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White Paper and FAQ on EMS Airway Management in Maine

Patients with respiratory compromise and respiratory failure require EMS providers to intervene to maintain oxygenation and ventilation. While endotracheal intubation has clear benefits, it also has clear down sides. In particular, in the patient in cardiac arrest, there is no clear benefit to endotracheal intubation and there may be worse outcomes. Additionally, other techniques are often equally effective in meeting the goals of good oxygenation and adequate ventilation. Therefore, it is important for EMS providers to use judgement to select the most appropriate interventions and document their decision-making process.. This paper will answer commonly asked questions; in doing so, we hope to give you the tools to make good decisions and to document how you made those decisions.

FAQs

1. Which patients not in cardiac arrest can be safely intubated by MEMS providers (without Medication Facilitated Airway Management)?

A: A patient must have complete loss of protective airway reflexes and be unresponsive. Any patient with intact airway reflexes is at significant risk of harm. Patients can be harmed by fighting the laryngoscope, coughing/aspirating, bucking, increased intracranial pressure, and significant catecholamine (epinephrine) release.

2. Which patients not in cardiac arrest can safely have a blind insertion airway device placed by MEMS providers (without Medication Facilitated Airway Management)?

A: A patient must have complete loss of protective airway reflexes and be unresponsive. Any patient with intact airway reflexes is at significant risk of harm. Patients can be harmed by fighting the blind insertion airway device, coughing/aspirating, bucking, increased intracranial pressure, and significant catecholamine (epinephrine) release.

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3. For which patients is endotracheal intubation clearly preferred?

A: Intubation provides two key advantages over other airway management techniques. First, because the endotracheal tube passes through the vocal cords, any process that threatens airway patency at the level of the cords will benefit from endotracheal intubation over other techniques. Examples would include acute angioedema and edema from an inhalation injury. Unfortunately, most of these patients have intact airway reflexes and so cannot be safely intubated by MEMS providers. The second group is patients requiring high peak airway pressures. An example would include a drowning patient with an aspiration event resulting in pulmonary edema. These patients may be unresponsive without airway reflexes.

4. How do I know the airway is protected if I don't intubate?

A: If you are using a BVM plus oral/nasal pharyngeal airway only to ventilate your patient you can be reassured that the airway is adequately protected if:

- There are no visible secretions/foreign matter in the airway (e.g. blood, vomit, fluids)
- You can easily ventilate the patient with a good seal AND you verify chest rise with each breath given.

If you verify the above, then you can be reassured that the airway is protected without requiring more advanced airway placement (intubation, King, LMA, etc.)

5. When should I intubate in cardiac arrest?

A: This is the million-dollar question. It is difficult to answer and there is an active debate ongoing amongst EMS physicians. Although there have been many studies looking at this question, most have been retrospective. That means the results of the study is not reliable enough to direct our care and protocols. Furthermore, some of these studies contradict each other. We at Maine EMS and MDPB have debated this ourselves. The conclusion of the group is as follows:

- There is no current consensus in the literature that tells us when (or if) we should intubate in cardiac arrest
- It seems that basic life support airway management (BVM plus oral/nasal airways) is just as effective as more advanced airway management (intubation, LMA, King)
- No matter what you choose, there is clear consensus that airway management in cardiac arrest cannot interrupt chest compressions
- It is prudent to approach airway management in a stepwise manner:
 - Use a goal directed approach to airway/respiratory management in general. The goal is to meet these three needs:
 - Oxygenate
 - Ventilate
 - Protect the airway
 - Start with simple, basic airway management (BVM plus oral/nasal airways)

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- Move to more advanced airway management (LMA, King) only when needed (i.e. when basic measures fail)
- Intubate only if the previous less invasive and less complicated procedures fail
- There are some caveats and clinical scenarios when you may choose to “skip ahead.” The classic example is severe facial trauma may require you to skip all the way past intubation to cricothyrotomy. It is OK to use your clinical judgment. Please document your reasoning so that we can review your decision-making process.

6. Are there certain types of cardiac arrest where intubation is preferred?

A: There is no easy answer here and no consensus amongst EMS physicians. The types of cardiac arrest that occur due to a respiratory etiology (drowning, hypoxia) do not require the placement of an endotracheal tube, they require the oxygenation and ventilation that the tube delivers. If you can immediately and reliably provide that oxygenation and ventilation with basic airway management (BVM plus oral/nasal airways) why delay with a more advanced procedure? A goal directed approach outlined above is the best answer. We will continue to review the literature and update the protocols if better evidence demands a change to this approach.

7. Is it OK to intubate immediately in cardiac arrest? Why not take a “quick look”?

A: See above. The patient needs oxygenation and ventilation.

8. What are some of the predictors of a difficult airway

A: Traumatized or distorted facial anatomy, facial hair, small lower jaw can make it difficult to even obtain a good seal with a BVM. Morbid obesity, short neck or shallow jaw dimensions. Neck stiffness, history of cervical spine fusion, history of Rheumatoid Arthritis and spine trauma requiring c-collar/stabilization will make it difficult or impossible to put the patient in a “sniffing position”. Loose teeth are in danger of becoming dislodged and aspirated. Lack of dentition can make and inferior jaw slack. Bleeding from the mouth, nose or esophagus can obstruct the airway making ventilation and oxygenation difficult.

9. What are some of the techniques to make airway maintenance easier?

A: Put the patient in a position of comfort, this will help with anxiety and decreased work of breathing. Proper suctioning techniques noting that studies have shown than patient-directed suctioning is appropriate in certain situations if a patient is able to follow commands. Keep the head of the bed up 30-40 degrees as this has been shown to decrease intra-thoracic pressures as well as aspiration.. MEMS endorses the use of two nasal and one oral airway if patient tolerates allowing for better ventilation and oxygenation.

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10. What if I have a “failed” airway?

A: Remember that the primary focus of airway management is to provide, first and foremost, oxygenation and ventilation. Therefore, in the moment, select an appropriate technique that allows to successfully meet the primary goal. Upon arrival at the receiving hospital, observe how the ED staff manages the airway. Finally, after the event, review your actions to determine if there was anything you might have done differently to have led you to succeed in your intubation attempt. Reach out to the region if you would like an objective third party review and critique.

11. What is the process that the state/region has for QI in airway?

A: The MEMS Run Reporting system produces weekly reports for the regional medical directors on every incident of airway management. These are reviewed and feedback provided when appropriate. Additionally, aggregate statewide data is collected to monitor the entire system.

12. Does MEMS or my Region have resources for my service in regards to further airway education?

A: Yes and Yes. MEMS can provide you with comparative data to help you figure out what your educational needs are. Every regional office offers classes and has instructors, courses, and equipment resources to support providing education for you.

13. When are we going to get video laryngoscopes?

A: There are no studies that clearly demonstrate that EMS intubation success rates go up with the use of video laryngoscopy. Therefore, Maine EMS has approved a pilot project to investigate the use of video laryngoscopy here. Once we have good data from that pilot project, we will determine if video laryngoscopy should be approved statewide.

14. How should I document an airway. What are the components to good airway documentation?

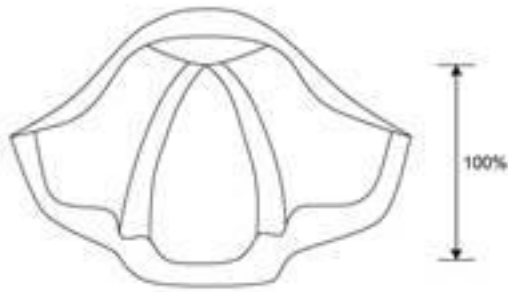
1. Positioning of patient
 - a. Ear to sternal notch (to optimize visualization of cords)
 - b. Document other alternative positioning
2. POGO score
 - Percent **O**f **G**lottic **O**pening

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3. Bougie first pass use
 - a. "Tracheal tap" (vibration of bougie tip felt running over tracheal rings)
 - b. "Hold Up Sign" (resistance of carina when bougie is gently buried)
4. Number of attempts
 - a. Attempt = blade inserted through mouth opening
5. ET tube size
6. Depth of tube at teeth/gums
7. Any difficulties/challenges
 - a. Suction of secretions
 - i. Emesis, blood, etc.
 - b. Equipment failures
 - c. Miscellaneous details
8. Neck stabilization after intubation (to protect tracheal placement)
 - a. C-collar or blankets
9. Endotracheal tube placement confirmation
 - a. ETCO₂ first, lung sounds equal
10. Ventilation rate after intubation

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