



Canadian Society of Otolaryngology - Head and Neck Surgery /  
Société canadienne d'oto-rhino-laryngologie et de chirurgie cervico-faciale

## Recommendations from the CSO-HNS Taskforce on Performance of Tracheotomy During the COVID-19 Pandemic

### Taskforce Contributors:

Engels PT<sup>1</sup>, Weitzel E<sup>2</sup>, Witterick IJ<sup>3</sup>, Khalili S<sup>4</sup>, Corsten M<sup>5</sup>, Tewfik MA<sup>6</sup>, Fung K<sup>7</sup>, Cote D<sup>8</sup>, Gupta M<sup>9</sup>, Sne N<sup>1</sup>, Brown TFE<sup>5</sup>, James P<sup>10</sup>, Kost KM<sup>6</sup>, Sommer DD<sup>9</sup>

1. Department of Surgery and Critical Care, McMaster University, Hamilton, ON, Canada
2. Department of Otolaryngology Head and Neck Surgery, Wilford Hall Medical Center, Lackland Air Force Base, Texas, United States
3. Department of Otolaryngology - Head & Neck Surgery, University of Toronto, Toronto, ON, Canada
4. Aurora Neuroscience Innovation Institute, Milwaukee, WI, United States
5. Division of Otolaryngology - Head & Neck Surgery, Dalhousie University, Halifax, NS, Canada
6. Department of Otolaryngology - Head and Neck Surgery, McGill University, Montreal, QC, Canada
7. Department of Otolaryngology - Head and Neck Surgery, Western University, London, ON, Canada
8. Division of Otolaryngology - Head and Neck Surgery, University of Alberta, Edmonton, AB, Canada.
9. Division of Otolaryngology - Head & Neck Surgery - Department of Surgery, McMaster University, Hamilton, ON, Canada
10. Department of Anesthesia, McMaster University, Hamilton, ON, Canada

### Background:

The performance of tracheotomy is a common procedural request by Critical Care to the surgical services of General Surgery and Otolaryngology - Head & Neck Surgery. COVID-19 pandemic planning anticipates a large volume of ventilated patients with a possibly prolonged period of endotracheal intubation. The evidence for dealing with many aspects of this evolving situation is still somewhat anecdotal at the time and subject to future modification. This document provides guidance on the use of tracheotomy in such patients.

### Guiding Principles:

The tracheotomy procedure is highly aerosol generating and directly exposes the surgical team to the viral aerosol plume and secretions, thereby increasing the risk of transmission to healthcare providers. In general, **extended endotracheal intubation** with a balloon inflated prior to the first breath should be the standard of care for the **entire duration of ventilation** in patients.

### Recommendations:

In the COVID-19 positive patient, tracheotomy should not be routinely considered in any endotracheally intubated patient until the patient has been determined to be cleared of the COVID virus and isolation precautions have been discontinued.





Canadian Society of Otolaryngology - Head and Neck Surgery /  
Soci t  canadienne d'oto-rhino-laryngologie et de chirurgie cervico-faciale

- **We strongly recommend against performing a tracheotomy in COVID-19 patients who are still infectious. This should only be considered in this group if the endotracheal tube is proving insufficient to provide an adequate airway.**
- In the COVID-19 positive patient, requests for tracheotomy should generally not be considered regardless of duration of endotracheal intubation. Requests for tracheotomy should be considered only in exceptional circumstances on a case by case basis with thorough discussion of the risks and benefits between the ICU Attending and the Attending Surgeon. In this exceptional circumstance, the use of PPE with PAPRs is required.

The following recommendations are made regarding **performance of the tracheotomy procedure in the COVID-19 negative patient:**

- We recommend the tracheotomy should be performed in an open fashion in the operating room or in the ICU, ideally in a negative pressure room. The tracheotomy should be performed using complete neuromuscular paralysis to help reduce the potential for aerosol generation.
- Percutaneous tracheotomy requires the use of flexible fiber-optic bronchoscopy, with bronchoscopy being an AGMP itself. The risk/benefits of transferring from an ICU setting to the OR needs to be weighed against the risk of aerosolization with bronchoscopy.
- The tracheotomy should be performed primarily by the most experienced surgeon, preferably the attending surgeon and most experienced anesthesiologist.
- The surgical staff, anesthesia and nursing staff should be kept to the lowest number possible to safely carry out the procedure and any transportation required.
- Additionally, any upper airway surgery that must proceed should have the requirement of urgent COVID-19 testing/clearance of the patient before initiating surgery.
- Due to the possibility of false negative COVID-19 testing at this time and the high risk level of viral contamination with airway surgery, we are recommending N95 masks and face shield be worn by the surgical team for patients that have thus far tested negative for COVID-19 during this pandemic. This may be modified as test certainty improves.

**Emergency Tracheotomy (Imminent airway obstruction with unknown COVID-19 status)**

- Manage the patient as presumed COVID-19 positive.
- Full aerosol PPE including PAPR equipment or equivalent should be used. N95 masks alone may not be sufficient according to colleagues from China.
- Intubation rather than tracheotomy would be highly preferable.
- Avoid use of high flow oxygen/high flow nasal cannula.
- Intubation should be performed by the most skilled person present to maximize initial attempt success.
- Most skilled and available airway manager (Otolaryngology, General Surgeon, Thoracic Surgeon, TTL) for tracheotomy if required.
- Reduce unnecessary team members to limit potential spread of disease.
- See Procedure for elective tracheotomy above.
- **Awake tracheotomy and cricothyroidotomy** are to be considered **very high risk** for viral plume spread and should be avoided. Only in very extenuating circumstances should this be considered. A discussion between team members (e.g. anesthesia,





Canadian Society of Otolaryngology - Head and Neck Surgery /  
Société canadienne d'oto-rhino-laryngologie et de chirurgie cervico-faciale

otolaryngology-hns, general/thoracic surgeon, TTL, emergency physician, critical care physician) should be undertaken to determine the risk/benefit profile for each situation.

### **Elective/Emergent Tracheotomy Procedural Considerations**

- Paralyze the patient to avoid coughing.
- Non-fenestrated, cuffed tracheotomy tube of appropriate size, with balloon inflated sufficiently to avoid cuff leak/avoid aerosolizing the virus.
- Careful attention to avoid damaging the endotracheal tube cuff during insertion.
- Initial advancement of the endotracheal tube could be performed to make the cuff distal to the tracheotomy incision (to prevent airflow through the surgical tracheotomy).
- If possible, cease ventilation during tracheal incision and ensure the cuff is still inflated before reinitiating ventilation.
- Ventilation to cease prior to tracheotomy tube insertion and ensure swift and accurate placement of tracheotomy tube with prompt inflation of the cuff (generous inflation of cuff to ensure seal against tracheal wall).
- Attach anesthetic circuit to the tracheostomy tube and manually ventilate gently with the aim of minimizing an airway leak.
- Ideally, confirm placement with end tidal CO<sub>2</sub> measurement.
- Ensure there is no leak from the cuff and the tube is secured.
- HME should be placed on the tracheotomy to reduce shedding of the virus should the anesthetic tubing be disconnected.
- **Avoid disconnecting HME, but if necessary, disconnect distal to HME.**
- Avoid/minimize use of open suction in the airway prior to insertion of tracheotomy as this is aerosol generating. Safer suction through the closed airway circuit is recommended if possible.
- We caution the use of bronchoscopy as detailed above. If required, utilize a video bronchoscope and appropriate connectors to minimize aerosol generation. Limit the presence of staff in the room to the bare minimum.

### **Abbreviations**

AGMP - Aerosol Generating Medical Procedure

PAPRs – Powered Air Purifying Respirators\*

PPE – Personal Protective Equipment

HME - Heat and moisture exchanger

TTL – Trauma Team Leader

\*PAPRs are reusable respirators that are typically loose-fitting hooded or helmeted. They are equipped with a battery-powered blower to force air through a particle filter for the wearer to breath. They are capable of reducing airborne exposures at efficiencies that typically exceed the N95 and EHFR, using a high-efficiency particulate air filter (information from the Department of Health and Human Services, Centre for Disease Control and Prevention, United States).

### **Post-operative Care**

The post-operative care of tracheotomized patients in the COVID-19 era is a complex issue. As such, we are developing a second document which will deal with this topic.





Canadian Society of Otolaryngology - Head and Neck Surgery /  
Soci t  canadienne d'oto-rhino-laryngologie et de chirurgie cervico-faciale

## Disclaimer

The Canadian Society of Otolaryngology - Head & Neck Surgery (CSO-HNS) has developed this information as guidance for its members. This is based on information available at the time of writing (March 22, 2020) and the Society recognizes that the situation is evolving rapidly, so recommendations may change. The guidance included in this document does not replace regular standards of care, nor do they replace the application of clinical judgement to each individual presentation, nor variations due to jurisdiction or facility type.

The CSO-HNS is not liable for the accuracy or completeness of the information in this document. The information in this document cannot replace professional advice.

## Resources/References:

<https://www.mja.com.au/journal/2020/212/10/consensus-statement-safe-airway-society-principles-airway-management-and>

[https://link.springer.com/epdf/10.1007/s12630-020-01591-x?shared\\_access\\_token=HJRC31WFdVviRmPTESxKlve4RwlQNchNByi7wbcMAY52WCI8YrVr0ysBWORVfDyatXyGA-oJgYnzznCm2\\_QCUNZHGW0t1FrYdul3s6T0pQF4Au6pH6zuvckKRGNdGfKW56wnU5ReqCQ-75gTZy77HRA%3D%3D](https://link.springer.com/epdf/10.1007/s12630-020-01591-x?shared_access_token=HJRC31WFdVviRmPTESxKlve4RwlQNchNByi7wbcMAY52WCI8YrVr0ysBWORVfDyatXyGA-oJgYnzznCm2_QCUNZHGW0t1FrYdul3s6T0pQF4Au6pH6zuvckKRGNdGfKW56wnU5ReqCQ-75gTZy77HRA%3D%3D)

<https://www.entuk.org/tracheotomy-guidance-during-covid-19-pandemic>

[https://www.asa.org.au/wordpress/wp-content/uploads/News/eNews/covid-19/ASA\\_airway\\_management.pdf](https://www.asa.org.au/wordpress/wp-content/uploads/News/eNews/covid-19/ASA_airway_management.pdf)

<https://link.springer.com/article/10.1007/s12630-020-01620-9>

<https://www.wfsahq.org/resources/coronavirus>

<https://www.fda.gov/media/135662/download>

Wuhan Level 3 precautions video including PAPR, full hooded suites for COVID positive patients available at: <https://www.youtube.com/watch?v=BSTDmkftc1I>

Please address any correspondence to the Canadian Society of Otolaryngology – Head & Neck Surgery at [cs0.hns@sympatico.ca](mailto:cs0.hns@sympatico.ca)

Version: March 22, 2020

