

# Enhancing the ABCDE Bundle Implementation Adherence Rate through Nurse Education in the ICU

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## Introduction & Objective

The ABCDE bundle is an interprofessional, multicomponent tool for reducing the duration of mechanical ventilation among critically ill patients. The ABCDE bundle involves **A**: awakening, **B**: breathing **C**: coordination, **D**: delirium monitoring/management, and **E**: early exercise/mobility.

The study has four main aims, including:

**Aim 1:** Determine the baseline adherence rate of implanting the ABCDE Bundle among intubated patients in the ICU

**Aim 2:** Provide educational course to the ICU nurses about the important of implanting the ABCDE bundle

**Aim 3:** Measure the effects of the educational intervention on nurse's knowledge of implanting the ABCDE Bundle

**Aim 4:** Measure the effects of the educational intervention on the ABCDE Bundle implantation adherence rate

## Method

A pre-post design was used in this quality improvement project to examine the ICU nurses' knowledge on the adherence rate of implementing the ABCDE Bundle.

The educational course was on-line and adopted from AACN. ICU nurses had 30 days to finish the course. Thirty-eight (65%) of ICU nurses completed the knowledge survey pre- and post-intervention.

## Measures

Nurse knowledge was measured with a 10-item electronic survey (Balas et al., 2013). The adherence rate was measured with the number of ABCDE bundle worksheet documentation the electronic health record (EPIC). The work sheet has 5 components SAT trial, SAT screen, SBT trial, SBT screen and Early mobility screen.

- SAT= Spontaneous Awakening Trial
- SBT= Spontaneous Breathing Trial
- RASS= Richmond Agitation Sedation Scale
- CAM-ICU= Confusion Assessment Method for ICU
- GCS=Glasgow Coma Scale

## Results

The demographic characteristics of the project sample and the comparing the results of adherence rate before and after educational course are summarized in table 1 and 2.

There was statistically significant difference in knowledge score between the groups pre and post education and the increase was 31 points.

Table 1- Patient Demographics

Characteristics	Pre-Intervention Value (n=44)	Post-Intervention Value (n=60)
Age, years (mean ± SD)	63.6 (19.7)	59.7 (17.7)
Sex, No. (%)		
Female	22(48.9%)	32(52.5%)
Male	23(51.1%)	29(47.5%)
Race, No. (%)		
White or Caucasian	23(51.1%)	40(65.6%)
Black or African American	16(35.6%)	12(19.7%)
Asian	4(8.9%)	7(11.5%)
Other	2(4.4%)	2(3.3%)
BMI on Admission, mean (SD)	28.1 (7.6%)	28.4 (7.5%)
Language, No. (%)		
English	42(93.3%)	57(93.4%)
Non-English	3(6.7%)	4(6.6%)
Length of Hospital Stay, mean(SD)	11.7 (9.2)	10.7(8.4)
Length of ICU Stay, mean (SD)	4.8(5.0)	4.6(3.9)
Length of Intubation, mean (SD)	3.0(3.8)	2.2(1.9)
Chief Complaint for Admission, No. (%)		
Shortness of Breath	7(15.6%)	12(19.7%)
Altered Mental Status	7(15.7%)	10(16.4%)
Ingestion	4(8.9%)	6(9.8%)

The overall ABCDE bundle adherence rate and bundle components of 104 intubated patients on a total of 634 intubation days (See table 2).

Table 2- ABCDE Bundle Adherence Rate

	ABCDE Adherence Rate Based on Components, No. (%)							ABCDE
	A Awakening Assessment (Screen/Trial) SAT	B Spontaneous Breathing (Screen/Trial) SBT	C Coordination Between SAT & SBT	D Delirium Monitoring			E Exercise/Mobility Safety Screen	
				RASS	CAM-ICU	GCS		
Pre-Intervention (Intubation days = 313)	25 (10.1%)	31 (12.3%)	26 (18.8%)	196 (64.2%)	148 (48.5%)	272 (89.2%)	12 (8.9%)	41 (15.7%)
Post-Intervention (Intubation days = 321)	50 (20.2%)	59 (23.4%)	48 (37.5%)	199 (64.6%)	105 (34.1%)	262 (85.1%)	33 (26.4%)	88 (34.9%)
P-Value	0.0013	0.0006	0.0004	0.5700	0.0003	0.1643	0.0001	0.0000

p-value reports values for two-sample t-test with unequal variance

- Re-educate ICU nurses about the ABCDE bundle policy in the hospital.
- Discuss the project results with ICU staff and quality improvement committee.
- Share the new AACN updated on the ABCDE bundle with ICU manger and educators

## Conclusions

This quality improvement project demonstrated that education is an important intervention to enhance ABCDE bundle adherence. Education strengthens nurse knowledge and optimizes their participation in ABCDE bundle implementation. Clarity and consistency foster nurse knowledge and increases adherence to implantation of this tool. Nurses education included initial, sustained and supportive efforts.

## Selected Reference

Balas, M. C., Burke, W. J., Gannon, D., Cohen, M. Z., Colburn, L., Bevil, C., . . . Vasilevskis, E. E. (2013). Implementing the ABCDE Bundle into Everyday Care: Opportunities, Challenges and Lessons Learned for Implementing the ICU Pain, Agitation and Delirium (PAD) Guidelines. *Crit Care Med*, 41(9 0 1), S116-127. doi:10.1097/CCM.0b013e3182a17064

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Figure 1- The study overview

