

Response to draft proposal for Ontario College of Physicians and Surgeons “Infection Prevention and Control for Clinical Office Practice”

Comment by the Canadian Aerosol Transmission Coalition, 6th May 2024
(<https://www.aerosoltransmissioncoalition.ca/>)

In addition to the traditional (and in some cases dated) concepts presented in the clinical guidance draft, it would be appropriate to incorporate measures consistent with recent advances in the understanding of infectious disease transmission, such as studies during the current COVID-19 pandemic, as well as learnings from the 2003 SARS outbreak, (see Report of the SARS Commission¹). The following points are based on these.

It seems a basic expectation that a practice document issued by the provincial governing body for senior medical professionals will emphasize compliance with legal requirements and related national standards in its guidance.

Clinics and other healthcare facilities are places of employment under the law, and therefore the prime importance of meeting obligations and responsibilities under the Ontario Occupational Health and Safety Act² (OHSA) should be highlighted in the first paragraph of this Practice Notice, rather than left just as a footnote.

Applicable National Standards of Canada such as CSA Z94.4 “Selection, Use and Care of Respirators”³, which is cited in OHSA regulations, need to be referenced as a required protocol. The current (2018) version of this standard provides guidance on risk assessment for workplaces such as healthcare facilities where respiratory exposure to infectious biological materials can occur, and a systematic method for selection of appropriate respiratory protective equipment. Compliance with this standard is consistent with regulatory requirements under the OHSA.

Recent well-cited studies^{4,5} have shown that measured infectious particle dispersion by coughing, sneezing or talking can exceed by orders of magnitude that caused by most traditional aerosol generating medical procedures. This, along with the observation of pre-symptomatic infectivity of individuals with COVID-19, means that infection in clinics in current and future pandemics can be expected to be spread not only from patients and medical procedures, but also from visitors and co-workers. In recognition of this, appropriate general controls and protective measures need to be ensured.

Also, the practice guidance has to recognise that infectious aerosols readily follow airflow patterns to spread widely, and can remain airborne and viable over time, so that, for instance, they could still pose a hazard even after a room has been vacated.

Therefore, effective ventilation providing clean air by one or more of filtration, sterilization and fresh air intake is paramount: facility compliance with applicable CSA⁶ or ASHRAE^{7,8} ventilation standards needs to be emphasized. Use of real-time air quality monitoring

equipment provides an added benefit. Appropriate isolation precautions and personal protective equipment combine with ventilation for improved infection control.

When anyone working in a clinic acquires an infection, it would be a good practice for continuous improvement to document the case and investigate the cause, even if it is suspected to have arisen outside the workplace.

Point 2(v) of the guidance indicates that physicians must wear "... a medical mask when required to prevent transmission of infectious agents in droplets and airborne particles...". The ineffectiveness of poorly-fitting facial coverings like these in protecting the airways is well-known by now⁹: comparison quantitative measurements show that a medical mask is in fact just as good as a hand over the mouth in preventing inhalation of particles in the air. A properly selected and fitted respirator is at least hundred times more effective¹⁰. New developments in respirator designs giving greater comfort and ease of use – particularly for re-usable elastomeric and powered air purifying respirators – make these very attractive options over disposable facepieces, improving protection, reducing the volume of waste and saving costs^{11,12}.

Also, a sharp distinction between "droplets" and "airborne particles" is inconsistent with physical observation using modern methodology, as a spectrum of particle sizes can be emitted by an infection source: size and buoyancy (which contribute to dispersion) change over time¹³.

To improve this document, in addition to addressing regulations and standards, it is necessary as a minimum to add clauses on ventilation and personal protective equipment, incorporating the following suggested wording:

- Ventilation in healthcare facilities must meet current versions of standards such as CSA Z317.2 or ASHRAE 170 or 241.
- The employer must provide required personal protective equipment (gloves, gowns, approved respirators etc.) at no cost to the employees.
- CSA or NIOSH-approved respirators must be worn for protection against known or suspected sources of infection transmitted through the air, including that from individuals (patients, visitors, co-workers) and materials generated from medical procedures and laboratory sample processing.
- Such respirators must be selected, used and maintained in accordance with the version of Canadian Standard CSA Z94.4 "Selection, Use and Care of Respirators" cited in current regulations. All applicable requirements including initial and repeat fit testing, training and individual accommodation must be undertaken: the standard cannot be "cherry-picked".
- Various types of respiratory protection may be required to meet needs for all employees and tasks: as well as "N95"-type disposable filtering facepieces, re-

usable elastomeric respirators and powered air purifying respirators are available: re-usable respirators may offer superior protection, reduce waste and are generally more cost-effective than disposable types.

- Records of employees' medical clearance for respirator use, fit testing and training in respirator use must be maintained in accordance with applicable regulations and standards.

Thank you for the opportunity to comment.

References

Note that this list includes a variety of sources and formats, but covers just a fraction of the available information supporting the points made.

¹ The SARS Commission https://www.archives.gov.on.ca/en/e_records/sars/report/

² Occupational Health and Safety Act, R.S.O. 1990, c. O.1
<https://www.ontario.ca/laws/statute/90o01>

³ CAN/CSA Z94.4:18 National Standard of Canada, "Selection, Use and Care of Respirators". Viewable version at: <https://community.csagroup.org/docs/DOC-121294>

⁴ "The effect of respiratory activity, non-invasive respiratory support and facemasks on aerosol generation and its relevance to COVID-19", N. M. Wilson, G. B. Marks, A. Eckhardt et al., *Anaesthesia*, 76 p.1465-1474 (2021).
<https://associationofanaesthetists-publications.onlinelibrary.wiley.com/doi/epdf/10.1111/anae.15475>

⁵ Re-evaluating our language when reducing risk of SARS-CoV-2 transmission to healthcare workers: Time to rethink the term, "aerosol-generating procedures" Andrew Silvers, David J. Brewster et al., *Virology Journal* (2022) 19:189
<https://virologyj.biomedcentral.com/articles/10.1186/s12985-022-01910-2>

⁶ CAN/CSA Z317.2:19 National Standard of Canada, "Special requirements for heating, ventilation, and air-conditioning (HVAC) systems in health care facilities"
<https://www.csagroup.org/store/product/CSA%20Z317.2:19/>

⁷ Ventilation of Health Care Facilities ANSI/ASHRAE/ASHE Standard 170-2017
<https://www.ashrae.org/technical-resources/standards-and-guidelines/standards-addenda/ansi-ashrae-ashe-standard-170-2017-ventilation-of-health-care-facilities>

⁸ ASHRAE Standard 241-2023, Control of Infectious Aerosols
https://store accuristech.com/ashrae/standards/ashrae-241-2023?product_id=2567398

⁹ Understanding the Difference – CDC Guidance
<https://www.cdc.gov/niosh/npptl/pdfs/understanddifferenceinfographic-508.pdf>

¹⁰ “Why your masks may not be as protective as you think”, CBC Television 23rd March 2021. <https://www.youtube.com/watch?v=6NsHfBQw42w>

¹¹ ”Thinking green: modelling respirator reuse strategies to reduce cost and waste”, Chu J, Ghenand O, Collins J, et al. BMJ Open 2021;11:e048687. [https://doi.org: 10.1136/bmjopen-2021-048687](https://doi.org/10.1136/bmjopen-2021-048687).

¹² “Elastomeric respirators are safer and more sustainable alternatives to disposable N95 masks during the coronavirus outbreak”, Chiang, J., Hanna, A., Lebowitz, D. et al. Int J Emerg Med 13, 39 (2020). <https://doi.org/10.1186/s12245-020-00296-8>

¹³ What were the historical reasons for the resistance to recognizing airborne transmission during the COVID-19 pandemic?, Jose L. Jimenez, Linsey C. Marr et al. Indoor Air. 2022 Aug; 32(8): e13070. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9538841/>