Roadmap for Implementing the New ABCDEF Bundle in Your ICU

Welcome
http://www.iculiberation.org
Presenters on Today’s Webcast

Juliana Barr, MD, FCCM
Associate Professor of Anesthesiology, Perioperative and Pain Medicine
Stanford University School of Medicine
Staff Anesthesiologist and Intensivist
Anesthesiology and Perioperative Care Service
VA Palo Alto Health Care System
Palo Alto, California, USA

Mary Ann Barnes-Daly, RN, BSN, CCRN, DC
Regional Clinical Initiative Lead
Sutter Health
Sacramento, California, USA
What is the ABCDEF Bundle?

No financial disclosures

Lead Author, ICU PAD Guidelines

ICU Liberation Task Force
Learning Objectives

• Review the elements of the new ABCDEF bundle.

• Develop a mental model for successful implementation of bundle elements in the ICU.
2013 ICU PAD Guidelines

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

ICU PAD Guidelines
Summary Recommendations

1. Assess all ICU patients for pain, sedation depth, and delirium.

2. Integrate pain, agitation/sedation, and delirium management:
   a. Treat pain first, then sedate!
   b. Avoid deep sedation!
   c. Preferentially use non-pharmacologic delirium management strategies.

3. Link PAD management → ventilator weaning, early mobility
The ICU PAD Care Bundle

**PAIN**

- Assess pain ≥ 4x/shift & prn
- Preferred pain assessment tools:
  - Patient able to self-report → NRS (0-10)
  - Unable to self-report → BPS (3-12) or CPOT (0-8)
- Patient is in significant pain if NRS ≥ 4, BPS ≥ 6, or CPOT ≥ 3

- Treat pain within 30” then reassess:
  - Non-pharmacologic treatment: relaxation therapy
  - Pharmacologic treatment:
    - Non-neuropathic pain → IV opioids +/- non-opioid analgesics
    - Neuropathic pain → gabapentin or carbamazepine, + IV opioids
    - S/p AAA repair, rib fractures → thoracic epidural
  - Administer pre-procedural analgesia and/or non-pharmacologic interventions (eg, relaxation therapy)
  - Treat pain first, then sedate

**AGITATION**

- Assess agitation, sedation ≥ 4x/shift & prn
- Preferred sedation assessment tools:
  - RASS (-5 to +4) or SAS (1 to 7)
  - NMB → suggest using brain function monitoring

- Depth of agitation, sedation defined as:
  - agitated if RASS = +1 to +4, or SAS = 5 to 7
  - awake and calm if RASS = 0, or SAS = 4
  - lightly sedated if RASS = -1 to -2, or SAS = 3
  - deeply sedated if RASS = -3 to -5, or SAS = 1 to 2

- Targeted sedation or DSI (Goal: patient purposely follows commands without agitation): RASS = -2 – 0, SAS = 3 - 4
  - If under sedated (RASS >0, SAS >4) assess/treat pain → treat w/sedatives prn (non-benzodiazepines preferred, unless ETOH or benzodiazepine withdrawal suspected)
  - If over sedated (RASS <2, SAS <3) hold sedatives until @ target, then restart @ 50% of previous dose

- Consider daily SBT, early mobility and exercise when patients are at goal sedation level, unless contraindicated
  - EEG monitoring if:
    - at risk for seizures
    - burst suppression therapy is indicated for ↑ICP

**DELIRIUM**

- Assess delirium Q shift & prn
- Preferred delirium assessment tools:
  - CAM-ICU (+ or -)
  - ICDSC (0 to 8)

- Delirium present if:
  - CAM-ICU is positive
  - ICDSC ≥ 4

- Treat pain as needed
- Reorient patients; familiarize surroundings; use patient’s eyeglasses, hearing aids if needed
- Pharmacologic treatment of delirium:
  - Avoid benzodiazepines unless ETOH or benzodiazepine withdrawal suspected
  - Avoid rivastigmine
  - Avoid antipsychotics if ↑risk of Torsades de pointes

- Identify delirium risk factors: dementia, HTN, ETOH abuse, high severity of illness, coma, benzodiazepine administration
- Avoid benzodiazepine use in those at ↑risk for delirium
- Mobilize and exercise patients early
- Promote sleep (control light, noise; cluster patient care activities; decrease nocturnal stimuli)
- Restart baseline psychiatric meds, if indicated
Delirium Prevention
ABCDE Bundle*

Awakening and Breathing Coordination of daily sedation and ventilator weaning trials, Choice of sedative and analgesic exposure, Delirium monitoring and management, and Early mobility and Exercise.

*Pandharipande et al. Critical Care 2010, 14:157
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.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!
ABCDE vs. ABCDEF Bundles

(Haven’t we done this already without the ‘F’?)

**ABCDE Bundle**
- Created in 2010 (*pre-PAD Guidelines*).
- Focuses only on delirium, weakness.
- Uses only RASS, CAM-ICU for delirium assessments.
- Doesn’t specifically define PAD treatment thresholds.
- Doesn’t include specific treatment recommendations.
- Links SATs, SBTs, and Early Mobility.
- Doesn’t specifically involve ICU families.

**ABCDEF Bundle**
- Created in 2014 (*post-PAD Guidelines*).
- Focuses on pain, sedation, and delirium.
- Uses validated *pain, sedation*, and *delirium* assessment tools.
- Defines significant pain, agitation or deep sedation, and delirium.
- Makes specific recommendations for treating and preventing pain, agitation, deep sedation, and delirium.
- Links SATs, SBTs, and Early Mobility.
- Engages, empowers ICU Families.
Why a Bundle?

Standardize Care Processes

Improve ICU Team Communication

Better Outcomes!

Reduce Practice Variation

Every Patient, Every Time

http://www.ihi.org/resources/Pages/ImprovementStories/WhatsaBundle.aspx
Other ICU Bundles

- Sepsis
- VAP
- CRBSI
- CAUTI
ABCDEF Bundle
Integrated PAD Management

Sedation/Agitation Management

Delirium Management

Early Mobility

SBTs
Synergistic Benefits of Integrated PAD Management

SAT/Ts + SBT = ABC

ABC + EM = ABC+E

EM + SAT/Ts = A+E

MV ↓ 3d
LOS ↓ 4d
Mort ↓ 32%
(Girard 2008)

ICU LOS ↓ 1.4d
Hosp LOS ↓ 3.3d
(Morris 2008)

↓ delirium 2d
↓ MV 2.4d
↑ Indep. FS (OR 2.7)
(Schweickert 2009)
ABCDE Bundle Implementation

Study Design:
- **Hypothesis**: Implementing the ABCDE bundle → ↓ incidence of *ICU delirium*, *ICU acquired weakness*
- Prospective, observational cohort, before/after study design
- N = 296 adult pts (+/− MV), single center, 7 ICUs/SDUs (2010 – 2012)

Interventions:
- **Awakening and Breathing Coordination**
- **Delirium Monitoring/Management**
- **Early exercise/mobility**

Outcomes:
- Ventilator-free days
- Prevalence/duration of delirium, coma (RASS = -4 or -5)
- ICU mobilization frequency
- ICU/hospital mortality, LOS, discharge disposition

*Balas, et al, Crit Care Med 2014; 42:1024–1036*
Results:

- Pre- vs. post- groups similar except age (59 yr. vs. 56 yr., P = 0.05)
- Ventilator free days by 3 days (P = 0.04)
- Odds of developing delirium ↓ by = 45% (adjusted, P = 0.03)
- Odds of patients getting out of bed ↑ x2 (P = 0.003)
- No differences in safety outcomes (i.e., unplanned extubation, re-intubation, tracheostomies, restraints)
- No differences in LOS, mortality, or discharge disposition
- Frequency of SATs, SBTs
- No differences in sedative, opioid use!
- No change in deep sedation!

*Balas, et al, Crit Care Med 2014; 42:1024–1036*
PAD Protocol + SATs + SBTs

Study Design:

- **Hypothesis**: Implementing an integrated PAD management protocol bundled with SATs and SBTs improves ICU patient outcomes.
- Prospective, observational cohort, before/after study design
- N = 1,483 MV ICU patients admitted to a single 24-bed Trauma/Surgical ICU (2009 - 2011)

Interventions:

- Integrated PAD Protocol → analgosedation, TSS (*light sedation*)
- PAD management linked to daily SATs, SBTs (*single bundle*).

Outcomes:

- Pain (NRS), RASS, CAM-ICU assessments
- Benzodiazepine use
- Delirium incidence
- MV duration
- ICU/hospital mortality, LOS, VAP rate
Results:

• ↑ # of RASS, CAM-ICU assessments performed per day ($P = 0.01$).
• ↓ mean hourly benzodiazepine dose by 34.8% ($P = 0.01$).
• ↑ mean RASS scores (i.e., patients were less sedated) ($P = 0.01$)
• Multivariate Analyses: (i.e., SAP score, age, gender, weight)
  |   | ICU delirium risk ↓ by 33% (OR, 0.67; 95% CI, 0.49–0.91; $P = 0.01$) |
  |   | MV duration ↓ by 17.6% (95% CI, 0.6–31.7%; $P = 0.04$). |
  |   | ICU LOS ↓ 12.4% (95% CI, 0.5–22.8%; $P = 0.04$) |
  |   | Hospital LOS ↓ 14% (95% CI, 2.0–24.5%; $P = 0.02$) |
  |   | No significant changes in VAP rate, mortality, or discharge status |

How Can You Successfully Implement the ABCDEF Bundle in Your ICU???

HELP!

VS

Mary Ann Barnes-Daly RN BSN CCRN DC
Expected Benefits of Implementing the ABCDEF Bundle

- ↓ Duration of MV
- ↓ ICU, hospital LOS
- ↑ ICU patient throughput, bed availability
- ↓ Health care costs per patient
- ↑ Long-term cognitive function, mobility
- ↑ Number of patients discharged to home!
- ↑ Lives saved!

But by how much??????
ABCDEF Bundle
Where are We Going?

ICU Liberation Website (www.iculiberation.org)
SCCM Webcasts/Podcasts
ICU Liberation Book (2015)
ICU Liberation Collaborative (Fall 2015)
ICU Liberation & Animation: Implementing the PAD Guidelines
Vanderbilt University & SCCM (Sept. 9-10, 2015)
Redcap PAD Database (2016?)
V4.0 PAD Guidelines (2017)
Implementation: Role of the Interprofessional Team

Mary Ann Barnes-Daly, RN, BSN, CCRN, DC
Regional Clinical Initiative Lead
Sutter Health
Sacramento, California, USA
Disclosures and Associations

No industry affiliations

Grants from the Gordon and Betty Moore Foundation for work with the following:

• Society of Critical Care Medicine ICU Liberation Taskforce – Member Nursing Faculty

• Society of Critical Care Medicine Surviving Sepsis Campaign Phase IV – Member Nursing Faculty
ICU LIBERATION

Liberation from:

- The ventilator
- Deep sedation
- The bed/immobility
- Delirium
- PTSD
- Death

Implementation – Clinical Perspective
Implementation – Clinical Perspective

- **A** – Assess, Prevent and Manage Pain
- **B** – Both spontaneous Awakening trials (SAT) & spontaneous Breathing trials (SBT)
- **C** – Choice of Analgesia and Sedation
- **D** – Delirium - Assess, Prevent and Manage
- **E** – Early Mobility and Exercise
- **F** – Family Engagement and Empowerment

The Entire Bundle Begins With Reduction of sedation levels!
Implementation from a Systems Perspective

Individual practitioners – working in teams

<table>
<thead>
<tr>
<th>Bundle Element</th>
<th>Primary Accountability</th>
<th>Additional Team Member Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Awakening and Analgesia</td>
<td>RN</td>
<td>MD, Pharm</td>
</tr>
<tr>
<td>B Breathing</td>
<td>RCP</td>
<td>RN, MD, Pharm</td>
</tr>
<tr>
<td>C A&amp;B Coordination/Choice of Medication</td>
<td>RN, RCP</td>
<td>MD, Pharm</td>
</tr>
<tr>
<td>D Delirium Assessment, Prevention, Mitigation</td>
<td>RN</td>
<td>RCP, Pharm, MD, PT</td>
</tr>
<tr>
<td>E Exercise and Early Mobility</td>
<td>PT</td>
<td>RN, RCP</td>
</tr>
<tr>
<td>(F) Family and Patient</td>
<td>RN</td>
<td>All</td>
</tr>
</tbody>
</table>
How-Team Administered Protocol

• **Assessment**: SAT, SBT, CAM-ICU, RASS, Functional mobility assessment, etc

• **Treatment**: Most effective when implemented by nursing, respiratory care practitioner, MD, pharmacist and physical therapy/rehab personnel working together as an ICU team.
What Do We Do With the Information?

Sharing assessments, recommendations and interventions among the ICU Care Team

• Discussing in rounds
• What do your rounds look like?
• Do you use scripts?
• Modifying the plan of care?
• Multi-disciplinary versus Interprofessional
Slide used with permission of Barnes-Daly, MA; Bennett, C; and Sutter Health
Interprofessional Team Development

**Coordination: “It”** Work together, through process integration, to achieve mutual goals.
- PDSA
- SBAR
- Patient Care Plan
- Sustain Change

**Cooperation: “We”** Listen to, value and respect the viewpoints of all team members and contribute/change your own views.
- Self-Awareness
- Communication
- Contrasting Statements
- Feedback

**Partnership: “I”** Create open and respectful relationships (including patient & family) and work equitably to achieve shared outcomes.
- Inclusion of Patient and Family
- Rounding/Team Skills
- Decision Making

Slide used with permission of Barnes-Daly, MA; Bennett, C; and Sutter Health
Success Definition

- Improvement in Interprofessional Team (IPT)-work and collaboration
- More efficient resource use with less energy (including money, time, supplies, and/or good will)
- **Sustained compliance** with assessments and interventions
- Reduction of ICU mechanical ventilation days
- Reduction of ICU an inpatient mortality
- **Reduction of long term physical and cognitive harm to our ICU survivors**
Sutter Amador Hospital
Sutter Auburn Faith Hospital
Sutter Davis Hospital
Sutter Medical Center, Sacramento
Sutter Roseville Medical Center
Sutter Solano Medical Center

7 ICUs targeted

Sacramento, California
“Four Cornerstones for Success”

Evidence Based Practice → Inter-Professional Teams

Reduction of Practice Variation ← Regional Collaboration
Making the Cornerstones Functional

RN Leads in each ICU

Subject Matter Expert teams in each discipline

Interprofessional Team Training

Data collection solution

ICU Rounds – IPT Model
IHI MODEL FOR IMPROVEMENT

PDSA - PDCA

Plan

Act

Do

Study

Plan: Develop the Plan Based on a Needs Assessment

Do: Execute the Plan

Study: Collect Data and Review Performance Indicators

Act: Adjust, Adopt or Abandon

ICU LIBERATION
How to do this work – Our 4 Es

- **Engage**
  - The hearts and minds

- **Educate**
  - Clinical and IP Team Model

- **Execute**
  - Do the bundle and hold IPT rounds

- **Evaluate**
  - Collect the data and show progress
Culture Change

BEHAVIORAL CHANGE:
The Team Approach

Regional Implementation & Design Team (RIDT)
- Collaboration
- Administrative Communication
- Planning

Subject Matter Expert Groups (SMEs)
- Individual Bundle Element Protocols
- Order Set Creation
- Integrated ABCDE Bundle

Affiliate Inter-Professional Teams (AITs)
- PDSA Testing of Bundle
- Modeling IPT Behavior
- Mentoring Others
- Implementation

Collaboration and Community of Practice
Challenges

- Shifting practices that are based on outdated or no evidence
- Mentoring your peers and leading by example
- Data: LOOK at your performance and respond to opportunities
“You never change things by fighting the existing reality. To change something, build a new model that makes the existing model obsolete.”

~R. Buckminster Fuller