Critical Care Continuous Neuromuscular Blockade Order Set

MEDICATIONS:
- Sedation MUST be initiated PRIOR to paralytic agent

SEDATION
- Propofol infusion at 5 mcg/kg/min
  - Titrate by 5 mcg/kg/min q5min to maintain BIS 40-60 (Max of 50mcg/kg/min)
  - Change tubing q12hrs
  - Serum triglyceride level at start of infusion and q72hrs while on propofol (notify MD if > 300mg/dl)
  - PROPOFOL ORDER WILL EXPIRE AFTER 72 HOURS. PHYSICIAN MUST REWRITE.
  - Notify MD for MAP < 65mmHg or if unable to maintain sedation within dosage range

**For patients with a contraindication to propofol**
- Lorazepam continuous infusion _____mg/hr (recommend 0.5 to 5mg/hr), titrate to maintain BIS 40-60. Max dose 50mg/24h
- Lorazepam IV ___mg q ___ hours scheduled (goal BIS 40-60)

ANALGESIA – to maintain physiological parameters to non-verbal pain scale and BIS goal
- Fentanyl continuous infusion _____mcg/hr (recommend 25-100mcg/hr)
- Fentanyl IV ___mcg q ___ hours prn analgesia goal above
- Morphine continuous infusion _____mg/hr (recommend 1-10mg/hr)
- Morphine IV ___mg q ___ hours prn analgesia goal above

NEUROMUSCULAR BLOCKADE
**Use cisatracurium for patients with underlying renal (CrCl < 30mL/min) or hepatic dysfunction (total bilirubin >2.2mg/dL or transaminases and alkaline phosphate > 3 times the normal) or concomitant corticosteroids**
- Cisatracurium (Nimbex) 200mg/200mL normal saline
  - Cisatracurium bolus dose 0.2 mg/kg
  - Cisatracurium continuous infusion 1 mcg/kg/min, adjust dose by 0.5 mcg/kg/min q 15 minutes to achieve desired TOF ____(2:4). Max dose 10 mcg/kg/min.

- Vecuronium (Norcuron) 100mg/100mL normal saline
  - Vecuronium bolus dose 0.1 mg/kg
  - Vecuronium bolus dose 0.1 mg/kg then 0.015 mg/kg q ____ hours to achieve desired TOF ____(2:4).
  - Vecuronium continuous infusion 0.8 mcg/kg/min, adjust dose by 0.3 mcg/kg/min q15 minutes to achieve desired TOF ____(2:4). Max dose 1.7 mcg/kg/min.

- Artificial tears ointment both eyes q2 hours and PRN dry eyes
- Dietary consult
- Refer to IV Neuromuscular Blockade In ICU policy for nursing standards of care

VTE Risk Assessment and Prevention: HIGH RISK
- Bilateral Sequential Compression Devices – SCDs (all patients)
  - Lovenox* 40 mg SQ q24h (caution in patients with CrCl < 30ml/min)
  - Heparin 5000 units SQ q8hr
  - Anticoagulation Contraindicated because:
    - High risk of bleeding
    - On therapeutic anticoagulation
    - Other:
      - Consult Hematology: History of HIT: Dr. __________
      - Consult Anesthesiology: indwelling/epidural catheter regarding timing of prophylactic anticoagulation
  - If Lovenox or Heparin ordered: CBC, BMP, PT/INR, PTT Prior to giving dose (if not done in the last 24h)
  - If Lovenox or Heparin ordered: CBC every other day

MD Signature: Date: Time:

RN Signature: Date: Time:
## Critical Care Neuromuscular Blockade Information Sheet

<table>
<thead>
<tr>
<th>NMBA</th>
<th>Onset of Action</th>
<th>Peak Onset of Action (min)</th>
<th>Recovery time (min)</th>
<th>Loading Dose (mg/kg)</th>
<th>Intermittent Dose</th>
<th>Continuous Infusion Dose</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>INTERMEDIATE DURATION</strong></td>
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<tr>
<td>Cisatracurium</td>
<td>2 – 6 min</td>
<td>2 – 6</td>
<td>30 – 90</td>
<td>0.1 – 0.2</td>
<td>0.03 mg/kg</td>
<td>1 – 3 mcg/kg/min (max 10)</td>
<td>Ester hydrolysis and Hoffman elimination; Preferred if hepatic and/or renal failure</td>
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<tr>
<td>(Nimbex)</td>
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<td></td>
<td></td>
<td></td>
<td>Q20-30 min</td>
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<tr>
<td>Rocuronium</td>
<td>45 sec – 2 min</td>
<td>3</td>
<td>20 – 90</td>
<td>0.6 – 1.0 H</td>
<td>0.1 – 0.2 mg/kg</td>
<td>4 – 16 H mcg/kg/min</td>
<td>Hepatic elimination (some renal); incompatible with alkaline solutions; increases pulmonary vascular resistance (PVR)</td>
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<tr>
<td>(Zemuron)</td>
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<td></td>
<td></td>
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<td>Q15-30 min</td>
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<tr>
<td>Vecuronium</td>
<td>2 – 5 min</td>
<td>2 – 5</td>
<td>30 – 60</td>
<td>0.08 – 0.1 H R</td>
<td>0.01 – 0.015 mg/kg H R</td>
<td>0.8 – 1.7 H R mcg/kg/min</td>
<td>Hepatic and renal elimination</td>
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<tr>
<td>(Norcuron)</td>
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<td></td>
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<td>Q25-40 min</td>
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<td><strong>LONG DURATION</strong></td>
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<tr>
<td>Pancuronium</td>
<td>30 sec</td>
<td>2 – 3</td>
<td>45 – 180</td>
<td>0.04 – 0.1</td>
<td>0.04 – 0.1 mg/kg</td>
<td>1-2 mcg/kg/min</td>
<td>Renal elimination (some hepatic); vagolytic (90% have increased HR ≥10 bpm)</td>
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<td>(Pavulon)</td>
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<td>Q1-3hr</td>
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</table>

*H* Adjust dose for hepatic dysfunction (cirrhosis, liver failure)

*R* Adjust dose for renal dysfunction (pancuronium: CrCl 10-50 mL/min decrease dose 50%, avoid if CrCl <10 mL/min)

### Drug Interactions

#### Potentiate/Prolong NMBA Action
- Corticosteroids
- Ketamine
- Rivastigmine
- Nitrous oxide
- Quinidine
- Aminoglycosides
- Phenytoin
- Cyclosporine
- Carbamazepine
- Clindamycin
- Lidocaine
- Procaainamide
- Magnesium
- Diuretics
- Lithium
- Dantrolene

#### Antagonize/Compete with NMBA
- Phenytoin
- Theophylline
- Phenobarbital
- Ranitidine
- Carbamazepine

### Acute Quadriplegic Myopathy Syndrome (AQMS)

Patients experience devastating diffuse weakness that persists long after the NMBA is discontinued (days-weeks). Concurrent corticosteroids may exacerbate and/or increase risk of patients experiencing AQMS with NMBA. The incidence may be as high as 30% in patients receiving > 2 days of corticosteroids and the total daily dose of >1 gram/day of methylprednisolone or equivalent.

This Page is **NOT** a part of the Medical Record