

# Sugammadex versus Neostigmine for Reversal of Rocuronium-Induced Neuromuscular Blockade: A Study of Thoracic Surgical Patients

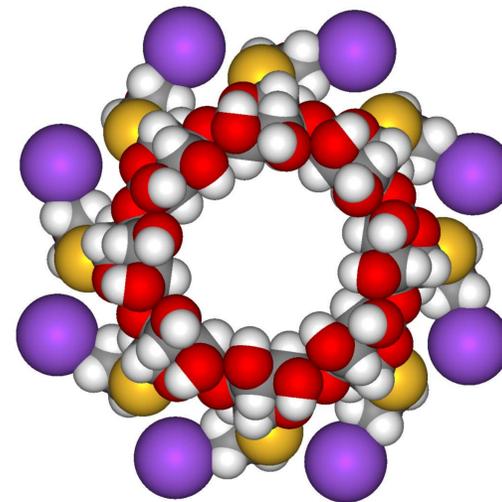
## INTRODUCTION

Inadequate reversal of neuromuscular blockade is a common and troubling problem contributing to postoperative respiratory complications such as hypoxia, reintubation, and prolonged hospital stay.<sup>1-5</sup> Neostigmine is typically utilized to reverse neuromuscular blockade, but it has numerous side effects (Table 1).<sup>6</sup> Sugammadex is a novel agent for reversal of neuromuscular paralysis in that it can reverse any depth of neuromuscular blockade due to its unique ring structure, allowing it to directly bind and help eliminate the blockade agent (Figure 1).<sup>7</sup> While there has been anecdotal evidence that patients treated with sugammadex have better subjective measures of recovery compared to those treated with neostigmine, few studies have systematically evaluated this, especially in patients with pre-existing pulmonary disease predisposing them to postoperative adverse respiratory events. This study aims to compare the reversal of rocuronium-induced neuromuscular blockade in sugammadex versus neostigmine and glycopyrrolate in thoracic surgical patients regarding the domains of physiological factors, nociceptive factors, emotional factors, activities of daily living, and patient satisfaction and to evaluate the costs associated with these factors.

**Table 1. Side Effects of Neostigmine and Sugammadex**

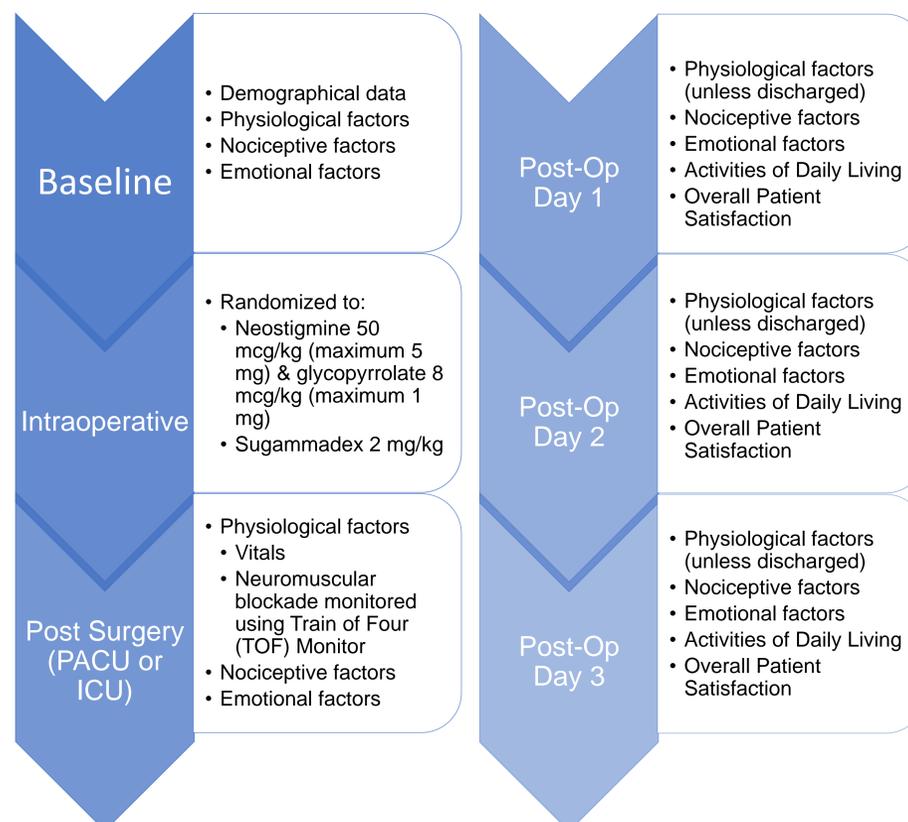
Frequency	Neostigmine	Sugammadex
Frequent	Low heart rate, nausea, vomiting, dry mouth	Nausea, vomiting, pain, headache
Occasional	Low blood pressure, low oxygen level, injection site pain, itching	High or low blood pressure, itching, dizziness
Rare	Severe allergic reaction	Severe allergic reaction, low heart rate

**Figure 1. Space-Filling Model of Sugammadex**



## METHODS

100 adult patients undergoing thoracic surgery with general endotracheal anesthesia at Parkland Hospital will be enrolled into this double-blind study. Data is collected as follows:



## PRELIMINARY RESULTS

While approximately 81 patients have been enrolled so far, statistical analysis is pending more data collection. Since this is a double-blind, randomized control trial, it cannot be definitively determined during this stage if a patient has received either sugammadex or neostigmine with glycopyrrolate. However, from the preliminary data, there appears to be two distinct groups, one of which has a significantly shorter reversal time as well as a shorter duration in the PACU than the other. So far, this does not appear to correlate with physiological, nociceptive, and emotional factors collected from the PQRS, but it is predicted that those who receive sugammadex will experience better outcomes related to these factors.

## CONCLUSION

If there is a significant improvement as a result of sugammadex usage, such as increased quality of life or decreased time in the operating room or PACU, a cost-analysis of the difference between the two reversal agents is recommended alongside a revision of current protocol for neuromuscular blockade reversal in thoracic surgical patients. Continued data collection and analysis is needed to support this conclusion.

## REFERENCES

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