



## Sedation and Analgesia in the Critically Ill

### Key Article

- *Devlin JW, et al. Executive Summary: Clinical practice guidelines for the prevention and management of pain, agitation/sedation, delirium, immobility, and sleep disruption in adult patients in the ICU. Crit Care Med. 2018; 48:1532-48.*

### 2018 Guidelines

- Updated the 2013 Pain, Agitation, and Delirium Guidelines
- Added immobility and sleep (PADIS)
- Included patients as collaborators and coauthors
- Invited panelists from high-income countries as an early step towards incorporating more diverse practices and expertise from the global critical care community
- 37 Recommendations
  - Only 2 are “strong”
  - Remainder are “conditional”
    - Apply to most but not all critically ill adults
    - Made when evidence is conflicting, low quality, insufficient or applicable to 1 patient subgroup
    - Or when potential benefits require weighing almost equal risks
- 2 Good Practice Statements
- 32 Additional Statements

### Recommendations

- *Pain/Analgesia*
  - Overview
    - Consistent approach to pain assessment and management is paramount
    - Inability to communicate clearly does not negate a patient’s pain experience or the need for appropriate pain management
    - Severe pain negatively affects critically ill adults
    - Implementation of assessment-driven and standardized pain management protocols improves ICU outcomes and clinical practice
  - Protocol-Based Pain Assessment and Management
    - **Good Practice Statement: Management of pain for adult ICU patients should be guided by routine pain assessment and pain should be treated before a sedative agent is considered**
    - Recommendation: “We suggest using an assessment-driven, protocol-based, stepwise approach for pain and sedation management in critically ill adults” (Conditional Recommendation, Moderate quality of evidence)

- Conditional recommendation given because benefits of protocol-based approach not observed across all critical outcomes
  - Analgo-sedation or analgesia-based sedation - reduces sedative requirements, decreases duration of MV, ICU LOS, and pain intensity
- What are the most reliable and valid pain assessment methods?
  - Self-report scales - reference standard for pain assessment in patients who can communicate reliably
  - Behavioral pain assessment tools: among adults unable to self-report and in whom behaviors are observable, the BPS and CPOT demonstrate greatest validity and reliability
  - **Physiologic measures: Vital signs are not valid indicators for pain in critically ill adults and should only be used as cues to initiate further assessment** using appropriate and validated methods such as the patient's self-report or a behavioral scale
- Pharmacologic Adjuvants to Opioid Therapy
  - Opioids remain a mainstay for pain management in most ICU settings; important safety concerns such as sedation, delirium, respiratory depression, ileus, and immunosuppression may increase ICU LOS and worsen post-ICU patient outcome
  - Panel generally supports use of a multimodal pharmacotherapy approach as a component of analgesia-first approach to spare/minimize opioid and sedative use
  - Acetaminophen
    - Recommendation: "Suggest using acetaminophen as an adjunct to an opioid to decrease pain intensity and opioid consumption for pain management" (Conditional, very low quality of evidence)
    - IV, oral, or rectal administration; IV acetaminophen may cause hypotension
  - Ketamine
    - Recommendation: "Suggest using low-dose ketamine (1-2 mcg/kg/hr) as an adjunct to reduce opioid consumption in postsurgical adults admitted to the ICU" (Conditional, very low quality of evidence)
    - IV ketamine was not shown to improve patients' self-reported pain intensity; reduced opioid consumption is only a surrogate for better patient-centered outcomes
    - Evidence regarding its role in the ICU for this indication currently remains limited
  - Neuropathic pain medications
    - "Recommend using a neuropathic pain med (gabapentin, carbamazepine, pregabalin) with opioids for neuropathic pain management in critically ill adults" (Strong, moderate quality evidence)

- Recommendation: “Suggest using a neuropathic pain medication with opioids for pain management in the ICU after cardiovascular surgery.”
    - These medications have been evaluated in patients with GBS and who have recently undergone cardiac surgery - use significantly reduced opioid consumption within 24 hours
    - Drugs require the ability for patients to swallow or have enteral access
  - Lidocaine
    - “Suggest not routinely using IV lidocaine as an adjunct to opioid therapy for pain management” (Conditional, low quality of evidence)
    - “Suggest not routinely using local analgesia or nitric oxide for pain management during chest tube removal.”
  - COX-1 NSAID
    - “Suggest not routinely using a COX-1 selective NSAID as an adjunct to opioids.” (Conditional, low quality of evidence)
  - Other Agents/Medications
    - Recommend not using inhaled volatile anesthetics for procedural pain management (strong, very low)
    - Suggest using an NSAID administered IV, orally, or rectally during discrete and infrequent procedures
- *Sedation*
  - Overview
    - Sedative medications are frequently administered to relieve anxiety and prevent agitation-related harm
    - These medications may predispose to increased morbidity
    - 2013 PAD Guideline
      - Suggested targeting lighter levels of sedation or using daily awakening trials
      - Recommended minimizing the use of benzodiazepines
  - Light Sedation
    - Recommendation: “Suggest using light sedations in critically ill mechanically ventilated adults.” (Conditional, low quality of evidence)
    - 2013 PAD Guideline defined light sedation as RASS 0 to -2; this level of sedation is probably deeper than that required for many patients receiving MV
    - No universally accepted definition of light sedation exists
    - Most use RASS of -2 to +1
    - Outcomes evaluated for the current 2018 PADIS Guideline differ from the short-term outcomes assessed in the 2013 PAD Guideline
    - Light sedation was associated with a shorter time to extubation and a reduced tracheostomy rate; not associated with a reduction in 90-day mortality, delirium prevalence, PTSD, or self-extubation

- Choice of Sedative
  - 2013 PAD Guidelines suggested (conditionally) that nonbenzodiazepines sedatives (propofol or dexmedetomidine) are preferable to benzodiazepines in critically ill mechanically ventilated patients because of improved short-term outcomes such as ICU LOS, duration of MV, and delirium
  - 2018 PADIS Guideline
    - “Suggest using either propofol or dexmedetomidine over benzos for sedation in critically ill mechanically ventilated adults” (Conditional, low quality of evidence)
    - Evaluated the effect of propofol vs benzodiazepines, dexmedetomidine vs. benzodiazepines, and propofol vs. dexmedetomidine
    - In most studies, benzo’s given via continuous infusion and not intermittent boluses
    - Compared with benzodiazepines, propofol was associated with a shorter time to light sedation and shorter time to extubation
    - Compared with benzodiazepines, dexmedetomidine was associated with a shorter duration of MV and ICU LOS; also associated with a significant reduction in delirium
    - Recent MENDS trial demonstrated greater incidence of bradycardia in the dexmedetomidine group, current studies have not found that intervention has been required for bradycardia
    - dexmedetomidine vs. propofol - no difference in time to extubation
    - PRODEX study - delirium incidence was decreased with dexmedetomidine at a single time point 48 hours after sedation cessation; patients could communicate more effectively with dexmedetomidine; no difference in bradycardia
  - Economic considerations - costs lower than they were when initially studied

### Take Home Points

- **2018 PADIS Guideline serves to update 2013 Guideline – included patients and critical care practitioners from around the globe.**
- **Assess Pain first using an assessment-driven protocol-based approach.**
- **Physiologic measures such as vital signs are not adequate; the Behavioral Pain Scale and the Critical Care Pain Observation Tool demonstrate the most reliability.**
- **Start with analgesia first – opioids remain first line**
- **Consider ketamine, acetaminophen, and neuropathic medications as adjuncts.**
- **Assess anxiety and agitation using a validated protocol – RASS**
- **Titrate to lighter levels of sedation**
- **First line sedatives include propofol and dexmedetomidine**
- **Avoid benzodiazepines when possible.**