HRET HIIN VAE Sprint #2

December 4, 2018
11:00 a.m. – 12:00 p.m. CT
Welcome and Introductions
Kavita Bhat, MD, MPH
Program Manager, HRET
Hello, My Name is…

- Name
- Hospital/State Hospital Association
- City, State
AGENDA

- Welcome and Introductions
- VAE Hospital Pre-Assessment Results
- The ABC Components of the ABCDEF Bundle
- Initial VAE Discoveries
- Questions and Answers
- Review Expectations
- Wrap Up
Why Are We Here?

12 States

25 Hospitals

581 Preventable VAE Harms!
from 8/2018 to 9/2018
VAE Pre-Assessment Results

Kavita Bhat, MD, MPH
Program Manager, HRET

Maryanne Whitney, RN, CNS, MSN
Improvement Advisor, Cynosure
All 27 hospital participants took the VAE pre-assessment!!
VAE Pre-Assessment Results

Does your hospital monitor Head of the Bed (HOB) 30-45 degree compliance?

Key Takeaways:
- 87% of participants are testing HOB 30-40 degree compliance or have already spread it to multiple units.
VAE Pre-Assessment Results

Does your hospital use Endotracheal Tube (ETT) with subglottic secretion management?

Key Takeaways:
- 45.2% of participants are not thinking about using an ETT with subglottic secretion management
- 32.3% of participants have spread the practice of ETT with subglottic secretion management to multiple units.
VAE Pre-Assessment Results

Does your hospital provide oral care every 4 hours for mechanically ventilated patients?

- 0.0% Not thinking about it
- 0.0% Just starting to plan
- 23.3% Testing on one unit
- 76.7% Spread to multiple units

Key Takeaways:
- 100% of participants are testing oral care every 4 hours for mechanically ventilated patients or have already spread it to multiple units.
Does your hospital have standard ventilation orders for 6-8 ml/kg Tidal Volume (TV)?

Key Takeaways:
- 51.7% of participants have spread standard ventilation orders for 6-8 ml/kg Tidal Volume to multiple units.
- 27.6% of participants are not thinking about having standard ventilation orders for 6-8 ml/kg Tidal Volume.
Key Takeaways:
• 72.4% of participants are testing treating pain prior to administering sedation or have spread this practice to multiple units.
VAE Pre-Assessment Results

Does your ICU administer three bolus doses of sedation prior to hanging an infusion?

Key Takeaways:
- 66.7% of participants are not thinking about administering three bolus doses of sedation prior to a hanging infusion.
VAE Pre-Assessment Results

Does your ICU target sedation using an agitation score such as RASS (Richmond Agitation Assessment)?

Key Takeaways:
• 93.3% of participants target sedation using an agitation score such as the RASS.
VAE Pre-Assessment Results

Does your ICU encourage patient/family participation in bedside reporting and/or shift change huddles?

Key Takeaways:
- 70% of participants are testing in one unit or have spread the practice of patient/family participation in bedside reporting and/or shift change huddles to multiple units.
**VAE Pre-Assessment Results**

Does your ICU provide information to patients/family members regarding what to expect during the stay?

Key Takeaways:
- 86.6% of participants are testing in one unit or have spread the practice of providing information to patients/family members regarding what to expect during the stay.
VAE Pre-Assessment Results

Key Takeaways:
• 93.1% of participants conduct coordinated awakening and breathing trials to decrease VAEs.
• 72.4% of participants conduct delirium screening to decrease VAEs.
• 27.6% of participants utilize sleep enhancement strategies to decrease VAEs.
• 75.9% of participants utilize progressive mobility to decrease VAEs.
VAE Pre-Assessment Results

Has your hospital shifted from the VAP bundle to the ABCDEF bundle?

Key Takeaways:
• 40% of participants are not thinking about shifting from the VAP bundle to the ABCDEF bundle.
• 30% of participants are just starting to plan shifting from the VAP bundle to the ABCDEF bundle.
The ABC Components of the ABCDEF Bundle

Wes Ely, MD, MPH
Professor of Medicine,
Vanderbilt University Medical Center
COMMITMENT
The chicken is involved. The pig is committed.
The ABC’s of VAE
Getting to the ABCDEF Bundle

- Pain
- Agitation
- Delirium
Clinical Practice Guidelines for the Management of Pain, Agitation, and Delirium in Adult Patients in the Intensive Care Unit

Juliana Barr, MD, FCCM; Gilles L. Fraser, PharmD, FCCM; Kathleen Puntillo, RN, PhD, FAAN, FCCM;
E. Wesley Ely, MD, MPH, FACP, FCCM; Céline Gélinas, RN, PhD; Joseph F. Dasta, MSc, FCCM, FCCP;
Judy E. Davidson, DNP, RN; John W. Devlin, PharmD, FCCM, FCCP; John P. Kress, MD;
Aaron M. Joffe, DO; Douglas B. Coursin, MD; Daniel L. Herr, MD, MS, FCCM;
Avery Tung, MD; Bryce R. H. Robinson, MD, FACS; Dorrie K. Fontaine, PhD, RN, FAAN;
Michael A. Ramsay, MD; Richard R. Riker, MD, FCCM; Curtis N. Sessler, MD, FCCP, FCCM;
Brenda Pun, MSN, RN, ACNP; Yoanna Skrobik, MD, FRCPS; Roman Jaeschke, MD
50-70% Cognitively Impaired

Wolters Intensive Care Med 2013; 39: 376
Jackson AJRCCM 2010; 182: 183
Girard Crit Care Med 2010; 38: 1513
60-80% Functionally Impaired

Latronico Lancet Neurol 2011; 10: 931
ICU PAD Guidelines: ABCDEFG Bundle Checklist*

- A – Assess, prevent and manage pain
- B – Both SATs and SBTs
- C – Choice of sedation
- D – Delirium: assess, prevent and manage
- E – Early mobility and exercise
- F – Family engagement and empowerment

*www.icudelirium.org
*www.iculiberation.org
ABCDEF Bundle Objectives

- Optimize pain management.
- Break the cycle of deep sedation and prolonged mechanical ventilation.
- Reduce the incidence and duration of ICU delirium.
- Improve short and long-term ICU patient outcomes.
- Reduce health care costs!

Morandi et al Curr Opin Crit Care 2011;17:43-9
Vasilevskis et al Crit Care Med 2010;38:5683-91
Zaal et al, ICM 2013;39:481-88
Colombo et al, Minerva Anest 1012;78:1026-33
Liberation is the GOAL
Liberated…
…texting while on vent
Liberated…
…ventilated patient and nurse “talking”
Assess, Prevent, and Manage Pain

Assess
- Assess pain > 4x/shift & PRN
- Significant pain with pain score >3 or CPOT >2

Prevent
- Administer pre-procedural interventions or analgesia
- Treat pain first, then sedate

Treat
- Treat pain within 30 minutes of detecting and reassess
- Incorporate both non-pharmacological and pharmacological treatments

### CPOOT - Critical Care Pain Observation Tool

<table>
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<tr>
<th>INDICATOR</th>
<th>SCORE</th>
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<tr>
<td>FACIAL EXPRESSION</td>
<td>Relaxed, neutral 0</td>
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<td></td>
<td>Tense 1</td>
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<td></td>
<td>Grimacing 2</td>
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<tr>
<td>BODY MOVEMENTS</td>
<td>Absence of movements 0</td>
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<tr>
<td></td>
<td>Protection 1</td>
</tr>
<tr>
<td></td>
<td>Restlessness 2</td>
</tr>
<tr>
<td>MUSCLE TENSION (evaluate by passive flexion and extension of upper extremities)</td>
<td>Relaxed 0</td>
</tr>
<tr>
<td></td>
<td>Tense, rigid 1</td>
</tr>
<tr>
<td></td>
<td>Very tense or rigid 2</td>
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<tr>
<td>COMPLIANCE WITH VENTILATOR (intubated patients)</td>
<td>Alarms not activated; easy ventilation 0</td>
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<tr>
<td></td>
<td>Coughing but tolerating 1</td>
</tr>
<tr>
<td></td>
<td>Fighting ventilator 2</td>
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<tr>
<td>OR</td>
<td>Talking in normal tone or no sound 0</td>
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<tr>
<td>VOCALIZATION (extubated patients)</td>
<td>Sighing, moaning 1</td>
</tr>
<tr>
<td></td>
<td>Crying out, sobbing 2</td>
</tr>
</tbody>
</table>

**CPOT range = 0 – 8; CPOT >2 is significant**

Both Spontaneous Awakening Trials & Spontaneous Breathing Trials

- Daily spontaneous awakening trials (SAT) showed a decrease in the duration of mechanical ventilation
  - Pause sedation infusion until patient is awake
  - Restart at 50% prior dose

- Spontaneous breathing trials (SBT) Increases opportunity for effecting independent breathing
  - Duration a minimum of 30 minutes
  - Requires communication and coordination between RN, RT, and MD

**SAT Safety Screen**
- No active seizures
- No alcohol withdrawal
- No agitation
- No paralytics
- No myocardial ischemia
- Normal intracranial pressure

**SAT Failure**
- Anxiety, agitation, or pain
- Respiratory rate > 35/min
- Oxygen saturation <88%
- Respiratory distress
- Acute cardiac arrhythmia

SBT Safety Screen

- No agitation
- Oxygen saturation ≥ 88%
- FiO2 ≤ 50%
- PEEP ≤ 7.5 cm H2O
- No myocardial ischemia
- No vasopressor use
- Inspiratory efforts

SBT Failure

- Respiratory rate > 35/min
- Respiratory rate < 8/min
- Oxygen saturation < 88%
- Respiratory distress
- Mental status change
- Acute cardiac arrhythmia

Society of Critical Care Medicine. (n.d.) Implementing the b component of the abcdef bundle. Retrieved from:
Wake Up and Breathe in Indiana

- N=702 MICU/SICU patients
- Implemented paired SATs/SBTs
- Average RASS was one level more arousable (p<0.0001)
- Prevalence of delirium down 11 percent (66.7% to 55.3%, p=0.06)
- Combined delirium/coma down by six percent (p=0.01)
CDC WAKE UP AND BREATHE COLLABORATIVE

- 20 ICUs: 12 full collaborative
- 5,164 consecutive MV days
- Opt-out SATs and SBTs
- 3x-4x increase in completion
- 35 percent less VAE risk/MV episode
- 65 percent less IVAC risk/MV episode
- Eight “surveillance only” ICUs had no improvements

Khan B, CCM 2014;42:e791-95
Klompas M, AJRCCM 2015;191:292-301
C

Choice of Analgesia and Sedation

- Goal of sedation:
  - Pain: 3 or less or 2 or less (CPOT)
  - Sedation: RASS = +1 to -2
  - Delirium: CAM-ICU Negative

- Treat pain FIRST then sedate

- Not all mechanically ventilated patients need to be started on IV opioids and/or sedation infusions following intubation

- Non-benzodiazepine sedative are associated with better ICU outcomes

# Richmond Agitation-Sedation Scale (RASS)

<table>
<thead>
<tr>
<th>Score</th>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>+4</td>
<td>Combative</td>
<td>Overtly combative, violent, immediate danger to staff</td>
</tr>
<tr>
<td>+3</td>
<td>Very agitated</td>
<td>Pulls or removes tube(s) or catheter(s), aggressive</td>
</tr>
<tr>
<td>+2</td>
<td>Agitated</td>
<td>Frequent nonpurposeful movement, fights ventilator</td>
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<tr>
<td>+1</td>
<td>Restless</td>
<td>Anxious but movements not aggressively vigorous</td>
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<tr>
<td>0</td>
<td>Alert and calm</td>
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<tr>
<td>-1</td>
<td>Drowsy</td>
<td>Not fully alert but has sustained awakening (eye opening/eye contact)</td>
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<td>to voice (≥10 seconds)</td>
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<tr>
<td>-2</td>
<td>Light sedation</td>
<td>Briefly awakens to voice with eye contact (&lt;10 seconds)</td>
</tr>
<tr>
<td>-3</td>
<td>Moderate sedation</td>
<td>Movement or eye opening to voice (but no eye contact)</td>
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<tr>
<td>-4</td>
<td>Deep sedation</td>
<td>No response to voice but movement or eye opening to physical stimulation</td>
</tr>
<tr>
<td>-5</td>
<td>Unarousable</td>
<td>No response to voice or physical stimulation</td>
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</tbody>
</table>

### Verbal Stimulation

- Briefly awakens to voice with eye contact (<10 seconds)
- Movement or eye opening to voice (but no eye contact)
- No response to voice but movement or eye opening to physical stimulation

### Physical Stimulation

- No response to voice or physical stimulation
NEW ORDER SET: BENZODIAZEPINE USE

Median dose - Lorazepam equivalents (mg)

Adjusted Ratio of Medians: 0.71 (95% CI: -1.31, -0.10)

Dale CR & Treggiari M, Ann ATS 2014;11:367-74
Hopkins QI Project = Reduced Delirium via less benzodiazepines and more mobility

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Pre-QI (n=27)</th>
<th>Post-QI (n=30)</th>
<th>p</th>
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</thead>
<tbody>
<tr>
<td>Days with any benzodiazepine use**</td>
<td>150 (50%)</td>
<td>118 (26%)</td>
<td>.002</td>
</tr>
<tr>
<td>Days alert (RASS -1 to +1)</td>
<td>88 (30%)</td>
<td>311 (67%)</td>
<td>&lt;.001</td>
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<tr>
<td>PT/OT in MICU</td>
<td>19 (70%)</td>
<td>28 (93%)</td>
<td>.040</td>
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<tr>
<td>Number of PT/OT treatments in ICU</td>
<td>1 (0-3)</td>
<td>7 (3-15)</td>
<td>&lt;.001</td>
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<tr>
<td>Days without delirium</td>
<td>61 (21%)</td>
<td>243 (53%)</td>
<td>.003</td>
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<tr>
<td>Days of delirium in ICU</td>
<td>107 (36%)</td>
<td>125 (28%)</td>
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<tr>
<td>Days of Coma</td>
<td>129 (43%)</td>
<td>86 (19%)</td>
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</table>

** Benzodiazepine dose (median midazolam eq) from 47mg down to 15 mg/day

Needham DM Arch Phys Med Rehabil 2010; 91:536-542
Effectiveness and Safety of the Awakening and Breathing Coordination, Delirium Monitoring/Management, and Early Exercise/Mobility Bundle

Michele C. Balas, PhD, RN, APRN-NP, CCRN1; Eduard E. Vasilevskis, MD, MPH2,3,4; Keith M. Olsen, PharmD, FCCP, FCCM8; Kendra K. Schmid, PhD7; Valerie Shostrum, MS7; Marlene Z. Cohen, PhD, RN, FAAN8; Gregory Peitz, PharmD, BCPS5,6; David E. Gannon, MD, FACP, FCCP2; Joseph Sisson, MD3; James Sullivan, MD10; Joseph C. Stothert, MD, PhD, FCCM, FACS11; Julie Lazure, BSN, RN12; Suzanne L. Nuss, PhD, RN13; Randeep S. Jawa, MD, FACS, FCCM11; Frank Freihaut, RRT14; E. Wesley Ely, MD, MPH, FCCM3,4,15; William J. Burke, MD16

1.5 year prospective QI (before/after) study of 296 ICU patients.

Balas M, CCM 2013;42:1024-36
Delirium Prevention and Safety: Starting with the ABCDEF’s

It is essential to consider delirium management in the broader picture of ICU patient care as a major piece of the current guidelines for Fear, Agitation, and Delirium (PAD) of the Society of Critical Care Medicine (SCCM). Advancements in research and technology are resulting in higher acuity and increased complexity of care, which is resulting in drastic increases in workload and demands on staff. More than ever, there is a great need to develop simpler ways of implementing safer and better care into practice for our sickest patients.

The ABCDEF bundle is one way to assist and coordinate care, which includes specific focus on delirium as a component of the overall care patients receive, including sedation and pain medications, breathing, mobility, and mobilization.

What are the components of the ABCDEF
VENTILATOR FREE DAY RESULTS

Days

Ventilator Free Days-28 Day

Balas M, CCM 2013;42:1024-36

p=0.04
Keystone’s ABCDE Bundle Collaborative

- 51 hospitals in Michigan’s Keystone ICU initiative.
- Those implementing SATs + delirium screening were 3.5x more likely to exercise ventilated patients.
- Incomplete or non-sequential bundle implementation yielded lower success rates.
- Authors wrote: “another layer of evidence that for the ABCDEs, the whole is greater than sum of the parts.”

Miller, Hyzy, Iwashyna, Ann ATS, epub May 2015
Bundle Implementation Success: key findings from a meta-analysis

- 21 studies - all including process measures and nine with clinical outcomes data

Trogrlić Z. Critical Care 2015; 19:157
Bundle Implementation Success
key findings from a meta-analysis

• A variety of programs improved process measures
e.g., 92% Delirium screening adherence

• Programs with six or more implementation strategies were best

• Statistically lower mortality and shorter ICU length of stay

• Strategies targeting organizational changes in addition to provider behavior reduced mortality

Trogrlić Z. Critical Care 2015; 19:157
VANDERBILT/VA ICU DELIRIUM AND COGNITIVE IMPAIRMENT STUDY GROUP
Initial VAE Discoveries
Maryanne Whitney, RN, CNS, MSN
Improvement Advisor, Cynosure
## Mini VAE Process Improvement Discovery Tool

(Minimum 10 charts/Maximum 20 charts)  Note: Do NOT spend more than 20-30 minutes per chart!

Instructions: (1) Enter Y or N in each box for each chart. Then identify which rows the most ‘Y’s are to find process improvement opportunities.

<table>
<thead>
<tr>
<th>Chart 1</th>
<th>Chart 2</th>
<th>Chart 3</th>
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<th>Chart 7</th>
<th>Chart 8</th>
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<th>Chart 10</th>
<th>Chart 11</th>
<th>Chart 12</th>
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<th>Chart 14</th>
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<th>Chart 17</th>
<th>Chart 18</th>
<th>Chart 19</th>
<th>Chart 20</th>
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<td>Process</td>
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<td>PH was maintained at 30-40 degrees</td>
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<td>PH had a subglottic suction ETT present</td>
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<td>PH was ventilated with R-limiting TV</td>
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<td>PH was treated for pain prior to receiving sedation</td>
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<tr>
<td>PH received 3 boluses doses of sedative prior to beginning an infusion</td>
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<td>PH did not receive a benzodiazepine</td>
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<tr>
<td>If PH did receive sedation, it was goal-directed, targeting a RASS score of +1 to +1</td>
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<td>PH had a daily coordinated SAT &amp; QT</td>
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<tr>
<td>PH was screened for delirium every shift</td>
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Expectations
Kavita Bhat, MD, MPH
Program Manager, HRET
Hospital Expectations

✓ Select 1 VAE lead for the sprint
✓ Accept invites and participate in the 4 HRET HIIN VAE Sprint virtual events
✓ Complete pre-assessment (link here)
✓ Utilize the VAE Process Discovery Tool and submit it to kbhat@aha.org
✓ Participate in 1 coaching session with their State Partner
✓ Complete post-sprint assessment

6 Easy Steps!
State Partner Expectations

- Accept invites and participate in the 4 HRET HIIN VAE Sprint virtual events

- Follow-up with hospitals to identify a lead for the sprint and remind them of hospital expectations throughout the sprint. Track your registered hospitals using the sprint tracking tool.

- Schedule 1 coaching session with hospitals session of one-on-one coaching with hospitals utilizing the VAE Sprint Coaching Guide. Submit completed coaching guide to kbhat@aha.org
What should I complete before the next virtual event?

Hospitals
✓ Submit your completed VAE Process Discovery Tool to your state partner.
✓ Participate in a coaching call with your state partner.
✓ Be ready to share your VAE successes and challenges on the next virtual event.

State Partners
✓ Have a coaching call with each of your hospitals.
✓ Submit the VAE Process Discovery Tool and Coaching Guide to kbhat@aha.org.
✓ Be ready to share your VAE successes and challenges on the next virtual event.
HRET HIIN VAE Sprint Webinar Schedule

- December 4, 2018 (11:00AM – 12:00PM CT)
- January 9, 2019 (11:00AM – 12:00PM CT)
- February 5, 2019 (11:00AM – 12:00PM CT)
- Summary VAE Sprint for all HRET HIIN (TBD)

Calendar invitations with the platform link will be sent by HRET HIIN
Questions?
HRET Resources

2018 VAE Checklist

2018 VAE Change Package
thank you!