Why you should read this article:

- To ensure your knowledge and skills in assisting in emergency tracheal intubation are up to date
- To promote a team approach to emergency tracheal intubation within your organisation, which ensures risks to patients are minimised, the trachea and lungs are protected from aspiration, and the airway is secured
- To understand the evidence base that supports the practice of emergency tracheal intubation

How to assist in emergency tracheal intubation

Christopher Williams and Emma Bennett

Rationale and key points

Emergency tracheal intubation has been widely advocated as a life-saving procedure in severe acute illness and injury, to secure the patient’s airway and provide oxygenation and ventilation. This article explains the process and actions required to assist in undertaking safe and effective emergency intubation of a patient with a compromised airway or respiratory function.

- The role of the healthcare practitioner assisting in emergency intubation is vital, because failure to ventilate and intubate the patient is life-threatening.
- The healthcare practitioner assisting the intubator must have the knowledge to assemble and check the equipment required for intubation, and must be able to position the patient appropriately to optimise success.
- The healthcare practitioner assisting in emergency intubation requires appropriate knowledge and skills for the procedure to be performed safely. They must have the psychomotor skills required to assist the intubator, which involves handing them the equipment and connecting it in a timely manner. They should also understand the airway adjuncts that can be used should any difficulties be encountered in achieving intubation.

Reflective activity

‘How to’ articles can help to update your practice and ensure it remains evidence based. Apply this article to your practice. Reflect on and write a short account of:

1. How this article has changed your practice when assisting in emergency tracheal intubation.
2. How you could use this resource to educate colleagues on how to assist in emergency tracheal intubation.

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Keywords

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THIS ARTICLE provides an overview of the process of assisting in emergency tracheal intubation and should be used in conjunction with additional information on the equipment required, including the manufacturer’s guidelines, and on other elements such as cricoid pressure. Further reading and accessing other materials such as online videos, visits to the operating department and scenario-based training can support healthcare practitioners to become competent in this skill.

Preparation and equipment

- Gather all the necessary equipment and ensure it is readily accessible. The equipment required in intubation should be checked on a daily basis, so that it is ready for immediate use. An intubation checklist may aid this process and reduce the risk of adverse incidents. Healthcare practitioners involved in these checks must know the names of each item of equipment, the uses and how to check the equipment, in accordance with local policy. The following...
Specific roles should be assigned in the team. Usually there should be a minimum of four healthcare practitioners all with distinct roles, but some individuals may have multiple roles. The roles and tasks usually assigned are as follows (Higgs et al 2016):
- Team leader.
- First intubator.
- Drug administrator, who will usually give the anaesthetic drugs (sedation and paralysing agents), as well as any vasoconstrictors or other drugs required during the procedure.
- Observer of the patient’s clinical status and physiological monitoring.
- Healthcare practitioner who can perform cricoid pressure, if required.
- Airway equipment assistant.
- Runner to obtain any additional equipment required.
- Second intubator. If the first intubator fails to intubate the patient, the second intubator will attempt intubation. Often, the second intubator will be the team leader and/or the most skilled intubator present.
- Healthcare practitioner who is skilled in manual inline stabilisation of the spinal cord, if traumatic damage is suspected. This individual will hold the patient’s neck in alignment during intubation to ensure the neck is not overflexed during the procedure, to prevent further spinal damage.
- Healthcare practitioner applying force to the front of the patient’s neck with their thumb and forefinger to occlude the oesophagus.
- Observer of the patient’s clinical status and physiological monitoring.
- Drug administrator, who will administer intravenous drugs (sedation and paralysing agents), as well as any vasoconstrictors or other drugs required during the procedure.
- Second intubator. If the first intubator fails to intubate the patient, the second intubator will attempt intubation. Often, the second intubator will be the team leader and/or the most skilled intubator present.
- Healthcare practitioner who is skilled in manual inline stabilisation of the spinal cord, if traumatic damage is suspected. This individual will hold the patient’s neck in alignment during intubation to ensure the neck is not overflexed during the procedure, to prevent further spinal damage.

The team leader should explain the plan and share the mental model of what will happen during the procedure.

It is important to communicate with the patient throughout the procedure, even if it appears they cannot hear what is being said.

**Procedure**

1. Put on a disposable apron and decontaminate your hands, in accordance with local policy. Put on clean disposable gloves.
2. Introduce yourself to the patient and explain the procedure, as appropriate.
3. Place the patient in a supine and elevated position to reduce the risk of airway-related complications, such as difficulty accessing the patient’s airway.
4. Position the bed so that it has 360° access and is at a height that suits the intubator.
5. The allocated team member will proceed through the checklist with the team, discussing their allocated roles and the expectations of each individual.
6. Establish physiological monitoring of the patient via: three or five-lead cardiac monitoring; blood pressure monitoring; end-tidal carbon dioxide monitoring; oxygen saturation measurement using a pulse oximeter; and respiratory rate.
7. Turn on the oxygen to 15L per minute and ensure it is connected to the self-inflating bag. Hand the self-inflating bag to the intubator who will begin pre-oxygenating the patient for three minutes. Following this, the patient will be anaesthetised by the drug administrator.
8. If there is a concern about the presence of gastric contents and the risk of vomiting, the application of cricoid pressure may be required. This will involve an experienced healthcare practitioner applying force to the front of the patient’s neck with their thumb and forefinger to occlude the oesophagus.
9. When the intubator is ready, pass the equipment to them as requested (Figures 1-5). Ensure the intubator does not have to look around when receiving the equipment, since they should be focused on identifying the anatomy in the patient’s larynx.
10. Following pre-oxygenation, place the laryngoscope into the open palm of the intubator so that they can immediately insert it into the patient’s larynx (Figure 1).
11. If required, use a Yankauer suction catheter to clear secretions, vomit or blood from the patient’s airway, to optimise the view (Figure 2).

**Figure 1. Place the laryngoscope into the open palm of the intubator**

**Figure 2. Hand the endotracheal tube to the intubator and optimise their view by pulling on the corner of the patient’s mouth**
Intubation is a high-risk procedure, and when Even in an emergency intubation, having a Emergency tracheal intubation has been nursingstandard.com is equal between the two lungs. can be used to determine if air entry Auscultation with a stethoscope (Whitaker 2011, Frerk et al 2015). rise and fall of the patient's chest tidal carbon dioxide monitoring, be confirmed initially using end- Endotracheal tube placement can Post-procedure Endotracheal tube placement can be confirmed initially using end-tidal carbon dioxide monitoring, and by the presence of misting of the endotracheal tube and the rise and fall of the patient's chest (Whitaker 2011, Frerk et al 2015). Auscultation with a stethoscope can be used to determine if air entry is equal between the two lungs. Absence of breath sounds on one side may indicate migration of the endotracheal tube into one lung, usually the right lung. A chest X-ray can be used later to determine the location of the end of the endotracheal tube, which should be above the carina (the ridge at the base of the trachea). The procedure should be documented in the patient's medical notes, including any difficulties encountered, which will aid other healthcare practitioners when planning intubations in the future.

Evidence base
Emergency tracheal intubation has been widely advocated as a life-saving procedure in patients with severe acute illness and/or injury, to secure the airway and provide oxygenation and ventilation (Lecky et al 2008). It is a particularly important procedure because failure to ventilate and/or intubate the patient is life-threatening (Cook et al 2012). Intubation outside the operating department may be a relatively rare event; however, healthcare practitioners must be skilled to assist when it is required. Intubation can pose significant risks to patients and the procedure requires a team approach. Tracheal intubation is the gold standard for airway protection, ensuring the trachea and lungs are protected from aspiration of gastric contents, and enabling delivery of oxygen and removal of carbon dioxide through ventilation (Thomas and Moss 2014). Securing the airway is crucial to resuscitation and why it is the first component of the ABCDE (airway, breathing, circulation, disability, exposure) approach (Resuscitation Council (UK) 2016).

Intubation is a high-risk procedure, and when it occurs away from the operating department the risk to the patient is increased further. Therefore, healthcare practitioners assisting in this procedure must have a high level of competence.

Even in an emergency intubation, having a pre-procedure plan and sharing a mental model of what will happen during the procedure with the team members involved is increasingly common, and recommended in conjunction with an intubation checklist (Cook et al 2011, Frerk et al 2015).

**Key points**

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with an intubation checklist (Cook et al 2011, Frerk et al 2015). When intubation is performed as an emergency there is no option to awaken the patient if it cannot be achieved, which could be an option in the elective surgery setting (Higgs et al 2016). Therefore, if intubation cannot be achieved, the airway should be supported by airway adjuncts to achieve oxygenation and ventilation, for example an oropharyngeal airway to assist with ventilation or a laryngeal mask to secure the airway. In extreme circumstances, where attempts to intubate fail and the patient cannot be ventilated or oxygenated using alternative methods, it may be necessary to access the airway through the front of the patient’s neck by cricothyroid puncture or surgical incision (Frerk et al 2015).

There are several resources available that explain the equipment required for emergency intubation (Jukes 2003, Aldridge and Jevon 2014). Higgs et al (2016) provided a list of the roles and tasks required to safely undertake emergency intubation, outlined previously in this article. Soliman et al (2018) outlined the equipment that should be present and checked, and recommended that healthcare practitioners use an intubation checklist to aid this process and reduce the risk of adverse incidents. It is essential that healthcare practitioners know the names of each item of equipment, the uses and how to check the equipment to assist in intubation safely and effectively.

In the application of cricoid pressure, the cricoid cartilage is pushed backwards to occlude the oesophagus by flattening it, thus preventing gastric contents rising up and aspirating into the lungs via the trachea (Salem et al 2017). However, this skill requires practice and training (Parry 2009), and a Cochrane review by Algie et al (2015) found no evidence that applying cricoid pressure is effective or necessary, and that it may contribute to harm. Despite this, Higgs et al (2016) advocated its use for intubation in critical care settings, but emphasised the need to release cricoid pressure if necessary, for example if there is difficulty in intubation or ventilation. It should also be released if the patient vomits, otherwise the oesophagus may rupture under the pressure.

Intubation is a high-risk procedure, and when it occurs away from the operating department the risk to the patient is further increased. Therefore, healthcare practitioners assisting in this procedure must have a high level of competence.

It has been identified there is a lack of consistent formal training in assisting with intubation (Williams and Parry 2018), which could be addressed through the development of national standards that would form the basis of training programmes. Local courses on assisting with intubation are available in some healthcare organisations and health boards (West Midlands CARE Team 2018). The issue of skills decay as a result of the lack of frequent opportunity to practise intubation could be addressed through updates for healthcare practitioners, for example through regular training and education.

References