Patient Safety Tip of the Week

September 20, 2016

Downloadable ABCDEF Bundle Toolkits for Delirium

Among our numerous columns on the management and prevention of delirium we have noted the "ABCDE Bundle" which focuses on prevention of two very common and very serious iatrogenic problems seen in our ICU's: delirium and ICU-acquired weakness (see our What's New in the Patient Safety World columns for December 2010 "The ABCDE Bundle" and February 2013 "The ABCDE Bundle in Action"). Now the new acronym "**ABCDEF**" appropriately includes an additional "F" to convey the importance of family engagement. Thus, the ABCDEF acronym stands for:

- **A**wakening and **B**reathing trials
- **C**oordination of awakening, breathing, and mobility interventions (some also include a C for **C**hoice of Sedation)
- **D**elirium monitoring
- **E**xercise/**E**arly mobility
- **F**amily engagement

The incidence of delirium in ICU's may be as high as 80%, with highest rates in those mechanically ventilated and the elderly. Delirium is obviously a patient safety concern but also has a tremendous financial impact on hospitals because it may prolong both ICU and total hospital length of stay. Because patients who experience delirium are also at risk for cognitive dysfunction following acute hospitalization there are additional costs for post-hospital care. Therefore, multiple organizations have collaborated in implementing "bundles" of individual evidence-based interventions aimed at reducing and managing delirium and ICU weakness. Fortunately for those hospitals yet to implement the ABCDEF bundle, those hospitals that have implemented it have experienced numerous lessons learned and identified both success factors and barriers to implementation. And tools used in those implementations are now readily available to hospitals.

In our February 2013 What's New in the Patient Safety World column "The ABCDE Bundle in Action" we discussed a study (Balas 2013a , Balas 2014) that was a prospective, cohort, before-after study of the ABCDE bundle at a large, tertiary medical center, involving patients from multiple ICU's. They found patients treated with the ABCDE bundle experience more days breathing without assistance and a shorter duration of ICU delirium. The odds of delirium were cut almost in half. Patients on the bundle were also more likely to be mobilized out of bed during their ICU stay. No significant

differences were noted in self-extubation or reintubation rates. Balas and colleagues subsequently published an excellent paper on the lessons learned from that implementation, including both factors for success and barriers encountered (Balas 2013b).

One factor of importance is the perception as to whether implementation of ABCDEF will improve patient outcomes. Balas and colleagues found that only 29% of respondents surveyed after implementation thought it would improve patient outcomes at 4 months but this increased to over 50% by 8 months. Probably important in this regard is the culture of the units. Physicians, in particular, were slow to accept use of the bundle and the feeling "I already know what I'm doing" seemed to be an underlying theme.

Another theme was concern about doing spontaneous breathing trials (SBT's) at night. Both respiratory therapists and nurses often felt that SBT's and SAT's (spontaneous awakening trials) should be deferred to daytime hours. (That concern may actually be a valid one in view of a just-published study (Gershengorn 2016) which showed that for patients mechanically ventilated more than 12 hours, those extubated overnight had higher reintubation rates and higher ICU and hospital mortality with no difference in length of stay. We'll be discussing that study in an upcoming column. But the Balas study did not show higher reintubation rates.)

Concerns about workload were significant prior to implementation. Balas and colleagues found that support from administration and nursing leadership was needed to ensure both that staff had adequate time to undergo the required education/training sessions and to have adequate staffing available to provide all the components of the ABCDEF bundle.

They also identified issues in confidence to us the CAM-ICU tool to screen for delirium. This fluctuated during the implementation, though confidence in using the CAM-ICU tool increased by 8 months post-implementation.

Concerns about documentation needs were very high on the list of barriers. Staff wanted to make sure that documentation would be concise and available electronically and visible to all disciplines involved in the patient's care. Fears that the documentation would just become another piece of unnecessary paperwork were common. They apparently had experienced lack of use of their institution's daily goals sheets and feared that the ABCDEF documentation would suffer a similar fate.

Suggestions from participants for improvement of implementation included: continuing education (particularly since staff may have turnover), shorter, more readable policies, merging documentation with the EMR, adding to the daily rounding sheets, creating early mobilization teams, and creating a "unit champion" award. They also felt that the intensivist should always ensure the ABCDEF bundle was discussed on daily rounds.

Overall, factors they felt facilitated adoption of the ABCDEF bundle were: performance of daily interdisciplinary rounds, use of standardized delirium and sedation screening tools, and intense/sustained educational efforts. Significant barriers were inconsistent

medical practice, reluctance to follow any protocol, workflow documentation-related concerns, and the fears about timing of SBT's and SAT's and their possible adverse consequences. Perhaps the two most important lessons were the need for adequate leadership/institutional support and the importance of interdisciplinary rounds and associated communication. Also, they identified the importance of having the educational sessions be done by clinical staff rather than the research team as a means of improving buy-in.

They also acknowledged differences in implementing the ABCDEF bundle compared to implementing the related PAD guidelines (see our October 29, 2013 Patient Safety Tip of the Week "PAD: The Pain, Agitation, and Delirium Care Bundle").

Their experiences and those of others have now led to a proliferation of toolkits and other resources to support implementation of ABCDEF. The Society for Hospital Medicine is the latest of several organizations that have made available downloadable toolkits for implementation of the ABCDEF Bundle (SHM 2016). The Society for Critical Care Medicine has launched an ICU Liberation collaborative related to implementing the PAD guidelines via application of the ABCDEF bundle (SCCM 2015). Additional toolkits are available from the ICU Delirium and Cognitive Impairment Study Group (ICU Delirium and Cognitive Impairment Study Group 2013) and the American Association of Critical-Care Nurses (AACN 2016). Also available are a good video on implementing the bundle (Barnes-Daly 2015), an ABCDEF Bundle Action planning tool (NYSPFP 2016), and a set of slides on implementation from an IHI presentation (Masica 2014). These resources are comprehensive and include suggestions about building your teams, developing the educational materials (including handouts and slides), sample pocket reference cards, brochures for patients and families, scripts for communication, sample rounding tools, protocols for the components of the ABCDEF bundle, and measurement and tracking performance. Several also include tools dealing with change management, gap analysis and readiness assessment, and securing stakeholder buy-in. The SHM toolkit also has an excellent section on leveraging the EHR to help practice adoption.

Aside from ensuring there is a culture that recognizes the need to improve and is willing to change, two keys to implementation are (1) improving interdisciplinary care and (2) empowering nurses and respiratory therapists in the decision making process. Several studies have shown that weaning patients from mechanical ventilation can be successfully achieved by nurses and respiratory therapists using protocols, rather than relying solely on individual physician judgment. The standardization of care and use of standardized tools like the CAM-ICU (Confusion Assessment Method for the Intensive Care Unit) and the RASS (Richmond Agitation-Sedation Scale) are the easy parts. Communicating status of these parameters and the patient responses on SBT and SAT to all members of the interdisciplinary care team are the more difficult parts. Status of the ABCDEF bundle should be a formal part of interdisciplinary rounds and we recommend use of a checklist for interdisciplinary rounds to remind all of that need.

Pay attention to the timelines in some of the above resources. It will be easy for you to convince your senior management and nursing and medical leadership of both the human

and financial business cases for implementing the ABCDEF bundle. But you will need more time to get buy-in from the key frontline clinical stakeholders. They must be part of the planning process. And remember, as in any change management program, if you don't get a lot of upfront "noise", your project will be doomed. You need to get all their concerns out on the table and deal with them before you get started. Regular feedback once you get started is also critical, both for completion of your implementation and especially for sustainability.

Some of our prior columns on delirium assessment and management:

- October 21, 2008 "Preventing Delirium"
- October 14, 2008 "Managing Delirium"
- February 10, 2009 "Sedation in the ICU: The Dexmedetomidine Study"
- March 31, 2009 "Screening Patients for Risk of Delirium"
- June 23, 2009 "More on Delirium in the ICU"
- January 26, 2010 "Preventing Postoperative Delirium"
- August 31, 2010 "Postoperative Delirium"
- September 2011 "Modified HELP Helps Outcomes in Elderly Undergoing Abdominal Surgery"
- December 2010 "The ABCDE Bundle"
- February 28, 2012 "AACN Practice Alert on Delirium in Critical Care"
- April 3, 2012 "New Risk for Postoperative Delirium: Obstructive Sleep Apnea"
- August 7, 2012 "Cognition, Post-Op Delirium, and Post-Op Outcomes"
- February 2013 "The ABCDE Bundle in Action"
- September 2013 "Disappointing Results in Delirium"
- October 29, 2013 "PAD: The Pain, Agitation, and Delirium Care Bundle"
- February 2014 "New Studies on Delirium"
- March 25, 2014 "Melatonin and Delirium"
- May 2014 "New Delirium Severity Score"
- August 2014 "A New Rapid Screen for Delirium in the Elderly"
- August 2014 "Delirium in Pediatrics"
- November 2014 "The 3D-CAM for Delirium"
- December 2014 "American Geriatrics Society Guideline on Postoperative Delirium in Older Adults"
- June 16, 2015 "Updates on Delirium"
- October 2015 "Predicting Delirium"
- April 2016 "Dexmedetomidine and Delirium"
- April 2016 "Can Antibiotics Lead to Delirium?"
- July 2016 "New Simple Test for Delirium"

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