

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

Amanda Lewandowski, PharmD¹; Alaa Sulh, PharmD²; Michael Cirone, MD¹; Mary Hormese, PharmD, BCPS³; Marc McDowell, PharmD, BCPS¹

¹Advocate Christ Medical Center; ²Loyola University Medical Center; ³Northwest Community Hospital

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.^{1,3}
- It was concluded that the use of ideal or lean body weight provided sufficient intubation conditions without prolonging duration of action^{1,3}.
- 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.^{1,3}

Objective

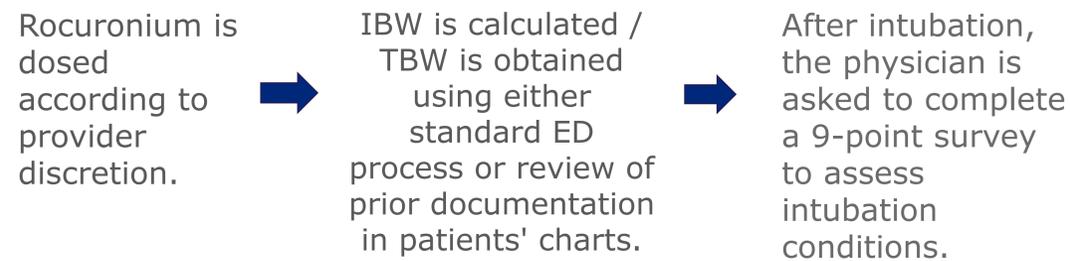
- To evaluate the use of IBW versus TBW rocuronium dosing in obese patients for rapid sequence intubation in the emergency department.

Study Design

- Single-center, prospective, observational study
This study was deemed exempt by the local IRB



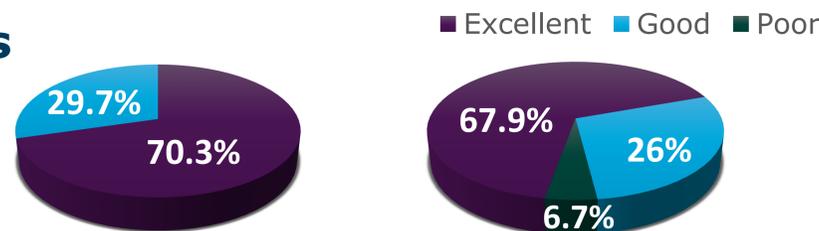
Methods



INCLUSION CRITERIA	EXCLUSION CRITERIA
Intubated in the emergency department at APMC	Age less than 18 years old
Use of rocuronium	Known neuromuscular disease
Obese: total body weight >30% of ideal body weight or BMI >30	Allergy or sensitivity to study drug

OUTCOME	
Primary Outcome:	Optimal intubation conditions
Secondary Outcomes:	Efficacy: Duration of paralysis
	Safety:
	Incidence of post-intubation hypertension Incidence of post-intubation tachycardia

Results



Non-Inferiority Analysis

Relative Risk	Limit [90% CI]	p-value
1.05	0.88 [0.75-1.40]	0.19

First Pass Success

TBW N [%]	IBW N [%]	p-value
49 [92.5%]	31 [83.8%]	0.2

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.
- Shailaja, 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

Results

Duration of paralysis: Time to muscle recovery (min) [IQR]

TBW [N = 49]	IBW [N = 33]	p-value
71 [57-96]	43 [40 - 60]	<0.01

Incidence of Post-Intubation Hypertension

TBW	IBW	p-value
43.4%	27.0%	0.11

Incidence of Post-Intubation Tachycardia

TBW	IBW	p-value
35.9%	37.8%	0.85

Limitations

- Observational, single-centered study
- Intubating physicians' level of experience
- Total body weight may have been based on estimated weight
- Dosing classification interpreted
- Duration of paralysis based on subjective nature of observation

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 sample size 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.