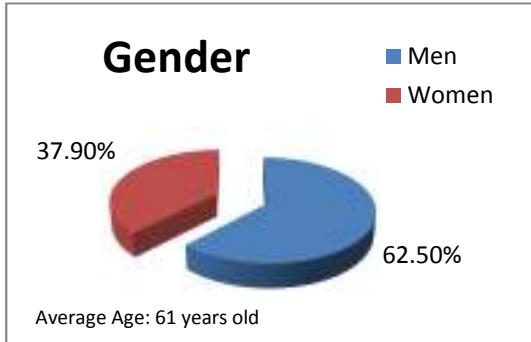


Prehospital Advanced Airway Use in Virginia Beach (2016)

In 2016, the City of Virginia Beach Department of EMS (VBEMS) initiated an advanced life support (ALS) airway attempt on 309 patients. Of these, 14 cases (5%) were ultimately unsuccessful in obtaining the ALS airway and reverted back to a successful basic life support (BLS) airway.



Basic life support airways include the use of an oral or nasal adjunct, application of oxygen via nasal cannula or non-rebreather or a bag-valve-mask (BVM). There are many reasons an ALS airway may be required. Advanced Life Support airways such as an endotracheal tube (ETT), nasotracheal tube (NT), surgical/needle cricothyrotomy, or a King airway is placed to provide a more secure airway to prevent aspiration of blood or vomitus and provide ventilation and oxygen to the patient. VBEMS allows both Intermediate

and Paramedic level providers to “intubate” adult patients orally with standard intubation equipment or video laryngoscopy. Paramedic providers can perform cricothyrotomy, pediatric oral intubation, nasal intubations and use a bougie device. Advanced level providers and above can insert a King airway which is a supraglottic device. This means that it does not enter the trachea and sits just outside the opening. For the purposes of this document, Continuous Positive Airway Pressure (CPAP) devices are not included.

Intubation attempt: An endotracheal tube is inserted past the teeth/gums with the intent to place it in the trachea.

Allowed intubation attempts: Providers should move to the King airway or other back up plan if one provider attempts twice or more than one provider tries up to three times.

Difficult Airway: A patient that requires suction for vomit, blood or other fluid with significant amounts, requires Magill Forceps, or other documented difficult airway characteristics such as swelling, anatomy, etc. prior to or during the intubation attempt.

Pediatric: For airway purposes, age is less than 12 years old.

Providers are encouraged to use the most appropriate tool at the right time for their patient. This will depend on patient status and the individual patient circumstances. They are also required to have a secondary plan ready to go if their first choice is not successful.

Every patient with an ETT in place should be attached to waveform capnography and this should be continuously monitored on the Lifepak. Fluctuations quickly indicate changes in patient status or tube migration. In 2016, this was documented 89% of the time for patients with an ETT. These patients should also have a cervical collar and commercial tube holder applied to reduce the chances for tube

migration. The ALS Airway Confirmation section should also have an entry made for every tube confirmation check as well as insertion. Please only select the confirmation methods that you actually used at those times. Intubation confirmation was documented 94.6% of the time in 2016. Those numbers decreased with the new system so please ensure that you are completing the proper section. The goal for documentation on both is 90% though it should be much closer to 100% in reality.

Final Successful Airway		
Normal Airway	Difficult Airway	
95%	ETT	78%
3%	King	13%
2%	BLS	9%

Intubation Success Rates

There has been a lot of discussion nationally in regards to success rates for pre-hospital oral intubations and if medics should be able to continue to perform them. There are a lot of variables including comparing EMS intubations to intubations in the operating or emergency room so the various studies aren't able to say anything with certainty at this time.

Most studies show a prehospital intubation success rate of around 77-86%. The dynamics of whether they used first attempt or ultimate success depend on the specific study. One particular study in 2010 used NEMSIS data from 2008 and found an intubation success rate of 77%. They repeated the study with 2012 data and the success rate rose to 85%. Emergency Department intubation success rates for the first attempt are closer to 95-99%.

VBEMS 2016 Numbers:

- **Intubation success rate-1st attempt: 69%**
 - **“Normal” Airway: 75%**
 - **Difficult Airway: 58%**

- **Intubation success rate-2 attempts: 85%**
 - **“Normal” Airway: 90%**
 - **Difficult Airway: 73%**

- **Intubation success rate-overall (all attempts): 91%**

This means that our intubation success rate is at or below those studied and is an area that we can work on improving. If you are not as confident as you should be, attend additional airway training. You can make an appointment to use the manikins at training as well. Please ensure that you are comfortable with standard equipment and both types of video laryngoscopy (Glidescope and McGrath) as they require very different techniques. There is no requirement to attempt one method or device over another so if you feel the Glidescope is going to work best for your patient, please feel free to use it first.

King Airways

Just like patients who are intubated, patients with a King airway should have a cervical collar, tube holder and waveform capnography in place. In 2016, only 63% of the patients with a King airway had documented waveform capnography. Please make sure that the ALS Airway Confirmation section is completed for every check and reverification as well.

King airways were inserted as the initial ALS airway in nine patients. An additional ten patients ultimately received a King airway for a total of nineteen patients for 2016. Thirteen of the patients had an identified “difficult” airway.

Pediatric Intubations

There were eight pediatric patients with at least an ALS airway attempt. Three were identified as difficult. Five were successfully intubated with one attempt. Only one case was not successful at intubation and they ultimately required a BLS airway.

Documentation

Please ensure that the following are documented:

- Proper number of intubations attempts
- All procedures performed including the correct time and provider
- ALS Airway confirmation for each confirmation
- Waveform capnography
- And don't forget to upload the EKG monitor

Sources

- Diggs LA, Yusuf JE, De Leo G. An update on out-of-hospital airway management practices in the United States. *Resuscitation*. 2014 Jul;85(7):885-92.
- Wang HE, Mann NC, Mears G, Jacobson K, Yealy DM. Out-of-hospital airway management in the United States. *Resuscitation*. 2011 Apr;82(4):378-85.
- Hubble MW, Brown L, Wilfong DA, et al: A meta-analysis of prehospital airway control techniques part I: Orotracheal and nasotracheal intubation success rates. *Prehosp Emerg Care* 2010; 14:377-401
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Contact for further information:

Captain Christi Budy

CQI Coordinator

Virginia Beach EMS

CBudy@vbgov.com

(757)385-5063