Reducing the Risk of Advanced Stage Pressure Injuries in Pediatric ECMO Patients

Cherrylene Montano, BSN, RN, MHA, CCRN, NE-BC, CE-NP
Rachel Bostwick, BSN, RN
Breleigh Hughes, BSN, RN
Brittany Mullens, BSN, RN
Caitlin Marion, DNP, RN, CPN, NPD-BC, CNE, CNEcl

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Learning Objectives

1. Identify key risk factors contributing to advanced-stage skin injury in pediatric patients receiving ECMO support.
2. Describe evidence-based skin assessment and prevention strategies tailored to the unique needs of pediatric ECMO patients.
3. Apply standardized, interdisciplinary approaches to skin integrity management to reduce device- and immobility-related skin injury.
4. Recognize early signs of skin compromise and initiate timely interventions to prevent progression to advanced-stage injury.
5. Utilize outcome data and performance metrics to support continuous improvement in skin injury prevention and patient safety.

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Background: Pediatric ECMO Program

Oklahoma Children's Hospital Pediatric ECMO Program
Gold Level Center of Excellence ELSO

Overview of ECMO support in Pediatric patients

- Cannulation: VV and VA
- Incidence and impact of advanced-stage skin injury
- Patient safety, quality, and regulatory implications

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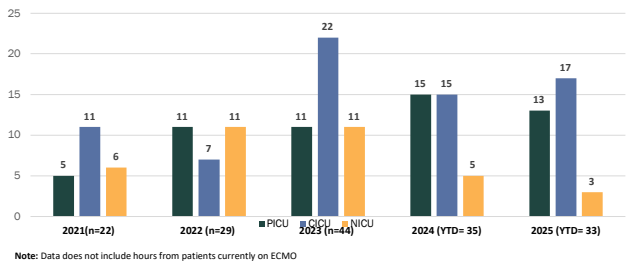
OCH Total ECMO Hours & Runs



Note: Data does not include hours from patients currently on ECMO

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Problem

- Extracorporeal Membrane Oxygenation (ECMO) is a critical intervention for neonates and pediatric patients with severe respiratory or cardiac failure.
- The complexity of ECMO management presents significant risks for hospital-acquired pressure injuries (HAPI).
- ECMO patients experience advanced stage HAPIs at a higher rate compared to non-ECMO patients.
- The ECMO team identified a need to decrease advanced stage HAPIs in ECMO patients through multidisciplinary collaboration.

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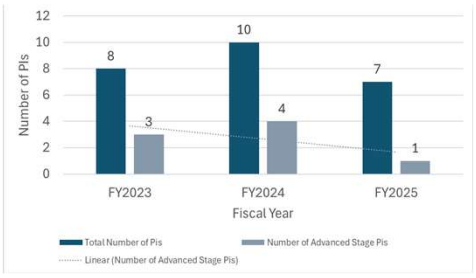
HAPI and ECMO



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Aim

The aim of this practice change was to decrease advanced stage HAPIs in ECMO patients through interprofessional collaboration.

Outcomes were measured by comparing the frequency of HAPIs in ECMO patients before and after the intervention.

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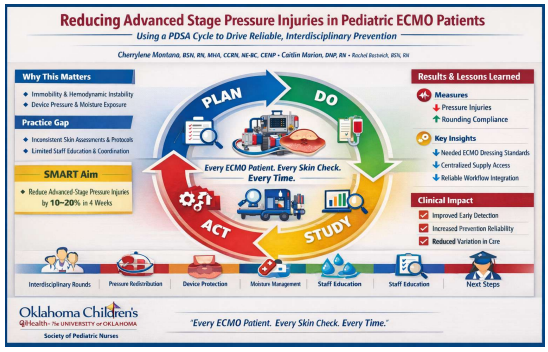

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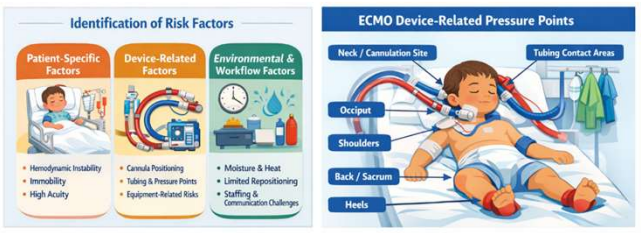
Identification of Risk Factors



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Assessment of Current Practice Gaps

Variability in skin assessment – frequency and skin documentation

Inconsistent prevention strategies and device padding

Challenges with repositioning and moisture management

Gaps in interdisciplinary communication and escalation pathways

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Evidence-Based Prevention Strategies

- Standardized skin assessment tools and frequency
- Pressure redistribution and device-related injury prevention
- Moisture management and support surface utilization
- Early identification and intervention strategies

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S.K.I.N. D.E.E.P

S.K.I.N. D.E.E.P. is a protocol that is used in all units (NICU, PICU and CICU) for patients requiring ECMO support.

S.K.I.N. D.E.E.P. is an acronym that focuses on main points such as:

S: Specialty Mattress – All patients requiring ECMO support should be on a low-air loss mattress or a pressure redistributing mattress.

K: Keep Repositioning – All patients are turned every 2 hours at a minimum of 15 degrees, goal of 30 degrees.

I: Incontinence/Moisture - All patients are to receive every 2-hour perineal care.

N: Nutrition – All patients requiring ECMO receive a nutrition consult within 24-48 hours of admission.

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S.K.I.N. D.E.E.P

S.K.I.N. D.E.E.P. is an acronym that focuses on main points such as:

D: Dressing Selection – 5-layer foam borders should be in all high-risk areas and bony prominences.

E: Equipment – All patients have their pulse oximeter moved every 4 hours along with their blood pressure cuff.

E: Evaluation Tools – All patients < 18 years old have the Braden QD score completed every 4 hours. If the patient is ≥ to 18 years old have the Braden score completed every 4 hours. An automatic wound care consult is placed for all patients receiving ECMO upon admission.

P: Pressure Injury – All patients have an in-depth skin assessment completed every shift (every 12 hours). All patients receiving ECMO receive an initial physical therapy consult.

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HAPI Bundle (Standard Elements)

Skin Assessment	• Full skin assessment within 24 hours of admission • PI risk assessment within 24 hours of admission • Full skin assessment every 24 hours • PI risk assessment every 24 hours • Upon arrival to unit following operative procedure lasting 4 hours or more • Upon change in condition
Medical Device Rotation/Reposition	• Assess skin in contact with devices every shift • Reposition/rotate devices with hands on care • Rotate pulse ox at least every 6 hours • If in a C-Collar: Remove collar and perform skin care and skin assessment every shift
Patient Positioning	• Reposition/turn patients that have limited mobility or are immobile every 2 hours • HOB less than or equal to 30 degrees • Reposition patients in chairs or upright in bed greater than 2 hours
Appropriate Surface	• Utilize a surface that meets your patient's need for pressure redistribution • Evaluate the need for specialty surfaces based on your pressure injury risk assessment score • Use of gel pads, fluidized positioners, and/or other pressure redistribution positioning aids as appropriate
Moisture Management	• Keep all skin clean, dry and appropriately hydrated • Apply moisture barriers and/or wicking products to keep skin dry

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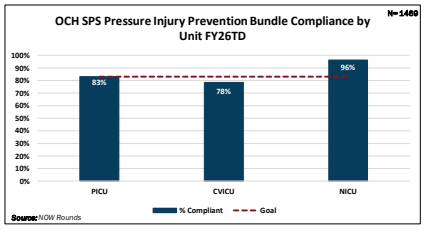
NOW Rounds

To be performed on all high-risk patients in the ICUs weekly



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Data through 1/31/26

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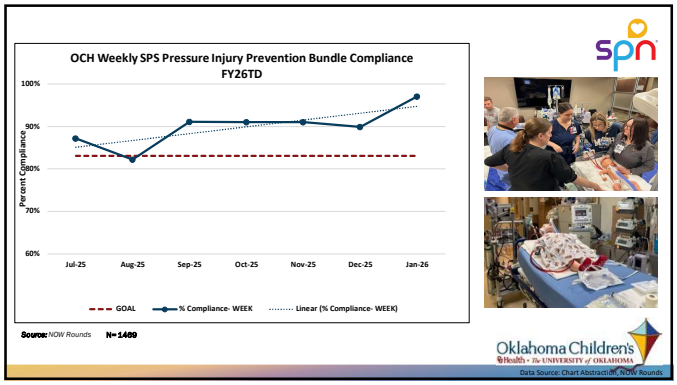

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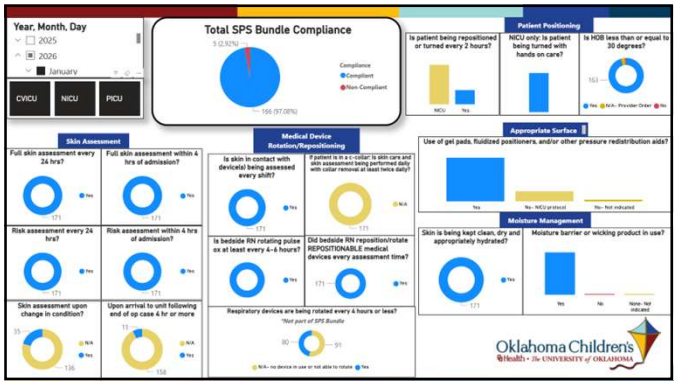

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Interdisciplinary Collaboration and Workflow Integration

Roles of nursing, ECMO specialists, wound care, providers, and ancillary teams

Structured rounding and communication processes

Shared accountability and escalation pathways

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Education and Frontline Engagement

- Targeted staff education and competency reinforcement
- Use of decision-support tools and visual aids
- Frontline involvement in practice improvement

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Outcomes and Performance Monitoring

- Tracking skin injury rates and severity
- Use of data dashboards and feedback loops
- Continuous quality improvement and sustainability strategies

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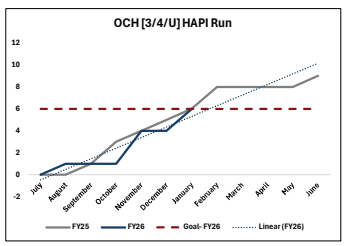
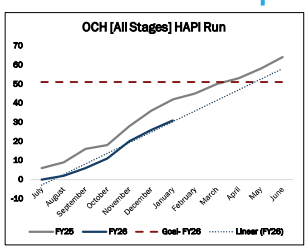
Hospital Acquired Pressure Injuries

Data source: Safety Solutions & Epic abstraction Updated 2/11/26. Data is not finalized. Finalized data will be released by the Office of the CMO





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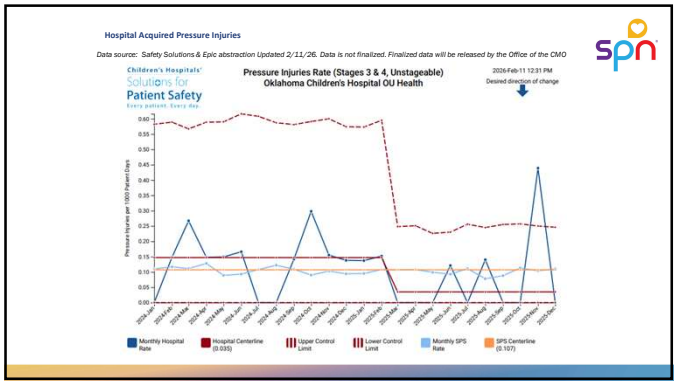

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Lessons Learned

Key successes and challenges encountered

Adaptations made to improve reliability

Transferability to other high-risk pediatric populations

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Conclusions and Future Directions

Summary of impact on patient safety and care quality

Opportunities for ongoing improvement and spread

Alignment with organizational and national quality goals

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