HRET HIIN VENTILATOR-ASSOCIATED EVENTS (VAE):
THE VENTILATOR-ASSOCIATED PNEUMONIA (VAP) BUNDLE AND BEYOND

December 20, 2016 | 12:00 p.m. - 12:50 p.m. CT
Welcome and Introductions

Emily Koebnick
Program Manager, HRET
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Description</th>
<th>Presenter(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>12:00-12:05</td>
<td>Welcome and Objectives</td>
<td>During this VAE virtual event you will learn: 1. The elements of the VAP and ABCDEF bundles 2. The similarities and differences between the bundles 3. How your peers use the bundles to ultimately reduce VAE in your facility</td>
<td>Emily Koebnick, MPH, MPA</td>
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<td><strong>Program Manager, HRET</strong></td>
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<tr>
<td>12:05-12:10</td>
<td>Data Dive</td>
<td>Share the results of HEN 2.0 VAE efforts and the HIIN VAE measurements</td>
<td>Rich Rodriguez, MPH</td>
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<td><strong>Data Analyst, HRET</strong></td>
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<tr>
<td>12:10-12:25</td>
<td>VAP Bundle Point Counterpoint Discussion</td>
<td>Learn about the evolution of the VAP bundle and current evidence regarding the effectiveness of the bundle elements</td>
<td>Maryanne Whitney, RN CNS MSN</td>
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<td>Steve Tremain, MD</td>
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<td></td>
<td><strong>Improvement Advisors</strong></td>
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<td></td>
<td><strong>Cynosure Health</strong></td>
</tr>
<tr>
<td>12:25-12:35</td>
<td>The VAP Bundle and........bring VAP to Zero!</td>
<td>Learn how a fellow HIIN hospital reduced VAE ventilator days and VAP with the VAP bundle and more.</td>
<td>Louise Thomas, RRT</td>
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<td>Saint Francis Hospital and Medical Center</td>
</tr>
<tr>
<td>12:35-12:45</td>
<td>Beyond the VAP</td>
<td>Discuss The Society of Critical Care Medicine’s ICU Liberation Campaign related to the implementation of the ABCDEF bundle</td>
<td>Wes Ely, MD, MPH</td>
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<td><strong>Vanderbilt University</strong></td>
</tr>
<tr>
<td>12:45-12:55</td>
<td>Let’s Hear From You!</td>
<td>Share your thoughts and ideas regarding the bundles, how to begin and how to gain momentum</td>
<td>Dr. Wes Ely and Maryanne Whitney</td>
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<td></td>
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<td></td>
<td>Steve Tremain</td>
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<tr>
<td>12:55-1:00</td>
<td>Resources and Next Steps</td>
<td></td>
<td>Emily Koebnick</td>
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<td></td>
<td><strong>Program Manager, HRET</strong></td>
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</table>
Framing with the data and our learnings

Richard Rodriguez
Data Analyst, HRET
HEN 2.0 VAE RESULTS

VENTILATOR ASSOCIATED EVENTS (VAE)

- 92% of Eligible Acute/CAH/Children’s Hospital Reporting Data
- 18% Reduction in VAE Measures
- 91% Percent of participants that stated information provided will promote higher quality work

What does that mean?

- 278 VAE HARS PREVENTED
- $5,833,000 TOTAL PROJECT ESTIMATED VAE COST SAVINGS
- 8 states MEETING THE REDUCTION IN PREVENTABLE HARM GOAL 40%

Which is enough money to purchase...

- 33,280 WALKERS

Source:
https://www.activeforever.com/drive-wenzelite-rehab-glider-walker
Which element or elements of the ABCDEF Bundle did you tackle first?

- A - Assessment & management of pain
- B - Breathing trials coordinated with awakening trials
- C - Choice of sedation- avoiding benzodiazepines
- D - Delirium assessment and management
- E - Early progressive mobility
- F - Family empowerment and engagement
Point Counterpoint Discussion

VAP Bundle Elements

Maryanne Whitney, RN, MSN
Steve Tremain, MD

Improvement Advisors, Cynosure Health
VAP BUNDLE EVOLUTION - IHI

- Designed as part of an overall strategy to improve the care of ventilated patients.
- Original intent was not to reduce VAP rates, but rather to provide best care for patients on ventilators.
- Observed an average 45% reduction in the incidence of VAP in a prior ICU collaborative improvement project at IHI.
- Success is most likely due to the effect of the underlying interventions, as well as to the teamwork that is developed while carrying out the required care reliably.

IHI 100,000 lives campaign & 5,000,000 lives campaign
ELEVATED HEAD OF BED

- Improved ventilation
- Decreased risk of aspiration
- Not clinically proven but remains preferred position
- Difficult to monitor and maintain
- Increased risk of PrI

DAILY SAT & SBT

- Decreased days on ventilation
- Increased risk of self extubation

- Decreased risk of VAE
- No change in rate of reintubation
PUD & DVT PROPHYLAXIS

PUD necessary to decrease risk of stress ulcers
Excellence in care of patients on ventilators
No direct correlation to decrease VAP
PUD shown to increase risk for CDI

DVT prophylaxis to prevent VTE
Excellence in care of patients on ventilators
No direct correlation to decrease VAP

SCHEDULED ORAL CARE WITH CHLORHEXIDINE

Improves oral hygiene
Improves patient comfort
No significant reduction in VAP in non-cardiac patients

Subglottic suction ET tubes

Marked decrease in VAP

Cost prohibitive

Patient selection is difficult
VAP BUNDLE IS GOOD, CAN WE DO MORE?

- The ventilator bundle was designed as part of an overall strategy to improve the care of ventilated patients.
- The original intent was not to reduce VAP rates, but rather to provide best care for patients on ventilators.
Hospital Story: Saint Francis Hospital and Medical Center in Hartford, CT

Louise Thomas
Respiratory Therapy Manager for Saint Francis Hospital and Medical Center
VAE REDUCTION TEAM

- Louise Thomas, RRT - Respiratory
- Kimberlee E. Richard, MSN, MHA, RN - Director of Nursing Critical Care Services
- Prashant Grover, MD, FCCP - Medicine
- Cathy Roy RN, MSN - MSICU Nursing
- Peter Sandor, RRT, MHS PA-C, DFAAPA - Surgical Service
- Gregory Vernon, RN, BSN - CICU Nursing
- Patrick Cosgrove, PA-C - CV Surgical Service
- Pamela Moran - MT(ASCP), CIC
- CC Respiratory Staff
- CC Nursing Staff
Goal:
• Reduce MSICU VAE rate by 50%, (35/1000VD), stretch of 75%
• Reduce CICU VAE rate by 20%, (4/1000VD) stretch of 40%

Process and Interventions:
• Educated all critical care providers on:
  1. The 3 tier parameters of VAC, IVAC, PoVAP
  2. Trigger identification: ARDS, Atelectasis, Pulmonary edema, Pneumonia
  3. Methods to reduce all VAE: VAP Bundle, ABCDEF Bundle
• Developed and implemented *RT Driven Mechanical Ventilation Oxygen/PEEP Weaning Protocol*; this new protocol was in addition to *Weaning Assessment* and *SBT Protocol* being done twice a day
• Increased by increments of 2 cm for Peep and 10% for FIO2 for targeted oxygen saturation for hypoxia
• Implemented daily interdisciplinary rounding that triggered better communication and coordinated care within the care provider team
• Conducted daily audit by RT and/or ID (in almost real time) of ventilator parameters and concerns identified in rounding to identify patients at risk
• Reviewed cases of all VAE patients
CC Interdisciplinary Rounding
8:00 a.m. every morning Monday through Friday

**NURSING Presentation:** Patient is a (age) year old (gender); This is day (#) of hospital stay. Patient admitted to ICU for (active primary issue).

<table>
<thead>
<tr>
<th><strong>Interdisciplinary Rounding Tool</strong></th>
<th><strong>RN Questions</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>RN Questions</strong></td>
<td></td>
</tr>
<tr>
<td>Is pain adequately controlled?</td>
<td>RN</td>
</tr>
<tr>
<td>Is patient free from pressure ulcers?</td>
<td>RN</td>
</tr>
<tr>
<td>Did patient pass daily weaning screen?</td>
<td>RT</td>
</tr>
<tr>
<td>Did patient pass Spontaneous Breathing Trial?</td>
<td>RT</td>
</tr>
<tr>
<td>Is patient receiving adequate enteral nutrition?</td>
<td>Yes</td>
</tr>
<tr>
<td>Is patient ordered for critical care early mobility protocol?</td>
<td>No</td>
</tr>
<tr>
<td>Can patient be transferred to a lower level of care?</td>
<td>Yes</td>
</tr>
<tr>
<td>Are there barriers to transfer or discharge?</td>
<td>Yes</td>
</tr>
<tr>
<td>Has code status been addressed?</td>
<td>Yes</td>
</tr>
<tr>
<td>Is there a designated decision maker identified?</td>
<td>Yes</td>
</tr>
<tr>
<td>Is a urinary catheter currently indicated?</td>
<td>No</td>
</tr>
<tr>
<td>Is a central venous line indicated?</td>
<td>Yes</td>
</tr>
</tbody>
</table>

RT will present Vent day # and if >7 will ? Plan for Trach
### Ventilator Associated Events: All Events Combined

#### MSICU

**FY 2016**

<table>
<thead>
<tr>
<th>MSICU</th>
<th>Total VAE</th>
<th>Vent Days</th>
<th>Pt Days</th>
<th>Rate per 1000 Vent Days</th>
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<tbody>
<tr>
<td><strong>FY-15</strong></td>
<td>70</td>
<td>3556</td>
<td>6801</td>
<td>19.69</td>
</tr>
<tr>
<td>Oct-15</td>
<td>7</td>
<td>312</td>
<td>588</td>
<td>22.44</td>
</tr>
<tr>
<td>Nov-15</td>
<td>4</td>
<td>261</td>
<td>567</td>
<td>15.33</td>
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<td>Dec-15</td>
<td>3</td>
<td>237</td>
<td>549</td>
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<tr>
<td>Jan-16</td>
<td>2</td>
<td>266</td>
<td>583</td>
<td>7.52</td>
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<tr>
<td>Feb-16</td>
<td>1</td>
<td>215</td>
<td>517</td>
<td>4.65</td>
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<tr>
<td>Mar-16</td>
<td>5</td>
<td>254</td>
<td>550</td>
<td>19.69</td>
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<tr>
<td>Apr-16</td>
<td>0</td>
<td>247</td>
<td>545</td>
<td>0.00</td>
</tr>
<tr>
<td>May-16</td>
<td>2</td>
<td>269</td>
<td>500</td>
<td>7.43</td>
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<tr>
<td>Jun-16</td>
<td>0</td>
<td>177</td>
<td>506</td>
<td>0.00</td>
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<tr>
<td><strong>FY-16 Totals</strong></td>
<td>24</td>
<td>2238</td>
<td>4905</td>
<td>10.72</td>
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**Event Breakdown**

<table>
<thead>
<tr>
<th>Month</th>
<th>VAC</th>
<th>IVAC</th>
<th>PoVAP</th>
<th>Total</th>
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<tr>
<td>Oct-15</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>Nov-15</td>
<td>4</td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Dec-15</td>
<td>3</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Jan-16</td>
<td>1</td>
<td>1</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Feb-16</td>
<td>1</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Mar-16</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Apr-16</td>
<td></td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>May-16</td>
<td>2</td>
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<td></td>
<td>2</td>
</tr>
<tr>
<td>Jun-16</td>
<td></td>
<td></td>
<td></td>
<td>0</td>
</tr>
</tbody>
</table>

*VAP rate=# of VAP/Vent days*1000
MSICU FY15 (70)-FY16 (24) Total VAE

FY15

FY16
### Ventilator Associated Events: All Events Combined

#### CICU

#### FY 2016

<table>
<thead>
<tr>
<th></th>
<th>SFH</th>
<th>NHSN Percentile</th>
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<tr>
<td></td>
<td>Total VAE</td>
<td>Vent Days</td>
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<td>18</td>
<td>1351</td>
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<tr>
<td>Oct-15</td>
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<td>Dec-15</td>
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<td>73</td>
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<td>Jan-16</td>
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<td>103</td>
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<tr>
<td>Feb-16</td>
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<td>114</td>
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<td>Mar-16</td>
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<td>Apr-16</td>
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<td>161</td>
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<td>May-16</td>
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<td>113</td>
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<tr>
<td>Jun-16</td>
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<td>131</td>
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<tr>
<td><strong>FY-16 Totals</strong></td>
<td>5</td>
<td>1128</td>
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*#Vent Days/Patient Days

#### Event Breakdown

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<th>Month</th>
<th>VAC</th>
<th>IVAC</th>
<th>PVAP</th>
<th>TOTALS</th>
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<td>Oct-15</td>
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<td>1</td>
<td>1</td>
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<td>Dec-15</td>
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<tr>
<td>Jan-16</td>
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<tr>
<td>Feb-16</td>
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<tr>
<td>Apr-16</td>
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<td>1</td>
<td>1</td>
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<tr>
<td>May-16</td>
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<td>0</td>
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<tr>
<td>Jun-16</td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
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</table>
CICU FY15 (18)-FY16 (5) Total VAE

Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep

FY15
FY16

2015
2016
Prevention Beyond the VAP
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, FRCP; 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
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<td>agitation</td>
<td>RASS</td>
<td>SBT</td>
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<td>delirium</td>
<td>CAM-ICU</td>
<td>D</td>
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<tr>
<td></td>
<td>SAS</td>
<td>E</td>
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</tbody>
</table>
ICU PAD GUIDELINES
ABCDEF 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, duration of ICU delirium.
- Improve short, 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:S683-91
Zaal et al, ICM 2013;39:481-88
Colombo et al, Minerva Anest 2012;78:1026-33
LIBERATED...?
LIBERATED...
LIBERATED...TEXTING WHILE ON VENT
LIBERATED...
VENTILATED PATIENT AND NURSE “TALKING”
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 Pain, 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 align and coordinate care, which includes specific focus on delirium as a component of the overall care patients receive including sedation and pain medications, breathing machines, and mobilization.

What are the components of the ABCDEF
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
Adjusted OR of delirium: 0.67 (95% CI: 0.49, 0.91)

Dale CR & Treggiari M, Ann ATS 2014;11:367-74
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, FCCM5,6; Kendra K. Schmid, PhD7; Valerie Shostrom, MS7; Marlene Z. Cohen, PhD, RN, FAAN8; Gregory Peitz, PharmD, BCPS5,6; David E. Gannon, MD, FACP, FCCP9; Joseph Sisson, MD9; 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.
VENTILATOR FREE DAY RESULTS

Balas M, CCM 2013;42:1024-36
DELIRIUM RESULTS

Balas M, CCM 2013;42:1024-36
28 DAY MORTALITY RESULTS

- Pre ABCDE Bundle
- Post ABCDE Bundle

Percent

ICU

Total Hospital

p=0.07

p=0.04

Balas M, CCM 2013;42:1024-36
ADJUSTED ANALYSIS

• Controlling for age, sex, mechanical ventilation, APACH II score, Charlson Comorbidity Index

• Delirium anytime - OR 0.55 (0.33-0.93); p=0.03

• OOB anytime in ICU - OR 2.11 (1.30-3.45) p=0.003

Balas M, CCM 2013;42:1024-36
# 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>
</tr>
</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>
</tr>
<tr>
<td>PT/OT in MICU</td>
<td>19 (70%)</td>
<td>28 (93%)</td>
<td>.040</td>
</tr>
<tr>
<td>Number of PT/OT treatments in ICU</td>
<td>1 (0-3)</td>
<td>7 (3-15)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Days without delirium</td>
<td>61 (21%)</td>
<td>243 (53%)</td>
<td>.003</td>
</tr>
<tr>
<td>Days of delirium in ICU</td>
<td>107 (36%)</td>
<td>125 (28%)</td>
<td></td>
</tr>
<tr>
<td>Days of Coma</td>
<td>129 (43%)</td>
<td>86 (19%)</td>
<td></td>
</tr>
</tbody>
</table>

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

Needham DM Arch Phys Med Rehabil 2010; 91:536-542
WAKE UP AND BREATHE IN INDIANA

- N=702 MICU/SICU patients
- Implemented paired SATs/SBTs
- Avg. RASS was 1 level more arousable (p<0.0001)
- Prevalence of delirium down 11% (66.7% to 55.3%, p=0.06)
- Combined delirium/coma down by 6% (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% less VAE risk/MV episode
- 65% less IVAC risk/MV episode
- 8 “surveillance only” ICUs had no improvements

Klompas M, AJRCCM 2015;191:292-301
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 pts
• 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
21 studies, all including process measures and 9 with clinical outcomes data.
BUNDLE IMPLEMENTATION SUCCESS

KEY FINDINGS FROM A META-ANALYSIS

- A variety of programs improved process measures
e.g., 92% delirium screening adherence
- Programs with 6 or more implementation strategies were best
- Statistically lower mortality and shorter ICU LOS
- Strategies targeting organizational changes in addition to provider behavior reduced mortality

Trogrlić Z. Critical Care 2015; 19:157
IHI’s and CDC’s Rethinking Critical Care: Implementing Change Using Bundle Approach

Qualitative descriptions of IHI’s and CDC’s collaboratives between 2011 and 2014.

**Conclusion:** Changing critical care practices requires an interprofessional approach addressing cultural, psychological, and practical issues.

**Key take home points:**
1. Test changes on a small scale
2. Feed back data regularly and provide ongoing education
3. Build will through seeing the work in action

Klompas M, AJRCCM 2015;191:292-301
Survival and Delirium/Coma Improved after Implementing PAD Guidelines via ABCDEF Bundle in >6,000 patients

Mortality Improvement

Delirium and Coma Freedom

NOTE: Adjusted for age, APACHE III, and mechanical ventilation
7 California Hospitals, Interprofessional QI Implementation project

Barnes-Daly and Ely, SCCM meeting, Orlando 2016
INCREASED ODDS OF SURVIVAL ASSOCIATED WITH INCREASED ABCDEF BUNDLE COMPLIANCE

<table>
<thead>
<tr>
<th>Compliance analysis</th>
<th>All patients</th>
<th>All minus palliative care</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>7%</td>
<td>12%</td>
</tr>
<tr>
<td>Partial</td>
<td>15%</td>
<td>23%</td>
</tr>
</tbody>
</table>

*MVA adjusted for age, APACHE III, mechanical ventilation

** all $p < 0.001$
POLLING QUESTION

Are you walking ICU patients who are on ventilators in your hospital?

☐ Yes

☐ No

If yes, chat in how is it going?
FINAL THOUGHTS

• What bold action is needed to reduce VAE by 20 percent?
Resources and next steps

Emily Koebnick
Program Manager, HRET
RESOURCES

Download the change package here: http://www.hret-hen.org/topics/vae/HRETHEN_ChangePackage_VAE.pdf
RESOURCES

2016 VAE Top Ten Checklist

<table>
<thead>
<tr>
<th>Process Change</th>
<th>In Place</th>
<th>Not Done</th>
<th>Will Adapt</th>
<th>Needs (Responsible and By When?)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Include all elements of the bundle in charge nurse rounds and nurse-coordinated nurse reports.</td>
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<tr>
<td>Establish a multidisciplinary approach. Nurses, physicians and respiratory therapists need to work together to ensure bundle items such as head held at bed level (HOB), spontaneous awakening (SAW), spontaneous breathing trials (SBT) and oral care are done according to recommendations.</td>
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<td>Elevate HOB to between 30-45 degrees (use visual cues, designate one person to check for HOB every one to two hours).</td>
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<td>Establish a process to perform invasive care every two hours with antiseptic mouthwash and chlorhexidine 0.12% (every 2-3 hours – create visual cues, partner with respiratory therapy in performing care). Make the above care part of the ventilator order set as an automated order that requires the physician to actively exclude it. Include the chlorhexidine and care on HOB.</td>
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<tr>
<td>Include pneumatic airway decontamination (PAC) as an ICU admission and ventilator order set as an automated order that requires the physician to actively exclude it.</td>
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<tr>
<td>Include venous thromboembolism (VTE) prophylaxis on ICU admission and ventilator order set as an automated order that would require the physician to actively exclude it.</td>
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<tr>
<td>Invite families to participate in care by encouraging them to ask if prevention efforts have been completed, such as oral care and HOB elevation. Educate families on the risk of VAE, preventive measures put in place and what they can do to help (e.g. perform oral care or passive range of motion exercises if possible).</td>
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<tr>
<td>Perform and coordinate SAT and SET to maximize weaning opportunities when patient sedation is minimal – coordination between nursing and respiratory therapy to manage SAT and SET, perform daily assessment of readiness to wean and exclude.</td>
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<td>Establish a process for timely physical and occupational therapy evaluation for patients on ventilator support to establish a plan for progressive mobility.</td>
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<tr>
<td>Manage delirium by assessing patients for delirium at least once daily. Isolation should be used as needed and should be administered, as ordered, by the physician according to a scale such as Richmond Agitation Scale (RASS).</td>
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Download the checklist here: http://www.hret-hen.org/topics/vae/HRETHEN_Checklist_VAE.pdf
1. Join the **ListServ®**!
2. Sign up for our upcoming events
   - January 5, 2016 | HRET HIIN | New Year, New Game Plan? Fresh Ideas for Teamwork and Innovation to Save Skin
   - January 10, 2016 | HRET HIIN | SSI *more information to come*
   - January 23, 2016 | HRET HIIN Rural/CAH Affinity Group Virtual Event *more information to come*
3. Check out our fellowship programs!
   - **QI**
   - **PFE**
   - Review our **resources**.
   - Want to share a resources? Email **HIIN@aha.org** with the subject line “VAE resource.”
   - Have a suggestion for the next VAE event? Email **HIIN@aha.org** with the subject “suggestion for VAE event.”
THANK YOU!

Find more information on our website: www.hret-hiin.org

Questions/Comments: HIIN@aha.org