

FOCUS ON

(ARCHIVED) Masking for Source Control of COVID-19: Considerations for Workers in Non-Healthcare Settings

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Highlights

- Masks can be worn for the purpose of source control, protecting others in close proximity to the wearer by preventing the spread of bacteria and viruses to others.
- Where physical distancing is not possible or where workers have frequent or close contact with the public, a policy to use either medical or non-medical masks may offer some source control. Cloth masks may provide slightly more source control than no mask. However, while masking, meticulous hand hygiene is crucial to avoid self-inoculation from face touching.
- A COVID-19 exposure risk assessment for workers can aid employers considering a policy on masking for source control.
- If pursued, masking for source control needs to be an adjunct to a comprehensive strategy to minimize worker exposure risk.
- In the current context of PPE shortages associated with COVID-19, it is vital that medical masks be conserved for use in healthcare settings. Therefore, non-medical masks (e.g., cloth masks) are preferred in most situations where masking is for source control.

Introduction

This document was generated out of a request on the topic of masking for source control in non-healthcare workplaces. This document is intended to provide a synopsis of relevant scientific and grey literature on the effectiveness of and considerations for implementing such measures to mitigate the spread of COVID-19.

Methods

A rapid review of the literature was performed using Google Scholar, with search terms that included “COVID-19” or “SARS CoV 2” or “respiratory viruses,” and “personal protective equipment” or “source control” or “transmission” or “prevention.” Grey literature (including available published Public Health Ontario documents), as well as applicable sources, including the Centers for Disease Control (CDC), World Health Organization (WHO), Public Health Agency of Canada (PHAC), National Institute for Occupational Safety and Health (NIOSH), Occupational Safety and Health Administration (OSHA), Canadian Centre for Occupational Health and Safety (CCOHS), and American College of Occupational and Environmental Medicine (ACOEM) were consulted.

Current relevant guidance/best practice documents from the [Government of Canada](#),¹ [OSHA](#),² [ACOEM](#),³ and [CCOHS](#)⁴ were also referenced.

Important Context

Personal protective equipment (PPE) is equipment and clothing worn to minimize exposure to hazards and **prevent illnesses and infection for the wearer**.⁵ Examples include masks, eye protection, and gowns. Masks in particular can also be worn for the purpose of **source control**, to prevent the spread of bacteria and viruses **from the wearer to others**⁵ (e.g., wearing a mask to cover the mouth when coughing).

In the context of COVID-19, masks may be used as PPE for some individuals and as source control for others, potentially leading to confusion. In workplaces where they are needed, PPE requirements and usage parameters are well-defined. Little guidance is available on masking for source control in most workplaces. This document outlines considerations on this.

Background

- For workers in non-healthcare settings, the highest risk of exposure to the virus causing COVID-19 from co-workers or members of the public will be from exposure to respiratory secretions (e.g., direct or indirect contact with an infected person’s cough or sneeze).
- The risk to workers in non-healthcare settings where no specific risk for exposure to COVID-19 is present varies by worker and the workplace (e.g., those who interact with members of the public versus working alone; workers unable to physically distance).
- The intent of routine masking in most non-healthcare work settings is source control (i.e., to protect others in close proximity to the wearer). This is due to the potential risk of COVID-19 from someone who does not show any symptoms (i.e., [asymptomatic or pre-symptomatic transmission](#)).⁶

- Among non-healthcare workers, PPE is currently recommended for those [caring for someone who has COVID-19](#).⁷ Masking for source control is recommended in some situations for COVID-19 patients and is [optional](#)⁸ for asymptomatic members of the public.
- [Droplet and contact PPE required in the care of COVID-19 patients](#)⁹ (e.g., in healthcare settings) consists of a medical mask in addition to eye protection, gloves, and gown. It is chosen when a point of care risk assessment determines a reasonable risk of direct and close exposure to individual(s) with active disease.

Evidence on Equipment Used for Source Control and Personal Protection

- Masks for source control reduce transmission of infection from the wearer to those around them. Non-medical masks do not function to filter inhaled air, however, protect the wearer's nose and mouth from droplets, contact and spray.
- PHO's [What We Know So Far About...Wearing Masks in Public](#) (WWKSF)¹⁰ summarizes the evidence on masking in public, for source control and as PPE, as well as available data on homemade and cloth masks. This summary suggests that:
 - Wearing masks (either medical or non-medical) for source control in non-healthcare settings (such as for the general public) may be useful, but the evidence is limited. The review also states that the effect of masking asymptomatic or pre-symptomatic individuals for source control has not been studied.
 - There is experimental evidence that cloth masks may provide slightly more protection as source control than no mask. Homemade and cloth masks as PPE appear to provide less protection than medical-grade disposable masks based on limited data. No specific readily available material has been [consistently](#)¹¹ noted to be superior to any other.
 - Masking can lead to additional contact with the face due to discomfort and potentially increase the risk of infection, highlighting the need for meticulous hand hygiene.
 - In studies where medical mask wearing as PPE in non-healthcare settings was deemed effective, good hand hygiene was also performed.
- No studies on face shields as source control (either alone or with masking) were identified.

Masking for Source Control for Non-Healthcare Workers

- The inability to practice physical distancing with other coworkers has been [cited](#)¹² as a rationale for using masks for source control of an asymptomatic/pre-symptomatic worker. In these cases, a policy to use masks (medical or non-medical) may offer some source control, based on limited evidence, as discussed. Considerations include:
 - Source control protects those around the mask wearer.
 - Masks potentially reduce transfer of fluids from the wearer to others or vice versa. Masks also act as a barrier to touching the mouth and nose with contaminated hands.

- Masking may lead to more hand-face contact, potentially leading to self-inoculation.
- Some workers may not wish to wear a mask or have underlying medical conditions (e.g. asthma, eczema) that make masking difficult or [uncomfortable](#).¹³
- In the current context of PPE shortages associated with COVID-19, it is vital that medical masks be conserved for use in healthcare settings. Therefore, non-medical masks (e.g., cloth masks) are the preferred option in most situations where masking is for source control.
- Any PPE requirements for workers would supersede source control policies, e.g., construction, abatement workers who need respirators for personal protection.
- If masking for source control is pursued as a workplace policy, training on the technique for donning, use, doffing and hand hygiene is critical to support employees on appropriate use.

Considerations for Developing a Masking Policy

- As noted, the risk of exposure to COVID-19 in non-health care workers varies by worker and the workplace. Many occupational health and safety and public health organizations (e.g., [OSHA](#),² [CCOHS](#)⁴ and [PHAC](#)¹) do not recommend routine use of masking for source control in non-healthcare workplaces.
- [ACOEM](#)³ endorses the use of face coverings for source control in non-healthcare workplaces, as per the [CDC](#)'s¹⁴ recommendation for the general public. Their guidance to employers and employees includes the rationale, type, donning, doffing, extended use and reuse.
- Ontario [Ministry of Health documents](#)¹⁵ for various sectors include guidance on staff screening for COVID-19. Symptomatic individuals are not to report to work; they can complete the [self-assessment tool](#)¹⁶ or see their healthcare provider for further instructions. For certain workplaces, more specific guidance may be available for public health management including the use of masking for source control and/or PPE.
- Employers can perform a COVID-19 exposure risk assessment for their workers to inform their policy on masking for source control. [OSHA](#)¹⁷ provides a risk categorization framework based on the job task; WHO's [advice on the use of masks](#)¹⁸ also suggests some considerations:
 - Nature of work, including industry, e.g., critical infrastructure, aviation, food retail, law enforcement; geographic isolation; proximity to the public and/or co-workers (ability to practice physical distancing); work tasks
 - Risk of exposure – examples of occupations where risk of exposure is higher include emergency response, post-mortem care, airline operations
 - Access to health care
 - Available options for hazard control (see below)
- OSHA uses four risk levels to classify work tasks. The framework is adapted in Table 1:

Table 1: COVID-19 exposure risk levels and work tasks, adapted from OSHA

Risk category	Description	Examples (a-e suggested lower to higher risk categories)
Lower Exposure Risk	“Jobs that do not require contact with people known to be, or suspected of being, infected... Workers in this category have minimal occupational contact with the public and other coworkers.”	<ul style="list-style-type: none"> a) Staff working from home b) Office workers able to physically distance c) Delivery/courier, pick-up/drop-off service
Medium Exposure Risk	“Jobs that require frequent/close contact with people who may be infected, but who are not known to have or suspected of having COVID-19.”	<ul style="list-style-type: none"> d) Food service workers*, office workers unable to physically distance, transit workers* e) Grocery store clerks*, child care workers
High Exposure Risk	“Jobs with a high potential for exposure to known or suspected sources” of COVID-19	Healthcare delivery and support staff, medical transport workers, and mortuary workers exposed to known/suspected COVID-19 patients/deceased
Very High Exposure Risk	“Jobs with a very high potential for exposure to known or suspected sources of [COVID-19] during specific medical, postmortem, or laboratory procedures.”	Healthcare workers performing aerosol-generating medical procedures, workers handling of specimens from infected patients, morgue workers performing autopsies on bodies of COVID-19 patients

*Risk among these workers especially will vary by ability to physically distance and other controls available (e.g., physical barriers)

- Where workers are not able to practice physical distancing or have frequent contact with the public, masking could be considered for source control, i.e., to reduce pre-symptomatic or asymptomatic transmission (assuming symptomatic workers do not report to work).
- From an overall workplace perspective, the [hierarchy of controls](#)¹⁹ for exposures to occupational hazards (Table 2) provides a systematic approach to reducing worker exposure risk. If adopted in the workplace, masking for source control needs to be an adjunct to a comprehensive strategy that includes as many controls as possible to minimize worker exposure risk.

Table 2: Hierarchy of controls for worker exposure to COVID-19

Type of control	Description	Examples
Engineering	Remove/block the hazard at the source before it can reach the worker	Physical distancing , ²⁰ physical barriers (e.g., Plexiglass booths), ²¹ environmental cleaning/disinfection ²²
Administrative	Optimizing the movement of workers to minimize potential contact with the hazard	Scheduling (e.g., staggered shifts, breaks, and meals), work from home policies, limited hours, staff reduction, virtual meetings, paid sick leave, temperature screening, symptom screening/reporting
Personal Hygiene	Worker actions or behaviors that may potentially reduce hazard exposure	Hand hygiene , ²³ respiratory etiquette, masking for source control
Personal Protective Equipment	The “last line of defense” when other controls are infeasible, inadequate or exhausted.	Selection based on exposure risk. These may include masks, gloves, eye protection, gowns or coveralls. As well as healthcare settings, PPE may be necessary in industries such as postmortem care and laboratory settings

- Masking for source control could be considered a personal hygiene measure under administrative controls, however it is a worker action that primarily protects others and not the masked worker. As well, the potential infection risk from errors in usage has been discussed.
- If there is a workplace exposure to a case/suspected case of COVID-19, the local public health unit can be contacted. Individuals who are identified as contacts of a case may be advised by the public health unit to [self-isolate](#)²⁴ or [self-monitor](#)²⁵ for symptoms for 14 days from the last exposure.

Conclusions

Masking for source control primarily protects those around the masked worker. It may be useful in non-healthcare settings where physical distancing is not possible and where workers have frequent or close contact with the public; however, the evidence is limited. If implemented, masking for source control needs to be part of a comprehensive strategy to minimize COVID-19 exposure risk for workers. Due to present pandemic-related supply issues for PPE, medical masks are to be conserved for use in healthcare settings. Non-medical masks (e.g., cloth masks) are preferred for non-healthcare usage.

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