

# Evaluation of Rocuronium Dosing in Rapid Sequence Intubation Based on Ideal Body Weight vs. Non-Ideal Body Weight in Obese Patients: A Prospective, Observational Study

## Background

- During rapid sequence intubation (RSI) providing adequate paralysis while reducing potential undersedation can be difficult in an obese patient population.
- There are no guideline recommended dosing strategies for the use of rocuronium for rapid sequence intubation in the emergency department (ED) in the obese patient population.
- Currently, dosing remains dependent on practitioner preference. Dosing can be based on total body weight (TBW), ideal body weight (IBW), lean body weight (LBW), or adjusted body weight (aBW).
- A paucity of data have compared the use of rocuronium in obese patients based on different body weights.<sup>1,3</sup>
- It was concluded that the use of ideal or lean body weight provided sufficient intubation conditions without prolonging duration of action<sup>1,3</sup>. However, these studies took place in a surgical setting and not in the ED, therefore, demonstrating the need for more data in an emergency department setting.<sup>1,3</sup>

## Study Objective

To evaluate the use of IBW versus TBW rocuronium dosing in obese patients for rapid sequence intubation in the emergency department.

## Design

Single-center, prospective, observational study

This study was deemed exempt by the local IRB.

## Methods

### Intervention:



Rocuronium is dosed according to physician / pharmacist preference.



IBW is calculated / TBW is obtained using either standard ED process or review of prior documentation in patients' charts.



After intubation, the physician is asked to complete a 9-point survey to assess intubation conditions.



### Inclusion criteria:

- Intubated in the ED at ACMC
- Use of rocuronium
- Obese: TBW > 30% of IBW or BMI >30



### Exclusion criteria:

- Age <18 years
- Known neuromuscular disease
- Allergy or sensitivity to study drug
- Concomitant use of medications known to interfere with neuromuscular transmission

### Primary Endpoint:

Optimal intubation conditions

### Secondary Endpoints:

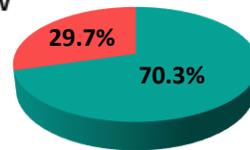
- Efficacy:
  - Duration of paralysis
- Safety:
  - Incidence of hypertension
  - Incidence of tachycardia

## Results

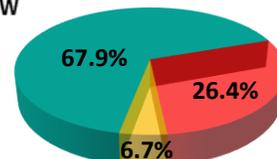
### Optimal intubation conditions (%)

Population: IBW 37 patients, TBW 53 patients

IBW



TBW



### Scoring

- Excellent (3's)
- Good (2 or 3's)
- Poor (any 1's)

### Non-Inferiority Analysis

Relative Risk	P-Value	Limit (90% CI)
1.05	0.19	0.88 (0.75 - 1.40)

### First pass success n (%)

Ideal Body Weight: 31 (83.8%)



Total Body Weight: 49 (92.5%)



### Time to muscle recovery (min), median [IQR]

TBW	IBW	P-Value
71 [57 - 96]	43 [40 - 60]	<0.01

## Conclusion

- Ideal body weight dosing of rocuronium is suggested to be non-inferior to total body weight dosing in obese patients that require rapid sequence intubation in the emergency department.
- This study demonstrates similar efficacy of intubation conditions with shorter duration of paralysis between the two dosing weight strategies.
- Follow-up superiority studies are suggested with a larger patient population to determine if there is a difference in optimal intubation conditions between IBW and TBW dosing.

### References:

- Meyhoff SC, Lund J, Jenstrup TM, et al. Should dosing of rocuronium in obese patients be based on ideal or corrected body weight? *Anesth Analg* 2009;109:787-92.
- Shallaja, S et al. "Comparing ease of intubation in obese and lean patients using intubation difficulty scale." *Anesthesia, essays and researches* vol. 8,2 (2014): 168-74. doi:10.4103/0259-1162.134493.
- Sakizci-Uyar B, Celik S, Postaci A, et al. Comparison of the effect of rocuronium dosing based on corrected or lean body weight on rapid sequence induction and neuromuscular blockade duration in obese female patients. *Saudi Med J* 2016;37:60-65.