COVID-19 Tracheostomy

Framework for open tracheostomy in COVID-19 patients

Dear Colleagues,

You will have last week received ENT UK's recommendations regarding PPE along with a timely paper by James Ramsden & colleagues on the subject of tracheostomy in a COVID patient. There has also been further information from the National Tracheostomy project (NTSP).

The requests for a tracheostomy in suspected or confirmed COVID ventilated patients are likely to begin coming our way very soon. It is difficult to predict the level of burden at this point but we ought to prepare for the worst. We (ENT UK) believe it is appropriate therefore to release further guidance and cognitive aids to help departments in the preparation for COVID tracheostomies.

We would like to reiterate that a tracheostomy is a high risk procedure in this patient cohort and most certainly is an Aerosol Generating Procedure (AGP) representing significant risk to surgeons and our immediate colleagues. Decisions regarding the requirement for a tracheostomy in COVID patients should not be taken lightly and should be made following discussion between Critical Care and ENT at consultant level with specific consideration given to long term prognosis. It is beyond the remit of this document to try and stipulate when and in whom it ought to be considered as there are just too many evolving variables at play. It must be also made clear that these guidelines should be regarded as an early framework. It should be viewed as an aspirational model, as the available resources in various trusts could have an enormous impact on how best practice can be delivered.

The question about whether a percutaneous tracheostomy is less aerosol generating than a controlled open tracheostomy is debatable and again we felt that local factors, competencies, and experience are likely to influence the chosen technique. The guidance therefore is aimed at outlining the steps that can be taken by ENT / Head & Neck Surgeons to best protect themselves and minimise aerosol generation when called on to perform open tracheostomies on COVID patients.

It would be desirable to create "COVID ENT Airway teams" within all departments. A suggested constitution of the team would be 2-3 consultants (preferably Head & Neck trained) and 2-3 registrars or middle grade staff. Responsibilities of the team should include discussion with ICU regarding the indications and appropriateness for tracheostomies, the logistics of performing the procedure and to perform urgent upper aero-digestive cancer work or other ENT emergencies during the COVID crisis. Through experiential learning, these teams will quickly develop a sense of what works and why. These teams should then take a lead in training replacement teams who will likely be required to enter the airway service to cover for sickness, service demand, and to distribute the burden of these high risk and stressful events.

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In addition, there should be careful consideration of where is best to perform tracheostomies for a COVID patient. Whilst it would be best practice if procedures are done in a negative pressure room / theatre, these are not always available. The designated area should have only the essential personnel in them with a clean runner situated in the antechamber being the only conduit to the outside. Some units may prefer to perform tracheostomies within ITU. Whilst this is attractive in terms of minimising transfer, the surgical team must be able to perform tracheostomy with maximum efficiency. The decision of where best to perform the procedure will be influenced heavily by local factors.

Planning must start now before we hit the steepest part of the epidemiological disease curve. The next few days and weeks would be very well spent in running simulations within your department to familiarise the airway teams with the environment, the equipment, and the special steps recommended to minimise aerosol generation. The situation continues to evolve rapidly and will no doubt be in a state of flux for some time. We will of course continuously monitor developments and as our collective experience evolves we will update the guidance as necessary.

The attached visual guides have been endorsed by the Head & Neck society of ENT UK, the British Laryngological society and the ENT UK executive.

Finally, I would like to acknowledge the hard work of three colleagues at University Hospital Lewisham in rapidly developing these guidelines: Abigail Walker, ENT ST7; Angelos Mantelakis, ENT FY2; and Oliver Keane, Consultant Anaesthetist.

With best regards & stay safe,

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PLANNING (Days /weeks prior to procedure)

PPE	Review ENT UK guidance on high-risk procedures Surgeons and runners must wear full PPE Consider additional protection for surgeons (eg. Stryker hood, powered purifying respirator)
Place	Ideally in a negative pressure theatre or isolation room If not available consider a normal theatre with closed doors during the procedure Consider turning off laminar flow (if present) Antechamber or anaesthetic room (for donning/doffing and for clean runner)
Patient	Joint ITU and ENT decision whether to perform a tracheostomy with specific regard to timing, prognosis, and outcome
Equipment	Pre-prepare tracheostomy sets in grab bags and store in a designate clean zone Ensure an adequate stock of cuffed, non-fenestrated tracheostomy tubes in various sizes Establish a system to record what has been used and what needs restocking
Airway Team	Designate staff to form a COVID ENT Airway Team to facilitate efficiency during the crisis Suggested team make up of consultant, registrar, runner (can be non-medical) Run simulation training on location and in full PPE
When	Semi – elective Planned theatre slot with familiar anaesthetist and scrub team

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PREPARATION (Day of Procedure)

Check	Ensure PPE is available for all staff Take tracheostomy grab bag and check contents – tracheostomy set, cuffed non-fenestrated tubes of appropriate size, and HME with viral filter Confirm designated staff are available and prepared (Anaesthetic, ENT, and scrub team)
Confirm	Indication and appropriateness of tracheostomy to be reconfirmed and documented
Briefing *To include but not limited to*	Airway management steps generic to tracheostomy Steps particular to COVID tracheostomy (see additional documents from ENT UK and page 5) Request full paralysis throughout to reduce risk of cough
Equipment	Don PPE and perform "buddy check" Lay out tracheostomy equipment including tube Attach syringe to tracheostomy balloon ready for inflation Consider preloading the HME onto the inner tube Ensure closed in-line suction only is used for ETT and tracheostomy tube Consider use of surgical ties rather than diathermy to prevent vapour plumes containing viral particles
Patient	Confirm readiness with surgeons, runner, nursing, anaesthetic team **Only now send for the patient**

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PERFORMANCE (Once trachea is exposed)

Pause	Inform anaesthetist of readiness to open trachea Confirm paralysis Pre-oxygenate with PEEP then stop ventilation and turn off flows Allow time for passive expiration with open APL valve
Advance	Consider clamping ETT then advance cuff beyond proposed tracheal window Hyperinflate cuff and re-establish oxygenation with PEEP When adequately re-preoxygenated then again cease ventilation and allow apnoeic oxygenation via ETT
Tracheal window	Create tracheal window taking care to avoid the ETT cuff Turn off flows with open APL valve, allow passive expiration, consider clamping ETT Deflate ETT cuff and draw back proximal to the tracheal window under direct vision Ensure window is of sufficient size to allow easy insertion of tracheostomy tube without injury to cuff Insert cuffed, non-fenestrated tracheal tube
Circuit connection	Immediately inflate tracheostomy tube cuff Replace introducer with inner tube and HME Prompt attachment of circuit Resume ventilation
Confirmation	Confirm position with end-tidal CO2 only (avoid contamination of stethoscope by ausculattaion) Withdraw clamped ETT carefully
Secure	Secure tube with sutures and tracheostomy tapes Use appropriate dressing Doffing of PPE with “buddy check” in appropriate area with disposal and destruction of equipment as per local guidelines

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POST-PROCEDURE (ITU and beyond)

First week	Exercise extreme care in transfer One dedicated team member allocated to holding tracheostomy tube whenever being proned or turned Humidified oxygen to be avoided, HME only
Nursing care	Use only in line closed suction circuits at all times Periodic check of cuff pressures Cuff to remain inflated at all times whilst in COVID positive environment Do not change dressings unless frank signs of infection
First tube change	Delay first tube change to 7-10 days Full PPE Perform same sequence of pause in ventilation with flows off before deflating cuff and inserting new tube with immediately re-inflation of cuff and reconnection of circuit
ITU stepdown	Dedicated COVID tracheostomy ward with trained nursing staff Cuffed non-fenestrated tube to be used until the patient is confirmed COVID negative Tube changes at 30 days
Decannulation	If patient is confirmed COVID negative and is to be moved to a COVID negative ward then consider trials of cuff deflation Readiness for decannulation should be made with close liaison with SLT and physiotherapy