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Reference Article: Eisenberg, Matthew A. et al. Comparison between direct and video-assisted laryngoscopy for intubations in a pediatric emergency department. *Academic Emergency Medicine* August 2016, Vol 23, No 8, 870-876.

Question: Is there a difference in first pass intubation success rate, complication rates, or rate of successful intubations between direct laryngoscopy and video laryngoscopy in the ED?

Introduction: In the current landscape of emergency department intubations, video assisted laryngoscopy (VAL) has become increasingly utilized. VAL allows the clinician to attempt a DL intubation while a supervisor watches. This has been shown to be a valuable tool for teaching. But more importantly, in adults, literature has demonstrated that VAL provides better views and improved first pass as well as ultimate success rates in ED intubations when compared to DL. Pediatric anesthesia literature has also demonstrated that VAL provides better glottis views compared to DL, although success rates between the two are similar. Of particular interest to an ED physician is the use of VAL for pediatric intubations. Despite the prevalent use of VAL in emergency department pediatric intubations, no previous studies have compared the two techniques and the success rates and complication rates between them. DL in pediatric intubations has been cited to have first pass success rate from 52-78%. The purpose of this study was to compare rates of success and complications associated with C-MAC VAL compared to DL in pediatric ED intubations.

Methods: This study was a single centered retrospective cohort study that looked at all patients that underwent endotracheal intubations at a level I trauma pediatric ED over an 11 year period from January 1, 2004-December 31, 2014. Initial intubation attempts were nearly always performed by a trainee for which experience ranged from PGY1-PGY6 and covered specialties of EM residency, pediatric residency, and pediatric emergency medicine fellowship. All trainees received specific C-MAC training before the study. The analysis was subsequently limited to intubations performed by an ED provider-resident, fellow, or attending. All patients used for this study were < 18 yrs of age. Patients were excluded if they underwent intubation prior to arrival to the ED. Patients were placed in VAL group if initial intubation attempt was performed with C-MAC. DL group was defined as first attempt performed by traditional Macintosh or Miller blades with a non-video laryngoscope. The primary outcome was first pass success rate. Secondary outcomes were ultimate successful intubation attempt and rates of complications. ET tube placement was confirmed with capnography and post-intubation chest x ray in both groups. A total of 240 patients were placed in DL group and 199 in VAL group.

Results: With respect to primary outcome, there was no significant difference between the two groups in first pass success rate (70.8% in DL group vs 72.4% in VAL group). There were also no significant differences in ultimate success rate (92.9% DL vs 94% VAL) or complication rates (16.3% DL vs 19.6% VAL) between the two groups.

Discussion: The use of VAL has become widely used in both adult and pediatric emergency departments. Previous studies in adult ED populations have demonstrated improved first pass success rate when VAL was used compared to DL. This study was first of its kind to evaluate VAL vs DL in pediatric ED patients and demonstrated to statistical difference in first pass success rate, ultimate success rate, or complication rates. Previous pediatric anesthesia literature yielded similar results with no difference in first pass success rate although improved glottis visualization was noted. It should also be noted that

some adult studies have also demonstrated no difference in first pass success rates in VAL vs DL. The authors of this study pointed out the high rate of first pass success with DL compared to previous studies and noted that the majority of pediatric patients were intubated by pediatric emergency medicine fellows and that perhaps experience of the provider may have played a role in this higher success rate. This study was limited by being retrospective in nature as well as single centered. It should also be noted that self-reporting was used to analyze success rates and that bias could have played a part in the data collected. Overall, this study asked a valuable question in pediatric intubations. It certainly demonstrated that DL is not inferior to VAL in pediatric intubations. However, more multi-centered randomized controlled trials need to be performed to evaluate this question.
