



## Purpose

This procedure provides guidance on the appropriate application of Advance Airway during retrieval missions

## Procedure

Advanced Airway

## For Review

Aug 2015

### 1. Introduction

Greater Sydney Area HEMS is frequently tasked to retrieve patients from hospitals or small medical facilities who have unsecured airways or other indications for tracheal intubation. **The overwhelming majority of patients can be intubated successfully using direct laryngoscopy following rapid sequence intubation.** A small but significant subset of patients have unexpected difficult direct laryngoscopy or morphological/pathological conditions which contra-indicate rapid sequence intubation with direct laryngoscopy. Such patients may be best managed by alternative airway techniques.<sup>1,2</sup> The service carries a range of advanced airway equipment to assist with the management of these patients.

### 2. Aim:

To describe the features predictive of “difficult” airways and the indications for use of the King “Vision” video laryngoscopy and Ambu “aScope” flexible optical scope for “awake” intubation and for rescue intubation following unsuccessful direct laryngoscopy or following laryngeal mask airway insertion.

### 3. Scope:

All doctors.

### 4. Equipment

GSA-HEMS carries a range of equipment in the interhospital bag to manage patients with “difficult” direct laryngoscopy in addition to standard intubation equipment.

- King “Vision” laryngoscope screen (non-disposable) and blades (disposable)
- Ambu “aScope” Flexible Optical Scope – Screen with charger (non-disposable) and scopes (disposable)
- Equipment for airway topicalisation – Lignocaine, Atropine, Cophenylcaine spray, long mucosal atomiser etc
- Reinforced tubes for nasal intubation



## 5. Patient Selection

### “Difficult” Airway

The term “Difficult Airway” refers to one or more of the following:<sup>3,4</sup>

#### 5.1 Difficult Bag Valve Mask (BVM)

- Mask seal problematic - beard, facial deformity, edentulous, elderly
- Obesity – BMI > 26
- Pregnancy - 3rd trimester
- Obstruction - neck swelling, angioedema, hematomas, upper airway tumours
- Stiff lungs - severe asthma, COPD, pulmonary contusions

#### 5.2 Difficult Laryngoscopy / Intubation

- Morphological - short neck, reduced thyromental distance, large tongue, large teeth, restricted mouth opening
- Obstruction – angio-oedema, airway burns, stridor, upper airway mass
- Neck immobility

#### 5.3 Difficult SupraGlottic Airway (SGA) insertion

- Restricted mouth opening
- Disrupted, distorted or obstructed upper airway
- Stiff lungs - severe asthma, COPD, pulmonary contusions

#### 5.4 Difficult Cricothyrotomy

- Previous neck surgery
- Neck deformity – Hematoma, swelling, tumour
- Obesity
- Radiation distortion

## 6. Decision Making

Advanced airway equipment can be employed in the following settings:

- Backup technique with direct laryngoscopy with RSI as primary plan
- Awake intubation (video laryngoscopy or flexible optical scope)
- Rescue Intubation through laryngeal mask airway

**SGA insertion and surgical airway remain essential alternatives in the setting of “Can’t Intubate”, “Can’t Ventilate” situations**

**The Senior Retrieval Consultant should be phone conferenced whenever awake technique is planned to assist with decision-making.**



## 6.1 Backup for Direct Laryngoscopy

Any patient with features suggestive of difficult direct laryngoscopy should have the King "Vision" video laryngoscope present and a plan for use elucidated.

## 6.2 Awake intubation

6.2.1 Intubation of the trachea can be achieved without general anaesthesia or neuromuscular paralysis by the use of airway topical anaesthesia and light sedation/analgesia employing either video laryngoscopy or flexible optical scopes<sup>5,6</sup>.

6.2.2 The main advantage of this technique is that it significantly reduces the risk of complete airway obstruction as may occur following RSI when intubation is not possible.

6.2.3 The major disadvantage is the time taken to perform the procedure (often underestimated) and it should not be used for patients who need immediate airway management.

6.2.4 It is recommended that patients with contra-indications to RSI should have an attempt at gaining adequate laryngeal view using the King "Vision" following airway topicalisation and light sedation unless limited mouth opening or other features preclude its use.

6.2.5 If a good view is obtained then full anaesthesia and neuromuscular paralysis can be administered with a very high degree of confidence in the success of tracheal intubation with the same device.

6.2.6 If a good view is not obtainable then awake intubation using flexible optical scope should be performed.

## 6.3 Rescue Intubation through SupraGlottic Airway (SGA)

6.3.1 The iGel SGA is the ideal conduit for the aScope. If in situ then the Ambu "aScope" can be used to guide a tracheal tube into the trachea through the iGel.

6.3.2 The iGel can be left in place as a bite block for the tracheal tube, or the aScope cable can be cut off at the scope end to act as a tracheal tube introducer, enabling the iGel to be removed and the tracheal tube to be railroaded into the trachea.

6.3.3 On occasions an alternative SGA is already in situ on arrival of the retrieval team. There are a wide range of SGA types and many have aperture bars (LMA Unique etc) or "wings" (LMA Supreme etc) which impede the railroading of a tracheal tube through the SGA. It is important at this point that the type of SGA is identified and another one opened and examined closely

6.3.4 If SGA other than an iGel is in place, options include:

- Direct laryngoscopy under sedation and neuromuscular paralysis if it is considered likely to be successful
- Video laryngoscopy with sedation and neuromuscular paralysis
- Flexible optical laryngoscopy to pass the aScope down the SGA, intubate the trachea directly and railroad a tracheal tube if possible.
- Flexible optical laryngoscopy to pass the aScope down the SGA and intubate the trachea directly, the aScope cable is cut and then used as a tracheal tube introducer upon removal of the SGA
- Flexible optical laryngoscopy to pass a tracheal tube introducer (TTI) down the SGA, running alongside the aScope and visualise the TTI intubating the trachea



## 7. References

1. The Australian and New Zealand College of Anaesthetists - **TG4- EQUIPMENT TO MANAGE A DIFFICULT AIRWAY DURING ANAESTHESIA** – 2010
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3. Kheterpal S, Han R, Tremper KK, Shanks A, Tait AR, O'Reilly M, Ludwig TA. **Incidence and predictors of difficult and impossible mask ventilation**. Anesthesiology 2006, 105:885-891.
4. Lavery, G et al **The difficult airway in adult critical care**. Critical Care Medicine. 2008 36(7): 2163-2173
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6. Vijayakumar, M., Clarke, A., Wilkes, A. R., Goodwin, N. and Hodzovic, I. (2011), **Comparison of the manoeuvrability and ease of use of the Ambu aScope and Olympus re-usable fibroscope in a manikin**. Anaesthesia, 66: 689–693.



## Advanced Airway Algorithm

