

NTSP considerations for tracheostomy in the Covid-19 outbreak

Tracheostomy is performed in around 10-13% of all level 3 ICU admissions in the UK. The clinical course of Covid-19 in the critically ill has not yet been fully characterized but there are considerations for patients with new or existing tracheostomies, considered below. This short article considers balancing the risks of infection control risks of aerosol spread of the virus versus the best management for the patient with a tracheostomy.

This guide considers balancing the risks of infection control re aerosol spread of the virus versus the best management for the patient with a tracheostomy. This guidance is written for UK hospitals but is applicable elsewhere. You may adapt/adopt these guidelines without permission. The guidance may change as data on tracheostomy in the Covid-19 becomes available.

Who gets a tracheostomy?

Indications from European ICUs suggest that decision making around access to critical care and organ support is based largely on current practice; the expectation is that this stands for decisions to undertake tracheostomy. The major indication will remain to wean from ventilation when a primary extubation is not possible or has failed.

Currently, in-hospital mortality is around 20% for ICU patient requiring tracheostomy. A tracheostomy may not be in a patients' best interests if the prospects of long-term independent survival are limited. These decisions may become more focused in a resource-limited, overwhelmed system.

Tracheostomy may have some positive benefits in the Covid-19 pandemic, which may lead to earlier consideration than in normal practice:

- Tracheostomy offers a 'sealed' system for ongoing respiratory support which may be preferable to a primary extubation with a high chance of failure and/or the requirement for NIV/High Flow Oxygen therapy.
- Patients with tracheostomy are typically managed with reduced or no sedation. This may allow for:
 - Less intensive nursing care (the patient may be able to assist in moving, rolling).
 - Fewer pumps (advantageous if there is a shortage of drugs or devices).
 - Care may be overseen by non-ICU staff (who aren't as experienced in managing sedation perhaps).
 - However, a more awake patient can be more difficult to manage, and staff must be able to safely care for tracheostomised patients. (There may be a role for ORL/ENT/MaxFax staff here).

Practical management of the ventilated tracheostomy patient with Covid-19

- PPE as per local/national guidelines.
- A cuff inflated, closed system is the most likely to prevent cross-contamination of staff, equipment, other patients.
- Closed suction should be mandatory.
- Consider reducing the frequency of cleaning/inspecting the inner cannulae, or whether this should be used at all. (Risk assess daily). Thick secretions or any time spent on an open system should be indications to use an inner cannula.
- Cuff deflation as part of weaning, will increase aerosol generation and so the patient should either be in a side room or in a cohort area with other Covid-19 patients. Staff will need to wear PPE, especially if the patient is still managed with a ventilator or a system providing CPAP.
- It may be possible to group weaning tracheostomised patients together which may facilitate cuff deflation strategies. Successful and prompt weaning requires experienced multidisciplinary staff, who would all need to wear appropriate PPE in this environment.
- Hospitalised patients who are normally managed with an un-cuffed tracheostomy (typically the long-term ventilated in the community) will require a trachy change to a cuffed tube and ventilation with a closed system in a critical care environment. This will remove the ability to vocalise (if present). If a cohort area exists where cuff deflation or CPAP is occurring, then this is an option,

Practical management of the non-ventilated tracheostomy patient with Covid-19

- PPE as per local/national guidelines
- These patients will need an 'open' humidification system (ranging from a Buchanan bib or similar simple HME device) through to active warmed humidification.
- Supplemental oxygen may be required, delivered by a trache-mask (offers some protection to the immediate environmental droplet spread).
- These patients should be considered in the same category as any other Covid-19 patient who requires hospitalization and/or oxygen therapy.
- They will need managing by specialist staff, trained to manage patients with tracheostomy. They will need high-risk (to staff) airway interventions such as suctioning and inner cannula care.
- A simple face mask may be applied over the face if the cuff is deflated to minimize droplet spread from the patient.

Where to manage a patient with a tracheostomy?

There are likely to be competing priorities when considering at hospital/strategic level where best to manage patients with a tracheostomy in hospitals during the pandemic. It is likely that a significant rise in the in-hospital population of tracheostomised patients will occur.

- Patients may be Covid-19 +ve, suspected +ve, or -ve.
- Patients may need invasive ventilation.
- Patients need to be managed by staff who are trained in tracheostomy care to:
 - Prevent problems through *basic care, done well*.
 - Detect *red flags* and warning signs early through education.
 - Know how to troubleshoot problems and manage emergencies through education and rehearsal.



We recommend that at least one member of staff is appropriately trained to safely manage tracheostomy problems in each cohort location that tracheostomy patients are managed in. This standard should apply around the clock. Refresher resources are available from the links below.

Emergency management

- Emergency care should continue as per the NTSP guidelines.
- Airway interventions should be planned where possible to allow appropriate PPE to be applied.
- It is likely that a member of staff in a cohort area will be wearing at least some appropriate PPE at the time of an airway emergency – call for help.
- PPE should be immediately available in areas that Covid-19 positive tracheostomy patients are managed in.
- Staff should ensure that they protect themselves in order to best care for our patients.

Performing a new tracheostomy

The likelihood is that the majority of elective ICU tracheostomies in the coming months will be for Covid-19 related respiratory failure and to facilitate weaning from mechanical ventilation.

ORL/ENT/MaxFax surgical teams may be available to help with procedures (less elective work) and should be used. Nursing staff from these areas may be invaluable if there is a sharp increase in the ICU population with tracheostomy.

- See ENT-UK or relevant surgical guidelines
- Local Safety Standards for Invasive Procedures (LocSSIPs) MUST be used

Location

Tracheostomy procedures may be performed in the ICU or in new, unfamiliar environments, depending on where the patient is being managed and the prevailing infection control measures. If new teams or locations are being used– ensure that the appropriate equipment, staff and support are available, including lighting and the ability to position the patient. For surgeons; note ICU beds are often much wider than a theatre table, with no isolated head support. This limits surgical access. Consider bringing the patient to the side of the bed nearer the primary surgeon, although this limits the access for an assistant.

If it looks difficult (especially an obese patient) then consider moving to the OR rather than a sub-optimal location and accepting whatever infection control measures this entails.

Timing

To minimize the risks to staff, the tracheostomy should ideally be undertaken when the patient is Coronavirus negative. However, the accuracy of the tests is currently not clear and in critical illness, active shedding of the virus can be prolonged. It may not be clinically or practically feasible to wait for a negative result prior to undertaking tracheostomy.

There may be some benefits to performing a tracheostomy in ventilator-dependent patients earlier than in current practice. These are outlined above. For patients at high risk of a failed extubation, a tracheostomy offers a controlled wean. This may be preferable to extubation onto CPAP and then urgent re-intubation, balancing the risks to the patient and to staff from the tracheostomy procedure itself.

Practical considerations

- The PPE might restrict views for the operator and the rest of the team. It also makes communication more difficult. Minimize noise and discuss/rehearse beforehand.
- Agree beforehand what the team will do and discuss the case in detail before you get to the bedside.
- Check you can see what you are doing in whatever PPE you need to use.
- The procedure will inevitably generate aerosols in a vent-dependent trachy patient. When the neck is punctured, dilated or opened surgically, consider reducing the ventilatory pressures and/or frequency to minimize aerosol generation if the patient condition allows. Consider suspending ventilation if possible. An experienced anaesthetist or intensivist should manage the 'top end'.

- Think about the best location for tracheostomy and think about nearby patients, staff and equipment.
- The ideal location is in a (negative pressure) side room or a theatre suite (with the problems of transfer).
- Take **minimal staff**.
- **Use the most experienced staff** (who will probably be the quickest).
- **Consider a travelling trachy team** – perform insertions and review existing patients.
- Liaise now with ORL/ENT/MaxFax surgical teams, medical and nursing colleagues.

Existing patients with tracheostomies

Current in-patients

- In-patients are at an unknown risk of Covid-19 from visitors and staff
 - Plan where a patient would go if they developed symptoms.
 - What if they had an altered airway, or tracheostomy and need specialist care?
 - Plan ahead.

Current out-patients

- If a patient with a tracheostomy needs ventilator support, then they will need a cuffed tracheostomy inserting and management in a critical care location.
- A suspected or confirmed Covid-19 patient who does not need ventilatory support will need managing in a cohort area. These locations will need staff who are trained and competent to manage tracheostomies and their potential complications.

Existing patients with laryngectomies

Patients who have neck-only-breathing laryngectomees don't have the nasal 'filters' and intuitively they are at greater risk of viral infection.

These patients should be contacted and offer advice. See <http://dribrook.blogspot.com/>
Some sensible, practical advice may also be relevant for hospitalised laryngectomy patients:

- Wear a stomal HME filter (not all HMEs perform equally).
- Hands-free valves minimize touching of the stoma.
- Ask the patient to manage as much of their stoma care as possible.

All multidisciplinary staff involved in tracheostomy care are advised to be familiar with the safety resources and best practices for quality improvement available at:

- www.globaltrach.org
- www.tracheostomy.org.uk
- New e-learning tracheostomy modules at e-learning for Healthcare <https://portal.e-lfh.org.uk>
- Data collection and adoption best practices are strongly encouraged