Interconnected Care Delivery: Preventing Delirium in Ventilated Patients Reduces VAE

May 22, 2014

A partnership of the Healthcare Association of New York State and the Greater New York Hospital Association
# Agenda

<table>
<thead>
<tr>
<th>Topic</th>
<th>Speakers</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Welcome and Introductions</td>
<td>Maria Sacco, NYSPFP</td>
</tr>
<tr>
<td>II. A New Frontier in Critical Care: Saving the Injured Brain</td>
<td>E. Wesley Ely, MD, MPH Professor of Medicine and Critical Care Vanderbilt University, Nashville, TN VA TN Valley Health Care System GRECC</td>
</tr>
<tr>
<td>III. Hospital Discussion and Question and Answer</td>
<td>Facilitated by Zeynep Sumer-King, NYSPFP</td>
</tr>
<tr>
<td>IV. Next Steps</td>
<td>Zeynep Sumer-King, NYSPFP</td>
</tr>
</tbody>
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A New Frontier in Critical Care: Saving the Injured Brain

E. Wesley Ely, MD, MPH
Professor of Medicine and Critical Care
Vanderbilt University, Nashville, TN
VA TN Valley Health Care System GRECC

May 22, 2014  3
Disclosures: ICU Physician Vanderbilt

- Abbott, Hospira, Orion
- NIH and VA U.S. Federal Funding
- Author of PAD Guidelines of SCCM 2013
SAG Guidelines for sustained *use of sedatives and analgesics* in the critically ill adult

*Jacobi, CCM 2002*
Dr. Swenson explained, "I'll tell you the truth. What I have discovered...is not what I expected. It is something greater, much more ambitious than anything we had hoped for...in science: Never be so focused on what you are looking for that you overlook the thing you actually find."

Ann Patchett - 2011, *State of Wonder*
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.
Delirium Prevention and Safety: Starting with the ABCDE’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 ABCDE 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. This bundle has multiple, evidenced based components, interdependent, and designed to:

- Improve collaboration and coordination among clinical team members
- Standardize care processes
- Decrease delirium
- Break the cycle of oversedation and prolonged ventilation

What are the components of the ABCDE bundle?

- **A**: Awakening and breathing trials
- **B**: Choosing the right sedative(s)
- **C**: Delirium monitoring and management
- **D**: Early mobility and exercise
<table>
<thead>
<tr>
<th>Symptoms</th>
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<th>Management</th>
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<tbody>
<tr>
<td>P pain</td>
<td>BPS</td>
<td>SAT</td>
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<tr>
<td>A agitation</td>
<td>RASS</td>
<td>SBT</td>
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<td>D delirium</td>
<td>CAM-ICU</td>
<td>DCE</td>
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# ICU Liberation Project of SCCM

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<tr>
<th>SYMPTOMS</th>
<th>MONITORING TOOLS</th>
<th>CARE ABCDEF BUNDLE</th>
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<tr>
<td>PAD GUIDELINES</td>
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<tr>
<td>PAIN</td>
<td>BPS</td>
<td>C</td>
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<td></td>
<td>CPOT</td>
<td>A</td>
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<td>AGITATION</td>
<td>RASS</td>
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<td></td>
<td>SAS</td>
<td>B</td>
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<td>DELIRIUM</td>
<td>CAM-ICU</td>
<td>C</td>
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<td></td>
<td>ICDSC</td>
<td>D</td>
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50-70% Cognitively Impaired

Jackson *AJRCCM* 2010; 182: 183
Girard *Crit Care Med* 2010; 38: 1513
60-80% Functionally Impaired
ICU Survivorship

Family

Hobbies

Work

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After 5 months I felt better and returned to work but was fired 10 weeks later... it didn't surprise me because I was struggling terribly. I couldn't organize my work; committed many errors in documentation; frequently lost things; forgot meetings, and did not manage my time well.

http://www.icudelirium.org/testimonials.html
When I returned to work, the work I did before seemed foreign and unfamiliar. I became isolated and excluded from everyone. No one wanted to be around me. My wife of more than 36 years told me that I was just “feeling sorry” for myself, and I just needed to get on with my life. I nearly ended my life a few times. Then after five years of this hell, Oct 2 2013 CBS News ran a report about people just like me. From that report I found your website. I cried for long time; it has changed my wife’s opinion about me. For the first time in the past five years, I think believe I have a future.

http://www.icudelirium.org/testimonials.html
Cognitive Impairment: Sepsis

Before Sepsis

% survivors cognitively impaired

-3 years -1 year +1 year +3 years

Mild Cognitive Impairment
Moderate/Severe Cog Impairment

After Sepsis

p<0.001

Iwashyna T, JAMA 2010;304:1787-1794
Delirium as a Predictor of Mortality in Mechanically Ventilated Patients in the Intensive Care Unit

Ely EW, JAMA 2004;291:1753-62
Delirium Duration & Mortality

<table>
<thead>
<tr>
<th></th>
<th>HR</th>
<th>95% CI</th>
<th>p-value</th>
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<tbody>
<tr>
<td>0 vs 1</td>
<td>1.7</td>
<td>1.27-2.29</td>
<td>&lt;0.001</td>
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<tr>
<td>0 vs 2</td>
<td>2.69</td>
<td>1.58-4.57</td>
<td>&lt;0.001</td>
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<tr>
<td>0 vs 3</td>
<td>3.73</td>
<td>1.92-7.23</td>
<td>&lt;0.001</td>
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</tbody>
</table>

Shehabi Y, et al. CCM 2010; 38:2311–2318
Bringing to light Risk factors And Incidence of Neuropsychological dysfunction in ICU survivors
INDEPENDENT VARIABLES

- Delirium Duration
- Drug Exposure

DEPENDENT VARIABLES

- Long Term Cognitive Impairment (LTCI) Battery
- Health-Related Quality of Life (HRQL) Battery
Long-Term Cognitive Impairment after Critical Illness


ABSTRACT

BACKGROUND
Survivors of critical illness often have a prolonged and disabling form of cognitive impairment that remains inadequately characterized.
Delirium and Brain Atrophy

(A) 46 year old, no delirium

(B) 42 year old, 12 days of delirium

May 22, 2014
The VISIONS MRI Studies

Gunther M et al. CCM 2012;40:2022-32
The Picture of Dementia Following ICU Care
Global Cognitive Scores by Age
Global Cognitive Scores by Age and Comorbidity
Delirium and Executive Function

![Graph showing the relationship between duration of delirium and adjusted Trails B T-Score over 12 months.](image)
If delirium is not screened for using a validated delirium screening tool it is missed ~75% of time.

Take Home Message

Delirium = Dangerous

Patient = Vulnerable

Andros Island by N Rakov, NEJM 2011;365:457
2013 PAD Guidelines:

“We recommend routine monitoring for delirium in adult ICU patients”

*Grade 1B Recommendation*

*Crit Care Med. 2013;41:263-308*
Don’t forget about Dr. DRE

**Diseases**
Sepsis, COPD, CHF

**Drug Removal**
SATs and stopping benzodiazepines/narcotics

**Environment**
Immobilization, sleep and day/night, hearing aids, glasses, noise
So let’s focus on potentially modifiable aspects of care such as potent medications, delirium, and improving care and clinical outcomes...
ABCDEs:
Building blocks of managing Pain, Agitation & Delirium
Awake and Breathing Coordination

- ↓ Duration of mechanical ventilation
- ↓ Duration of coma
- ↓ Mortality

Choose light sedation & avoid benzos

- ↓ Duration of mechanical ventilation
- ↓ Mortality
- ↓ Delirium

Delirium monitoring & management

- ↑ Delirium detection

Early Mobility & Environment

- ↓ Duration of delirium
- ↓ Disability
- ↓ ICU Length of Stay
- ↓ Rehospitalization/Mortality

Morandi et al, Curr Opin Crit Care 2011;17:43-9
Vasilevskis et al, Crit Care Med 2010;38:S683-91
Vasilevskis et al, Chest 2010;138:1224-1233
Zaal et al, ICM 2013;39:481-88
Colombo et al, Minerva Anest 2012;78:1026-33
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 epub
Probability of Delirium over Time

Adjusted OR of delirium: 0.67 (95% CI: 0.49, 0.91)

Dale CR & Treggiari M, Ann ATS 2014 epub
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.

Balas M, CCM 2014 epub
VENTILATOR FREE DAY RESULTS

Days

p=0.04

Post ABCDE Bundle

Pre ABCDE Bundle

Ventilator Free Days-28 Day

Days

19

20

21

22

23

24

25

Balas M CCM 2014
DELIRIUM RESULTS

p=0.02

Balas M CCM 2014
28 DAY MORTALITY RESULTS

- ICU: Pre ABCDE Bundle: p=0.07
- Total Hospital: Pre ABCDE Bundle: p=0.04

Balas M CCM 2014
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
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>
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<tr>
<td>Days of Coma</td>
<td>129 (43%)</td>
<td>86 (19%)</td>
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</tbody>
</table>

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

May 22, 2014

Needham DM Arch Phys Med Rehabil 2010; 91:536-542
Average ICU has background noise of crowded restaurant, louder next to patient’s head.

Noise spikes of >85dBA at least every 8 minutes.
“I came awake on the fifth day. My first memory is that of **floating up from the ocean bottom**, my eyes still waterlogged and **with what felt like scuba gear stuffed in my mouth and throat**. I couldn’t speak. As I broke to the surface, I understood that I was still in the ICU at Our Lady, but I heard nothing of what anybody said.

Abraham Verghese - 2009, *Cutting for Stone*
Hopkins Sleep Protocol Associated with Reductions in Delirium

<table>
<thead>
<tr>
<th>Environmental</th>
<th>Non-Pharmacologic</th>
<th>Pharmacologic</th>
</tr>
</thead>
<tbody>
<tr>
<td>No overhead pages</td>
<td>Ear plugs</td>
<td>Avoiding Benzos, Opiates</td>
</tr>
<tr>
<td>No TV</td>
<td>Eye masks</td>
<td>&amp; trazodone as sleep aides</td>
</tr>
<tr>
<td>Dim hall lights</td>
<td>Soothing Music</td>
<td>Zolpidem if CAM –</td>
</tr>
<tr>
<td>Grouping Care Activities</td>
<td></td>
<td>Haloperidol if CAM +</td>
</tr>
<tr>
<td>Mobilization</td>
<td></td>
<td></td>
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<tr>
<td>Lights on, blinds open</td>
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<tr>
<td>Decrease naps</td>
<td></td>
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<tr>
<td>No caffeine after 3pm</td>
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</table>

Following QI intervention, fewer patients developed delirium (Adjusted OR 0.46, 95% CI 0.23-0.89, p=0.02)

Intervention patients had more days of ‘normal’ brain function (Adjusted OR 1.64, 95% CI 1.04-2.58, p=0.03)
Pain, Agitation, and Delirium Are Interrelated

2013 PAD Guidelines:

“Pain should be routinely monitored in all adult ICU patients”

Grade 1B Recommendation

Crit Care Med. 2013;41:263-308
Pain, Agitation, and Delirium Are Interrelated

Targeted Level of Consciousness

Choose Target RASS
Assess Actual RASS
Modify treatment so Actual = Target
2013 PAD Guidelines:

“We recommend either daily sedation interruption or a light level* of target sedation be routinely used...”

*Light sedation = RASS 0 to -2

Grade 1B Recommendation

Crit Care Med. 2013;41:263-308
Awake and Breathing Coordination
- ↓ Duration of mechanical ventilation
- ↓ Duration of coma
- ↓ Mortality

Choose light sedation & avoid benzos
- ↓ Duration of mechanical ventilation
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Delirium monitoring & management
- ↑ Delirium detection

Early Mobility & Environment
- ↓ Duration of delirium
- ↓ Disability
- ↓ ICU Length of Stay
- ↓ Rehospitalization/Mortality

Mortality

References:
- Morandi et al, Curr Opin Crit Care 2011;17:43-9
- Vasilevskis et al, Crit Care Med 2010;38:S683-91
- Vasilevskis et al, Chest 2010;138:1224-1233
- Zaal et al, ICM 2013;39:481-88
- Colombo et al, Minerva Anest 2012;78:1026-33
Liberating from Ventilator

SBT reduced weaning time by = 2 days

Control (n = 151)
Protocol (n = 149)

(Time (Days))

Patients on Ventilator (%)

$p < .001$

Liberating from Sedation

SAT reduced ventilator time by = 2 days

Control (n=60) vs. Protocol (n=68)

Adjusted p < .001

Efficacy and safety of a paired sedation and ventilator weaning protocol for mechanically ventilated patients in intensive care (Awakening and Breathing Controlled trial): a randomised controlled trial

ABC Trial: One-Year Survival

NNT=7

ABC approach (n=167)

Control (n=168)

p=.01

Days

Sedation Interruption in SLEAP

Mehta S, JAMA 2012;308:1985-92
## Benzodiazepine Use in Trials

<table>
<thead>
<tr>
<th>Study</th>
<th>Control</th>
<th>Treatment</th>
</tr>
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<tbody>
<tr>
<td>Kress NEJM 2000</td>
<td>90 mg/day</td>
<td>53 mg/day</td>
</tr>
<tr>
<td>Girard ABC Lancet 2007</td>
<td>84 mg/day</td>
<td>54 mg/day</td>
</tr>
<tr>
<td>Mehta SLEEP JAMA 2012</td>
<td>82 mg/day</td>
<td>102 mg/day</td>
</tr>
<tr>
<td>OSCILLATE NEJM 2013</td>
<td>141 mg/day</td>
<td>199 mg/day</td>
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</table>

* All values converted and expressed as **mean** midazolam dose per patient, **median** for ABC study were 8 mg and 5 mg, respectively.
SPICE Study – first 48 hours
mean 50 mg/d benzos
No Sedation: ICU Length of Stay

Control (n=58) vs Intervention (n=55)

Patents Remaining in ICU (%)

Days


9.7 days
Awake and Breathing Coordination
- Duration of mechanical ventilation
- Duration of coma
- Mortality

Choose light sedation & avoid benzos
- Duration of mechanical ventilation
- Mortality
- Delirium

Delirium monitoring & management
- Delirium detection

Early Mobility & Environment
- Duration of delirium
- Disability
- ICU Length of Stay
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References:
- Vasilevskis et al. Chest 2010;138:1224-1233
- Zaal et al. ICM 2013;39:481-88
- Colombo et al. Minerva Anest 1012;78:1026-33
2013 PAD Guidelines:

“We suggest that sedation strategies using non-benzodiazepines (propofol or dexmedetomidine) may be preferred over sedation with benzodiazepines (midazolam or lorazepam)”

*Grade 2B Recommendation*

**Crit Care Med. 2013;41:263-308**
Buffalos to Beer to Brain Cells
Cliff the mailman and philosopher

Cliff: “Well you see, Norm, it's like this . . A herd of buffalo can only move as fast as the slowest buffalo. And when the herd is hunted, it is the slowest and weakest ones at the back that are killed first. This natural selection is good for the herd as a whole, because the general speed and health of the whole group keeps improving by the regular killing of the weakest members.”

sitcom CHEERS
Buffalos to Beer to Brain Cells

“In much the same way, Norm, the human brain can only operate as fast as the slowest brain cells. Now, as we know, excessive intake of alcohol kills brain cells. But naturally, it attacks the slowest and weakest brain cells first. In this way, regular consumption of beer eliminates the weaker cells, making the brain a faster and more efficient machine. And that, Norm, is why you always feel smarter after a few beers.”

sitcom CHEERS
Pain, Agitation, and Delirium Are Interrelated

May 22, 2014
Awake and Breathing Coordination
- ↓ Duration of mechanical ventilation
- ↓ Duration of coma
- ↓ Mortality

Choose light sedation & avoid benzos
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May 22, 2014

Morandi et al. Curr Opin Crit Care 2011;17:43-9
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Zaal et al. ICM 2013;39:481-88
Colombo et al. Minerva Anest 2012;78:1026-33

www.SEDATION-cme.org
Cardinal Symptoms of Delirium and Coma

AROUSABLE TO VOICE
- Acute mental status change
- Fluctuating mental status
- Inattention
- Disorganized thinking
- Hallucinations, Delusions, Illusions
- Altered level of consciousness

UNAROUSABLE TO VOICE

COMA

May 22, 2014
Delirium in Mechanically Ventilated Patients
Validity and Reliability of the Confusion Assessment Method for the Intensive Care Unit (CAM-ICU)
Ely EW, JAMA 2003;289:2983-91

Monitoring Sedation Status Over Time in ICU Patients
Reliability and Validity of the Richmond Agitation-Sedation Scale (RASS)
MIND-USA Modifying the Impact of ICU-Associated Neurological Dysfunction
Brain Road Map
(A framework for bedside rounds)

1. Where is the patient going?
   Target RASS

2. Where is the patient now?
   Current RASS
   Current CAM-ICU

3. How did they get there?
   Drugs
ABCDEs: Building blocks of managing Pain, Agitation & Delirium
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## ICU Liberation Project of SCCM

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<th>Symptoms</th>
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<th>Care ABCDEF Bundle</th>
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<tr>
<td><strong>Pain</strong></td>
<td>BPS</td>
<td>A Assess / Treat Pain</td>
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<td></td>
<td>CPOT</td>
<td>A Awakening Trials - SATs</td>
</tr>
<tr>
<td><strong>Agitation</strong></td>
<td>RASS</td>
<td>B Breathing Trials - SBTs</td>
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<td></td>
<td>SAS</td>
<td>C Coordination of Care</td>
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<td>C Choice of Sedatives</td>
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<tr>
<td><strong>Delirium</strong></td>
<td>CAM-ICU</td>
<td>D Delirium Reduction</td>
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<td>ICDSC</td>
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- Diseases, Drug Removal, Environment e.g., sleep, noise, eye glasses, hearing aids
- Early mobility and Exercise
- Family - Communication and Involvement

May 22, 2014

www.iculiberation.org & www.icudelirium.org
Excellence

Aristotle: “We are what we repeatedly do. Excellence is not an act, but a habit”
I survived and that is the main thing. And I am so grateful to God that I survived and am now off all oxygen and consider myself all well except that I can’t remember to take my medications...

-SB
**ICU Delirium and Cognitive Impairment Study Group: selected local members**

<table>
<thead>
<tr>
<th>Pratik Pandharipande</th>
<th>Leanne Boehm</th>
<th>Tim Girard</th>
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<tbody>
<tr>
<td>Jim Jackson</td>
<td>Joyce Okahashi</td>
<td>John Gore</td>
</tr>
<tr>
<td>Jin Han</td>
<td>Cayce Strength</td>
<td>Baxter Rogers</td>
</tr>
<tr>
<td>Ed Vasilevskis</td>
<td>Brenda Pun</td>
<td>Stephan Heckers</td>
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<tr>
<td>Chris Hughes</td>
<td>Lauren Hardy</td>
<td>Cathy Fuchs</td>
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<tr>
<td>Alessandro Morandi</td>
<td>Amy Lipsey</td>
<td>Heidi Smith</td>
</tr>
<tr>
<td>Paula Watson</td>
<td>Ryan Black</td>
<td>Ty Berutti</td>
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<td>Lorraine Ware</td>
<td>Jessica McCurley</td>
<td>Brad Strohler</td>
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<td>Gordon Bernard</td>
<td>Michael Santoro</td>
<td>Elizabeth Card</td>
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<td>Bob Dittus</td>
<td>Carrie Jones</td>
<td>Jennifer Thompson</td>
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<td>Ted Speroff</td>
<td>Morgan Crawford</td>
<td>Ayumi Shintani</td>
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<td>Wes Ely</td>
<td>Mayur Patel</td>
<td>Stephanie Hamilton</td>
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Depression, post-traumatic stress disorder, and functional disability in survivors of critical illness in the BRAIN-ICU study: a longitudinal cohort study

James C Jackson, Pratik P Pandharipande, Timothy D Girard, Nathan E Brummel, Jennifer L Thompson, Christopher G Hughes, Brenda T Pun, Eduard E Vasilevskis, Alessandro Morandi, Ayumi K Shintani, Ramona O Hopkins, Gordon R Bernard, Robert S Dittus, E Wesley Ely, for the Bringing to light the Risk Factors And Incidence of Neuropsychological dysfunction in ICU survivors (BRAIN-ICU) study investigators

Summary

Background Critical illness is associated with cognitive impairment, but mental health and functional disabilities in survivors of intensive care are inadequately characterised. We aimed to assess associations of age and duration of delirium with mental health and functional disabilities in this group.

Methods In this prospective, multicentre cohort study, we enrolled patients with respiratory failure or shock who were undergoing treatment in medical or surgical ICUs in Nashville, TN, USA. We obtained data for baseline demographics...
BRAIN-ICU: Depression
BRAIN-ICU: Post-Traumatic Stress Disorder (PTSD)
BRAIN-ICU HRQL: Take Home

• Depression (>1 in 3) was 4 times more common than PTSD (7%, 1 in 14)
• Depression drivers were primarily somatic (eg, weakness, appetite change, fatigue) rather than cognitive symptoms (eg, sadness, guilt, or pessimism)
• Two-thirds of survivors with mild depression met diagnostic criteria based on somatic symptoms alone.
• “This finding is an essential correction to a literature that has tended to focus on PTSD and anxiety, in part because it relied on tests that poorly measured somatic symptoms.”

Prescott and Iwashyna, Lancet Resp editorial

Jackson J, Lancet Resp 2014
CAM-ICU Sensitivity and Specificity

- Over a dozen studies have now compared the 30 second CAM-ICU evaluation to Geriatric psychiatrists’ 30 to 45 minute evaluations:
  - Sensitivity 80% to 95%
  - Specificity 90% to 97%
  - Inter-rater reliability, kappa = 0.96 (0.92-0.99)
  - Delirium prevalence rates in mechanically ventilated ICU patients consistently 60% to 80%

Ely EW, JAMA 2001;286:2703-10
Gusmao-Flores Crit Care 2012;16:R115
Questions

Hospital Discussion
Next Steps

- Optimizing Care for the Ventilated Patient and Preventing VAE
  - Thursday, June 5, 2014 at 11:00 a.m. – 12:00 p.m.