

## **Evaluation of a Pharmacy Regulated Protocol for Continuous Neuromuscular Blocking Agent Infusion in the Adult Intensive Care Unit**

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### **Background/Purpose**

Neuromuscular blocking agents (NMBAs) paralyze skeletal muscle and are used in the ICU for indications such as emergent intubation and acute respiratory distress syndrome (ARDS) associated with ventilator asynchrony. NMBAs must be used with caution for patients who are intubated and properly sedated. At Long Beach Medical Center (LBMC), a pharmacy protocol was created for pharmacists to dose and monitor NMBAs, consisting of daily progress notes, daily train-of-four (TOF) measurements, and deep sedation prior to and throughout therapy. An internal audit was conducted to evaluate both performance of the protocol for dosing and pharmacist compliance with documentation.

### **Methods**

A retrospective chart review was performed using the hospital electronic medical record. The analysis included all adult patients who were initiated on continuous NMBA dosing per pharmacy from February 2022 to July 2023. Descriptive statistics was performed used Microsoft Excel.

### **Results**

62 patients were assessed with orders for cisatracurium dosing per pharmacy. 67.7% required a dose adjustment, with an average 14 hours and 3 dose adjustments to reach goal TOF. The average dose utilized was 0.15 mg/kg/hour. Daily progress notes were recorded in 95.2% of patients, and daily TOF documentation was absent in 9.7% of cases. Deep sedation before paralysis was achieved in 70.5% of patients (RASS score  $\leq -4$ ), and 85.5% of patients maintained the required minimum amount of sedation per protocol while on a cisatracurium infusion.

### **Conclusion**

This audit found that pharmacists at LBMC were compliant with the dosing and monitoring of continuous NMBA infusion per the pharmacy protocol. The protocol dosing range is 0.06-0.18 mg/kg/hr, so it may be appropriate to initiate doses at the higher end of the range based on the average dose. Areas for re-education for pharmacists are to complete documentation for TOF measurements and daily progress notes. Areas for re-education for pharmacists, nurses and physicians are to ensure deep and adequate sedation prior to starting NMB infusions and throughout therapy.