

## **Science tells us that portable air filters reduce infection risk. It's time for public health authorities to make this clear.**

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### **Summary**

Portable air filters (PAFs) with HEPA or MERV-13 filters remove respiratory particles from the air and reduce the risk of transmission of airborne diseases like COVID-19. PAFs are not complicated to choose, use or maintain, and there is high-quality guidance available to help. Going forward, public health authorities should ensure that PAFs are appropriately positioned in infection prevention and control guidance, plans and resources.

### **Details**

Who we are: A multidisciplinary team with expertise in aerosol science, infectious diseases, occupational hygiene, epidemiology, primary care, public health, engineering, indoor air, community services and knowledge translation.

What we did: Reviewed evidence related to PAFs and the prevention and control of infectious diseases such as COVID-19 through the lens of our training and experiences. A table of the different types of literature we reviewed, along with citations, is available [here](#). The full text of our review is available [here](#).<sup>1</sup>

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<sup>1</sup> We reviewed English-language literature we are familiar with through our work. We aimed to address issues raised in the context of Canadian public health responses to COVID-19 and portable air filters. Where the literature we review is related to infections, it is related to specific types of infections, please see references.

Why we did it: Throughout the COVID-19 pandemic, some Canadian public health advisors and decision-makers have shared conflicting and confusing messages about PAFs. We want to make sure that PAFs are appropriately positioned in infection prevention and control guidance from now on.

What we want to emphasize: People release respiratory particles when breathing, talking, coughing or sneezing. If someone is infected with a virus or bacteria, they can release it into the air through these respiratory particles. Both ventilation and filtration help remove these respiratory particles from room air.<sup>2</sup> Ventilation accomplishes this by replacing room air with outside air through windows or HVAC systems. Filtration accomplishes this by passing room air through high-efficiency filters<sup>3</sup> in HVAC systems or PAFs. Some public health advisors have implied that while ventilation works to reduce COVID-19 transmission risk, PAFs may not. This assertion is not consistent with the physics that governs both interventions. Ventilation removes particles, filtration removes particles, and **equivalency in particle removal rates is widely accepted**, such as the equivalent clean airflow defined in [ASHRAE Standard 241](#). For details, please see "[Table S2, Summary of clean air delivery rate \(CADR\) and equivalent air change per hour \(ACH\) of portable air filters reported in recent studies.](#)"

What we hope people do with this information: We hope that people use PAFs to help reduce the risk of transmission for airborne infections, particularly in public and congregate settings that do not have optimal ventilation and filtration provided through their HVAC systems. We also expect that, going forward, public health advisors and decision-makers will share accurate information about the role of PAFs in infection prevention and control.

Next steps:

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<sup>2</sup> When infections are circulating in the community, no indoor space will be perfectly safe, even with excellent ventilation and filtration. In particular, close contact and crowded conditions will present a risk. In these conditions (and all others), well-fitted respirator-grade masks can help protect those who are not infected with infections such as COVID-19 and reduce the amount of particles released into the room by those who are.

<sup>3</sup> HEPA filters, or HVAC filters that are MERV-13 or higher.

To help respond to gaps in public health guidance, some members of our team have created an [indoor air checklist for community spaces](#). If you use it, please let us know how it goes through Pearl Buhariwala at [pearl.buhariwala@unityhealth.to](mailto:pearl.buhariwala@unityhealth.to).

In addition, in April 2022, we launched a [virtual ventilation and filtration consultation program](#), which gives people working in community spaces direct access to indoor air quality experts. In April 2023, we evaluated the program, you can see the results [here](#). **To make an appointment for our virtual ventilation and filtration program**, please contact Pearl Buhariwala at [pearl.buhariwala@unityhealth.to](mailto:pearl.buhariwala@unityhealth.to)

**For more information about PAFs**, please contact Amy (Tianyuan) Li at:

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