

## Considerations for Tracheostomy in the Covid-19 Outbreak

### Cardiff and Vale UHB

#### Produced by the Cardiff and Vale UHB Tracheostomy Steering Group

#### Introduction:

Within Cardiff and Vale UHB approximately 140-150 patients requiring a tracheostomy each year. These are inserted for a variety of reasons including as part of weaning from mechanical ventilation, as an emergency airway or as part of an OMFS / ENT procedure. Over the past 3-years the care of these patients has vastly improved and their hospital pathway become more recognised and robust.

However, the current Covid-19 outbreak is likely to challenge these systems, with potentially much increased numbers of patients requiring a tracheostomy (primarily to facilitate weaning from mechanical ventilation) and due to high demand on bed pressures, patients are likely to be discharged to areas not familiar with caring for patients with tracheostomies.

Furthermore, it is likely that there will be an increase in patients with pre-existing tracheostomies or laryngectomies being admitted from the community with Covid-19. These patients are likely to be cohorted to Covid-19 wards who may have little or no experience in caring for those with tracheostomies.

The purpose of this document is to outline the suggested care for these patients including their in-hospital pathways. The suggestions made are based on recommendations from ENT-UK and the National Tracheostomy Safety Programme, and reflect Cardiff and Vale UHB infection policies.

Based on current UK guidance, full PPE (long sleeve gown, FFP3 mask, gloves and visor) must be worn for all aerosol generating procedures no matter the patients covid status.

**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 Cardiff and Vale UHB but may be applicable elsewhere. Other NHS Wales health boards may adapt/adopt these guidelines without permission. The guidance may change in line with changes to NTSP or other professional guidance and as data on tracheostomy in the Covid-19 becomes available.**

### **Decision for Tracheostomy:**

Current international evidence for Covid positive patients admitted to critical care suggests high mortality (up to 60%). In those that survive, tracheostomy has been suggested to aid facilitate weaning from mechanical ventilation, reduce risks associated with failed extubation and facilitate flow from critical care.

The decision to proceed to insert a tracheostomy must be made by an Consultant in Intensive Care Medicine. This decision may be supported by input from ENT, Oro-maxillofacial surgery, Cardiff Tracheostomy Team and wider MDT. The likely patient trajectory must be considered including discharge destination and access to appropriate therapies. NTSP and ENT-UK recommendations suggest a tracheostomy should not be inserted until 14 days after critical care admission when the risk of the patient remaining infectious is vastly reduced. Additionally, patients should be on no more than 40% oxygen.

### **Criteria for Tracheostomy Insertion:**

The following are indicators for readiness for tracheostomy. Note this is not an exhaustive list and cases will be considered on a patient by patient basis:

- $\geq 14$  days post critical care admission
- Apyrexial  $\geq 48$  hours
- PEEP  $\leq 10$ cm H<sub>2</sub>O
- FiO<sub>2</sub>  $\leq 0.4$
- NG feed stopped 6 hours prior to surgery (e.g. 2am)

### **Insertion Method:**

Within the literature there is debate regarding whether percutaneous insertion results in less aerosol generation than a surgical approach. Due to the extreme demands being placed likely to be placed on critical care and the intensive care medicine consultants, it is likely that a higher than normal proportion of tracheostomies will be completed surgically.

### Surgical:

#### Booking Process:

Once the decision has been made for a surgical tracheostomy, the patient must be listed via TheatreMan by 10am on the day prior to the completion of the tracheostomy. They must also be listed on the whiteboard in the specialist services hub (critical care resource room). The CEPOD list will be used as an interim booking process for tracheostomies (patients to be highlighted as 'covid



tracheostomy'), however theatre slots on Monday, Wednesday and Friday will be ringfenced for tracheostomy insertion. Surgical tracheostomies will be available on other days but theatre availability will not be ringfenced and therefore may be impacted by other emergencies requiring CEPOD theatres.

All booked surgical tracheostomies will then be discussed between intensivist, anaesthetist (see appendix 1 for anaesthetic care bundle) and surgeon at 1pm on that day (the day prior to surgery) in the A3/B3 corridor. A tracheostomy booking form needs to be completed by the critical care team, outside of the 'hot zone', and brought to the Cepod booking hub. This contains essential eligibility criteria relating to the patient's condition.

The critical care consultant will be responsible for the consenting process and the patient does not need to be reviewed by the operating consultant prior to the procedure.

#### Location and Staffing:

All surgical tracheostomies will be performed in a designated Covid theatre and will be completed in pre-allocated sessions (see surgical tracheostomy SOP appendix 2). The procedure must be completed by an experienced consultant surgeon (ENT or OMFS) in the presence of an experienced anaesthetic consultant. This will reduce the duration of the procedure and lessen the duration of aerosol generation. All surgical tracheostomies should be completed in theatres with the most frequent air changed (theatres 12-15 with negative pressure corridor) and with as minimal staff present as safely allows. PPE must be worn as per UHB recommendations for aerosol generating procedures.

#### Process for Patient Collection:

The nurse caring for the patient on the night prior to the tracheostomy will be informed of the requirement for the patient to be NBM 6 hours prior to the procedure. The daytime nurse will then be responsible for preparing the patient for transfer to theatre as guided by the intensive care team. Prior to theatre a theatre care plan will be started, consent form signed by ICM consultant, and a covid specific surgical tracheostomy checklist completed (see appendix 3). This will include collecting a tracheostomy tube from the stock on B3 to theatre with the patient.

Tracheotwist plus tracheostomy tubes will be used as standard with size 8 tubes primarily being used. This will be guided by the critical care medical staff and physiotherapy. If an alternative tube is required then this will be collected by theatre 'runners' during the procedure and collected from the main store on B3 corridor. Patients will be collected and returned from theatre as per existing arrangements.

Patients must be transferred to theatre using critical care's oxylog and transport monitor. As per critical care recommendations, appropriate viral filters (or viral HME) must be in place, and the closed suction device, adaptor and catheter mount must remain in place.



Intra-Operative Recommendations:

A WHO checklist will be completed prior to initiating the procedure. This will include a team brief and role allocation.

Intra-operatively, ENT-UK recommend advancing the ETT to near the level of the carina to reduce the risk of accidental cuff damage when creating a tracheal window, and to ensure that any ongoing ventilation is distal to and isolated from the surgical site. Critical care (via the MERIT team) will be using cut ETT's to reduce deadspace and dislodgement during proning. Therefore, there **may** be a requirement to change the existing ETT an uncut ETT. This tube can then be advanced to the necessary level ensuring adequate ventilation remains – to date this has not been required however it may be required in some cases. Neuromuscular blockade should be maintained, to reduce the potential for the patient to cough during the procedure. Due to incidences of sputum plugging, suction should be performed prior to starting the procedure. It may also be beneficial to perform a bronchoscopy (caution to be taken as AGP). The bronchoscopy, if required, can be completed via the existing closed suction adaptor (suction catheter removed).

The anaesthetic consultant must be informed prior to the trachea being opened. After this point the following should occur: 1) mechanical ventilation should cease and the APL valve opened to allow passive expiration; 2) the trachea should be opened (if cuffed not damaged then ventilation may be provided to pre-oxygenate prior to continuing); 3) ETT cuff deflated and ETT drawn back to above level of stoma; 4) suction provided via the newly created stoma, 5) cuffed tracheostomy tube inserted and cuff hyperinflated; 6) ventilatory circuit attached to the tracheostomy tube including the closed suction device, adaptor and catheter mount; 7) ventilation re-started via the tracheostomy tube (confirm ventilation); and 7) careful removal of ETT. This process will reduce potential for contamination and reduce risk to health care staff. Once adequate ventilation has been achieved, a bronchoscope must be passed via the tracheostomy tube to confirm position and patency of the bronchial tree.

Post procedure the patient should be transferred back to critical care with extreme caution taken not to cause disconnection of the ventilator circuit. Additional guidance for surgical tracheostomies has been produced by ENT-UK and other than differences stated above, the existing Cardiff and Vale UHB SOP for surgical tracheostomy remains active.

Percutaneous:

Booking:



Percutaneous tracheostomies will all be completed in theatre and therefore will need to be booked via TheatreMan by 10am on the day prior to the planned procedure. Initially this process will use the CEPOD list with 'Percutaneous COVID tracheostomy' listed on the booking. At the 1pm meeting it will be highlighted that the procedure will be percutaneous and ENT consultant must be aware of completion in case of complications.

#### Location and Staffing:

As previously stated, all percutaneous tracheostomies will be performed in a designated COVID theatre. This is to reduce the impact on critical care resources / staffing, and reduce risks associated with staff exposure in surrounding areas.

Percutaneous tracheostomies must be performed by consultants in ICM with significant experience in percutaneous tracheostomy tube insertion, and an additional experienced consultant responsible for managing the upper airway. This will reduce the likelihood of intra-procedure complications and reduce the procedure time. These consultants may require allocated days within their rota to ensure availability to complete tracheostomies across the critical care cohorts.

All staff must wear appropriate PPE and a clear plan of the procedure be discussed prior to initiation. This plan must include actions in the event of adverse or unexpected events e.g. inability to insert tracheostomy tube. A LocSSIP must be followed and completed at all times.

#### Process for Patient Collection:

The nurse caring for the patient on the night prior to the tracheostomy will be informed of the requirement for the patient to be NBM 6 hours prior to the procedure. The daytime nurse will then be responsible for preparing the patient for transfer to theatre as guided by the intensive care team. A percutaneous tracheostomy insertion kit will go to theatre with the patient. The consultant intensivist completing the procedure will select the size of traceotwist plus tracheostomy tube to be used. This will then go to theatre with the patient. Theatre will contact critical care once they are ready for the patient to be taken across ready for the procedure.

#### Intra-Procedure Recommendations:

A WHO checklist will be completed prior to initiating the procedure. This will include a team brief and role allocation.

To prevent potential damage to the ETT or ETT cuff, the ETT must be withdrawn to a level just below the vocal cords prior to starting the percutaneous technique. This should be completed using a CMAC laryngoscope (used to reduce potential risk to healthcare staff). The ETT management needs to be discussed in detail at the team brief. Due to incidences of sputum plugging, suction should be



performed prior to starting the procedure. It may also be beneficial to perform a bronchoscopy (caution to be taken as AGP).

As per surgical insertion, the consultant responsible for the upper airway must be informed prior to insertion of the dilator. At this point ventilation may be ceased until insertion of the tracheostomy, cuff inflation and connection of the ventilator circuit to the tracheostomy. The position of the tracheostomy tube should be confirmed by presents of ETCO<sub>2</sub>, ventilator waveforms and chest wall movement. The use of stethoscopes to confirm air movement is not recommended due to potential to breach PPE. The pre-existing percutaneous tracheostomy LoccSIP must be completed prior to the patient returning to critical care. Bronchoscopy may be beneficial to confirm tracheostomy tube location.

### **Tracheostomy Care:**

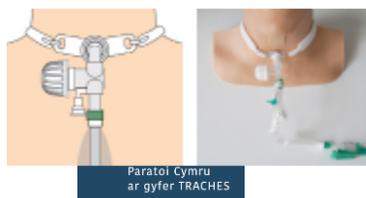
#### ***Critical Care:***

For patients on mechanical ventilation the following should apply:

- PPE to be worn throughout as per local guidance
- Closed suction should be mandatory, with subglottic suction completed at least 4-hourly
- The frequency of inner tube inspection / changes should be reduced to 6-hourly unless evidence of inner tube becoming blocked within this time. Prior to changing the inner tube either the 'O2 suction' or 'manual disconnect' option must be used to reduce aerosol spread on disconnection. Caution must be taken when cleaning the inner tube – staff should have a lower threshold to use a new inner tube where the existing one is more difficult to clean.
- Tapes and dressings should continue to be changed once a day – at least one member of staff with experience of managing patients with tracheostomies must be present and lead the change
- The use of 'leak speech' or passy-muir valves is discouraged and must be discussed with a consultant in ICM prior to use, and where deemed appropriate, must be first trialled by either speech and language therapy or a senior physiotherapist (static critical care physiotherapy staff only).
- Any patients admitted to critical care from the community with pre-existing cuffless tubes must be changed to cuffed tubes prior to initiating mechanical ventilation.

For patients not requiring mechanical ventilation:

- Where possible, heat moisture exchangers ('Swedish nose' not b Buchanan protector) to be used – this may be used in conjunction with closed suction - Low flow additional oxygen may be added via the HME



- For those requiring higher levels of oxygen or with viscous secretions, humidified oxygen should be used as per standard
- Suction to be completed only when necessary, and in accordance with local PPE policy. Subglottic suction completed at least 4-hourly
- Assessment of the inner tube to be completed 4-hourly unless otherwise stated after individualised risk assessment
- Tapes and dressings to be changed once a day as per standard
- Decision to initiate cuff deflation to be made by consultant in ICM in conjunction with tracheostomy MDT, including Physiotherapy and Speech and Language Therapy.

### **Ward Based Care:**

Following discharge from critical care, patients with tracheostomies must be discharged to a covid cohort ward with appropriate PPE available for completing aerosol generating procedures. Initially, for medicine, this will be ward C7 but as patient numbers increase, another ward will need to be allocated to receive these patients (suggest ward C6). Due to the requirement for full PPE (water repellent long sleeve gown, gloves, FFP3 mask and visor) for tracheostomy care (as recognised AGP) it is advised to cohort patients together in patient bays where possible. There may be a requirement to consider nursing allocation to ensure presence of staff with experience in tracheostomy care. Patients admitted under different specialities e.g. neurosurgery, should where possible be transferred to that speciality. If this area is not cohorted Covid then the patient should be cared for in a side room.

*Note: All non-covid will be cared for on ward A5 (this will include those with long term tracheostomies admitted from community locations who are not suspected to have covid) however, all tracheostomy care (suction, inner tube, subglottic suction) must be considered an aerosol generating procedure and therefore appropriate PPE worn!*

### Care considerations:

- All aspects of tracheostomy care must be considered to be an aerosol generating procedure and therefore appropriate PPE must be worn (gown, gloves, FFP3 mask, visor).
- Attempts should be made to cluster care to reduce exposure and requirement for donning / doffing PPE
- Where possible, heat moisture exchangers ('Swedish nose' not b Buchanan protector) to be used – this may be used in conjunction with closed suction - Low flow additional oxygen may be added via the HME



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- For those requiring higher levels of oxygen or with viscous secretions, humidified oxygen should be used as per standard Assessment of inner tube, assessment of suction requirements and subglottic suction to be completed every 2-4 hours as individually risk assessed
- Tapes and dressings and assessment of cuff pressure to be completed as per standard – at least one member of staff to be experienced / attending training on tracheostomy care

### **Weaning and Decannulation:**

Tracheostomy weaning will only commence once the patient no longer requires mechanical ventilation. As per standard patients will undergo cuff deflation, followed by a period of assessment to determine appropriateness for decannulation. Where patients require elective tracheostomy tube changes (either for downsize or for > 29 days in situ) will be delayed where possible until the patient is Covid-19 negative. If changes are required whilst still Covid-19 positive then these will be completed by staff highly experienced in tracheostomy tube changes (e.g. ENT consultants or clinical specialist physiotherapist) and appropriate PPE must be worn throughout.

Weaning and decisions regarding appropriateness for decannulation must be completed by the multi-professional team with consideration of the patients Covid-19 status.

### **Emergency Management:**

- Emergency care should continue as per the NTSP algorithm.
- 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 with patients that have tracheostomies including non-covid cohort wards
- Staff should ensure that they protect themselves in order to best care for our patients.

### **Swallow and Communication:**

Factors to consider include:

- Due to prolonged periods of cuff inflation, there will be a significant impact on a patient's ability to communicate due to lack of airflow to the larynx and therefore lack of voice. Staff will



need to consider alternative communication strategies at this time such as pen/paper, communication charts etc. It may be appropriate to refer to Speech and Language Therapy for further support.

- Prevalance of laryngeal injury due to intubation duration for patient's with Covid-19 and expected delays to tracheostomy placement which can impact on voice, swallow fuction, airway integrity and tracheostomy weaning.
- Swallow assessment by a Speech and Language Therapist will be required as prolonged intubation and prolonged duration of cuff inflation with tracheostomy in situ is more likely to result in Dysphagia (swallowing problems)
- An MDT decision to be made on individual patient basis regarding timings of proceeding with Above Cuff Vocalisation (ACV) and cuff deflation/speaking valve use to minimise the risk of aerosolisation.
- The recent guidance from the British Laryngological Association (BLA) has stated that *“all therapist-led endoscopy should cease”*, therefore the use of Fiberoptic Endoscopic Evaluation of Swallowing (FEES) is not indicated at this time. However the role of the SLT in the care of patients with and recovered from Covid-19 is still evolving and this guidance will be updated to reflect changing caseloads, clinical priorities, roles and ways of working.

### **Tracheostomy Ward Round:**

Tracheostomy ward rounds will continue to be completed at least once weekly (regularity under review). For patients with confirmed or supsected Covid-19 within critical care, a virtual tracheostomy ward round will be completed. This will be to reduce healthcare professionals exposure and to prevent unnecessary use of PPE. The physiotherapist from the tracheostomy team will be reviewing these patients regularly as part of standard physiotherapy services and therefore will be able to advise the rest of the team of current progress. The plan from the tracheostomy ward round will then be documented by any member of the team when next working in critical care (likely next day).

For patients with confirmed or suspected Covid-19 within cohort wards (Covid-19 cohort wards) or isolation rooms on non-cohort wards, tracheostomy ward rounds will continue as normal with members of the tracheostomy team wearing appropriate PPE depending on intervention.

### **Training and Resources:**

Support for staff caring for patients with tracheostomies will be provided by the tracheostomy team – primarily by the clinical nurse specialist. Formal has been cancelled for the foreseeable future, however informal training will be available as required.



As per standard, emergency equipment (tracheostomy blue box), bed head signs and emergency algorithms must be located in the bed area of any patient with a tracheostomy.

Additionally, online training on tracheostomy care and emergency management will be available to all NHS Wales healthcare professionals. Tracheostomy care posters will be located on all of the wards likely to receive patients with tracheostomies. Smaller versions of the poster will also be placed in the bed areas. These posters will have links to both the NTSP algorithm and online training modules. Staff are highly encouraged to complete the training to increase confidence and competence in caring for those with tracheostomies.

### **Community Tracheostomy Tube Changes:**

Patients with long-term tracheostomies who normally attend UHW or UHL for tracheostomy tube changes will continue to do so. However, all changes will now be completed in ENT clinic rather than other locations within the hospital. Furthermore, patients with cuffless tubes will only have their tracheostomy tube changed every 3 months. Those with cuffed tracheostomy tubes will need to be individually risk assessed to determine frequency of changes.

Appendix 1:

Tracheostomy Care Bundle:



### Tracheostomy Care Bundle

First Name  Last Name  DOB  Hospital Number	Admitting Team: _____ Indication: _____  Surgeon performing tracheostomy: _____  Tracheostomy type + size needed (e.g adjustable flange): _____
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**Brief Clinical History -**

Initial laryngoscopy grade 1 2 3 4 Blade used .....	<p style="color: red; margin: 0;"><b>COVID Tracheostomy Requirement</b></p> PEEP ≤ 10cm H <sub>2</sub> O <input type="checkbox"/> FIO <sub>2</sub> ≤ 0.4 <input type="checkbox"/> Apyrexial ≥ 48 hrs <input type="checkbox"/> NG feed stopped 6hrs <input type="checkbox"/>
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<b>Allergies</b>			
Consent completed	Yes/No		
NG feed to be stopped	Date: .....	Time: .....	
Last dose clexane/ anticoagulants/ antiplatelet to be given	Date: .....	Time: .....	

Bloods				Latest ABG		FIO <sub>2</sub> .....%
<b>FBC</b>	Hb WCC Plts	<b>U+E</b>	Na K Ur Cr	pH		
<b>Coag</b>	PT APTT Fib	<b>LFT</b>	Alb Bili ALT ALP	PaCO <sub>2</sub>		
<b>G+S</b>	Yes/No	<b>E.issue</b>	Yes/No	PaO <sub>2</sub>		
				Bicarb		
				Lact		
				Base excess		

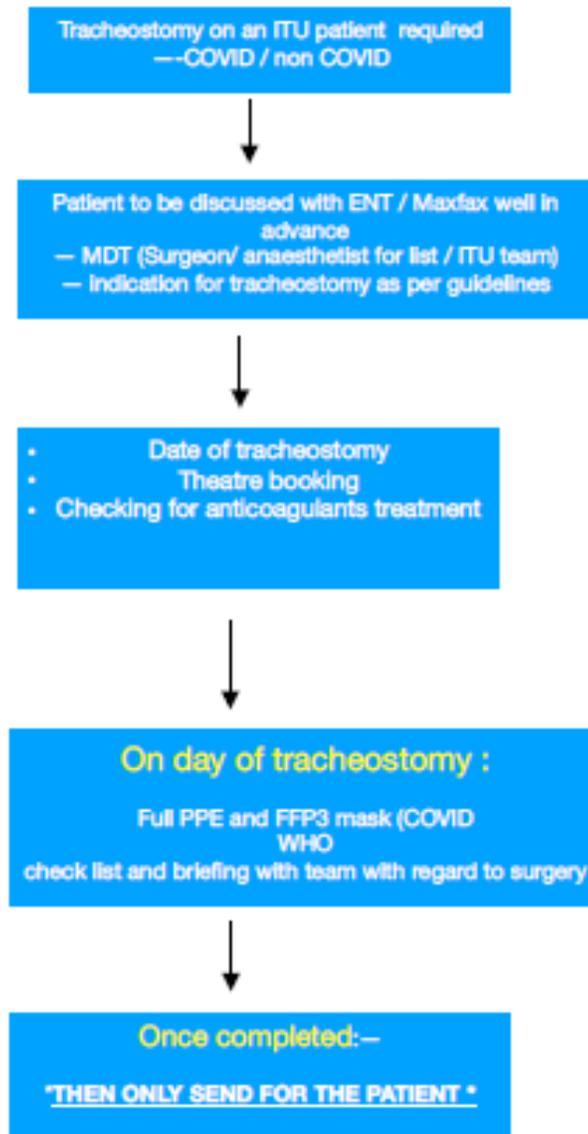
Systems review				
<b>CNS</b>	Best GCS ...../15 (E.....M.....V.....)			Sedation/analgesia
<b>Cardiovascular</b>	HR	Art. BP	Rhythm	Support (vasopressors/inotropes)
<b>Respiratory</b>	FIO <sub>2</sub>	SpO <sub>2</sub>	PEEP	Vent Mode
<b>GI/GU</b>	Liver failure Yes/No	Reflux Yes/No	Renal Failure Yes/No	
<b>Musculoskeletal</b>	C-Spine clear Yes/No			Spinal injuries Yes/No
				Log roll required Yes /No

Tracheostomy Care Bundle COVID - version 1 - 4/20

Appendix 2:



## TRACHEOSTOMY SOP UHW & UHL



Appendix 3:

Surgical Tracheostomy Checklist for patients with Covid:



Task	Complete or N/A
Bedside nurse at the aware of the planned procedure and that it has been discussed with the patient/relatives	
Critical care technicians are aware so patient/monitoring/drugs/infusions can be prepared for transfer	
NG feed should be stopped at 0600 on the day	
Maintenance fluid prescribed if required	
Blood bank should have at least 1 valid group & save sample (2 for electronic issue)	
Coagulation has been checked and corrected as required	
Heparin infusion should be stopped 6 hours pre-procedure and APTTR checked.	
Treatment dose LMWH/Oral anticoagulants withheld	
Consent for 4 completed by Critical Care senior clinician (for patients unable to consent)	
Theatre care plan completed by bedside nurse	
Tracheostomy tube of type and size stated above is with the patient ready for transfer	
Closed suction device (TT length), adaptor and catheter mount are with the patient ready for transfer	
Notes/Drug chart available for transfer	
Equipment to Gather	Complete or N/A
Ambu Bag, Water's circuit and Face Mask	
Bed drip stand	
Oxylog ventilator	
2 Full CD Oxygen cylinders	
Transfer monitor with battery bracket. <b>Check capnography is visible on monitor</b>	
Syringe Drivers if needed	
Closed suction adapter and catheter mount (if not already present on ETT)	
Tracheostomy Tubes x1 (intended size only)	

