Reviewer's report

Title: Effects of Changes in Intraoperative Management on Recovery from Anesthesia: A Review of Practice Improvement Initiative

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Reviewer: Carrie Atcheson

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Overall, this is an excellently structured retrospective study that can serve as a necessary jumping off point in the literature for further investigation into improving PACU through-put and immediate postoperative clinical outcomes. The analysis addressed the hypothesis, and the decrease in PACU length of stay observed is clinically significant. I very much appreciated that the authors resisted the temptation to inappropriately extrapolate on the incidental finding of decreased adverse respiratory events – though it would be a great topic for future investigations, it was not a primary or secondary endpoint here.

The major revisions below will improve the language of the manuscript, provide a compulsory (if only cursory) completeness in accounting for possible bias, and assure sound statistical methods. The simplicity of the study design and the findings indicate a shorter manuscript would be most appropriate – as it stands now, the manuscript is in excess of 3,000 words without figures, so anything you can do to tighten it up to around 2,000 words will help your reader appreciate the good points without becoming fatigued.

I hope your next study addresses whether patient satisfaction was affected by the Epoch II protocol – it’s clear these measures improved some administrative outcomes (PACU LOS) and some clinical outcomes (adverse respiratory events), but were there any trade-offs?

Major Compulsory Revisions

1. Scientific language – In lines 80, 97, 107 you describe the study in terms of what “we” (the authors did). Throughout the manuscript, remove the word “we” and restructure the description in terms of “the study.” As you’re going through converting a first person relating of events into a snappy description of a scientific study, take out unnecessary details such as the lengthy description of the clinical practice of administering a benzodiazepine at or near the induction of anesthesia in lines 245-248. Simply stating: “Because midazolam administration is associated with increased PACU length of stay, the Epoch II protocol helped clinicians narrow use of midazolam to use in monitored anesthesia care and for patients with clinically significant anxiety” helps decrease your word count by 1/3.

2. Address hidden bias – Add a sentence in the “Limitations” section to address the question: are the authors aware of any other policy or staffing change
implemented during the study period that could have accounted for the decrease in PACU length of stay? You allude to it in line 286, but it needs to be explicit.

3. Describe the mystery “secondary analyses” alluded to in line 203 – You provide this data in the results section, so you must describe the analysis (I’m assuming it was an Analysis of Variance?).

Minor Essential Revisions

1. Shorten manuscript by removing unnecessary description, first person narrative, and redundancy, as described above.

2. Add tables for PACU recovery criteria and respiratory adverse events definitions. This information would be much easier to assimilate if it were contained in 1 or 2 tables, as you see fit. You can then briefly refer to the tables in the “Methods” section.

3. Remove the sentence: “Between the two epochs there was no significant change in the intraoperative use of bronchodilators (P = 0.061), antiarrhythmnic medications (P = 0.775), antihypertensive medications (P=0.775), or vasopressors (P=0.061).” It detracts from the main results, and this data is found in Table 2.

Discretionary Revisions

1. The focus of the “Limitations” section – lines 275-278 address the lack of a universal protocol. I would argue that the lack of a universal protocol is an asset, not a limitation in this case because you were observing the laboratory of real life. With the rise of big data, a great strength of your institution, this type of study is the future of research in our specialty. You brush over what I feel is the more significant limitation of this study design in line 282-283: the fact that you can’t isolate the effect of the 3 components of the protocol, so one is, in essence, guessing about the impact of these individual components.

2. Eliminate Figures 1 & 2 – Your study design is straightforward and easy to understand without Figure 1. The impressive shift in practice is easy to appreciate without Figure 2. I was, in fact, surprised to find them at the end of the manuscript.

3. Reconsider the descriptors “Epochs I & II” – I would favor “Period I & II.” Epoch makes me think you would rather be writing a novel about King Arthur than a scientific manuscript, which may be the case – no judgment. I just personally found the terminology distracting.

Level of interest: An article of importance in its field

Quality of written English: Acceptable
**Statistical review:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**

I declare that I have no competing interests