Sedation During Neuromuscular Blockade (NMBA) in the ICU *

Overall Pharmacologic Paralysis:
- Paralytics DO NOT have analgesic, amnestic, or sedative properties
- During pharmacologic paralysis in the ICU, patients should receive deep sedation to avoid being paralyzed and aware of surroundings and/or sense pain

Peri-intubation Paralysis
- Rocuronium - most commonly used paralytic for intubation in the ICU
  - Duration of action is ~45-60 minutes and up to 2 hours with liver failure
- Most pre-intubation sedative (anesthetic) agents (etomidate, propofol, midazolam) last < 30 minutes
- After intubation, most patients should receive midazolam 2-4 mg every 15 minutes x 2 doses to avoid aware paralysis – reference below
  - Provider to use post-intubation orderset

Peri-intubation Drug Effect

Continuous or Bolus Paralysis for Hypoxia, Asynchrony, or ARDS
- Confirm physiologic endpoints for using NMBA
- Ensure pt. is receiving both analgesia and sedative/amnestic infusions prior to any NMBA
  - Propofol preferred sedative, where no contraindication
  - Dexmedetomidine does not provide adequate sedation for use with paralytics
  - Achieve RASS/BPS goals
    - Patients should be deeply sedated to RASS -4 or -5 (ideally -5)
    - Optimize analgesia to BPS <6
- As clinically appropriate, initiate Train of Four (TOF) monitoring and obtain baseline

Prior to Paralysis
- Due to an inability to assess sedation underneath paralysis, DO NOT wean down sedation unless the paralytics are interrupted and have worn off
- Sedative and analgesic continuous infusion doses that achieved pre-paralysis RASS -4/-5 should be maintained throughout
- Clinical considerations:
  - Hypotension – do NOT wean sedation; consider fluid or a vasoactive agent
  - Under-sedation (unexplained tachycardia, hypertension, BIS >60), consider increase in sedation as clinically appropriate

During Continuous Paralysis
- Wait to wean sedation and analgesia until continuous infusion paralysis wears off:
  - If TOF available: TOF 4/4
  - Once the infusion is stopped, paralytic effect will persist based on drug half-life:
    - Cisatracurium = 60-80 mins
    - Vecuronium = 1-2 hours (may be longer dependent on liver/renal function)

Post-Paralysis
- Confirm physiologic endpoints for using NMBA
- Ensure pt. is receiving both analgesia and sedative/amnestic infusions prior to any NMBA
- Propofol preferred sedative, where no contraindication
- Dexmedetomidine does not provide adequate sedation for use with paralytics
- Achieve RASS/BPS goals
  - Patients should be deeply sedated to RASS -4 or -5 (ideally -5)
  - Optimize analgesia to BPS <6
- As clinically appropriate, initiate Train of Four (TOF) monitoring and obtain baseline

* Reference the ‘Guideline for Use of Neuromuscular Blocking Agents in the ICU’ accessed in the Penn Medicine Inpatient Formulary

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