

TECHNICAL BRIEF

Interim Infection Prevention and Control Measures Based on Respiratory Virus Transmission Risk in Health Care Settings

1st Revision: November 2023

Introduction

Established on the former *Interim Infection Prevention and Control Measures based on COVID-19 Transmission Risks in Health Care Settings*, this document outlines interim recommendations that are based on the best available evidence and expert opinion, where evidence is lacking. Health care settings should adhere to legislative requirements applicable to their organization/setting. As additional evidence emerges these interim recommendations will be updated.

Key Messages

- As respiratory virus activity changes, the additional IPAC measures used within health care settings can be safely adjusted during periods of increasing or decreasing respiratory virus transmission risk with the primary goal of preventing harm to vulnerable patients, in addition to reducing transmission within the health care settings and preserving operational capacity of the health care system.
- Routine Practices are required for all clinical interactions, independent of any concern for the possibility of COVID-19 or other infectious diseases, and therefore remain important regardless of the respiratory virus transmission risk.

Purpose and Scope

This technical brief focuses on additional IPAC considerations that have been implemented within the context of the COVID-19 pandemic and maintained during the fall/winter 2022/2023 surge of other respiratory viruses and how they can be adjusted during periods of different transmission risk (high and non-high).

This document is intended for IPAC and occupational health professionals in acute health care settings to provide an overview of the considerations for the implementation of additional IPAC measures during times of high levels of community respiratory virus transmission. It also provides considerations for maintaining additional IPAC measures during non-high risk periods. It is acknowledged that these principles may be applied to other settings where health care is provided including pre-hospital care, long-term care, primary care, ambulatory care clinics and community care, including home care. While those outside of acute care using this document are advised to consult with local public health and IPAC and occupational health expertise to understand risk assessment and application in their setting, comments have been provided throughout the document about considerations when adapting to other settings.

This document presents a framework for adjusting IPAC measures in the context of:

- Immunity (immunization and/or natural infection) to the circulating respiratory viruses among health care workers (HCW), patients and visitors
- Community incidence of circulating respiratory viruses
- Disease severity from the circulating respiratory viruses

In situations where the incidence of a particular respiratory virus is rapidly increasing, and there is evidence of frequent or severe outbreaks occurring within health care settings, additional measures may be considered to those outlined in this document, including but not limited to those recommended for outbreak management.¹

For the purposes of this document, the term “patient” is used to encompass all recipients of health care services and is inclusive of residents of long-term care homes or retirement homes.

Hierarchy of Hazard Controls

IPAC practices can reduce the risk of infection transmission to patients, HCWs, as well as other staff and visitors, in all settings where health care is delivered. A [Hierarchy of Controls \(HOC\)](#) is used in health care settings (and other workplaces) to reduce the risk of transmission of infectious diseases.²

Vaccination against respiratory viruses, where available, with all recommended doses, is one of the most effective preventive measures and is strongly recommended for all HCWs. Recommendations on HCW vaccination policy is out of scope for this document.

Routine Practices

Routine Practices are required for ALL clinical interactions, independent of any concern for the possibility of COVID-19, influenza, respiratory syncytial virus (RSV) or other transmissible infectious diseases.³

Personal protective equipment (PPE) is an important layer of protection. A point of care risk assessment should be conducted to support appropriate selection of personal protective equipment.

With respect to Additional Precautions, recommendations specific to COVID-19 are provided in the Public Health Ontario (PHO) [IPAC Recommendations for Use of Personal Protective Equipment for Care of Individuals with Suspect or Confirmed COVID-19](#)⁴ and general recommendations for other respiratory viruses are provided in [Routine Practices and Additional Precautions](#).³

Background

Over the course of the COVID-19 pandemic, several IPAC measures were implemented, in addition to Routine Practices in health care settings in order to minimize infection transmission and preserve operations. These additional IPAC measures were maintained when other respiratory virus (e.g., influenza and RSV) activity increased and placed pressure on the health care systems. These IPAC measures include but are not limited to vaccination policies for staff and visitors, visitor restrictions, active and passive screening for visitors, staff and patients, restrictions on in-person gatherings, occupancy limits, distancing and cohorting of staff and patients, universal masking and routine use of eye protection.

These measures likely work best in combination as a multi-layered strategy. As the community incidence of circulating respiratory viruses changes, it is important to revisit and adjust the additional IPAC measures in health care settings with the primary goal of preventing harm to vulnerable patients and reducing transmission within the health care setting, in addition to preserving operational capacity of the health care system.

As IPAC measures are adjusted in the health care setting through periods of differing transmission risk, change management will be critical given varying risk thresholds of health care staff and the general public. An important component of this includes communication around the rationale for adjustments using a clear framework for weighing the risks and benefits to patients, staff and health care operations.

Transmission Risk Framework

The following transmission risk framework for adjusting IPAC measures ([Table 1](#)) can be used as a starting point to inform and develop an organizational plan taking into account local epidemiology, transmission risk, and the unique needs of a health care setting or organization. It outlines IPAC considerations for identifying periods of high and non-high transmission risk within health care settings, which is largely dependent on community incidence of respiratory viruses, including SARS-CoV-2, influenza and RSV. Timely implementation of multi-layered interventions is key to protecting patients and staff, preventing health care acquired infections, and reducing strain on hospital personnel and other resources.

The time period from respiratory virus season onset until a stable sustained decline in community incidence, would be considered a **high risk** period for health care transmission. Typically, the incidence of respiratory viruses increases in the fall and winter, when people tend to spend more time indoors. The onset of a steadily increasing trajectory of respiratory virus (e.g., Influenza and RSV) activity typically begins in October-November, peaking in January-February and gradually decreasing until April-May.

Outside of the typical high risk respiratory virus season and given the uncertain seasonality of SARS-CoV-2, it is important to monitor institutional outbreak frequency, hospitalizations, intensive care admissions and changes in other epidemiologic factors (e.g., markers of community transmission) that may indicate high transmission risk and warrant the implementation of additional IPAC measures (see [Table 1](#)). Changes in these factors should be sustained and/or anticipated to be sustained over several weeks prior to major adjustments to IPAC measures (excluding outbreak management), as frequent adjustments are associated with implementation challenges. While all three indicators can be considered in defining the transmission risk, the frequency of institutional outbreaks is a key consideration given the significant consequences for patients and staff and institutional changes in IPAC practices will have the largest impact on this metric. Hospitalizations and ICU admissions secondary to respiratory viruses can be used a proxy for disease severity and is important for understanding the consequences of hospital-acquired infections when

considering implementing additional measures. Community transmission will not be impacted by local institutional practices unless implemented at the community level, however, high levels of community transmission increases the likelihood of introductions into the health care system. Key independent metrics to consider in defining the community incidence include community positivity rate and wastewater trends, where available. Indicators such as increasing hospitalizations, nosocomial infection rates and outbreaks, staff positivity (where testing is available) and staff absenteeism within health care settings can be considered a proxy of community incidence and identify high risk periods.

The **non-high** period encompasses all periods that are not high risk. During non-high risk periods, some measures may still be considered from the high risk period based on the patient and staff transmission risk assessment and operational considerations.

[Table 1](#) provides indicators to consider to identify high transmission risk periods. This framework can be implemented at the level of the organization, health care setting, local public health unit, region and province. While all three indicators should be considered in identifying high risk period, the indicators are listed in order of importance for consideration. Specific thresholds for metrics/indicators for each period have not been defined as there is no evidence to support a specific quantitative threshold/cutoff and risk tolerance will differ based on multiple dynamic factors (e.g., local epidemiology, population at risk, immunization coverage, healthcare human resource constraints etc.). Baseline levels refers to the expected level of the indicator based on past experience. There may be differences in the weighting of individual criteria in a quantitative or qualitative population-level risk assessment by jurisdiction and health care setting, depending on their unique circumstances.

Table 1: Framework for Transmission Risk Periods

Indicator	High Risk Period	Non-High Risk Period
Respiratory virus outbreaks in health care settings	Frequent and ongoing	Infrequent or baseline
Hospitalizations and ICU admissions*	High and /or upward trajectory	Baseline and stable
Community transmission**	High and /or increasing	Low to moderate and stable

*Secondary to acute respiratory virus infection. May include local or provincial context depending on organization. Metrics to consider as a proxy for disease severity include hospitalized cases or weekly number of hospitalizations per 100 000 community population

**Metrics to consider as a proxy for community transmission include:

1. Community positivity rates
2. Staff metrics including staff positivity rates and/or absenteeism
3. Wastewater surveillance trends

Recommended IPAC Practices by Risk Level

Routine Practices

Transmission of SARS-CoV-2 from unrecognized cases (e.g., asymptomatic, pre-symptomatic) led to the implementation of extra IPAC measures incorporated into the existing Routine Practices during the COVID-19 pandemic. These added IPAC measures were applied in all clinical care areas and in some circumstances, were applied throughout health care settings.

Evidence suggests that universal masking for source control and personal protection in health care settings is associated with reduced transmission of COVID-19^{5,6} and may be effective for other respiratory viruses, particularly those with presymptomatic and asymptomatic spread (e.g., Influenza). The routine use of masking by staff, patients and visitors may also reduce the risk of transmission and need for exposure follow-up for other communicable infections.

There is limited evidence suggesting that the universal use of eye protection reduces COVID-19 or other respiratory virus transmission, outside of recommendations for Routine Practices and Additional Precautions during the provision of direct care. Therefore, eye protection is recommended as per Point-of-care Risk Assessment (Routine Practices) during all risk periods.

[Figure 1](#) summarizes the spectrum of masking recommendations for source control from situational masking to targeted masking to universal masking, for periods of non-high to high transmission risk. During all risk periods, masking guidance should at a minimum be consistent with community masking guidance for *indoor spaces*.

Figure 1. Spectrum of masking recommendations for non-high to high transmission risk periods



Ontario Health, Toronto Region Masking Community of Practice Committee; Merkley J, Cass D, Hota S, Johnstone J. TR HOT – changes to masking guidance: summary of assumptions, recommendations & operational guidance. Toronto, ON: King’s Printer of Ontario; 2023 Jun 30. Progression of masking policies in clinical areas, p. 5.

During **high transmission** risk periods, at a minimum, masking is recommended for all direct patient care (**targeted clinical masking**). Outside of direct patient care, masking can be targeted based on both patient and staff transmission risk assessment, taking in consideration the duration, frequency and number of interactions (see [Table 2](#)). For example, when considering a patient transmission risk assessment, areas where there may be close, prolonged exposure to a large number of individuals are higher risk (e.g., lounges, waiting rooms) compared to areas with transient interactions (e.g. hallways). For the staff transmission risk assessment, similar considerations scenarios where there may be prolonged, close contact is important (e.g., inpatient ward areas), in addition to the impact on staffing in the event of a staff exposure (inpatient versus outpatient units versus off site administrative buildings), burden within the setting (e.g., outbreak unit) and/or high risk unit (e.g., ICU, transplant unit). **Universal masking** refers to masking in all areas (clinical, administrative, and public areas) throughout the institution (“door-to-door masking”).

During **non-high risk** periods, some measures may still be considered from the high risk period based patient and staff transmission risk assessment (**situational masking**). HCW masking for direct patient care is the highest yield to protect patients and may be considered when providing care to high risk populations, especially if receiving prolonged direct close care. In addition, visitor/essential caregiver masking is also high yield to protect patients if there is high community transmission and frequent movement of the visitor/essential caregiver between the community and health care setting.

Table 2: Scenarios and considerations for targeted masking

Targeted Masking Scenario	Rationale / Considerations
HCW Masking for direct patient care (Targeted clinical masking)	<p>To reduce the risk of nosocomial transmission between HCWs and patient, especially when there is prolonged, close contact (e.g., during patient care activities).</p> <p>In non-high transmission periods, situations where masking may be considered include when providing direct care to high risk patients (e.g., immunocompromised), especially when prolonged direct care is provided (e.g., high needs patients).</p>
HCW Masking in inpatient clinical areas (Targeted inpatient unit masking)	<p>To reduce the risk of nosocomial transmission, including staff to staff transmission, or inadvertent unmasked patient contact.</p> <p>Considerations include health care staffing contingency risk assessment in the event of a staff exposure, high burden within the setting (e.g., outbreak unit), patients in hallways, and/or high risk unit (e.g., ICU, transplant unit).</p>
HCW Masking in outpatient clinical areas (Targeted outpatient unit masking)	<p>To reduce the risk of nosocomial transmission, including staff to staff transmission, or inadvertent unmasked patient contact.</p> <p>Considerations include health care staffing contingency risk assessment in the event of a staff exposure, risk of exposure in waiting rooms and patient population in the clinic (e.g., hematology / oncology clinic).</p>

Targeted Masking Scenario	Rationale / Considerations
Masking in meeting rooms, administrative / office areas / non-patient facing clinical areas	To reduce the risk of staff to staff transmission. Considerations include health care staffing contingency risk assessment in the event of a staff exposure and evidence of staff to staff transmission (outbreaks, increasing illness amongst staff).
HCW Masking in public spaces, non-clinical areas (i.e., no patient care activities performed/delivered)	Recommendations should at a minimum be consistent with community indoor masking guidance if in place. Recommendations for staff, patients and visitors should align in common areas.
Asymptomatic Patient masking [†]	Consider aligning with HCW masking in clinical areas. Consider in common areas where there may be close, prolonged exposure to a large number of individuals (e.g., lounges, waiting rooms and protection of patients at high risk for severe disease).*
Visitor/essential caregiver masking in clinical areas	When within the patient bed space/room, for essential caregivers who are household contacts rooming in with patients (e.g., parent or labouring partner) or for essential caregivers in non-acute care settings (e.g., LTCH, home care) masking of the essential caregiver is recommended only when patient is receiving care by staff (but can be considered at all times).

*Exceptions may include home-like environments where interactions between smaller groups of patients are considered an important aspect of care (e.g., long term care homes).

[†]Patient masking is not recommended for paediatric patients 2 years of age or younger or for any patient unable to tolerate masking for medical reasons. Patients with signs and symptoms of a communicable infectious disease should wear a mask outside their bed space as per institutional policies and procedures, unless there are contraindications to masking.

Environmental Controls

Environmental controls can reduce respiratory virus transmission through achieving adequate ventilation, physical distancing, and the selective use of physical barriers. Some environmental controls are difficult to implement in a timely manner and are not amenable for targeted use in a particular risk period. Other environmental controls are beneficial even outside the context of a pandemic and should not be limited to a transmission risk period (e.g., achieving adequate ventilation).

Physical distancing can reduce the risk of respiratory virus transmission, as transmission most commonly occurs with close, unprotected contact. Therefore, in situations where patients who are normally not in contact with each other are brought together in the same space (e.g., waiting room), physical distancing should be optimized, especially when presenting with signs and symptoms of a communicable disease and a single patient room is not immediately available (e.g., emergency department). While the current physical distancing recommendation in Canada is 2 metres, both the World Health Organization and the Centers for Disease Control and Prevention recommend a distance of 1 metre. Distancing is not an all-or-nothing phenomenon, with increased distancing likely to decrease respiratory virus transmission risk.

Therefore, in settings where 2 meters is not feasible, the aim should be to optimize physical distancing where possible and masking can be used to help mitigate the spread of respiratory infections.

In situations where social interactions are encouraged and/or individuals are in a home-type environment (e.g., long-term home), optimizing physical distancing may not always be the preferred strategy and the use of masking can help mitigate transmission in high risk periods.

Vaccination

Vaccination with all recommended doses is an evidence-based intervention that has been shown to reduce COVID-19 and influenza virus disease incidence, and reduce the likelihood of severe disease. Therefore, it is strongly recommended for all eligible HCWs, patients and visitors to be vaccinated and receive all recommended doses of these vaccines and other recommended vaccines for respiratory viruses (e.g. respiratory syncytical virus), when they become available.

Screening

Active screening of patients for signs and symptoms of communicable diseases is part of best practices regardless of transmission risk period.

Staff should report symptoms of communicable diseases to occupational health and safety and should not attend work (except during periods of critical staff shortages and with the approval of occupational health and safety and facility leadership). To support staff reporting symptoms, settings should have supportive sick leave and/or work-from-home policies.

Additional Precautions, Patient Placement and PPE

Additional Precautions are applied along with Routine Practices for patients who are known or suspected to be infected or colonized with transmissible organisms. They are required regardless of the respiratory virus epidemiology or risk period (i.e., if the patient is known to have COVID-19, use [Additional Precautions recommended for COVID-19](#),⁴ regardless of the background incidence).

Patients with respiratory virus infections should ideally be cared for in a single room under Additional Precautions with access to their own toileting facility whenever possible. When there are critical staffing shortages and/or critical bed shortages, patient cohorting strategies may be considered.^{7,8,9}

A Point of Care Risk Assessment (PCRA) is necessary prior to any encounter. The appropriate selection and use of personal protective equipment is informed by the PCRA regardless of the current epidemiology or transmission risk period.⁴

Considerations for Visitors

While visitors can provide important emotional support to patients, visitor restrictions during high risk periods of respiratory virus transmission may be considered based on organizational risk assessment, weighing the benefits and risks of their presence. Exceptions should be considered for those who meet organizational criteria (e.g., at end of life) and may be adapted to the unique needs of the health care setting or organization.

In-person gatherings and room occupancy limits

For all in-person gatherings in a health care setting, occupancy should not exceed public health guidelines, if existing. In high risk periods, consideration should be given to limit room occupancy to allow for physical distancing, particularly if individuals are unmasked (e.g., in dining areas), based on organizational considerations, such as health care capacity constraints.

Summary of Revisions

New material in this revision is summarized in the table below.

Revision number	Date of Implementation	Description of Major Changes	Page
1	November 22, 2023	Clarification of how IPAC measures may be applied with changing levels of respiratory transmission.	Overarching
1	November 22, 2023	New image added to visually explain how measures may be applied with changing levels of respiratory transmission.	5

References

1. Ontario Agency for Health Protection and Promotion (Public Health Ontario), Provincial Infectious Diseases Advisory Committee. Best practices for managing COVID-19 outbreaks in acute care settings [Internet]. 2nd ed. Toronto, ON: King's Printer for Ontario; 2023 [cited 2023 Oct 5]. Available from: https://www.publichealthontario.ca/-/media/documents/ncov/ipac/2021/03/covid-19-pidac-outbreaks-acute-care.pdf?sc_lang=en
2. National Institute for Occupational Safety and Health (NIOSH). Hierarchy of controls [Internet]. Atlanta, GA: Centers for Disease Control and Prevention; 2023 [modified 2023 Jan 17; cited 2023 Oct 5]. Available from: <https://www.cdc.gov/niosh/topics/hierarchy/default.html>
3. 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. Toronto, ON: Queen's Printer for Ontario; 2012. Available from: <https://www.publichealthontario.ca/-/media/documents/B/2012/bp-rpap-healthcare-settings.pdf>
4. Ontario Agency for Health Protection and Promotion (Public Health Ontario). IPAC recommendations for use of personal protective equipment for care of individuals with suspect or confirmed COVID-19 [Internet]. 2nd ed. Toronto, ON: King's Printer for Ontario; 2022 [cited 2023 Oct 5]. Available from: https://www.publichealthontario.ca/-/media/documents/ncov/updated-ipac-measures-covid-19.pdf?sc_lang=en
5. Wang X, Ferro EG, Zhou G, Hashimoto D, Bhatt DL. Association between universal masking in a health care system and SARS-CoV-2 positivity among health care workers. *JAMA*. 2020;324(7):703-4. Available from: <https://doi.org/10.1001/jama.2020.12897>
6. Lan FY, Christophi CA, Buley J, Iliaki E, Bruno-Murtha LA, Sayah AJ, et al. Effects of universal masking on Massachusetts healthcare workers' COVID-19 incidence. *Occup Med*. 2020;70(8):606-9. Available from: <https://doi.org/10.1093/occmed/kqaa179>
7. Ontario Agency for Health Protection and Promotion (Public Health Ontario). Cohorting strategies to facilitate bed flow in acute care settings [Internet]. Toronto, ON: Queen's Printer for Ontario; 2022 [cited 2023 Oct 5]. Available from: https://www.publichealthontario.ca/-/media/documents/ncov/ipac/2022/01/cohorting-strategies-facilitate-bed-flow-acute-care.pdf?sc_lang=en
8. Ontario Agency for Health Protection and Promotion (Public Health Ontario). Coronavirus disease 2019 (COVID-19): cohorting during an outbreak of COVID-19 in long-term care homes [Internet]. Toronto, ON: Queen's Printer for Ontario; 2022 [cited 2023 Oct 5]. Available from: https://www.publichealthontario.ca/-/media/documents/ncov/ltrh/2020/11/covid-19-outbreak-cohorting-ltch.pdf?sc_lang=en
9. Ontario Agency for Health Protection and Promotion (Public Health Ontario). Focus on: cohorting in outbreaks in congregate living settings [Internet]. 2nd ed., 2nd revision. Toronto, ON: Queen's Printer for Ontario; 2022 [modified 2022 Mar; cited 2023 Oct 5]. Available from: <https://www.publichealthontario.ca/-/media/documents/ncov/cong/2020/06/focus-on-cohorting-outbreaks-congregate-living-settings.pdf?la=en>

Citation

Ontario Agency for Health Protection and Promotion (Public Health Ontario). Interim infection prevention and control measures based on respiratory virus transmission risks in health care settings. 1st revision. Toronto, ON: King's Printer for Ontario; 2023.

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.

Publication History

Published: April 2023

1st Revision: November 2023

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.

© King's Printer for Ontario, 2023

Ontario 