A TRAFFIC LIGHT ALGORITHM BASED APPROACH TO MANAGING DIFFICULT AIRWAYS

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Introduction: Primary responsibility for intubating outside of the operating room is done by non-anesthesia providers such as physicians, intensivists and respiratory therapists. Management of an unpredictable and difficult airway can have devastating consequences. The reduction of these consequences can be mitigated by preparation and management of potential risk, including when to call for assistance. Utilizing a colour coded algorithm with a matching difficult airway cart (DAC) will encourage providers to recall, anticipate and follow a structured approach to difficult airway management.

Objectives: The goal was to standardize the DAC in critical care and the emergency departments at both hospital sites within our organization and develop an efficient algorithm that could be easily navigated by physicians and respiratory therapists when facilitating or assisting with a difficult adult/pediatric airway in a stressful, emergency situation.

Methods: An extensive literature search identified numerous difficult airway algorithms and a broad range of airway adjuncts. Advanced airway equipment for both the adult and pediatric populations was evaluated. Each step of the difficult airway algorithm was linked to the difficult airway cart, drawer by drawer in a colour coded sequence. A specific colour both identified the algorithm step and the associated cart drawer and its contents. To identify a difficult airway in increasing order of acuity, the colours green, yellow and red were used. Yellow signified caution and a call for assistance. Prior to implementation, education was provided targeting physicians in critical care and the ED departments as well as respiratory therapy, highlighting the new process and airway adjuncts now available.

Results: We now have standardized DAC’s across both sites in critical care and the ED departments. The final algorithm is simple, easy to remember and is coloured coded with matching DAC drawers. This approach emphasizes algorithm based thinking and is designed to follow a sequence of steps in managing a difficult airway. The many presentations to physicians and respiratory therapy have led to an increased level of awareness and a new respect for the difficult airway among the various providers. Both physician and respiratory therapy staff have been receptive to this new approach.

Conclusion: To ensure availability of equipment the DAC’s are restocked and resealed by respiratory therapy utilizing a weekly check-off list. To ensure success and sustainability of our practice, the DAC & associated algorithm is being integrated into simulation scenarios with both physicians and respiratory therapists taking part. All respiratory therapy & physician assisted intubations are recorded and tracked monthly using an RT Meditech Intervention, including difficult intubations. These occurrences are then reviewed by a quality care committee. With introduction of the new system we have shifted from an equipment based focus to one where the algorithm dictates the level of response. All staff now approach a difficult airway with an increased level of confidence towards advanced airway adjuncts. The operationalization of this
algorithm has led to a culture of safety in airway management in keeping with our organizations focus on continuous quality improvement.

DIFFICULT AIRWAY ALGORITHM

Position: “ear to sternal notch”
Bag/Mask ventilate to keep SpO2 ≥ 88%.
Pre-oxygenate using appropriate mask and airway/s.
Initial intubation using direct laryngoscopy.
Maximum 2 attempts

Suspected difficult intubation based on one or more of the following criteria: Mallampati test, jaw slide,
Thyromental distance, Obesity, Short neck, reduced mouth opening, buck teeth, neck masses.

Consider Awake Intubation

Unsuccessful

Bag/Mask ventilate patient to SpO2 ≥ 88%.
Maximum 2 additional attempts with direct laryngoscopy alternatives:
Miller, Macintosh #4, Glidescope,
Endotracheal Tube introducer

Unsuccessful

Call for Assistance:
Bag/mask ventilate with 100% O2 to keep SpO2 ≥ 88%

Unable to adequately bag/mask ventilate:
Attempt insertion of ILMA/FAstrach or LMA
Cook Airway Exchange Catheter

Unsuccessful

Unable to maintain SpO2 ≥ 88%
Rescue Techniques for:
“can’t intubate can’t ventilate” situation
Attempt Surgical Airway:
Melker Cricothyrotomy Kit (≥ 8 yrs of age)
Enk Oxygen Flow Modulator Set
Emergency Tracheostomy Tray
Weinmann Tracheostomy Exchange Set

Unsuccessful

ABLE to adequately bag/mask ventilate:
Fiber-optic Bronchoscopy
• Aintree Intubation Catheter
Attempt insertion of ILMA/FAstrach or LMA
Cook Airway Exchange Catheter

Unsuccessful

Successful Intubation:
Confirm ETT placement with auscultation,
EtCO2 and/or CXR. Secure ETT.
Ventilate with positive pressure ventilation

Multiple Unsuccessful Attempts at Intubation:
Change Position Change Blade Change Modality Change Intubator

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