Guideline

Guideline Title: Sedation Management in the ICU

Summary: Guideline for ICU staff to ensure that the level of sedation is assessed using the Richmond Agitation-Sedation Scale, and that appropriate sedation is administered and the outcome is assessed and documented.

Approved by: Medical Director of ICU

Publication (Issue) Date: September 2015

Next Review Date: September 2018

Replaces Existing Policy/ Guideline: Sedation in ICU

Previous Review Dates: May 2012

Contents: Guideline and assessment tools

1. Introduction:

The risk addressed by this policy:

Patient safety and patient comfort

The Aims / Expected Outcome of this guideline:

The patient will receive goal directed sedation and analgesia in the Intensive care unit by the appropriate use of sedation and pain scores and sedation protocols.

Related Standards or Legislation

NSQHS Standard 1 Governance

National Standard 4 Medication Safety

Related Policies

<table>
<thead>
<tr>
<th>Policy Code</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>LH_PD2013_C03.01</td>
<td>Drug Administration</td>
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<tr>
<td>LH_PD2013_C03.01</td>
<td>Drug Administration</td>
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<tr>
<td>LH_PD2013_C03.00</td>
<td>Drug Prescribing</td>
</tr>
<tr>
<td>LH_PD2013_C03.12</td>
<td>Administration of Intravenous (IV) Medications</td>
</tr>
<tr>
<td>LH_PD2014_C03.05</td>
<td>Accountable Drugs – Schedule 8 (S8) and S4D</td>
</tr>
<tr>
<td>SWSLHD_GL2011_002</td>
<td>Delirium</td>
</tr>
</tbody>
</table>
2. Policy Statement

- All care provided within the Liverpool Health Service will be in accordance with infection control guidelines, manual handling guidelines and minimisation and management of aggression guidelines.
- Medications are to be prescribed and signed by a medical officer unless required during an emergency.
- Medications are to be given at the time prescribed and are to be signed by the administering nurse.
- Parenteral medication prescriptions and the drug are to be checked with a second nurse prior to administration.
- All drugs administered during an emergency (under the direction of a medical officer) are to be documented during the event, then prescribed and signed following the event.
- Adverse drug reactions are to be documented and reported to a medical officer.
- Medication errors are to be reported using the hospital electronic reporting system: IIMS.
- Guidelines are for adult patients unless otherwise stated.
- RASS (Richmond Agitation Sedation Scale) must be used to assess sedation scores in all Intensive care patients. The desired score must be determined and documented by the Intensive Care Medical Team in the clinical notes.
- The RASS score must be regularly documented by the ICU nurses on the allocated section of the ICU flow chart.

3. Principles / Guidelines

Background\(^1,2\)

Patient comfort should be a primary goal in the intensive care unit (ICU), including adequate pain control, anxiolysis, and prevention and treatment of delirium. However, achieving the appropriate balance of sedation and analgesia is challenging. Analgesic and sedative medications used in ICU have been identified as a risk factor for delirium and prolonged ICU stay. It is important to have rational and agreed upon “target levels” of sedation, by all members of the healthcare team. The clinical practice guidelines of the Society of Critical Care Medicine emphasize the need for goal-directed delivery of psychoactive medications to avoid oversedation and to promote earlier extubation.

Most available evidence regarding sedatives and analgesics in ICU patients indicates that it may be less important which drugs are delivered than their proper titration using goal-directed delivery to optimize patient comfort while avoiding complications such as prolonged mechanical ventilation or reintubation. “Goal-directed delivery” of sedatives is best accomplished by the use of sedation scales to help the medical and nursing team agree on a target sedation level for each individual patient. This can be done by the use of instruments such as the RASS to implement sedation protocols for mechanically ventilated patients for goal-directed sedative and analgesic administration.

Pain Assessment\(^9,10\)

There are various available pain scales, the Numerical Rating Scale (NRS) (1 to 10) and the Faces Pain Scale (0 to 10) have been validated for acute pain only and not in mechanically ventilated patients in the ICU\(^21\). They can be used for the awake patients in ICU who can self report their pain. Patient relatives may also be involved in the assessment of pain.
The Behavioural Pain Scale (BPS) was developed specifically for measuring the severity of pain in sedated, mechanically ventilated, unresponsive patients. Another available scale shown to be useful in this group of patients is the CPOT (Critical care pain observation tool)\(^{23}\). In ICU the CPOT is the scale of choice.

Assess Pain Scale every 2-4 hours. Self-reporting of pain should be used whenever appropriate.

Numerical Rating Scale and Faces Pain Scale - If pain score < 4, consider analgesia effective, reassess frequently as ongoing analgesia may need to continue. If pain score \( \geq 4 \), increase analgesia to relieve pain.

Patient is in significant pain if BPS > 5; CPOT > 3, administer appropriate analgesia.

**Sedation Assessment\(^9,10\)**

The use of a sedative aims to:
- Enable the patient to cooperate with ventilation and treatment.
- Produce a desired amnesia to the Intensive Care environment.

- Obtain a sedation score goal at handover/ward round; document this in the health care record (either in the clinical notes or on the ICU flowchart CR145).
- Document which drugs the patient is taking to produce a sedative effect.
- Assess a sedation score and a Glasgow Coma Score (GCS) at least every 2 hours and as clinically indicated (some patients may require hourly assessment of GCS). Note that if a stable patient is prescribed a sedative to assist with sleeping (e.g. temazepam), it is reasonable to omit one episode of assessment.
- Conduct a sedation score even if there is no apparent drug in use that would contribute to sedation; if sedation is present and not a goal of therapy – report this to the M.O. and document findings, action plan and outcome in the health care record.
- A ‘sedation – vacation’ from sedative drugs must be done on all patients on a daily basis, unless there is specific indication by the medical team not to reduce sedation.
- When the patient is oversedated and the sedation score is \( \geq -3 \), and this degree of sedation is not the goal of therapy, stop sedative and analgesic agents until the target RASS has been achieved and restart the infusion at half or less of the previous rate (e.g. if the rate was 5ml/hr restart at 2.5ml/hr).
- If the patient is undersedated, anxious or agitated, consider the need for non-pharmacological followed by pharmacological management to achieve desired sedation score. Usual RASS target is -1 (drowsy) to 0 (alert and calm).

**Analgesia and Sedation Management\(^9,10\)**

**Non-Pharmacological Management:**
- Establishing a method of nonverbal communication (e.g. blinking or head nodding)
- Use a calm voice and gentle touch to convey reassurance.
- Frequent repositioning.
- Ensure basic hygiene needs attended –such as brushing teeth, wash, skin care.
- Using diversion – getting family to speak to patient, listening to music, re-orientating them.
- Ensure adequate lighting, noise reduction.
Pharmacological Management:

**Analgesia / Sedation Protocol**

1. **Assess Analgesia**
   - In pain: Yes → Fentanyl 20-50 micrograms/hr OR Morphine 2-5 mg/hr
   - No → Reassess often (2-4th hourly)

2. **Assess Sedation**
   - RASS at Target? (usual is -1 to 0)
     - No → Over-Sedated
     - Under-Sedated
     - Over-Sedated → Hold sedative/analgesic to achieve RASS target.
       Restart at 50% of the rate it was running at.
     - Under-Sedated → 1) Propofol 5-10 ml/hr (50 to 100 mg/hr).
       2) Dexmedetomidine 0.2-0.7 mcg/kg/hr (if weaning off sedation or ventilation)
       3) Midazolam 1-3 mg/hr (only use if patient is in alcohol withdrawal or has propofol intolerance, as this is because use of benzodiazepines has been associated with an increased incidence of delirium)
     - Yes → Reassess and document 2nd hourly
       Consider daily sedation vacation & Spontaneous breathing trial

3. **Delirium**
   - If RASS ≥ 3 perform CAM-ICU Delirium Assessment
     - Negative → Reassess in 12 hrs
     - Positive
       - Non-pharmacological management
       - Pharmacological management
       - (as per delirium guideline)
For analgesia use:

- Fentanyl Infusion - Dilute 500 micrograms fentanyl with sterile 0.9% sodium chloride to a total volume of 50mL (10 micrograms/mL). Administer @ 20-50 micrograms/hr

OR

- Morphine infusion – Dilute 50mg morphine with sterile 0.9% sodium chloride to a total volume of 50ml (1mg/ml). Administer @ 2-5mg/hr.
- Adjust the rate to achieve the desired level of analgesia.

For sedation use:

- Propofol infusion – Dilute 500mg propofol in 50mL syringe (10mg/mL). Administer @5-10ml/hr (50 -100mg/hr).
- If weaning off sedation or ventilation, consider the use of dexmedetomidine. Add the dexmedetomidine 200mcg / 2ml (one vial) to 48ml 0.9% sodium chloride = total volume 50ml (200mcg/50ml = 4mcg/ml). Recommended maintenance dose is 0.2-0.7mcg/kg/hr. Please refer to the dexmedetomidine guideline for dosage and administration details.
- Only if the patient has propofol intolerance or is in alcohol withdrawal use midazolam. Dilute 50mg of midazolam with sterile 0.9% sodium chloride, to give a total volume of 50mL (1mg/mL). Administer @ 1-3 mg/hr. Benzodiazepines have been associated with an increased risk of delirium.

4. Performance Measures

- An audit of the ICU flowchart and compliance with sedation assessment and scoring will occur on an ad hoc basis to assess compliance with this guideline.

5. References / Links


Author: S.Shunker, CNC - ICU

Reviewers: Director-ICU, ICU – Staff Specialists, NM, CNE’s, CNS’s, Pharmacists.

Endorsed by: Prof M. Parr, Director- ICU.
APPENDIX 1 - Pain Assessment

**Awake and responsive:** Use "Faces Pain Scale - Revised" adapted for ICU - get the patient to point to the face that matches their pain level or ask the patient: 0 = none, 5 = worst pain.

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No pain</td>
</tr>
<tr>
<td>2</td>
<td>Mild pain, discomfort only with moving</td>
</tr>
<tr>
<td>4</td>
<td>Continuous mild pain</td>
</tr>
<tr>
<td>6</td>
<td>Continuous moderate pain</td>
</tr>
<tr>
<td>8</td>
<td>Continuous severe pain</td>
</tr>
<tr>
<td>10</td>
<td>Excruciating pain</td>
</tr>
</tbody>
</table>

**Assess for pain at least every 4 hours:**
- If pain score < 4, consider analgesia effective, reassess frequently as ongoing analgesia may need to continue.
- If pain score $\geq 4$, increase analgesia to relieve pain
- Maintain prescribed sedation score, report any issues to the M.O. and document.
- Document score on the flowchart.
- If the patient has no pain and they are able to cough easily, deep breathe and move easily, the ongoing need for analgesia is assessed.

**Patients who are sedated, mechanically ventilated and unresponsive**
Use the "Behavioural Pain Scale" or the Critical-Care Pain Observation Tool (CPOT).

**Behavioural Pain Scale**

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
<th>SCORE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facial Expression</td>
<td>Relaxed</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Partially tightened (eg, brow lowering)</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Fully tightened (eg, eyelid closing)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Grimacing</td>
<td>4</td>
</tr>
<tr>
<td>Upper Limb Movements</td>
<td>No movement</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Partially bent</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Fully bent with finger flexion</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Permanently retracted</td>
<td>4</td>
</tr>
<tr>
<td>Compliance with mechanical ventilation</td>
<td>Tolerating movement</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Coughing but tolerating ventilation for most of the time</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Fighting ventilator</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Unable to control ventilation</td>
<td>4</td>
</tr>
<tr>
<td><strong>TOTAL SCORE</strong></td>
<td></td>
<td><strong>3 TO 12</strong></td>
</tr>
</tbody>
</table>

Score ranges from 3 (no pain) to 12 (maximum pain).
The Critical-Care Pain Observation Tool (CPOT)\textsuperscript{11}.

Directives of use of the CPOT

1. The patient must be observed at rest for one minute to obtain a baseline value of the CPOT.
2. Then, the patient should be observed during nociceptive procedures (e.g. turning, wound care) to detect any changes in the patient’s behaviours to pain.
3. The patient should be evaluated before and at the peak effect of an analgesic agent to assess whether the treatment was effective or not in relieving pain.
4. For the rating of the CPOT, the patient should be attributed the highest score observed during the observation period.
5. The patient should be attributed a score for each behaviour included in the CPOT and muscle tension should be evaluated last, especially when the patient is at rest because the stimulation of touch alone (when performing passive flexion and extension of the arm) may lead to behavioural reactions.

Observation of patient at rest (baseline).
The nurse looks at the patient’s face and body to note any visible reactions for an observation period of one minute. She gives a score for all items except for muscle tension. At the end of the one-minute period, the nurse holds the patient’s arm in both hands — one at the elbow, and uses the other one to hold the patient’s hand. Then, she performs a passive flexion and extension of the upper limb, and feels any resistance the patient may exhibit. If the movements are performed easily, the patient is found to be relaxed with no resistance (score 0). If the movements can still be performed but with more strength, then it is concluded that the patient is showing resistance to movements (score 1). Finally, if the nurse cannot complete the movements, strong resistance is felt (score 2). This can be observed in patients who are spastic.

Observation of patient during turning.
Even during the turning procedure, the nurse can still assess the patient’s pain. While she is turning the patient on one side, she looks at the patient’s face to note any reactions such as frowning or grimacing. These reactions may be brief or can last longer. The nurse also looks out for body movements. For instance, she looks for protective movements like the patient trying to reach or touching the pain site (e.g. surgical incision, injury site). In the mechanically ventilated patient, she pays attention to alarms and if they stop spontaneously or require that she intervenes (e.g. reassurance, administering medication). According to muscle tension, the nurse can feel if the patient is resisting to the movement or not. A score 2 is given when the patient is resisting against the movement and attempts to get on his/her back.
## The Critical-Care Pain Observation Tool (CPOT)

(Gelineas et al., 2006)

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Facial expression</strong></td>
<td>Relaxed, neutral: 0</td>
<td>No muscle tension observed</td>
</tr>
<tr>
<td></td>
<td>Tense: 1</td>
<td>Presence of frowning, brow lowering, orbit tightening and levator contraction or any other change (e.g. opening eyes or tearing during anaesthetic procedures)</td>
</tr>
<tr>
<td></td>
<td>Grinning: 2</td>
<td>All previous facial movements plus eyelids tightly closed (the patient may present with mouth open or holding the endotracheal tube)</td>
</tr>
<tr>
<td><strong>Body movement</strong></td>
<td>Absence of movement: 0</td>
<td>Does not move at all (doesn’t necessarily mean absence of pain) or normal position (movements not aimed toward the pain site or not made for the purpose of protection)</td>
</tr>
<tr>
<td></td>
<td>Protection: 1</td>
<td>Slow, cautious movements, touching or rubbing the pain site, seeking attention through movements</td>
</tr>
<tr>
<td></td>
<td>Restlessness/Agitation: 2</td>
<td>Pulling tube, attempting to sit up, moving limbs: shaking, not following commands, striking at staff, trying to climb out of bed</td>
</tr>
<tr>
<td><strong>Compliance with the ventilator</strong></td>
<td>Tolerating ventilator or movement: 0</td>
<td>Alarms not activated, easy ventilation</td>
</tr>
<tr>
<td>(intubated patients)</td>
<td>Coughing but tolerating: 1</td>
<td>Coughing, alarms may be activated but stop spontaneously</td>
</tr>
<tr>
<td></td>
<td>Fighting ventilator: 2</td>
<td>Asynchrony: blocking ventilation, alarms frequently activated</td>
</tr>
<tr>
<td><strong>Vocalization</strong></td>
<td>Talking in normal tone or no sound: 0</td>
<td>Talking in normal tone or no sound</td>
</tr>
<tr>
<td>(extubated patients)</td>
<td>Sighing, moaning: 1</td>
<td>Sighing, moaning</td>
</tr>
<tr>
<td></td>
<td>Crying out, sobbing: 2</td>
<td>Crying out, sobbing</td>
</tr>
<tr>
<td><strong>Muscle tension</strong></td>
<td>Relaxed: 0</td>
<td>No resistance to passive movements</td>
</tr>
<tr>
<td>Evaluation by passiveexion and extension of upper limb when patient is at rest or evaluation when patient is being turned</td>
<td>Tense, rigid: 1</td>
<td>Resistance to passive movements</td>
</tr>
<tr>
<td></td>
<td>Very tense or rigid: 2</td>
<td>Strong resistance to passive movements or inability to complete them</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td>8/8</td>
</tr>
</tbody>
</table>

Assess Pain Scale every 2-4 hours. Self-reporting of pain should be used whenever appropriate.

Patient is in significant pain if BPS > 5; CPOT > 3
Appendix 2 - Sedation score

Instructions
- Obtain a sedation score goal at handover/ward round; document this in the health care record (either in the clinical notes or on the ICU flowchart CR145).
- Assess a sedation score and a Glasgow Coma Score (GCS) at least every 2 hours and as clinically indicated (some patients may require hourly assessment of GCS). Note that if a stable patient is prescribed a sedative to assist with sleeping (e.g. temazepam), it is reasonable to omit one episode of assessment.
- Conduct a sedation score even if there is no apparent drug in use that would contribute to sedation; if sedation is present and not a goal of therapy – report this to the M.O. and document findings, action plan and outcome in the health care record.
- A ‘sedation – vacation’ from sedative drugs must be prescribed when the sedation score is deemed ‘moderate sedation: -3’, and this degree of sedation is not the goal of therapy.

Assessment
The use of a sedative aims to:
- enable the patient to cooperate with ventilation and treatments, and
- produce a desired amnesia to the Intensive Care environment.
- document which drugs the patient is taking to produce a sedative effect

Richmond Agitation-Sedation Score (RASS)\(^ {16} \)

<table>
<thead>
<tr>
<th>Score</th>
<th>Term</th>
<th>Description</th>
<th>Stimulus</th>
</tr>
</thead>
<tbody>
<tr>
<td>+4</td>
<td>Combative</td>
<td>Overtly combative, violent, immediate danger to self, staff, others</td>
<td>-</td>
</tr>
<tr>
<td>+3</td>
<td>Very agitated</td>
<td>Pulls or removes tube(s) or catheter(s); aggressive</td>
<td>-</td>
</tr>
<tr>
<td>+2</td>
<td>Agitated</td>
<td>Frequent non-purposeful movement, fights ventilator</td>
<td>-</td>
</tr>
<tr>
<td>+1</td>
<td>Restless</td>
<td>Anxious but movements are not aggressive/vigorous</td>
<td>-</td>
</tr>
<tr>
<td>0</td>
<td>Alert and calm</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>-1</td>
<td>Drowsy</td>
<td>Not fully alert, has sustained awakening (eye-opening/eye contact) to voice (≥ 10 seconds)</td>
<td>Verbal</td>
</tr>
<tr>
<td>-2</td>
<td>Light sedation</td>
<td>Briefly wakes with eye contact to voice (&lt; 10 seconds)</td>
<td>Verbal</td>
</tr>
<tr>
<td>-3</td>
<td>Moderate sedation</td>
<td>Movement or eye opening to voice (but no eye contact)</td>
<td>Verbal</td>
</tr>
<tr>
<td>-4</td>
<td>Deep sedation</td>
<td>No response to voice but movement or eye opening to physical stimulation</td>
<td>Physical</td>
</tr>
<tr>
<td>-5</td>
<td>Unrousable</td>
<td>No response to voice or physical stimulation</td>
<td>Physical</td>
</tr>
</tbody>
</table>

Procedure
- Observe patient
  - Patient is alert, restless or agitated (score 0 to +4)
- 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 (score -1)
  - Patient awakens with eye opening and eye contact, but not sustained (score -2)
  - Patient has any movement in response to voice but no eye contact (score -3)

- When no response to verbal stimulation, physically stimulate the patient by shaking shoulder and / or using the trapezius pinch or applying supra-orbital pressure, as appropriate
  - Patient has any movement to physical stimulation (score -4)
  - Patient has no response to any stimulation (score -5)