Drug Guideline Title: Remifentanil

Summary:
Remifentanil is an ultra-short acting opiate with analgesic and sedative properties. This guidelines outlines its use for adult patients in intensive care.

Approved by: ICU Director
Publication (Issue) Date: February 2015
Next Review Date: February 2018

Replaces Existing Drug Guideline: New Guideline
Previous Review Dates: not applicable

1. Introduction:
The risk addressed by this policy:

Patient Safety

The Aims / Expected Outcome of this policy:

Remifentanil will be administered safely and appropriately without any adverse side effects.

Related Standards or Legislation

- NSQHS Standard 1 Governance
- National Standard 4 Medication Safety

Related Policies

- LH_PD2013_C03.01 Drug Administration
- LH_PD2013_C03.03 Drug Calculation Formulas
- LH_PD2013_C03.00 Drug Prescribing
- LH_PD2014_C03.05 Accountable Drugs – Schedule 8 (S8) and S4D
- LH_PD2013_C03.12 Administration of Intravenous (IV) Medications

2. Policy Statement:
- All care provided within Liverpool Hospital will be in accordance with infection control, manual handling and minimisation and management of aggression guidelines.
- Medications are to be prescribed and signed by a medical officer/authorised nurse practitioner (NP) unless required during an emergency.
• All drugs administered during an emergency (under the direction of a medical officer/authorised nurse practitioner) are to be documented during the event, then prescribed and signed following the event.
• Remifentanil is a Schedule 8 drug, requiring storage and administration as per the Poisons Act 1994.
• Registered Nurses and medical staff are to be familiar with the following Hospital Policy:

LH_PD2014_C03.05 Accountable Drugs – Schedule 8 (S8) and S4D

• Medications are to be given at the time prescribed (as close to the time as is possible when multiple drugs require ‘same time’ administration and, when the nurse is caring for more than one patient, recognition is given to a possible short delay to administration – antibiotics and other lifesaving drugs are to be prioritised) and are to be signed by the administering nurse.
• Parenteral medication prescriptions and the drug are to be checked with a second registered or endorsed enrolled nurse prior to administration. The “rights of drug administration” must be followed: right: patient, drug, dose, route, administration, time, reason for the drug, documentation, education and evaluation/outcome.
• 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.
• Remifentanil should never be bolused because of the risk of severe hypotension and bradycardia.

3. Principles / Guidelines

Actions

- Remifentanil is an ultra-short acting opiate, with analgesic and sedative properties. It is given via a continuous infusion.
- The time between entering the body and clinical effect onset is 1.3 minutes – meaning its effects come on rapidly after starting the infusion.
- Its half life is only 4 minutes, meaning once the infusion is switched off its effects will be spontaneously reversed in a matter of minutes.
- It is metabolised in the blood / tissues via non-specific esterases. This means it is safe to give in renal failure and liver failure without dose adjustment and to the obese patient.
- Due to the very rapid offset of action of remifentanil, no residual opioid activity will be present within 5 to 10 minutes after discontinuation regardless of the duration of infusion.

Indications

Remifentanil is used for two sets of patients, with differing regimes for each:

- **Patients who are intubated and on invasive mechanical ventilation:**
  - Here it is used for its sedative and analgesic properties. It is an alternative to fentanyl. It is useful in patients who need regular, rapid waking for assessment for example neurological patients.
  - Dosage: 0.05 – 0.5 micrograms/kg/min – using a 100microgram/ml concentration solution
  - At this dose respiratory drive maybe reduced so close monitoring and mechanical ventilation is necessary.
• **Patients on Non Invasive Ventilation (NIV):**
  - Here it is used for light sedation to allow compliance with the NIV. Patients who have a RASS >0 and are non compliant with NIV due to this can have remifentanil to reduce the RASS to 0 to -1. This may help with compliance with therapy and prevent the need for intubation.
  - Dosage: 0.01 – 0.15 micrograms/kg/min – using a 50microgram/ml concentration
  - At this lower dose, respiratory depression rarely occurs, but must be monitored carefully.

**Contraindications**

1,2

**Absolute contra-indication:**
- Previous anaphylaxis / allergy to remifentanil or fentanyl analogues

**Relative contraindications for use of remifentanil with intubated and invasively mechanically ventilated patients include:**
- Hypotension, especially if requiring vasopressors
- Bradycardia (pulse rate <50bpm)

**Relative contraindications for use of remifentanil with NIV include:**
- RASS <0
- Reduced respiratory drive (RR <10)
- Hypotension, especially if requiring vasopressors
- Bradycardia (pulse rate <50bpm)

**Precautions**

1,2

- The use of remifentanil may be associated with respiratory depression, hence close monitoring of the patient is necessary.
- Muscle rigidity may be seen during the use of remifentanil as an analgesic. This may be treated by stopping or decreasing the rate of administration of remifentanil. Resolution of muscle rigidity after discontinuing the infusion of remifentanil occurs within minutes.
- Remifentanil causes dose dependent hypotension and bradycardia. Hypotension and bradycardia may be managed by reducing the rate of infusion of remifentanil and by using intravenous fluids, vasopressor or anticholinergic agents as appropriate.

**Significant Interactions**

1,2

- If doses of concomitantly administered CNS depressant drugs are not reduced, patients may experience an increased incidence of adverse effects associated with these agents.
- The cardiovascular effects of remifentanil (hypotension and bradycardia), may be exacerbated in patients receiving concomitant cardiac depressant drugs, such as beta-blockers and calcium channel blocking agents.

**Adverse Effects**

2, 3, 4

Potential side effects of remifentanil are detailed below. All can be treated by reducing the rate of the infusion.
- Bradycardia – can be treated with anti-cholinergics (i.e. glycopyrollate)
- Hypotension – can be treated with intravenous fluids or vasopressors
- Respiratory depression – reducing the infusion or ceasing it for a period will rapidly improve respiratory drive again.
Presentation
Powder for infusion remifentanil (as remifentanil hydrochloride) in 1 mg and 5 mg vials.
(Use sterile H₂O for injection or 0.9% sodium chloride for reconstitution of the powder)

Administration Guidelines
At present remifentanil needs to be ordered up from Pharmacy. It is an S8 drug and therefore must be ordered using the S1 request form. Theatres also have a stock for urgent acquirements. Please order 5mg vials when making up the Intubated patient infusion and 1mg vials when making up the NIV patient infusion.

For Intubated and invasely mechanically ventilated patients:
- Reconstitute remifentanil 5mg powder for infusion with 5ml 0.9% sodium chloride and further dilute with 0.9% sodium chloride to a total volume of 50mls (100 micrograms / ml)

Remifentanil 5mg/50ml = 100 micrograms/ml
- Remifentanil must be administered via a syringe driver.
- Rate and dose of infusion is calculated based on ideal body weight.

Ideal Body weight calculation
An Ideal body weight (IBW) needs to be calculated by measuring the patients height

Males: IBW = 50 kg + 2.3 kg for each inch over 5 feet.
Females: IBW = 45.5 kg + 2.3 kg for each inch over 5 feet.

E.g For a 70kg IBW patient, the rate of infusion for an intubated and ventilated patient would be: 0.05 – 0.5 microgram/kg/min = 2.1 – 21 mls/hr (using a 100microgram/ml solution).

Rate of infusion for intubated and invasively mechanically ventilated patients using a 100microgram /ml infusion solution (remifentanil 5mg in 50 ml 0.9% sodium chloride)

<table>
<thead>
<tr>
<th>Ideal Body Weight (kg)</th>
<th>Intubated and Ventilated Patient Starting Dose (0.05microgram/kg/min) Rate in mls/hr</th>
<th>Intubated and Ventilated Patient Maximum Dose (0.5microgram/kg/min) Rate in mls/hr</th>
</tr>
</thead>
<tbody>
<tr>
<td>40 kg</td>
<td>1.2 ml/hr</td>
<td>12 ml/hr</td>
</tr>
<tr>
<td>45 kg</td>
<td>1.4 ml/hr</td>
<td>13.5 ml/hr</td>
</tr>
<tr>
<td>50 kg</td>
<td>1.5 ml/hr</td>
<td>15 ml/hr</td>
</tr>
<tr>
<td>55 kg</td>
<td>1.7 ml/hr</td>
<td>16.5 ml/hr</td>
</tr>
<tr>
<td>60 kg</td>
<td>1.8 ml/hr</td>
<td>18 ml/hr</td>
</tr>
<tr>
<td>65 kg</td>
<td>2.0 ml/hr</td>
<td>19.5 ml/hr</td>
</tr>
<tr>
<td>70 kg</td>
<td>2.1 ml/hr</td>
<td>21 ml/hr</td>
</tr>
<tr>
<td>75 kg</td>
<td>2.3 ml/hr</td>
<td>22.5 ml/hr</td>
</tr>
<tr>
<td>80 kg</td>
<td>2.4 ml/hr</td>
<td>24 ml/hr</td>
</tr>
<tr>
<td>85 kg</td>
<td>2.6 ml/hr</td>
<td>25.5 ml/hr</td>
</tr>
<tr>
<td>90 kg</td>
<td>2.7 ml/hr</td>
<td>27 ml/hr</td>
</tr>
<tr>
<td>95 kg</td>
<td>2.9 ml/hr</td>
<td>28.5 ml/hr</td>
</tr>
<tr>
<td>100 kg</td>
<td>3.0 ml/hr</td>
<td>30 ml/hr</td>
</tr>
</tbody>
</table>
For NIV (non-invasively ventilated) patients:
- Renconstitute remifentanil 2 x 1mg vials powder for infusion with 2ml 0.9% sodium chloride and further dilute with 0.9% sodium chloride to a total volume of 40mls (50 micrograms / ml)

Remifentanil 2mg/40ml = 50 micrograms/ml

- Remifentanil must be administered via a syringe driver.
- Rate and dose of infusion is calculated based on ideal body weight (see formula above)

e.g For a 70kg IBW patient, the rate of infusion for a NIV patient would be: 0.01 – 0.15 microgram/kg/min = 0.8 – 12.6 ml/hr (using a 50microgram/ml solution).

Rate of infusion for NIV patients using a 50microgram /ml infusion solution (remifentanil 2mg in 40 ml 0.9% sodium chloride)

<table>
<thead>
<tr>
<th>Ideal Body Weight (kg)</th>
<th>NIV Patient Minimum Dose (0.01microgram/kg/min) Rate in mls/hr</th>
<th>NIV Patient Maximum Dose (0.15microgram/kg/min) Rate in mls/hr</th>
</tr>
</thead>
<tbody>
<tr>
<td>40 kg</td>
<td>0.5 ml/hr</td>
<td>7.2 ml/hr</td>
</tr>
<tr>
<td>45 kg</td>
<td>0.5 ml/hr</td>
<td>8.1 ml/hr</td>
</tr>
<tr>
<td>50 kg</td>
<td>0.6 ml/hr</td>
<td>9 ml/hr</td>
</tr>
<tr>
<td>55 kg</td>
<td>0.7 ml/hr</td>
<td>10 ml/hr</td>
</tr>
<tr>
<td>60 kg</td>
<td>0.7 ml/hr</td>
<td>10.8 ml/hr</td>
</tr>
<tr>
<td>65 kg</td>
<td>0.8 ml/hr</td>
<td>11.7 ml/hr</td>
</tr>
<tr>
<td>70 kg</td>
<td>0.8 ml/hr</td>
<td>12.6 ml/hr</td>
</tr>
<tr>
<td>75 kg</td>
<td>0.9 ml/hr</td>
<td>13.5 ml/hr</td>
</tr>
<tr>
<td>80 kg</td>
<td>1 ml/hr</td>
<td>14.4 ml/hr</td>
</tr>
<tr>
<td>85 kg</td>
<td>1 ml/hr</td>
<td>15.3 ml/hr</td>
</tr>
<tr>
<td>90 kg</td>
<td>1.1 ml/hr</td>
<td>16.2 ml/hr</td>
</tr>
<tr>
<td>95 kg</td>
<td>1.1 ml/hr</td>
<td>17.1 ml/hr</td>
</tr>
<tr>
<td>100 kg</td>
<td>1.2 ml/hr</td>
<td>18 ml/hr</td>
</tr>
</tbody>
</table>

There is no absolute “minimum” or “maximum” rates for running remifentanil, the above tables for intubated and mechanically ventilated and NIV patients are an idea of safe starting doses and normally accepted maximum rates (calculated on IBW). For elderly patients and those with cardiovascular instability or with multi-organ failure, consider starting the infusion at half the recommended starting rate. An infusion rate even lower than the suggested starting rate maybe adequate for some patients – titrate to effect.

**REMIFENTANIL SHOULD NEVER BE BOLUSED - RISK OF SEvere Hypotension AND Bradycardia**

**Clinical Considerations**
- Assess and document pain scores using the Critical-Care Pain Observation Tool (CPOT) at least 4 hourly (this tool is used for patients who are sedated, mechanically ventilated and unresponsive). In awake and responsive patients use the “Faces Pain Scale” (See Appendix 2). Self-reporting of pain should be used whenever appropriate.
- Patient relatives may also be involved in the assessment of pain.
- Patient is in significant pain if CPOT > 3 or Faces pain scale >4.
Use the “Richmond Agitation-Sedation Score” (RASS) and assess and document the patients sedation score 2nd hourly on the ICU flow chart (See Appendix 1).

The desired RASS sedation score should be documented on the flow chart.

Daily sedation vacations or interruption of analgesia / sedation should occur to allow for neurological assessment.

For patients experiencing on-going pain, a pain management plan is to be developed, documented and reviewed to ensure adequate pain relief with minimal side effects for the patient.

Constipation will occur in patients receiving opioid analgesia. Impaction may occur in the elderly, debilitated or bedridden patient. Commence a laxative, stool softener and other appropriate treatments at the beginning of opioid therapy.

Ensure airway protection occurs in ventilated/tracheotomised patients. Patients with a decreased level of consciousness should be assessed for adequate airway protection.

Prior to discontinuation of Remifentanil powder for injection, patients must be given alternative analgesic and sedative agents at a sufficient time in advance to allow the therapeutic effects of these agents to become established.

**Special considerations when using remifentanil on patients with NIV.**

- A decision on goals and plan of care needs to be established before starting i.e. is this patient for intubation if this technique fails? Remifentanil may be used to improve compliance with NIV especially in patients who are not suitable for intubation, and are non compliant with NIV. A time frame for review of the effectiveness of the technique should also be set.

- 1:1 nursing is needed for at least the first 12 hours whilst dosage of remifentanil is titrated

- Start the infusion at a low dose (normally 0.01 microgram/kg/min) and titrate up by 0.005 microgram/kg/min (approximately 0.5ml/hr) every 5 minutes aiming for NIV compliance but avoiding adverse events of:
  - RASS < -1
  - RR <10 / Tidal volume <6mls/kg
  - Bradycardia
  - Hypotension

- If an adverse event occurs, provide appropriate ALS support and stop the infusion until the adverse event has ceased. Once the adverse event has terminated, restart at 0.01 microgram/kg/min.

- If an adverse event occurs again, stop the infusion and have the patient and appropriate analgesia / sedation reviewed by ICU staff specialist or senior registrar.

- Once an appropriate infusion level has been achieved (RASS 0 to -1, NIV tolerance, no adverse events), continue to review the patients parameters every 5 minutes for a further half hour to ensure they remain stable.

- After this period, ongoing half hourly assessments are required to detect if a reduction or increase in the infusion is needed. If an adjustment is needed, increase or decrease the infusion by 0.005 microgram/kg/min and reassess in 5 minutes.
4. Performance Measures

All incidents are documented using the hospital electronic reporting system: IIMS and managed appropriately by the NUM and staff as directed.

5. References / Links


Author: CNC – ICU (S. Shunker); ICU Registrar (M. Govier)
Reviewers: ICU – CNC, CNE, NM, NUM, Staff Specialists, CNS ‘s, Medical Director, Pharmacist
Endorsed by: A/ Prof M. Parr, Director ICU.
APPENDIX 1: Richmond Agitation-Sedation Score

Instructions
• Obtain a sedation score goal at handover/ward round; document this in the health care record.
• Assess a sedation score every 2-4 hours and as clinically indicated. Conduct a sedation score even if there is no apparent drug in use that would contribute to sedation.
• 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) ⁹

<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 awakens with eye opening 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)
APPENDIX 2: 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, 10 = 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 ≥ 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 Critical-Care Pain Observation Tool (CPOT)\(^{10,11}\)

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)

(Gélinas et al, 2006)

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facial expression</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relaxed, neutral</td>
<td>0</td>
<td>No muscle tension observed</td>
</tr>
<tr>
<td>Tense</td>
<td>1</td>
<td>Presence of frowning, brow lowering, orbit tightening and levator contraction or any other change (e.g. opening eyes or tearing during noninvasive procedures)</td>
</tr>
<tr>
<td>Grimacing</td>
<td>2</td>
<td>All previous facial movements plus eyelid tightly closed (the patient may present with mouth open or bring the endotracheal tube)</td>
</tr>
<tr>
<td>Body movement:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Absence of movements or normal position</td>
<td>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>Protection</td>
<td>1</td>
<td>Slow, cautious movements, touching or rubbing the pain site, seeking attention through movement:</td>
</tr>
<tr>
<td>Restlessness/Agitation</td>
<td>2</td>
<td>Pulling tube, attempting to sit up, moving limbs thrashing, not following commands, striking at staff, trying to climb out of bed</td>
</tr>
<tr>
<td>Compliance with the ventilator (intubated patients)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tolerating ventilator or movement</td>
<td>0</td>
<td>Alarms not activated, easy ventilation</td>
</tr>
<tr>
<td>Coughing but tolerating</td>
<td>1</td>
<td>Coughing, alarms may be activated but stop spontaneously</td>
</tr>
<tr>
<td>Fighting ventilator</td>
<td>2</td>
<td>Asynchrony: blocking ventilation, alarms frequently activated</td>
</tr>
<tr>
<td>Vocalization (extubated patients)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Talking in normal tone or no sound</td>
<td>0</td>
<td>Talking in normal tone or no sound</td>
</tr>
<tr>
<td>Sighing, moaning</td>
<td>1</td>
<td>Sighing, moaning</td>
</tr>
<tr>
<td>Crying out, cobbling</td>
<td>2</td>
<td>Crying out, cobbling</td>
</tr>
<tr>
<td>Muscle tension</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evaluation by passive flexion and extension of upper limbs when patient is at rest or evaluation when patient is being turned</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relaxed</td>
<td>0</td>
<td>No resistance to passive movements</td>
</tr>
<tr>
<td>Tense, rigid</td>
<td>1</td>
<td>Resistance to passive movements</td>
</tr>
<tr>
<td>Vary tense or rigid</td>
<td>2</td>
<td>Strong resistance to passive movements or incapacity to complete them</td>
</tr>
<tr>
<td>TOTAL</td>
<td>8</td>
<td></td>
</tr>
</tbody>
</table>
Assess Pain Scale every 4 hours. Self-reporting of pain should be used whenever appropriate. Patient is in significant pain if CPOT > 3

APPENDIX 3:

1. Assess Analgesia
   - In pain: Yes → Fentanyl 10-50 micrograms/hr OR Morphine 1-5 mg/hr
   - No
     - Reassess often (2-4 hourly)

2. Assess Sedation
   - RASS at Target? (usual is -1 to 0)
     - Over-Sedated
       - Hold sedative/analgesic to achieve RASS target. Restart at 50% of the rate it was running at.
     - Under-Sedated
       - Yes → Reassess and document 2nd hourly. Consider daily sedation vacation & spontaneous breathing trial
       - No
         - No

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