ICU Liberation ABCDEF Bundle Implementation: Focus on Delirium

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The mission of the **ICU liberation** campaign is to create lean, sustainable, and highly functioning ICU interdisciplinary teams that partner with patients and families to create a safe and comfortable patient Environment by implementing the **PAD guidelines** utilizing the **ABCDEF bundle**.
SCCM ICU Liberation ABCDEF Bundle Implementation Collaborative Goal

• Correlate **ABCDEF Bundle** compliance and the effect on patient outcomes over time:
  o If we apply **ABCDEF Bundle** elements how does the process change impact the patient outcome & their family?
SCCM ICU Liberation ABCDEF Bundle Implementation Collaborative Success Definitions

• Improvement in teamwork & Healthy Work Environments
• Sustained compliance with the evidence base practice ABCDEF Bundle interventions produces improved patient outcomes
• Efficient resource use: i.e.,

“It's not just another thing to do, it's a new and better way to do our work that doesn't harm patients”  
Mary Ann Barnes – Daly MS-L, CCRN, RN, DC  
ICU Liberation Steering Committee/West Coast Regional Faculty
** 2018 Revised SCCM PAD Guidelines (PAD-ES) with expanded early mobility and sleep
ABCDEF Bundle: Components

A. Assess, Prevent and Manage Pain
B. Both SAT and SBT
C. Choice of Analgesia and Sedation
D. Delirium: Assess, Prevent and Manage
E. Early Mobility and Exercise
F. Family Engagement and Empowerment
# Improve Patient Comfort, Safety, and Outcomes

[www.iculiberation.org](http://www.iculiberation.org)

<table>
<thead>
<tr>
<th>PAD SYMPTOMS</th>
<th>ASSESSMENT &amp; MONITORING TOOLS</th>
<th>CARE IMPROVEMENT ABCDEF BUNDLE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PAIN</strong></td>
<td><strong>NRS:</strong> Numeric Rating Scale</td>
<td><strong>A</strong>ssess, Prevent, and Manage Pain</td>
</tr>
<tr>
<td></td>
<td><strong>BPS:</strong> Behavioral Pain Scale</td>
<td><strong>B</strong>oth Spontaneous Awakening Trials and Spontaneous Breathing Trials</td>
</tr>
<tr>
<td></td>
<td><strong>CPOT:</strong> Critical Care Pain Observation Tool</td>
<td><strong>C</strong>hoice of Sedation</td>
</tr>
<tr>
<td><strong>AGITATION</strong></td>
<td><strong>RASS:</strong> Richmond Agitation Sedation Scale</td>
<td><strong>D</strong>elirium: Assess, Prevent and Manage</td>
</tr>
<tr>
<td></td>
<td><strong>SAS:</strong> Sedation Agitation Scale</td>
<td><strong>E</strong>arly Mobility and <strong>E</strong>xercise</td>
</tr>
<tr>
<td><strong>DELIRIUM</strong></td>
<td><strong>CAM-ICU:</strong> Confusion Assessment Method for ICU</td>
<td><strong>F</strong>amily Engagement and Empowerment</td>
</tr>
<tr>
<td></td>
<td><strong>ICDSC:</strong> Intensive Care Delirium Screening Checklist</td>
<td></td>
</tr>
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SCCM ICU Liberation ABCDEF Bundle
Implementation Collaborative

ICU Liberation Collaborative©:

- national campaign
- data-driven
- specifically aimed at PAD guideline dissemination AND implementation via the evidence-based ABCDEF bundle.
ABCDEF Bundle Implementation
Collaborative Teams

78 hospitals chosen to participate (96 applicants)
• 69 adult and 9 pediatric
• Academic, Veteran’s Affairs and community hospital ICUs from 29 states and Puerto Rico were accepted.
  • Retention remained high - 67 adult and 8 pediatric ICUs completing active participation
Collaborative Leadership and Faculty

An inter-professional panel of 23 ICU clinicians with expertise in ABCDEF bundle related domains and QI efforts reached consensus on *how the bundle should be defined, implemented, and measured in practice.*
Site Commitment Requirements

• Senior level administrative commitment (CEO, CNO, ICU Level RN and MD leaders)

• Pre and post-collaborative surveys:
  - **ICU Care Survey** – Three part survey Assessment of Interprofessional Team Collaboration Scale (AITCS)*, AACN Healthy Work Environment^, and ABCDEF Bundle perception
  - **Administrative Survey** – Demographics, staffing, policies

• Core team composition (MD, RN, RT, Pharmacy, Rehab [PT/OT] and others)

• Education and implementation of ABCDEF Bundle

• Monthly Data collection and submission

^AACN Healthy Work Environment
Patient Level Data Collection

- The ABCDEF Bundle Daily Compliance Form
  - Standard Operating Procedure and Data Definitions Manual (33 pages)
- Demographic/Discharge Form
  - important patient and family-centered outcomes
  - variables that may affect bundle compliance
  - important prognostic indicators (e.g., demographics, diagnosis, comorbidities),
What We Did

Collaborative members participated in:

• 5 in-person meetings,
• Monthly co-learning calls,
• Database training sessions,
• An e-Community listserv, and
• Select in-person site visits.

Hundreds of investigations from all around the world specific to these elements of patient care, it would be expected that consolidating them into an efficient set of bedside tools and plans would be imperative to accomplish the process of their implementation. That is what this collaborative has been about.
Translating Evidence into Practice

- **Envision** the problem within the larger system
- **Engage** collaborative multidisciplinary teams centrally and locally

1. Summarize the evidence
2. Identify local barriers to implementation
3. Measure performance
4. Ensure that all patients receive the interventions

Improvement

Describe:
• Process – what steps do we take?
• Methodology – what has proven to work?
• Compliance – did we follow the protocol?
• Performance – did the patient get the bundle element?
ICU Liberation - Blending Priorities

Clinical Implementation of PAD guidelines + The ABCDEF Bundle for the ICU

Inter-professional Team Development and Execution
Guideline Recommendation = Teamwork

• We recommend using an **interprofessional ICU team approach** that includes provider education, pre-printed and/or computerized protocols and order forms, and quality ICU rounds checklists to facilitate the use of pain, agitation, and delirium management guidelines or protocols in adult ICUs (+1B).

Interprofessional Team (IPT) Definition

• An interdisciplinary (Interprofessional) team is “composed of members from different professions and occupations with varied and specialized knowledge, skills, and methods.” (p. 54)

• Members of an Interprofessional team communicate and work together, as colleagues, to provide quality, individualized care for patients.
Unit-based Team – Drives IPT model and ABCDEF Bundle
Putting it all together in ICU Rounds

- Using IPT training and principles to make the ABCDEF bundle happen for each patient
- Rounding tool for the ABCDEF Bundle:

  **Brain Road Map**

  Script for Rounds
1. Where is the patient going?
Target LOC (RASS, SAS, etc)

2. Where is the patient now?
Current pain score (NRS, CPOT, BPS)
Current LOC (RASS, SAS, etc)
Current delirium assessment (ICDSC, CAM-ICU, etc)

3. How did they get there?
Drug exposures
You Can Do It!

• ABCDEF bundle data already published show good results
• Plan may yield improved team dynamics and patient outcomes
• Depends on your unit’s baseline practice, patient population, and the degree to which compliance with the stated process measures is accomplished
• Resources:  http://www.iculiberation.org/
              http://icudelirium.org/
We keep moving forward, opening new doors, and doing new things, because we're curious and curiosity keeps leading us down new paths.

- Walt Disney
Assess, Prevent and Manage Pain
Self-Report of Pain—Gold Standard

0 – 10 Numeric Rating Scale

Slide courtesy of J-F Payen

0-10 visually enlarged horizontal NRS most valid & reliable

Behavioral Pain Scales

• The Critical Care Pain Observation Tool (CPOT) & the Behavioral Pain Scale (BPS) are the most valid scales for monitoring pain in medical, postoperative, and trauma (except for brain injury) patients unable to self-report in whom motor function is intact & in whom behaviors are observable.

Barr J et al., Crit Care Med 2013; 41: 263-306
Behavioral Pain Scale  
(abbreviated version)

<table>
<thead>
<tr>
<th>ITEM</th>
<th>SCORE</th>
</tr>
</thead>
<tbody>
<tr>
<td>FACIAL EXPRESSION</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>4</td>
</tr>
<tr>
<td>UPPER LIMBS</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>4</td>
</tr>
<tr>
<td>COMPLIANCE WITH VENTILATOR</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>4</td>
</tr>
</tbody>
</table>

Score Range 3 – 12. Significant pain = BPS > 5

Payen JF et al., Crit Care Med 2001;29: 2258-2263
## CPOT (abbreviated version)

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

**CPOT range = 0 – 8; CPOT > 3 is significant**
Both Spontaneous Awakening Trials & Spontaneous Breathing Trials
## Sedation-Agitation Scale (SAS)

<table>
<thead>
<tr>
<th>Score</th>
<th>State</th>
<th>Behaviors</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>Dangerous agitation</td>
<td>Pulls at ET tube, climbs over bedrail, strikes at staff, thrashes side to side</td>
</tr>
<tr>
<td>6</td>
<td>Very agitated</td>
<td>Does not calm despite frequent verbal reminding, requires physical restraints</td>
</tr>
<tr>
<td>5</td>
<td>Agitated</td>
<td>Anxious or mildly agitated, attempts to sit up, calms down to verbal instructions</td>
</tr>
<tr>
<td>4</td>
<td>Calm and cooperative</td>
<td>Calm, awakens easily, follows commands</td>
</tr>
<tr>
<td>3</td>
<td>Sedated</td>
<td>Difficult to arouse, awakens to verbal stimuli or gentle shaking but drifts off</td>
</tr>
<tr>
<td>2</td>
<td>Very sedated</td>
<td>Arouses to physical stimuli but does not communicate or follow commands</td>
</tr>
<tr>
<td>1</td>
<td>Unarousable</td>
<td>Minimal or no response to noxious stimuli, does not communicate or follow commands</td>
</tr>
</tbody>
</table>

Richmond Agitation Sedation Scale (RASS)

<table>
<thead>
<tr>
<th>Score</th>
<th>Descriptor</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>+4</td>
<td>Combative</td>
<td>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>
</tr>
<tr>
<td>+1</td>
<td>Restless</td>
<td>Anxious, apprehensive but movements not aggressive or vigorous</td>
</tr>
<tr>
<td>0</td>
<td>Alert and calm</td>
<td>Not fully alert, but has sustained awakening to voice (eye opening and contact &gt;10 seconds)</td>
</tr>
<tr>
<td>-1</td>
<td>Drowsy</td>
<td>Briefly awakens to voice (eye opening and contact &lt;10 seconds)</td>
</tr>
<tr>
<td>-2</td>
<td>Light sedation</td>
<td>Movement or eye opening to voice (but no eye contact)</td>
</tr>
<tr>
<td>-3</td>
<td>Moderate sedation</td>
<td>No response to voice, but movement or eye opening to physical stimulation</td>
</tr>
<tr>
<td>-4</td>
<td>Deep sedation</td>
<td>No response to voice or physical stimulation</td>
</tr>
<tr>
<td>-5</td>
<td>Unarousable</td>
<td></td>
</tr>
</tbody>
</table>
Choice of Analgesia and Sedation
Analgo-Sedation Strategies

• Addressing pain and discomfort **first** before administering sedatives.

• Utilization of one drug for two purposes:
  ➢ Pain relief and sedation

• Usually accomplished with an opioid.
Expert consensus and recommendations on safety criteria for active mobilization of mechanically ventilated critically ill adults

Carol L Hodgson, Kathy Stiller, Dale M Needham, Claire J Tipping, Megan Harrold, Claire E Baldwin, Scott Bradley, Sue Berney, Lawrence R Caruana, Doug Elliott, Margot Green, Kimberley Haines, Alisa M Higgins, Kirs-Maija Kaukonen, Isabel Anne Leditschke, Marc R Nickels, Jennifer Paratz, Shane Patman, Elizabeth H Skinner, Paul J Young, Jennifer M Zanni, Linda Denehy, and Steven A Webb

**Figure 1: Color coding definitions**

- **Green:** Low risk of an adverse event. Proceed as usual according to each ICU's protocols and procedures.

- **Yellow:** Potential risk and consequences of an adverse event are higher than green, but may be outweighed by the potential benefits of mobilization. The precautions or contraindications should be clarified prior to any mobilization episode. If mobilized, consideration should be given to doing so gradually and cautiously.

- **Red:** Significant potential risk or consequences of an adverse event. Active mobilization should not occur unless specifically authorized by the treating intensive care specialist in consultation with the senior physical therapist and senior nursing staff.
Early Mobility and Exercise
Early ICU Mobility Therapy in the Treatment of Acute Respiratory Failure (cont’d.)

Results
• ICU length of stay:
  • Protocol: 5.5 days
  • Usual care: 6.9 days
• Hospital length of stay:
  • Protocol: 11.2 days
  • Usual care: 14.5 days

Conclusion
• Reduced sedation levels in patients
• Increased activity sessions during ICU stay
• Net cost savings
• No adverse events during mobility sessions

Morris P. Crit Care Med. 2008;36:2238-43
Early Physical and Occupational Therapy in Mechanically Ventilated, Critically Ill Patients: A Randomised Controlled Trial (cont’d.)

Conclusion

• Intervention group had:
  • Decreased days of delirium (50%) and MV
  • ICU LOS reduced by 2-day median
  • 59% return to independent function at hospital discharge vs. only 35% in control group

Family Engagement and Empowerment

Society of Critical Care Medicine
The Intensive Care Professionals
How Involved are Families in Your ICU?

Not Present and Not Involved

Present and Actively Engaged in Daily Care
Family Participation on Rounds

- Who should participate?
  - Decision makers
  - Patients, whenever possible
- Invite them to join rounds.
- Provide an opportunity to ask questions, clarify.
- Ask them, “Do you have any additional concerns?”
- Participation fosters:
  - Bi-directional communication
  - Shared decision-making

Cypress B. *Dimens Crit Care Nurs.* 2012;31:53-64.
ICU Diaries

• ICU diaries decrease the incidence of PTSD after an ICU stay.

• Diary contents:
  • Calendar of events and/or milestones.
  • Photographs, both of the patient and the ICU.
  • Entries from staff and/or family.

• Utilize preprinted templates or websites
  • Great resource: http://www.icu-diary.org

Delirium: Assess, Prevent and Manage
Creating a Standard Language

- Acute confusional state
- Confusion
- Acute brain syndrome
- Altered mental status
- Toxic or metabolic encephalopathy
- Sundowning
Delirium: Motoric Subtypes

- Hyperactive Delirium (~1%)
- Hypoactive Delirium (35%)
- Mixed Delirium (64%)

Anticipating Delirium: Risk Factors

**Baseline Vulnerability**
- Underlying brain disease (dementia, stroke, Parkinson)
- Increased age
- Institutionalization
- Chronic disease (HIV, HTN, ETOH dependency, diabetes, etc.)
- Visual/hearing deficits

**Precipitants**
- Medications
- Infection
- Dehydration
- Immobility/restraints
- Malnutrition
- Tubes/catheters
- Electrolyte imbalance
- Sleep deprivation
Delirium: Epidemiology and Short-Term Outcomes

• Prevalence
  • 50% to 80% of mechanically ventilated patients
  • 20% to 50% of lower severity patients

• Associated outcomes
  • Prolonged hospitalization
  • Increased mortality
  • Increased cost

Delirium: Long-Term Outcomes

• Mortality
  • Each day of delirium in the ICU increases the hazard of 1-year mortality by 10% \(^1\)

• Cognitive Impairment
  • ICU delirium was an independent risk factor for long-term cognitive impairment \(^2,^3\)
    34% with scores similar to traumatic brain injury
    24% with scores similar to Alzheimer disease

\(^1\) Pisani MA *Am J Respir Crit Care Med.* 2009;180:1092-1097.
PAD Delirium Assessment Recommendations

- Routinely monitor for delirium in all adult ICU patients (+1B)

- Use either:
  - Confusion Assessment Method for ICU (CAM-ICU)
  - Intensive Care Delirium Screening Checklist (ICDSC)

Assessment: Coma vs. Delirium

- Coma: defined by level of arousal
  - SAS 1 or 2, RASS = -4 or -5
    - Only responsive to physical or noxious stimulus, if at all
    - Unable to communicate

- Comatose patients should be reassessed over time to permit delirium scoring
  - Scoring is optimal during a patient’s maximal level of wakefulness

- Eligible for delirium assessment when they arouse to verbal stimulus
  - RASS -3: brief eye opening to voice, no contact
  - SAS 3: awakens to verbal stimulus, but drifts off
CAM-ICU Flowsheet

Confusion Assessment Method for the ICU (CAM-ICU) Flowsheet

1. Acute Change or Fluctuating Course of Mental Status:
   - Is there an acute change from mental status baseline?  **OR**
   - Has the patient’s mental status fluctuated during the past 24 hours?

   **NO**  →  CAM-ICU negative
   **YES**  →  CAM-ICU negative

2. Inattention:
   - “Squeeze my hand when I say the letter ‘A’.”
     Read the following sequence of letters: SAVE AH A R T
     **ERRORS:** No squeeze with ‘A’ & Squeeze on letter other than ‘A’
   - If unable to complete Letters → Pictures

   **0 - 2 Errors**  →  CAM-ICU negative
   **> 2 Errors**  →  CAM-ICU positive

3. Altered Level of Consciousness
   - Current RASS level

   **RASS = zero**  →  CAM-ICU positive
   **RASS other than zero**  →  CAM-ICU negative

4. Disorganized Thinking:
   1. Will a stone float on water?
   2. Are there fish in the sea?
   3. Does one pound weigh more than two?
   4. Can you use a hammer to pound a nail?

   **Command:** “Hold up this many fingers” (Hold up 2 fingers)
   **OR** “Hold up that many fingers” (Do not demonstrate)
   **OR** “Add one more finger” (If patient unable to move both arms)

   **> 1 Error**  →  CAM-ICU positive
   **0 - 1 Error**  →  CAM-ICU negative

Pooled Test Characteristics:
- Sensitivity 80%
- Specificity 96%
- \( \kappa > 0.91 \)

Figure: [www.ICUdelirium.org](http://www.ICUdelirium.org)
Intensive Care Delirium Screening Checklist (ICDSC)

1. Altered level of consciousness
2. Inattention
3. Disorientation
4. Hallucination, delusion, or psychosis
5. Psychomotor agitation or retardation
6. Inappropriate speech or mood
7. Sleep/wake cycle disturbances
8. Symptom fluctuation

Score 1 point per domain present

Delirium if > 4

Pooled Test Characteristics:
- Sensitivity 74%
- Specificity 82%
- $\kappa > 0.80$

Figure: [www.ICUdelirium.org](http://www.ICUdelirium.org)
Gusmao-Flores D. *Crit Care*. 2012;16:R115-R125
Screening: Implementation Strategies

• **Case-based scenarios**\(^1\)
  • Before-and-after case studies
  • Strategy increased usage of the ICDSC by 70% and accuracy of assessment by 54%

• **Spot-checking**\(^2,3\)
  • Systematic comparison of users with expert raters
  • Identifies areas for fine tuning education

• **Get it into the water**
  • Incorporate delirium into hospital nursing orientation

Rounding Presentations: Emphasizing Mind and Body

• Pain
  • Pain controlled or uncontrolled on... (current analgesics)
  • Most recent pain score, source of pain (when known)

• Agitation and Delirium
  • Target RASS/SAS for the day
  • Current RASS/SAS
  • Delirium status
  • Current psychoactive medications

• Physical Activity
  • Prior level of activity
  • PT/OT consulted
  • Target activity level for the day
Interventions for Delirium

• Early mobility and rehabilitation*
• Sleep enhancement (via nonpharm and hygiene)*
• Reducing unnecessary and deliriogenic medications*
• Structured reorientation*
• Adequate oxygenation

Interventions for Delirium

• Pain management
• Constipation relief
• Nutrition and fluid repletion
• Sensory assistive devices (vision and hearing)
• Cognitive stimulation/rehabilitation

Wake Up, Breathe, and Exercise

• Dual center, RCT of 104 sedated, MV patients
• Both (B) SATs + SBTs for ALL patients
• Intervention patients
  • If unresponsive, passive range of motion
  • If following commands, PT/OT coordinated with DIS
  • Daily PT/OT until return to independence or hospital discharge

<table>
<thead>
<tr>
<th>Days from intubation to milestone</th>
<th>Intervention (n=49)</th>
<th>Control (n=54)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Out of bed</td>
<td>1.7</td>
<td>6.6</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Standing</td>
<td>3.2</td>
<td>6.0</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Marching in place</td>
<td>3.3</td>
<td>6.2</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Transferring to chair</td>
<td>3.1</td>
<td>6.2</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Ambulating</td>
<td>3.8</td>
<td>7.3</td>
<td>&lt;0.001</td>
</tr>
</tbody>
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Early Exercise

• Patient’s functional performance improved
  • Independent functional status at hospital discharge: intervention 59% vs. control 35%

• Shorter duration of MV

• Substantial reduction in duration of delirium
  • 2 vs. 4 days

Delirium and Sleep in the ICU

- Sleep and delirium
  - Sleep disruption is a manifestation of delirium
  - Sleep deprivation yields delirium

- Sleep deprivation and fragmentation commonly occur

- Etiologies:
  - Loss of night-day cues, constant environmental stimuli
  - Pain, sedatives, MV, stress

- ICU sleep hygiene programs*
  - Decrease both incidence and duration of delirium in patients

- Nighttime sedation ≠ sleep promotion

ICU Environment, Sleep, and Delirium

- **Daytime Interventions**
  - Blinds raised
  - Less than 50% of the day napping
  - Avoid caffeine after 3 PM

- **Nighttime Interventions**
  - Before 10 PM
    - Room lights dimmed
    - Room curtain closed
    - Warm bath
  - Unnecessary alarms prevented
  - Room temperature optimized
  - Pain appropriately controlled
  - Television off

Result: No difference in perceived sleep quality, but...
- Reductions in delirium/coma incidence (49% vs. 69%)
- Improved daily noise rating

Reorienting ICU Patients

• Before-after observations in 214 ICU patients

• Interventions:
  • Night environment, music therapy, visual cues (clock)
  • Reorientation with 5 W’s and 1 H
    • **Who?** Who are you? Who is the nurse/physician?
    • **What?** What happened?
    • **Where?** Where are you/we?
    • **Why?** Why did it happen?
    • **How?** How did it happen? And what is the illness progression?

• Result: Delirium incidence reduction
  • Pre 35% vs. post 22%
Helpful Approach to Delirium Management

- Stop
- THINK
- Lastly medicate
Helpful Approach to Delirium Management

- **Stop**
- **THINK**
- Lastly medicate
Reducing Unnecessary Medications

• STOP: especially consider sedatives

• Is your patient on the minimal amount necessary?
  – Review medications
  – Doses adjusted for elderly, renal failure, liver failure

• Do you have a plan to reduce drug exposure?
  • Spontaneous awakening trial
  • Nurse empowerment to titrate drug to a team-determined target level of arousal
Delirium Risk Factor: Drug Exposure

- Measuring the probability of being delirious the next day

<table>
<thead>
<tr>
<th>Medication</th>
<th>Transitioning to Delirium Only Odds Ratio (95% CI)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lorazepam</td>
<td>1.2 (1.1–1.4)</td>
<td>0.003</td>
</tr>
<tr>
<td>Midazolam</td>
<td>1.7 (0.9–3.2)</td>
<td>0.09</td>
</tr>
<tr>
<td>Fentanyl</td>
<td>1.2 (1.0–1.5)</td>
<td>0.09</td>
</tr>
<tr>
<td>Morphine</td>
<td>1.1 (0.9–1.2)</td>
<td>0.24</td>
</tr>
<tr>
<td>Propofol</td>
<td>1.2 (0.9–1.7)</td>
<td>0.18</td>
</tr>
</tbody>
</table>

- Result: Drugs have the potential for contributing to delirium
  - Lorazepam particularly susceptible

Helpful Approach to Delirium Management

• Stop

• THINK

• Lastly medicate
What to THINK if positive for delirium

- **T**oxic Situations
  - Congestive heart failure, shock, dehydration
  - Deliriogenic medications (tight titration)
  - New organ failure (liver, kidney, etc.)
- **H**ypoxemia
- **I**nfection/sepsis (nosocomial), **I**mmobilization
- **N**onpharmacological interventions
- **K**+ or electrolyte problems
Helpful Approach to Delirium Management

• Stop

• THINK

• Lastly medicate
PAD Treatment of Delirium Recommendations

• There are no published data that treatment with haloperidol reduces the duration of delirium in adult ICU patients (no evidence).

• Atypical antipsychotics may reduce the duration of delirium in adult ICU patients (C).

Antipsychotics and Delirium

• Unknown efficacy for delirium prevention and management
  • Studies are ongoing

• Indication: delirium with agitation and risk for self-harm
  • Unresponsive to nonpharmacologic strategies
  • Not proven to aid in delirium prevention/management
  • Ensure agitation not from untreated pain or withdrawal

• Do no harm
  • Measure QTc interval regularly
    • Avoid when baseline prolongation of QTc or history of torsades
    • Caution with concomitant meds known to prolong the QTc interval*
  • Discontinue antipsychotics within 48 hours of delirium resolution

Dexmedetomidine and Delirium

Multicenter, double-blind RCTs studying dexmedetomidine with delirium as an endpoint.

MENDS: dexmedetomidine vs. lorazepam
  - Dex: more combined delirium and coma-free days

• DEXCOM: dexmedetomidine vs. morphine
  - Dex: shorter duration of delirium

• SEDCOM: dexmedetomidine vs. midazolam
  - Dex: shorter duration of delirium

Dexmedetomidine and Delirium

• In MV patients at risk for developing delirium, dexmedetomidine administered for sedation may be associated with a lower prevalence of delirium compared to benzodiazepine infusions (B).

• We suggest that sedation strategies using nonbenzodiazepine sedatives (either propofol or dexmedetomidine) may be preferred over sedation with benzodiazepines to improve clinical outcomes in MV patients (+2B).

Reducing ICU Delirium

➢ Treat pain first!
➢ Promote consciousness!
➢ Prevent delirium
➢ Wean MV
➢ Increase mobility

➢ Increase patient participation
➢ Promote patient recovery
➢ Reduce complications
➢ Improve patient outcomes*

SCCM ICU Liberation ABCDEF Bundle Implementation Collaborative Success Definitions

• Improvement in teamwork & Healthy Work Environments ✓

• Sustained compliance with the evidence base practice ABCDEF Bundle interventions produces improved patient outcomes ✓

• Efficient resource use: i.e., ✓

“It's not just another thing to do, it's a new and better way to do our work that doesn't harm patients” Mary Ann Barnes – Daly MS-L, CCRN, RN, DC
ICU Liberation Steering Committee/West Coast Regional Faculty

✓ Incidence of delirium decreased over course of the collaborative
Community Hospitals

Total and partial bundle compliance were measured utilizing random effects regression to determine the association between ABCDEF bundle compliance accounting for total compliance (all or none) or for partial compliance (“dose” or number of bundle elements used) and outcomes of hospital survival and delirium-free and coma-free days, after adjusting for age, severity of illness, and presence of mechanical ventilation.

Higher bundle compliance was independently associated with improved survival and more days free of delirium and coma.
ICU Liberation Rap-Up
by Cooper Short
“And suddenly you know... It’s time to start something new and trust the magic of beginnings.”

Thank you
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