

TECHNICAL BRIEF

Interim IPAC Recommendations for Use of Personal Protective Equipment for Care of Individuals with Suspect or Confirmed COVID-19

Updated: December 15, 2021

Overview

The interim recommendations in this technical brief incorporates evidence to date on modes of transmission, effectiveness of personal protective equipment (PPE) in healthcare workers and the undetermined impact of the emergence of the Omicron (B.1.1.529) variant of concern. Recommendations will be updated as more information is available.

Please note that the [Ministry of Health's Directive 5](#) is the provincial baseline standard for provision of PPE for hospitals, long-term care homes and retirement homes during COVID-19.¹

Key Findings

- Healthcare workers (HCWs) are at risk of infection from both occupational and community exposures. Therefore, protection of HCWs from COVID-19 requires both the application of the hierarchy of controls for infection prevention and control (IPAC) in healthcare settings and public health measures aimed at reducing COVID-19 transmission in the community setting, particularly vaccination.
- Enhancing vaccine effectiveness with a third dose will provide increased protection for HCWs from COVID-19 due to the Omicron (B.1.1.529) variant and reduce infection from exposures in both the community and healthcare setting.
- The selection and use of appropriate PPE in the healthcare setting is important given the risk associated with healthcare interactions. The body of existing evidence comparing N95 respirators (or equivalent) to surgical/procedural (medical) masks has substantial limitations related to high risk of bias and unmeasured confounding. This evidence does not currently support a significant protective effect of N95 respirator use over medical masks when caring for patients with suspect or confirmed COVID-19 based on studies conducted prior to the emergence of the Omicron (B.1.1.529) variant.
- There are early estimates of significant increased transmissibility and decreased vaccine effectiveness with the Omicron (B.1.1.529) variant. It is unclear at this time if there is a change in the infectiousness of aerosols as a possible explanation for this increase in transmissibility. In light of this, all layers of protection in healthcare settings should be optimized to prevent transmission until more information is available.

- Given the undetermined impact of the Omicron (B.1.1.529) variant, the interim recommended PPE when providing direct care for patients with suspect or confirmed COVID-19 includes a fit-tested, seal-checked N95 respirator (or equivalent or greater protection), eye protection, gown, and gloves. Other appropriate PPE includes a well-fitted surgical/procedure (medical) mask, or non-fit tested respirator, eye protection, gown and gloves for direct care of patients with suspect or confirmed COVID-19.
- Fit tested N95 respirators (or equivalent or greater protection) should be used when aerosol-generating medical procedures (AGMPs) are performed or anticipated to be performed on patients with suspect or confirmed COVID-19.
- These recommendations are interim and will be re-evaluated as more information on the Omicron (B.1.1.529) variant emerges.

Background

The evidence on the routes of transmission for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) have been summarized elsewhere.^{2,3} SARS-CoV-2 is transmitted most frequently and easily at short range through exposure to respiratory particles that range in size from large droplets to smaller aerosols that can be inhaled or deposited on mucous membranes.² Infection can also occur by touching mucous membranes with soiled hands contaminated with virus.³ There is evidence to suggest long-range transmission can occur under the right set of favourable conditions (e.g. outbreak events in a poorly ventilated space) implicating opportunistic aerosol transmission.²

- General recommendations from a review of guidance on infection prevention and control and personal protection from CDC,⁴ WHO,⁵ Alberta,⁶ British Columbia (BC),⁷ PHAC,⁸ and multiple United Kingdom (UK) jurisdictions⁹⁻¹¹ include the following:
 - All jurisdictions emphasize the use of a Hierarchy of Controls.⁴⁻¹¹ This approach employs multiple levels of assessment to identify appropriate interventions to prevent transmission.
 - For standard care of patients with suspect or confirmed COVID-19, WHO, Alberta, BC, PHAC and multiple UK jurisdictions recommend surgical/procedure (medical) masks.⁵⁻¹¹ CDC preferentially recommends the use of N95 respirators, with medical masks as an alternative minimum standard.⁴
 - In all jurisdictions, an N95 respirator (or equivalent or greater protection) is recommended when aerosol generating procedures are being performed.⁴⁻¹¹
 - All jurisdictions recommend that N95 respirators be considered when the organizational and/or personal assessments determines there is a significant risk of transmission when all elements of hierarchy of controls have been addressed as best as possible.⁴⁻¹¹ However, detailed guidance on risk assessment is generally not provided outside of aerosol generating medical procedures (AGMPs).
- Omicron (B.1.1.529) has been circulating in Ontario.¹² Current evidence points to overall increased transmissibility and the mechanisms for increased transmissibility are unclear. At this stage there is uncertainty if aerosols containing more infectious virus explains the higher transmissibility. The lower vaccine effectiveness suggests that for a given exposure there is a greater likelihood of

infection, and hence the utmost need for optimization and adherence to all layers of current IPAC measures including the fit of respiratory protection. Guidance may change as evidence evolves.^{13,14}

- The risk of COVID-19 infection for HCWs is influenced by multiple factors including virus characteristics (i.e. infectious dose), local epidemiology, healthcare worker factors (i.e. immune status, hand hygiene), PPE practices (including choice, fit and appropriate donning and doffing), patient factors (i.e. vaccination status, ability to mask for source control), interaction (i.e. close, prolonged contact, procedures associated with higher transmission risk), environmental factors (i.e. crowding and ventilation). For the best protection, the use of multiple layered preventive measures should be used in combination to help reduce the risk of COVID-19 infection.
- Ontario HCWs are at greater risk of infection from community exposures.¹⁵ Vaccination, including 3rd doses based on evidence that a 3rd dose increases vaccine effectiveness based on current epidemiology, is the most important infection control measure to protect HCWs from community and occupational infection risk.^{16,17}

Preamble

The protection of health care workers (HCWs), as well as other staff, in all health care settings where health care is provided is critical. Health care settings include, but are not exclusive to, acute care, pre-hospital care, long-term care, primary care, ambulatory care clinics and community care, including home care and other locations in the community where health care is provided (e.g., residential care or correctional facilities). A hierarchy of hazard controls is used in healthcare settings (and other workplaces) to reduce the risk of transmission. This technical brief focuses on recommendations for PPE, however PPE recommendations alone are not sufficient to protect HCW from a pandemic with substantial community transmission and must be implemented along with HCW vaccination and other protective measures within the hierarchy of controls. Recommendations for IPAC best practices incorporates the science of disease transmission, the effectiveness of measures in isolation and in combination as layered mitigation measures, as well as the effectiveness and the impact of implementation fidelity.

The interim PPE recommendations summarized in the table below are based on the best available evidence and were adapted from the World Health Organization's [Rational Use of Personal Protective Equipment for Coronavirus Disease 2019](#) and Health Protection Scotland's [Standard infection control precautions literature review of AGMPs](#).^{5,18}

Health care settings should adhere to legislative requirements applicable to their organization/setting.

As additional evidence emerges these interim recommendations will be updated.

Recommended Risk Assessments

Organizational Risk Assessment

A recommended practice is to conduct an Organizational Risk Assessment (ORA). An ORA is a systematic approach to identifying areas of infection risk and assessing the efficacy of control measures that are in place to mitigate the transmission of infections in the health care setting. The ORA is central to any health care organization's preparation and planning to protect HCWs. Organizations have a responsibility to provide education and training to HCWs regarding the organization's ORA and any identified gaps and provide guidance around the organizational factors that may affect the selection and use of PPE such as local epidemiology and assessment of ventilation in the facility. Organizations also have a responsibility

for engagement of the Joint Health and Safety Committees or Health and Safety representatives, as appropriate.¹⁹

Organizational risk assessment of the efficacy of the most important control measure, elimination, would centre on vaccination status of HCWs in the organization. Engineering control measures include care and maintenance of HVAC systems, physical barriers for screening and access to point of care alcohol-based hand rub (ABHR); administrative controls, such as policies and procedures regarding screening, monitoring the local epidemiology (including implications of new emerging variants) and appropriate selection and use of PPE.

An organizational awareness of ventilation / air exchanges in areas in the organization, to identify rooms that do not meet the minimum CSA standard can prioritize areas to limit occupancy and facilitate placement of individuals with suspected or confirmed COVID-19. Application of the hierarchy of controls can help to mitigate the risk of transmission when upgrades are not possible or are in process (for example, elimination – not using the room; substitution – only using for screen negative patients; engineering – using portable HEPA filters, only using the room for patients able to mask; administration – limiting occupancy, using rooms for only short visits; PPE – use of N95 respirators).

Individual Risk Assessment

An individual's personal risk assessment looks at the task at-hand, any interaction with others, and the environment. Performing a risk assessment is the first step in Routine Practices,²⁰ which are to be used with all patients, for all care and for all interactions. A point of care risk assessment (PCRA) as performed by a regulated health professional, also includes assessing the exposure risk specific to the care intervention being performed. Education and training is to be provided to the HCW on how to effectively perform a risk assessment, including information on the efficacy of control measures identified in the organizational risk assessment that would be pertinent to the individual risk assessment. Both risk assessments are dynamic and should therefore be completed by the HCW before every patient interaction or task to determine whether there is risk of being exposed to an infection and selection of the correct PPE required to protect the health worker and other staff in their interaction with the patient and patient environment. Examples of risk factors that may increase transmission and infection risk in the HCW include:

- **HCW:** Vaccination status
- **Patient:** Unable to mask for source control, unvaccinated
- **Interaction:** prolonged, close contact (i.e. < 1 m for > 15 minutes), performing a high-risk procedure (see below)

Application of the Hierarchy of Hazard Controls

According to the [National Institute for Occupational Safety and Health](#) (NIOSH), the fundamental framework for protecting workers is through the application of the hierarchy of hazard controls.²¹ The levels of control range from the highest levels considered most effective at reducing the risk of exposure (i.e., elimination and substitution) to the lowest or last level of control between the worker and the hazard (i.e., PPE).

The application of the hierarchy of hazard controls is a recognized approach to containment or mitigation of hazards and is fundamental to an occupational health and safety framework.

An understanding of the strengths and limitations of each of the controls enables health care organizations to determine how the health care environment (e.g., infrastructure, equipment, processes and practices) increases or decreases a HCWs risk of infection from exposure to a pathogen within the health care setting.

Collaboration between IPAC, OHS and health care building engineers supports the comprehensive evaluation and implementation of measures to reduce the risk of HCWs exposure to pathogens.

Elimination and Substitution

Elimination and substitution are considered to be the most effective measures in the hierarchy of controls, but are not often feasible or possible to implement fully, particularly in regard to infectious diseases in health care settings. Highly effective COVID-19 vaccines are available in Canada and high vaccination coverage (including additional doses as recommended) is an integral component of protecting healthcare workers, reducing the spread of SARS-CoV-2 in the population, and reducing the likelihood of infected patients in health care settings.^{22,23} Vaccination will be less effective as an elimination strategy with VOC capable of immune escape.^{13,14}

Engineering and Systems Control Measures

Engineering controls reduce or eliminate exposure by isolating the hazard from the employee and/or by physically directing actions to reduce the opportunity for human error (e.g. isolation or ventilation).

Examples include ventilation (e.g.; airborne infection isolation room (AIR), reducing structural barriers to airflow, and optimizing the fresh air changes in the heating ventilation and air conditioning (HVAC) system), transparent barriers at the interface between the patient and the HCWs at reception and triage, point of care sharps containers, and easily accessible alcohol-based hand rub. Other examples include ante-chambers for donning and doffing PPE, but these must include reinforced training measures, as these areas can become contaminated.

Administrative Control Measures

Administrative controls are measures to reduce the risk of transmission of infections to HCWs and patients through the implementation of policies, procedures, training and education.

Effective administrative control measures to prevent the transmission of infection require the support of leadership in the health care organization, in consultation with management and HCWs through the Joint Health and Safety Committees or Health and Safety representative to provide the necessary organizational procedures, resources, education and training to effectively apply the controls and the commitment of HCWs and other users to comply with their application.

Examples of administrative controls include a HCW vaccination policy, electronic alert systems with infectious disease flags for hospitals for early detection of respiratory illness. Active screening, passive screening (signage) and restricted visitor policies are other examples of administrative control measures used in health care settings. In addition, administrative controls include policies regarding restricting entrances, cohorting of staff and patients and designated centres for screening or treating patients and audits of practice.

Personal Protective Equipment (PPE)

Although the use of PPE controls is often the most visible of the hierarchy of controls, PPE is the last tier in the hierarchy and should not be relied on as a stand-alone primary prevention program. The PPE tier refers to the availability, support and appropriate use of protective gear to minimize exposure and prevent transmission. Examples of PPE include gloves, gowns, facial protection, including medical or surgical/procedure masks (ASTM level 1-3) and N95 respirators and eye protection (including some types of safety glasses, face shields, goggles).^{24,25}

A systematic review on the protective effects of eye protection on transmission of SARS-CoV-2 identified 5 observational studies which demonstrated an overall protective effect, however all of the studies were at high risk of bias and the certainty of the evidence was very low.²⁶

Wearing a surgical/procedure mask (henceforth referred to as a medical mask) has been shown to be effective in preventing transmission of acute respiratory infections such as influenza.^{27,28} Results of a systematic reviews and meta-analysis show no significant difference between N95 respirators and medical masks when used by health care workers to prevent transmission of acute respiratory infections from patients.^{6,29} No randomized controlled studies comparing medical masks and N95 respirators for preventing SARS-CoV-2 have been completed, although one is in progress (clinicaltrials.gov NCT04296643).

A systematic review and meta-analysis of mask effectiveness for prevention of SARS-CoV-2 infection identified a significant protective effect of mask use in healthcare workers (adjusted OR 0.18; 95% CI 0.09-0.34), but did not compare different types of masks.³⁰ Observational studies in jurisdictions that have recommended medical masks for routine care of suspected or confirmed patients with COVID-19 have reported on the general effectiveness of these policies by demonstrating a low nosocomial infection rates compared to community exposures.³¹⁻³³ However, all of these studies were done during times of earlier variants of SARS-CoV-2.

There is mixed evidence on the relative effectiveness of N95 respirators (or equivalent) compared to medical masks for SARS-CoV-2. Two survey studies comparing infection rates in healthcare workers who reported respirator use demonstrated significantly higher seropositivity for SARS-CoV-2 compared to those reporting medical mask use.^{34,35} However, in the preprint survey study from France there was an increased odds of seropositivity if healthcare workers reported universal respirator use (i.e., for care of non-COVID-19 patients) compared to those who wore medical masks.³⁵ These studies have high potential for unmeasured confounding. In a case-control study of HCWs in Colombia there was a significant increased infection risk by RT-PCR in those who did not use a respirator.³⁶ In this preprint cohort study from Switzerland of over 3000 HCWs, 22% preferentially used respirators and was associated with non-statistically significant risk reductions in COVID-19 compared to medical masks (adjusted HR 0.8; 95%CI 0.6-1.0, p=0.052 and 0.7; 95%CI 0.5-1.0, p=0.053 for PCR confirmed SARS-CoV-2 and seroconversion, respectively).³⁷ In an ecological study from England that compared COVID-19 outbreaks among orthopedic surgery wards based on respirator policies there were numerically less outbreaks on units that used respirators (11/13 of medical mask units vs 3/6 respirator units), although this difference was not statistically significant.³⁸

In a small case-control study, there was no significant association with respirator use and infection.³⁹ In this cross-sectional survey study of emergency departments (ED) in the Netherlands; 13/45 (29%) had policies for respirator use (and eye protection) for all contacts with suspected or confirmed COVID-19 patients, and there was no difference in ED staff infections in these units compared to EDs that used medical masks.⁴⁰ In this preprint study, almost 3,000 HCWs were sampled from 13 institutions (7 with

respirators recommended only for AGMPs and 6 respirators recommended for all interactions with COVID-19 patients).³⁵ There was no significant association with the institutions' mask policy and seroconversion rates. In a retrospective cohort study from the United States of 1414 HCWs there was no association in PCR positive SARS-CoV-2 between HCWs wearing medical masks compared to respirators when performing non-AGMP routine patient care.⁴¹

The body of existing evidence has substantial limitations related to high risk for bias and unmeasured confounding, however it does not currently support a significant protective effect of N95 respirator use for all patients with suspect or confirmed COVID-19 based on studies conducted prior to the emergence of the Omicron (B.1.1.529) variant. It is therefore likely that both medical masks and respirators (combined with eye protection) are effective as PPE for SARS-CoV-2, and any actual difference in effectiveness is likely small. The degree of protection for HCWs from other infection prevention measures (i.e., additional dose of vaccine) is likely to be far greater than the reduction in risk achieved by using N95 respirators, rather than a medical mask, when providing care to patients with suspect or confirmed COVID-19, as vaccine provides protection against exposures from community sources, in occupational settings where masking is not possible (i.e. staff eating areas), and from unrecognized patient or staff cases.

Any other apparel (e.g. foot covers and hair bonnets) are not required unless identified through the personal risk assessment. The health care organization plays a critical role in ensuring HCWs have access to appropriate PPE for the task to be performed and the necessary education and training to ensure competency on the appropriate selection, use and disposal of PPE to prevent exposure to infection.²⁰

Patient Accommodation

Patients with suspected or confirmed COVID-19 should be cared for in single rooms, whenever possible. The use of an AIR is the recommended standard of care when performing an AGMP (see below). If an AIR is not available, a single room with the door closed should be used for the procedure. In one study the universal use of AIR for care of patients with suspected or confirmed COVID-19 did not reduce healthcare worker infection rates.⁴² There is no evidence to suggest that a fallow time is required after a patient with suspect or confirmed COVID-19 leaves the room or following a high risk procedure (i.e. AGMP). The evidence and recommendations behind fallow times prior to re-entering a room (after an infectious source has been removed) stem from TB literature, and is not reflective of, nor translatable to respiratory viruses such as COVID-19. Therefore, the use of a fallow time is not recommended in any setting.

Procedures with Increased Transmission Risk

The procedures that are listed as aerosol-generating medical procedures (AGMPs or AGPs) are those procedures/encounters that have epidemiological data that indicate they may significantly increase risk of infection to health care workers within close range of the procedure and thus N95 respirators are required as a minimum level of respiratory protective equipment (as well as eye protection).⁴³

The presence of aerosols is not sufficient to consider a procedure/encounter as having increased risk of transmission. However, it is acknowledged that other procedures may have high-risk features similar to an AGMP, including close, prolonged contact with the airway (e.g. nebulized medication, endoscopy). The risk associated with these other procedures will depend on various other factors such the likelihood of infectious SARS-CoV-2 virus, community infection rates, duration of procedure, and the distance from the patient. While these procedures share similar high-risk features to AGMPs, they currently lack clear evidence on increased risk and HCWs may choose to wear an N95 respirator based on this uncertainty and their PCRA.

The collection of a nasopharyngeal swab or a throat swab is not considered a procedure at increased risk of transmission.³³

Table 1: Procedures Considered AGMPs

Procedures Considered AGMPs

- Intubation, extubation and related procedures e.g. manual ventilation and open deep suctioning
- Tracheotomy/tracheostomy procedures (insertion/open suctioning/removal)
- Bronchoscopy
- Surgery using high speed devices in the respiratory tract
- Some dental procedures (e.g., high-speed drilling and ultrasonic scalers)
- Non-invasive ventilation (NIV) e.g. Bi-level Positive Airway Pressure (BiPAP) and Continuous Positive Airway Pressure ventilation (CPAP)
- High-Frequency Oscillating Ventilation (HFOV)
- Induction of sputum with nebulized saline
- High flow nasal oxygen (high flow therapy via nasal cannula)

Summary of PPE Recommendations

This guidance is intended to inform recommended and other appropriate PPE for the care of patients with suspect or confirmed COVID-19. In light of emerging evidence of substantial increased transmissibility of the Omicron (B.1.1.529) variant,¹⁶ unclear mechanism for this increased transmissibility, and reduced vaccine effectiveness, the recommended PPE for direct care of patients with suspect or confirmed COVID-19, includes a fit-tested, seal-checked N95 respirator (or equivalent, or greater protection), eye protection, gown and gloves. Other appropriate PPE (based on individual risk assessment) includes a well-fitted medical mask or non-fit tested N95 respirator (or equivalent), eye protection, gown and gloves for direct care of patients with suspect or confirmed COVID-19.

Fit-tested N95 respirators (or equivalent or greater protection) should be used when aerosol-generating medical procedures (AGMPs) are performed or anticipated to be performed on patients with suspect or confirmed COVID-19. N95 respirators should be fit-tested prior to use to optimize any expected benefit.⁴⁴

Selection of appropriate PPE should include individual risk assessment, fit, and tolerability of the mask and equipment. HCWs should follow their local organizational guidance.

Note: For every patient and/or patient environment encounter, apply the [Four Moments for Hand Hygiene](#).⁴⁵ Universal masking with well-fitted medical masks for source control (i.e. to protect others from the mask wearer) and eye protection are current recommended practices for HCWs in Ontario. Eye protection includes goggles and face shields.²⁴

Health Care Facilities – Inpatient Facilities

Setting	Individual	Activity	Recommended PPE (pending further data on Omicron)	Other appropriate PPE and considerations
Patient room	Health care workers	Providing direct care to patients with suspect or confirmed COVID-19	<ul style="list-style-type: none"> • N95 respirator (fit-tested, seal-checked) • Isolation gown • Gloves • Eye protection 	<ul style="list-style-type: none"> • Medical mask* • Isolation gown • Gloves • Eye protection
Patient room	Health care workers	Aerosol-generating medical procedures performed on suspect or confirmed COVID-19 patients	<ul style="list-style-type: none"> • N95 respirator (fit-tested, seal-checked) • Isolation gown • Gloves • Eye protection • Negative pressure room, if available 	If negative pressure room is not available, place patient in single room and ensure door closed during procedure.
Patient room	Environmental service workers	Entering and cleaning in the room of patients with suspect or confirmed COVID-19	<ul style="list-style-type: none"> • N95 respirator (fit-tested, seal-checked) • Isolation gown • Gloves • Eye protection 	<ul style="list-style-type: none"> • Medical mask* • Isolation gown • Gloves • Eye protection
Patient room	Visitors	Entering the room of a patient with suspect or confirmed COVID-19	<ul style="list-style-type: none"> • Medical mask* • Isolation gown • Gloves • Eye protection 	<p>Visitors should be limited to those providing essential care</p> <p>Consider restricting to only those fully vaccinated</p>
Patient Room	Transient activities (e.g., Food service delivery, laundry pick-up/drop-off)	Entering the room of a patient with suspect or confirmed COVID-19	<ul style="list-style-type: none"> • Medical mask* • Isolation gown • Gloves • Eye protection 	Gowns and gloves are only required if direct patient contact.

Setting	Individual	Activity	Recommended PPE (pending further data on Omicron)	Other appropriate PPE and considerations
Other areas of patient transit (e.g., wards, corridors)	All staff, including health care workers	Any activity that does not involve contact with patient suspect or confirmed COVID-19	Routine Practices** and Additional Precautions based on risk assessment.	
Triage	Health care workers	Preliminary screening not involving direct contact	If able to maintain spatial distance of at least 2 m or separation by physical barrier: <ul style="list-style-type: none"> • Routine Practices** 	If unable to maintain spatial distance of at least 2 m or separation by physical barrier: <ul style="list-style-type: none"> • Medical mask* • Isolation gown • Gloves • Eye protection
Triage	Patient with suspect or confirmed COVID-19	Any	Maintain spatial distance of at least 2 m or separation by physical barrier Provide patient with medical mask* if tolerated and not contraindicated. Patient to perform hand hygiene.	Provide medical mask* to accompanying caregivers.
Administrative areas	All staff, including health care workers	Administrative tasks that do not involve contact with patients	<ul style="list-style-type: none"> • Routine Practices** 	

*A non-fit tested N95 (or equivalent) respirator is considered an alternative to a medical mask.

**Routine practices currently includes universal medical masking for healthcare workers.

Health Care Facilities – Ambulatory and Outpatient Settings/Clinics

Setting	Individual	Activity	Recommended PPE (pending further data on Omicron)	Other appropriate PPE and considerations
Consultation or exam room/area	Health care workers	Providing direct care to patients with suspect or confirmed COVID-19	<ul style="list-style-type: none"> • N95 respirator (fit-tested, seal-checked) • Isolation gown • Gloves • Eye protection 	<ul style="list-style-type: none"> • Medical mask* • Isolation gown • Gloves • Eye protection
Consultation or exam room/area	Patients with suspect or confirmed COVID-19	Any	<ul style="list-style-type: none"> • Provide medical mask* if tolerated and not contraindicated. • Perform hand hygiene 	Provide medical mask* to accompanying caregivers.
Consultation or exam room/area	Environmental service Workers	After and between consultations with patients with suspect or confirmed COVID-19	<ul style="list-style-type: none"> • Medical mask* • Isolation gown • Gloves • Eye protection 	
Waiting room	Patient with suspect or confirmed COVID-19	Any	<ul style="list-style-type: none"> • Provide medical mask* if tolerated and not contraindicated. • Immediately move the patient to a single patient room or separate area away from others; if this is not feasible, ensure spatial distance of at least 2 m from other patients. 	Provide medical mask* to accompanying caregivers.
Administrative areas	All staff, including health care workers	Administrative tasks that do not involve contact with patients	<ul style="list-style-type: none"> • Routine Practices** 	

Setting	Individual	Activity	Recommended PPE (pending further data on Omicron)	Other appropriate PPE and considerations
Triage/Reception	Health care workers	Preliminary screening not involving direct contact	<p>If able to maintain spatial distance of at least 2 m or separation by physical barrier:</p> <ul style="list-style-type: none"> • Routine Practices** 	<p>If unable to maintain spatial distance of at least 2 m or separation by physical barrier:</p> <ul style="list-style-type: none"> • Medical mask* • Isolation gown • Gloves • Eye protection
Triage/Reception	Patients with suspect or confirmed COVID-19	Any	<ul style="list-style-type: none"> • Maintain spatial distance of at least 2 m or separation by physical barrier. • Provide medical mask* if tolerated and not contraindicated. 	Provide medical mask* to accompanying caregivers

*A non-fit tested N95 (or equivalent) respirator is considered an alternative to a medical mask.

** Routine practices currently includes universal medical masking for healthcare workers.

Other Settings

Setting	Individual	Activity	Recommended PPE (pending further data on Omicron)	Other appropriate PPE and considerations
Home Care	Health care workers	Providing direct care to clients/patients with suspect or confirmed COVID-19	<ul style="list-style-type: none"> • N95 respirator (fit-tested, seal-checked) • Isolation gown • Gloves • Eye protection 	<ul style="list-style-type: none"> • Medical mask* • Isolation gown • Gloves • Eye protection <p>Minimize other household members / individuals in the room; if presence required, individual should be masked.</p> <p>Keep windows open if possible.</p>
Home Care	Health care workers	Aerosol-generating medical procedures performed on clients/patients with suspect or confirmed COVID-19	<ul style="list-style-type: none"> • N95 respirator (fit-tested, seal-checked) during AGMP • Isolation gown • Gloves • Eye protection 	<p>Minimize other household members / individuals in the room during procedure; if presence required, individual should be masked.</p> <p>Keep windows open if possible.</p>
Long-term care home/retirement home	Health care workers	Providing direct care to residents with suspect or confirmed COVID-19	<ul style="list-style-type: none"> • N95 respirator (fit-tested, seal-checked) • Isolation gown • Gloves • Eye protection 	<ul style="list-style-type: none"> • Medical mask* • Isolation gown • Gloves • Eye protection
Long-term care home/retirement home	Health care workers	Performing an AGMP (e.g. CPAP and/or open suctioning) on residents with suspect or confirmed COVID-19	<ul style="list-style-type: none"> • N95 respirator (fit-tested, seal-checked) • Isolation gown • Gloves • Eye protection 	<p>Manage in single room with door closed.</p> <p>Keep the number of people in the room during the procedure to a minimum.</p>

Setting	Individual	Activity	Recommended PPE (pending further data on Omicron)	Other appropriate PPE and considerations
Long-term care home/retirement home	Environmental service workers	Entering and cleaning in the room of patients with suspect or confirmed COVID-19	<ul style="list-style-type: none"> • N95 respirator (fit-tested, seal-checked) • Isolation gown • Gloves • Eye protection 	<ul style="list-style-type: none"> • Medical mask* • Isolation gown • Gloves • Eye protection
Long-term care home/retirement home	Administrative areas	Administrative tasks that do not involve contact with resident with suspect or confirmed COVID-19	<ul style="list-style-type: none"> • Routine Practices** 	
Long-term care home/retirement home	Visitors	Entering the room of a resident with suspect or confirmed COVID-19	<ul style="list-style-type: none"> • Medical mask* • Isolation gown • Gloves • Eye protection 	<p>Visitors should be limited to those providing essential care</p> <p>Consider restrictions to only those fully vaccinated</p>

*A non-fit tested N95 (or equivalent) respirator is considered an alternative to a medical mask.

** Routine practices currently includes universal medical masking for healthcare workers.

References

1. Ontario. Ministry of Health; Ontario. Ministry of Long-Term Care. COVID-19 directive #5 for hospitals within the meaning of the Public Hospitals Act and long-term care homes within the meaning of the *Long-Term Care Homes Act, 2007* [Internet]. Toronto, ON: Queen's Printer for Ontario; 2021 [cited 2021 Dec 10]. Available from: https://www.health.gov.on.ca/en/pro/programs/publichealth/coronavirus/docs/directives/public_hospitals_act.pdf
2. Ontario Agency for Health Protection and Promotion (Public Health Ontario). COVID-19 transmission through large respiratory droplets and aerosols...what we know so far [Internet]. Toronto, ON: Queen's Printer for Ontario; 2021 [cited 2021 Dec 9]. Available from: https://www.publichealthontario.ca/-/media/documents/ncov/covid-wwksf/2021/05/wwksf-transmission-respiratory-aerosols.pdf?sc_lang=en
3. Ontario Agency for Health Protection and Promotion (Public Health Ontario). Additional routes of COVID-19 transmission – what we know so far [Internet]. Toronto, ON: Queen's Printer for Ontario; 2021 Jun 30 [cited 2021 Dec 9]. Available from: https://www.publichealthontario.ca/-/media/documents/ncov/covid-wwksf/2020/12/routes-transmission-covid-19.pdf?sc_lang=en
4. Centers for Disease Control and Prevention. Interim infection prevention and control recommendations for healthcare personnel during the Coronavirus Disease 2019 (COVID-19) pandemic [Internet]. Atlanta, GA: Centers for Disease Control and Prevention; 2021 [cited 2021 Dec 13]. Available from: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/infection-control-recommendations.html#print>
5. World Health Organization. Rational use of personal protective equipment for Coronavirus disease 2019 (COVID-19) and considerations during severe shortages: interim guidance [Internet]. Geneva: World Health Organization; 2020 [modified 2020 Dec 23; cited 2021 Dec 10]. Available from: [https://www.who.int/publications-detail/rational-use-of-personal-protective-equipment-for-coronavirus-disease-\(covid-19\)-and-considerations-during-severe-shortages](https://www.who.int/publications-detail/rational-use-of-personal-protective-equipment-for-coronavirus-disease-(covid-19)-and-considerations-during-severe-shortages)
6. Alberta Health Services. COVID-19 Scientific Advisory Group rapid evidence report interim update: masking guidance for healthcare workers [Internet]. Edmonton, AB: Alberta Health Services; 2021 [cited 2021 Dec 8]. Available from: <https://www.albertahealthservices.ca/assets/info/ppih/if-ppih-covid-19-sag-rapid-evidence-report-masking-guidance-healthcare-workers.pdf>
7. British Columbia Centre for Disease Control; British Columbia. Ministry of Health. Infection prevention and control guidance on SARS-CoV-2 variants of concern [Internet]. Vancouver, BC: Provincial Health Services Authority; 2021 [cited 2021 Dec 10]. Available from: http://www.bccdc.ca/Health-Professionals-Site/Documents/IPC_Guidance_SARS-CoV-2_VoC.pdf
8. Public Health Agency of Canada. Infection prevention and control for COVID-19: interim guidance for acute healthcare settings [Internet]. Ottawa, ON: Government of Canada; 2021 [cited 2021 Dec 13]. Available from: <https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/health-professionals/infection-prevention-control-covid-19-second-interim-guidance.html>

9. UK Infection Prevention and Control Cell. Masks for healthcare workers to mitigate airborne transmission of SARS-CoV-2. London: Crown Copyright; 2021 [cited 2021 Dec 07]. Available from:
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/979441/S1169_Facemasks_for_health_care_workers.pdf
10. Health and Safety Executive. Rapid evidence review delivered by HSE for the Government Chief Scientific Adviser part one: equivalence of N95 and FFP2 masks part two: aprons, gowns and eye protection [Internet]. Bootle: Crown Copyright; 2020 [cited 2021 Dec 07]. Available from:
<https://www.hse.gov.uk/coronavirus/assets/docs/face-mask-equivalence-aprons-gown-eye-protection.pdf>
11. Antimicrobial Resistance and Healthcare Associated Infection Scotland. Rapid review of the literature: assessing the infection prevention and control measures for the prevention and management of COVID-19 in healthcare settings Version 21 [Internet]. Glasgow: Health Protection Scotland; 2021 [cited 2021 Dec 13]. Available from:
<https://www.nipcm.hps.scot.nhs.uk/media/1735/2021-12-09-hps-rapid-review-ipc-for-covid-19-v21.pdf>
12. Ontario Agency for Health Protection and Promotion (Public Health Ontario). Epidemiologic summary: SARS-CoV-2 whole genome sequencing in Ontario, December 7, 2021 [Internet]. Toronto, ON: Queen's Printer for Ontario; 2021 [cited 2021 Dec 13]. Available from:
https://www.publichealthontario.ca/-/media/documents/ncov/epi/covid-19-sars-cov2-whole-genome-sequencing-epi-summary.pdf?sc_lang=en
13. Ontario Agency for Health Protection and Promotion (Public Health Ontario). COVID-19 variant of concern Omicron (B.1.1.529): risk assessment, December 7, 2021 [Internet]. Toronto, ON: Queen's Printer for Ontario; 2021 [cited 2021 Dec 10]. Available from:
https://www.publichealthontario.ca/-/media/documents/ncov/voc/2021/12/covid-19-omicron-b11529-risk-assessment-dec-7.pdf?sc_lang=en
14. Ontario Agency for Health Protection and Promotion (Public Health Ontario). COVID-19 Delta: risk assessment and implications for practice (September 20, 2021 update) [Internet]. Toronto, ON: Queen's Printer for Ontario; 2021 [cited 2021 Dec 8]. Available from:
https://www.publichealthontario.ca/-/media/documents/ncov/voc/2021/10/covid-19-delta-variant-risk-assessment-update.pdf?sc_lang=en
15. Science M, Bolotin S, Silverman M, Nadarajah J, Maguire B, Parekh RS, et al. SARS-CoV-2 antibodies in Ontario health care workers during and after the first wave of the pandemic: a cohort study. *CMAJ Open*. 2021 Oct 12;9(4):E929-E939. Available from:
<https://www.cmajopen.ca/content/9/4/E929>
16. UK Health Security Agency. SARS-CoV-2 variants of concern and variants under investigation in England [Internet]. London: Crown Copyright; 2021 [cited 2021 Dec 13]. Available from:
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1040076/Technical_Briefing_31.pdf
17. Arbel R, Hammerman A, Sergienko R, Friger M, Peretz A, Netzer D, et al. BNT162b2 vaccine booster and mortality due to Covid-19. *N Engl J Med*. 2021 Dec 8 [Epub ahead of print]. Available from: <https://doi.org/10.1056/NEJMoa2115624>

18. Health Protection Scotland. Aerosol generating procedures (AGPs) [Internet]. Glasgow: Public Health Scotland; 2021 [cited 2021 Dec 8]. Available from: https://hpspubsrepo.blob.core.windows.net/hps-website/nss/2893/documents/1_tbp-lr-agp.pdf
19. Public Services Health and Safety Association. Infectious disease threats risk assessment tool for acute care [Internet]. Toronto, ON: Public Services Health and Safety Association; 2020 [cited 2021 Dec 10]. Available from: <https://www.pshsa.ca/resources/infectious-disease-threats-risk-assessment-tool-for-acute-care>
20. Ontario Agency for Health Protection and Promotion (Public Health Ontario), Provincial Infectious Diseases Advisory Committee. Routine practices and additional precautions in all health care settings. 3rd ed. [Internet]. Toronto, ON: Queen's Printer for Ontario; 2012 [cited 2021 Dec 10]. Available from: <https://www.publichealthontario.ca/-/media/documents/bp-rpap-healthcare-settings.pdf?la=en>
21. National Institute for Occupational Safety and Health (NIOSH). Hierarchy of controls [Internet]. Atlanta, GA: Centers for Disease Control and Prevention; 2015 [cited 2021 Dec 10]. Available from: <https://www.cdc.gov/niosh/topics/hierarchy/>
22. Ontario Agency for Health Protection and Promotion (Public Health Ontario). COVID-19 real-world vaccine effectiveness – what we know so far [Internet]. Toronto, ON: Queen's Printer for Ontario; 2021 [cited 2021 Dec 8]. Available from: https://www.publichealthontario.ca/-/media/documents/ncov/covid-wwksf/2021/04/wwksf-vaccine-effectiveness.pdf?sc_lang=en
23. Ontario Agency for Health Protection and Promotion (Public Health Ontario). COVID-19 vaccine effectiveness over time – what we know so far [Internet]. Toronto, ON: Queen's Printer for Ontario; 2021 [cited 2021 Dec 8]. Available from: https://www.publichealthontario.ca/-/media/documents/ncov/covid-wwksf/2021/11/wwksf-vaccine-effectiveness-over-time.pdf?sc_lang=en
24. Government of Canada. Personal protective equipment (COVID-19): overview [Internet]. Ottawa, ON: Government of Canada; 2021 [cite 2021 Dec 10]. Available from: <https://www.canada.ca/en/health-canada/services/drugs-health-products/covid19-industry/medical-devices/personal-protective-equipment/overview.html>
25. Shah VP, Breeher LE, Hainy CM, Swift MD. Evaluation of healthcare personnel exposures to patients with SARS-CoV-2 associated with personal protective equipment use. *Infect Control Hosp Epidemiol*. 2021 May 12;1-5 [Epub ahead of print]. Available from: <https://doi.org/10.1017/ice.2021.219>
26. Byambasuren O, Beller E, Clark J, Collignon P, Glasziou P. The effect of eye protection on SARS-CoV-2 transmission: a systematic review. *Antimicrob Resist Infect Control*. 2021;10(1):156. Available from: <https://doi.org/10.1186/s13756-021-01025-3>
27. Loeb M, Dafoe N, Mahony J, John M, Sarabia A, Glavin V, et al. Surgical mask vs N95 respirator for preventing influenza among health care workers: a randomized trial. *JAMA*. 2009;302(17):1865-71. Available from: <https://doi.org/10.1001/jama.2009.1466>
28. Radonovich LJ, Simberkoff MS, Bessesen MT, Brown AC, Cummings DA, Gaydos CA, et al. N95 respirators vs medical masks for preventing influenza among health care personnel: a randomized clinical trial. *JAMA*. 2019;322(9):824-33. Available from: <https://doi.org/10.1001/jama.2019.11645>

29. Smith JD, MacDougall CC, Johnstone J, Copes RA, Schwartz B, Garber GE. Effectiveness of N95 respirators versus surgical masks in protecting health care workers from acute respiratory infection: a systematic review and meta-analysis. *CMAJ*. 2016;188(8):567-74. Available from: <https://doi.org/10.1503/cmaj.150835>
30. Li Y, Liang M, Gao L, Ayaz Ahmed M, Uy JP, Cheng C, et al. Face masks to prevent transmission of COVID-19: a systematic review and meta-analysis. *Am J Infect Control*. 2021;49(7):900-6. Available from: <https://doi.org/10.1016/j.ajic.2020.12.007>
31. Gohil SK, Quan KA, Madey KM, King-Adelsohn S, Tjoa T, Tifrea D, et al. Infection prevention strategies are highly protective in COVID-19 units while main risks to healthcare professionals come from coworkers and the community. *Antimicrob Resist Infect Control*. 2021;10(1):163. Available from: <https://doi.org/10.1186/s13756-021-01031-5>
32. Yassi A, Grant JM, Lockhart K, Barker S, Sprague S, Okpani AI, et al. Infection control, occupational and public health measures including mRNA-based vaccination against SARS-CoV-2 infections to protect healthcare workers from variants of concern: a 14-month observational study using surveillance data. *PLoS ONE*. 2021;16(7):e0254920. Available from: <https://doi.org/10.1371/journal.pone.0254920>
33. Schwartz KL, Muller MP, Williams V, Harry R, Booker S, Katz K, et al. Coronavirus disease 2019 (COVID-19) risk among healthcare workers performing nasopharyngeal testing. *Infect Control Hosp Epidemiol*. 2021 Aug 2:1-3. [Epub ahead of print]. Available from: <https://doi.org/10.1017/ice.2021.354>
34. Sims MD, Maine GN, Childers KL, Podolsky RH, Voss DR, Berkiw-Scenna N, et al. Coronavirus disease 2019 (COVID-19) seropositivity and asymptomatic rates in healthcare workers are associated with job function and masking. *Clin Infect Dis*. 2021;73(Suppl 2):S154-62. Available from: <https://doi.org/10.1093/cid/ciaa1684>
35. Wilson S, Mouet A, Jeanne-Leroyer C, Borgey F, Odinet-Raulin E, Humbert X, et al. Professional practice for COVID-19 risk reduction among health care workers: a cross-sectional study with matched case-control comparison. *medRxiv* 21263315 [Preprint]. 2021 Oct 21 [cited 2021 Dec 9]. Available from: <https://doi.org/10.1101/2021.09.09.21263315>
36. Rodriguez-Lopez M, Parra B, Vergara E, Rey L, Salcedo M, Arturo G, et al. A case-control study of factors associated with SARS-CoV-2 infection among healthcare workers in Colombia. *BMC Infect Dis*. 2021;21(1):878. Available from: <https://doi.org/10.1186/s12879-021-06581-y>
37. Haller S, Guesewell S, Egger T, Scanferla G, Thoma R, Leal-Neto OB, et al. Use of respirator vs. surgical masks in healthcare personnel and its impact on SARS-CoV-2 acquisition: a prospective multicentre cohort study. *medRxiv* 21258080 [Preprint]. 2021 Jun 1 [cited 2021 Dec 9]. Available from: <https://doi.org/10.1101/2021.05.30.21258080>
38. Mastan S, Malik RA, Charalambous CP, Abdulla M, Alonge J, Chelva R, et al. COVID-19 infection is related to differences in the use of personal protective equipment by orthopaedic specialist trainees caring for hip fracture patients during the second surge of COVID-19 in the North West of England. *Eur J Orthop Surg Traumatol*. 2021;31(5):989-93. Available from: <https://doi.org/10.1007/s00590-021-03006-z>
39. Rosser JI, Tayyar R, Giardina R, Kolonoski P, Kenski D, Shen P, et al. Case-control study evaluating risk factors for SARS-CoV-2 outbreak amongst healthcare personnel at a tertiary care center. *Am*

J Infect Control. 2021;49(12):1457-63. Available from:

<https://doi.org/10.1016/j.ajic.2021.09.004>

40. Schmitz D, Vos M, Stolmeijer R, Lameijer H, Schönberger T, Gaakeer MI, et al. Association between personal protective equipment and SARS-CoV-2 infection risk in emergency department healthcare workers. *Eur J Emerg Med.* 2021;28(3):202-9. Available from: <https://doi.org/10.1097/mej.0000000000000766>
41. Li A, Slezak J, Maldonado AM, Concepcion J, Maier CV, Rieg G. SARS-CoV-2 positivity and mask utilization among health care workers. *JAMA Netw Open.* 2021;4(6):e2114325. Available from: <https://doi.org/10.1001/jamanetworkopen.2021.14325>
42. Klompas M, Ye S, Vaidya V, Ochoa A, Baker MA, Hopcia K, et al. Association between airborne infection isolation room utilization rates and healthcare worker COVID-19 infections in two academic hospitals. *Clin Infect Dis.* 2021 Oct 2 [Epub ahead of print]. Available from: <https://doi.org/10.1093/cid/ciab849>
43. Chan VW, Ng HH, Rahman L, Tang A, Tang KP, Mok A, et al. Transmission of severe acute respiratory syndrome Coronavirus 1 and severe acute respiratory syndrome Coronavirus 2 during aerosol-generating procedures in critical care: a systematic review and meta-analysis of observational studies. *Crit Care Med.* 2021;49(7):1159-68. Available from: <https://doi.org/10.1097/ccm.0000000000004965>
44. Duncan S, Bodurtha P, Naqvi S. The protective performance of reusable cloth face masks, disposable procedure masks, KN95 masks and N95 respirators: filtration and total inward leakage. *PLoS ONE.* 2021;16(10):e0258191. Available from: <https://doi.org/10.1371/journal.pone.0258191>
45. Ontario Agency for Health Protection and Promotion (Public Health Ontario), Provincial Infectious Diseases Advisory Committee. Best practices for hand hygiene in all health care settings [Internet]. 4th ed. Toronto, ON: Queen's Printer for Ontario; 2014 [cited 2021 Dec 13]. Available from: <https://www.publichealthontario.ca/-/media/documents/B/2014/bp-hand-hygiene.pdf?la=en>

Summary of Revisions

This document is current to December 2021. New material in this revision is highlighted in the table below.

Page	Revision	Implementation Date
1	Recommendations changed from standing to interim due to undetermined impact of the Omicron (B.1.1.529) variant.	December 15, 2021
2	Summarized IPAC guidance from different jurisdictions	December 15, 2021
4	Expanded guidance on ORA, PCRA and HOC to include more details on risk assessment of control measures.	December 15, 2021
6	Updated evidence review of effectiveness of PPE for prevention of HCW infection	December 15, 2021
8	Expanded risk assessment of procedures with increased risk of transmission	December 15, 2021
9	Change in recommendations to interim recommended PPE for direct care for patients with suspect or confirmed COVID-19 to include a fit-tested, seal-checked N95 respirator (or equivalent or greater protection), eye protection, gown, and gloves. Other appropriate PPE includes a well-fitted surgical/procedure (medical) mask, or non-fit tested N95 respirator (or equivalent), eye protection, gown and gloves for direct care for patients with suspect or confirmed COVID-19.	December 15, 2021

Publication History

Published: March 12, 2020

1st Revision: March 25, 2020

2nd Revision: April 6, 2020

3rd Revision: May 3, 2020

4th Revision: May 30, 2020

5th Revision: Jan 22, 2021

6th Revision: May 17, 2021

7th Revision: December 15, 2021

Citation

Ontario Agency for Health Protection and Promotion (Public Health Ontario). Interim IPAC recommendations for use of personal protective equipment for care of individuals with suspect or confirmed COVID-19. Toronto, ON: Queens's Printer for Ontario; 2021.

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.

For more information about PHO, visit publichealthontario.ca.

