ONTARIO SOCIETY OF PROFESSIONAL ENGINEERS

May 6, 2024

College of Physicians and Surgeons of Ontario
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Subject: Feedback to the CPSO *Infection Prevention and Control for Clinical Office Practice Policy* and *Advice Document*

The Ontario Society of Professional Engineers (OSPE) is the advocacy body and voice of the engineering profession in Ontario. Ontario currently has over 85,000 professional engineers, 250,000 engineering graduates, 6,600 engineering post-graduate students and 37,000 engineering undergraduate students. In response to the COVID-19 pandemic, OSPE established an Indoor Air Quality Advisory Group including leading experts in air quality, ventilation, engineering, and medical fields. This group has produced a series of guidance documents and continues to advocate at both provincial and federal level for regulations that protect the health of Canadians.

OSPE appreciates the opportunity to provide feedback to the *CPSO's Infection Prevention and Control for Clinical Office Practice Policy* and draft *Advice Document*. Below, OSPE's recommendations relating to the protection of patients and healthcare workers from airborne diseases and pollutants are outlined. Our recommendations relate to **Personal Protective Equipment (PPE)** use and **ventilation and filtration** in indoor spaces.

PPE Use

Point 2.iv. of the draft policy states that "wearing a medical mask when required to prevent transmission of infectious agents in droplets and airborne particles, and during aseptic and invasive procedures". We would like to emphasize the important difference between a medical mask and a respirator. Medical masks are not adequate PPE for infectious agents which are transmitted by inhalable respiratory particles (referred to in your document as "airborne particles"). We suggest that your document's terminology be changed so that it reflects the current understanding of PPE and transmission routes.

Ventilation and Filtration in Indoor Spaces

Many healthcare spaces are either not designed to comply with applicable ventilation standards or are not in compliance with these standards. Ensuring acceptable indoor air quality is an important tool to providing patients and healthcare workers with a low-risk environment. Acceptable indoor air quality starts with compliance with CSA Standard Z317.2 – HVAC Systems in Health Care Facilities. This standard includes:

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- Two air changes per hour of outdoor air and six total air changes per hour for examination, treatment and consulting rooms[1]
- Four air changes per hour of outdoor air and 12 total air changes per hour in patient waiting rooms[2]
- Use of MERV-14 filters for all patient care areas[3]

Furthermore, proper protection from airborne diseases should be achieved through compliance with ASHRAE 241-2023 Control of Infectious Aerosols and the ability to operate the building in infection risk management mode. This includes:

- 20 liters/second/person of equivalent clean air in exam rooms
- 45 liters/second/person of equivalent clean air in waiting rooms

Finally, transparency and monitoring are the best methods to ensure a safe space is maintained for health care workers and patients. This can be achieved through monitoring carbon dioxide concentrations to verify required outdoor airflow is being achieved. In spaces compliant with CSA Z317.2-2019, in accordance with typical densities listed in ASHRAE 62.1-2022, the expected maximum CO_2 concentrations when at full capacity are:

- 1000 ppm in offices, clinics, exam, treatment or consulting rooms
- 1400 ppm in patient waiting rooms

However, although these CO_2 concentrations indicate a system complying with CSA Z317.2-2019, for *good* indoor air quality, recommended average CO_2 concentrations are 800 ppm.[4] Additionally, this only confirms the outdoor airflow component of the required clean air and additional filtration, as required by CSA Z317.2-2019 and is necessary for acceptable indoor air quality.

In conclusion, OSPE suggests the CPSO *Infection Prevention and Control for Clinical Office Practice Policy* be updated to differentiate between medical masks and respirators. Additionally, this policy should recommend adherence to guidelines CSA Standard Z317.2-2019 and ASHRAE 241-2023 Control of Infectious Aerosols, coupled with transparent monitoring practices. Compliance with these standards ensures the well-being of healthcare workers and patients. [redacted]

Sincerely,

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Sandro Perruzza
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[1] CSA Z317.2-2019 Table 1
[2] CSA Z317.2-2019 Table 1
[3] CSA Z317.2-2019 Table 3
[4] https://www.science.org/doi/10.1126/science.adl067