

ICU LIBERATION BUNDLE: NURSING ATTITUDES AND POTENTIAL BARRIERS TO
IMPLEMENTATION

A Scholarly Project Submitted in Partial Fulfillment of

The Requirements for the Degree of

Master of Science in Nursing

in

The Onanian School of Nursing

Rhode Island College

May 4, 2023

by

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Abstract

Background: Intensive Care Unit (ICU) survivorship is often marked by lasting complications such as delirium, morbidity, debilitation, and increased incidence of 6-month mortality. Aside from direct organ and life support through critical illness periods, this survivorship remains a key area of opportunity for improved outcomes through evidenced-based intervention. One such intervention is the ICU Liberation Bundle, a package of elements proven to improve survivor outcomes. The literature is abundant with evidence for its effectiveness, but also speaks to lack of universal implementation and whole-bundle compliance at the point of care.

Purpose/Specific Aims: To explore barriers to ICU Liberation Bundle implementation and overall nursing attitudes towards the bundle and its five elements.

Methods: Education sessions on ICU Liberation Bundle to ICU point of care nursing staff were followed by focus group style interviews using open-ended questions to explore perceived barriers and standard care divergence from the bundle. Analysis was conducted using inductive thematic analysis as described by Nowell et al. (2017)

Results: Nurses have mostly positive perception of the bundle and its elements. They consider the early mobility element as the most divergent from their current practice and commonly identified staffing/resource availability and concerns for patient safety as barriers to implementation. Family involvement was also cited as divergent with similar barriers to implementation.

Conclusion: Nurses agree with most of the outcome-centered mission and elements of the bundle but perceive staffing as a barrier to full implementation. Further investigation is warranted to confirm or refute these findings.

Key Words: ICU liberation bundle; ICU liberation bundle education; ICU delirium; nurse focus group; ABCDEF bundle; critical care (and) delirium; and author search for Devlin

Introduction

Critical Care is a fairly young phenomenon. Successes and failures in supporting those who would otherwise perish in this level of care show the need to analyze and refine practice. This points to critical care practice which is intensely complex and has opportunity for improvement. More and more, the importance of learning to treat a person as a whole, rather than a system with multiple parts, affirms the mission of nursing practice. Pulling the sickest patients back from the brink of death with aggressive, meticulous, and sometimes highly invasive treatment, stand out as the greatest victories. All too often though, these victories are only partial, as these patients are often debilitated and delirious long after the immediate threat of death has passed. Delirium affects nearly one third of ICU survivors as measured by validated scales, but less severe presentations are likely more prevalent (Pun et al., 2019). Delirium and physical debilitation are hallmarks of a phenomena known as “Post-ICU Syndrome” which describes a persistent alteration from functional baseline for ICU survivors. This author’s recent endeavor to find evidence for pharmacological remedy to delirium lead partly to disappointment, but also to a pride in a more wholistic approach, which is a tenant of nursing. Medications are proven throughout the literature, again and again to be ineffective in combating ICU delirium; however, nurse-driven efforts to restore basic health such as early mobility, aggressive de-escalation from mechanical ventilation, removal of lines, tubes, and devices, adequate pain management, increased family involvement, and sleep restoration are shown to be highly effective. These efforts are summarized in a stepwise approach with criteria for readiness to de-escalate in a package known as the ICU Liberation Bundle or “A to F bundle”. Despite the bundle’s effectiveness in improving post-ICU syndrome and delirium, it is not universally

adopted or, perhaps, not universally known by ICU nurses and other professionals at the point of care. This professional project aimed to discover potential barriers to its implementation.

Background and Significance

Intensive care unit (ICU) delirium is “an acute and fluctuating disturbance in consciousness and cognition” (Girard et al., 2008). ICU Delirium has been called many names over the years such as acute brain dysfunction, ICU psychosis, and encephalopathy and has a recent incidence of approximately 30% of ICU patients (Pun et al, 2019). However, this does not make ICU delirium irrelevant, as the presence of delirium is positively correlated with higher rates of ICU readmission, longer ICU stays, increased cost, and nearly doubles the likelihood that an ICU survivor will die within the next 6 months (Pun et al., 2019).

Luckily, ICU delirium and its associated risks have been found to be largely modifiable and nursing/interdisciplinary team sensitive. In 2013, the Society of Critical Care Medicine (SCCM) summarized the key points of modifiable care delivery in their guidelines for pain, agitation, and delirium. They packaged them into the *ABCDE Bundle* in 2014 and revised them to reflect the most recent evidence in the updated 2018 PADIS guidelines which included immobility and sleep disturbance in addition to the original pain, agitation, and delirium (Devlin et al., 2018). This ABCDE(F) bundle has many iterations throughout the literature but is most thoroughly deployed by the SCCM in their version, which is now referred to as the ICU Liberation Bundle.

The ICU Liberation Bundle consist of six elements: (a) **A**ssess and treat pain; (b) **B**oth daily spontaneous awakening trial (SAT) and spontaneous breathing trial (SBT) for patient who do not meet exclusion criteria and are receiving continuous sedation, mechanical ventilation, or both; (c) **C**hoice of sedation with preference for light sedation and non-deliriogenic medications when possible; (d) **D**elirium screening using a validated tool and documentation; (e) **E**arly mobility; and (f) **F**amily involvement (Pun et al.,2019). Implementation of these bundle elements

has shown reduced ICU delirium, improved mortality and post-ICU morbidity, shorter time to discharge, more frequent discharges to home, and reduced readmission/reintubation rates (Pun et al., 2019). Despite the convincing evidence for the bundle's success, its adoption at the point of care has been inconsistent, possibly a result exacerbated by the COVID-19 pandemic's effect on critical care.

Problem Statement and Study Question

Nurses play the central role in bundle implementation, though its entirety is dependent on interdisciplinary collaboration. Nursing is often described as ‘an art and a science’. This is certainly characterized by the challenge of effective care for the critically ill. Deploying life support effectively is highly reflective of the science skilled nurses must be familiar with, and preparing for the best possible outcome by tailoring and de-escalating life support mechanisms safely and timely lends to the art of critical care nurses.

The ICU liberation bundle is an evidence-based strategy to introduce more science to this often-treacherous art of de-escalating life support for the critically ill. Application of the ICU liberation bundle has been shown to increase chance of survival from critical illness by 12% for every 10% total bundle compliance, and a 23% better chance for each 10% of partial bundle compliance (Barnes-Daily et al., 2017) Barnes-Daily were also able to demonstrate negative correlation between bundle compliance and rates of ICU delirium. Universal adoption of the ICU Liberation Bundle is therefore indicated to improve critical care survivorship and morbidity.

Adoption of the ICU Liberation Bundle at the point of care has not been universally accepted despite the availability of its evidence and accessibility of related educational materials from the SCCM. The central question for this study was: Does providing education to ICU nurses regarding the ICU Liberation Bundle components, effectiveness, and safety effect the point of care end user’s attitudes towards their own practice, the incorporation of evidence-based practice (EPB), and the feasibility of adopting the ICU Liberation Bundle into practice?

Literature Review

A comprehensive literature search using PubMed and CINAHL databases sought studies regarding both ICU Liberation Bundle efficacy and barriers to implementation. Search terms included ICU Liberation Bundle, ICU Liberation Bundle education, ICU delirium, nurse focus group, ABCDEF bundle, critical care (and) delirium, and author search for Devlin.

ICU Delirium

The diagnostic and statistical manual fifth edition (DSM-5) criteria for delirium diagnosis include:

A disturbance in attention and awareness that develops over a short period of time and is a departure from baseline tending to fluctuate in severity over the course of the day; accompanied by a disturbance in cognition which are not better explained by a pre-existing, established, or evolving neurocognitive disorder without the presence of coma; and evidence from the history, physical examination or laboratory findings that the alteration is a direct physiological consequence of illness, substance intoxication or withdrawal, toxins, or multifactorial process (European Delirium Association & American Delirium Society, 2014).

Mo & Yam (2017) sought to elaborate on the use of first- and second-generation antipsychotics (FGAs and SGAs, respectively) for treatment or prevention of delirium. Though FGAs and SGAs are expressly no longer recommended for this in the most recent guidelines (Devlin et al., 2018), Mo and Yam offer expert opinion on the theoretical neurobiochemical basis for delirium. The authors describe delirium as likely resultant from imbalance of neurotransmitters dopamine, serotonin, acetylcholine, and/or histamine (Mo & Yam, 2017).

Chan et al., (2021) examined this neurobiological basis for ICU delirium by seeking association with the presence of serum neurological biomarkers such as amyloid beta ($A\beta$)1-40, $A\beta$ 1-42, T-tau, neuron specific enolase (NSE), C-reactive protein (CRP), interleukin (IL)-1 β , interleukin-1 receptor antagonist (IL-RA), IL-6, IL-8, IL-10, IL-17, S-100 calcium-binding protein B (S100 β), tumor necrosis factor α (TNF- α), and monocyte chemoattractant protein-1 (MCP-1) and the presence of ICU Delirium. This meta-analysis considered a pooled sample of 38 studies gleaned from a literature review and found ICU delirium association only with $A\beta$ 1-40. The authors suggest this association with a neurological biomarker is also noted in Alzheimer's disease and other related dementias (ADRD) and may support a physiological basis for delirium and its association with permanent and often hastened neurocognitive decline after critical illness.

These studies mostly demonstrate how cryptic and insidious delirium can manifest in acute illness, a point supported by a highly variable reported incidence throughout the literature. The most recent meta-analysis on point prevalence of delirium across inpatients included 9 studies with a pooled sample of 4,153 adults found a 22.3% incidence of delirium (Koirala et al., 2020). The authors also discussed a wide reported range of delirium across the sampled studies from 9-33% irrespective of inpatient environment or historical timing of the study; this suggests a disparity in delirium screening. In fact, one included study reported just a 3% total compliance in delirium screening among critical care units (Koirala et al., 2020).

Duceppe et al. (2019) studied a population of 150 critically ill adult trauma patients without pre-existing neurocognitive disorder or co-existing traumatic brain injury admitted to ICU for at least 48 hours across two level 1 trauma center ICUs to ascertain modifiable risk factors for delirium. The authors noted advanced age, acute physiology and chronic health

evaluation (APACHE) II score, injury severity score (ISS), illicit drug or alcohol use, cumulative doses of benzodiazepine and opiates, duration of mechanical ventilation, and total number of blood transfusions are independent risk factors for developing delirium. The study found a significant association between delirium and use of physical restraints, lack of television or radio in the room, immobility, episodes of hypoxia, and active infection. This study demonstrates feasible nurse-driven, non-pharmacological interventions as effective means of reducing ICU delirium.

ICU Liberation Bundle Efficacy

Pun et al. (2019) conducted a retrospective review of the results of ICU Liberation Bundle implementation via meta-analysis for more than 15,000 patients across 68 different ICUs (medical, cardiac, surgical, trauma, respiratory and mixed) in multiple medical centers. The authors revealed total bundle compliance for at least one day in critical care significantly reduced the likelihood of delirium, next day mechanical ventilation, coma, 21-day in hospital death, ICU readmission, physical restraint, and discharge to a location other than home. The article gives reassurance the ICU Liberation Bundle is effective in practice.

Siddiqi et al. (2016) also published a meta-analysis seeking interventions for delirium but focused on non-ICU patients. Their synthesis of data from 39 randomized control trials (RCT) offered a pooled sample of 16,082 adult patients. They examined the effect of 22 interventions on delirium incidence or resolution and found no pharmacological interventions offered clear benefit. Second generation antipsychotics were the only class of medications which offered mixed results through multiple RCTs, while all others offered a high quality of evidence against any efficacy. The authors did find, however, a multi-component intervention set did modestly affect delirium rates, though these interventions sets were not discussed in detail.

Balas et al. (2014) explored the association between non-pharmacological interventions similar to published literature on the ICU Liberation Bundle, delirium, time to extubation, time to discharge, mortality, and discharge to a non-home environment. The interventions included coordination of both spontaneous and awakening trials, delirium identification through screening, and early mobility/exercise, essentially including over half of ICU Liberation Bundle elements. By pre/post intervention comparison of a 296 adult patient sample, the authors found that the intervention set decreased the odds of delirium by half, and increased days breathing without mechanical support by an average of 3 inpatient days.

Olsen et al. (2012) also aimed to evaluate the effectiveness of the ABCDE bundle via prospective pre/post bundle implementation study of 109 non-mechanically ventilated adult patients in a critical care setting. They found patients cared for after bundle implementation were about half as likely to develop delirium than those without bundle implementation (39% vs. 19%, respectively); additionally the average duration of delirium was shorter. The group also found patients were about 50% more likely to be assisted out of bed after bundle implementation but did not find a significant difference in mortality or length of hospital stay.

Kram et al. (2015) examined ICU Liberation Bundle efficacy in 3 rural hospital ICUs by comparing 47 pre-implementation patient outcomes with 36 patients post implementation. Nurses were educated during 1-hour ABCDE bundle classes and the bundle was protocolized in the ICUs. While ICU length of stay did not vary significantly pre-bundle versus post-bundle implementation, overall hospital LOS among the sample decreased by 26%. The study also found bundle implementation reduced average days on ventilator by a full day (3.2 vs. 2.2 days, respectively). A validated delirium screening tool was not used before bundle implementation, therefore, the bundle's effect on delirium for this sample cannot be known. The reported

incidence of delirium among the post-bundle group was 19%, slightly lower than the reported incidence of ICU delirium in a recent meta-analysis (Kram et al, 2015; Koirala et al., 2020).

Devlin and Needham (2021) conducted a large retrospective trial in Canada which included 12,137 adult patients across 14 medical/surgical ICUs in Alberta. Researchers included patients admitted for more than 24 consecutive hours and sought associations between ICU delirium presence, duration and long-term outcomes including mortality, ED visits after discharge, and cognitive decline. The study found a significant increase in hazard for and correlation with each of these long-term outcomes and the presence of delirium. Furthermore, they were able to link the duration of delirium with the incidence of these negative outcomes. The authors offered commentary as the ICU Liberation Bundle relates to the reduction of ICU delirium and cited the link as cause for increased exploration of the ICU Liberation Bundle's effect on post-ICU syndrome, survivorship, and its long-term effects.

ICU Liberation Bundle Adoption

The American Academy of Critical Care Nurses (AACN) has endorsed the SCCM's ICU Liberation Bundle in their publication from 2019. In this publication they credit the bundle with 70,000 fewer unplanned ICU readmissions, 21% reduction in ICU acquired conditions, and 40% reduction in central line associated blood stream infections (AACN, 2019).

A narrative from Balas et al. (2019) appearing in *Critical Care Nurse* sought to address some of the most common concerns among nurses regarding implementation of the ICU Liberation Bundle. The authors consider one common concern regarding each bundle element and attempts to provide evidence to allay the concern. The authors address concerns surrounding The Joint Commission surveyors taking issue with dose-range analgesia orders, and present

clarifying statements from The Joint Commission stating clinicians employing dose-range analgesic orders must be able to furnish evidenced hospital policy arming them with the authority to do so and should also be able to articulate their decision making during the process of their use.

Balas and colleagues (2019) then describe techniques to optimize SAT/SBT timing and implementation. The authors stressed the importance of coordination of the two activities that require familiarity with screening techniques and interdisciplinary communication. Also worthily noted, timing and execution of daily SAT/SBT is heavily dependent on staff and resource availability and so should be implemented with this in mind. The authors also stated, though rates of self-extubation are higher with coordinated SAT/SBT, the rates of reintubation are not. Though this may serve as some reassurance, the data used to support this claim is dated to 2008, and so should be reassessed for validity.

Balas et al. (2019) addressed concerns around early mobilization of the critically ill including proper coordination with physical therapy (PT) and/or occupational therapy (OT). The authors cited a study by Schweickert et al. (2009) which demonstrated dramatic improvement in duration of delirium (2 vs. 4 days), ventilator-free days (21.1 vs. 23.5 days), retention of physical functions, and discharge to home versus other location (59% vs. 35%) when PT and OT worked with ICU patients in the first 48 hours of their admission. The authors stated this coordination, while not essential to the process, does arm nursing and respiratory staff with the confidence to carry out early mobilization. The authors, however, do not discuss the root cause of this need for increased confidence, which is poorly defined.

Regarding sleep hygiene, the authors commented on reducing sleep interruption by reducing sedation level assessment during night hours. The authors suggested it is reasonable to

withhold sedation or pain assessment during nighttime hours for the critically ill who have demonstrated consistent RASS scores and adequate pain control during the day, citing ICU survivors often report sleep disturbance as one of the most difficult aspects of their care in the ICU setting.

Similarly, Stollings et al. (2019) sought to reconcile more common questions about ICU Liberation Bundle implementation. The author group defined the barriers to ICU Liberation Bundle implementation as patient safety related, knowledge deficit related, excessive workload and documentation burden, lack of interdisciplinary respect or communication, poor staff morale, and excessive ICU staff turnover. They presented eight of the most common questions encountered when first implementing the ICU Liberation Bundle. These questions concerned bedside staffs' concern of how a 0-10 numeric pain scale and validated observational pain scales compare in accuracy, eligibility for SAT/SBT, resuming sedation for patients who remain calm and comfortable during SAT, how to respond to a positive delirium screening, using objective functional scales to establish patient mobility goals, how to effectively measure family engagement, how to recognize staff for utilizing the ICU Liberation Bundle and how to delineate professional roles in bundle implementation. Stollings and colleagues take these questions and make recommendations based on currently available evidence, which mirror the recommendations in the SCCM's educational publications on the ICU Liberation Bundle.

Devlin et al. (2020) spoke to the barriers presented in ICU Liberation Bundle implementation during the COVID-19 pandemic the authors noted the vast number of people needing mechanical ventilation and critical care services from COVID-19 illness has made implementing the bundle more challenging, but also more necessary than ever. The authors noted the timing of the pandemic as it relates to dissemination and implementation of the ICU

Liberation Bundle into practice. The article touches on the challenges faced by nurses in critical care during the COVID-19 pandemic and how they relate to ICU Liberation Bundle implementation, such as, reduced time spent at the bedside, the isolative nature of COVID-19 contact precautions, deeper sedation levels, and frequent prolonged neuromuscular blockade and organizes recommendations on bundle implementation specific to the COVID-19 pandemic.

An article published in *Critical Care Explorations* sought associations among ICUs implementing the ICU Liberation Bundle. Barr and co-authors (2020) noted although 51 Michigan ICUs have been participating in an ICU liberation collaborative, bundle implementation remains lacking. They identified poor team communication, lack of outcome measurement, lack of resources, and poor leadership as known barriers to ICU Liberation Bundle implementation. Barr and colleagues found common characteristics among ICUs that have demonstrated robust ICU Liberation Bundle implementation include facilities with strong safety culture, involved leadership, and those who have used checklists to facilitate interdisciplinary collaboration.

A mixed methods study from Collinsworth et al. (2021) sought to explore the effectiveness of different ICU Liberation Bundle implementation strategies. The study took place across 12 ICUs in the Baylor Scott and White Healthcare system, and included a survey of 84 nurses, physicians, and therapists. They first compared ICU Liberation Bundle implementation by two different strategies: a basic strategy which protocolized bundle elements using the electronic health record, and an enhanced strategy which included bundle educational sessions, designated “bundle champions”, as well as electronic health record modifications like those in the basic group. The study found ICU Liberation Bundle compliance increased for both groups in year one by 24%, but interestingly ICU Liberation Bundle compliance among ICUs in the basic

group exceeded that of the enhanced group by 20% in the year after. The 84 respondents to the survey reported overall, they felt the ICU Liberation Bundle improved patient care, and armed them with more autonomy to improve patient outcomes. The majority also reported the ICU Liberation Bundle was compatible with their practice and simple enough to use daily. Respondents identified strong leadership, good working interdisciplinary relationships, good communication, and sufficient resources as facilitating factors for ICU Liberation Bundle implementation. Among the most ICU Liberation Bundle-adherent ICUs studied strategies such as designation of bundle champions, enhanced ICU Liberation Bundle education, visual displays, email reminders, and whiteboards to track patients who met criteria for ICU Liberation Bundle elements were credited with their enhanced performance.

Finally, a massive point prevalence study from Liu et al. (2021) sought to examine the global implementation rate of the ICU Liberation Bundle in the context of the COVID-19 pandemic. Using web-based video conferencing, the authors were able to gather ICU Liberation Bundle adherence data from 212 ICUs in 38 different countries. The study examined care in a variety of ICU settings and sought characteristics of ICUs with higher-than-average ICU Liberation Bundle adherence. Liu et al. found overall ICU Liberation Bundle adherence was low, with only 1% of the studied patients receiving all bundle elements (even after excluding Family involvement considering COVID-19 visitor restrictions).

Liu et al. (2021) found compliance for **Assess and treat pain** was 45%, **Both spontaneous awakening and breathing trials** were performed for 28% of patients, **regular sedation assessment for Choice of sedation** was 52%, **Delirium assessment** was 38%, **Early mobility** was achieved for 35%, and **Family engagement/empowerment** just 16%. The authors found significant association among larger ICU's and adherence to elements A, B, and E, but, interestingly, did not find 1:1

nurse-patient ratios affected the rates of ICU Liberation Bundle adherence. The care of critically ill patients with COVID-19 has, again, made bundle adherence more difficult with isolation precautions, severity of illness, and resource depletion, but these are perhaps the patients most vulnerable and in need of protocolized ICU Liberation Bundle implementation.

Attitudes Towards ICU Liberation Bundle Adoption

Boehm et al. (2020) aimed to explore nurses' attitudes towards the A to F bundle (a former iteration Awakening and Breathing trial Coordination, Delirium screening, and Early mobility). This article titled *A Multisite Study of Nurse-Reported Perceptions and Practice of ABCDEF Bundle* detailed nurses' perceptions towards A to F Bundle elements across 28 ICUs in the continental United States. The study sought nurses' perceptions of their practice and A to F bundle adherence using a 53-question survey and sought barriers and facilitating factors to bundle implementation from 2011 through 2015. A sample of 1,661 nurses involved in direct patient care reported compliance to A to F Bundle elements was routine 70% of the time demonstrating the perceived bundle compliance by its users and actual bundle compliance in critical care to be widely disparate.

Likewise, Hosie et al., (2015) discussed how a focus group format was used to explore nurse attitudes towards adoption of a delirium screening tool . The study was conducted in two Australian palliative care units. This focus-group style qualitative study used a sample of 21 nurses who participated in one or more short semi-structured interview taking place immediately after handoff to another nurse as not to interrupt workflow. A total of four interviews were held; answers were recorded and transcribed and then analyzed for themes using inductive thematic analysis. Though nurses using the tool found doing so easy, the major theme identified from the

focus group was the perception that positive screening for delirium did not alter treatment plan in the palliative care setting.

ICU Liberation Bundle Education

Pinto & Biancofiore (2016) sought to evaluate nurses' knowledge and attitudes towards the ICU Liberation Bundle in a 1,200-bed teaching hospital with five critical care wards in Italy. Through return of 108 of 150 anonymous questionnaires, they found just 41% of nurses expressed having knowledge of the bundle. The three-page questionnaire included abbreviated education regarding the ICU Liberation Bundle and its elements. A total of 80% of those surveyed found the SBT and SAT screening and implementation criteria easy to understand while 71% reported the same regarding the use of the CAM-ICU for screening for delirium. The majority also reported that they agreed the ICU Liberation Bundle was beneficial, however just 34% of the respondents thought the bundle could be applied in their own practice. The authors related this pessimistic outlook to a lack of emphasis on training and education, and lack of faith among the surveyed nurses in leadership and interdisciplinary collaboration.

Balas et al. (2013) described their process of integrating the ICU Liberation Bundle into practice in five ICUs, one stepdown unit, and one specialty care unit at the University of Nebraska Medical Center. The authors described the formulation of their plan, inclusion of executives and distribution to unit level facilitators (nurse managers, clinical coordinators, advanced practice providers, and attending physicians). The medical center used a web-based learning experience distributed to the RNs on the units via email, which they were able to complete asynchronously over approximately 30 minutes. The education included incidence and prevalence of delirium, risk factors for delirium and immobility, and elements of the ICU Liberation Bundle, and their associated screening and safety criteria. The medical center also

hired an ICU Liberation Bundle expert to participate in rounds on the units, and an ICU Nurse educator secured a grant to host an eight-hour ICU Liberation Bundle education day. There were then various education outreaches for staff over the following nine months. Feedback from staff who received education was generally positive, though many nurses had concerns regarding ICU Liberation Bundle element safety and universal applicability to all patients. This points to a need for patient care to be individualized appropriately, and for element-specific screening criteria to be revised and updated periodically. The nurses also voiced approval with the shorter educational segments spread out over the course of nine months.

In summary, this literature search reveals an abundance of evidence exists for the prevalence of delirium and its deleterious effect and correlations with poorer outcomes. There also exists an abundance of evidence on the effectiveness of the ICU Liberation Bundle to reduce delirium and improve other outcomes such as reduction in time to extubation, ICU readmission rates, and the rates at which patients are discharged to a location other than home. Despite evidence for the ICU Liberation Bundle's successes, its full adoption is lacking. Point of care ICU Liberation Bundle users cite lack of education, lack of interdisciplinary collaboration, and sparsity of resources as barriers to making full bundle adoption a reality. This professional project proposal aims to bolster available literature on potential barriers to ICU Liberation Bundle implementation.

Purpose Statement and Specific Aims

The purpose of this quality improvement study was to explore local nurses' attitudes towards ICU Liberation Bundle implementation after an ICU Liberation Bundle educational intervention. This qualitative study that sought critical care nurses' attitudes toward ICU Liberation Bundle implementation in a community hospital in Rhode Island. Qualitative data collection was chosen to reveal barriers to ICU Liberation Bundle implementation, both perceived and real.

Conceptual Framework

The Synergy Model was conceptualized in the 1990s by critical care nurses to address health care needs of the critically ill patient. Essentially, the model theorizes nurse competency is driven by patient needs and is built on the premise that critical care nurses continually engage in patient needs assessment and therefore must be adept at the skills and knowledge required to adequately support the seriously ill patients (McEwen & Wills, 2017).

With the refinement of critical care, so too should the nurse's skill set evolve to manage increasingly complex patient care and incorporate best practice. In her model, M. Curley describes eight patient characteristics (a) stability, (b) complexity, (c) resiliency, (d) vulnerability, (e) predictability, (f) participation in care, (g) participation in decision making, and (h) resource availability and eight nursing characteristics (a) clinical judgement, (b) clinical inquiry, (c) caring practices, (d) response to diversity, (e) advocacy/moral agency, (f) facilitation of learning, (g) collaboration, and (h) systems thinking that must be in sync to optimize patient outcomes (Curley, 2007). Specifically, the use of the ICU Liberation Bundle calls for clinical inquiry on the part of the nurse regarding patient readiness to de-escalate aggressive support safely as determined through evaluation of the patient characteristics. This process requires care and clinical judgement, consideration, and advocacy for the patient as an individual, and especially collaboration with a multidisciplinary team. Incorporating evidence from the literature to transform practice in such a radical way requires readiness to learn on the part of the nurse. The model's conceptual underpinning aligns with this project's aims to provide ICU Liberation Bundle education in an ICU setting to critical care nurses to ensure patient needs and nurse competencies are in syncs. It is within this context that the model is chosen to inform the education intervention and qualitative design components of the study.

The acceptability of the Synergy Model has been demonstrated in the literature. Kohr et al. (2012) explored the use of the synergy model to map nurses' workflow in similar care settings. The study solicited eight charge nurses from three different ICU settings to evaluate their decision-making process when building patient assignments. They described using the model to inform focus group style interviews of charge nurses from different ICUs who build nurse assignments around patients' and their families' needs in consideration of critical care nurse competencies. This author also explored the concept of adapting nurse/interdisciplinary care to evolving patient needs.

Methods

Setting

The educational sessions and focus group interviews took place at Kent County Hospital, a community hospital in Warwick, RI. The hospital currently has 359 licensed beds, 14 of which comprise the mixed medical/surgical ICU.

Participants

The project enrolled 14 Registered Nurses (RN) who regularly practice in the above intensive care unit. Enrollment was voluntary. Solicitation for enrollment was completed in person on the unit by convenience with permission from the critical care nurse manager and critical care nurse educator (see Appendix A). Inclusion criteria were licensed registered nurse staff members who provide direct patient care in the ICU. All staff RNs were invited to participate to bolster sample size.

Intervention and Measures

Participants were asked to attend one of four thirty-minute educational interventions informed by the SCCM's ICU Liberation Bundle educational publications (see Appendix B) and the above-mentioned studies on its effectiveness. The author delivered the staff education with a PowerPoint presentation, which included content germane to the prevalence of post-critical-illness morbidity and delirium. An outline of the ICU Liberation Bundle and its elements was presented along with best evidence from the literature demonstrating improved outcomes directly influenced by bundle compliance (Pun et al., 2019). Implementation of the ICU Liberation Bundle was also described in greater detail (see Appendix B) including ICU Liberation Bundle elements, their associated purpose(s), associated patient screening and safety criteria, and

methods for implementation. A lesson plan was developed to ensure consistency of information (see Appendix C).

Following the educational interventions, the participants were invited to participate in a focus group utilizing semi-structured interview questions to explore their views on current practice in the ICU, how it compares with practice described in the ICU Liberation Bundle, and the feasibility of its full implementation. The interview followed an open-ended question format (see Appendix D) and included follow-up questions as appropriate to identify perceived barriers to ICU Liberation Bundle implementation. The interviews were audio recorded using a G L87 mp3 audio recorder and transcribed using Google Cloud Speech-to-text powered by API. The interview questions centered around nurse attitudes towards ICU Liberation Bundle implementation, perceived effect of ICU Liberation Bundle element safety, their effect on outcomes, perceived current ICU Liberation Bundle compliance/divergence, ICU Liberation Bundle patient values or ethical considerations, and perceived facilitating factors and potential barriers. For example, the interview questions started with “How does care outlined in the ICU Liberation Bundle compare with our current practices? What is similar? What is different?”. This question aimed to seek nurse understanding of current use of ICU Liberation Bundle elements without directly using the ICU Liberation Bundle as an algorithmic and evidence-based basis for interventions provided. It also seeks to prepare learners to think about how they can improve practice or identify what flaws the learners may find with total ICU Liberation Bundle adherence.

After exploring the perceived values inherent to the ICU Liberation Bundle as compared to those of the participants practice in critical care, the question was posed more directly by asking “Of the ICU Liberation Bundle elements that stand out as different: which of these could

you see yourself implementing more? What are some barriers to this that you might have to overcome?” This was followed by :Of the ICU Liberation Bundle elements that differ from your normal care: which of these are you least likely to deploy in your practice? Why?’, ‘Do you feel confident in performing spontaneous awakening trial?’, and finally, “Do you feel confident in mobilizing mechanically ventilated patients?.”

Analysis

Once the audio recordings of the interview were transcribed and reviewed for accuracy, content analysis of qualitative data was performed using inductive thematic analysis as described by Nowell et al. (2017). In *Phase One*, the transcribed and recorded focus group responses were reviewed and re-reviewed for familiarity. *Phase Two* consisted of coding the data for indexing themes developed in the interview. In this phase it is recommended that the coder works systematically and chronologically through the entire transcription to avoid redundant coding and to further familiarize themselves with the data set. In *Phase Three*, the codes were interpreted for themes. Nowell et al. (2017) state themes are not necessarily dependent on frequency or tendency in the data, but moreover bear pertinence to the aim of the study. In *Phase Four*, themes were reviewed to ascertain their significance to the study goal and assessed for any patterns in the data. In *Phase Five*, themes were named and defined based on what element of the data they captured and how they related to the study question. In the final phase of analysis, *Phase Six*, the themes were written up in a concise, logical, and non-repetitive narrative with emphasis on thematic correlation to the study purpose. Nowell et al. (2017) recommend that the researcher keep methodological notes of their actions throughout these phases to maintain an audit trail, lending to the trustworthiness of the analysis. This was done.

Ethical Considerations

Institutional Review Board approval was sought from both RIC and the clinical site. Given the nature of this qualitative quality-improvement project, full IRB review was waived by the third-party contractor representing Care New England's IRB. Participation was voluntary, and responses were made anonymous before dissemination. Informed consent was taken as implied once participants attended the education session and remained for the group interview. Transcribed data was stored on a password-protected personal computer. Of potential conflict, the elements of the ICU Liberation Bundle may not be specifically endorsed or protocolized by Care New England, so buy-in from the ICU unit manager and critical care educator was sought and granted by these parties. No patient identifiers were used or discussed.

Results

Early mobility, and family involvement were identified as ICU Liberation Bundle elements that differed from the site's normal nursing care in the ICU; with early mobility cited most frequently (See Appendix E). Various perceived barriers to early mobility were identified, most commonly nurses who did not foresee early mobility entering their standard practice cited lack of staff availability. This is not surprising; early mobility, though cited in the literature as the most effective ICU Liberation Bundle element in reducing delirium, may also be the most cumbersome of the elements. The SCCM acknowledges interdisciplinary cooperation of nursing, respiratory therapy, physical therapy and/or occupational therapy, as well as medical team facilitation is required to accomplish early mobility. Staff who cited these barriers also noted the recent dissolution of the previously organized "lift team" who would also be helpful in this process.

One nurse noted these ICU Liberation Bundle elements not only must occur before the early mobility, but also rank higher on the nurse's prioritization of patient care. Other nurses noted they rarely care for patients who are stable enough to mobilize from a physiological standpoint, but must remain endotracheally intubated. Though the **E** element is not solely intended for those undergoing positive pressure mechanical ventilation (PPMV), the **E** element is published by the SCCM with a focus on implementing this for the patient undergoing PPMV. Additionally, nurses cited fear for patient stability, lack of available personnel, and fear of adverse events related to early mobility as perceived barriers to its common implementation. One nurse cited early mobility is simply not culturally ingrained in the ICU, reflecting perhaps a lack of recognition for its benefit as opposed to the detracting factors listed above. One nurse answered they would feel comfortable incorporating early mobility more if the nurse and

interdisciplinary staff were available and willing, and also if there were defined criteria for doing so.

When asked which ICU Liberation Bundle element they might incorporate more, the most frequent response was a hybrid of sentiments from **A** and **C**, which both implore nursing staff to treat pain before considering sedation. Several nurses cited provider buy-in to this sedation plan as a potential barrier, as they are responsible for ordering pharmacological analgesia. Three nurses cited the persistent use of Haldol for agitated delirium, despite the departure from the SCCM's recommendation of this in 2018. This reflects another theme developed in the analysis of the focus group sessions, i.e., the need for continuing education for point of care staff.

Family involvement was also cited as an ICU Liberation Bundle element which departed from normal care. Two respondents felt they were least likely to deploy this element to practice. They reported family involvement often carries a high time burden associated with imparting an understanding of complex disease processes upon these family members. They also relayed that while their intent was not to neglect families of the critically ill, their experiences with families informed their perceptions that families who lacked knowledgebase in the care of critically ill detract from time otherwise spent providing this care. They acknowledged ideally there would be enough time to adequately care for patients and keep their loved ones involved in the process, but realistically this time did not exist with the expectations and requirements of critical care.

All the nurses interviewed endorsed their comfort with performing spontaneous awakening trials, but this also produced valuable discussion. Several nurses endorsed the practice as a whole, but worried about the timing and interdisciplinary collaboration needed to make the most of this practice. They emphasized the intended coordination with respiratory therapy to

perform both SAT and SBT in synchrony needed flexibility for the RT to also meet the needs of the other patients on the unit. They also cited the common practice of trialing a patient on SAT and SBT for at least 30 minutes, but not more than 90 minutes, which produced only a one hour window to extubate. They reported the availability of the attending physician or other designated provider who would ultimately determine the plan for extubation during this hour as a variable and potential barrier.

Discussion

Overall, the nurses interviewed shared appreciation for the value of the ICU Liberation Bundle. This was evidenced by their identification of system barriers to implementation of ICU Liberation Bundle elements which they identified as divergent from their normal practice. The early mobility element proved to be the most controversial, with some respondents citing fear for patient safety and stability as a barrier to implementation. This reflects the complex and highly individual nature of critical care, which is wisely considered by point of care nursing staff. Though the benefits of early mobility are clear in the literature, the risks of carrying this out are also appreciated and dynamic.

Only one nurse included in the focus group endorsed previous exposure to the ICU Liberation Bundle, but the individual concepts portrayed by the ICU Liberation Bundle were mostly familiar to staff. Family involvement was also identified by some nurses in the focus group as challenging to fully embrace. These nurses have, in some cases, spent more than a decade growing their familiarity with disease processes commonly treated in critical care. Their hesitancy to dedicate valuable time imparting a working knowledge base of these disease processes to family members in such a limited interval is recognized and, in some instances, valid. While family involvement is evidenced as beneficial in terms of direct patient outcomes and more subjectively in terms of unit milieu, this involvement must be sometimes be weighed against the immediate physiological needs of the patient.

A recurring theme presented as a barrier to some of the more complex ICU Liberation Bundle elements such as **B** and **E** was the lack of staff availability or coordination to carry these out safely. This is likely reflective of a growing standard of care in the setting of a strained healthcare system. Elements **B** and **E** are perhaps the most complex and inherently demand

interdisciplinary collaboration to carry them out. Nurses who participated in this focus group shared their concerns regarding this. These patients are usually already under the care of a respiratory therapist and certainly considered for **B**oth spontaneous awakening and breathing trials. The difficulty is coordinating nursing actions to perform SAT when the respiratory therapist is available to perform and monitor SBT when they may also be responsible for the care of several, if not a dozen or more, critically ill patients concurrently. One month before these focus group sessions were conducted, a new practice of scheduling these coordinated SAT and SBT for ventilated patients materialized. Nurses and respiratory therapists now plan this coordinated effort by scheduling a time of the morning they are to be performed on the whiteboard in each patient's room. If the trials are performed, a note of it is also made on the whiteboard so the medical team has this information when assessing readiness to extubate or when a plan of care needs modification to meet the needs of the patient. This demonstrates alignment with the **B** element, but also highlights its complexity when considered in the context of a critical care unit full of patients with SAT/ABT needs and finite staff to meet them.

Similarly, the foremost concern surrounding **E**arly mobility was staff availability. To safely mobilize a patient undergoing PPMV, at least one nurse, one respiratory therapist, and physical and/or occupational therapist should be involved and, ideally, this team would feature more professionals to safely accomplish this task depending on patient specifics. Realistically, assembling this requires enhanced leadership and interdisciplinary communication from the critical care nurse and coordination is highly dependent on uncontrollable variables from the rest of the critical care unit and hospital due to the nature of critical care. These challenges are recognized by the nurses who participated in the focus group, but their appreciation for the potential benefit of early mobility is not lost. However, early mobility is not beneficial solely to

those requiring invasive PPMV. Patients who lack the need for invasive PPMV or who have been successfully weaned from PPMV equally share this benefit and require a less robust interdisciplinary effort to mobilize. This practice is neither absent in critical care, nor universal, and serves as an opportunity for improvement.

Conclusions

The ICU Liberation Bundle is a compilation of care techniques intended to improve ICU survivorship and morbidity, including delirium mitigation. The evidence clearly demonstrates its effectiveness. The nurses interviewed in this study share the same mission to improve patient outcomes and appreciated the value of the ICU Liberation Bundle. Though some of the ICU Liberation Bundle elements are common to standard practice, others stand out as divergent from standard practice in this community hospital ICU setting, despite evidence of consistent whole and partial ICU Liberation Bundle compliance. The most prevalent and informative themes identified in this study on barriers centered around staffing, resource availability, and time allocation, constraints likely common across many community hospital settings. These perceived barriers are realized and manifested in the form of limited staff resources and time. As such, the lack of universal adoption of the full ICU Liberation Bundle previously discussed in the literature is unsurprising. However, enhanced ICU Liberation Bundle adoption may be feasible by investing further quality improvement work in identifying system strengths and weaknesses, which may lead to defeating the barriers exposed by this study.

APRN Considerations

While the bulk of the ICU Liberation Bundle implementation is executed at the point of care by critical care nurses, much of this is accomplished in collaboration with the interdisciplinary team, including advanced practice registered nurses (APRNs). This study sought to explore potential barriers to total ICU Liberation Bundle adherence. In some instances, need for enhanced collaboration with the medical team was implicated, such as with the **B** element, where uncertain timing of coordinated spontaneous breathing and awakening trials was identified. To meet this challenge, the APRN in critical care has the opportunity to serve as a guiding resource for SAT/SBT timing when no protocol is in place and may also have independence in guiding the decision to extubate after a passed SAT/SBT trial.

Elements **A** and **C** both involve choices of sedation and analgesia, where nursing delivery of these is dependent on provider participation. The APRN has the opportunity to facilitate enhanced ICU Liberation Bundle adherence by familiarizing themselves with the pertinent guidelines in pharmacological sedation and analgesia.. Similarly, APRNs should be prepared to aggressively de-escalate unnecessary invasive treatments, lines, and catheters identified in the **D** element and supporting literature as deliriogenic.

The barrier identified most by participants was lack of staff availability. APRNs are uniquely prepared in both medical and nursing interventions and thus may serve in supportive and mentoring roles to RN staff at the point of care. Early mobility and Family involvement may be supported by their advanced physiologic knowledge and assessment skills. These skills strengthen direct involvement in ICU Liberation Bundle execution on an individual basis, but also may serve to culturally engrain evidence-based practices within the ICU environment and inspire increased confidence in nurses to carry them out.

References

- American Association of Critical Care Nurses (2019) ABCDEF bundle and patient outcomes. *AACN Bold Voices*, 11(1), 16–16.
- Balas, M. C., Burke, W. J., Gannon, D., Cohen, M. Z., Colburn, L., Bevil, C., Franz, D., Olsen, K. M., Ely, E. W., & Vasilevskis, E. E. (2013). Implementing the awakening and breathing coordination, delirium monitoring/management, and early exercise/mobility bundle into everyday care. *Critical Care Medicine*, 41, S116
S127. <https://doi.org/10.1097/ccm.0b013e3182a17064>
- Balas, M. C., Vasilevskis, E. E., Olsen, K. M., Schmid, K. K., Shostrom, V., Cohen, M. Z., Peitz, G., Gannon, D. E., Sisson, J., Sullivan, J., Stothert, J. C., Lazure, J., Nuss, S. L., Jawa, R. S., Freihaut, F., Ely, E. W., & Burke, W. J. (2014). Effectiveness and safety of the awakening and breathing coordination, delirium monitoring/management, and early exercise/mobility bundle. *Critical Care Medicine*, 42(5), 1024
1036. <https://doi.org/10.1097/ccm.0000000000000129>
- Balas, M. C., Pun, B. T., Pasero, C., Engel, H. J., Perme, C., Esbrook, C. L., Kelly, T., Hargett, K. D., Posa, P. J., Barr, J., Devlin, J. W., Morse, A., Barnes-Daly, M. A., Puntillo, K. A., Aldrich, J. M., Schweickert, W. D., Harmon, L., Byrum, D. G., Carson, S. S., ... Stollings, J. L. (2019). Common challenges to effective ABCDEF bundle implementation: The ICU Liberation campaign experience. *Critical Care Nurse*, 39(1), 46-60. <https://doi.org/10.4037/ccn2019927>
- Barr, J., Ghaferi, A. A., Costa, D. K., Hedlin, H. K., Ding, V. Y., Ross, C., Pun, B. T., Watson, S. R., & Asch, S. M. (2020). Organizational characteristics associated with ICU

- Liberation (ABCDEF) bundle implementation by adult ICUs in Michigan. *Critical Care Explorations*, 2(8), 0169. <https://doi.org/10.1097/CCE.0000000000000169>
- Barnes-Daly, M. A., Phillips, G., & Ely, E. W. (2017). Improving hospital survival and reducing brain dysfunction at seven California community hospitals: Implementing PAD guidelines via the ABCDEF bundle in 6,064 patients. *Critical Care Medicine*, 45(2), 171–178.
- Boehm, L. M., Pun, B. T., Stollings, J. L., Girard, T. D., Rock, P., Hough, C. L., Hsieh, S. J., Khan, B. A., Owens, R. L., Schmidt, G. A., Smith, S., & Ely, E. W. (2020). A multisite study of nurse-reported perceptions and practice of ABCDEF bundle components. *Intensive & Critical Care Nursing*, 60, 102872–102872. <https://doi.org/10.1016/j.iccn.2020.102872>
- Chan, C. K., Song, Y., Greene, R., Lindroth, H., Khan, S., Rios, G., Khan, B., & Wang, S. (2021). Meta-analysis of ICU delirium biomarkers and their alignment with the NIA-AA research framework. *American Journal of Critical Care*, 30(4), 312–319. <https://doi.org/10.4037/ajcc2021771>
- Collinsworth, A. W., Brown, R., Cole, L., Jungeblut, C., Kouznetsova, M., Qiu, T., Richter, K. M., Smith, S., & Masica, A. L. (2021). Implementation and routinization of the ABCDE bundle. *Dimensions of Critical Care Nursing*, 40(6), 333–344. <https://doi.org/10.1097/dcc.0000000000000495>
- Curley, M. A. Q. (2007). *Synergy: The unique relationship between nurses and patients*. Sigma Theta Tau International.

- Devlin, J. W., & Needham, D. M. (2021). Long-term outcomes after delirium in the ICU: Addressing gaps in our knowledge. *American Journal of Respiratory and Critical Care Medicine*, 204(4), 383–385. <https://doi.org/10.1164/rccm.202104-0910ED>
- Devlin, J. W., O’Neal, H. R., Thomas, C., Barnes Daly, M. A., Stollings, J. L., Janz, D. R., Ely, E. W., & Lin, J. C. (2020). Strategies to optimize ICU liberation (A to F) bundle performance in critically ill adults with coronavirus disease 2019. *Critical Care Explorations*, 2(6), e0139. <https://doi.org/10.1097/cce.0000000000000139>
- Devlin, J. W., Skrobik, Y., Gélinas C., Needham, D. M., Slooter, A. J. C., Pandharipande, P. P., Watson, P. L., Weinhouse, G. L., Nunnally, M. E., Rochweg, B., Balas, M. C., van den Boogaard, M., Bosma, K. J., Brummel, N. E., Chanques, G., Denehy, L., Drouot, X., Fraser, G. L., Harris, J. E., ... Alhazzani, W. (2018). Clinical practice guidelines for the prevention and management of pain, agitation/sedation, delirium, immobility, and sleep disruption in adult patients in the ICU. *Critical Care Medicine*, 46(9).
- Duceppe, M.-A., Williamson, D. R., Elliott, A., Para, M., Poirier, M.C., Delisle, M.S., Deckelbaum, D., Razek, T., Desjardins, M., Bertrand, J.C., Bernard, F., Rico, P., Burry, L., Frenette, A. J., & Perreault, M. (2019). Modifiable risk factors for delirium in critically ill trauma patients: A multicenter prospective study. *Journal of Intensive Care Medicine*, 34(4), 330–336. <https://doi.org/10.1177/0885066617698646>
- European Delirium Association, & American Delirium Society (2014). The DSM-5 criteria, level of arousal and delirium diagnosis: Inclusiveness is safer. *BMC Medicine*, 12, 141. <https://doi.org/10.1186/s12916-014-0141-2>

- Girard, T. D., Pandharipande, P. P., & Ely, E. W. (2008). Delirium in the intensive care unit. *Critical Care (London, England)*, *12 Suppl 3*(Suppl 3), S3.
<https://doi.org/10.1186/cc6149>
- Hosie, A., Lobb, E., Agar, M., Davidson, P. M., Chye, R., & Phillips, J. (2015). Nurse perceptions of the nursing delirium screening scale in two palliative care inpatient units: A focus group study. *Journal of Clinical Nursing*, *24*(21-22), 3276-3285. <https://doi.org/10.1111/jocn.12925>
- Kohr, L. M., Hickey, P. A., & Curley, M. A. Q. (2012). Building a nursing productivity measure based on the synergy model: First steps. *American Journal of Critical Care: An Official Publication, American Association of Critical-Care Nurses*, *21*(6), 420–30.
<https://doi.org/10.4037/ajcc2012859>
- Koirala, B., Hansen, B. R., Hosie, A., Budhathoki, C., Seal, S., Beaman, A., & Davidson, P. M. (2020). Delirium point prevalence studies in inpatient settings: A systematic review and meta-analysis. *Journal of Clinical Nursing*, *29*(13-14), 2083-2092. <https://doi.org/10.1111/jocn.15219>
- Kram, S. L., DiBartolo, M. C., Hinderer, K., & Jones, R. A. (2015). Implementation of the ABCDE bundle to improve patient outcomes in the intensive care unit in a rural community hospital. *Dimensions of Critical Care Nursing*, *34*(5), 250-258. <https://doi.org/10.1097/dcc.000000000000129>
- Liu, K., Nakamura, K., Katsukawa, H., Elhadi, M., Nydahl, P., Ely, E. W., Kudchadkar, S. R., Takahashi, K., Inoue, S., Lefor, A. K., Kesecioglu, J., & Nishida, O. (2021). ABCDEF bundle and supportive ICU practices for patients with coronavirus disease 2019 infection:

An international point prevalence study. *Critical Care Explorations*, 3(3), e0353. <https://doi.org/10.1097/cce.0000000000000353>

McEwen, M., & Wills, E. M. (2017). *Theoretical basis for nursing*. Lippincott Williams & Wilkins.

Mo, Y., & Yam, F. K. (2017). Rational use of second-generation antipsychotics for the treatment of ICU delirium: A neuropharmacological approach. *Journal of Pharmacy Practice*, 30(1), 121–129. <https://doi.org/10.1177/0897190015585763>

Nowell, L. S., Norris, J. M., White, D. E., & Moules, N. J. (2017). Thematic analysis: Striving to meet the trustworthiness criteria. *International Journal of Qualitative Methods*, 16(1), 160940691773384. <https://doi.org/10.1177/1609406917733847>

Olsen, K., Burke, W., Peitz, G., Gannon, D., Stothert, J., Jawa, R., Nuss, S., Thorell, W., Freihaut, F., & Balas, M. (2012). The ABCDE bundle reduces the incidence of delirium in non-mechanically-ventilated patients. *Critical Care Medicine*, 40(12), 1328. <https://doi.org/10.1097/01.ccm.0000424261.88103.a9>

Pinto, P., & Biancofiore, G. (2016). The ABCDE bundle: a survey of nurses' knowledge and attitudes in the intensive care units of a national teaching hospital in Italy. *Dimensions of Critical Care Nursing*, 35(6), 309-314. <https://doi.org/10.1097/DCC.0000000000000210>

Pun, B. T., Balas, M. C., Barnes-Daly, M. A., Thompson, J. L., Aldrich, J. M., Barr, J., Byrum, D., Carson, S. S., Devlin, J. W., Engel, H. J., Esbrook, C. L., Hargett, K. D., Harmon, L., Hielsberg, C., Jackson, J. C., Kelly, T. L., Kumar, V., Millner, L., Morse, A., ... Ely, E. W. (2019). Caring for critically ill patients with the ABCDEF bundle: Results of the ICU liberation collaborative in over 15,000 adults. *Critical Care Medicine*, 47(1), 3–14.

- Stollings, J. L., Devlin, J. W., Pun, B. T., Puntillo, K. A., Kelly, T., Hargett, K. D., Morse, A., Esbrook, C. L., Engel, H. J., Perme, C., Barnes-Daly, M. A., Posa, P. J., Aldrich, J. M., Barr, J., Carson, S. S., Schweickert, W. D., Byrum, D. G., Harmon, L., Ely, E. W., ... Balas, M. C. (2019). Implementing the ABCDEF bundle: Top 8 questions asked during the ICU liberation ABCDEF bundle improvement collaborative. *Critical Care Nurse*, 39(1), 36-45. <https://doi.org/10.4037/ccn2019981>
- Siddiqi, N., Harrison, J. K., Clegg, A., Teale, E. A., Young, J., Taylor, J., & Simpkins, S. A. (2016). Interventions for preventing delirium in hospitalized non-ICU patients. *Cochrane Database of Systematic Reviews*. <https://doi.org/10.1002/14651858.cd005563.pub3>
- Schweickert, W. D., Pohlman, M. C., Pohlman, A. S., Nigos, C., Pawlik, A. J., Esbrook, C. L., Spears, L., Miller, M., Franczyk, M., Deprizio, D., Schmidt, G. A., Bowman, A., Barr, R., McCallister, K. E., Hall, J. B., & Kress, J. P. (2009). Early physical and occupational therapy in mechanically ventilated, critically ill patients: A randomized controlled trial. *Lancet (London, England)*, 373(9678), 1874–1882. [https://doi.org/10.1016/S01406736\(09\)60658-9](https://doi.org/10.1016/S01406736(09)60658-9)

Appendix A

Nurse Director Approval Letter

November 1, 2022

To KCMC/CNE institutional review board,

I am writing to express my endorsement of a quality improvement project which Adam Hobbins RN, BSN has drafted as part of his curriculum for the Adult Gerontology Acute Care Nurse Practitioner program with Rhode Island College Onanian School of Nursing. This project proposal is intended to demonstrate the effectiveness of implementing an ICU Liberation Bundle that promotes delirium prevention and overall improvement of ICU patient outcomes. Attached you will find his project proposal which he is submitting to you for review and approval. Adam plans to conduct two brief educational sessions with the nursing staff, following each with a brief focus-group style interview to assess nursing attitudes and potential barriers to its implementation.

Adam has expressed that he has chosen our ICU at Kent because of his ties to our organization and his familiarity with the staff and culture here. From my perspective, with our high ventilator population, I feel this project would benefit our patients and promote evidence-based thinking in our staff. I have given my approval to him to proceed with seeking IRB approval and performing this academic endeavor here.

Thank you for your consideration,

Virginia Wilcox

Virginia Wilcox RN, MSN, CCRN, CNML

Intensive Care and Hemodialysis Unit Nurse Director, Kent Hospital



Appendix B

ICU Liberation Bundle (A-F)

A

Introduction

The “A” element of the ICU Liberation Bundle (A-F) consists of assessing, preventing, and managing pain. Pain is an unpleasant sensory and emotional experience that is best reported by the person who is experiencing it, although self-reporting can be a challenge in the ICU. The inability to communicate verbally does not negate the possibility that a patient is experiencing pain. A reliable and valid pain assessment is the foundation for effective pain treatment. Choosing the best intervention to treat pain is challenging. The ICU Liberation’s implementation tools offer a stepwise approach to pain assessment. Assessment is suggested in this order:

- Attempt to obtain a patient’s self-report of pain.
- Look for behavioral changes.
- Ask the family to help identify pain behaviors.
- Assume that pain is present.

Pain and sedation levels should be assessed frequently in the ICU, at least every four hours, and reassessment should be performed within one hour after an intervention is made.

The following tools are available for ICU patients:

- Numerical Rating Scale (NRS)
- Behavioral Pain Scale (BPS)
- Critical-Care Pain Observation Tool (CPOT)

Intervention/Prevention

The most important step for clinicians seeking to prevent pain is to recognize the painfulness of common ICU procedures. Turning, wound drain removal, wound care, chest tube removal, and arterial line insertion are among the most painful procedures. Preprocedural analgesia and/or nonpharmacologic interventions should be administered and should be considered for other procedures as well. Treat pain first!

Nonpharmacologic Interventions:

- Relaxation and or distraction techniques
- Information/education
- Massage/touch
- Music therapy
- Pet therapy
- Family presence for support and distraction

For pharmacologic treatment of pain, ICU Liberation recommends:

- IV opioids should be considered as the first-line drug class for nonneuropathic pain.
- IV opioids are especially effective when titrated to similar pain intensity end point.

For further information about pharmacologic treatment options for pain, see “C” – Choice of Analgesia and Sedation.

B

The “B” element of the ICU Liberation Bundle (A-F) consists of both spontaneous awakening trials (SATs) and spontaneous breathing trials (SBTs).

- Studies have shown that using SATs and SBTs synergistically helps decrease mechanical ventilation days (3.1-day reduction; 95% CI, 0.7-5.6; P = 0.02), necessity for tracheostomy, and delirium (odds ratio 0.505; 95% CI, 0.299-0.853; P = 0.01).
- Reducing the duration of ventilation time is an important goal because prolonged mechanical ventilation can lead to undesirable outcomes, such as longer (approximately 4 days) hospitalizations and ICU stays.

The B element focuses on setting a time(s) each day to stop sedative medications, orient the patient to time and day, and conduct an SBT to liberate the patient from the ventilator.

- Light-to-moderate ICU sedation can help reduce anxiety and agitation for patients, facilitate mechanical ventilation, and decrease traumatic memories.
- Deep sedation has been found to reduce six-month survival and increase hospital mortality, ICU length of stay, ventilator duration, and physiologic stress.

Assessment

- Both SATs and SBTs are incorporated into the Wake Up and Breathe Protocol, a two-step process that focuses on creating a synergy between SAT and SBT protocols. These protocols typically incorporate safety screens and failure criteria.
- The SAT safety screen includes the absences of seizures, alcohol withdrawal, paralysis, and increased intracranial pressure. SAT failure criteria focus attention on the signs of

pain, agitation, and delirium, along with signs common to respiratory distress in aroused patients, such as tachypnea and use of accessory muscles.

- The SBT safety screen evaluates the need for ventilator support, which helps facilitate ventilation weaning and decreases reintubation rates. The SBT safety screen includes the absence of hypoxia, apnea, agitation, significant doses of vasopressors, and increased intracranial pressure. SBT failure criteria include tachypnea, hypoxemia, acute change in mental status, acute cardiac arrhythmia, and signs of respiratory distress.
- To enable successful implementation of SATs and SBTs, it is important to create an interprofessional team. At all levels of care, the ICU Liberation Bundle is most effective when implemented by a team that includes a physician or advanced practice provider, a nurse, a respiratory therapist, and a physical therapist.

Intervention

The pain, agitation/sedation, delirium, immobility, and sleep disruption (PADIS) guidelines recommend:

- Depth and quality of sedation should be routinely assessed in all ICU patients daily, even when SATs and SBTs are contraindicated.
- The Richmond Agitation-Sedation Scale (RASS) and Sedation-Agitation Scale (SAS) are the most valid and reliable scales for assessing quality and depth of sedation in adult ICU patients.
- Objective measures of brain function should be used adjunctively to monitor sedation in patients receiving neuromuscular blocking agents.

- EEG monitoring should be used to either monitor nonconvulsive seizure activity in ICU patients at risk for seizures or titrate electrosuppressive medication to achieve burst suppression in ICU patients with elevated intracranial pressure.

C

The “C” element of the ICU Liberation Bundle (A-F) consists of choice of analgesia and sedation. The “C” element focuses on constructing a safe and effective medication regimen for the management of pain and agitation in critically ill adults, consistent with the pain, agitation, and delirium (PAD) guidelines and the pain, agitation/sedation, delirium, immobility, and sleep disruption (PADIS) guidelines. Sedation must be frequently assessed in ICU patients at least every four hours, using validated tools to prevent both under- and oversedation. Each patient should have an individualized sedation level goal, and sedatives should be titrated accordingly to meet that goal.

In adult patients, the following tools are available for assessment of level of consciousness:

- Richmond-Agitation Sedation Scale (RASS)
- Riker Sedation-Agitation Scale (SAS).

Intervention

The PADIS guidelines recommend:

- IV opioids are the first-line drug class for nonneuropathic pain.
- All IV opioids are equally effective when titrated to similar pain scores.

- Nonopioid analgesics should be considered to decrease the amount of opioids administered and the resultant opioid-induced adverse effects.

Drug	Metabolic/Drug Interaction Considerations	Usual Starting Dose	Drug-Specific Adverse Effects	Drug Accumulation Factors
Fentanyl	3A4 major substrate	CI: 12.5-25 µg/hr OR CI: 0.35-0.5 µg/kg	Muscle rigidity	Hepatic failure, high volume of distribution, high lipophilicity, unpredictable clearance (long context-sensitive half-time) with prolonged infusion
Morphine	Glucuronidation	CI: 1-2 mg/hr	Hypotension, bradycardia from histamine release	Hepatic failure, active metabolite (3-morphine glucuronide) accumulation in renal failure
Hydromorphone	Glucuronidation	CI: 0.25-0.5 mg/hr	Overdose effects from dosing errors of high-potency opioids	Hepatic failure
Methadone	3A4 and 2B6 major substrates	N/A	QTc prolongation, serotonin syndrome	Long half-life, delayed clearance with hepatic and renal failure
Remifentanyl	Blood and tissue esterases	LD: 1.5 µg/kg	CI: 0.5-15 µg/kg/hr	Chest wall rigidity, rebound pain on discontinuation

Non-Opioids Commonly Used in the Adult ICU:

Analgesic	Recommendation
Acetaminophen	Use as an adjunct to opioid therapy to decrease pain intensity and opioid consumption.
Ketamine	Use low-dose ketamine (1-2 µg/kg/hr) as an adjunct to opioid therapy to reduce opioid use in post-surgical adults.
Gabapentin and pregabalin	Use neuropathic pain medications with opioids for neuropathic pain management. Use with opioids after cardiovascular surgery.
Lidocaine	Do not routinely use IV lidocaine as an adjunct to opioid therapy.
COX-1 selective NSAIDs	Do not routinely use a COX-1 selective NSAID as an adjunct to opioid therapy.
Cybertherapy and hypnosis	Do not offer cybertherapy (virtual reality) or hypnosis.
Massage therapy	Offer 10- to 30-minute massages once or twice daily for 1-7 days.
Music therapy	Use music therapy for procedural and nonprocedural pain.
Cold therapy	Offer cold therapy for procedural pain.

The following are PADIS guidelines recommendations and suggestions for the treatment of agitation:

- Recommend light sedation (vs. deep sedation) in critically ill, mechanically ventilated patients
- Suggest using propofol or dexmedetomidine over benzodiazepines (midazolam or lorazepam) for sedation in critically ill mechanically ventilated patients
- Suggest using propofol over benzodiazepines (midazolam or lorazepam) for sedation in mechanically ventilated patients after cardiac surgery

Sedatives for Adult Patients on Mechanical Ventilation in the ICU Abbreviations:

CI =continuous infusion, LD = loading dose, MD = maintenance dose.

Drug	Onset and Duration	Precautions for Use	CYP Substrate (Major)	Usual Dose	Significant Adverse Effects
Propofol	Onset: 1 min Duration: Short term: 0.5-1 hr Long term > 7 days: variable, 25-50 hr has been observed (depends on depth and time on sedation)	Hypotension, bradycardia, hepatic/renal failure, pancreatitis	2B6	5-50 µg/kg/min, 0.3-3 mg/kg/hr	Hypotension, respiratory depression, bradycardia, propofol infusion syndrome
Dexmedetomidine	Onset: 5-10 min with LD, 1-2 hr without LD Duration: 1-2 hr	Hepatic failure, symptomatic bradycardia	2A6	LD: 0.5-1 µg/kg (optional) MD: 0.2-0.7 µg/kg/hr	Hypo- or hypertension, bradycardia
Lorazepam	Onset: 5-20 min Duration: 4-8 hr, prolonged with CI	Delirium, renal failure	N/A	Intermittent: 1-4 mg IV every 4-6 hr	Oversedation, propylene glycol toxicity
Midazolam	Onset: 3-5 min Duration: 2-6 hr, prolonged with CI	Hepatic failure, end-stage renal failure, dialysis, delirium	3A4 (active metabolite)	0.02-0.1 mg/kg/hr	Oversedation

General Approach to Pharmacologic Management of Acute Agitation:

Situation	Preferred Intervention
Agitation and pain	Fentanyl until agitation resolves
Acute agitation in a patient who requires deep sedation	Opioid continuance with the addition of propofol infusion
Acute agitation in a non-intubated patient	Low-dose intermittent IV opioid, haloperidol, or dexmedetomidine infusion

D

The “D” element of the ICU Liberation Bundle (A-F) consists of assessing, preventing, and managing delirium.

Delirium is experienced by 50% to 80% of mechanically ventilated patients and 20% to 50% of patients with lower-severity illness, resulting in prolonged hospitalization and duration of mechanical ventilation and increased costs. Long-term effects include increased risk of mortality and long-term cognitive impairment. The etiology of delirium is often multifactorial. There is limited evidence to support pharmacologic interventions. Thus, our most powerful interprofessional tools are daily prevention using nonpharmacologic interventions and early recognition using valid and reliable screening tools. Delirium should be routinely monitored in all ICU patients using validated and reliable delirium screening tools. It is recommended that screening be performed at least once a shift and more frequently for any changes in mental status.

In adults, use either:

- Confusion Assessment Method for the ICU (CAM-ICU)
- Intensive Care Delirium Screening Checklist (ICDSC)

Intervention and Prevention

Strategies for delirium treatment include all the nonpharmacologic interventions that have been outlined for prevention. When a patient has delirium, the first step is to identify the potential etiology.

A useful mnemonic for the quick differential evaluation of the cause of delirium is THINK—“Stop, THINK, and lastly medicate.” This framework directs our focus and attention to identifying etiology first, before moving toward pharmacologic strategies. If all potential risk factors have been addressed and/or removed and all etiologies have been considered and treated, the team may consider initiation of pharmacologic therapies.

Consider using dexmedetomidine for delirium in mechanically ventilated adults when agitation is precluding weaning or extubation.

- Reduce deliriogenic drugs and provide daily sedation breaks
- Improve wakefulness (reduce sedation)

Prevention of delirium focuses on implementation of nonpharmacologic strategies to minimize delirium risk factors with integration of all elements of the ICU Liberation Bundle. Additionally, daily ICU care should focus on optimizing comfort and mobility, promoting sleep, and maintaining day-night cycles and patients’ normal routines as much as possible. There are no data to support the routine use of antipsychotics for the prevention of ICU delirium in adults.

Key strategies for delirium prevention include:

Nonpharmacologic: Employ a multicomponent strategy including:

- Daily and regular orientation to the environment
- Engaging patients with familiar items from home and family interaction
- Removing urinary catheters and invasive devices as early as possible
- Reducing visual or hearing impairment by providing hearing aids and glasses as needed
- Early involvement of rehabilitation team and daily mobility goals
- Optimizing nutrition and hydration
- Promoting sleep at night and clustering patient care activities during the daytime
- Exposure to sunlight in the daytime and dimming lights and minimizing noise at night
- ICU diaries

E

The “E” element of the ICU Liberation Bundle (A-F) consists of early mobility and exercise. Early mobilization of critically ill patients has been shown to be safe and feasible in both adult and pediatric populations. In adults, studies have shown that ICU-based early mobilization decreases delirium, improves functional outcomes, and is cost effective.

Mobilization of ICU patients can vary based on the strength of activity, from passive stretching to active walking. It is important to set a daily activity goal for each patient based on the patient’s clinical status and resources available for support.

Consider the following aspects before deciding on an ICU patient’s activity goal:

- Neurologic (level of alertness, weakness of an extremity, deconditioning)
- Cardiac (hemodynamic stability and vasoactive medications)
- Pulmonary (ventilation and oxygenation needs)

- Lines and drains (stability of lines, location, comfort if mobilized)
- Support staff available (physical and occupational therapy, nursing staff, family presence)

If activity goals are not being met, consider these questions:

- Is the patient awake enough to participate?
- Does sedation need to be optimized?
- Is pain adequately controlled to allow for comfortable activity?
- What was the patient's activity level prior to admission?
- Are there enough support staff available to assist with mobilization?

Intervention

While encouraging and physically supporting patients in their efforts to achieve their individual goals, staff must watch the patient, watch the monitors, and watch the lines while gradually increasing the activity level.

Mobility steps:

- Untangle and create slack on the lines. Secure the lines. Connect the portable monitor.
- Initiate bed exercise. Watch the patient, watch the monitor, and watch the lines.
- Sit the patient on the edge of the bed. Assess for pain and orthostatic blood pressure.
- Assist seated patient in standing.
- Initiate walking. Keep a chair close to the patient. Have aides, volunteers, and students push chair and IV poles.
- Seat and rest the patient as needed.

Consider the following factors with each physical rehabilitation or ICU mobility session:

- Determine whether the level of activity is therapeutic.
- Identify the available equipment.
- Schedule a time to work on physical activity with the patient, family, nurse, and respiratory therapist. Ascertain whether sedation should be suspended.
- Assess and manage the patient's pain before, during, and after mobility activity.
- Optimize the work of breathing and patient level of alertness to make treatment beneficial.
- Institute activities that are goal-oriented for the patient.
- Do not delay or defer physical activity and rehabilitation even if the patient is to be extubated that day.
- Do not delay or defer physical activity because of agitation if it can be safely managed by the nurse and therapist. For patients who are agitated or experiencing disorganized thinking and delirium, a focused task provides an opportunity for reorienting.

Stop and rest the patient if the patient:

- is unresponsive
- is fatigued or appears pale
- has a respiratory rate consistently higher than 10 resp/min above baseline
- has decreased muscle recruitment
- loses balance
- has decreased weight-bearing ability
- has diaphoresis

F

The “F” element of the ICU Liberation Bundle (A-F) consists of family engagement and empowerment. The “F” element focuses on promoting family presence in the ICU and identifying strategies to engage and empower families. Engaging families in the care of their loved one during critical illness has a positive impact on quality and safety and can decrease anxiety, confusion, and agitation. Assessment of the “F” element of the ICU Liberation Bundle consists of assessing the family unit and engaging them to provide a holistic assessment of the patient.

- Assess for key family members, which may include individuals who are not formally related
- Identify key decision-makers.
- Assess family support needs.
- In addition to social and medical history, involve the family in goal setting, identifying personal and cultural beliefs and providing other key information to support the ICU team in best understanding the patient.
- If the patient is unable to speak for him-/herself, engage the family in identifying patient preferences and routines such as music or TV programs and typical sleep/wake cycles.

Intervention

Interventions to promote family engagement include:

- Flexible visitation, including an open ICU and virtual capability when in-person visitation is not feasible
- Daily meetings with family

- Involvement of family in interdisciplinary rounds
- Patient and family diaries
- Variety of available options for ways family can participate in care that can be tailored to the patient's needs and family's level of involvement.
- Resources to help family navigate ICU terminology and common interventions
- Resources to support identified family needs

Appendix C

Educational Intervention Lesson Plan

<p>Learner Outcomes</p>	<ul style="list-style-type: none"> • Describe ICU Delirium • Identify risk factors for ICU delirium • Describe the ICU Liberation Bundle • Describe ICU Liberation Bundle elements • Describe screening criteria for specific ICU Liberation Bundle elements • Analyze ICU Liberation Bundle impact on clinical outcomes • Describe interdisciplinary care as it relates to ICU Liberation Bundle implementation
<p>Educational Content</p>	<p>Society for Critical Care Medicine</p> <p>ICU Liberation Bundle published educational materials (Appendix A), presented in a PowerPoint presentation.</p> <ul style="list-style-type: none"> • ICU Liberation Bundle elements • Rational for each ICU Liberation Bundle element • Safety screening/inclusion criteria for each element <p>Devlin et al., (2018) Class Discussion:</p> <ul style="list-style-type: none"> • Practice guidelines <ul style="list-style-type: none"> ○ How they have changed • Choice of sedatives & <p>Pun et al., (2019) Efficacy of ICU Liberation Bundle. <i>Presented as handouts and reviewed as a group</i></p>
<p>Evaluation</p>	<ul style="list-style-type: none"> • Teach back ICU delirium incidence, prevalence, and risk factors. • Teach-back ICU Liberation Bundle elements. • Case study application of SAT/SBT screening criteria, and failure criteria • Case study application of early mobility criteria

Appendix D

Focus Group Interview Open-ended Questions

Authored by A. Hobbins RN, BSN with consideration of project purpose and aims.

1. Which ICU Liberation Bundle elements stand out to you as different from our standard care?
2. Of the ICU Liberation Bundle elements that stand out as different: which of these could you see yourself implementing more? What are some barriers to this that you might have to overcome?
3. Of the ICU Liberation Bundle elements that differ from your normal care: which of these are you least likely to deploy in your practice? Why?
4. Do you feel confident in performing spontaneous awakening trial?
5. Do you feel confident mobilizing mechanically ventilated patients?

Appendix E

Focus Group Responses

<p>1. Which bundle elements stand out to you as different from our standard care?</p>	<ul style="list-style-type: none"> • “Definitely early mobility” x6 • Family involvement- they get in the way of critical care, lack of knowledgebase. • Delirium screening as the CAM-ICU dictates- • unknown cognitive baseline • going through cumbersome steps of screening • variable patient capability
<p>2. Of the bundle elements that stand out as different: which of these could you see yourself implementing more? What are some barriers to this that you might have to overcome?</p>	<ul style="list-style-type: none"> • Treating pain first • Provider “buy-in” • Choice of sedation- • “Haldol is still common.” • Early mobility • “Lack of standardized criteria” • “PT/OT availability” • Family involvement • “Could improve decision making.” • “Strict visitation hours” • Both awakening and breathing trials • “I don’t know if they’ll de-stabilize.”
<p>3. Of the bundle elements that differ from your normal care: which of these are you least likely to deploy in your practice? Why?</p>	<ul style="list-style-type: none"> • Early mobility • “Because the other bundle elements like pain control and choice of sedation take priority over this.” • “People who are ready to mobilize are often no longer in ICU.” • “Staff availability” “multidisciplinary availability” • “Not culturally engrained here.” • Fear of falls/adverse events • Family involvement • “They get in the way and take up too much time.” • Detract from care- “coddle patient.” • Needing to spread time between patients equitably while family members asking for more attention for their loved one.
<p>4. Do you feel confident in performing spontaneous awakening trial?</p>	<ul style="list-style-type: none"> • Yes • “We already do this.” (x4) • “However, the criteria aren’t universal.” • “Coordination with respiratory therapy and the medical team can be a barrier.” (x2) • ‘Respiratory therapy isn’t always willing to cooperate/coordinate.’ • Not really • “I feel like the doctors are inconsistent with this and should be involved in the process”
<p>5. Do you feel confident mobilizing mechanically ventilated patients?</p>	<ul style="list-style-type: none"> • No • “We lack the resources to safely carry this out.” • “We don’t have the time.” • “These patients are too sick for that.” • ‘Staff availability’(x3) • Yes • “When there is enough staff.”

