

Emergency management of the patient with a tracheostomy or laryngectomy.

The management of tracheostomy-related emergencies has developed somewhat piecemeal, in a similar way to that of general airway emergencies before publication of the difficult airway algorithms. Before such guidance, emergencies were commonly managed by relying on individually acquired skills and experience or lessons learned from previous errors. The NTSP were involved in analysing critical incidents reported to the UK National Patient Safety Agency and recurrent themes were identified, evident in similar analyses. It was clear that simple, clear and authoritative guidelines were urgently required, similar in structure to previous difficult airway algorithms and Resuscitation Council (UK) ALS guidelines. Our tracheostomy and laryngectomy emergency guidelines were developed following wide consultation with key national bodies involved in tracheostomy care, incorporating feedback from their members and utilising case reports in the literature. This chapter presents the guidelines and discusses their rationale. A similar, detailed explanation has been published in the journal *Anaesthesia* in 2012, upon which this section is based. The full text of this article is freely available from this link: McGrath B, Bates L, Atkinson D & Moore J. Multidisciplinary guidelines for the management of tracheostomy and laryngectomy airway emergencies. [Anaesthesia 2012 Sep;67\(9\):1025-41.](#)

Guideline development

Draft guidelines were developed and then tested and refined locally before being re-submitted to the UK stakeholder organisations. Extensive use was made of real-life critical incidents that were recreated using high fidelity simulation and different management strategies were attempted with different staff members and local airway experts. Near-final guidelines were subject to open peer review for a period of 6 months via the NTSP website and that of the UK stakeholder organisations. During this period, the resources were accessed >28,000 times and the emergency algorithms downloaded nearly 9,000 times, with worldwide feedback received. Generally, feedback was positive and supportive of the project aims, with many comments adapted to be included in the final version of the guidelines with the contributors' permission.

First, it was clear from initial analyses that distinct bedside information and algorithms were required for patients with a potentially patent upper airway and those with a laryngectomy. This led to the development of the bed-head signs, allowing essential information to be clearly displayed and immediately available to responders in an emergency. This allows the responder to know immediately whether the patient has any special considerations for managing the upper airway or the tracheostomy stoma. Bedside information can also summarise key details regarding the nature and date of the tracheostomy, method of forming the stoma and the function of any 'stay sutures.'

Second, it was recognised that separate algorithms were needed for patients with a potentially patent upper airway and those with a laryngectomy. However, it was also apparent that there would be similarities between the algorithms, with the management of laryngectomy patients following the same steps as for tracheostomy patients, but without the upper airway elements.

It was clear to us that a number of principles should underpin the guidelines that we developed. The two key priorities were supported by our critical incident reviews: oxygenation of the patient takes priority (not necessarily securing the airway immediately and definitively, unless required for oxygenation) and the best assistance should be sought early. Ideally, this assistance would include other members of the multi-disciplinary team who are trained and competent to deal with tracheostomy emergencies. Emergencies should be managed in adequately equipped clinical environments.

Rather than taking a problem-specific approach, we developed a generic algorithm that would cover the vast majority of common and easily reversible clinical situations that arise whilst accepting that a number of special circumstances do exist (e.g. the critically ill ventilated patient on ICU or the patient who has undergone a complex tracheal reconstruction). Even in these complicated scenarios, key airway management principles can still be followed. This approach also allows training to be standardised.

We have divided the competencies and training required between those of the primary and secondary responder. The primary responder (typically a nurse, junior doctor or allied health professional) needs to be guided to detect airway problems, to assess tracheostomy and airway patency and to provide basic emergency oxygenation. The secondary responder (typically an anaesthetist, intensivist, head and neck surgeon or specialist practitioner) will have skills in conventional airway management and will also be guided to use skills in managing the tracheostomy or stoma. These skills would typically include oronasal intubation techniques (including difficult intubations), ability to use a fiberoptic 'scope to assess or replace tracheostomy tubes and the ability to perform and manage an emergency surgical airway or tracheostomy. Our emergency algorithms are thus divided into sections to reflect the differing skills of the responders.

The algorithms are applicable for any urgent or emergency situation that develops in a patient with a tracheostomy or laryngectomy.

Interactive algorithms with video links to each of the key steps are available from the website www.tracheostomy.org.uk. There are details of each of the key steps in the algorithm explained in the e-learning resources associated with this manual.