

Spring 5-4-2018

Sugammadex Protocol

Brenna M. Thomas

Southern Illinois University Edwardsville

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Recommended Citation

Thomas, Brenna M., "Sugammadex Protocol" (2018). *Doctor of Nursing Practice Projects*. 28.
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Executive Summary

Title

Sugammadex Protocol

Author

Brenna Thomas

Introduction of the Problem

Sugammadex became available in the United States of America (USA) in January 2016 for the reversal of muscle relaxation induced by rocuronium, vecuronium, and pancuronium. Sugammadex is now available for use at St. Anthony's Memorial Hospital in Effingham, IL. Currently, they do not have a protocol regarding the use of sugammadex. Creating a protocol for the administration of sugammadex in different patient populations will improve the practitioners' knowledge of sugammadex and improve their confidence in its administration. The protocol has the potential to improve patient outcomes post-operatively.

Literature Review

Sugammadex is a new drug designed to reverse muscle relaxation induced by rocuronium, vecuronium, and pancuronium. Journal articles were reviewed with the purpose of creating a sugammadex protocol. Topics reviewed included indications, dosing, patient populations, re-establishing paralysis, IV compatibility, side effects, and contraindications.

The average dosing of sugammadex is 2mg/kg in patients aged 17 years or older. The dose does not need to be adjusted for weight or co-morbidities. It has not been approved for use in pediatric patients and patients with chronic renal failure. Sugammadex is not compatible with IV ondansetron, ranitidine, or verapamil. The only true contraindication to sugammadex is a

known allergy or hypersensitivity. The most common side effects are vomiting, pain, nausea, hypotension, and headache.

Methodology

Goals of the Project

To promote a safe post-anesthesia environment regarding sugammadex and residual neuromuscular blockade

Objectives of Project

To provide an evidence based protocol for the administration of sugammadex

For an anesthesia provider to identify a client who requires sugammadex for reversal of non-depolarizing muscle relaxation

Practitioners should be able to discuss the dosing of sugammadex

Practitioners should be able to describe the administration and compatibility of sugammadex

Practitioners should be able to discuss the contraindications and warnings related to sugammadex

Practitioners should be able to discuss reestablishment of paralysis after sugammadex administration

Setting and Group The project was initiated and implemented at St. Anthony's Memorial Hospital in Effingham, Illinois. The sample population included Certified Registered Nurse Anesthetists (CRNAs), anesthesiologists, Registered Nurses (RNs) in the pre-operative and post-operative units, and pharmacy staff.

IRB Information An application was submitted to the Institutional Review Board (IRB) of Southern Illinois University Edwardsville for Human Subjects Exempt Research. All Collaborative Institutional Training Initiative programs were completed and turned in with the IRB application. In addition, the protocol, the pretest and posttest, and the cover letter were submitted. Approval was granted within one week of application submission on April 21, 2017.

Project Design and Tools The design of the project is non-experimental consisting of a practice protocol for the administration of sugammadex in the perioperative setting and a computer based learning tool (a PowerPoint presentation) to introduce the protocol to the staff. The evaluation of the protocol and learning tool was achieved by a pretest and posttest that assessed the knowledge of the practitioners. The two tests assessed the understanding of the sugammadex protocol and the relevance to clinical practice.

Strengths of the Project

Anesthesia providers at St. Anthony's Memorial Hospital demonstrated a better understanding of sugammadex

RNs in the post-operative unit expressed a better understanding of residual neuromuscular blockade and when sugammadex may be indicated

The protocol has the potential to improve patient safety postoperatively which in the long term improves healthcare for the community

Weaknesses of the Project

Face to face education makes the staff wary of anonymity

There exists bias regarding the pretest and posttest having the same questions

Introduction of the new protocol can be stressful to staff

Opportunities to the Project

The protocol was adopted by St. Anthony's Memorial Hospital

Threats to the Project

Failure of staff to utilize protocol

Pharmacy does not support protocol

Evaluation

The pretest and posttest were evaluated with how many answered each question correctly or incorrectly. The average score of the pretest was calculated as 3.5 correct out of 5 questions. The average score of the posttest was 4.7 correct out of 5 questions. The application IBM SPSS Statistics 24 was used to run paired samples *t* test on questions 1-5 from the pretest compared to the posttest. In addition to each question, a paired samples *t* test was calculated on the average of the pretest and posttest. Significance was found between the pretest and posttest with $p = 0.005$.

Impact on Practice

Overall, the sugammadex protocol made an impact on the OR staff at St. Anthony's Memorial Hospital. After the educational PowerPoint presentation, an answer and question session began. There were no questions or thoughts needing clarification. The healthcare providers believed the presentation was thorough. An improvement in their knowledge

regarding sugammadex was seen related to the increased scores from the pretest to the posttest. At this time, no further recommendations can be made.

Conclusions

The implementation of the sugammadex protocol made a positive effect on the anesthesia group at St. Anthony's Memorial Hospital. As noted previously, the sample size was small. Thus, making it hard to decipher statistical significance or make inferences regarding the protocol. The pretest and posttest used to gauge learning consisted of the same questions. In using the same questions, the subjects could know what to listen for in the educational presentation and what to expect on the posttest. Sugammadex has the potential to promote postoperative patient safety. The initiation of an evidence based practice protocol in the use of sugammadex along with the implementation process, which improves practitioners' knowledge, can have a positive effect on the healthcare provided at St. Anthony's Memorial Hospital in Effingham, Illinois.

Author Contact Information

Brenna Thomas, Southern Illinois University Edwardsville, brennth@siue.edu