Maine EMS White Paper on
Advanced Airway Management

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Maine EMS has received a number of comments regarding the upcoming 2011 protocol changes. In particular, we have received a number of questions surrounding the changes in airway management at the EMT-Intermediate level. These changes represent an evolution in our thoughts and practice of airway management. As EMS professionals and providers of emergency care, we owe you the opportunity to understand why these changes are taking place.

We would like to start by noting that the MDPB spent approximately two years wrestling with what is right for our collective patients. We did not arrive at these decisions lightly, and for those who were not part of the larger discussions, the weight of evidence may be lost in a simple narrative such as this. The purpose of this letter is to inform you of the process undertaken by the MDPB.

This process began in February of 2009, when EMS services around the state began noticing decreasing numbers of intubations compared to historical perspectives. This was brought forward to the MDPB and our first concern was that as a highly technical set contingent upon pristine critical judgment, intubation requires some degree of ongoing, clinical practice to maintain the skill set. We initiated an Airway Management Subcommittee in March of 2009, and spent the first months of the sub-committee’s life exploring pre-hospital intubation. We did this in both our own state of Maine and also via collecting literature, data and experience from across the country. It soon became apparent to us as we looked forward to the upcoming changes in the National Scope of Practice, that the time was optimal to be discussing intubation as the Scope of Practice changes would impact our EMT-Intermediate level significantly.

In the summer of 2009, we were able to collect our thoughts in the form of a white paper. This document was organized under the following six themes:

1) **Redirect the focus from endotracheal intubation and toward the concept of Airway Management.**

Under such a strategy, the EMS benchmarks would shift from proper tube placement to proper oxygenation, ventilation and airway protection.

2) **Reevaluate current airway skill sets at all EMS levels.**

This re-evaluation process offers the state an opportunity to reassess these current practices and to potentially modify the current provider skill sets. Any decisions made must be balanced with expected upcoming national changes in the standardization of provider levels.
3) Offer insight into patients appropriate for initial airway management strategies other than intubation as well as patients appropriate for immediate intubation.

Airway management practices have evolved dramatically over the last decade and in that process the medical literature has defined that certain patient populations may have improved or equal outcomes if NOT intubated in the field. This list includes pediatrics, the patient with Congestive Heart Failure (CHF) or Out of Hospital Cardiac Arrest (OHCA), and perhaps, the severely head injured. Based on this literature, it is possible to suggest that pediatric patients should, at least initially, be managed with bag-valve masking, that the patient with CHF should be managed with a trial of CPAP, a patient suffering from severe TBI should not have airway protective reflexes stimulated and that the patient suffering from OHCA should have few if any interruptions in chest compressions. This program should seek out other patients who may be candidates for initial strategies that do NOT include intubation as well as patients who may benefit from immediate attempts at intubation.

4) Suggest goals and objectives that foster excellent primary education in airway management as well as create an continuing education program for regular refreshers in airway management.

National literature suggests that in order to remain proficiency in airway management, the pre-hospital provider must have a minimum number of patient encounters per year. The American Heart Association quotes 6 – 12 as the minimum number while EMS systems boasting a high success rate frequently will attest to > 15 patient encounters/year. Based on local literature, we know that Maine EMS providers are not approaching these numbers of patient encounters with only 37% to 42% of providers annually performing intubation and only 18 providers per year approaching 5 intubations. Only 1.4% to 2.7% of providers annually attempted pediatric intubation. Based on these numbers, it is essential that Maine EMS foster excellent training in the primary phases of a provider’s education and create a system that regularly updates the provider’s experience.

5) Focus more attention on the post-airway management and apply these skills to all positive pressure ventilation attempts

Current missed and unrecognized intubation rates range between 6% - 25%. In Maine, the most recently published missed, unrecognized intubation rate was 12%. Many providers in EMS question if these high rates of misplaced intubation may occur in the post intubation phase of patient care. While difficult to determine in which phase of care the displacement of an endotracheal tube occurs, national literature does reflect that therapies such as capnography and placement of a cervical collar may dramatically reduce the number of unrecognized misplaced endotracheal tubes. Based on the strength of such literature, these therapies should be mandated in the post-intubation phases of care and likely have equal utility in all cases in which any airway device has been placed to ensure effective placement and ongoing ventilation.
6) Create an excellent Quality Assurance program that captures all airway management events and feeds back directly to the provider.

At present, Maine EMS struggles with quality improvement efforts surrounding airway management. These struggles arise at least in part due to an inability to collect vital information regarding procedural success that is collected at the level of the hospital. An effective airway QI/QA program would use the state’s MEMS Run Reporting software to alert local hospital and EMS QI contacts when prehospital airway management has occurred allowing these providers to review the case and feed information back to the state. While the mechanism of QI is yet to be determined, it is apparent that both the service and the receiving hospital are two major stakeholders that must be involved in this process. Also, with a renewed investment in all manners of airway management, a QA/QI program must review all airway related therapies, to include CPAP, periglottic and transglottic devices as well as intubation. Finally, results of QA/QI efforts must be fed back to the field provider such that he/she may reinforce excellent practice or adjust less than excellent practice.

We took these six themes and began looking both at our practice in the state of Maine as well as practices across the country and the upcoming changes at the National Scope of Practice. The vast majority of pre-hospital intubations in the state of Maine are in patients suffering from out of hospital cardiac arrest (approximately 83%). We know in this population, any interruptions in chest compressions are deleterious. Certainly, airway management is essential in these patients, BUT many different strategies exist to meet the patient's needs and intubation is but one of these mechanisms. Ultimately, the best way to manage the individual patient is to determine what each patient requires and offer care tailored to their needs. In the patient suffering from OHCA, therapies such as LMA or King LT's may be preferable as they are much easier to place and afford fewer interruptions in chest compressions. Other indications for airway management within the state include traumatic brain injury, respiratory distress (including CHF and COPD) and intoxication. In each of these circumstances, there are equally effective or more effective strategies other than intubation. At present, EMT-Intermediates perform less than 5% of the intubation attempts with in our state. In the vast majority of those cases, intubation is only one of a number of different therapies that would help manage the patient’s airway and in some cases, intubation is either less effective OR less globally beneficial to the patient’s overall care.

The above realization forces the question, “Is intubation necessary at all in the pre-hospital armamentarium?” The members of the Airway Sub-Committee felt very strongly that this was an essential skill set that needs to be available to the citizens of Maine requiring emergency care. However, does this skill set need to be as widely available as the current structure allows? The MDPB uniformly and very strongly believes that pre-hospital intubation continues to have a roll in the care of Maine citizens. However, after critically balancing the difficulties of skills maintenance due to decreasing numbers of in-field intubations, and the challenges of continuing education along with an evolution in the National Scope of Practice and the reality that the vast majority of our patients can be effectively and efficiently managed with procedures other than intubation, we recognized that a change had to occur.
EMT-Intermediates are a critical part of emergency medicine in Maine. These changes in the EMT-I scope of practice will not dilute your ability to provide potentially life-saving emergency medical treatment. Nor is it a comment on your individual technical abilities. Instead, this represents an evolution in our collective understanding about airway management and about our patients’ needs. In fact, we believe strongly that once we re-educate all pre-hospital providers on the details of our state-of-the-art, goal-directed Airway Management Protocol all providers will have a more sophisticated airway skill set. With this more modern and evidence-based approach to airway management we will be providing safer and more advanced medicine to our patients.

3) Bledsoe, B, “The Disappearing Endotracheal Tube” JEMS 3-2009
5) Jemmet ME, “Unrecognized misplacement of endotracheal tubes in a mixed urban to rural emergency medical services setting.” Jemmet ME Acad Emerg Med 01-SEP-2003
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