**

- Only remove stool, try to leave pectin products in place
- Skin showing: replace pectin products pin
- Reapply Criticald Clear

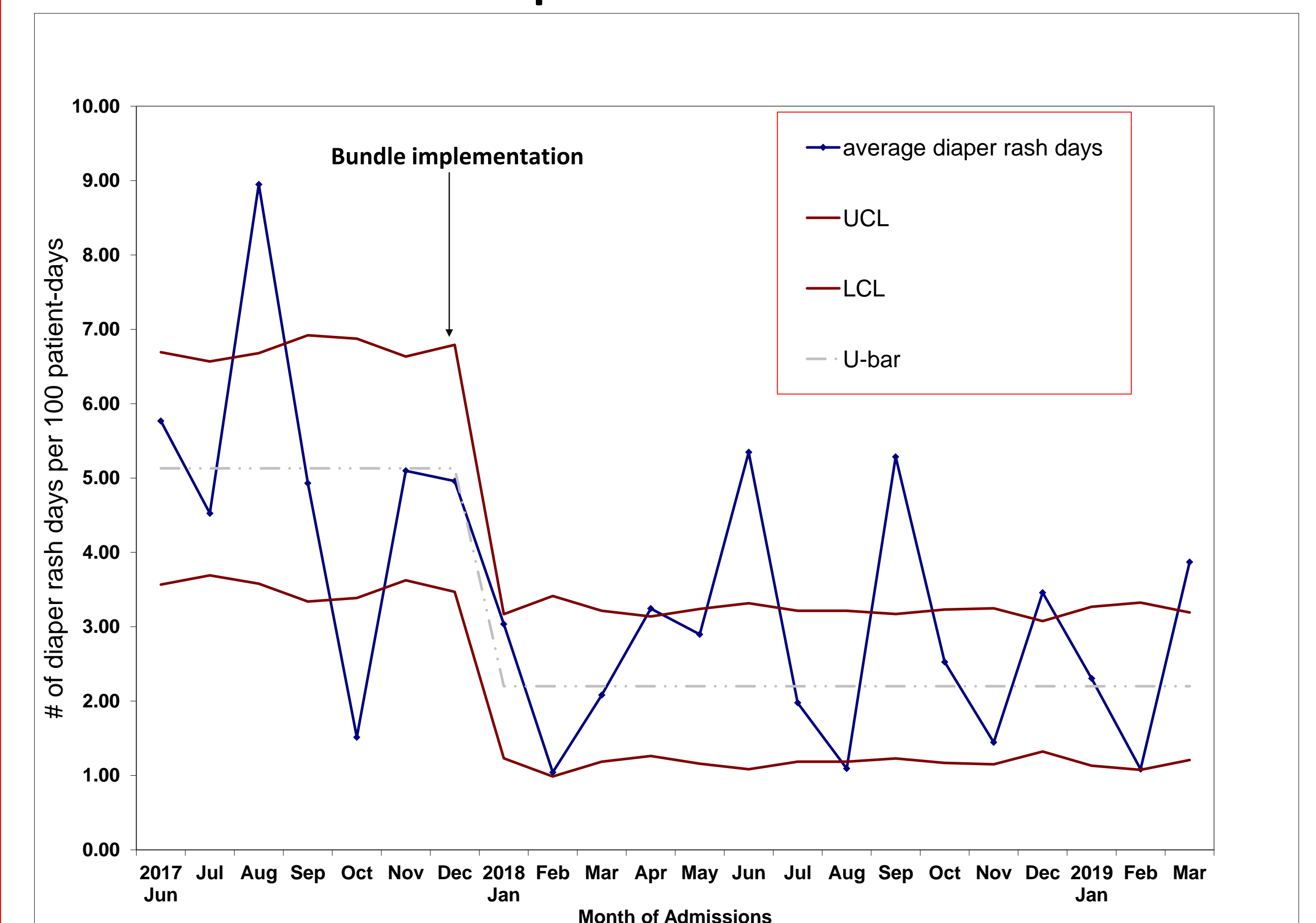
**For Babies > 28 days:** May Apply 3 M No Sting Barrier prior to application of any of the products.

NBICU Leadership  
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## Results

- 1365 neonates were admitted during the study period
- Average GA 36 +/- 3 weeks, BW 1000 +/- 27g
- 51% of neonates had documented diaper rash
- The incidence of severe diaper rash with excoriation **decreased** from 5.1 days to 2.2 days per 100 patient days (**a 50% reduction**).
- For infants <32 weeks GA, the reduction severe diaper rash was 63% after implementation.

Figure 3. Control Chart (U chart) showing reduction in the incidence of severe diaper rash.



## Discussion

- Implementing of the Standardized Perineal Skin Care Bundle reduces the incidence of severe diaper rash in critically ill NICU neonates.
- Using chemical free WaterWipes® prevents severe diaper rash.
- This is the first study to show that pure water wipes with grapefruit seed extract are well tolerated by preterm and term neonates.
- Further effort is needed to sustain the improvement.