USE OF LORAZEPAM (ATIVAN) FOR VENTILATOR MANAGEMENT

I. PURPOSE:

To provide guidelines for the administration of Ativan which is a Benzodiazepine with antianxiety, sedative and anticonvulsant effects, that is indicated for the continuous intravenous sedation of the mechanically ventilated, intubated patient.

II. POINTS OF EMPHASIS:

A. Do not mix Ativan with other agents or co-administer with blood or plasma in same I.V. catheter.

B. Utilize a Smart Pump and infuse through a central line if one is in place; otherwise, administer through a peripheral infusion line.

C. Ativan has a slow on set of action (10-20 minutes) and has an intermediate half life of (6 hours).

D. Use opiates as needed for pain, sedatives are a poor substitute for analgesics when pain is the primary problem facing the patient.

III. CONTRAINDICATION:

A. Patients with known hypersensitivity to Ativan (Lorazepam) or allergy.

B. Pregnant or nursing female.

C. Hemodynamically unstable patients for whom sedation is contraindicated.

D. Acute narrow – angle glaucoma.

E. Hepatic or renal failure.
IV. ADVERSE REACTIONS:

A. Cardiovascular collapse, hypotension, phlebitis or thrombosis at I.V. site. Bradycardia, cardiac arrest.

B. CNS – confusion, atoxia, dizziness, memory loss, disorientation, anterograde amnesia, coma, paradoxical reaction, increase bronchial secretions.

C. Leukopenia, Neutropenic Disorder.

D. Hepatic – Elevated LDH, ALT, AST and alkaline phosphate, hepatic dysfunction including hepatitis and jaundice.

E. Propylene Glycol Toxicity if dose 26 mg/hr >48 hours. Symptoms include renal failure and lactic acidosis.

V. DOSAGE AND ADMINISTRATION:

A. Standard Infusion: 20 mg Ativan in 250 ml D5W
   Alternate Infusion: 20 mg Ativan in 100 ml NSS

B. Ativan I.V. can be ordered as a scheduled medication. The physician will order the dose and frequency. The physician will determine the sedation goal and order a RASS score at which the medication will be held to prevent over sedation. It is recommended that if Ativan is needed to be given every hour, that a drip should be initiated continuously.

C. Ativan drip: recommend range of infusion 1mg/hr – 5 mg/hr. In certain instances the physician may order the infusion to a maximum dose of 20 mg/hr.

   The physician managing the ventilator will order the initial drip rate required to achieve a Richmond Agitation Sedation Score of his or her choice. (0 to -2) in most cases.

   If the RASS score is not achieved, the Physician will be notified for further titration or bolus orders.
VI. RICHMOND AGITATION/SEDATION SCALE (RASS) FOR PATIENTS RECEIVING MECHANICAL VENTILATION:

<table>
<thead>
<tr>
<th>SCORE</th>
<th>TERM</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>+4</td>
<td>COMBATIVE</td>
<td>Overtly combative or violent, immediate danger to staff.</td>
</tr>
<tr>
<td>+3</td>
<td>VERY AGITATED</td>
<td>Pulls on or removes tubes or catheters, aggressive behavior toward staff.</td>
</tr>
<tr>
<td>+2</td>
<td>AGITATED</td>
<td>Frequent non-purposeful movement of patient ventilator dyssynchrony.</td>
</tr>
<tr>
<td>+1</td>
<td>RESTLESS</td>
<td>Anxious or apprehensive but movements not aggressive or vigorous.</td>
</tr>
<tr>
<td>0</td>
<td>ALERT AND CALM</td>
<td></td>
</tr>
<tr>
<td>-1</td>
<td>DROWSY</td>
<td>Not fully alert, sustained (&gt;10 seconds) awakening, eye contact to voice.</td>
</tr>
<tr>
<td>-2</td>
<td>LIGHT SEDATION</td>
<td>Briefly (&lt;10 seconds) awakens with eye contact to voice.</td>
</tr>
<tr>
<td>-3</td>
<td>MODERATE SEDATION</td>
<td>Any movement (but no eye contact) to voice.</td>
</tr>
<tr>
<td>-4</td>
<td>DEEP SEDATION</td>
<td>No response to voice, any movement to physical stimulation.</td>
</tr>
<tr>
<td>-5</td>
<td>UNAROUSABLE</td>
<td>No response to voice or physical stimulation.</td>
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VII. MONITOR:

A. Monitor patient while on the ventilator including BP and HR every 15 min. during initiation of infusion and with any change in dose rate ordered by physician.

B. Notify Physician immediately if there is hypotension or any adverse reaction to the medication.

C. Assess sedation level every hour and document the level in the patient’s EMR per policy.

D. Conduct daily neurologic (wake-up) assessment by discontinuing the I.V. Ativan infusion and assess respiratory function to assure the minimal dose of Ativan required to achieve sedation. This should be done when the physician managing the ventilator is present and rounding in the unit. This could take longer due to the half life of the medication. Perform a daily neurologic assessment at this time.
E. The physician will determine the dose rate at this time or decrease the rate or even discontinue if patient is ready to be weaned from the ventilator.

F. When ventilated patients are admitted from the Emergency Department, the Registered Nurse caring for the patient will contact the Physician consulted to manage the ventilator care to receive additional ventilator orders and Ativan orders.

G. If scheduled doses of Ativan are ordered, it is the nurse’s responsibility to evaluate and document a pre and a post RASS score in the EMR. Ativan will be held if the RASS score exceeds the score indicated by the ordering Physician.

The post evaluation should be done 30 minutes after the administration of Ativan IV.

VIII. HYPOTENSION:

Contact the physician if the systolic blood pressure is <100 or the mean arterial blood pressure is < 70 mm/hg.

IX. VENTILATOR PATIENTS > 3 DAYS:

This medication should be considered if the patient will remain on the ventilator greater than 3 days.

X. WEANING FROM THE VENTILATOR:

The Physician will order the drip to be decreased or discontinued prior to the patient beginning the weaning process.