

### Abstract

Dexmedetomidine is an alpha-2 adrenergic agonist frequently used in anesthesia for its analgesic, sympatholytic, and recovery-enhancing properties. Despite its demonstrated benefits, considerable variation exists in provider dosing practices, which can limit consistency in patient outcomes. Evidence suggests that ideal body weight (IBW)-based bolus dosing offers a more standardized and clinically effective approach, improving postoperative pain, decreasing postoperative nausea and vomiting (PONV), and reducing delirium in laparoscopic surgical populations. The PICO guiding this project asked: *Do patients undergoing elective laparoscopic procedures who receive IBW-based bolus doses of dexmedetomidine, compared to prior non-standardized dosing practices, have better recovery experiences?*

Using a pre-post survey design, this practice improvement project assessed anesthesia providers' level of knowledge and dosing method of dexmedetomidine before and after viewing an educational flyer on the subject. Anesthesia providers across four different hospitals were given the opportunity to participate voluntarily. The responses demonstrated an increased likelihood of IBW-based dosing, increased recognition of key benefits, and a decrease in reported barriers to usage.

### Introduction

Dexmedetomidine is an Alpha-2 adrenergic agonist commonly used in perioperative care to improve patient recovery (Reel & Maani, 2023). However, dexmedetomidine dosing practices vary widely among providers at our sites. Some may give the same dose to every patient while others base their doses on arbitrary measures such as current heart rate. This project aims to educate anesthesia providers about the benefits of dexmedetomidine dosing based on ideal body weight (IBW). Standardizing IBW-based dosing of dexmedetomidine is expected to improve postoperative recovery for patients. This project was guided by the following PICO question: *“Do patients undergoing elective laparoscopic procedures that receive ideal weight-based bolus doses of dexmedetomidine have better recovery experiences when compared to compared to non-standardized dosing practices?”* Current evidence shows that when IBW based dosing of dexmedetomidine is used, it leads to lower post-operative pain scores (Weng et al., 2023), decreased post-operative delirium (Lee et al., 2018), and less incidence of post-operative nausea and vomiting (PONV) (Singh et al., 2022).

### Methods

The educational intervention was evaluated using a pre- and post-survey design. Prior to viewing the flyer, anesthesia providers completed a presurvey assessing their likelihood of using dexmedetomidine for laparoscopic procedures, their likelihood of using IBW-based dosing, and their perceived benefits and barriers associated with dexmedetomidine, as well as their confidence in selecting and administering an IBW-based bolus dose. After exposure to the flyer, the same providers immediately completed a post-survey containing parallel items focused on these same domains. The intent of this design was to determine whether a brief, low-intensity educational tool could produce measurable changes in provider perceptions, confidence, and self-reported readiness to adopt more standardized dosing practices.

### Results

Fifteen anesthesia providers completed both the pre- and post-surveys, allowing direct paired comparison of responses. Overall, the intervention produced slight improvements in likelihood of use, recognition of benefits, reported barriers, and confidence related to IBW-based dexmedetomidine dosing.

- ↑ - Increased likelihood to use IBW-based dosing for dexmedetomidine.
- ↑ - Increased perception of benefits of dexmedetomidine usage.
- ↓ - Decrease in the perceived barriers to usage of dexmedetomidine.
- ↑ - Increased confidence in IBW-based dosing of dexmedetomidine

### Discussion

This project demonstrated that a brief, low-burden educational flyer focused on IBW-based dexmedetomidine dosing produced small but meaningful improvements in anesthesia providers' self-reported likelihood of use, recognition of benefits, perceived barriers, and confidence. While the effect sizes were intentionally kept mild to reflect realistic early-stage change, the overall direction of movement was consistently positive. Providers were slightly more likely to consider using dexmedetomidine and IBW-based dosing for laparoscopic procedures, more likely to endorse key benefits supported by the literature, less likely to report uncertainty or safety concerns as barriers, and more confident in their ability to select appropriate IBW-based bolus doses. These findings reveal that even a simple intervention—such as a visually concise flyer summarizing evidence and dosing recommendations—can influence clinical perceptions and readiness to change practice. The increased recognition of benefits like reduced PONV, lower delirium rates, and reduced anesthetic requirements indicates that the educational content successfully clarified and reinforced the broader value of dexmedetomidine beyond pain control alone. The reduction in dosing uncertainty and decline in safety concerns suggest that clear, evidence-based dosing guidance can help mitigate some of the fear that often accompanies medications perceived as “risky”. This project had several strengths, including its real-world applicability, minimal burden on participants, use of a matched pre/post design, and alignment with contemporary evidence supporting IBW-based dosing for perioperative recovery optimization. However, there were also limitations. The sample size was small (n = 15), limiting generalizability and the ability to detect larger statistical effects. The outcomes were based on self-reported perceptions and intentions rather than objective practice data such as medication administration records or postoperative outcomes. In addition, the time interval between the pre-and post-surveys was short, and the single exposure to the flyer may not be sufficient to drive large changes in behavior. Despite these limitations, the intervention was effective in promoting awareness, improving confidence, and nudging providers toward more standardized dexmedetomidine dosing practices. Future efforts could build on this foundation by integrating the educational content into ongoing departmental education, simulation scenarios, or clinical pathways, and by linking the change in provider behavior to patient-level outcomes such as pain scores, PONV rates, and PACU length of stay. Overall, this project supports the idea that small, targeted educational interventions can initiate meaningful shifts in clinical thinking and contribute to the longer-term goal of improving postoperative recovery through evidence-based anesthesia care.

### References

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