

Increasing Competence in Pressure Injury Prevention Using Competency-Based Education in an Adult Intensive Care Unit

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Introduction

More than 2.5 million people develop pressure injuries (PI) in the United States every year causing patient suffering, increased healthcare costs, and lead to serious complications like sepsis and death.¹

Evidence suggest competency and not just knowledge is needed to decrease Hospital Acquired Pressure Injury prevalence.²

Objectives

To evaluate the use of competency-based education in increasing staff competence in the application of PI prevention interventions.

Methods

Cohort

A quality improvement pre and post-intervention design using the Johns Hopkins Quality and Safety Research Group (JHQSRG) Translating Evidence into Practice model to implement a Donna Wright based competency-based education on pressure injury prevention.

Study population included 102 nursing staff and 117 patients of an adult Medical Intensive Care Unit (MICU) at an Academic Medical Center in Baltimore, Maryland.

Study Variables and Analysis

	Measure	Data Collection	Data Analysis SPSS
Aim 1 Engagement	% of Participation (Educators, Wound Care Nurses and Champions)	Online module and competency development meeting attendance	Frequency and Descriptive Statistics
	Develop an online education module Develop verification tools		
Aim 2 Education	% staff completion of online module	Online Education Report	Frequency and Descriptive Statistics
Aim 3 Execution	% staff completion of 1st verification tool	Record of staff return demonstration	Frequency and Descriptive Statistics
Aim 4 Evaluation	% agreement between raters (higher = better)	24-48 hour EMR documentation prior to the PI Prevalence survey (nursing staff)	Descriptive Statistics: Chi-square test
	% agreement of necessary interventions (higher = better) % patients with UAPI 2+ (lower = better)	PI Prevalence Survey (unit champion)	

Results

Aim 1: Engagement of experts: Each of the 7 meetings was attended by at least 1 Educator, 1 Wound Care Nurse, and 1 Champion. These experts developed an online education module and identified competency verification tools by July 2017.

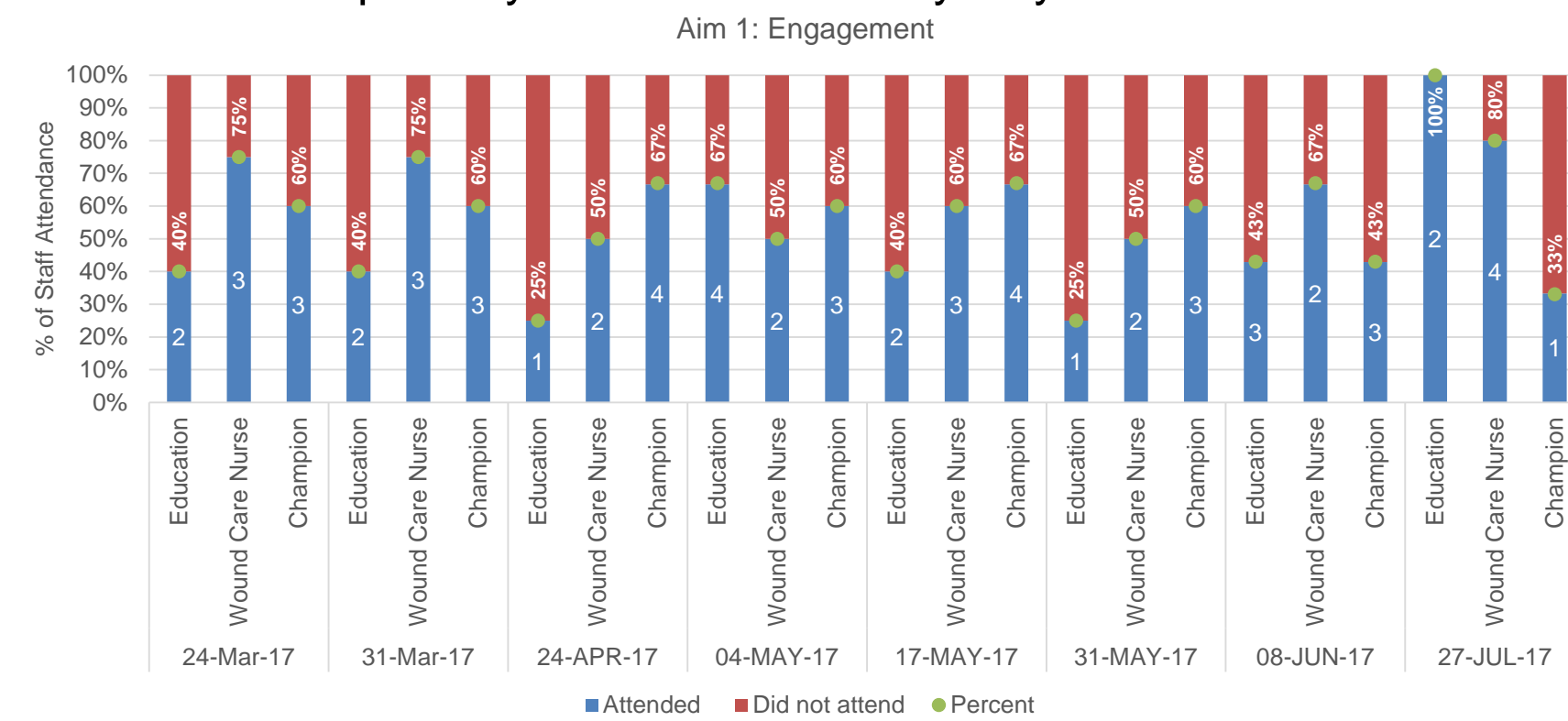


Figure 1. Staff attendance and percentage of participants who attended the competency development meetings from those who were invited

Aim 2: Educate: 98% of the MICU nursing staff completed the online education module by September 2017.

Aim 3: Execute: 91% of the MICU nursing staff completed the first competency verification sign off by January 2018.

Table 1 MICU staff demographics

	N
MICU Staff	102
	Mean (SD)
Age	33.78 (9.52)
	N (%)
Sex	
Female	92 (90.2)
Male	10 (9.8)
Level of Education	
Clinician Technician (Non-RN)	10 (9.8)
Associate Degree	7 (6.9)
Bachelor's Degree	76 (74.5)
Master's Degree	8 (7.8)
Clinical Level	
Clinician Technician (Non-RN)	10 (9.8)
Nurse Clinician I	74 (72.5)
Nurse Clinician II	11 (10.8)
Nurse Clinician III	6 (5.9)
Nurse Clinician Specialist	1 (1.0)

Patient demographics shows:

- There were 60 patients during post-implementation compared to 57 pre-implementation
- 93.3% of patients were at risk for developing PIs during post-implementation compared to 87.7% pre-implementation. A T-test showed no statistical significance in the difference in risk, in age, or sex between groups

Table 2. Patient demographics

Intervention Period	Total	Pre-Implementation	Post-Implementation	
	N	N	N	
Patient	117	57	60 ↑	
	Mean (SD)	Mean (SD)	Mean (SD)	p-value*
Age	54.16 (18.86)	56.53 (14.39)	51.92 (22.18)	0.183
	N (%)	N (%)	N (%)	p-value*
Sex				
Female	61 (52.1)	35 (61.4)	26 (43.3)	0.051
Male	56 (47.9)	22 (38.6)	34 (56.7)	
Risk for Developing Pressure Injury				
High (Braden score ≤ 18)	106 (90.6)	50 (87.7)	56 (93.3) ↑	0.306
Low (Braden score > 19)	11 (9.4)	7 (12.3)	4 (6.7)	
Patients with UAPI	8 (6.8)	4 (7.0)	4 (6.6) ↓	0.672

*Significant at p-value of <0.05

Aim 4: Evaluate MICU UAPI Rates:

- A 6.6% UAPI rate post implementation compared to 7.0% in pre-implementation. Not statistically significant but clinically significant for the patients and the organization.
- A total of 10 UAPIs, 4 in post implementation and 6 in pre-implementation (some patients developed more than 1 UAPI). No statistical significant difference in the actual number of UAPIs, UAPI stages, and non-stageables or medical device-related UAPIs

Table 3. UAPI demographics

Intervention Period	Total	Pre-Implementation	Post-Implementation	
	N	N	N	
UAPI	10	6	4 ↓	0.503
	N (%)	N (%)	N (%)	p-value*
UAPI stages				
Stage 1	0	0	0	-
Stage 2	5 (50)	4 (66.6)	1 (25)	0.243
Stage 3	2 (20)	1 (16.7)	1 (25)	0.971
Stage 4	0	0	0	-
DTPI	1 (10)	0	1 (25)	0.321
Unstageable	1 (10)	0	1 (25)	0.321
UAPI non-stageable				
Mucosal Membrane	1 (10)	1 (16.7)	0	0.322
UAPI Other description				
Medical Device-Related UAPI	4 (40)	3 (50)	1 (25)	0.296

*Significant at p-value of <0.05

Aim 4: Evaluate: A Chi-square test showed a statistically significant improvement in staff documentation of necessary interventions of skin assessment (p-value of 0.015), repositioning (p-value of 0.001) and nutrition support (p-value 0.020). A Fischer's Exact test showed the same significance for the two interventions with a count of less than 5.

Table 5: Percent agreement of documented necessary prevention intervention between staff and unit champion by implementation period.

Prevention Intervention	% Agreement of necessary intervention documentation		% Increase in % agreement of necessary intervention documentation	p-value*
	Pre-Implementation N=57	Post-Implementation N=60		
Skin assessment	82%	96%	18%	0.015 ^c
Pressure redistribution	96%	100%	4%	0.124 ^d
Repositioning	63%	91%	44%	0.001
Nutritional Support	45%	71%	58%	0.020
Moisture Management	86%	87%	1%	0.937

*Significant at p value <0.05; ^cFisher's exact test p-value=0.016; ^dFisher's exact test p-value=0.211

Conclusions:

- Findings suggest statistical improvement in 3 UAPI prevention intervention documentation: skin assessment, repositioning, and nutrition support
- Findings suggest competency-based education can be effective in increasing documentation of PI prevention interventions

References:

- Agency for Healthcare Research and Quality, ed. *Preventing pressure ulcers in hospitals: A toolkit for improving quality of care*. Rockville, MD: Agency for Healthcare Research and Quality; 2014.
- Henry M, Foronda C. Evaluation of evidence-based nursing education of hospital acquired pressure injury prevention in clinical practice: An integrative review. *Journal of Nursing Education and Practice*. 2017;8(1):9.



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