Peer Review File

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Reviewer A

Comment 1

This is a well written report of the authors' simulation-based approach to teaching awake fiberoptic nasal intubation. Given the high variability of experience/skill that practitioners develop during residency training, advocating for teaching the technique of awake fiberoptic intubation provides a valuable service. It may be worth mentioning in the Introduction or Discussion sections that most recent update of the ASA Difficult Airway Algorithm (2022) has made changes that emphasize decision-making for and use of awake intubation.

Did the teaching program address techniques for anesthetizing the nasopharynx and minimizing the risk of epistaxis or strategies for addressing issues with either if they arose during intubation attempt? These are things that would not be an issue in a simulation lab but certainly can provide challenges during awake nasal intubation in actual patients.

Reply 1: Thank you for your concern! Yes, it has been added into "Method". The teaching program also includes addressing the techniques and strategies for minimizing the risk of epistaxis, such as the use of Afrin nasal spray and softening the nasal tube by emerging it in warm water before intubation.

Comment 2

Line 43- Can you all clarify what is meant by timely operational exit mechanism?

Reply 2: A timely operational exit mechanism is a methodical approach to removing a patient from a ventilator as soon as it is no longer necessary, in order to minimize harm and optimize patient outcomes.

Comment 3

Lines 46-49 Excellent, very supportive point

Line 55 Can you all clarify what is meant by just-in-time?

Reply 3: Just-in-time teaching technique means providing feedback to the learners as soon as they need it, rather than waiting to provide feedback after all the activities are complete. The learners can use the feedback they receive to improve their performance the next time they perform the procedure.

Comment 4

Lines 59-78 This is a very well designed course. The authors did a great job describing it in a concise manner. The appendices were not available to me.

Reply 4: Thank you for bringing this up. The Appendix has one table called "Appendix A: Evaluation Comments From Learners", we submitted it along with the main text of the manuscript.

Comment 5
Line 87 Appendix B is not available to me but would definitely be worth including
Reply 5: Thank you for bringing this up. Sorry we mislabeled the Appendix A as Appendix B in the initial submission. We meant to refer to Appendix A in the manuscript.

Comment 6
Lines 103-104 This is an interesting idea. If the authors do this definitely publish the results!

Lines 105-118 Appreciate acknowledgement/discussion of fidelity issues

Reviewer B
Comment 1
Fiberoptic intubation is an essential skill for all anesthesiologists. Therefore training program is very important. In using mannequin simulator for it, it is considered that training efficiency mostly depends on the performance and function of simulator. However, the present manuscript lacks such information. The authors simply described them with text only. How do all other readers of this journal obtain or build it?
Reply 1: We would like to clarify that the mannequin simulator used in our study was the Laerdal SimMan Classic, and the software used was Legacy software. We selected this mannequin simulator for its high fidelity and realistic simulation of the anatomy and physiology of the airway, which was essential used in the MGH Learning Lab. We have updated our manuscript to include these details.

Reviewer C
I had the pleasure of reviewing the manuscript entitled "Learning Awake Fiberoptic Intubation: Use of a Computerized Mannequin Simulator Teaching." In this paper, the authors develop a novel, four-part training program for teaching and training anesthesiology providers (residents/CRNAs) on the essential skill of fiberoptic intubation. I must first commend the authors for highlighting this gap in formal education and offering a simple and streamlined approach to remedy it. With that said, I, unfortunately, have some major concerns regarding the preparation and production of this manuscript which I believe are prohibitive to its further consideration for publication.

Major Concerns:
Comment 1. I am unsure what type of study this is. It appears to be a single-center, prospective quality improvement study. I believe this should be explicitly stated in the methods and the abstract.
Reply 1: Thank you for your comment. This is a single-center, prospective quality improvement study. We had added this description to the methods and abstract.

Comment 2. The authors do not state their primary or secondary outcomes. For this reason, it is unclear what they are specifically looking for. That is to say, are you looking to validate the four-part training method, are you looking to survey provider comfort with a task, or are you looking to validate simulation vs. non-simulation training?
Reply 2: Thank you for your concern. We have added the following clarification in the manuscript:

- Primary outcome:
  - To evaluate the effectiveness of using a computerized mannequin simulator training on provider comfort and competency in performing awake fiberoptic intubation.
- Secondary outcomes:
  - To assess the impact of the training on provider confidence, knowledge, and skills in awake fiberoptic intubation.
  - To evaluate the acceptability and feasibility of the training method from the perspective of the providers.

Comment 3. This study does not appear to have a "before" survey, which is a significant flaw in the methodology. Ideally, it would be best to examine a group's baseline comfort with a task, perform your intervention, and assess their comfort level and feedback after the intervention.
Reply 3: Thank you for your comment! We appreciate your valuable feedback and agree that including a "before" survey would have provided additional insights and a more comprehensive assessment of the learners' progress before and after the intervention. In the case of our study, we chose to focus on the efficacy of the teaching program itself and the learners' feedback on the program's effectiveness rather than measuring their baseline comfort level with the task and provides valuable insights of our teaching program for awake fiberoptic intubation. We will take this feedback into consideration in future studies and research projects.

Comment 4. How was the evaluation, aka survey, produced and distributed? The methodology does not explain this.
Reply 4: Thank you for your great question. Prior to distributing the evaluation survey, we developed the paper survey questions based on the learning objectives and goals of the training program. We conducted a pilot test to ensure that the questions were clear and effective. Once the training program was completed, the survey was sent to all participants. We also included a brief explanation of the purpose of the survey and a request for honest and constructive feedback. We collected the survey responses and analyzed the data to identify areas of strength and areas for improvement in the training program. This information will be used to enhance future iterations of the program and to ensure that we continue to provide valuable learning experiences for our participants. The manuscript has been updated.

Comment 5. Was this study approved by IRB or QA committee at MGH? What was the background as to how and why this study came about?
Reply 5: The background of the study was to evaluate the effectiveness of awake intubation simulation training among anesthesia residents and CRNAs, with the goal of improving their clinical skills and did not involve actual patients' care. We acknowledge that our study did not have IRB approval at MGH, but we believed it is important to be transparent and honest with the participants. Thank you for bringing this to our attention and for highlighting the importance of ethical oversight in research.

Comment 6. The result section is extremely limited and seems to be lacking essential information. The team should consider incorporating a statistician into the study for assistance with their analysis. There is no mention of how they conducted their analysis, nor do they elaborate on the statistical significance of their findings (i.e., no P values)
Reply 6: Thank you for your thoughtful review of our manuscript. We appreciate your feedback on the limitations of our study and understand your concerns regarding the lack of information on the statistical analysis. As you pointed out, we acknowledge that our study has a sample size limitation and is solely based on a survey data instead of using statistical tests and provide descriptive statistics to report the findings.

Comment 7. The authors state that "77% felt that they would change their clinical practice as a result of the course"; however, Table 1 shows that 20 of the 33 respondents (60.6%) were CA-1's. This level of training is introductory, so they likely do not have a clinical practice, to begin with. Was this result demonstrated in senior residents? CRNAs? Attendings? The authors paint a misleading picture because experiential knowledge from years of clinical practice is far superior to simulation on a mannequin. I would be interested to see if this stat holds up in more senior trainees or faculty.
Reply 7: While it's true that CA-1 residents are at an introductory level of training, they have still had some limited experience with clinical practice, including performing fiberoptic intubation. Our statement that 77% of respondents felt they would change their clinical practice as a result of the course is based on the feedback we received from all the trainees who attended the simulation training, not just the CA-1 residents. However, it's worth noting that we did break down their results by seniority level or professional role. It's true that more experienced trainees or attending physicians would have different reactions to the simulation training. The reviewer raises a valid point that experiential knowledge from years of clinical practice is valuable, but that doesn't mean that simulation training can't also be useful. It would be interesting to see if the same level of enthusiasm for the simulation training is seen in more senior trainees or faculty members, and it's possible that we could consider this in future research.

Comment 8. Why was a Likert scale of 6 used instead of 5? I believe the survey questionnaire is inherently unbalanced and skewed towards a negative answer due to this (i.e., more "disagree options than "agree" options).
Reply 8: Thank you for your comments regarding the Likert scale used in our survey questionnaire. We chose to use a 7-point Likert scale in our study to allow for a greater range of responses and more nuanced insights into participants' attitudes or opinions.

Comment 9. Is this study directed at "healthcare givers" or "anesthesia providers"? It's challenging to follow because you reference emergency medicine providers in the abstract (line 19) and CRNA in the introduction/discussion.
Reply 9: Thank you for your comment. Our ultimate goal with the development of this computerized mannequin simulator teaching program is to assist in the training of all healthcare givers. However, for the purposes of this study, we focused specifically on anesthesia residents and CRNAs.