

## FOCUS ON

# Face Shields for Source Control of COVID-19

July 16, 2020

## Introduction

Questions about the use of face shields without masks as a source control measure in situations where physical distancing cannot be maintained or individuals are unable to wear masks have been raised.<sup>1</sup> This document provides a synopsis of currently available guidance for face shield use as a source control measure for COVID-19 and the scientific evidence behind the use of face shields instead of non-medical masks as both personal protective equipment and source control.

## Terminology

- Measures that are used for **source control** are intended to prevent the spread of infection from the wearer, protecting those around them. Examples of source control include covering the mouth when coughing, performing hand hygiene, and wearing a mask in public.
- **Personal Protective Equipment (PPE)** are worn items intended to protect the wearer from others.
- **Face shields** are devices that have a transparent window or visor supported in front of the face and provide a barrier of protection to the facial area and related mucous membranes (eyes, nose, lips). Face shields are PPE, considered an alternative to goggles and are not meant to function as a primary device for respiratory protection.
- **Surgical masks** can function either as PPE or for source control. PPE for protection against droplet-transmitted respiratory infections consists of a mask, gloves, gown and eye protection, and is chosen as part of point-of-care risk assessment. **Cloth or non-medical masks** are face coverings worn for source control and are not PPE.

## Background

Physical distancing has been one of the primary measures used to prevent the spread of COVID-19. As the COVID-19 incidence decreases and more public settings and workplaces reopen while the risk of COVID-19 transmission remains, the use of non-medical masks as a source control measure (e.g. to protect those around the wearer) has been recommended where physical distancing cannot be maintained.

However, the wearing of non-medical masks may present challenges for some people due to health reasons, and for others due to interference with their work activities where facial movements and expressions are important (e.g., working with children or individuals with hearing impairment). The use of face shields instead of non-medical masks has been suggested as a potential source control measure.

## Methods

- A review of current guidance documents on source control measures for COVID-19, including public health agencies, occupational health and safety organizations, and other grey literature was completed.
- A scoping review of the scientific literature was performed to assess the evidence for face shields as both PPE and source control.

## Results

### Guidance on Face Shields as Source Control

- Face shields have been suggested as a source control measure for COVID-19 when non-medical masks are in short supply/unavailable or when mask use may present challenges (e.g., for people with certain mental health disorders, developmental disabilities, impaired hearing) by the [World Health Organization \(WHO\)](#).<sup>2</sup>
- The [WHO](#) and the [United States Centers for Disease Control and Prevention \(CDC\)](#) note that face shields alone do not perform as well as masks with respect to the prevention of droplet transmission. Face shields should cover the sides of the face and extend below the chin.<sup>2,3</sup>
- The [Infectious Disease Society of America](#) lists face shields as part of physical distancing measures (rather than as PPE or source control). It is not specified if face shields are meant to be used alone or with a face mask. Other practices described include face masks, limited gatherings, and continued distancing for susceptible adults.<sup>4</sup>
- The [Quebec Ministry of Health and Social Services](#) has recommended that a face covering with a “clear window” incorporated into it can be used where there is concern over difficulty in communication as a result of using a face covering (such as a non-medical mask), and when physical distancing is not possible.<sup>5</sup>
- The [CDC](#) does not recommend the use of face shields for normal everyday activities, for newborns or infants, or as a substitute for cloth face coverings. They state, “It is not known if face shields provide any benefit as source control to protect others from the spray of respiratory particles... If face shields are used without a mask, they should wrap around the sides of the wearer’s face and extend to below the chin.”<sup>3</sup>

### Evidence on Face Shields as Personal Protective Equipment

- A review from 2016 by [Roberge](#) evaluated the evidence for using face shields as PPE in the health care setting.<sup>6</sup> Some cited laboratory studies that measured droplet dispersion (by simulating a sneeze/cough directed toward a mannequin wearing a face shield) noted aerosol blockage (which declined with reduced droplet size). Others cited “real world” (health care setting) studies found limited/variable evidence for face shield effectiveness, and called for more research in this area. The author concluded that the lack of evidence supports the use of face shields only in addition to other PPE (e.g. medical masks).<sup>6</sup>

- A review from the [Institute of Medicine](#) evaluated the evidence on PPE for respiratory viruses for health care workers. In this review they appraised the evidence for face shields and, citing many of the same studies as in Roberge (2016), state, “Little is known about the potential PPE role of face shields and face masks in preventing transmission of viral respiratory diseases.”<sup>7</sup>

## Limitations

The number of studies on the use of face shields for source control and as PPE are limited and may not fully represent the people who may use face shields (e.g., individuals that do not work in a health care setting). While some laboratory studies have measured droplet dispersion with the use of face shields, their performance have not been evaluated outside of a health care setting.

## Conclusion

- Non-medical masks are recommended by some jurisdictions to reduce the spread of respiratory droplets from an infected person. Face shields feature a looser fit and transparency, which may be why their use in place of non-medical masks has been considered only in certain circumstances (e.g., when masks are in shortage, when wearing masks interferes with speech clarity, for those impacted by heat stress).
- At this time there is some experimental evidence to support that face shields may block aerosolized droplets, which supports its current use as PPE (in addition to other equipment, including face masks). To date, there is no evidence that face shields alone are effective either as source control or as PPE.

## References

1. Perencevich EN, Diekema DJ, Edmond MB. Moving personal protective equipment into the community: face shields and containment of COVID-19. *JAMA*. 2020;323(22):2252-3. Available from: <https://doi.org/10.1001/jama.2020.7477>
2. World Health Organization. Advice on the use of masks in the context of COVID-19: interim guidance, 5 June 2020 [Internet]. Geneva: World Health Organization; 2020 [cited 2020 Jul 2]. Available from: <https://apps.who.int/iris/handle/10665/332293>
3. Centers for Disease Control and Prevention. Coronavirus disease 2019 (COVID-19): considerations for wearing cloth face coverings: help slow the spread of COVID-19 [Internet]. Atlanta, GA: Centers for Disease Control and Prevention; 2020 [modified 2020 Jun 28, cited 2020 Jul 2]. Available from: <https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/cloth-face-cover-guidance.html>
4. Infectious Diseases Society of America. Policy and public health recommendations for easing COVID-19 distancing restrictions [Internet]. Arlington, VA: Infectious Diseases Society of America; 2020 [cited 2020 Jul 2]. Available from: [https://www.idsociety.org/contentassets/9ba35522e0964d51a47ae3b22e59fb47/idsa-recommendations-for-reducing-covid-19-distancing\\_16apr2020\\_final-.pdf](https://www.idsociety.org/contentassets/9ba35522e0964d51a47ae3b22e59fb47/idsa-recommendations-for-reducing-covid-19-distancing_16apr2020_final-.pdf)
5. Gouvernement du Québec. Wearing a mask or a face covering in public settings in the context of the COVID-19 pandemic [Internet]. Québec, QC: Gouvernement du Québec; 2020 [modified 2020 Jun 18; cited 2020 Jun 26]. Available from: <https://www.quebec.ca/en/health/health-issues/a-z/2019-coronavirus/wearing-a-face-covering-in-public-settings-in-the-context-of-the-covid-19-pandemic/>
6. Roberge RJ. Face shields for infection control: a review. *J Occup Environ Hyg*. 2016;13(4):235–42. Available from: <https://doi.org/10.1080/15459624.2015.1095302>
7. Institute of Medicine. Preventing transmission of pandemic influenza and other viral respiratory diseases: personal protective equipment for healthcare personnel: update 2010. Washington, DC: National Academies Press; 2011. Available from: <https://doi.org/10.17226/13027>

## Authors

Mabel Lim, Program Infection Prevention Control Specialist, Infection Prevention and Control, Public Health Ontario

Vince Spilchuk, Public Health Physician, Environmental and Occupational Health, Public Health Ontario

## Reviewers

Jin Hee Kim, Physician Lead, Environmental and Occupational Health, Public Health Ontario

Sandra Callery, Director, Infection Prevention and Control, Public Health Ontario

## Citation

Ontario Agency for Health Protection and Promotion (Public Health Ontario). Focus On: Face Shields for Source Control of COVID-19. Toronto. Ontario; 2020.

©Queen's Printer for Ontario, 2020

## Disclaimer

This document was developed by Public Health Ontario (PHO). PHO provides scientific and technical advice to Ontario's government, public health organizations and health care providers. PHO's work is guided by the current best available evidence at the time of publication.

The application and use of this document is the responsibility of the user. PHO assumes no liability resulting from any such application or use.

This document may be reproduced without permission for non-commercial purposes only and provided that appropriate credit is given to PHO. No changes and/or modifications may be made to this document without express written permission from PHO.

## Public Health Ontario

Public Health Ontario is an agency of the Government of Ontario dedicated to protecting and promoting the health of all Ontarians and reducing inequities in health. Public Health Ontario links public health practitioners, front-line health workers and researchers to the best scientific intelligence and knowledge from around the world.

Public Health Ontario provides expert scientific and technical support to government, local public health units and health care providers relating to the following:

- communicable and infectious diseases
- infection prevention and control
- environmental and occupational health
- emergency preparedness
- health promotion, chronic disease and injury prevention

- public health laboratory services

Public Health Ontario's work also includes surveillance, epidemiology, research, professional development and knowledge services. For more information about PHO, visit: [publichealthontario.ca](https://publichealthontario.ca).

