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Manashi Sengupta
Sankar Madhab College of Nursing, Assam down town University Guwahati, India

Rikupar Iawim
Lecturer, Sankar Madhab College of Nursing, Guwahati, India

Betbhalin Mukhim
Lecturer, Sanka Madhab College of Nursing, Guwahati, India

Correspondence
Manashi Sengupta
Sankar Madhab College of Nursing, Assam down town University Guwahati, India

Compliance of care bundles: Ventilator-associated pneumonia care bundle, catheter-associated urinary tract infection care bundle, central line-associated bloodstream infection care bundle, pressure ulcer care bundle among nurses working in ICU at a selected hospital, Guwahati, Assam

Manashi Sengupta, Rikupar Iawim and Betbhalin Mukhim

Abstract
Health organizations promote the use of evidence-based practices such as care bundles to improve patient outcomes and provide quality health care. Care bundles have proven to be effective in improving clinical outcomes. This research describes the introduction of 4 care bundles. A descriptive survey was conducted to determine the strategies used to implement care bundles in intensive care unit and to assess the effects of these strategies when implementing bundles.

Materials and Methods: In this descriptive survey study, 27 nurses in intensive care unit of down town hospitals were assessed. The implementation of all measures for the prevention of Ventilator-associated pneumonia, Catheter-associated urinary tract infection, Central line associated bloodstream Infection and Pressure ulcer was investigated through observation and using a checklist on the care bundles among the nurses working in ICU

Results: The practice score was classified as Adequate and Inadequate practice. It was observed that in Ventilator-associated pneumonia care bundle adequate practice was 85% and inadequate practice was 15%, in Catheter-associated urinary tract infection care bundles adequate practice was 41% and inadequate practice was 59%, Central line-associated bloodstream infection care bundle adequate practice was 22% inadequate practice was 78%, Pressure ulcer care bundle adequate practice was 37% inadequate practice was 63%,

Conclusions: In conclusion compliance with the standards for the prevention of Ventilator-associated pneumonia, Catheter-associated urinary tract infection, and Central line-Associated Bloodstream Infection and Pressure ulcer practice of care bundles was relatively acceptable.

Keywords: Ventilator-associated pneumonia care bundle, catheter-associated urinary tract infection care bundle, central line-associated bloodstream infection care bundle, pressure ulcer care bundle, intensive care unit

Introduction
Sepsis and hospital acquired infections (HAI's) are considered major public health risks and leading causes of death in hospitalized patients. These HAI's may be preventable if addressed with bundled care processes, which are felt to be powerful drivers for improving the reliability of delivery of evidence-based care to impact patient outcomes**.** To provide comprehensive care according to the best available evidence and to decrease the variation in daily care, clinical guidelines and protocols are developed. Despite the efforts made in implementation, the adherence to guidelines and protocols is often poor, which negatively influences the quality of care. Initially, care bundles were introduced to reorganize the structure and organization of care processes within the ICU departments. For example, the central line bundle was developed to reduce bloodstream infections. The bundled approach has already proven to be effective in improving clinical outcomes Ventilator-associated pneumonia (VAP) is one of the deadliest infections. VAP is preventa le education of VAP prevalence implies significant reduction in treatment costs and impact on mortality in the ICU. The use of indwelling catheters in the Critical Care Units (CCUs) has a major role in

determining the incidence and the morbidity as well as mortality from hospital-acquired urinary tract infections (UTIs). The importance of UTIs in the ICU lies in the fact that distinguishing urosepsis from inconsequential Bacteriuria with fever from other causes can be difficult. Central line-associated bloodstream infections (CLABSI) are common healthcare-associated infections that can lead to longer hospital stays and increased healthcare costs. Improved central line insertion practices have led to reductions in CLABSI rates in intensive care units (ICUs). Adherence to best practices for central line care after insertion is a well-established method to prevent CLABSI. Pressure Ulcers represent a major concern for hospitalized patients and the health professionals responsible for their wellbeing. The purpose of this study was to evaluate a care maintenance bundles designed to optimize maintenance practices and reduce systemic infection in ICU settings at a large.

Materials and Method

Quantitative research approach was adopted, descriptive study on 27nurses in ICUs at downtown hospitals, Guwahati, Assam. Convenience sampling technique was used to collect the samples. The inclusion criteria included nurses who were working in ICU, willing to participate in the study, and providing care for patients. Any nurse unwilling to participate in the study was excluded. In this study, the implementation of all measures for the prevention of Ventilator-associated pneumonia, Catheter-associated urinary tract infection, Central line-Associated Bloodstream Infection and pressure ulcer was assessed through observation among nurses and using a checklist. The researcher assessed compliance with these standards based on the designed checklist. The checklist contained6-itemsfor VAP care bundle, 6-items for Catheter-associated urinary tract infection care bundle, 7-items for Central line-Associated Bloodstream Infection care bundle and 8-items for Pressure ulcer care bundle.

Table 1: Frequency and percentage distribution of demographic variables n=27

S. No.	Sample characteristics	Frequency (f)	Percentage (%)
1	**Age (in years)**		
	a. 21-25	19	70
	b. 26-30	08	30
	c. >30	0	0
2	**Gender**		
	a. Female	27	100
	b. Male	0	0
3	**Professional qualification**		
	a. G.N.M	14	52
	b. BSc. Nursing	10	37
	c. Post Basic BSc. Nursing	03	11
4	**Marital status**		
	a. Married	01	4
	b. Unmarried	26	96
	c. Divorce/Separated	0	0
	d. Widow	0	0
5	**Total years of experience in ICU**		
	a. <1year	12	44.4
	b. 1-3years	12	44.4
	c. >3years	03	11.2
6	**Participation in In-service programme related to care bundles**		
	a. Yes	23	85
	b. No	04	15

Table 1 shows that majority 70% belongs to the age group of 21 -25 years, 100% were female, 57% were GNM, 96% were unmarried, 44.4% had both <1year and 1-3years of experience in ICU and 85% participated in in-service programme related to care bundles.

Table 2: Frequency distribution and practice score of selected care bundles among nurses working in ICU n=27

Selected Care Bundle	Total Score	Practice Score Range	Frequency (F)	Percentage (%)
Vap Care Bundle	6			
• Inadequate		1-3	4	15
• Adequate		4-6	23	85
Catheter Associated Uti Care Bundle	6			
• Inadequate		1-3	16	59
• Adequate		4-6	11	41
Central Line Associated Bloodstream Care Bundle	7			
• Inadequate		1-3	21	78
• Adequate		4-7	6	22
Pressure Ulcer Care Bundle	8			
• Inadequate		1-4	17	63
• Adequate		5-8	10	37

Table 2 shows that in VAP care bundle adequate practice was 85% and inadequate practice was 15%, in UTI care bundles adequate practice was 41% and inadequate practice was 59%, Central line care bundle adequate practice was 22% inadequate practice was 78%, pressure ulcer care bundle adequate practice was 37% inadequate practice was 63%,

Conclusion

Quality of care reflects in the reduction of different infections and the consequential safety of patient receiving mechanical ventilation, indwelling catheter, central line catheter and patients who are bedridden. For care bundle success, compliance with all the requirements of the care bundle must be strictly observed. This requires multidisciplinary and concrete practices, as well as periodic audits.

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