PREVENTING PRESSURE INJURIES IN THE INTENSIVE CARE UNIT USING A BUNDLED SKINCARE ALGORITHM

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Introduction & Background

- Critically ill patients are disproportionately affected by hospital-acquired pressure injury (HAPI) compared with general inpatients^{1,2,3,4}
- HAPIs are associated with increased pain, infection, prolonged length of stay, healthcare costs, caregiver burden, and patient mortality⁵
- HAPIs effects ICU patients globally, nationally, and locally
- HAPI prevalence at the studied facility averaged 16% from 2019-2020, above the national benchmark of 5.2%

Purpose & Aims

Decrease the prevalence of HAPI in the ICU after implementing a HAPI prevention bundled skincare algorithm along with staff education.

Aim 1: HAPI Prevalence

• HAPI prevalence rates in the ICU will decrease to at or below National Database Nurse Quality Indicator (NDNQI) benchmark of 5.2% for three consecutive months after project implementation.

Aim 2: ICU nurses' knowledge

• ICU nurses will have increased knowledge and awareness of HAPI prevention bundle components and HAPI prevention after project implementation measured by using the validated Pressure Ulcer Knowledge Test (PUKT)⁶

Aim 3: Bundle Compliance

• There will be an increase in compliance with the HAPI prevention bundle components and interventions delineated by the acronym SKINCARE.

Intervention

SKINCARE:

S: Sacral foam dressing K: Keep skin clean and dry I: Inspect under devices **N:** Nutritional support **C:** Consult Wound Ostomy Nurse A: Assess the need for heel elevation devices **R**: Reposition every 2 hours or per turn schedule/early mobility **E:** Elevate the head of bed 30 or less

> **Figure 1.** Bundled Skincare Algorithm (Page 1)



CONSULT WOCN AND ORDER SPECIALTY BED SURFACE * SEE APPENDIX F

POLICY PATP009*

REFER TO NURSE-MANAGED PRESSURE ULCER PREVENTION AND SKIN/WOUND CARE

HOSPITAL-ACQUIRED PRESSURE INJURY <u>Skincare</u> Algorithm

RISK ASSESSMENT USING BRADEN SCALE **'USE APPENDIX B** Assess and consider ICU specific risk factors: Malnutrition, impairment in blood flow and tissue oxygenation opressor administration, sedative medication use, diabetes, and ipheral vascular disease), extreme changes in skin temperature

> BRADEN SCALE 19 OR > nue skin and risk assessment **every shift** and consider

other ICU-specific risk factors outlined

BRADEN SCALE 18-15 Continue assessments above CONSIDER implementing SKINCARE Bundle Interventions per patient needs

BRADEN SCALE < 15 Continue assessments above AN IMPLEMENT SKINCARE Bundle: Silicone Multilayered Foam (Sacral Border) dressing placed appropriately; *assess use in patients with significant

Keep skin clean and dry; use one airflow pad to decrease on, maximize airflow and moisture absorption Inspect skin under devices with assessments; ensure ydrocolloid/foam dressing in place under devices in constant contact with skin (i.e., BiPAP); consider giving breaks; inspect ndotracheal tube <u>*see Appendix C</u>

Consult WOCN for patients with Pl stage 3, 4, deep tissue or stageable, negative wound pressure therapy, BMI >35 or 500lb, spinal cord Injury, manual prone position see Appendix D Assess need for heel elevation devices; suspend heels off

he bed with pillows <u>*see Appendix F</u> Reposition q2h using devices such as wedges/lift equipment ND Mobilize patients to maximum ability as early as possible If too unstable for a full turn (i.e., drastic change in vital signs ith turns and/or on high dose vasopressors) <u>*see Appendix E</u> se/attempt q2h micro-turns, gradual turns, or weight shifts

Progress to full turns and dangling as tolerated Elevate head of the bed at 30 degrees or less if medically

KEY: ICU-INTENSIVE CARE UNIT, PI-PRESSURE

INJURY, MASD-MOISTURE ASSOCIATED SKI

DAMAGE, IV-INTRAVENOUS, Q-EVERY, ET

ENDOTRACHEAL TUBE, RT-RESPIRATOR

THERAPY, WOCN-WOUND, OSTOMY

CONTINENCE NURSE

Design: Quality Improvement pre-post design from June 2021 through December 2021 Setting: Within 24-bed ICU in a 230-bed community-based acute care hospital in the mid-Atlantic, U.S.A.

Timelin	e:		
	Pre Intervention	Bundled Algorithm Roll-Out/Education and Control	Post Intervention
Time	JUN 2021-AUG 2021	SEP 2021	OCT 2021-DEC 2021
Measure			
Prevalence Rounds	~	\checkmark	\checkmark
Nurses' Knowledge Scores		\checkmark	
Compliance	\checkmark	\checkmark	\checkmark

Table 1. Nurse Sample Demographics

Characteristic	<u>n</u>	⁰∕₀		Pre-intervention $n=28$		Post-intervention $p_{n=20}$	
	n=40		Characteristic	Mean	SD	Mean	S
Gender			Age, years	63.4	17.9	66.8	1
Male	5	10.9	Body Mass Index	27	6.3	30.7	1.
Female	34	73.9	Sequential Organ Failure Assessment Score	5.5	2.8	5.9	3
Prefer not to say	1	2.2	Length of Stay, days	11.4	11.2	7.8	5
	•	2.2	Braden on admission	14	4	13	
Age (years)	<u>^</u>	0	Braden for shift	12	2	12	
18-24	0	0		п	%	n	(
25-35	13	28.3	Sex (male)	22	78.6	13	4
36-45	12	26.1	Highest Level of Mobility 1, Lying in bed	18	64.3	14	43
46-55	11	23.9	Vasopressor Use	20	71.4	18	62
Over 55	Λ	87	On Mechanical Ventilator	19	67.9	18	62
	4	0.7	Primary Diagnosis	_	. – .	2	
Experience (years)			Respiratory	5	17.9	8	2'
Less than 1	4	8.7	Cardiothoracic	6	21.4	3	10
1-5	6	13	Neurologic	9	32.1	5	1
6 10	л Л	8 7	Trauma	1	3.6	1	3
0-10	4	0./	Renal	5	17.9	1	3
Greater than 10	26	56.5	Sepsis/Multisystem	0	0	5	17
			Other	2	7.1	6	20

Aim 1: HAPI Prevalence

Figure 2. Hospital-Acquired Pressure Injury Prevalence Rate



Methods & Sample

CU Nurse Sample (46 RNs)

Inclusion: Staff registered nurses, agreed to participate Exclusion: Non-nurses, contracted RN staff, non-direct care staff, and auxiliary staff

CU Patient Sample (57 ICU Patients)

Inclusion: Adult ICU over the age of 18; Braden risk score < 15

Exclusion: In procedure, palliative care, COVID19 restrictions, refusal

Results

Table 2. Patient Sample Characteristics

Aim 2: Nurses' Knowledge

usefulness

Figure 3. PI Questionnaire Non-Paired Test Scores



Aim 3: Bundle Compliance

	Pre-intervention $n=28$	Post-intervention $n=29$	
Domain	Compliance Rate (%)		Pre-Mean=
Braden Risk Assessment, shift	85.7	100	84.1% (SD
Skin Assessment, Admission	100	100	14.6%)
Skin Assessment, Shift	89.3	100	
Sacral Bordered Dressing Present*	70.4	82.1	
Moisture Management	89.3	96.6	
Device Management	64.3	41.4	
Nutrition	84	72.7	Post-Mean=
WOCN consultation referral	42.9	72.7	85.1% (SD
Heel elevation	88.9	82.8	15.4%)
Repositioning Schedule	92.9	96.6	
Head of Bed elevation at 30 degrees*	85.7	82.8	

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Results Continued

22 of 46 nurses (47.8%) strongly agree on a 4-point Likert scale for both awareness and



Table 3. Bundle Compliance

Conclusions & Implications

• The intervention may increase nurses' knowledge and help reduce HAPIs • Monthly reinforcement and WOCN presence could aid in compliance • Potential reasons for lack of compliance: staff turnover, extended use of temporary RN staff, increased workload, lack of supplies, and patient-specific factors • HAPI prevention is interdisciplinary

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