Sedation Strategies in the ICU

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Outline

• ICU sedation
  – The good, the bad, and the ugly
• Recent clinical practice guidelines
• Top 10 myths
• A practical approach
What is GOOD about ICU sedation?

- Decreases psychomotor agitation
  - Safety of patient and staff
  - Improve ventilator tolerance
- Makes patients appear more comfortable
- Induces amnesia
- Treatment of specific conditions
  - Alcohol withdrawal
  - Status epilepticus

What is BAD about ICU sedation?

- Early negative effects may include
  - Hypotension
    - May require fluid resuscitation, vasopressors, invasive lines
  - Bradycardia
  - Unreliable neurologic evaluation
  - Loss of patient participation

What is UGLY about ICU sedation?

- ICU effects may include
  - Increased ICU delirium and coma
  - Increased duration of mechanical ventilation
  - Decreased ability to participate in care
    - Turns, mobility, bronchopulmonary hygiene
  - Increased mortality

Vasilevskis E. Chest 2010
What is UGLY about ICU sedation?

- Long-term effects may include
  - Cognitive impairment
  - Functional impairment
  - Inability to return home
  - Post-traumatic stress symptoms
  - Ongoing increased mortality

Peitz GJ. CCM 2013

Critical Care Medicine

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

Barr J. CCM 2013

PAD Guidelines: Pain recommendations

- Pain should be routinely assessed using a valid and reliable pain scale
- Pain should be anticipated and treated
  - Intravenous opioids are first line
  - Non-opioids should be considered as well
PAD Guidelines: Agitation recommendations

- Sedative medications should be titrated to maintain light (not deep) sedation, unless clinically contraindicated
- Depth of sedation should be monitored using a valid and reliable scale
  - RASS or SAS
- Non-benzodiazepine sedatives
  - Preferred over benzodiazepines
    • Propofol or dexmedetomidine

PAD Guidelines: Delirium recommendations

- Early mobility for prevention
- Daily sedation interruption or light target level
- Suggest analgesia-first sedation
- Promote sleep with environment, not drugs

So why do so many ICU patients still look like Sleeping Beauty?
TOP 10 MYTHS ABOUT ICU SEDATION

10. ALL MECHANICALLY VENTILATED PATIENTS NEED SEDATION
MYTHS ABOUT ICU SEDATION

10. ALL MV PATIENTS NEED IT

- Endotracheal intubation and mechanical ventilation can be tolerated by most awake patients
- A “no sedation” approach
  - Tolerated by 80% of patients in RCT
  - Decreased ventilator time
  - May decrease mortality

No sedation approach is good for patients!

<table>
<thead>
<tr>
<th></th>
<th>No sedation (n=6)</th>
<th>Sedation (n=6)</th>
<th>p value</th>
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</thead>
<tbody>
<tr>
<td>Days without mechanical ventilation from induction to extub.</td>
<td>8.8 (24.5)</td>
<td>10.0 (10.2)</td>
<td>0.5221*</td>
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<tr>
<td>Length of stay</td>
<td>10.3 (27.4)</td>
<td>9.8 (7.3)</td>
<td>0.2087*</td>
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<tr>
<td>Intensive care</td>
<td>13 (1.1 - 13)</td>
<td>12 (1.0 - 13)</td>
<td>0.5079*</td>
</tr>
<tr>
<td>Hospital stay</td>
<td>18 (14.4)</td>
<td>18 (14.4)</td>
<td>0.9997</td>
</tr>
<tr>
<td>Mortality</td>
<td>8 (17%)</td>
<td>7 (14%)</td>
<td>1.00</td>
</tr>
<tr>
<td>Intensive care</td>
<td>5 (10%)</td>
<td>6 (12%)</td>
<td>0.31</td>
</tr>
<tr>
<td>Hospital stay</td>
<td>11 (22%)</td>
<td>15 (30%)</td>
<td>0.15</td>
</tr>
</tbody>
</table>

Figure 5: Kaplan-Meier plot of length of stay in hospital and number of days from admission to NIV days.

9. SEDATION IS REQUIRED FOR PATIENT-VENTILATOR DYSYNCHRONY
9. VENTILATOR DYSYNCHRONY

- Sedation is not the most effective approach to improve ventilator synchrony
- Work with respiratory therapy to identify causes for dysynchrony
  - Double stacking?
  - Try increasing inspiratory time
  - Inspiratory efforts not coordinated with ventilator?
    - Assess for autoPEEP, try increasing set PEEP
  - High work of breathing?
    - Try increasing set rate

8. ALL ARDS PATIENTS NEED DEEP SEDATION
**MYTHS ABOUT ICU SEDATION**

8. ALL ARDS PATIENTS NEED IT

- Most ARDS patients tolerate low tidal volume ventilation without deep sedation
- Ventilator adjustments can improve tolerance
  - Desaturations with coughing or movement?
    - Try topical lidocaine, increasing set PEEP
  - Double stacking breaths?
    - Try increasing tidal volume by 1 cc/kg PBW if plateau pressure allows
- Opioids are effective for shortness of breath

Kahn J. CCM 2005

**TOP TEN MYTHS ABOUT ICU SEDATION**

7. DEEP SEDATION IS BETTER THAN NEUROMUSCULAR BLOCKADE IN MODERATE/SEVERE ARDS

- Neuromuscular blockade recommended for severe ARDS
  - 48 hours of cisatracurium decreased mortality in RCT
- Using high doses of sedatives alone is inferior
  - Much higher doses of sedatives may be needed to decrease respiratory efforts than to achieve sedation

Papazian L. AJN 2009
6. DEEP SEDATION IS NOT HARMFUL EARLY IN THE ICU COURSE

MYTHS ABOUT ICU SEDATION

- Many sedation protocols don’t begin until 24-48 hours into ICU stay
- Deep sedation is common early after starting mechanical ventilation
  - 76% of patients after 4 hours
  - 68% of patients after 48 hours
- Early deep sedation is associated with poor outcomes
  - Increased duration of MV, increased mortality

Early goal directed sedation is safe and feasible
5. SEDATED PATIENTS DON’T FEEL PAIN

- Pain is extremely common in ICU patients
  - Trauma, surgery
  - ICU related (e.g., suctioning)
  - Pre-existing
- Sedatives do NOT treat pain
- Untreated pain is associated with
  - Physiologic instability (tachycardia, tachypnea, etc.)
  - Delirium, anxiety, inability to sleep
  - PTSD after discharge

4. SEDATION HELPS PATIENTS SLEEP
MYTHS ABOUT ICU SEDATION

4. SEDATION HELPS SLEEP

• Sedation does NOT promote normal sleep
  – Propofol and benzodiazepines only mimic sleep
  – Suppress level III and IV sleep
  – Reduce cerebral blood flow
• Environmental strategies to promote sleep recommended instead

Peitz GJ. CCM 2013

TOP TEN MYTHS ABOUT ICU SEDATION

3. ANXIOUS PATIENTS NEED SEDATION

TOP TEN MYTHS ABOUT ICU SEDATION

3. SEDATION TREATS ANXIETY

• Effective approaches to anxiety management require patient engagement
  – Education
  – Cognitive behavioral therapy
  – Music
  – Facilitating communication
• Sedation decreases patients’ ability to engage

Chlan LL. Am J Crit Care 2016

9/28/2016
2. IT IS EASIER TO CARE FOR SEDATED PATIENTS

- Some aspects of care may be easier for deeply sedated patients in the short term... BUT
  - More likely to develop hypotension
  - More likely to become delirious
  - More likely to fail spontaneous breathing tests
  - More likely to develop weakness
- Awake and cooperative patients
  - Can participate in care
  - Can contribute to decision making
  - Get better faster!

1. IT’S BEST NOT TO REMEMBER CRITICAL ILLNESS
Memories are important to psychological recovery after critical illness
• PTSD is more common in patients who
  – Receive higher doses of benzodiazepines
  – Did not have sedation vacations
  – Do not have factual memories of ICU
  – Have delusional memories of ICU
  • (which are more common with deeper sedation)


Outline
• ICU sedation
  – The good, the bad, and the ugly
• Recent clinical practice guidelines
• Top 10 myths
• A practical approach to ICU sedation
A practical approach to ICU sedation

1. Evaluate clinical situation
2. Set RASS goal
   - Target the least sedation appropriate
   - Most patients can tolerate being awake
3. Assess and treat pain
4. Assess and manage ventilator tolerance
5. Assess and treat agitation
6. Repeat every 4 hours and de-escalate if appropriate
Conclusions

• Approach to sedation is crucial to ICU management and outcomes
• Light or no sedation is the recommended approach for most patients
• Understanding misinformation about ICU sedation will help culture change
• YOU can improve patient outcomes!
  – Evaluation before sedation
  – Deep sedation should only be used for specific indications and for defined periods of time
  – Frequent reassessment determine readiness for awakening

Thank you!
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The struggle itself toward the heights is enough to fill a man’s heart.
- Albert Camus

Protocols combine goals, assessment, treatment

1. Set RASS goal
2. Assess and treat pain
3. Assess and manage ventilator tolerance
4. Assess and treat agitation
5. Repeat every 4 hours and de-escalate if able

Sedation Goals
RASS Score 0 to -3 ABO Ventilator Tolerance: Excluded or the absence of:
- Blockade of respiratory drive
- RRR > 50 % max
- Cough with episodes of desaturation < 90%
- Use of accessory muscles/echocardiographic
  parameters

Dale CR. Annali ATS 2014
Protocol associated with decreased DMV, increased VFD and decreased hospital LOS

<table>
<thead>
<tr>
<th>Baseline (n = 250)</th>
<th>Sedation-Reducing (n = 768)</th>
<th>P Value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mortality (%)</td>
<td>8.0%</td>
<td>8.0%</td>
</tr>
<tr>
<td>Discharge from ICU</td>
<td>41 (16.7%)</td>
<td>195 (25.5%)</td>
</tr>
<tr>
<td>Discharge to home</td>
<td>56 (23.8%)</td>
<td>198 (29.2%)</td>
</tr>
<tr>
<td>Discharge to hosp.</td>
<td>270 (107.8%)</td>
<td>290 (37.7%)</td>
</tr>
<tr>
<td>30-day readmission</td>
<td>26 (10.4%)</td>
<td>26 (3.4%)</td>
</tr>
<tr>
<td>90-day readmission</td>
<td>36 (14.6%)</td>
<td>36 (4.7%)</td>
</tr>
<tr>
<td>Duration of ICU stay</td>
<td>9 (3.99)</td>
<td>11 (1.45)</td>
</tr>
<tr>
<td>Duration of hospitalization, median (IQR)</td>
<td>11 (2-17)</td>
<td>13 (4-16)</td>
</tr>
</tbody>
</table>

Dale CR. Annals ATS 2014