ICU Delirium Prevention and Treatment: Medication-Associated Implications

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Disclosures

Research Funding

• NIA

• NHLBI

• AstraZeneca Pharmaceuticals
Delirium Issues

Delirium

- Fear
- Depression
- Altered Sleep
- Persistent Cognitive Defects
- Reduced Functionality
- Family stress
- Mortality
- Increased healthcare costs
Outcomes of ICU Delirium

- Up to 60% of mechanically ventilated patients will develop delirium:
  - dependent on underlying patient risk
- ↑ days of mechanical ventilation & ICU stay
- ↑ ICU mortality
  - highly dependent on patient severity of illness
- Duration of delirium is associated with ↑ longer term mortality
- ↑ Hospital costs
- ↑ Societal costs

Ely EW et al, JAMA 2004;291-1753-1762
Milbrandt E et al, Crit Care Med 2004;32:955-962
Lin et al, Crit Care Med 2004;32:2254-59
Klein Klouwenberg PMC et al. BMJ 2014: 349:g6652
Objectives

• Identify medications that can potentiate delirium in critically ill adults.
• Define the role of pharmacologic interventions to reduce delirium in the ICU.
• Implement a care plan for treating delirium in the ICU.
Which medications are associated with increased delirium in the ICU?
Delirium Pathophysiology

# ICU Medications Commonly Reported To Cause Delirium

<table>
<thead>
<tr>
<th>Category of Medication</th>
<th>Examples</th>
<th>Mechanism</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analgesics</td>
<td>Opioids</td>
<td>GABA activation</td>
</tr>
<tr>
<td></td>
<td>NSAIDs</td>
<td>Cholinergic inhibition</td>
</tr>
<tr>
<td></td>
<td>Cefepime</td>
<td>GABA inhibition</td>
</tr>
<tr>
<td></td>
<td>Linezolid</td>
<td>Serotonin activation</td>
</tr>
<tr>
<td></td>
<td>Quinolones</td>
<td>GABA activation</td>
</tr>
<tr>
<td>Anti-infectives</td>
<td>SSRIs</td>
<td>Serotonin activation</td>
</tr>
<tr>
<td></td>
<td>Diphenhydramine</td>
<td>Cholinergic inhibition</td>
</tr>
<tr>
<td></td>
<td>Amiodarone</td>
<td>Cholinergic inhibition</td>
</tr>
<tr>
<td></td>
<td>Haloperidol</td>
<td>Cholinergic inhibition</td>
</tr>
<tr>
<td></td>
<td>Methylprednisolone</td>
<td>Dopamine inhibition</td>
</tr>
<tr>
<td></td>
<td>Metoclopramide</td>
<td>Cortisol excess</td>
</tr>
<tr>
<td></td>
<td>Ketamine</td>
<td>Dopamine inhibition</td>
</tr>
<tr>
<td></td>
<td>Benzodiazepines</td>
<td>NMDA inhibition</td>
</tr>
<tr>
<td></td>
<td>Propofol</td>
<td>GABA activation</td>
</tr>
<tr>
<td>Antidepressants</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antihistamines</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cardiac medications</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antipsychotics</td>
<td></td>
<td></td>
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<tr>
<td>Corticosteroids</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prokinetics</td>
<td></td>
<td></td>
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<tr>
<td>Sedatives</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Systematic Review of Risk Factors for Delirium in Critically Ill Adults

- Studies published from 2000 to Feb 2014 evaluating 80 different delirium risk factors:
  - Not undergoing cardiac surgery
  - Used multivariable analysis or randomization
- Evidence for each variable evaluated using 3 criteria:
  - Study quality (using SIGN checklists):
    - Number of studies investigating variable
    - Consistency of direction of association across studies
- Only 33 (2%) of 1626 studies were able to be included

Results

• **Strong evidence**
  - Age
  - Dementia
  - Hypertension
  - Pre-ICU surgery or trauma
  - APACHE II score
  - Mechanical ventilation
  - Metabolic acidosis
  - Delirium on the prior day
  - Sedation-associated coma

• **Moderate evidence**
  - Alcohol consumption
  - Multiple organ failure
  - Benzodiazepine use
  - Dexmedetomidine use is associated with decreased delirium prevalence

Univariate, non-time dependent cohort

ICU Admission → ICU Discharge

Patient exposure to drug X

Delirium during ICU stay

No delirium during ICU stay

% of patients with delirium who were exposed to Drug X
Multivariate, non-time dependent, cohort

- ICU Admission
- ICU Discharge
- Patient exposure to drug X
- Delirium during ICU stay
- No delirium during ICU stay
- RR of developing delirium with exposure to drug X during ICU stay

Baseline risk factors, Y/N exposure to Drug X, And Y/N ≥ 1 ICU day with delirium modelled using multivariate techniques

Presence of baseline risk factors for delirium considered
Situations where a multivariate, non-time dependent, cohort analysis may be problematic
Use of a first-order Markov model that incorporates multinomial logistic regression and considers both baseline and daily delirium risk factors is the gold standard method by which to characterize delirium risk with any medication in critically ill patients.
# Baseline and Daily Risk Factors

<table>
<thead>
<tr>
<th>Time-fixed (i.e. at ICU baseline)</th>
<th>Time-varying (i.e., daily)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admission service (e.g. medical vs surgical)</td>
<td>Day of ICU admission</td>
</tr>
<tr>
<td>Age</td>
<td>Daily severity of illness (e.g. SOFA)</td>
</tr>
<tr>
<td>Severity of illness (APACHE-2 score)</td>
<td>Metabolic acidosis</td>
</tr>
<tr>
<td>Charlson Comorbidity Index</td>
<td>Severe sepsis/Septic shock</td>
</tr>
<tr>
<td>History of chronic alcohol use</td>
<td>Use of mechanical ventilation</td>
</tr>
<tr>
<td>History of hypertension</td>
<td>Presence of condition(s) that might drive use of the study medication (e.g., ARDS = steroids)</td>
</tr>
<tr>
<td>History of psychoactive medication use</td>
<td>Use of a medication with a similar indication to the study medication (e.g., propofol if investigating benzodiazepines)</td>
</tr>
<tr>
<td>Emergent (vs. elective) ICU admission</td>
<td>Use of other competing medications known to affect delirium occurrence (e.g. dexmedetomidine if investigating benzodiazepines)</td>
</tr>
<tr>
<td>Factors that could affect the PK/PD response of the medication (e.g., BMI, ESRD, ESLD)</td>
<td></td>
</tr>
</tbody>
</table>
Considerations when transitioning from one mental state to another

ICU Day x
- Awake, not delirious
- Delirium
- Coma

ICU Day x+1
- Awake, not delirious
- Delirium
- Coma
- Discharge
- Death
Rigor of Delirium Assessment

1. Is once daily delirium assessment enough?
2. CAM-ICU alone by bedside clinicians may miss delirium

**UMC-Utrecht:** Assessment of delirium every 8 hours

- **YES**<br>Unable to assess
- **NO**<br><br>- **YES**<br>Delirious
- **NO**<br><br>- **YES**<br>Delirious
- **NO**<br><br>- **YES**<br>Delirious
- **NO**<br><br>- **YES**<br>Delirious
- **NO**<br>No Delirium

Test characteristics compared to delirium expert team:
Sensitivity = 0.75
Specificity = 0.88
Interrater agreement = 0.94

Relative Risk for each 5 mg BZ administered in midazolam equivalents

<table>
<thead>
<tr>
<th>Mental status</th>
<th>Mental status</th>
<th>Exposure</th>
<th>Adjusted Odds ratio**</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>day t</td>
<td>day t+1</td>
<td>No</td>
<td>reference</td>
<td></td>
</tr>
<tr>
<td>Awake without delirium</td>
<td>Awake without delirium</td>
<td>No</td>
<td>reference</td>
<td></td>
</tr>
<tr>
<td>Awake without delirium</td>
<td>Delirium</td>
<td>Yes§</td>
<td>1.04 (1.02-1.05)</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Awake without delirium</td>
<td>Delirium</td>
<td>Bolus⁰</td>
<td>0.97 (0.88-1.05)</td>
<td>0.44</td>
</tr>
<tr>
<td>Awake without delirium</td>
<td>Delirium</td>
<td>Continuous⁰</td>
<td>1.04 (1.03-1.06)</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Coma</td>
<td>Delirium</td>
<td>Yes§</td>
<td>1.00 (0.99-1.01)</td>
<td>0.90</td>
</tr>
<tr>
<td>Coma</td>
<td>Delirium</td>
<td>Bolus⁰</td>
<td>1.07 (0.95-1.20)</td>
<td>0.27</td>
</tr>
<tr>
<td>Coma</td>
<td>Delirium</td>
<td>Continuous⁰</td>
<td>1.00 (0.99-1.01)</td>
<td>0.56</td>
</tr>
</tbody>
</table>

Per 5mg midazolam equivalent

Why is OR for daily transition to delirium so much lower?

Simply because average daily dose of benzodiazepine is so much lower in 2015 (vs. 2006)


What is the relationship between polypharmacy and delirium burden?
## Risk Factors for Potentially Inappropriate Medications in the ICU

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Risk Ratio</th>
<th>95% CI</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td># of pre-admission PIMS</td>
<td>1.16</td>
<td>1.08-1.25</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Surgical (vs. medical) service</td>
<td>1.45</td>
<td>1.00-1.04</td>
<td>&lt; .01</td>
</tr>
<tr>
<td>Discharge home (vs. not home)</td>
<td>1.38</td>
<td>1.20-1.69</td>
<td>.03</td>
</tr>
</tbody>
</table>

From: Medication Reconciliation During Transitions of Care as a Patient Safety Strategy: A Systematic Review


Figure Legend:

Scope of Medication Reconciliation at ICU Discharge

- Check for Drug Omissions
- Screen for Drug Duplications
- Reverse Formulary Changes as Appropriate
- Rationalize the Continued Need for New Medications
- D/C Prophylaxis Medications
- D/C PRNs as appropriate
- Antibiotic Duration/Stop Dates
<table>
<thead>
<tr>
<th>Box 1-1. Strategies to Reduce Medication-Related Delirium in the ICU</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Avoid polypharmacy and ensure medication dosing is appropriate</td>
</tr>
<tr>
<td>• Consider medication withdrawal effects (particularly benzodiazepines)</td>
</tr>
<tr>
<td>• Avoid anticholinergic medications, when possible</td>
</tr>
<tr>
<td>• Avoid benzodiazepines, when possible (including sleep aids)</td>
</tr>
<tr>
<td>• Avoid use of non-benzodiazepine sleep aids, when possible</td>
</tr>
<tr>
<td>• Use the lowest effective corticosteroid dose</td>
</tr>
<tr>
<td>• Use the lowest effective opioid dose to control pain/optimize non-opioid analgesic</td>
</tr>
<tr>
<td>• Avoid metoclopramide, when possible</td>
</tr>
<tr>
<td>• If delirium occurs with levetiracetam, consider other anti-convulsant options</td>
</tr>
<tr>
<td>• Reassess need for continued antibiotic therapy</td>
</tr>
<tr>
<td>• Monitor diuretic therapy for signs of dehydration and/or electrolyte abnormalities</td>
</tr>
</tbody>
</table>
Before Administering a Medication to Either Prevent or Treat Delirium in the ICU:

1. Consider non-medication-related, reversible factors for delirium: Hypoxemia, new infection, electrolytes,
2. STOP (or decrease the dose) of any medication (where possible) that may increase delirium risk
3. Mobilize the patient (where possible)
4. Optimize non-pharmacologic interventions that may reduce delirium incidence and/or burden:
   - Hearing aids, glasses, reorientation, sleep protocols, music, noise control, family interaction

Kamdar B et al CCM 2013; CCM 2015
NICE Guidelines 2010
AGS Post Operative Delirium CPG 2015
Choice of sedation strategy in reducing delirium in critically ill adults?
Acute Brain Dysfunction

- Acute mental status change
- Inattention
- Hallucinations, Delusions, Illusions
- Altered level of consciousness
- Fluctuating mental status
- Disorganized thinking

**DELIRIUM**

- **AROUSABLE TO VOICE**
- **UNAROUSABLE TO VOICE**

**COMA**

Sedative-Induced

SEDCOM Trial: Prevalence of Delirium

![Graph showing prevalence of delirium over time with comparison between midazolam and dexmedetomidine.](image)

Dexmedetomidine vs. Midazolam, $P < 0.001$

Sample Size: 118 229 109 206 92 175 77 134 57 92 42 60 44 34

What is the role of an antipsychotic in preventing delirium in critically ill adults?
Why are Clinicians Often Quick to Administer a Medication to Prevent or Treat Delirium in the ICU?

• Medication-focused delirium reduction strategies are usually a quick and easy to administer whereas non-medication strategies more time-consuming/complex
• Ability to predict and recognize delirium remains limited in many ICU patients
• Assumption that agitation = delirium
  – Most delirium hypoactive
  – Agitation more likely related to uncontrolled pain or withdrawal states
• Reliance on mechanistic postulation rather than rigorous RCT evidence when justifying pharmacologic intervention in patients at risk or who have delirium
• Assumption that decades of use (e.g. antipsychotics) rather than rigorous RCT evidence represents a strong rationale to use

Girard TD et al. *Crit Care Med* 2010; 38:1513-1520
Barr J, *Crit Care Med* 2013

Background

• Strong evidence supports the routine use of non-pharmacologic delirium prevention strategies in the ICU
  – Will a pharmacologic delirium prevention strategy provide additional benefit?

• Peri-operative antipsychotic administration reduces delirium burden in non-critically ill populations
  Prakanrattana U Anaesth Intens Care 2007; 35:714-19
  Larsen KA et al. *Psychosomatics* 2010;51:409-18
  Hakim SH, et al. *Anesthesiology* 2012; 116:975-6

• One uncontrolled study suggests that ↑ haloperidol use over the course of the ICU stay may reduce delirium and mortality

• However, two RCTs, suggest that use of haloperidol in critically ill patients (with delirium or at high risk for delirium) does not influence patient outcome.
### Delirium Rates

<table>
<thead>
<tr>
<th></th>
<th>Haloperidol (n=34)</th>
<th>Placebo  (n=34)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>During study drug administration [% (n)]</td>
<td>35.3 (12)</td>
<td>23.5 (8)</td>
<td>0.287</td>
</tr>
<tr>
<td>Psychiatrist available and diagnosis confirmed [% (n)]</td>
<td>100 (12)</td>
<td>87.5 (7)</td>
<td>0.209</td>
</tr>
<tr>
<td>During ICU admission [% (n)]</td>
<td>35.3 (12)</td>
<td>26.5 (9)</td>
<td>0.431</td>
</tr>
<tr>
<td>Duration of delirium (d) [until delirium first resolved]</td>
<td>2 [1-2]</td>
<td>3 [2-4]</td>
<td>0.261</td>
</tr>
</tbody>
</table>

Reported as % (n) or median [25th to 75th percentile]
Results – Time to First Development of Delirium

What is the role of an antipsychotic in treating delirium in critically ill adults?
Proposed CMS restriction for antipsychotic use in hospitalized older adults:

- Threatening substantial harm to self or others

Why?
1. Data from non-ICU patients suggest little benefit/increased harm during AP use to either prevent or treat delirium
2. 6% of non-psychiatric hospitalized patients initiated on AP therapy
   *10% of ICU patients
3. AP use for delirium is off-label
4. Frequent continuation of AP therapy post-hospitalization
   *In patients with dementia this use is associated with increased mortality

2015 Beers Criteria

Antipsychotics, first- (conventional) and second- (atypical) generation

Increased risk of cerebrovascular accident (stroke) and greater rate of cognitive decline and mortality in persons with dementia
Avoid antipsychotics for behavioral problems of dementia or delirium unless nonpharmacological options (e.g., behavioral interventions) have failed or are not possible and the older adult is threatening substantial harm to self or others

<table>
<thead>
<tr>
<th>Author</th>
<th>Baseline Delirium (%)</th>
<th>Patient Population (%)</th>
<th>Intervention</th>
<th>Control</th>
<th>Present at End of Study Period (%)</th>
<th>Duration of Delirium</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skrobik (2004)</td>
<td>100</td>
<td>Surgical = 95; intubated = 0</td>
<td>Olanzapine 5 mg PO/ENT daily (n=28)</td>
<td>Haloperidol 2.5–5 mg PO/ENT q8hr (n=45)</td>
<td>NR</td>
<td>NR</td>
</tr>
<tr>
<td>Pandharipande (2007)</td>
<td>61</td>
<td>Medical = 70; intubated = 100</td>
<td>Dexmed up to 1.5 mcg/kg/hr (n=52)</td>
<td>Lorazepam up to 10 mg/hr (n=51)</td>
<td>79 vs. 82; p=0.65 Delirium-free days 9 (5–11) vs. 7 (5–11); p=0.09</td>
<td></td>
</tr>
<tr>
<td>Ruokonen (2009)</td>
<td>NR</td>
<td>Medical = 53; intubated = 100</td>
<td>Dexmed up to 1.4 mcg/kg/hr (n=41)</td>
<td>Midazolam up to 0.2 mg/kg/hr or propofol up to 66 mcg/kg/min (n=44)</td>
<td>44 vs. 25; p=0.035</td>
<td>NR</td>
</tr>
<tr>
<td>Riker (2009)</td>
<td>60</td>
<td>Medical = 86; intubated = 100</td>
<td>Dexmed up to 1.4 mcg/kg/hr (n=244)</td>
<td>Midazolam up to 0.1 mg/kg/hr (n=122)</td>
<td>54 vs. 77; p&lt;0.001</td>
<td>NR</td>
</tr>
<tr>
<td>Devlin (2010)</td>
<td>100</td>
<td>Medical = 75; intubated = 81</td>
<td>Quetiapine up to 200 mg PO/ENT q12hr (n=18)</td>
<td>Placebo PO/ENT (n=18)</td>
<td>NR</td>
<td>36 (12–87) vs. 120 (60–195) hr; p=0.006</td>
</tr>
<tr>
<td>Girard (2010)</td>
<td>49</td>
<td>Medical = 62; intubated = 100</td>
<td>Ziprasidone 40 mg PO/ENT up to q6hr (n=30)</td>
<td>C1: Haloperidol 5 mg PO/ENT q6hr (n=35) C2: Placebo IM/PO/ENT (n=36)</td>
<td>69 vs. 77; p=0.28 4 (2–7) vs. 4 (2–8) [C1] vs. 2 (0–5) [C2] days; p=0.93</td>
<td></td>
</tr>
<tr>
<td>Page (2013)</td>
<td>NR</td>
<td>Medical = 65; intubated = 100</td>
<td>Haloperidol 2.5 mg IV q8hr (n=71)</td>
<td>Placebo IV (n=70)</td>
<td>NR</td>
<td>5 (2–8) vs. 5 (1–8) days; p=0.53</td>
</tr>
<tr>
<td>Reade (2016)</td>
<td>100</td>
<td>Medical = 41; intubated = 100</td>
<td>Dexmed up to 1.5 mcg/kg/hr (n=39)</td>
<td>Placebo IV (n=32)</td>
<td>NR</td>
<td>Time to resolution 23 (13–54) vs. 40 (25–76) hr; p=0.01</td>
</tr>
</tbody>
</table>
Factors That May Disrupt Sleep in the ICU

- Medications
- Patient-ventilator interaction
- Stress response
- Bedside interventions
- Noise
- Temperature
- Light
- Environment
- Delirium
- Inflammatory Response
- Circadian rhythm disturbance
SkyDex: Randomized, Double-Blind, Controlled Study
of Nocturnal Dexmedetomidine (0.2-0.8 mcg/kg/hr from 21:30-6:30) vs. Placebo in Critically Ill Medical and Surgical Patients Without Delirium

P = 0.03

<table>
<thead>
<tr>
<th></th>
<th>Dexmedetomidine (n=49)</th>
<th>Placebo (n=49)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum LEEDS sleep score</td>
<td>6 [4-7]</td>
<td>5 [4-6]</td>
<td>0.287</td>
</tr>
</tbody>
</table>

Reported as median [25th to 75th percentile]

Skrobik Y, Devlin JW, et al ATS 2017
## General Approach to Treating Delirium

<table>
<thead>
<tr>
<th>Situation</th>
<th>Preferred Intervention</th>
</tr>
</thead>
</table>
| Patient found to have delirium                                           | 1. Remove/reduce all modifiable risk factors (including medications) that could be causing/worsening delirium  
2. Implement non-pharmacologic interventions known to reduce delirium occurrence/duration (e.g. reorientation, ear plugs). |
| Patient has persistent delirium with agitation                          | 1. If agitation is mild, is not related to pain or benzodiazepine withdrawal and the QTc interval is ≤ 500 msec then haloperidol 1mg IV q6h (if patient NPO) and quetiapine 50mg PO/FT q12h (if patient eating/tolerating TF)  
2. If agitation is severe and is not related to pain or benzodiazepine withdrawal then start a dexmedetomidine infusion  
Note: If patient on a benzodiazepine or propofol infusion – change to dexmedetomidine (if deep sedation is not required) |
| Patient has delirium, no agitation but has bothersome delirium symptoms (e.g. fear b/c of hallucinations) | If the QTc interval is ≤ 500 msec initiate haloperidol 1mg IV q6h (if patient NPO) and quetiapine 50mg PO/FT q12h (if patient eating/tolerating TF) |
| Patient has delirium but neither agitation nor bothersome delirium symptoms | No pharmacologic treatment is warranted                                                                                                                                                                                   |
| Discontinuation of delirium medication therapy                           | Stop the medication (e.g. antipsychotics) 48 hours after delirium resolves. If delirium does not resolve before ICU discharge develop a clear plan for antipsychotic discontinuation after ICU discharge. |
ABCDEF Bundle

A. **Assess, Prevent and Manage Pain**

B. **Both SAT and SBT**

C. **Choice of Analgesia and Sedation**

D. **Delirium: Assess, Prevent and Manage**

E. **Early Mobility and Exercise**

F. **Family Engagement and Empowerment**


# Impact of an ABCDE Bundle Approach on Patient Outcome

<table>
<thead>
<tr>
<th></th>
<th>Pre-ABCDE Bundle (n=146)</th>
<th>Post-ABCDE Bundle (n=150)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ventilator-free days (~62% MV)</td>
<td>21 [0-25]</td>
<td>24 [7-26]</td>
<td>0.04</td>
</tr>
<tr>
<td>Delirium anytime (%)</td>
<td>62</td>
<td>49</td>
<td>0.02</td>
</tr>
<tr>
<td>ICU days spent in delirium (%)</td>
<td>50 [30-64]</td>
<td>33 [19-50]</td>
<td>0.003</td>
</tr>
<tr>
<td>ICU days spent in coma (%)</td>
<td>25 (18-44)</td>
<td>25 (12-43)</td>
<td>0.89</td>
</tr>
<tr>
<td>Mobilized out of bed ever (%)</td>
<td>48</td>
<td>66</td>
<td>0.002</td>
</tr>
<tr>
<td>Hospital mortality (%)</td>
<td>19.9</td>
<td>11.3</td>
<td>0.04</td>
</tr>
<tr>
<td>Self-extubation requiring re-intubation</td>
<td>N=1</td>
<td>N=1</td>
<td>1.0</td>
</tr>
</tbody>
</table>

Klompas M et al, AJRCCM (ahead of press Nov 4 2014)
Khan BA et al, Crit Care Med 2014; 42(12) e791-5
PAD Interdisciplinary Team

- RN Champion
- RT Champion
- Pharmacy Champion
- Physical Therapy Champion
- MD Champion
- Family
- Patient

Integrated Approach to PAD

Courtesy J Barr, MD
Adapting ICU Pain, Sedation and Delirium Evidence to the ICU Bedside: It’s all about perspective.
Interconnected
New ACCM-SCCM PAD-ES Clinical Practice Guideline Effort

- N=33 members from 7 countries
- Nurses, physicians, pharmacists, psychiatrist, PT, OT, medical librarian, methodologists
- N=36 clinical questions across 5 sections
- ICU survivors involved in all stages