Continuous Process Improvement Regarding Pressure Injuries in Children with Medical Complexity

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INTRODUCTION

Pressure injuries (PIs) are an unintended consequence throughout a hospital stay and impact pediatric patients in acute care worldwide (Simsek, Demir, Semerci, Karadag, 2023). For pediatric patients, medical devices are the number one cause of PIs (NPIAP, 2020). At this pediatric post-acute care hospital, PIs were most prevalent among patients ≥15 years and were specifically related to tracheostomies and related devices (Donahue, Palmgren, Brennan, Dorko, Hughes (2025) [manuscript in preparation]).

During Phase 1 of this process improvement journey at a post-acute care hospital (PACH), several actions were implemented to address pressure injuries, specifically focused on: prevention, assessment, and treatment. Previous actions included: root cause analyses addressing Stage III PIs, mandatory staff education/competencies, gap analyses, monitoring PI rates, electronic medical record reviews, addition of PI review to annual nursing skills day, and addition of PI review to nursing orientation. Phase 2 focused on implementation of a pressure injury prevention bundle in alignment with SPS recommendations.

Findings are related to the PI bundle implementation – with data gathered pre and post roll-out. This work was accomplished through the coordinated efforts of the PACH Wound Care Nurse and Advance Practice Practitioner (APP), Skin Champions, Quality and Safety Nurse, Nurse Researcher, and visiting Doctorate of Nursing Practice (DNP) students.

OBJECTIVE

Overall aim: decrease rates of pressure injuries, with focused efforts in early recognition and prevention of Stage II+.

Additional aims included:

- **Improve collaboration with Respiratory Therapist around PIs**
- **Increase Advance Practice Provider's (APP's) and nursing standardization of assessment and documentation**
- **Establish understanding of nursing's use of the Braden QD**
- **Assess the impact of the PI Bundle rollout**

METHODS

Interdisciplinary Collaboration

- Respiratory Therapists (RTs) trained on changing trach ties
  - Increased the number of staff to assist with change trach ties for larger patients (population of children with highest risk)
  - Avoids delay in changing saturated trach ties
  - Complement to nurses to perform trach tie changes
  - Coordinated by Quality and Safety team, RT Director & Educators

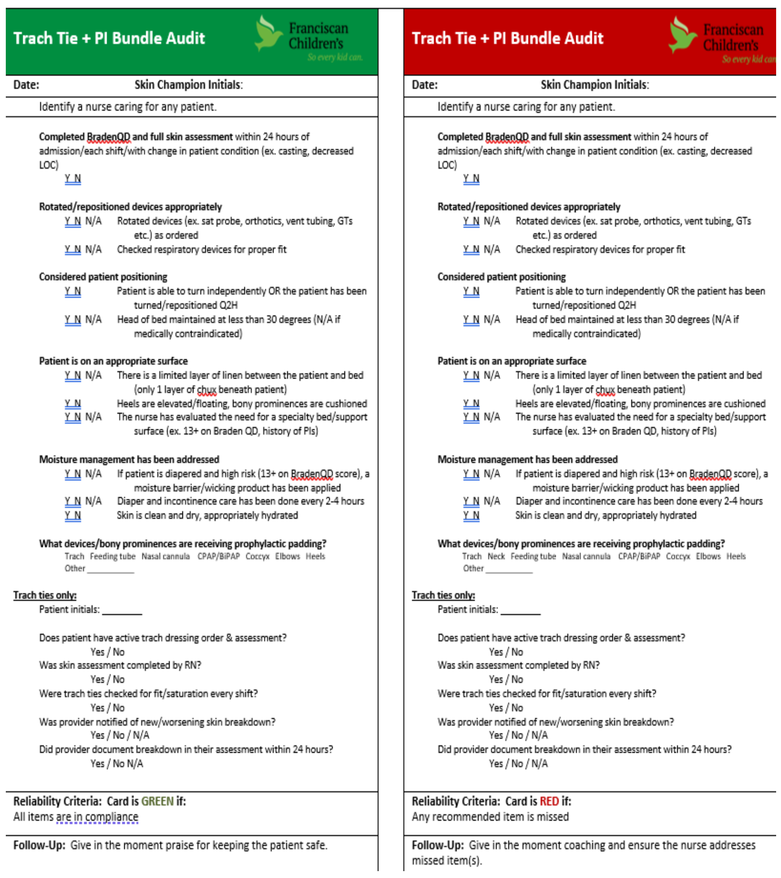
Education

- Just in time teaching
  - Follow-up education of APP and nurses
  - Assessment & documentation alignment
  - Occurred during Wound Rounds
- K-cards
  - One to one nursing education
  - Conducted by Skin Care Champions and Wound Care Nurse

Auditing

- Trach ties:
  - active order
  - discrepancies in assessment
  - timely notification
  - subsequent assessment when new breakdown noted
- PI Occurrence:
  - PI rate run charts
  - Retrospective chart review – pre & post bundle
- Kamishibai (K-cards)
  - Use of Braden QD scale
  - Nurses' PI understanding
  - Monitored compliance of PI bundle

Trach Tie Audit Compliance			
Month	Partial	Full	% Full Compliance
04 2024		2	100%
05 2024	2	6	75%
06 2024		6	100%
07 2024	4	41	91%
08 2024	2	9	82%
09 2024	1	38	97%
10 2024	1	3	75%
11 2024		4	100%
12 2024	3	6	67%



Trach Tie + PI Bundle Audit — Franciscan Children's — So every kid can.

Date: Skin Champion Initials:

Identify a nurse caring for any patient.

Completed BradenQD and full skin assessment within 24 hours of admission/each shift/with change in patient condition (ex. casting, decreased LOC)
Y N

Rotated/repositioned devices appropriately
Y N N/A Rotated devices (ex. sat probe, orthotics, vent tubing, GTs etc.) as ordered
Y N N/A Checked respiratory devices for proper fit

Considered patient positioning
Y N Patient is able to turn independently OR the patient has been turned/repositioned Q2H
Y N N/A Head of bed maintained at less than 30 degrees (N/A if medically contraindicated)

Patient is on an appropriate surface
Y N N/A There is a limited layer of linen between the patient and bed (only 1 layer of chux beneath patient)
Y N Heels are elevated/floating, bony prominences are cushioned
Y N N/A The nurse has evaluated the need for a specialty bed/support surface (ex. 13+ on Braden QD, history of PIs)

Moisture management has been addressed
Y N N/A If patient is diapered and high risk (13+ on BradenQD score), a moisture barrier/wicking product has been applied
Y N N/A Diaper and incontinence care has been done every 2-4 hours
Y N Skin is clean and dry, appropriately hydrated

What devices/bony prominences are receiving prophylactic padding?
Trach Feeding tube Nasal cannula CPAP/BiPAP Coccyx Elbows Heels
Other _____

Trach ties only:
Patient initials: _____

Does patient have active trach dressing order & assessment?
Yes / No
Was skin assessment completed by RN?
Yes / No
Were trach ties checked for fit/saturation every shift?
Yes / No
Was provider notified of new/worsening skin breakdown?
Yes / No / N/A
Did provider document breakdown in their assessment within 24 hours?
Yes / No N/A

Reliability Criteria: Card is GREEN if:
All items are in compliance

Follow-Up: Give in the moment praise for keeping the patient safe.

Trach Tie + PI Bundle Audit — Franciscan Children's — So every kid can.

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Y N Skin is clean and dry, appropriately hydrated

What devices/bony prominences are receiving prophylactic padding?
Trach Neck Feeding tube Nasal cannula CPAP/BiPAP Coccyx Elbows Heels
Other _____

Trach ties only:
Patient initials: _____

Does patient have active trach dressing order & assessment?
Yes / No
Was skin assessment completed by RN?
Yes / No
Were trach ties checked for fit/saturation every shift?
Yes / No
Was provider notified of new/worsening skin breakdown?
Yes / No / N/A
Did provider document breakdown in their assessment within 24 hours?
Yes / No / N/A

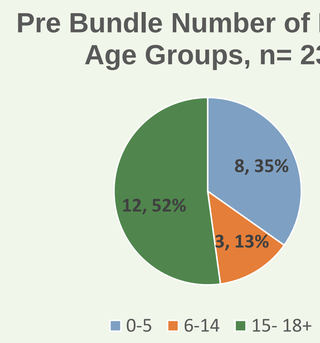
Reliability Criteria: Card is RED if:
Any recommended item is missed

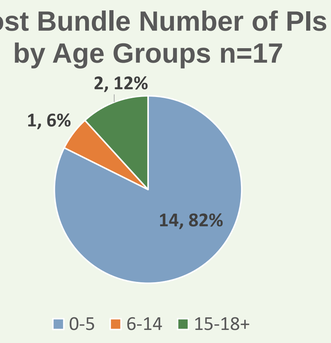
Follow-Up: Give in the moment coaching and ensure the nurse addresses missed item(s).

OUTCOMES

- **Interdisciplinary Collaboration**
  - All Charge RTs (6) and RT Educators (2) trained in changing trach ties
  - 3 staff members available for high-risk trach tie changes
  - Number of PIs decreased among high-risk population
- **Education**
  - Just in time teaching
    - Weekly instances of education related to PIs with nursing, APPs
    - Education topics included: early recognition, treatment, prevention, documentation, orders, products
    - Teaching specific to individual patients
- **Auditing**
  - Trach tie compliance
  - PI Occurrence
    - Prior to rollout, PI Rates* were above the performance measure goal. Following rollout, rates began exceeding the target – remained consistent through remainder of year.

    **Run Chart*
    - Following rollout 36% decrease in all PIs
- K-Cards
  - Full compliance in 94% of audits
  - Braden QD
    - 6% of patient scored as "at risk" by scoring 13 or greater on the Braden QD Scale
    - Majority of missing scoring continue to occur during night shift





Dec-22	Jun-23	Dec-23	Bundle implementation	Jun-24	Dec-24
0.68	0.48	0.21		0.07	0.07

Run Chart Rolling Averages of Stage III or greater

CONCLUSIONS

PI bundle and associated initiatives proved to be effective.

- Interdisciplinary collaboration reduced the rate of PIs among the previously highest risk population
  - Expanding trach tie care to RT was critical to this collaboration
- Just in time teaching assisted with providing concrete examples for learners to assimilate understanding
- Measurable reduction in overall PIs
  - Stage III+ rates have maintained within desired range

Future Opportunities

- Even though PIs were not identified at earlier stages, fewer in total were found. The age group of highest incidence shifted. Interventions such as 3-person trach tie changes decreased the incidence amongst older patients, while the rates amongst younger children did not change.
- Braden QD
  - Shift discrepancies in documentation continue
  - Scores not capturing high risk patients
- Teaching
  - Increased need for Skin Champions, with the addition of CNAs

REFERENCES

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