ABCDEF Bundle Implementation: The influence of access to bundle-enhancing supplies and equipment

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Objectives

1. Describe benefits of implementing a multicomponent, interprofessional bundle to standardize critical care processes.

2. List at least one area in which future research is needed to improve implementation of the ABCDEF bundle.

Funding: Sigma Theta Tau International and American Association of Critical Care Nurses
Employers: Vanderbilt University School of Nursing & Veterans Affairs Tennessee Valley Healthcare System in Nashville, TN, USA
No other conflicts of interest.
Significance – ICU Delirium & Weakness

**Scope**
- Common and costly
- Mortality, cognitive impairment, functional disability, PTSD, depression

**Interprofessional approaches to care are recommended**
- Align processes, people, technology
- Improve quality and safety
A. Assess, prevent and manage pain

B. Both SATs and SBTs - coordinate Wake up and Breathe approach

C. Choice of analgesia and sedation - thoughtful sedative/analgesic administration & meds to avoid

D. Delirium: Assess, prevent and manage

E. Early mobility - optimize mobility and advance as clinically able

F. Family engagement and empowerment

Delirium Days
Ventilator Days
Hospital Days

Early Mobility
Survival
Return to Physical & Cognitive Baseline
Aim: Describe availability and accessibility of ABCDEF-enhancing items in units implementing the bundle.
Study Design

• **Exploratory multicenter cross-sectional**

• **Eligibility:** Site participation in RCT utilizing ABCDEF bundle

• **Sample:** 10 medical and surgical ICUs in 6 academic medical centers

• **Measures:**
  - **Geospatial:** min and max distance from head of bed to 24 ABCDEF-enhancing items
  - **Adherence:** bedside ABCDEF bundle checklist

• **Used measuring wheel to capture exact distances in feet and inches**
Analysis

• Comparison of ABCDEF-enhancing item quantity across units

• Hierarchical agglomerative cluster analysis

• Regression analysis for selected items on early mobility adherence
# Unit Supply Comparison in Order of ABCDEF Adherence*

<table>
<thead>
<tr>
<th>ABCDEF Adherence (%)</th>
<th>Unit 1</th>
<th>Unit 2</th>
<th>Unit 3</th>
<th>Unit 4</th>
<th>Unit 5</th>
<th>Unit 6</th>
<th>Unit 7</th>
<th>Unit 8</th>
<th>Unit 9</th>
<th>Unit 10</th>
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TOTAL: 2 7 7 9 5 5 9 9 9 6 7

*All units have electronic documentation, bag valve masks, oxygen tubing, positive end expiratory pressure valves, and automated medication dispensing systems; all units with passive sling lifts and overhead lifts have lift slings.
Findings – Cluster Analysis (Full bundle)

• ↓ adherent clusters generally characterized by ↓ distance traveled

• ↑ adherent clusters generally characterized by ↑ distance traveled and ↑ room sizes

• Conversely, most adherent cluster had ↓ distance to:
  o Oxygen tanks
  o Specialty walkers
  o Lift slings
  o Respiratory supplies
  o Passive lifts
  o Chairs
Findings – Regression (Early mobility)

• No statistically significant associations at the 5% level.

• Trends for declining early mobility adherence for ↑ max distance traveled for:
  o Bag valve mask
  o Chart
  o Lift sling
  o Oxygen tank
  o Standard walker

• Trends for declining early mobility adherence for ↑ min distance traveled for:
  o Bag valve mask
  o Lift sling
  o Oxygen tank
  o Standard walker
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  o Bag valve mask
  o Chart
  o Lift sling
  o Oxygen tank
  o Standard walker

• Trends for declining early mobility adherence for ↑ min distance traveled for:
  o Bag valve mask
  o Lift sling
  o Oxygen tank
  o Standard walker
Conclusions

• Available and accessible equipment is not enough to explain variation in ABCDEF bundle adherence in this sample.

• Trends for distance traveled and early mobility adherence were noted but requires further study with larger sample sizes.
Implications

- Focus future investigation on environmental factors using larger sample.
  - Unit configuration
  - # corners
  - Free room space
  - In-room supplies
  - Distance traveled

- Explore role of other organizational factors.
  - Teamwork
  - Staffing
  - Coordination across disciplines
  - Protocol complexity
  - Role clarity
Thank you!

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