



Behavioral Economic and Staffing Strategies to Increase Adoption of the ABCDEF Bundle in the ICU (BEST-ICU)

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Sponsoring Institution

University of Nebraska Medical Center

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- Ohio State University Wexner Medical Center
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ABSTRACT

Survivors of critical illness frequently experience profound health impairments brought about or exacerbated by outdated mechanical ventilation and symptom management practices in the intensive care unit (ICU) and by known racial and socioeconomic disparities. This morbidity is potentially preventable through use of the ABCDEF bundle, a multicomponent, evidence-based intervention that improves team-based care in the ICU. Although the ABCDEF bundle has consistently been proven safe and effective, its adoption and performance remain poor nationwide. The BEST-ICU trial is evaluating 2 strategies grounded in behavioral economic theory and implementation science to increase ABCDEF bundle adoption. The strategies target a variety of ICU team members and known behavioral determinants of bundle performance. In the trial's planning phase, the study team worked with the NIH Pragmatic Trials Collaboratory Coordinating Center and community partners to enhance and finalize the implementation strategies and research methods. In the implementation phase, the study team is conducting a pragmatic, stepped-wedge, cluster randomized, hybrid type 3 effectiveness-implementation trial. The participating sites include 6 matched pairs of 12 ICUs in 3 hospitals (providing care for approximately 8100 patients on mechanical ventilation). The study team will randomly assign the ICUs within each matched pair to receive either a real-time audit and feedback dashboard using data from the electronic health record, or a registered nurse implementation facilitator. The trial will compare the effectiveness of the 2 strategies on ABCDEF bundle adoption (the primary outcome) and several clinical outcomes, including duration of mechanical ventilation; ICU, hospital, and 30-day mortality; ICU and hospital length of stay; days with acute brain dysfunction; discharge disposition; use of psychoactive medications and physical therapy; and 30-day hospital readmission. The study team will also identify and describe key stakeholders' experiences with and perspectives on the acceptability of the implementation strategies and their impact on workload. The long-term goal of BEST-ICU is to develop pragmatic, sustainable strategies to increase the delivery of evidence-based practices that improve care for critically ill adults across a variety of healthcare systems, particularly those serving populations with known health disparities, such as safety net hospitals.

WHAT WE'VE LEARNED SO FAR

Challenge	Solution
Challenges associated with using a stepped-wedge design	Frequent consultation with the Biostatistics and Study Design Core helped to hone the randomization strategy and the statistical analysis plan
Complexity of creating a real-time audit and feedback dashboard built on multiple EHR systems	Recruitment of a multidisciplinary team, especially the participation of nurse informaticists, has been critical to building and implementing the dashboard

“Having access to leaders in the field for all the different aspects of pragmatic clinical trials has provided real benefit in terms of saving us months of work, and their help has been invaluable.” — Dr. Michele Balas

“Being part of the NIH Collaboratory has been incredibly important for our project. There has been a lot of important input, especially with regard to our randomization scheme. We’ve really taken it in and made the most of it, and it’s going to make a more valid, more reproducible study.” — Dr. Ed Vasilevskis

SELECTED PUBLICATIONS & PRESENTATIONS

- Presentation: [NIH Pragmatic Trials Collaboratory Onboarding Meeting \(2023\)](#)
- PCT Grand Rounds Presentation: [Behavioral Economic and Staffing Strategies To Increase Adoption of the ABCDEF Bundle in the Intensive Care Unit \(BEST-ICU\): Protocol, Challenges, and Major Updates \(2025\)](#)
- Project Website: [BEST-ICU Clinical Trial](#)
- Article (Study Design): [Behavioral Economic and Staffing Strategies to Increase Adoption of the ABCDEF Bundle in the Intensive Care Unit \(BEST ICU\): Study Protocol for a Multi-site Stepped-Wedge Cluster Randomized Controlled Trial in the USA](#)

[See the complete set of BEST-ICU resources.](#)