

CASE AND COMMENTARY: PEER-REVIEWED ARTICLE

When Is It Justifiable for an Inexperienced but Licensed Clinician to Perform a High-Risk but Low-Frequency Procedure on a Patient in a Prehospital Setting?

Elizabeth Reiche, DO, Shaila Coffey, MD, and Emma Zeratsky, NRP, FP-C

Abstract

In prehospital settings, clinicians make difficult decisions that need to be made in short periods of time and be within their scope of practice, procedural skill set, and appropriate to their training and preparation. This commentary on a case offers a just culture approach to learning, especially after sentinel events.

Case

A dispatcher fields a call in a rural community from parents whose child is in sudden respiratory distress from an unknown cause. An emergency medical technician (EMT) arrives at the scene and assesses the child, who struggles for breath with pronounced intercostal retractions and nasal flaring. The EMT concludes that the child's airway needs to be secured via intubation urgently and probably immediately on the scene. The child's respiratory distress escalates.

The EMT was recently certified in advanced cardiovascular life support (ACLS) through a program funded by the state to support rural emergency medical services (EMS). The EMT has, indeed, been trained to perform a pediatric intubation, which, despite being in the EMT's scope of practice, is infrequently needed, and the EMT has never actually intubated an adult or a child patient. Were the EMT to attempt to intubate the child, they would be drawing upon their textbook knowledge and patient simulation manikin training only. Despite their lack of experience, the EMT successfully intubated the patient.

In a subsequent debrief about this case, the EMT talked about feeling more relieved and fortunate that this specific intubation was successful than competent to perform the procedure.

Commentary

There are a few assumptions that need to be made before we discuss the scenario and its ethical implications.

1. The EMT-basic (EMT-basic, or EMT-B) is operating in a state in which it is within their scope of practice to intubate.
2. The EMT is not only certified in ACLS, as stated in the clinical scenario, but credentialed by their agency and medical director to perform intubation.
3. Intubation in the prehospital setting can be considered a high-risk, low-frequency procedure.

An understanding of scope of practice is imperative to discuss this case. In medicine, scope of practice is the legal description of the procedures and actions a clinician is authorized to perform. Generally, the EMT scope of practice does not include endotracheal intubation, based on the National EMS Scope of Practice Model.¹ The National EMS Scope of Practice Model document provides recommendations on scope of practice for emergency medical responder (EMR), EMT, EMT-advanced (EMT-A), and paramedic.¹ Based on the guidelines, intubation requires the additional didactic and psychomotor training provided at the paramedic level of education.¹ However, it is up to each state to determine what the specific scope of practice will be for each level of training. For this reason, the state is purposely not named in this scenario, and we can infer that this specific state allows EMTs to intubate.

Past research has examined EMTs' competence in performing intubation. In a study published in 1998 by Sayre et al, 66 EMT-Bs were "authorized to perform intubation in the field" after a course on airway management in which they accrued 10 hours of experience over a period of at least 2 weeks.² EMT-Bs attempted endotracheal intubation in 103 patients; the attempt was successful in 53, and the remainder, except 6, were intubated by paramedics. The relatively low success rate and repeated attempts (1 attempt at intubation was made in 52 patients, 2 attempts in 44, and 3 attempts in 7) suggest an inadequate endotracheal intubation training model at that time—specifically, in the 1994 EMT-B curriculum.² Also in 1998, Bradley et al compared EMT-B and paramedic success rates for intubation.³ Thirty-four of 87 EMT-Bs who underwent 9 hours of airway manikin training and didactics, adapted from the national paramedic curriculum, attempted to intubate 57 eligible patients. Successful endotracheal tube placement was confirmed by the receiving physician in 49.1% of patients, whereas previous studies reported success rates for manikin-trained paramedics ranging from 76.9% to 90.6%.³ Lastly, Pratt and Hirshberg prospectively evaluated over a 4-year period intubations by rural EMT-Bs who were participating in a special waiver project to give them training and supervised practice in the procedure.⁴ The EMT-Bs were trained using a paramedic curriculum and performed live intubations on operating room patients undergoing cardiopulmonary or respiratory arrest, which sets this study apart from previous studies. Of 32 intubations performed over 4 years, 30 were successful and 2 were unsuccessful, and no esophageal intubations were noted. The study authors noted that these EMT-Bs were highly motivated, closely monitored, and achieved acceptable success rates in patients in cardiac and respiratory arrest.⁴

From the literature currently available, it is evident that, unless dedicated training is provided at a paramedic's educational level with close monitoring, EMT-Bs do not achieve intubation success rates comparable to those of paramedics.^{2,3,4} These findings support the National EMS Scope of Practice Model recommendations that require first responders who perform intubation to have paramedic-level training.¹

Risk-Benefit Analysis

Prior to doing any procedures, a clinician in a prehospital setting must perform a **risk-benefit analysis**. The risk of any medical procedure that is low frequency cannot be understated, as skill proficiency can diminish due to decreased utilization. In EMS, lower intubation success rates have been found in paramedics who attempt to perform fewer than 5 intubations a year.⁵ ACLS training can introduce airway management, but it is not an airway course. The clinician in this case has no experience and very little training in the procedure in the first place, making mastery of the skill upon completion of initial training unlikely. In fact, the ACLS instructor materials state that clinicians should not perform skills learned in the course that are outside of their training level.⁶ Such training provides theoretical knowledge but no real-world experience or precepted intubations. We can infer that the EMT in this case is not comfortable with the procedure by the EMT's feeling "more relieved and fortunate" about the successful intubation than competent to perform intubation generally. Therefore, it can be surmised that the training of the EMT was not adequate for performance of the procedure.

A risk-benefit analysis should also examine procedural complexity. Intubation can be incredibly complex. It is a skill that is honed by repetition. The complications of an ill-fated intubation are catastrophic. It is important for clinicians to be confident in their skill set and to have adjuncts as **backup** during these critical procedures or to have mutual aid personnel available. Supraglottic airways have been shown to be safer than endotracheal tube placement in the prehospital environment due to the low frequency of the latter.⁷ Clinicians thus should have a sufficient knowledge base to make the call about advanced airway management and to assess which interventions might be needed to best help the patient.

Obtaining a history quickly from bystanders in a situation of respiratory distress enables the clinician to best prepare for care of the patient, along with placing the patient on the monitor and evaluating their vital signs before a procedure. The child in this case is in immediate danger with life-threatening respiratory distress. However, we do not know the etiology of the child's respiratory distress or any additional history, vital signs, or other information regarding patient presentation. There is a time sensitive window to intubate a hypoxic child, but preparation is key in these situations. Waiting might cause the patient to experience respiratory arrest and sustain an anoxic brain injury. Yet rushing can lead to missed steps and equipment, unsuccessful intubation of the patient, or, even worse, esophageally intubating the patient. Many EMS agencies have moved to airway checklists as a part of their rapid sequence intubation protocols to ensure that nothing is missed in these high-stress situations, along with scenario-based training to augment muscle memory for such a high-risk, low-frequency procedure. Implementing an airway checklist may be a consideration for this EMS system in future critical situations.

In general, clinicians must weigh the need for procedures against their risk while considering the ethical principles of beneficence and nonmaleficence. As clinicians, the procedures we do should benefit the patient and avoid harming the patient. In this case, we would conclude that the risk of intubation was justified based on the information provided in the clinical vignette.

If this scenario could happen again, which is possible in a rural community that may have few or no paramedics, then additional training in advanced procedures, fundamental airway assessment, and different scenarios are needed at the EMT level.

We recommend that the EMS physician medical director emphasize continuing education for staff in this personnel category, frequent manikin practice, and practice in low-frequency, high-risk procedures. There might be opportunities for the EMTs in this system to get time in the operating room to do precepted intubations, get education from anesthesiologists, and further hone their skill set to help keep themselves sharp and their patients safe.

Avoiding Unjustifiable Risk

In this situation, a sentinel event should prompt a “just culture” review of the event. Just culture is a concept describing how organizations strive to create a balanced response to errors and mistakes, fostering a culture in which individuals feel safe to report errors and near-misses in the spirit of patient safety. A just culture approach to error management simply asks what process is to blame instead of who is to blame and aims to bridge the gap between blame-free culture and punitive culture. Management and staff have shared accountability for behavioral choices that lead to risk or error as they work toward realizing error-free and patient-centered care.⁸

Taking a just culture approach, we must first assume the positive intent of the EMT in this case. Based on their training and scope of practice in their state, did they act as another reasonable EMT would act? Have they kept up on their continuing medical education and come to competency training and checkoffs with their physician medical director?

As clinicians, we have a duty to avoid unjustifiable risk or harm. By using a simple series of questions, we can categorize behaviors into 1 of 3 categories: simple mistake, at-risk behavior, or reckless behavior.⁹ Focusing on the action of intubation of this child, was it the EMT’s purpose to cause harm to the patient? I would argue no, based on the limited information given to us. Did the EMT consciously decide to cause harm? Yes or no. If yes, then ask was the harm—risking failure or complications—justified as the lesser of 2 evils, the other being the death of the patient? Yes. The outcome of this line of questioning would be to support the clinician.

If the answer to the question of whether the EMT consciously decided to cause harm is no, then the further question is whether the behavior represented a substantial and unjustifiable risk. In this case the risk leans towards justifiable, as the intention was to successfully intubate the child and save their life. The outcome from this series of questions would be to consider no punitive action against the employee. The EMT cannot be blamed for the system failure in this case.

Based on our analysis, we would categorize the behavior in this case as at-risk.

Debrief

In addition to the post-event analysis, the EMS supervisor should consider debriefing the EMT. EMTs may experience significant emotional trauma and distress after a critical incident like this.^{10,11} However, there are considerations to be made here. There is literature on psychological debriefing and its effect on posttraumatic stress disorder (PTSD). In a systematic review, Rose et al found that critical incident stress, or psychological, debriefing, which is a one-time session of mandatory debriefing, after a traumatic event did not prevent secondary traumatization or reduce the risk of PTSD.¹² They proposed that a screen-and-treat model might be more appropriate, as single-session debriefing increased the risk of PTSD in studies in which follow-up was

conducted.¹² A debrief should occur—but after the EMT has had time to process the event and on the EMT's own terms, so that psychological trauma can be minimized.

In prehospital settings, there are many urgent treatment choices that must be made. We do not want to provide substandard care to our rural communities by lowering the bar for care, but we also do not want to make the standards so restrictive that no one meets them. By implementing a combination of the strategies listed above, EMS systems can significantly improve their ability to manage critical pediatric cases, even in **resource-limited environments**. One can always call one's medical director or a local hospital for guidance. This EMT may have demonstrated at-risk behavior, but, based on a just culture review of the event, they should be supported in their call. Although sentinel event review of this case is called for, system changes, such as additional educational opportunities, could be made to better support the EMTs and future patients in the community.

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Elizabeth Reiche, DO is an assistant professor of emergency medicine at University of Nebraska Medical Center (UNMC) in Omaha. She completed emergency medicine residency and an emergency medical services (EMS) fellowship at UNMC. Her professional interests include prehospital education, ultrasound, women's health, and suburban EMS.

Shaila Coffey, MD is an assistant professor of emergency medicine (EM) at University of Nebraska Medical Center (UNMC) in Omaha. She completed EM residency at UNMC and an emergency medicine services (EMS) fellowship at the University of Iowa. Her professional interests include rural EMS and prehospital ultrasound.

Emma Zeratsky, NRP, FP-C is currently the rescue captain and a paramedic volunteering with the Valley Fire Department in Valley, Nebraska. She holds a BSEMS from Creighton University and is a second-year medical student at Oceania University of Medicine. Her professional interests are ultrasound, EMS education, and difficult airway management.

Editor's Note

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