Pain, Anxiety and Delirium

Part of the Joint Trauma System (JTS) Clinical Practice Guideline (CPG) Training Series
Purpose

This CPG provides evidence-based guidelines for the management of pain, anxiety, and delirium (PAD) in military trauma patients.

This presentation is based on the Pain, Anxiety, and Delirium CPG, 13 Mar 2017 (ID:29). It is a high-level review. Please refer to the complete CPG for detailed instructions. Information contained in this presentation is only a guideline and not a substitute for clinical judgement.
Agenda

1. Summary
2. Background
3. Goals & Staffing
4. Evaluation: Scoring Methods
5. Pain Medication Treatment
6. Preventive Measures
7. Pain Evaluation, Control, Pharmacology
8. Role 1 Evaluation & Treatment
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11. Use of Catheters
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Summary

- Aggressive treatment of pain, anxiety, and delirium is an essential part of care throughout the continuum of care.
- Evaluation should use standardized methods.
- Treatment includes both non-pharmacologic and pharmacologic methods.
Background

- Pain is universally present in combat casualties. Treatment should begin at point of injury through all echelons of care.
  - Moral, medical, and operational imperative to treat.
  - Treatment reduces incidence of chronic pain syndromes, post traumatic stress disorder, and long-term narcotic dependency.
  - Pain control should be optimized as a priority over sedation.
  - A multimodal approach is advised to reduce negative side effects.

- All members of the care team should work as a team to provide effective pain management.
Goals & Staffing

- Pain control starts at point of injury, but limits in staffing make a pain management team most feasible at a Role 3 and above.
  - Establish an Acute Pain Service when able, to include at least:
    - Physician most experienced in pain management (often anesthesiologist) as Pain Consultant
    - Chief Pain Nurse
    - Ward Pain Nurse Champions
  - Team should interact directly and frequently with primary treating service.
  - Team should be available to all patients admitted to the hospital.
- Primary mission is the provision of effective pain control as well as the treatment and prevention of anxiety and delirium.
Pain, agitation, and delirium should be measured and treated based on accepted scoring systems.

- DoD/VA Pain Rating Scale (DVPRS): Used to assess pain.
- Richmond Agitation Sedation Scale (RASS): Used to assess anxiety.
- Confusion Assessment Method (CAM): Used to assess presence of delirium.

- Always document treatments.

- Materials to allow for regional anesthesia or systemic medications should be readily available.
DoD/VA Pain Rating Scale

1. Circle the one number that describes how, during the past 24 hours, pain has interfered with your usual ACTIVITY:

   - 0 Does not interfere
   - 1-10 Completely interferes

2. Circle the one number that describes how, during the past 24 hours, pain has interfered with your SLEEP:

   - 0 Does not affect
   - 1-10 Completely affects

3. Circle the one number that describes how, during the past 24 hours, pain has affected your MOOD:

   - 0 Does not contribute
   - 1-10 Contributes a great deal

4. Circle the one number that describes how, during the past 24 hours, pain has contributed to your STRESS:

   - 0 Does not contribute
   - 1-10 Contributes a great deal

# Richmond Agitation Sedation Scale

<table>
<thead>
<tr>
<th>Score</th>
<th>Term</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>+4</td>
<td>Combative</td>
<td>Overtly combative, violent, immediate danger to staff.</td>
</tr>
<tr>
<td>+3</td>
<td>Very Agitated</td>
<td>Pulls or removes tube(s) or catheter(s); aggressive.</td>
</tr>
<tr>
<td>+2</td>
<td>Agitated</td>
<td>Frequent non-purposeful movement, fights ventilator.</td>
</tr>
<tr>
<td>+1</td>
<td>Restless</td>
<td>Anxious but movements not aggressive vigorous.</td>
</tr>
<tr>
<td>0</td>
<td>Alert, Calm</td>
<td></td>
</tr>
<tr>
<td>-1</td>
<td>Drowsy</td>
<td>Not fully alert, but has sustained awakening (eye-opening/eye contact) to voice (&gt;10 seconds).</td>
</tr>
<tr>
<td>-2</td>
<td>Light Sedation</td>
<td>Briefly awakens with eye contact to voice (&lt; 10 seconds).</td>
</tr>
<tr>
<td>-3</td>
<td>Moderate Sedation</td>
<td>Movement or eye opening to voice (but no eye contact).</td>
</tr>
<tr>
<td>-4</td>
<td>Deep Sedation</td>
<td>No response to voice, but movement or eye opening to physical stimulation.</td>
</tr>
<tr>
<td>-5</td>
<td>Unarousable</td>
<td>No response to voice or physical stimulation.</td>
</tr>
</tbody>
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### Procedure for RASS Assessment

1. Observe patient: Patient is alert, restless, or agitated. Score 0 to +4

2. If not alert, state patient’s name and say to open eyes and look at speaker
   - Patient awakens with sustained eye opening and eye contact.
   - Patient awakens with eye opening and eye contact, but not sustained.
   - Patient has any movement in response to voice but no eye contact.

3. When no response to verbal stimulation, physically stimulate patient by shaking shoulder and/or rubbing sternum.
   - Patient has any movement to physical stimulation.
   - Patient has no response to any stimulation.

FEATURE 1: Acute Onset of Changes or Fluctuations in the Course of Mental Status
Is there evidence of an acute change in mental status from baseline or fluctuating behavior over the last 24 hours?
PRESENT OR ABSENT

and

FEATURE 2: Inattention
Does the patient have difficulty focusing attention or following conversations or instructions?
PRESENT OR ABSENT

and either

FEATURE 3: Disorganized Thinking
• Is there evidence of disorganized speech, or incoherent thinking or rambling?
• Is there altered awareness of surroundings or inability to follow commands?
PRESENT OR ABSENT

or

FEATURE 4: Altered Level of Consciousness
Is the patient’s level of consciousness anything other than alert (i.e. hypervigilant, lethargic, stuporous or unarousable)?
PRESENT OR ABSENT

DELIRIUM
Medications should be specifically directed and dosed to achieve a desired goal such as:

- Achieve a pain score of 4 or less.
- Maintain sufficient patient consciousness to assess the evolution of injuries by physical exam.
- Decrease the need for mechanical ventilation.
- Ameliorate the symptoms of anxiety, delirium or agitation.
Preventive Measures

- Pain, as a product of trauma, cannot be prevented. Early intervention can prevent the psychological and biochemical consequences of pain.

- Prevention of anxiety and delirium begins with recognition that all patients are at risk.
  - Management of underlying etiologies including pain, hypoxia, metabolic abnormalities, etc., is essential.
  - Disorientation from sedation can be mitigated with frequent/systematic reorientation and maintenance of sleep patterns.
Preventive Measures

Additional preventative measures include:

- Providing hearing aids or eye glasses as needed to prevent sensory deprivation.
- Intubated patients should receive spontaneous breathing trials daily.
- Physical and occupational therapy should be started as soon as possible.
- Avoid prophylactic administration of antipsychotics and benzodiazepines. (Consider Propofol for short term sedation.)
Pain Evaluation

Some level of pain is present in all combat casualties.

- Assess as early as possible and repeatedly thereafter.
  - Assess at least 1-4 hours for non-intubated patients using DVPRS.
  - Assess continuously for intubated patients.
- Document pain scores.
Signs of inadequate pain control include tachycardia, hypertension, and agitation.

- Life- and limb-threatening injuries can also have similar systemic effects and include:
  - Compartment syndrome
  - Missed injuries
  - Impending physiologic decline

- Exclude other injuries before attributing physical exam findings to pain.
Primary pharmacologic treatments include ketamine and opiates.

- Ketamine is a very effective analgesic alone or in association with opiates. Parental doses of 0.15 – 0.3 mg/kg shown to reduce pain, total narcotic use, and need for rescue medications.

- Any opioid medication can be titrated to the equal effectiveness of another opiate to achieve desired pain control.
Role 1 has limited resources and supplies. Options include:

- Patient able to fight (mild to moderate pain): Combat pill pack which contains acetaminophen and meloxicam.

- Patient not in or likely to develop shock or respiratory distress (moderate to severe pain): Oral transmucosal fentanyl citrate 800 ug.

- Patient in or likely to develop shock or respiratory distress: Ketamine 50 mg IM/IN or 20 mg IV or IO with repeated doses every 20-30 minutes depending on route.
At Role 2, an anesthesiologist or nurse anesthetist will be on staff and will be responsible for perioperative pain management.

- May have regional blocks or patient-controlled analgesia (PCA) pumps.
- Opiates and ketamine titrated to effect with benzodiazepines for dysphoric symptoms associated with ketamine.
At Role 3 or above, more robust options available including:

- Continuous or single-injection epidural and peripheral nerve catheter infusions.
- Low-dose ketamine infusions.
- Fentanyl, hydromorphone, and morphine PCAs.
Epidural and regional catheters should be used with some caution.

- All catheters should receive a 3 mL test dose of local anesthetic and 1:400,000 epinephrine.

- Low molecular weight heparin (LMWH) use should be timed to be given at least 12 hours before insertion and 2 hours after removal.

- LMWH should not be used in aeromedical evacuation (AE) patients with epidural catheters.

- Be mindful of total anesthetic doses and do not exceed safe limits (i.e., total dose of 0.2% Ropivicaine should not exceed 20 mL/hr).

- Blocks may mask compartment syndrome, and patients at risk should be closely monitored.
Local anesthetic toxicity can happen in patients with pain control catheters. Symptoms include: tinnitus, anxiety, restlessness, dizziness, blurred vision. If toxicity is suspected, stop all local anesthetics.

Can present with cardiac arrest; if so, stop local anesthetics and:
1. Start advanced cardia life support.
2. Patient should immediately receive 1.5 mL/kg of 20% intralipid repeated 1-2 times for persistent asystole, pulseless electrical activity, or reemergence of arrest.
3. If hemodynamic instability persists or recurs, set intralipid infusion rate to 0.5 mL/kg/min for at least 10 minutes after stability restored.

Can present with seizure; if so, stop local anesthetics and:
1. Treat seizure with anti-seizure medication.
2. Control airway if needed.
Anxiety, Delirium

- Altered mental status can be expected and preemptively managed.
- Evaluation and treatment can be complicated by the presence of traumatic brain injury (TBI).
  - TBI can impede accurate assessment.
  - Moderate to severe TBI is high risk for atypical or paradoxical reactions to sedating and stimulating agents.
  - Reactions to individual agents can change drastically over a short period of time as TBI evolves.
Anxiety Treatment

- Propofol is a good option for short-term sedation in patients with normal hemodynamics.
  - Propofol can cause hypotension.
  - Propofol should only be administered in patients who have a definitive airway and under continuous monitoring.
  - Rapid onset and clearance.

- Dexedetomidine is an option for patients on non-invasive mechanical ventilation for short-term sedation and anxiolysis.
  - Mild analgesic effects
  - Caution when used in patients with bradycardia or heart block

- Clonidine is useful for mild sedation and analgesia particularly in patients with hypertension with agitation.
Delirium Treatment

Haloperidol (Haldol) and quetiapine (Seroquel) are commonly used for treatment of delirium.

- Both increase QT interval and the cardiac effect should be monitored on a daily bases with EKG.
- Medications should be discontinued if QTc exceeds 500 msec or the interval increases 60 msec from baseline.
- Quetiapine also effective as an anxiolytic and to regulate sleep when used before bed.
Analgesics & Anxiolytics

Use of Analgesics and Anxiolytics with Mechanical Ventilation

- Intermittent dosing of analgesics and anxiolytics has benefits over continuous dosing and should be used first if possible.
  - Reduces duration of mechanical ventilation.
  - Continuous infusion will often result in a prolonged duration of action/effect due to accumulation of metabolites.
  - Patients requiring dosing more frequently than every 1-2 hours, continuous dosing can be titrated to effect.
Daily interruptions of sedation (sedation vacations) have demonstrated reduction in duration of mechanical ventilation and ventilator-associated pneumonia.

- To perform, continuous infusions should be stopped daily to assess physical examination and perform spontaneous breathing trial.
- Sedation goals can be assessed after sedation holidays.

Contraindications to sedation vacation:
- Intractable intracranial hypertension.
- Hemodynamic instability.
- Inability to adequately oxygenate or ventilate the patient.
Special Considerations

- Nausea is a common side affect of trauma and of medications used to treat pain, anxiety and delirium.
  - Gastric decompression with a nasogastric tube if any type of obstruction or gastric distension suspected.
  - Ondansetron is pharmacologic therapy of choice.

- Pain control may mask compartment syndrome.
  In patients at risk for compartment syndrome:
  - Any patient at risk for compartment syndrome with increasing pain medication requirements needs aggressive evaluation.
  - Fasciotomies or compartment checks should be done if there are any clinical findings for compartment syndrome or if patient is unable to reliably detect/report pain yet clinical findings raise concern.
AE Special Considerations

AE requires preparation.

- Patient movement requests must state type of regional anesthesia.
- All equipment and therapies used in flight must be approved for flight and personnel trained in their use.
- Ambit pumps currently approved.
- No narcotics should be added to infusions.
Patients undergoing prolonged air evacuation are exposed to a multitude of environments in an austere setting.

- Turbulence, weather, temperature, limited patient access, and monitoring make it difficult to maintain sedation and anesthesia.

- May be necessary to empirically increase sedation and pain regimens to maintain safety margin to prevent accidental dislodgement of critical items such as endotracheal tubes.

- Increased medications cloud neurologic examinations, so patients requiring neurologic monitoring in flight should have intracranial pressure monitors.
**Intent (Expected Outcomes)**
- All combat casualties will have their pain needs addressed.
- All combat casualties in the ICU will be assessed for pain using a validated pain scale and sedation using a validated sedation scale and will have the goals for pain and sedation documented.

**Performance/Adherence Measures**
- All combat casualties will have a pain score recorded upon admission to a Role 3 facility and as part of routine care while in the intensive care unit.
- No combat casualties will experience an inadvertent or unplanned extubation.
- All combat casualties in intensive care unit will be screened for delirium daily.

**Data Source**
- Patient Record
- Department of Defense Trauma Registry (DoDTR)
References (1)


References (2)


References (3)


Appendices

- **Appendix A**: Pain, Anxiety (Sedation) and Delirium Guidelines
- **Appendix B**: DOD and VA Pain Rating Scale
- **Appendix C**: DOD and Veterans Pain Supplemental Questions
- **Appendix D**: Richmond Agitation Sedation Scale (RASS)
- **Appendix E**: The Confusion Assessment Method (CAM)
- **Appendix F**: Regional Anesthetic Use
- **Appendix G**: Sedation Orders
- **Appendix H**: Additional Information Regarding Off-Label Uses in CPGs
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