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Reducing Pressure Injury Rates at Baystate Children's Hospital

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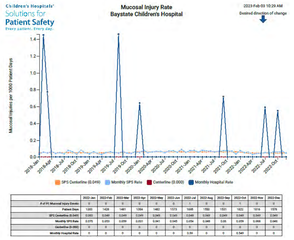
Introduction

The pediatric intensive care unit (PICU) staff reported mucosal injuries (MI) in intubated infants (Figure 1), deep tissue injuries (DTI) and unstageable wounds (Figures 2 and 3).

The Children's and Adolescent unit (CHAD) reported DTI's (Figure 3). The Neonatal Intensive Care Unit (NICU) used a pressure injury (PI) bundle since 2021 and celebrated 1 year without a PI.

Figure 1: Events are Mucosal Injuries in PICU

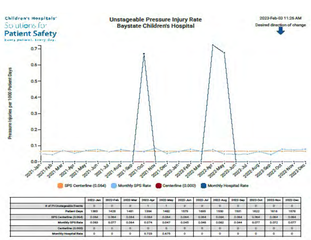
*****Extracted PICU Patient Days**



# of All Mucosal Injury Events	2021 Jan	2021 Feb	2021 Mar	2021 Apr	2021 May	2021 Jun	2021 Jul	2021 Aug	2021 Sep	2021 Oct	2021 Nov	2021 Dec
	0	0	0	0	0	0	0	0	0	0	0	0
Patient Days	1265	1426	1581	1394	1482	1573	1608	1700	1551	1620	1574	1529
SPS Centerline (0.040)	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040
Monthly SPS Rate	0.079	0.070	0.063	0.072	0.067	0.064	0.062	0.059	0.064	0.062	0.064	0.065
Centerline (0.000)	0	0	0	0	0	0	0	0	0	0	0	0
Monthly Hospital Rate	0	0	0	0	0	0	0	0	0	0	0	0

Figure 2: Events are Unstageable Injuries in PICU

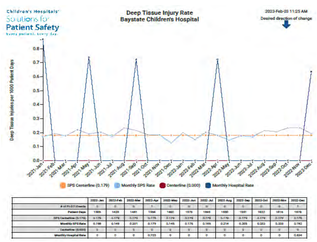
*****Extracted PICU patient days**



# of Unstageable Events	2021 Jan	2021 Feb	2021 Mar	2021 Apr	2021 May	2021 Jun	2021 Jul	2021 Aug	2021 Sep	2021 Oct	2021 Nov	2021 Dec
	0	0	0	0	0	0	0	0	0	0	0	0
Patient Days	1265	1426	1581	1394	1482	1573	1608	1700	1551	1620	1574	1529
SPS Centerline (0.004)	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004
Monthly SPS Rate	0.006	0.007	0.006	0.007	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006
Centerline (0.000)	0	0	0	0	0	0	0	0	0	0	0	0
Monthly Hospital Rate	0	0	0	0	0	0	0	0	0	0	0	0

Figure 3: Events are Deep Tissue Injuries in PICU (3 events) and CHAD (2 events).

*****Extracted PICU/CHAD patient days**



# of DTI Events	2021 Jan	2021 Feb	2021 Mar	2021 Apr	2021 May	2021 Jun	2021 Jul	2021 Aug	2021 Sep	2021 Oct	2021 Nov	2021 Dec
	0	0	0	0	0	0	0	0	0	0	0	0
Patient Days	1265	1426	1581	1394	1482	1573	1608	1700	1551	1620	1574	1529
SPS Centerline (0.179)	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179	0.179
Monthly SPS Rate	0.158	0.140	0.127	0.143	0.135	0.127	0.124	0.118	0.129	0.123	0.127	0.131
Centerline (0.000)	0	0	0	0	0	0	0	0	0	0	0	0
Monthly Hospital Rate	0	0	0	0.072	0.067	0	0	0	0	0	0	0

Objectives

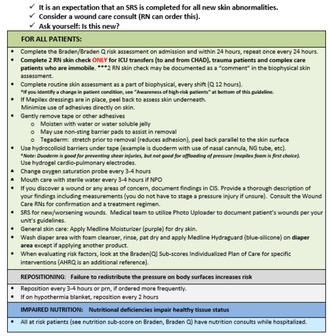
- Decrease the PICU 12-month rate of MI from 0.94 to 0 MI/1000 patient days.
- Decrease the 12-month PICU rate of unstageable PIs from 1.4 to 0.7 unstageable PI/1000 patient days.
- Decrease the 12-month rate of DTI in the PICU and CHAD unit from 0.48 to 0.24 DTI/1000 patient days.

Method

- Plan, Do, Study, Act (PDSA) from the Institute for Healthcare Improvement (IHI) was used.

Interventions

- Solutions for Patient Safety (SPS) hospitals shared success using the H/Y ETT taping method. Unplanned Extubation (UE) committee members agreed to change the taping method and placement, keeping the original tape (PDSA cycle 1, January 2023).
- Education and policies were revised for a practice change. Vigilance to standard of care of the intubated patient was recognized to prevent an increase in UE rate.
- Then in May 2023 (PDSA Cycle 2), PICU staff began to trial a new tape (3M multi-pore dry surgical) due to concerns of original tape sticking to the tube, risking extubation with re-taping.
- A complete pediatric PI bundle was created to support prevention of pressure injuries/skin irritation within the PICU and CHAD units.
- The PI Bundle aligns with SPS and the Agency for Healthcare Research and Quality (AHRQ). Implementation began in January 2023.



✓ It is an expectation that an SRS is completed for all new skin abnormalities.
✓ Consider a wound care consult (RN can order this).
✓ Ask yourself: Is this new?

FOR ALL PATIENTS:

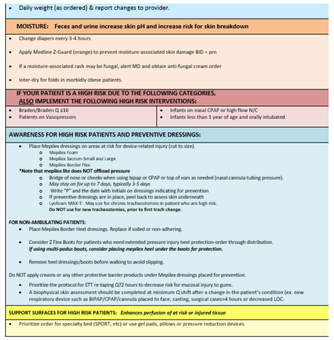
- Complete the Braden/Braden Q risk assessment on admission and within 24 hours, repeat once every 24 hours.
- **Complete 2 RN skin check ONLY for ICU transfers (to and from CHAD), trauma patients and complex care patients who are immobile.** ***2 RN skin check may be documented as a "comment" in the biophysical skin assessment.
- Complete routine skin assessment as a part of biophysical, every shift (Q 12 hours).
  ***If you identify a change in patient condition, see "Awareness of high-risk patients" at bottom of this guideline.**
- If Mepilex dressings are in place, peel back to assess skin underneath.
  Minimize use of adhesives directly on skin.
- Gently remove tape or other adhesives
  - Moisten with water or water soluble jelly
  - May use non-sting barrier pads to assist in removal
  - Tegaderm: stretch prior to removal (reduces adhesion), peel back parallel to the skin surface
- Use hydrocolloid barriers under tape (example is duoderm with use of nasal cannula, NG tube, etc).
  ***Note: Duoderm is good for preventing shear injuries, but not good for offloading of pressure (mepilex foam is first choice).**
  Use hydrogel cardio-pulmonary electrodes.
- Change oxygen saturation probe every 3-4 hours
- Mouth care with sterile water every 3-4 hours if NPO
- If you discover a wound or any areas of concern, document findings in CIS. Provide a thorough description of your findings including measurements (you do not have to stage a pressure injury if unsure). Consult the Wound Care RNs for confirmation and a treatment regimen.
- SRS for new/worsening wounds. Medical team to utilize Photo Uploader to document patient's wounds per your unit's guidelines.
- General skin care: Apply Medline Moisturizer (purple) for dry skin.
- Wash diaper area with foam cleanser, rinse, pat dry and apply Medline Hydraguard (blue-silicone) on **diaper area except** if applying another product.
- When evaluating risk factors, look at the Braden(Q) Sub-scores Individualized Plan of Care for specific interventions (AHRQ is an additional reference).

REPOSITIONING: Failure to redistribute the pressure on body surfaces increases risk

- Reposition every 3-4 hours or prn, if ordered more frequently.
- If on hypothermia blanket, reposition every 2 hours

IMPAIRED NUTRITION: Nutritional deficiencies impair healthy tissue status

- All at risk patients (see nutrition sub-score on Braden, Braden Q) have nutrition consults while hospitalized.



- Daily weight (as ordered) & report changes to provider.

MOISTURE: Feces and urine increase skin pH and increase risk for skin breakdown

- Change diapers every 3-4 hours
- Apply Medline Z-Guard (orange) to prevent moisture-associated skin damage BID + prn
- If a moisture-associated rash may be fungal, alert MD and obtain anti-fungal cream order
- Inter-dry for folds in morbidly obese patients.

IF YOUR PATIENT IS A HIGH RISK DUE TO THE FOLLOWING CATEGORIES, ALSO IMPLEMENT THE FOLLOWING HIGH RISK INTERVENTIONS:

- Braden/Braden Q ≤16
- Patients on Vasopressors
- Infants on nasal CPAP or high flow N/C
- Infants less than 1 year of age and orally intubated

AWARENESS FOR HIGH RISK PATIENTS AND PREVENTIVE DRESSINGS:

- Place Mepilex dressings on areas at risk for device-related injury (cut to size).
  - Mepilex Ivaer
  - Mepilex Sacrum-Small and Large
  - Mepilex Border Flex

***Note that mepilex lite does NOT offload pressure**

- Bridge of nose or cheeks when using bipap or CPAP or top of ears as needed (nasal cannula tubing pressure).
- May stay on for up to 7 days, typically 4-5 days
- Write "P" and the date with initials on dressings indicating for prevention
- If preventive dressings are in place, peel back to assess skin underneath
- Lyofoam Mask F - May use for chronic tracheostomies in patient who are high risk.
  Do NOT use for new tracheostomies, prior to first trach change.

FOR NON-AMBULATING PATIENTS:

- Place Mepilex Border Heel dressings. Replace if soiled or non-adhering.
- Consider Z Flex Boots for patients who need extended pressure injury heel protection-order through distribution.
  If using multi-podus boots, consider placing mepilex heel under the boots for protection.
- Remove heel dressings/boots before walking to avoid slipping.

Do NOT apply creams or any other protective barrier products under Mepilex dressings placed for prevention.

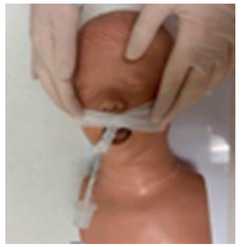
- Prioritize the protocol for ETT re-taping Q72 hours to decrease risk for mucosal injury to gums.
- A biophysical skin assessment should be completed at minimum Q shift after a change in the patient's condition (ex. new respiratory device such as BiPAP/CPAP/cannula placed to face, casting, surgical cases>4 hours or decreased LOC.

SUPPORT SURFACES FOR HIGH RISK PATIENTS: *Enhances perfusion of at risk or injured tissue*

- Prioritize order for specialty bed (SPORT, etc) or use gel pads, pillows or pressure reduction devices.

Results

- Surveillance, the safety reporting system (SRS) and the SPS data platform will be used to measure the rate of PI.
- PICU identified 1 mucosal injury in March 2023 after changing the taping method and will re-evaluate the data after the tape trial.
- PICU had 2 DTI events in Feb 2023 and CHAD had 0. The 12-month rate of DTI will be closely followed as the bundle elements are reinforced.



Future Work

- Our goals for the next 12 months include:
  - No mucosal injuries in PICU (rate of 0).
  - Decrease of 50% of DTI and unstageable PI, PICU and CHAD.

Additional Practice Implications

- A nursing concern was brought forth about the psychological safety of children who are receiving 2 RN skin checks.
- The PI bundle was then adjusted to include **only** patients at high risk: ICU transfers, trauma patients and complex care immobile patients. The 2 RN check is not otherwise indicated in pediatric patients.

Children's Hospitals' Solutions for Patient Safety
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