

# PAIN, AGITATION and DELIRIUM in ICU

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Research Methods, Evidence and Impact



Based on PADIS Guideline

## Clinical Practice Guidelines for the Prevention and Management of Pain, Agitation/Sedation, Delirium, Immobility, and Sleep Disruption in Adult Patients in the ICU

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# Educational Objectives

To review the PADIS guidelines with a focus on:

- Pain
- Agitation/sedation
- Delirium



PAIN

# 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.

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# SEDATION

# Sedation

Analgesia-first sedation:

- An analgesic (usually an opioid) is used before a sedative to reach the sedative goal

Analgesia-based sedation:

- An analgesic (usually an opioid) is used instead of a sedative to reach the sedative goal

# Key Concepts with Analgesia-Based Sedation

## **Takes advantage of certain opioid properties**

- Reduces/eliminates sedative requirements and their associated ADRs
- Improves sedation-agitation scores
- Dyspnea & respiratory depressant properties

## **May accentuate opioid-related ADR's**

- Gastric dysmotility, delirium, hypotension, myoclonus

## **May not be appropriate for patients with GABA agonist/sedative needs:**

- Alcohol/drug withdrawal & drug intoxication
- Neuromuscular blockade
- Elevated intracranial pressure & status epilepticus



# RECOMMENDATION

We **suggest** using an assessment-driven, protocol-based (analgesia/analgo-sedation), stepwise approach for pain and sedation management in critically ill adults

(conditional recommendation, moderate quality of evidence)

# Multimodal analgesia – a definition

Combining different analgesics that act by different mechanisms and at different sites in the nervous system

Results in additive or synergistic analgesia with lowered adverse effects compared to sole administration of individual analgesics

# Multimodal analgesia

## **Adjunctive:**

Acetaminophen (IV/PO/PR)

Nefopam

Ketamine

Neuropathic analgesia

IV lidocaine

NSAID (IV/PO)

# RECOMMENDATION

We **suggest** using an acetaminophen as an adjunct to an opioid to decrease pain intensity and opioid consumption for pain management in critically ill adults

(conditional recommendation, very low quality of evidence).

# Adjuvant Low-dose Ketamine

## **Considerations:**

Only one RCT available (with a very high risk of bias)

Data limited to abdominal surgery patients only

Safety (particularly delirium) not reported

Role of sedation on effect unclear

Builds on considerable observational data in non-ICU post operative populations

# RECOMMENDATION

We **suggest** using an acetaminophen as an adjunct to an opioid to decrease pain intensity and opioid consumption for pain management in critically ill adults

(conditional recommendation, very low quality of evidence)

# RECOMMENDATION

We suggest using low-dose ketamine (0.5 mg/kg IVP x 1; 1 -2 mcg/kg/min) as an adjunct to opioid therapy when seeking to reduce opioid consumption in **post-surgical adults** admitted to the ICU  
(conditional recommendation, very low quality of evidence)

# RECOMMENDATION

We **suggest** using a neuropathic pain medication (e.g., gabapentin, carbamazepine, and pregabalin) with opioids for pain management in ICU adults **after cardiovascular surgery**  
(conditional recommendation, low quality of evidence)



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# AGITATION/SEDATION

# RECOMMENDATION

We **suggest** using light (vs. deep) sedation in critically ill, mechanically ventilated adults  
(conditional recommendation, low quality of evidence)

# Daily Sedative Interruption/Nurse Protocolized Sedation

5 unblinded RCTs compared DSI to either usual or NP care

While differences exist between individual RCTs re: the ability of DSI (vs. its comparator) to maintain light sedation, the overall ability for DSI and NP to achieve light sedation is similar

## **Ungraded statement:**

Daily sedative interruption protocols and nursing protocolized targeted sedation can achieve & maintain a light level of sedation

Outcomes	Participants (Studies) Follow-Up	Quality of the Evidence (Grades of Recommendation Assessment, Development and Evaluation)	Estimated Benefit With Nonbenzodiazepine
ICU Length of stay	1,235 (6) Up to 45 d	⊗⊗⊗○ Moderate due to imprecision <sup>a</sup>	-1.64 d (-2.57, -0.70)
Duration of mechanical ventilation	1,101 (4) Up to 45 d	⊗⊗⊗○ Moderate	-1.87 d (-2.51, -1.22)
All-cause mortality	1,101 (4) Up to 45 d Control rate: 25%	⊗⊗⊗○ Moderate due to imprecision <sup>b</sup>	1.01 (0.78, 1.30)
Delirium	469 (2) During ICU stay Control rate: 70%	⊗⊗○○ Low due to imprecision, inconsistency <sup>c,d</sup>	0.82 (0.61, 1.11)

# RECOMMENDATION

We **suggest** using either propofol or dexmedetomidine over benzodiazepines for sedation in critically ill, mechanically ventilated adults

(conditional recommendation, low quality of evidence)



# DELIRIUM

# RECOMMENDATION

We suggest **NOT** using haloperidol, an atypical antipsychotic, dexmedetomidine, statin, or ketamine to **prevent** delirium in all critically ill adults

(Conditional recommendation, very low to low quality of evidence)

# RECOMMENDATION

We suggest **NOT routinely** using haloperidol and atypical antipsychotic to treat delirium  
(conditional recommendation, low quality of evidence)



# Dexmedetomidine vs. Placebo (Treatment)

**Rationale:** 1 RCT (71 pts)

Significant increase in ventilator-free hours

Mean Difference 17 hrs (95% CI, 4 to 33 hrs); very low quality

NO effect on ICU/Hosp LOS or hospital discharge location

# RECOMMENDATION

We **suggest** using dexmedetomidine for **treating** delirium in mechanically ventilated adults where agitation is precluding weaning / extubation

(conditional recommendation, low quality of evidence)

Assess, Prevent and manage Pain

Both SAT and SBT

Choice of analgesia and Sedation

Delirium: Assess, Prevent and Manage

Early Mobility and Exercise

Family Engagement and Empowerment



ABCDEF Bundle  
Elements

# Key Take-Aways



- Treat pain before sedating
- When treating pain consider non-opioid adjuncts
- Use as little sedation as possible/safe for each patient
  - Short acting sedation (Propafol and Dex) better than Long acting
- Drugs don't work to treat or prevent delirium
  - Non-pharmacologic prevention/treatment is key
  - But can use neuroleptics (eg. Haldol) if patient unsafe to practitioner or themselves

# References and Resources

<https://www.sccm.org/ICULiberation/Guidelines>