**Purpose:**
To ensure the safe and effective use of low dose ketamine for the management of intractable pain in patients greater than or equal to 19 years of age. The use of this medication above the below defined sub-anesthetic doses requires procedural sedation documentation & monitoring for diagnostic or therapeutic procedures (See MS15 Sedation and Analgesia). Low dose (sub-anesthetic) ketamine can be administered by a registered nurse (RN) on the post-anesthesia, emergency department, progressive care, and intensive care units that is appropriately trained to administer and monitor.

**Background:**
Ketamine is an anesthetic agent with analgesic properties at sub-anesthetic therapeutic concentrations. Through antagonism of the N-methyl-D-aspartate (NMDA) receptor, ketamine reduces excitatory nerve activity resulting in analgesia. Ketamine may be used in combination with other analgesics to improve pain management and reduce opioid requirements. It may be indicated to treat patients with uncontrollable and/or intractable pain that is unresponsive or poorly responsive to opioids and/or adjuvant agents.

### Low Dose (Sub-anesthetic) Ketamine Intermittent Administration for Pain in Non-Intubated Patients

**Intravenous:**

<table>
<thead>
<tr>
<th>Policy</th>
<th>Low dose (sub-anesthetic) intravenous or intramuscular administration for the management of acute severe pain or adjunctive therapy to opioids for refractory pain in patients requiring escalating doses must be initiated and managed by a licensed physician who is a specialist in anesthesiology, pain management, or emergency medicine. All other opioids/sedatives/hypnotics (ex narcotics, benzodiazepine) must be approved by ketamine ordering provider while on this medication (minimum of 30-60 min following last dose depending on route of administration).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub-anesthetic Dosing</td>
<td><strong>Intravenous:</strong> 0.1-0.3 mg/kg (single dose Max 20mg) IV push over 2-5 minutes. <strong>Intramuscular:</strong> 0.3-0.5 mg/kg IM (single dose max 50mg) <strong>Oral (IV product for Oral Use):</strong> 10-25mg four times daily increasing in 5-10mg increments to a maximum of 200mg/day <strong>Intranasal:</strong> 0.5 mg/kg of the 100mg/mL concentration (single dose max 50mg) IN via the nasal atomizer device as rapidly as possible. May repeat in 20-30 minutes if pain returns.*</td>
</tr>
<tr>
<td>Monitoring</td>
<td>Patient should be placed on cardiac monitor with heart rate, blood pressure, respiratory rate, and oxygen saturation continuously monitored and documented every 15 minutes after administration of the medication. Monitoring can be discontinued and patient may be discharged or transferred 30 minutes following IV, oral, or IN dosing – 60 minutes following IM administration if clinically appropriate. All other opioids/sedatives/hypnotics (ex narcotics, benzodiazepines) must be approved by ketamine ordering provider within the 30 minute (IV, PO, or IN) or 60 minute (IM) post-dose window.</td>
</tr>
<tr>
<td>Level of Care</td>
<td>Progressive Care or Intensive Care*</td>
</tr>
</tbody>
</table>

### Intravenous: Low Dose (Sub-anesthetic) Ketamine Continuous Infusion for Pain in Non-Intubated Patients

<table>
<thead>
<tr>
<th>Policy</th>
<th>Low dose (sub-anesthetic) ketamine continuous intravenous therapy for the management of intractable pain must be initiated and managed by a licensed physician who is a specialist in anesthesiology or pain management. All other opioids/sedatives/hypnotics (ex narcotics, benzodiazepines) must be approved by anesthesia while on this medication.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub-anesthetic Dosing</td>
<td><strong>Continuous Infusion:</strong> 0.03mg/kg/hr to 0.3mg/kg/hr (typical dose between 4-15mg/hr), with a max of 20mg/hr.</td>
</tr>
<tr>
<td>Monitoring</td>
<td>Patient should be placed on cardiac monitor with heart rate, blood pressure, respiratory rate, and oxygen saturation continuously</td>
</tr>
<tr>
<td>Level of Care</td>
<td>Progressive Care or Intensive Care*</td>
</tr>
</tbody>
</table>
* If patient is chronically maintained & stable on oral ketamine this therapy may be continued in med/surg telemetry level of care without acute pain service oversight. Initiation of any form of Ketamine must occur in a progressive care or intensive care unit with a provider who is a specialist in anesthesia or pain management, and new oral therapy starts must remain in progressive care or intensive care on a consistent dose for 24 hours prior to transferring to lower level of care.

**Reviewed by:**
Acute pain service 10/2015
Emergency Medicine Medical Staff 10/2015
Anesthesia Department Chair 10/2015
Medication Management Committee 10/2015
P&T Formulary sub-committee 10/2015

<table>
<thead>
<tr>
<th><strong>Department Approval</strong></th>
<th><strong>Administrative Approval</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Signed</td>
<td>Michael F. Powell</td>
</tr>
<tr>
<td>Title:</td>
<td>Co-Chairperson</td>
</tr>
<tr>
<td>Department:</td>
<td>Pharmacy &amp; Therapeutic Committee</td>
</tr>
</tbody>
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