Implementing the 2013 ICU Pain, Agitation, and Delirium Guidelines: Opportunities for Pharmacists to Lead Interdisciplinary Change

Presented as a Breakfast Symposium at the 48th ASHP Midyear Clinical Meeting and Exhibition

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Orlando, Florida

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Agenda

6:15 a.m. – 6:45 a.m.  Breakfast Buffet

6:45 a.m. – 6:40 a.m.  Welcome and Introductions
John W. Devlin, Pharm.D., FCCP, FCCM

6:50 a.m. – 7:10 a.m.  A Decade of Change: Overview of the 2013 PAD Guideline Recommendations
Gilles L. Fraser, Pharm.D., FCCM

7:10 a.m. – 7:35 a.m.  Successful Pharmacist-driven PAD Guideline Implementation Strategies
John W. Devlin, Pharm.D., FCCP, FCCM

7:35 a.m. – 7:45 a.m.  Faculty Discussion and Audience Questions

Faculty

John W. Devlin, Pharm.D., FCCP, FCCM, Activity Chair
Professor of Pharmacy
Northeastern University
Scientific Staff and Critical Care Pharmacist
Division of Pulmonary, Critical Care and Sleep Medicine
Tufts Medical Center
Boston, Massachusetts

Gilles L. Fraser, Pharm.D., FCCM
Professor, Tufts University School of Medicine
PGY2 Critical Care Residency Program Director
Clinical Pharmacist, Critical Care
Maine Medical Center
Portland, Maine
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- John W. Devlin, Pharm.D., FCCP, FCCM, has received research grant support from Hospira.

The following faculty and planners report no relationships pertinent to this activity:

- Gilles L. Fraser, Pharm.D., FCCM
- Susan R. Dombrowski, M.S., B.S.Pharm.
- Kristi N. Hofer, Pharm.D.

ASHP Advantage staff have no relevant financial relationships to disclose.
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Activity Overview

The new Society of Critical Care Medicine’s pain, agitation, and delirium (PAD) guidelines include important recommendations surrounding intensive care unit (ICU) pain control, patient wakefulness, sedative drug choice, early mobilization, and delirium recognition, prevention, and treatment. An interdisciplinary approach to the implementation of these recommendations is critical, and pharmacists are ideally suited to help lead these efforts. This activity will provide pharmacists with strategies for working with the rest of the ICU team to enact change.

Learning Objectives

At the conclusion of this application-based educational activity, participants should be able to

- State key changes and recommendations in the 2013 Society of Critical Care Medicine’s pain, agitation, and delirium (PAD) guidelines.
- Examine literature that reports how successful implementation of PAD-related changes by the ICU interdisciplinary team has improved patient outcomes.
- Describe potential barriers to PAD guideline implementation in the ICU setting and strategies to overcome them.
- Construct a plan for pharmacists to implement PAD guideline recommendations in the ICU.
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Continuing Education Accreditation

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3. Click on My Learning Activities. Then click on 2013 – Midyear Clinical Meeting & Exhibition (Orlando, FL) under Conferences.

4. At the bottom of the page is a field for redeeming Attendance Codes (formerly called CE codes). Enter the Attendance Code(s) from each session, and click Submit.

   Tip: If your code is not redeeming successfully, verify that you have clicked on the title of your conference in order to access the Attendance Code field, not the Enrollment Code field.

5. Each session will be listed under Your Sessions. Click Claim Credit for a session.

6. Click on the name of a session and complete the requirements for the session.

7. Click Claim Credit for your profession. It is important that you select the correct profession.
   - Pharmacists and Pharmacy Technicians: Fill in your NABP eProfile ID and birth month and date. Check the box at the bottom and click Claim. You will see a message advising you whether or not your credits were claimed successfully. Your CPE credit will be reported directly to CPE Monitor.
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There may be different directions for workshops and review courses.

| Date of Activity: | Monday December 9, 2013 | Attendance Code: | M _ _ _ _ _ | CPE Hours: | 1.0 |

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Implementing the 2013 ICU Pain, Agitation, and Delirium Guidelines: Opportunities for Pharmacists to Lead Interdisciplinary Change

Gilles L. Fraser, Pharm.D., FCCM
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PGY2 Critical Care Residency Program Director
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Gilles L. Fraser, Pharm.D., FCCM, is Professor, Tufts University School of Medicine, and Clinical Pharmacist, Critical Care, at the Maine Medical Center in Portland. Dr. Fraser also serves as program director for the PGY2 critical care residency program.

Dr. Fraser earned his Bachelor of Science in Pharmacy from the University of Connecticut in Storrs and Doctor of Pharmacy degree from the University of Minnesota in Minneapolis.

Dr. Fraser is a fellow of the Society of Critical Care Medicine. He has published extensively in the area of critical care medicine in the form of original research articles, review papers and editorials, textbook chapters, and research abstracts at national and international pharmacy and critical care scientific meetings. Dr. Fraser was a team leader for the recently published Society of Critical Care Medicine’s clinical practice guidelines for the management of pain, agitation, and delirium in the ICU.

Dr. Fraser has received numerous awards and honors, including Presidential Citations from the Society of Critical Care Medicine (2013, 2006, and 2000), Accomplished Teaching Award from Tufts University School of Medicine (2013), Preceptor of the Year, Maine Medical Center PGY1 Residency Program (2012), and the Maine Society of Health-System Pharmacists Pharmacy Practice Award (2010).
Management of Pain, Agitation, and Delirium in Critically Ill Adults: A Decade of Change

Gilles L. Fraser, Pharm.D., FCCM
Professor, Tufts University School of Medicine
PGY2 Critical Care Residency Program Director
Clinical Pharmacist, Critical Care
Maine Medical Center
Portland, Maine

Discussion Outline

- Greater concern for outcomes after ICU discharge
- Importance of pain evaluation
- Analgosedation
- Wakefulness is an important therapeutic goal
- Upgrade use of propofol and dexmedetomidine
- Downgrade use of benzodiazepines
- Delirium assessment and nonpharmacological prevention strategies

What We've Learned:
Goals for Our ICU Patients

- THEN: Survival and discharge
- NOW: Don’t fix patients and break them at the same time
  - Complications extend beyond hospital discharge
    - Delirium ~10%
    - Long-term (1 year) cognitive impairment ~30%
      - Similar to traumatic brain injury or early Alzheimer’s disease
    - PTSD ~15%
- FUTURE: Modifiable risk factors?

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Pain and/or Discomfort Should ALWAYS Be Considered a Cause of ICU Agitation

“Mundane/routine” aspects of ICU care are the most troublesome for patients

1990

63% remembered moderate to severe pain

2007

50% remembered unmet analgesic needs

There has been little progress in improving patient comfort in the ICU despite 17 years of focused attention on pain as an important clinical issue

ICU Pain and Discomfort

- Why is this so difficult for caregivers?
  - What is routine to us is hardly routine to the patient
  - Lack of appreciation for how poorly we assess pain
    - Gold standard for pain assessment = NRS
    - Unable to communicate with intact motor function?
      - Use validated behavioral pain scales
        - CPOT and BPS

NRS = numerical rating scale
Newly Validated Pain Scales for Nonverbal ICU Patients

- Behavioral Pain Scale (BPS)
  - Evaluates facial expression, upper limb movement, and compliance with ventilator
- Critical-Care Pain Observation Tool (CPOT)
  - Evaluates all of the above plus muscular tension and vocalization if not intubated
- Scales do NOT consider vital sign changes!!
- Systematic use decreases:
  - Moderate to severe pain
  - Time on the ventilator and in the ICU
  - Amount of sedatives administered


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New Paradigm: Analgesia-Based “Sedation”

- Also known as analgesedation or analgesia-first (A-1) sedation
- Acknowledges that discomfort is a common cause of agitation
- Any opioid useful… typically rapid onset and offset
- ~ 50% will require additional sedative agents

Clinical Practice Pearl: This is one way to limit avoidable serious adverse reactions from sedatives (immunomodulation, death, delirium, metabolic acidosis, hemodynamic derangement, etc).

“Analgesedation” Is Not Appropriate

- Drug/substance withdrawal (except opiates)
  - Replenish substance or alternative when appropriate
- Drug-induced agitation
  - Serotonin syndrome (linezolid, SSRIs)
  - Neuroleptic malignant syndrome
  - Delirium (benzodiazepines, meperidine, diphenhydramine, corticosteroids, etc)
  - Confusion (cefepime, quinolones, digoxin)
- Any agitation associated with a clear and reversible etiology

Finding the Balance with Analgesedation

- Pain and discomfort are a common cause for agitation
- Avoid potential sedative-related adverse events:
  - immunomodulation
  - death (e.g., PRIS)
  - delirium
  - metabolic acidosis
  - hemodynamic derangement
- ICU LOS, ventilator time, delirium, VAP, mortality, and cost of care NOT consistently reduced
- May interfere with respiratory drive, gastric motility, nutrition
- Potential for withdrawal symptoms when stopped
- Rigorously evaluated only in European ICUs

Potential Limitations

Potential Advantages

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Deep Sedation

• Greater than 40% patients are more deeply sedated than desired
• Drug-induced coma present during 32% of patient evaluations
  – Yet only 2.6% of clinicians rate these patients as “oversedated”

Does This Matter?

Payen JF et al. Anesthesiology. 2007; 106:687-95.

Avoiding Coma Improves Outcome

• Facilitates participation in care: pulmonary toilet, repositioning, early mobility
• Allows more accurate assessments of pain and delirium
• Reduces
  – Mechanical ventilation time (28-57%)
  – ICU length of stay (30-47%)
  – Neurodiagnostic testing (67%)
• Limits the post-intensive care syndrome?
  – Delirium?
  – PTSD?
  – Long-term cognitive impairment?


Sedation Management

• Light sedation for most patients (B)
  – Allows wakefulness: respond purposefully to at least three commands
  – RASS and SAS for sedation assessment
  – Light sedation = RASS -1 or -2; SAS 3
• Use protocol with daily sedation interruption or that targets light level of sedation (1B)

Audience Polling Question

Which of the following has been shown in studies to be an outcome of maintaining mechanically ventilated adult patients at a light (rather than deep) level of sedation?

- A greater incidence of post-traumatic stress disorder.
- A greater incidence of patient-initiated device removal (e.g., self-extubation).
- A shorter duration of mechanical ventilation.

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Sedation Management

- Sedation strategies with non-benzodiazepines may be preferred since they are associated with improved clinical outcomes (2B)
  - Ventilator time
  - ICU time
  - Delirium?
- No effect on mortality

Benzodiazepines

• Good
  – GABA agonist withdrawal
  – Anxiety
  – Intermittent agitation
  – Hemodynamic instability?
  – Seizures
  – Deep sedation and when amnesia is beneficial
• And sometimes they are indeed the devil’s handiwork


Benzodiazepine Use Impacts Outcome


See enlargement p. 21

Propofol

• Pharmacology: GABA agonist
• Pharmacokinetics/dynamics: onset 1-2 min, duration 10 min
• Benefits
  – Rapid onset & offset
    • Allows easy dose titration to goal and facilitates daily sedation evaluation
    • When compared to benzodiazepines, results in shorter time on mechanical ventilation and in the ICU
  • Hypnotic and antiemetic
  – Can be used for intractable seizures and elevated intracranial pressures

Propofol Concerns

• Not reliably amnestic, especially at low doses
• NO analgesia!
• Hypotension
• Hypertriglyceridemia; lipid source (1.1 kcal/mL)
  – Monitor triglycerides twice weekly
• Respiratory depression
• Propofol-Related Infusion Syndrome (PRIS)
  – Low frequency adverse reaction with very high risk for death


Dexmedetomidine

Competing Concerns

Use Dex
• Less time on the ventilator
• No interference with resp drive
• Less delirium
• Sympatholysis can be helpful

Don’t Use Dex
• Econotoxicity
• Hemodynamic derangement
• Not for deep sedation
• No amnestic properties

Helpful Hints
• If you wouldn’t treat a patient with a beta-blocker, don’t use dex
• Withdrawal tachycardia and hypertensin unusual
• Econotoxicity = HUGEl


Sedation Costs

• MMC sedative costs/DAY in a 90-kg patient
  – Dexmedetomidine 1.4 mcg/kg/hr = $1000
  – Propofol 60 mcg/kg/min = $53
  – Midazolam 5 mg/hr = $13
  – Clonidine 0.2 mg q 6 hr = $0.36
Discussion Outline

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Why Systematically Assess Delirium?

- Any data suggesting that this reduces delirium prevalence?
  - No!
- Any data suggesting that this reduces its severity?
  - No!
- So why bother?
  - Prompts timely identification of clinically relevant reversible causes ...infections, etc
  - Prompts scrutiny of drug therapy

Can ICU Delirium Be Prevented?

- Nonpharmacologic:
- Early mobilization
- Return to independent functional status
  - 59% vs. 35% (p=0.02)

**Early Mobilization**

![Graph showing median times for various outcomes]

- ↑ quality of life
- ↑ physical function
- ↑ peripheral, respiratory muscle strength


See enlargement p. 21

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**Delirium Management?**

- Correct inciting factor and offer nonpharmacologic interventions
- Control symptoms?
  - Unclear if standard antipsychotic treatment reduces duration & severity of symptoms
  - Benzodiazepines?
    • For delirium due to drug/alcohol withdrawal
  - Dexmedetomidine?
    • Preferable to benzodiazepines in most delirious patients
- No treatment FDA approved


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**Translation Into Practice**

Assumes that:
1) primary causes for pain, agitation, and delirium are addressed
2) non-pharm management options are in place including adjustment of vent settings
3) patient behaviors are troublesome and/or pose a risk

**Step 1** Assess and treat pain

- Routinely assess pain in all ICU patients using self-report if possible (NRS)
  - Evaluate at light levels of sedation
- For patients with intact motor function, but unable to self-report, assess pain with BPS or CPOT
- Preemptively treat procedural pain
- Opiates may be preferred especially if an analgesia-first approach is used.
Assessment for delirium and agitation/sedation should be routine for all ICU patients

- Use CAM-ICU or ICDS C assessment tools for delirium when patients are wakeful
- Use RASS or SAS assessment tools for sedation
- Use protocols and checklists to facilitate sedation management

*Target the lightest level of sedation possible*

**Translation Into Practice**
Assumes that
1) primary causes for pain, agitation, and delirium are addressed
2) non-pharm management options are in place including adjustment of vent settings
3) patient behaviors are troublesome and/or pose a risk
Benzodiazepine Use Impacts Outcome


Early Mobilization


• ↑ quality of life
• ↑ physical function
• ↑ peripheral, respiratory muscle strength
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John W. Devlin, Pharm.D., FCCP, FCCM, is Professor of Pharmacy at Northeastern University and Adjunct Associate Professor of Medicine at Tufts University in Boston. At Tufts Medical Center, Dr. Devlin is a member of the scientific staff in the Division of Pulmonary, Critical Care and Sleep Medicine, and he serves four months annually as a critical care pharmacist in the medical intensive care unit. Dr. Devlin directs a two-year critical care pharmacy fellowship program that is currently training its fourth candidate, and he frequently involves Northeastern University pharmacy students in his research.

Dr. Devlin earned his Bachelor of Science in Pharmacy and Doctor of Pharmacy degrees at the University of Toronto in Ontario, Canada. He completed a pharmacy practice residency at London Health Sciences Centre in London, Ontario, Canada and a critical care pharmacy fellowship at Henry Ford Hospital in Detroit, Michigan.

Dr. Devlin is a fellow of the American College of Critical Care Medicine and the American College of Clinical Pharmacy. He has published more than 50 peer-reviewed original research articles and more than 40 review papers and editorials, authored 20 textbook chapters, and presented more than 80 research abstracts at national and international pharmacy and critical care scientific meetings, primarily in the field of critical care pharmacotherapy. He is a member of the editorial boards of both Critical Care Medicine and Pharmacotherapy. Dr. Devlin’s federally-funded research program is primarily focused on the detection, prevention, and treatment of delirium in the intensive care unit and the use and assessment of sedation in the critically ill. He is frequently invited to lecture on his research at national and international critical care and pharmacy meetings.
Successful Pharmacist-driven PAD Guideline Implementation Strategies

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Tufts Medical Center
Boston, Massachusetts

Pharmacist-Driven PAD Optimization Strategies

- Interdisciplinary approach: differing perspectives
- Optimizing patient wakefulness strategies
- Boosting delirium recognition
- Minimizing antipsychotic use
- Reflection of current and past PAD efforts
- Leading PAD quality improvement efforts

PAD Interdisciplinary Team

Courtesy J Barr, MD
PAD Interdisciplinary Team

- Pharmacist Champion
- Physical Therapy Champion
- Hospital Administrators
- RT Champion
- RN Champion
- MD Champion
- Family

Integrated Approach to PAD

Adapting ICU Pain, Sedation and Delirium
Evidence to the ICU Bedside:
It’s all about perspective
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- Interdisciplinary approach: differing perspectives
- **Optimizing patient wakefulness strategies**
  - Boosting delirium recognition
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Patient Wakefulness is Important!

- Patient communication
- Delirium
- Delirium screening
- Spontaneous breathing trial
- Early mobilization
- PTSD
- Risk for sedative ADEs
Impact of a Combined SAT-SBT Strategy on Patient Outcomes

<table>
<thead>
<tr>
<th>Outcome</th>
<th>SBT</th>
<th>SAT+SBT</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ventilator-free days</td>
<td>12</td>
<td>15</td>
<td>0.02</td>
</tr>
<tr>
<td>Coma, days</td>
<td>3</td>
<td>2</td>
<td>0.002</td>
</tr>
<tr>
<td>Time-to-event, days</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Successful extubation</td>
<td>7</td>
<td>5</td>
<td>0.05</td>
</tr>
<tr>
<td>ICU discharge</td>
<td>13</td>
<td>9</td>
<td>0.01</td>
</tr>
<tr>
<td>Hospital discharge</td>
<td>19</td>
<td>15</td>
<td>0.04</td>
</tr>
</tbody>
</table>

Compliance with SAT and SBT components of protocol in this controlled study was ≥ 90%

SAT = Spontaneous Awakening Trial
SBT = Spontaneous Breathing Trial


Perceived Barriers to Use of Daily Sedation Interruption (DSI): Engaging the Bedside RN is the Key!

- Lack of physician order: 6.0%
- Lack of nursing acceptance: 15.0%
- Prefer more control than a protocol offers: 11.0%
- Use may cause oversedation: 8.0%
- Protocol not accessible when needed: 6.0%
- Protocols are difficult to use: 6.0%
- Inconvenient to coordinate: 4.0%
- Not appropriate for select patients*: 4.0%
- Possibility for undersedation: 3.0%
- No proven benefit: 2.0%
- Prefer more control than a protocol offers: 11.0%


See enlargement p. 37
After one hour on SBT, RN pages MD to come evaluate patient for possible extubation.

Reduction in Administration of Continuous IV Benzodiazepine and Opioid Therapy in Acute Lung Injury Patients Reduces Incidence of Coma

<table>
<thead>
<tr>
<th></th>
<th>Before New Sedation Protocol</th>
<th>After New Sedation Protocol</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Narcotic infusion*</td>
<td>74%</td>
<td>33%</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Benzodiazepine infusion *</td>
<td>70%</td>
<td>22%</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Median RASS score</td>
<td>-4 (-5 to -2)</td>
<td>-1.5 (-3, 0)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Comatose*</td>
<td>65%</td>
<td>23%</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

*% of MICU patients


Impact of a Clinical Pharmacist-Enforced ICU Sedation Protocol

Audience Polling Question

Which of the following has been shown to reduce sedation-associated coma in the ICU?

- Decreased use of IV sedation infusions
- Daily sedation interruption/awakening
- Each of the above

Pharmacist-Driven PAD Optimization Strategies

- Interdisciplinary approach: differing perspectives
- Optimizing patient wakefulness strategies
- **Boosting delirium recognition**
  - Minimizing antipsychotic use
  - Reflection of current and past PAD efforts
  - Leading PAD quality improvement efforts

Strategies to Boost Delirium Recognition in the ICU

- Sedation assessment (i.e., SAS or RASS) should be occurring regularly and reliably
- Need buy-in from both nurse and physician managers
- Education
  - Both didactic (e.g., classroom/web) and at bedside
  - Both nurses and pharmacists can deliver this education
  - Deliver education to all nurses (i.e., both day and night shift), physicians, and pharmacists
- Ensure that clinicians are comfortable with "not being able to evaluate" components of delirium at certain times
- Documentation of delirium evaluation
- Mandatory discussion of delirium evaluation during daily rounds

SAS=Sedation-Agitation Scale
RASS=Richmond Agitation-Sedation Scale

Pharmacist-Driven PAD Optimization Strategies

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---

**Use of Antipsychotic Therapy to Treat Delirium Remains High in American ICUs**

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<table>
<thead>
<tr>
<th>Medication</th>
<th>Published RCT demonstrating benefit (%)</th>
<th>Labeled by the FDA for delirium treatment (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haloperidol</td>
<td>42</td>
<td>34</td>
</tr>
<tr>
<td>Quetiapine</td>
<td>40</td>
<td>8</td>
</tr>
<tr>
<td>Lorazepam</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Dexmedetomidine</td>
<td>33</td>
<td>8</td>
</tr>
</tbody>
</table>

Low-Dose IV Haloperidol Prevents Delirium in Low-Acuity SICU Patients

<table>
<thead>
<tr>
<th></th>
<th>Haloperidol 1.7 mg IV over 12 hrs (n=229)</th>
<th>Placebo (n=228)</th>
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<td>Intubated (%)</td>
<td>78.6</td>
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</table>

See enlargement p. 39

Mechanically Ventilated Critically Ill Adults with Sub-syndromal Delirium [ICDSC 1-3]

<table>
<thead>
<tr>
<th></th>
<th>Haloperidol 1 mg IVP q6h</th>
<th>Placebo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>60±16 yrs</td>
<td></td>
</tr>
<tr>
<td>APACHE-2</td>
<td>20 (17-23)</td>
<td></td>
</tr>
<tr>
<td>Medical</td>
<td>71%</td>
<td></td>
</tr>
<tr>
<td>Pre-DeliricScore</td>
<td>49(37-74)%</td>
<td></td>
</tr>
</tbody>
</table>

Supported by 1R15AG034915-01A1 NIA

ICU Delirium (during study drug administration)

Al-Qahtani NS et al. Accepted SCCM Congress 2014

HOPE-ICU Study:

- Mechanically ventilated ICU patients randomized within 72 hrs of ICU admission (regardless of delirium or coma status) to receive:
  - Haloperidol 2.5 mg IV q8h or placebo for up 14 days or until ICU discharge or coma and delirium-free x 2 days

<table>
<thead>
<tr>
<th></th>
<th>Haloperidol n=71</th>
<th>Placebo n=70</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Days alive, delirium-free, and coma-free in the first 14 days</td>
<td>5 (0-10)</td>
<td>6 (0-11)</td>
<td>0.53</td>
</tr>
<tr>
<td>Days in delirium in the first 14 days</td>
<td>5 (2-8)</td>
<td>5(1-8)</td>
<td>0.99</td>
</tr>
<tr>
<td>Ventilator-free days</td>
<td>21 (0-25)</td>
<td>17 (0-25)</td>
<td>0.88</td>
</tr>
</tbody>
</table>

Efficacy and safety of quetiapine in critically ill patients with delirium. A prospective, multicenter, randomized, double-blind, placebo-controlled pilot study

MIND USA STUDY

Patients requiring either MV, NPPV or in shock who are CAM-ICU+
N=947 patients at n=14 USA centers

Haloperidol 10 mg IV q12h
Ziprasidone 20 mg IV q12h
Placebo 10 mL q12h

Period spent delirium-free and coma-free 14 days after randomization

Stop and THINK

Do any meds need to be stopped or lowered?
- Especially consider sedatives
- Is patient on minimal amount necessary?
  - Daily sedation cessation
  - Targeted sedation plan
- Do sedatives need to be changed?

Toxic Situations
- CHF, shock, dehydration
- Delirogenic meds (tight titration)
- New organ failure (liver/kidney)

Hypoxemia

Infection/sepsis (nosocomial)

Immobilization

Nonpharm interventions
- Hearing aids, glasses, reorient, sleep protocols, music, noise control, ambulation

K+ or electrolyte problems
Audience Polling Question

Which of the following is MOST true about the role of haloperidol for either the prevention or treatment of delirium in the ICU?

- Haloperidol is approved by the FDA for the treatment of delirium in the ICU.
- Haloperidol has been shown in one randomized, controlled trial to prevent delirium in severely ill ICU patients.
- Neither of the above

Pharmacist-Driven PAD Optimization Strategies

- Interdisciplinary approach: differing perspectives
- Optimizing patient wakefulness strategies
- Boosting delirium recognition
- Minimizing antipsychotic use
- Reflection of current and past PAD efforts
- Leading PAD quality improvement efforts

Perceived vs. Actual Practice

- Survey of 85 ICUs where a sedation protocol was used (24-hr practice snapshot)
  - Sedation protocols used in 50%
- Sedation interruption reported in 66% ICUs
  - Performed in 36% patients
- Delirium monitoring reported in 25% ICUs
  - Performed in 10% of patients

Reflection of Current Practices

Important

- Consider past PAD-related successes and failures
- Do you screen for pain with a non-verbal scale?
- Is sedation assessment regular and reliable?
- How many intubated patients receive continuous IV sedation?
- Is a light level of sedation being targeted?
- Is DA-SBT protocol in place?
- Is delirium being screened for?
- Has early mobilization been tried?

- What are the barriers for you to change YOUR daily PAD practices?
- What are the barriers preventing change to YOUR ICU's PAD practices?

**SCCM 2013 PAD guidelines are ONLY guidelines**

Controlling pain, agitation and delirium in the ICU requires an individualized approach for most patients

Pharmacist-Driven PAD Optimization Strategies

- Interdisciplinary approach: differing perspectives
- Optimizing patient wakefulness strategies
- Boosting delirium recognition
- Minimizing antipsychotic use
- Reflection of current and past PAD efforts
- **Leading PAD quality improvement efforts**
What Is the ABCDE Bundle?

- **A**: Awakening and Breathing coordination
- **B**: Choice of sedative
- **C**: Delirium identification and management
- **D**: Exercise

Vasilievskis EE et al. CHEST. 2010; 138:1224–33.

Impact of an ICU Sedation Protocol Incorporating Many PAD Guideline Recommendations

- Pain assessment and treatment first
- Maintenance 24/7 of patients in an awake/slightly sleepy state
- Use of continuous sedation infusions
- Minimal use of benzodiazepines
- Early delirium recognition and treatment

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Before-Protocol N=604</th>
<th>After-Protocol N=610</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>RASS</td>
<td>0.4</td>
<td>0.4</td>
<td>0.9</td>
</tr>
<tr>
<td>No exposure to benzodiazepines</td>
<td>39%</td>
<td>45%</td>
<td>&lt;0.03</td>
</tr>
<tr>
<td>Lorazepam equivalents</td>
<td>3.8</td>
<td>2.3</td>
<td>0.05</td>
</tr>
<tr>
<td>ICDSC=0</td>
<td>32%</td>
<td>41%</td>
<td>0.002</td>
</tr>
<tr>
<td>Discharged to home</td>
<td>45%</td>
<td>52%</td>
<td>0.02</td>
</tr>
</tbody>
</table>

Facilitating Knowledge Transfer to the Bedside

- Use clinical practice guidelines as a model
- Develop protocols for managing PAD
- Develop “order sets” based on institution-specific protocols
- Create “bundles” for implementing essential components of practice guidelines
- Consider daily rounding pharmacist or quality checklist with these elements
- Offer real time clinical decision support


Benchmarking PAD Guidelines Performance Improvement

<table>
<thead>
<tr>
<th></th>
<th>Pain</th>
<th>Agitation</th>
<th>Delirium</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Assess</strong></td>
<td>% of time patients evaluated for pain 4x per shift</td>
<td>% of time sedation assessed 4x per shift</td>
<td>% of time delirium assessments are performed every shift</td>
</tr>
<tr>
<td>% of time pain treatment administered within 30 minutes of significant pain</td>
<td>% of sedation assessments where patients are over sedated (e.g. RASS ≤ 2)</td>
<td>% of time benzodiazepines are administered to patients with agitated delirium</td>
<td></td>
</tr>
<tr>
<td><strong>Treat</strong></td>
<td>% of time patients receive pre-procedural analgesia</td>
<td>% of failed attempts at SBTs due to oversedation (i.e., lack of daily interruption)</td>
<td>% of patients receiving early mobility</td>
</tr>
<tr>
<td><strong>Prevent</strong></td>
<td>% of time patients evaluated for pain 4x per shift</td>
<td>% of time sedation assessed 4x per shift</td>
<td>% of time delirium assessments are performed every shift</td>
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Perceived Barriers to Use of Daily Sedation Interruption (DSI): Engaging the Bedside RN is the Key!

- Lack of physician order: 38.0%
- Lack of nursing acceptance: 15.0%
- Prefer more control than a protocol offers: 11.0%
- Use may cause oversedation: 8.0%
- Protocol not accessible when needed: 6.0%
- Protocols are difficult to use: 6.0%
- Inconvenient to coordinate: 4.0%
- Not appropriate for select patients: 4.0%
- Possibility for undersedation: 3.0%
- No proven benefit: 2.0%


Note: Nurses automatically evaluate all mechanically ventilated patients receiving continuous sedation and/or opioid for a DA trial EACH MORNING unless MD writes an order NOT to complete DA in the patient.
Use of Antipsychotic Therapy to Treat Delirium Remains High in American ICUs

<table>
<thead>
<tr>
<th>Year</th>
<th>Drug</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>Antipsychotics</td>
<td>634</td>
<td>70</td>
</tr>
<tr>
<td></td>
<td>Haloperidol</td>
<td>603</td>
<td>66</td>
</tr>
<tr>
<td></td>
<td>Atypical antipsychotics</td>
<td>34</td>
<td>4</td>
</tr>
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Low-Dose IV Haloperidol Prevents Delirium in Low-Acuity SICU Patients

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Selected References


Implementing the 2013 ICU Pain, Agitation, and Delirium Guidelines: Opportunities for Pharmacists to Lead Interdisciplinary Change


34. Riker RR, Fraser GL. Adverse events associated with sedatives, analgesics, and other drugs that provide patient comfort in the intensive care unit. *Pharmacotherapy.* 2005; 25(5 Pt 2):8S-18S.


Self-Assessment Questions

The presentation self-assessment questions are listed here for your convenience. Note the correct answers for future reference.

1. Which of the following has been shown in studies to be an outcome of maintaining mechanically ventilated adult patients at a light (rather than deep) level of sedation?
   a. A greater incidence of post-traumatic stress disorder
   b. A greater incidence of patient-initiated device removal (e.g., self-extubation)
   c. A shorter duration of mechanical ventilation

2. Which of the following has been shown to reduce sedation-associated coma in the ICU?
   a. Decreased use of IV sedation infusions
   b. Daily sedation interruption/awakening
   c. Each of the above

3. Which of the following is MOST true about the role of haloperidol for either the prevention or treatment of delirium in the ICU?
   a. Haloperidol is approved by the FDA for the treatment of delirium in the ICU.
   b. Haloperidol has been shown in one randomized, controlled trial to prevent delirium in severely ill ICU patients.
   c. Neither of the above

Answers

1. c
2. c
3. c