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CTS GUIDELINES AND POSITION STATEMENTS

Helping Canadian health care providers to optimize Sleep Disordered Breathing management for their patients during the COVID-19 pandemic

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Sleep Disordered Breathing (SDB) is a common chronic disorder and encompasses a range of diseases including obstructive sleep apnea (OSA) (by far the most common), and central sleep disorders (eg, associated with neuromuscular disease, opioid use, congestive heart failure). Diagnosis is based on physiologic measurement of a variety of respiratory and other physiologic signals, either in a sleep laboratory or at home. Many of these patients use positive airway pressure (PAP) devices during the night, including continuous positive airway pressure (CPAP), bilevel positive airway pressure (BPAP), or other more complex modes (eg, adaptive servo ventilation [ASV]).

This position statement aims to provide rapid guidance to sleep practitioners and other health care providers for management of these patients during the COVID-19 pandemic. This document was based on the consensus of the authors, many of whom are members of the SDB Guideline Committee of the Canadian Thoracic Society. The recommendations are informed by a very limited body of evidence and recommendations from other international guideline bodies. These recommendations are subject to change as information regarding COVID-19 and its effects are further understood. We plan to update this guidance at least once a month and as new information becomes available, and we recommend sleep practitioners and other health care providers periodically check the Canadian Thoracic Society website for updates.

Sleep clinic/laboratory testing

- Routine in-person visits should be avoided, and virtual care (telemedicine/telephone visits/consultations) should be considered as alternative options.
- **To minimize risks to other patients, staff, and patients' co-habitants, both sleep laboratory and home testing is strongly discouraged and should be limited to extremely urgent cases (life-threatening).** The definition of what constitutes an "extremely urgent" case should be based on clinical judgment. In general, this can be considered in cases of unstable cardiopulmonary disease in which SDB is a substantial contributor (eg, right heart failure, nocturnal angina, hypercapnia in the setting of neuromuscular disease, and/or severe nocturnal hypoxemia). However, even in some of these circumstances, empiric treatment may be considered (see fourth bullet point).
- Any testing (home or laboratory) during this time is strongly discouraged.
- However, if testing is urgently required, home testing (preferably with disposable equipment), if locally available, would be strongly preferred over in-laboratory testing, given risks to staff and other patients in the laboratory setting. If laboratory testing is required, **proper personal protective equipment (PPE) for all staff and cleaning precautions for the physical space and equipment should be instituted in all cases.** Ideally, patients should attend the sleep test alone and be screened and/or tested for COVID prior to sleep laboratory testing, depending on the local capacity and rules for COVID testing. In-laboratory PAP, titration studies should be avoided given potential risks of aerosolization (as PAP is thought to be aerosol-generating).
- In cases where clinical suspicion of SDB is high based on clinical algorithms, empiric treatment with delayed diagnostic testing could also be considered. This could include an empiric trial of auto-titrating PAP, nocturnal oxygen, and BPAP, among others. Appropriate patients may include: unstable/severe cardiopulmonary disease, neuromuscular disease and respiratory distress/hypercapnia, severe nocturnal hypoxemia, and substantial

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excessive daytime sleepiness with severe impairment of quality of life/daytime function.
- As per the aforementioned, new PAP prescriptions should be limited and delayed if possible. However, for patients who do require new PAP prescriptions on an urgent basis, rental machines should be discouraged. The best option is the sale of new machines/masks (eg, auto-titrating devices, remote titration), preferably sent by mail rather than picked up in person. COVID confirmed/suspected patients should not be started on PAP until after symptoms have resolved and ideally, two consecutive negative COVID tests have been confirmed, if at all possible.

Patients using PAP at home

- People without suspected/confirmed COVID should continue to use their PAP at home as they normally would. Cleaning the mask and hose should be continued as per the manufacturer recommendations and instructions (eg, changing machine filters, cleaning surfaces, humidifier, mask and tubing). Masks and machines should not be shared. Increasing the frequency of deep cleaning of the mask and hose should be considered if any respiratory symptoms develop, even these are insufficient to qualify as "suspected COVID."
- For patients with suspected/confirmed COVID at home, standard isolation procedures should be instituted as per Public Health Agency of Canada guidance. In addition, PAP devices can likely aerosolize droplets. Therefore, the patient should discuss with his/her doctor whether PAP should be continued, balancing risks/benefits of continuing PAP, while taking into account SDB severity and other clinical factors, as well as the presence of co-habitants and ability to physically distance from co-habitants during sleep. For example, it might be reasonable to withhold PAP in a patient with mild OSA but, perhaps, not so in a patient with severe SDB associated with obesity hypoventilation syndrome.
- If PAP is continued in a suspected/confirmed COVID patient, if the patient lives in a household with other people, he/she should sleep alone in a separate room, use a separate bathroom, keep appropriate distance from others, clean the mask daily with a cleaning wipe, and clean the hose with sterilizing solution (eg, sodium hypochlorite solution of 0.1% or 1000 ppm) every other day. Mask, filter and hose should be replaced once the illness has resolved. Other measures that could be helpful in reducing transmission include: discontinuation of humidification and mask change to full face mask. Additional measures include: use of a non-vented mask with an expiratory port and filter added to the tubing, or change to a dual closed circuit system with a filter placed over the exhaust port. Possible configurations and details can be seen here.
- Caregivers may also be at risk, especially for patients who cannot apply PAP by themselves and rely on caregivers to do so (eg, children). If contact cannot be avoided for this reason, caregivers should also take appropriate precautions.
- Without PAP, some patients may have health risks in the short term, such as accidents or falls. Depending on the situation, risk-mitigation strategies may be considered such as advising the patient to stop driving. Alternatives such as positional therapy and limiting alcohol/sedatives could be considered.

Patients with known SDB using PAP and who are admitted to hospital with confirmed/ suspected COVID

The patient's physician should balance the need for PAP against the risks of potential viral transmission with PAP. For example, it might be reasonable to withhold CPAP temporarily in a patient with mild/moderate OSA.

- If PAP is continued, the patient should use their own equipment/mask, if possible. Guidelines as per hospital infection control policy should be followed if PAP is continued.
- These may include use of a private/negative pressure room, airborne precautions during PAP use, discontinuation of humidification and mask modification (as previously detailed). A heat moisture exchanger (HME) could be used instead of a humidifier attachment. Patients switched to full face mask who cannot remove the mask on their own require an increased level of monitoring because of aspiration risk (especially important in pediatric patients).

Patients with newly diagnosed SDB in the hospital in whom PAP is urgently required

Risks and benefits of immediate therapy need to be weighed carefully with (preferably) respiratory medicine specialist consultation. However, if therapy is considered imperative and potentially life-saving then it should be initiated according to hospital infection control guidelines.

Additional resources for patients and practitioners:

American Academy of Sleep Medicine: https://aasm.org/covid-19-resources/covid-19-mitigation-strategies-sleep-clinics-labs

American College of Chest Physicians (CHEST):

https://foundation.chestnet.org/patient-education-resources/covid-19-resources-care-recommendations-home-based-ventilation-patients/?utm_content=123520270&utm_medium=social&utm_source=facebook&hss_channel=fbp-76297933103\

British Thoracic Society:

https://www.brit-thoracic.org.uk/media/455098/osa-alliance-cpap-covid-19-advice-20-3-20-v10.pdf

European Respiratory Journal:

Exhaled air dispersion during high-flow nasal cannula therapy *vs.* CPAP *via* different masks. https://erj.ersjournals.com/content/early/2019/01/16/13993003.02339-2018