The Pharmacist’s Role in Implementing the New Pain, Agitation, and Delirium Guidelines in the Critical Care Setting

Presented as a Breakfast Symposium and Live Webcast at the 47th ASHP Midyear Clinical Meeting and Exhibition

Tuesday, December 4, 2012
Las Vegas, Nevada

Planned and conducted by ASHP Advantage and supported by an educational grant from Hospira, Inc.
WEBCAST INFORMATION

What is a live webcast? A live webcast brings the presentation to you – at your workplace or in your home. You view and hear the presentations in “real time” complete with slides and video of the speakers and have the opportunity to ask questions at the end of the activity. Continuing pharmacy education (CPE) credits earned through participation in webcasts qualify as live CPE credit. Please join the webcast at least 5 minutes before the scheduled start time for important activity announcements.

How do I register? Go to http://www.ashpadvantage.com/IV/guidelines/#webcast and click the Register Now button. You will receive an email confirmation with webcast connection information.

How do I process my CPE? After completion of this webcast, you will process your CPE online and print your statement of credit at http://ce.ashp.org. You will need the Activity and Session Codes that will be announced at the end of the webcast. Complete CPE processing instructions are available in this handout. If you have questions about processing CPE online, contact support@ashpadvantage.com.

What if I would like to arrange for my colleagues to participate in this webcast as a group? One person should register for the webcast and will receive the webcast linking instructions via email. Each participant processes his or her CPE statement online at the conclusion of the activity.

How do I ask a question of the presenters during the webcast? Click the “Ask a Question” bubble icon 🤔 to type a question and your email. The speakers will answer as many questions as possible at the conclusion of the activity. Responses to technical questions will be sent to the email address you provided.

Why doesn't the presentation appear? If you’re using a pop-up blocker, configure it to allow this site's pop-ups. You will need to change settings in your browser.

Why can’t I hear audio? Check your volume controls and whether the device you are using has speakers. There are three areas you may find volume controls:

- Player volume: look for volume icon inside the player.
- Adjust the volume slider and confirm that mute is not selected.
- External speakers (optional): check whether the speakers have a volume control dial or knob that you can use to increase or decrease the volume level.

What if my video frame keeps freezing, progressing a bit, and then freezing again? Depending on the speed of your internet connection, there may not be enough bandwidth to accommodate the audio, slides, and live video. To alleviate this, either minimize or turn off the video by using the icons on your screen. You can also use the Classic Player version of the webcast tool to achieve better viewing.
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**What do I need to participate in the webcast?**
For the best presentation viewing experience, we recommend a broadband internet or Wi-Fi connection and the following system requirements:

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<th>Linux</th>
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<tbody>
<tr>
<td>• Windows 2008, Windows 7, Windows Vista, Windows XP, Windows 2003</td>
<td>• Mac OS® X 10.4.8 or later</td>
<td>• SUSE Linux Enterprise Desktop 10, openSUSE 11.0 or later, Ubuntu 8.04 or Fedora Core 9</td>
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<td>• Internet Explorer® 7.0 or later, Firefox® 3.6 or later or Google Chrome™</td>
<td>• Safari® 2.0.4 or later or Firefox 3.6 or later</td>
<td>• Firefox 2.0 or 3.0 depending on Linux operating system</td>
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<td>• Windows Media® Player 9.0 or later</td>
<td>• Microsoft Silverlight 5*</td>
<td>• Moonlight™ 1.0</td>
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<td>• Microsoft Silverlight® 5*</td>
<td>• Broadband Internet connection</td>
<td>• Microsoft Media Pack for Moonlight</td>
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<td>• Broadband Internet connection</td>
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* If Silverlight is not detected on your computer when viewing a presentation, you will be automatically prompted to install the plug-in. Silverlight only needs to be installed once and will then be available for watching any other presentations.

**Classic Player Option**
If you are unable to install Silverlight or your bandwidth speed is slower than required, another version of the webcast is available. The requirements are as follows:

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<td>• Windows Server 2003</td>
<td>• Safari™ 2.0.4 or later or Firefox 2.0 or later</td>
<td>• Firefox 2.0 or 3.0 depending on Linux operating system</td>
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<th>iPad</th>
<th>iPhone and iPod</th>
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<th>BlackBerry</th>
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<td>• Android 4.0 or later</td>
<td>• BlackBerry OS 7.0 or later</td>
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A G E N D A

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

6:45 a.m. – 6:50 a.m.  Welcome & Introduction  
John W. Devlin, Pharm.D., FCCP, FCCM

6:50 a.m. – 7:10 a.m.  Overview of the New Pain, Agitation, and Delirium (PAD) Guidelines  
John W. Devlin, Pharm.D., FCCP, FCCM

7:10 a.m. – 7:35 a.m.  Role of the Pharmacist in Implementing the New PAD Guidelines  
Gilles L. Fraser, Pharm.D., FCCM

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

F A C U L T Y

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

Gilles L. Fraser, Pharm.D., FCCM  
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PGY2 Critical Care Residency Program Director  
Clinical Pharmacist, Critical Care  
Maine Medical Center  
Portland, Maine
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The faculty and planners report the following relationships:

**John W. Devlin, Pharm.D., FCCP, FCCM**

Dr. Devlin declares that he has received research grant support from Hospira.

**Gilles L. Fraser, Pharm.D., FCCM**

Dr. Fraser declares that he has no relationships pertinent to this activity.

**Susan R. Dombrowski, M.S., B.S.Pharm.**

Ms. Dombrowski declares that she has no relationships pertinent to this activity.

**Kristi N. Hofer, Pharm.D.**

Dr. Hofer declares that she has no relationships pertinent to this activity.

ASHP staff has no relevant financial relationships to disclose.
The Pharmacist’s Role in Implementing the New Pain, Agitation, and Delirium Guidelines in the Critical Care Setting

ACTIVITY OVERVIEW

This educational activity will begin with a review of key changes to the Society of Critical Care Medicine’s pain, agitation, and delirium guidelines. Identification, prevention, and treatment of pain, agitation, and delirium in the critically ill patient will also be explained. The activity will conclude by demonstrating strategies that pharmacists can use to implement the new recommendations in the critical care setting.

ACTIVITY OBJECTIVES

After attending this application-based educational activity, participants should be able to

- Differentiate between the 2002 and the soon-to-be released pain, agitation, and delirium (PAD) guidelines from the Society of Critical Care Medicine.
- Adapt the PAD guidelines into prevention and treatment plans for pain, agitation, and delirium in the critically ill patient.
- Define the pharmacist’s role in implementing the revised PAD guidelines in the critical care setting.

Available soon at
www.ashpadvantage.com/IV/guidelines

A web-based activity based on today’s live symposium is being developed. Encourage your pharmacist colleagues who were unable to attend today to look for this free on-demand educational activity in March 2013.

(Please note that individuals who claim CPE credit for the live symposium or webcast are ineligible to claim credit for the web-based activity)
CONTINUING EDUCATION ACCREDITATION

The American Society of Health-System Pharmacists is accredited by the Accreditation Council for Pharmacy Education as a provider of continuing pharmacy education. This activity provides 1.0 hour (0.1 CEU) of continuing pharmacy education credit (ACPE activity #0204-0000-12-435-L01-P).

Attendees must complete a Continuing Pharmacy Education Request online and may immediately print their official statements of continuing pharmacy education credit at the ASHP CE Center at http://ce.ashp.org following the activity.

Complete instructions for receiving your statement of continuing pharmacy education online are on the next page. Be sure to record the session code beginning with “A” announced during the activity.

New! PRACTICE REMINDER EMAIL

During this educational activity, we encourage you to jot down points about what YOU want to remember to do as a result of what you are learning.

- Use your smart device to link directly to the reminder tool and type in your ideas.
- Next month, we will send you an email as a reminder from YOURSELF about what YOU want to do after attending this activity.
- Do it more than once...multiple entries for this activity from the same email address will be combined into one email.
- If you do not have a smart device, go to the reminder tool on the activity website. http://www.ashpadvantage.com/iv/guidelines/?remindme=1
Instructions for Processing CPE online at http://ce.ashp.org

The ASHP CE Center allows participants to obtain statements of continuing pharmacy education (CPE) conveniently and immediately using any computer with an internet connection. To obtain CPE statements for ASHP Advantage activities, please visit http://ce.ashp.org

1. Select Process Meeting CE from bottom left. Log in to the ASHP CE Center using your e-mail address and password.

2. If you have not logged in to the ASHP CE Center and are not a member of ASHP, you will need to create a free account by clicking on Register at the bottom of the Register as a New User panel. Once logged in to the site, click on Process Meeting CE.

3. If this activity title does not appear in your meeting list, enter the 5-digit activity code in the box above the list and click submit. The Activity and Session Codes are announced at the end of the activity. Click Submit when prompted and then click on the Start link to the right of the activity title.

4. Enter the session code, which starts with the letter “A” and was announced during the activity, and select the number of hours equal to your participation in the activity. Participants should only claim credit for the amount of time they participate in an activity.

5. Click Submit to receive the attestation page.

6. Confirm your participation and click Submit.

7. Print and/or save your CE statement as appropriate.

8. Complete activity evaluation by selecting the My Account tab and continue to My Transcript.

9. Select the applicable year from the drop down menu and locate the activity.

10. Click Complete Evaluation under the Status column to be taken to the evaluation page.

11. Complete all evaluation questions and click Finish.

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<th>CPE credit hours</th>
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NEED HELP? Contact ASHP Advantage at support@ashpadvantage.com.
The Pharmacist's Role in Implementing the New Pain, Agitation, and Delirium Guidelines in the Critical Care Setting

John W. Devlin, Pharm.D., FCCP, FCCM
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John W. Devlin, Pharm.D., FCCM, FCCP, is Associate 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 special and 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.
Overview of the New Pain, Agitation, and Delirium Guidelines

John W. Devlin, Pharm.D., FCCP, FCCM
Associate Professor
Northeastern University School of Pharmacy
Adjunct Associate Professor
Tufts University School of Medicine
Boston, Massachusetts

What’s Different about this Version of the PAD Guidelines? Methods

- Grade methodology
  - www.gradeworkinggroup.org
- More rigorous, transparent process for developing statements and recommendations
- Strength of recommendation based on BOTH strength of evidence and the relative risks & benefits of interventions
- Expert opinion NOT used as a substitute for making recommendations in the absence of evidence

<table>
<thead>
<tr>
<th>Considerations</th>
<th>Effect on Strength of Recommendation</th>
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<tbody>
<tr>
<td>Quality of evidence</td>
<td>Lower quality of evidence reduces the likelihood of a strong recommendation, and vice versa.</td>
</tr>
<tr>
<td>Uncertainty about the balance between desirable and undesirable effects</td>
<td>Higher degree of uncertainty about the balance between risks and benefits reduces the likelihood of a strong recommendation, and vice versa.</td>
</tr>
<tr>
<td>Uncertainty or variability in values and preferences across groups</td>
<td>Wide variability in values and preferences across groups reduces the likelihood of a strong recommendation, and vice versa.</td>
</tr>
<tr>
<td>Uncertainty about whether the intervention represents a wise use of resources</td>
<td>A higher overall cost of treatment reduces the likelihood of a strong recommendation, and vice versa.</td>
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</tbody>
</table>

Adapted from Guyatt GH et al. BMJ. 2008; 336:924-6.

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 Punttillo, RN, DNSc, FAAN; E. Wesley Ely, MD, MPH, FAACP, FCCM; Céline Gelinas, RN, PhD; Joseph F. Dasta, MSc; Judy E. Davidson, DNP, RN; John W. Devlin, PharmD, FCCM; John P. Kress, MD; Aaron M. Joffe, DO; Douglas B. Coursin, MD; Daniel L. Herr, MD, MS, FCCM; Avery Tung, MD; Bryce RH 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, RN, MSN, ACNP; Yoanna Skrobik, MD, FRCP; Roman Jaeschke, MD, MSc

Supporting Organizations:
American College of Critical Care Medicine (ACCM) in conjunction with Society of Critical Care Medicine (SCCM) and American Society of Health-System Pharmacists (ASHP)


What’s Different about this Version of the PAD Guidelines? Methods

- Anonymous online voting (E-survey) by all Task Force Members
- Standardized voting thresholds used
  - A recommendation in favor of an intervention (or the comparator) required at least 50% voting in favor, with ≤20% voting against; failure to meet these voting thresholds resulted in no recommendation being made.
  - For a recommendation to be graded as strong rather than weak, at least 70% of those voting had to vote for a strong recommendation, otherwise it received a weak recommendation.
Oversedation in the ICU is Common

- N=274 MICU patients
- 32% unarousable
- 21% no spontaneous motor activity
- Little variation over 24 hours in LOC, motor activity, or drug dose given
- Only 2.6% of RNs thought "oversedated"

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

Early Deep Sedation is Associated with Both a Longer Duration of Mechanical Ventilation and Reduced 6-month Survival

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

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.

Goal: Should adult ICU patients be maintained at a light level of sedation? (actionable)

Answer: Maintaining light levels of sedation in adult ICU patients is associated with improved clinical outcomes (e.g., shorter duration of mechanical ventilation and a shorter ICU length of stay) (B). We recommend that sedative medications should be titrated to maintain a light rather than deep level of sedation in adult ICU patients, unless clinically contraindicated (+1B).


Impact of a Combined SAT-SBT Strategy on Patient Outcomes

<table>
<thead>
<tr>
<th>Outcome</th>
<th>SAT</th>
<th>SAT+SAT</th>
<th>P-value</th>
</tr>
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<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>7</td>
<td>5</td>
<td>0.05</td>
</tr>
<tr>
<td>Successful extubation</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>
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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: Engaging the Bedside RN is the Key!

- Lack of physician order: 3.3%
- Lack of nursing acceptance: 15.6%
- Prefer more control than a protocol offers: 11.6%
- Use may cause oversedation: 10.0%
- Protocol not accessible when needed: 11.6%
- Protocols are difficult to use: 11.6%
- Inconvenient to coordinate: 14.0%
- Not appropriate for select patients: 14.0%
- Possibility for undersedation: 11.6%
- No proven benefit: 14.0%


Nursing-Implemented Sedation Protocol: Barnes Jewish Pilot United States

- Protocol + SAT/SBT versus Protocol + SBT alone

- Question: Should a protocol that includes either daily sedative interruption or a light target level of sedation be used in mechanically ventilated adult ICU patients? (actionable)

- Answer: We recommend either daily sedation interruption or a light target level of sedation be routinely used in mechanically ventilated adult ICU patients (+1B).
Question: Should non-benzodiazapine-based sedation, instead of sedation with benzodiazepines, be used in mechanically ventilated adult ICU patients? (actionable)

Answer: We suggest that sedation strategies using non-benzodiazepine sedatives (either propofol or dexmedetomidine) may be preferred over sedation with benzodiazepines (either midazolam or lorazepam) to improve clinical outcomes in mechanically ventilated adult ICU patients (+2B).

Question: Which instruments available for delirium monitoring have the strongest evidence for validity and reliability in ventilated and non-ventilated medical and surgical ICU patients? (descriptive)

Answer: The Confusion Assessment Method for the ICU (CAM-ICU) and the Intensive Care Delirium Screening Checklist (ICDSC) are the most valid and reliable delirium monitoring tools in adult ICU patients (A).

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

Early Mobilization

Return to independent functional status at d/c
- 59% in intervention group
- 35% in control group (p=0.02)
**Early Mobility Study Results**

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Intervention (n=49)</th>
<th>Control (n=50)</th>
<th>P</th>
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</thead>
<tbody>
<tr>
<td>Functionally independent at discharge</td>
<td>29 (59%)</td>
<td>19 (35%)</td>
<td>0.02</td>
</tr>
<tr>
<td>ICU delirium (days)</td>
<td>2.0 (0.0-6.0)</td>
<td>4.0 (2.0-7.0)</td>
<td>0.03</td>
</tr>
<tr>
<td>Time in ICU with delirium (%)</td>
<td>33 (0-58)</td>
<td>57 (33-69)</td>
<td>0.02</td>
</tr>
<tr>
<td>Hospital delirium (days)</td>
<td>2.0 (0.0-6.0)</td>
<td>4.0 (2.0-8.0)</td>
<td>0.02</td>
</tr>
<tr>
<td>Hospital days with delirium (%)</td>
<td>38 (20)</td>
<td>41 (23)</td>
<td>0.01</td>
</tr>
<tr>
<td>Barthel index score at discharge</td>
<td>75 (7.5-95)</td>
<td>55 (0-85)</td>
<td>0.05</td>
</tr>
<tr>
<td>ICU-acquired paresis at discharge</td>
<td>15 (31%)</td>
<td>27 (49%)</td>
<td>0.09</td>
</tr>
<tr>
<td>Ventilator-free days</td>
<td>23.5 (7.4-25.6)</td>
<td>21.1 (0.0-23.8)</td>
<td>0.05</td>
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<tr>
<td>Length of stay in ICU (days)</td>
<td>5.9 (4.5-13.2)</td>
<td>7.9 (6.1-12.9)</td>
<td>0.08</td>
</tr>
<tr>
<td>Length of stay in hospital (days)</td>
<td>13.5 (8.0-23.1)</td>
<td>12.9 (9.9-19.8)</td>
<td>0.93</td>
</tr>
<tr>
<td>Hospital mortality</td>
<td>9 (18%)</td>
<td>14 (25%)</td>
<td>0.53</td>
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**Question:** Should a non-pharmacological delirium protocol in the ICU be used to reduce the incidence or duration of delirium? (actionable)

**Answer:** We recommend that early mobilization of adult ICU patients be performed whenever feasible to reduce the incidence and duration of delirium (+1B).

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**Which of the following is MOST true about the role of antipsychotic therapy 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.
- Quetiapine has been shown in one randomized, controlled trial to prevent delirium in the ICU.
- Neither of the above.

**Question:** Should haloperidol or atypical antipsychotics be used prophylactically to prevent delirium in ICU patients? (actionable)

**Answer:** We do not suggest that either haloperidol or atypical antipsychotics be administered to prevent delirium in adult ICU patients (-2C).


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**Haloperidol: A Sigma-1 Receptor Antagonist**

- The Sigma-1 ligand PPBP protects the brain from ischemia
- Haloperidol is a Sigma-1 receptor antagonist
- Low dose haloperidol (0.05 mg/kg) when administered after an induced transient cerebral artery occlusion in rats decreased ischemic lesion volume by 50%
- Assuming that delirium is mediated by a diffuse, low-level ischemia, associated with critical illness, this Sigma-1 receptor antagonism may be an important mechanism by which haloperidol may prevent delirium in the critically ill.

**Question:** Should dexmedetomidine be used prophylactically to prevent delirium in ICU patients? (actionable)

**Answer:** We provide no recommendation for the use of dexmedetomidine to prevent delirium in adult ICU patients, as there is no compelling evidence regarding its effectiveness in these patients (0,C).

---

**Question:** For mechanically ventilated, adult ICU patients with delirium who require continuous IV infusions of sedative medications, is dexmedetomidine preferred over benzodiazepines to reduce the duration of delirium? (actionable)

**Answer:** We suggest that in adult ICU patients with delirium which is not related to either alcohol or benzodiazepine withdrawal, continuous intravenous infusions of dexmedetomidine rather than benzodiazepine infusions be administered for sedation in order to reduce the duration of delirium in these patients (+2B).

---

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

<table>
<thead>
<tr>
<th>Year</th>
<th>Antipsychotics</th>
<th>Benzodiazepines</th>
<th>Haloperidol</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>631</td>
<td>255</td>
<td>68</td>
</tr>
<tr>
<td>2007</td>
<td>647</td>
<td>243</td>
<td>65</td>
</tr>
<tr>
<td>2011</td>
<td>656</td>
<td>252</td>
<td>66</td>
</tr>
</tbody>
</table>

---

**SEDCOM Trial: Delirium Resolution**

![Graph showing delirium resolution](image)


**Dexmedetomidine vs. Morphine: DEXCOM**

<table>
<thead>
<tr>
<th>Outcome Variables</th>
<th>Dexmedetomidine (n = 152)</th>
<th>Morphine (n = 147)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients with delirium, n(%)</td>
<td>13 (8.6)</td>
<td>22 (15.0)</td>
<td>0.088</td>
</tr>
<tr>
<td>Delirium days, median (IQR)</td>
<td>2 [1-7]</td>
<td>5 [2-12]</td>
<td>0.031</td>
</tr>
<tr>
<td>Patients with IABP and delirium, n (%)</td>
<td>3/20 (15)</td>
<td>9/25 (36)</td>
<td>0.001</td>
</tr>
</tbody>
</table>

IABP = intraaortic balloon pump


---

**SEDCOM Trial: Prevalence of Delirium**

![Graph showing delirium prevalence](image)


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

![Graph showing medication use](image)

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

John W. Devlin, PharmD; Russell J. Roberts, PharmD; Jeffrey J. Fong, PharmD; Yuanta Skrobik, MD; Richard H. Heron, MD; Nicholas S. Hill, MD; Theresa Robito, RN; Erik Germain, MD

- n=36 (18 quetiapine, 18 placebo) with delirium based on ICDSC assessment
- QUETIAPINE 50mg PO/tube bid (max 200mg bid) vs. PLACEBO
- PRN IV haloperidol could be used to treat agitation in either group
- Baseline characteristics between groups were similar
- Primary Outcome
  - Time to first resolution of delirium was significantly less with quetiapine 1 day vs 4.5 days (p=0.003)


### Question: Does treatment with haloperidol reduce the duration of delirium in adult ICU patients? (descriptive)

**Answer:** There is no published evidence that treatment with haloperidol reduces the duration of delirium in adult ICU patients (No Evidence).

### Question: Does treatment with atypical antipsychotics reduce the duration of delirium in adult ICU patients? (descriptive)

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


---

### Safety

- Somnolence (n=5 episodes)
- Hypotension (n=1 episode)
- No episodes of EPS
- The number of subjects with QTc prolongation was similar between the quetiapine and placebo groups.
Gilles L. Fraser, Pharm.D., FCCM
Professor, School of Medicine
Tufts University
PGY2 Critical Care Residency Program Director
Clinical Pharmacist, Critical Care
Maine Medical Center
Portland, Maine

Gilles L. Fraser, Pharm.D., FCCM, is Professor, School of Medicine, Tufts University, 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 American College of Critical Care Medicine. He served on the editorial board of Critical Care Research and was a contributing editor for Critical Care Therapeutics and Hospital Pharmacy. Dr. Fraser 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 has received numerous awards and honors, including presidential citations from the Society of Critical Care Medicine (2013, 2006, and 2000), Maine Society of Health-System Pharmacists Pharmacy Practice Award (2010), and the Society of Critical Care Medicine Internal Medicine Award (2007).
Role of the Pharmacist in Implementing the New Pain, Agitation, and Delirium Guidelines

Gilles L. Fraser, Pharm.D., FCCM
Professor, School of Medicine, Tufts University
Director, PGY2 Critical Care Residency, Maine Medical Center
Outcomes Team Leader, SCCM PAD Guidelines

Learning Objectives
The Pharmacist Will
- Accept a leadership role to create an ICU that is a more humane environment to heal and to die
- Evaluate AND understand the rationale for PAD management recommendations
- Successfully adapt the guidelines to local clinical resources and goals
- Organize a multifaceted interdisciplinary approach to implement adaptation of these guidelines

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
    - Long-term cognitive impairment
    - PTSD

Gestational Period
- Mouse = 20 days
- Human = 9 months
- Elephant = 22 months
- PAD guidelines = 80 months

2006-13 SCCM Guidelines for the Management of Pain, Agitation, and Delirium

<table>
<thead>
<tr>
<th>Sedation</th>
<th>Analgesia</th>
<th>Delirium</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>J Barr, Chair</td>
<td>K Puntillo, Lead</td>
<td>W Ely, Lead</td>
<td>G Fraser, Lead</td>
</tr>
<tr>
<td>D Fontaine</td>
<td>D Coursin</td>
<td>B Pun</td>
<td>J Dasta</td>
</tr>
<tr>
<td>M Ramsay</td>
<td>C Gelinas</td>
<td>C Sessler</td>
<td>J Davidson</td>
</tr>
<tr>
<td>R Riker</td>
<td>D Herr</td>
<td>Y Skrobik</td>
<td>J Devlin</td>
</tr>
<tr>
<td>B Robinson</td>
<td>A Joffe</td>
<td></td>
<td>JP Kress</td>
</tr>
<tr>
<td>A Tung</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2013 PAD Guidelines
- Focus is on the patient, these are NOT sedation guidelines
- 12 pharmacologic recommendations
- Surprises
  - No recommendation on haloperidol
  - Either daily sedation interruption OR careful titration
  - Benzo’s as potential risk for delirium
  - Dexmedetomidine
Yes/No Poll

- Our ICU uses
  - A sedation protocol
  - A behavioral pain scale
  - A delirium screening tool

Yes No

Perceived vs. Actual Practice

- Survey 85 ICUs = 24-h practice snapshot
- Sedation protocols used in 50% ICUs
- Sedation interruption reported in 66% ICUs
  - Performed in 36% patients
- Delirium monitoring reported in 25% ICUs
  - Performed in 10% of patients


Ever Feel Like You Are Going in Circles?

PAD Interdisciplinary Team

Integrated PAD Management

Changing Practice Behaviors

- Multifaceted approach IS necessary
  - Champions
    - All disciplines should be represented
  - Education
    - A first step to inform and demonstrate relevance
  - Protocols
    - Efficient way to make it easy to do the right thing
  - Point of use reminders
    - For those who need a little help remembering nuances
  - Feedback loops
    - For those needing “encouragement” to do the right thing
Why is This So Important?

- Benefits of implementing guidelines
  - Reduced time on the ventilator and in the ICU
  - Lower rates of ICU complications
  - Improved quality of life after discharge
  - Less delirium and cognitive impairment

Facilitating Knowledge Transfer to the Bedside

- Use clinical practice guideline 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

NOT to WORRY! We’ve got a plan!

Importance of Protocolization

- Brings “best practice” to the bedside
- Limits practice variation
- Reduces delays in management
  - Encourages regular assessment of pain, agitation, delirium
  - Facilitates pharmacologic interventions: drug choice, dosing, titration

Why are Protocols Not Used?

- Potential barriers
  - Nursing acceptance
  - Potential for medical device removal, airway compromise, and patient discomfort
  - Lack of physician buy in
  - ICU patients and protocols are too complex

Complex to Simple:

ICU Care Bundles

- Examples: sepsis, central line placement, and now PAD!
- Elements should
  - Be easy to implement and measure
  - Have proven benefit
  - Be supported by sound scientific and clinical reasoning
  - Be relevant across a wide range of patient populations and health-care systems
- Metrics allow caregiver feedback and serve as part of a rapid-cycle change process improvement effort
**ICU PAD Bundle Web-based Toolkit**

- **Educational Tools**
  - PowerPoint presentations
  - PAD guideline staff education
  - PAD implementation strategies
  - Instructional videos
  - Use of pain, sedation, delirium assessment tools
  - Early mobility techniques
- **Implementation Tools**
  - Pocket cards
  - ICU/PAD Care bundle
  - PAD guideline recommendations
  - Apps for smart phone, tablets
  - Monitoring tools
  - Drug dosing guidelines
- **Tools**
  - Templates
  - Check lists
  - Goals sheets
  - Sample protocols
- **Performance Improvement Metrics**

**SCCM PAD Bundle**

*Identify, Manage, Monitor*

Available when guidelines are published

**EXAMPLE: Pain Bundle**

- Stepwise process
  - Incorporate valid pain monitoring tools
  - Address analgesia adequacy daily
  - Implement protocols to prevent and manage pain
  - Monitor adherence and effectiveness of these protocols
  - Track performance to understand barriers and identify strategies for improvement

**Some Things Are Easy**

- **Job #1 = Patient comfort, patient and caregiver safety, maintenance of oxygenation and perfusion**
- **Don’t complicate things**
  - Avoid deliriogenic drugs
  - Avoid propofol in pancreatitis
  - Avoid morphine in renal disease, etc.
  - Avoid propofol and dexmedetomidine with high dose vasoactive therapy
- **Initiate home medications IF and when appropriate**

**Cure sometimes**

**Comfort always**

Armstrong & Crisp (Turkel)
New Horizons 1994:2:85
The Pharmacist’s Role in Implementing the New Pain, Agitation, and Delirium Guidelines in the Critical Care Setting

SELECTED REFERENCES


Barr J, Fraser GL, Puntillo K et al for the American College of Critical Care Medicine, Society of Critical Care Medicine, and American Society of Health-System Pharmacists. Clinical practice guidelines for the management of pain, agitation, and delirium in adult patients in the intensive care unit. Crit Care Med. In press.


SELF-ASSESSMENT QUESTIONS

1. The soon-to-be-released guidelines for management of pain, agitation, and delirium in adults in the intensive care unit (ICU) differ from the previous version because recommendations for interventions are based on:
   a. Relative risks and benefits alone, without using expert opinion in the absence of evidence
   b. Strength of evidence alone, without using expert opinion in the absence of evidence
   c. Both strength of evidence and relative risks and benefits, without using expert opinion in the absence of evidence
   d. Both strength of evidence and relative risks and benefits, using expert opinion in the absence of evidence

2. Which of the following organizations support the new guidelines for management of pain, agitation, and delirium in adults in the ICU?
   a. American College of Critical Care Medicine
   b. Society of Critical Care Medicine
   c. American Society of Health-System Pharmacists
   d. All of the above

3. According to the new guidelines, the Confusion Assessment Method for the ICU (CAM-ICU) and the Intensive Care Delirium Screening Checklist (ICDSC) are the most valid and reliable delirium monitoring tools in adult ICU patients.
   a. True
   b. False

4. In the absence of alcohol or benzodiazepine withdrawal, what is the preferred sedative medication for mechanically ventilated, adult ICU patients with delirium who require continuous intravenous infusion?
   a. Midazolam
   b. Dexmedetomidine
   c. Lorazepam
   d. None of the above

5. Which of the following is NOT a benefit of protocols in medical practice?
   a. Limit practice variation
   b. Reduce delays in patient management
   c. Facilitate pharmacologic intervention
   d. Contain medical costs

Answer Key

1. c
2. d
3. a
4. b
5. d