

APPENDIX: 03

TITLE: INTUBATION PROCEDURES

REVISED: November 1, 2023

I. BACKGROUND

This appendix provides guidelines for use of the McGrath MAC Video Laryngoscope. When another device is used, those manufacturers guidelines should be used instead as appropriate.

II. INDICATIONS AND CONTRAINDICATIONS**INDICATIONS AND CONTRAINDICATIONS:**

- See *Appendix 2: Advanced Airway Supplement* and *Appendix 3: Intubation* for indications and contraindications to advanced airway management and intubation.
- There are no absolute indications for video laryngoscopy over direct laryngoscopy.
- Current guidance and expert opinion *strongly recommend* video or a combined video/direct laryngoscopy approach for the first intubation attempt.

II. COMPLICATIONS:

In addition to the complications associated with DL, providers must be prepared to deal with and prevent complications associated specifically with VL. These include:

- **Injuries to the airway:** Injuries have been documented by providers hyper focusing on the camera and being careless with passing the tube through the oral/hypopharynx.
 - The most common injuries occur to the Tonsillar Pillars and soft pallet but can occur to any structure.
 - This can be reduced by using a bougie first (if appropriate) and by being mindful.
 - A “progressive laryngoscopy” approach with a “mouth to screen” awareness will also reduce injuries.
- **Obstructed Camera:** The camera can be obstructed by fluids, vomit, secretions, etc.
 - Providers should “lead” with active suctioning whenever possible.
 - Providers should be ready to seamlessly switch to a direct laryngoscopy approach as needed.

The provider should be ready to transition to direct laryngoscopy seamlessly in the event of complications related to the video laryngoscope.

III. PROCEDURE

The provider should follow all the steps outlined in *Appendix 2: Advanced Airway Supplement* and *Appendix 3: Intubation Procedures* to include Preparation, Pre-oxygenation, Medication, and the Progressive laryngoscopy for oral intubation.

In addition, the provider should:

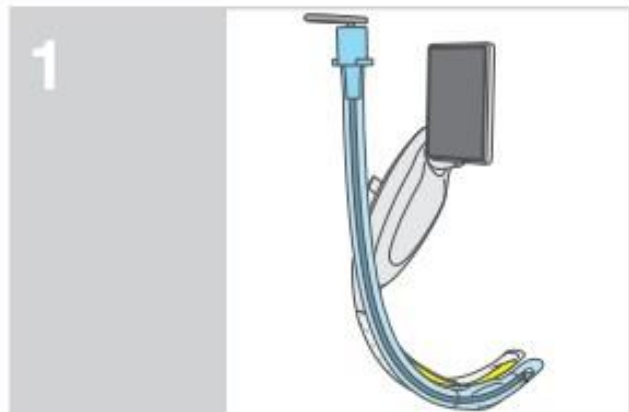
- Strongly consider using a Bougie or a stylet with the standard geometry blades.
- The provider should use a stylet *instead of a Bougie* with the hyperangulated “X Blade”
- “Lead” the VL with a suction device to decontaminate the airway as it is inserted, similar to the “SALAD” technique (Suction Assisted Laryngoscopy & Airway Decontamination). This is considered a best practice even if no fluids or contaminants are visualized in the airway.

ORAL INTUBATION WITH THE McGRATH™ MAC VIDEO LARYNGOSCOPE AND THE McGRATH® X BLADE™.

The McGrath X Blade is a hyperangulated blade approximately the size of a MAC 3 blade. It contains a more “acute curvature” (hyperangulation) and slimmer blade than other McGRATH™ MAC VL blades. It is easily distinguished by its yellow label affixed to the blade.

Key considerations:

- Clinical experience has shown that intubation using the McGRATH® X blade™ without any stylet or with a bougie, will not facilitate optimal tube placement.
- It is important not to advance the blade too deep in order to maintain maximum space to facilitate the E.T. tube placement.
- As with normal geometry blades, providers should “lead” the blade with a suction catheter and use a bougie when possible as a best practice.

	<p>Important Point</p> <p>A key difference between the MAC blades and the X Blade is that the ETT tube with a rigid/malleable stylet must be formed to the blade shape <i>before</i> intubation.</p>
<p>Clinical experience has shown that use of the X blade without a rigid/malleable stylet, or with a bougie; will make ETT placement more difficult.</p>	

McGRATH[®] X blade[™]

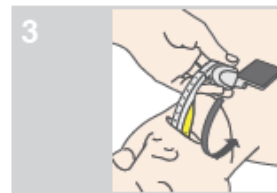
USING THE LARYNGOSCOPE - McGRATH[®] X blade[™]



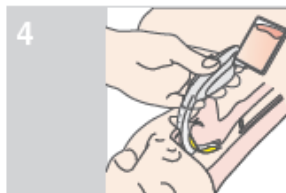
Load the E.T. tube onto a stylet(1) and form to the curvature of the X blade[™].



Where possible, elevate the patient's head into the "sniffing" position for optimal access.



Using a mid-line approach roll the blade into the mouth. Ensuring the anterior side of the blade maintains contact with the tongue, advance the blade until the epiglottis is seen on the top of the screen.



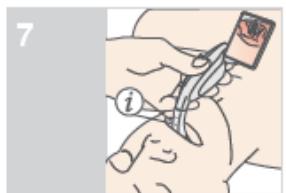
Place the tip of the X blade[™] into the vallecula.



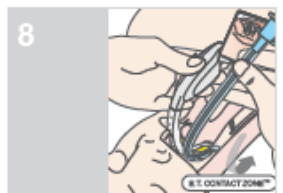
Using minimal force, rock the device back towards the user to lift the epiglottis and obtain an indirect view of the glottis.



When the device is in the optimal position the glottis will be viewed in the central upper section of the screen(2).



The DepthGuide[™] numeric markings on the posterior side of the blade may be used as an indication of the depth of blade insertion(3).



Insert the E.T. tube at the right side corner of the mouth. Advance in a rolling movement following the curvature of the blade, ensuring it maintains contact with the section of the blade labelled E.T. CONTACT ZONE[™].



When using optimal technique, the E.T. tube should enter the screen on the right hand side; advance the tube until the tip is in front of the vocal cords.



Holding the stylet secure, slide the tube off the stylet and through the cords, ensuring the stylet does not pass through the cords. Once the tube has passed through the cords remove the stylet completely.



The screen view can be used to confirm the correct insertion depth of the endotracheal tube.

ORAL INTUBATION WITH THE McGRATH™ MAC VIDEO LARYNGOSCOPE AND STANDARD GEOMETRY BLADES.

The McGRATH™ MAC VL uses “standard geometry” curved blades closely approximating Macintosh laryngoscope blades used in DL. These blades come in sizes 1-4 closely approximating their DL counterparts. Blade selection is based on providers clinical judgement.

Clinical reports indicate that providers should “lead” the blade with a suction catheter and use a bougie when possible as a best practice.

McGRATH™ MAC Blade

Using the McGRATH™ MAC Standard Geometry Blade



1 If possible, position the patient in the optimal position for direct laryngoscopy.



2 Look into the mouth; insert the blade into the right side of the mouth.



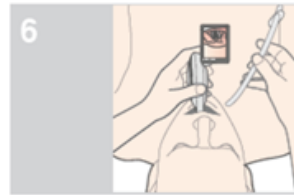
3 Move the device to a central position while sweeping the tongue to the left.



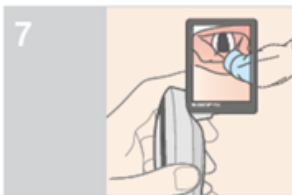
4 Advance the tip of the McGRATH® MAC blade into the vallecula.



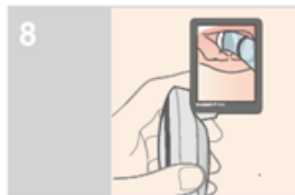
5 Visualise the epiglottis on the screen. Lift the anatomy forwards and upwards to expose a direct and indirect view of the glottis. When the device is in the optimal position the glottis should be viewed in the central upper section of the screen.



6 Advance the tube gently and atraumatically through the vocal cords. Tube placement can be performed either by looking directly in the mouth, indirectly on the screen or a combination of both(1).



7 Indirectly visualise the tube placement through the vocal cords. In optimal tube placement technique, the E.T. tube will enter from the right hand side of the display.



8 The screen view can be used to confirm the correct insertion depth of the endotracheal tube.

IV. CONFIRMATION AND DOCUMENTATION

- Follow confirmation and documentation procedures outlined in *Appendix 3: Intubation procedures*.

V. POST INTUBATION:

- Post intubation considerations and procedures are the same as outlined in *appendix 2: advanced airway supplement* and *appendix 3: intubation procedures*.

VI. SPECIAL SITUATIONS:

- **Contaminated Airways:** In case of vomituous or other contaminates in the airway, the provider should use the SALAD (Suction Assisted Laryngoscopy Airway Decontamination) method to place the advanced airway.
- **Difficult Airways:** The use of VL does not supersede basic principles of airway management. Providers are still limited by number of attempts, duration of attempts, and the overall goals of airway management. Over-reliance on VL can lead to adverse outcomes. The provider should follow the difficult airway algorithm outlined in *Appendix 2: Advanced Airway Supplement* as needed.
- **Battery Considerations:** In the event of Battery Failure, the McGrath should continue with light functions to facilitate direct laryngoscopy for a short time.

VII. Physician PEARLS

Regardless of the use of VL, or the perceived “passing of the tube” visualized on the camera, *sustained* ETCO₂ remains the gold standard for confirmation.

“No trace, No tube”.

- Be mindful of the differing perspectives between the VL camera and the view obtained by DL and correct as needed to ensure successful placement of the ETT. This is known as the “*laryngoscope paradox*”, where sometimes the “best view” results in esophageal placement of the ETT.
- VL does not preclude accidental and unrecognized esophageal intubation. In some cases, mis-identifying landmarks, and limited camera view lead to esophageal intubation. In other cases, an over-reliance on VL and anchoring bias convinced providers into discounting clear signs of esophageal intubation. Providers should always be cognizant that no procedure nor technology is foolproof.