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In Reply: Comparing Direct and Video Laryngoscopy for Prehospital Intubation: Can Meta-Analysis Provide and Exact Solution?

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In Reply,

We thank the authors for this letter and appreciate the opportunity to respond to the comments and clarify our position. We agree with the authors in a number of their specific comments, and will attempt to address each of them. The first comment refers to the difference in video laryngoscopy devices and how “... pooling of results from studies evaluating performance of different VLs for prehospital intubation may lead to intrinsic inconsistencies in the primary endpoints.” This is an important limitation, and we tried to specifically draw attention to it by noting that “an additional potential source of heterogeneity may be the varying types of indirect devices employed between studies. While all of the devices compared against direct laryngoscopy were indirect devices, there is evidence, based on airway simulation studies, that all indirect devices do not necessarily perform equally.”¹ We pointed out that the differences in the devices may have led to heterogeneity in the estimates, what the authors term “intrinsic inconsistencies in the primary endpoints.”

To the authors’ second comment, which points to the inclusion of observational studies as problematic: “Five of eight studies included in this meta-analysis were observational studies. These studies have significant methodological limitations and potentially introduce a number of confounding variables.” Once again, we agree. We used the Cochrane risk of bias tool for interventions to conduct a risk of bias assessment for each study, which was reported in table 2. We reported a summary assessment of study quality to be strong or moderate in the randomized trials, and gave overall lower ratings to the observational studies. We tried to name this concern in our summary of limitations by writing that “a likely reason for the heterogeneity we observed is the varied study designs.”¹ While we agree that randomized trials are of overall higher quality in addressing questions of clinical interventions, we also feel that given the dearth of randomized

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trials on this subject, that we may be excluding valuable data by rejecting observational studies outright. Prior work has suggested that including both observational studies and randomized studies in a meta-analysis could outweigh the disadvantages in many situations and that observational studies should not be excluded a priori.² We attempted to be as transparent as possible in our inclusion process. Rather than exclude the observational studies performed by non-physician operators, we made the decision to characterize and stratify them.

The final comment regarding differences in intubator experiences, and poor description of the said experience is well taken. It is clear that the levels of prior intubations differed among operators in the studies. We reported the baseline intubations per year in table 1, and note that in the randomized trials, the operators were physicians who performed >80 or >100 intubations per year as compared to the observational studies done by non-physicians in which the number of intubations done per year was 2.9, 6-10, 12, or not reported. We noted this difference, and in our discussion, we remarked that “our study suggests that physician intubators do not experience the same benefit from indirect laryngoscopy as non-physician intubators. We suspect this difference lies largely with the amount of previous experience physician providers reportedly had with direct laryngoscopy.”¹ We ultimately agree that the difference in success rates was likely not due to the intrinsic quality or functionality of the individual devices, but instead the experience of the operator combined with the learning curve of each device.

Overall, the many salient observations made by the authors with regards to the limitations of this study underscore the inherent challenges with meta-analyses and the need for larger and more rigorous randomized controlled trials to guide practice improvements in emergency medicine and prehospital care.

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