Ontario Health

Personal Protective Equipment (PPE) use during the COVID-19 Pandemic

Recommendations on the use and conservation of PPE from Ontario Health

Release date: March 25, 2020

Personal Protective Equipment (PPE) use during the COVID-19 Pandemic

Included are three evidence-based documents produced to support health care organizations and providers be stewards of personal protective equipment.

1. **Guidelines for Use of N95 Respirators for Care of Individuals with Suspected or Confirmed COVID-19**

2. **Guidelines on the allocation and use of procedural / surgical masks**

3. **General strategies for Conserving Personal Protective Equipment (PPE)**

Acknowledging the fear and anxiety associated with providing healthcare to persons with suspected or confirmed COVID-19, as well as the need to ensure effective personal protective equipment is available for healthcare providers, we encourage you to familiarize yourself with the evidence and recommendations provided here and communicate to your staff on the appropriate and responsible use of PPE. We also acknowledge the important relationship we have with our stakeholders, associations, organized labour and workers in working together to achieve the sustained safety of our workforce.

It is recognized that as community spread increases this guidance will need to be updated to ensure both that the best available evidence is applied and that we continue to think about longer-term sustainability of PPE.

Guidelines for Use of N95 Respirators for Care of Individuals with Suspected Or Confirmed COVID-19

Updated as of: March 25, 2020

The appropriate stewardship of our provincial supply of N95 respirators requires consideration of the safety of health care workers combined with strategies to both reduce inappropriate use and conserve supply. In order to best protect our health care workforce and to ensure the longer-term sustainability of N95 respirators for all healthcare workers in Ontario who need them, a set of recommendations – based on the best available evidence – is provided here.

While we work with health care providers at the front lines on PPE stewardship, we are also working quickly to stabilize the supply chain for N95 respirators (and other PPE). We will continue to communicate with you on a regular basis as more information becomes available.

Acknowledging the fear and anxiety associated with providing healthcare to persons with suspected or confirmed COVID-19, and the need to ensure effective personal protective equipment is available for healthcare providers, we encourage you to familiarize yourself with the evidence and recommendations provided here and communicate to your staff on responsible use of N95 respirators.

Inpatient Facilities (acute care hospital and complex continuing care)

- When caring for individuals with suspect of confirmed COVID-19 healthcare workers should follow droplet/contact precautions (surgical/procedure mask, isolation gown, gloves and eye protection).
- Use an N95 respirator during the following aerosol-generating medical procedures performed on suspected or confirmed COVID-19 patients:
    - Endotracheal intubation, extubation, and related procedures
    - Tracheostomy procedures (e.g., open suctioning, removal)
    - Open airway suctioning
    - Surgery and autopsy, especially when using high speed devices
- The following aerosol-generating medical procedures should be avoided in suspected or confirmed COVID-19 patients. Where these procedures must occur based on clinical judgment, an N95 respirator should also be used:
    - Cardio-pulmonary resuscitation (this is considered a high-risk procedure and should only be embarked upon where there is a reasonable prospect of success)
    - Tracheotomy
    - High frequency oscillating ventilation
    - Bronchoscopy (Diagnostic or Therapeutic)
    - Sputum induction (Diagnostic or Therapeutic)

- Non-invasive positive pressure ventilation (CPAP, BiPAP)
- CPAP/BiPAP for obstructive sleep apnea
- High flow oxygen therapy

- For all other situations, including screening, entering a patient's room, or providing direct care to patients suspected or confirmed to have COVID-19, a surgical mask, isolation gown, gloves and eye protection is sufficient. N95 respirators SHOULD NOT be used by providers caring for COVID-19 or suspected COVID-19 patients unless the patient is undergoing an aerosol-generating medical procedure as described above.

- Visitor allocation
  - Visitor restriction should be in effect to reduce the need for PPE
  - Visitors that are permitted entry to an inpatient unit under an exception, after screening for symptoms of COVID-19 and ensuring there are none, may receive allocation of **one (1)** procedure mask and only if the hospital's PPE supply allows
  - Hand hygiene must be performed prior to donning the procedure mask and the visitor instructed that the mask must remain fully in place for the duration of the visit.

Primary Care (including walk-in clinics), Outpatient and Ambulatory Settings

- When caring for individuals with suspected or confirmed COVID-19 healthcare workers should follow droplet/contact precautions (surgical/procedure mask, isolation gown, gloves and eye protection).

- Patients suspected of, or confirmed to have COVID-19, who are waiting to be seen should don surgical masks and maintain a 2-metre special distance from others.

COVID-19 Assessment Centres

- Patients who are waiting to be assessed should don surgical masks and maintain a 2-metre special distance from others.

- Screeners are advised to don a surgical mask if they are less than 2 metres away from those being screened and not behind a partition.

- Workers who are assessing (+/- obtaining nasopharyngeal swabs from) staff and patients with COVID-19 symptoms **do not require N-95 respirators**.
  - A surgical mask can be used over the course of many patients. Conserve your mask for as long as possible, but once wet, damaged, soiled, or removed, you should immediately dispose of the mask. Take extra care when removing this mask as this is when self-contamination may occur. Don a new mask for your next set of patient encounters, extending its use for as long as possible. In some circumstances this may necessitate more than 2 masks/shift.
  - It is safe to wear your mask for multiple patient encounters. Take care not to touch your facemask, and if you do, immediately perform hand hygiene.

- Leave the patient care area to remove the facemask and perform hand hygiene afterwards.

Long-term Care Facilities

- When caring for individuals with suspected or confirmed COVID-19 healthcare workers should follow droplet/contact precautions (surgical/procedure mask, isolation gown, gloves and eye protection).
- Healthcare workers providing CPAP and BiPAP (for obstructive sleep apnea) and/or open suctioning to suspected or confirmed COVID-19 resident are should don an N95 respirator, gown, gloves and eye protection.
- Visitor allocation
  - Visitor restriction should be in effect to reduce the need for PPE
  - Visitors that are permitted entry to an inpatient unit under an exception, after screening for symptoms of COVID-19 and ensuring there are none, may receive allocation of **one (1)** procedure mask and only if the hospital's PPE supply allows
  - Hand hygiene must be performed prior to donning the procedure mask and the visitor instructed that it must remain fully in place for the duration of the visit.

Home and Community Care

- When caring for individuals with suspected or confirmed COVID-19 healthcare workers should follow droplet/contact precautions (surgical/procedure mask, isolation gown, gloves and eye protection).
- Use an N95 respirator ONLY during aerosol-generating medical procedures performed on suspected or confirmed COVID-19 patients. For example:
  - Open airway suctioning
  - Tracheostomy management
- The following aerosol-generating medical procedures should be avoided in suspected or confirmed COVID-19 patients. Where these procedures must occur based on clinical judgment, an N95 respirator should also be used
  - Sputum induction (Diagnostic or Therapeutic)
  - Non-invasive positive pressure ventilation
  - High flow oxygen therapy.
- For all other situations, including screening, entering a patient's home, or providing direct care to patients suspected or confirmed to have COVID-19, a surgical mask, isolation gown, gloves and eye protection is sufficient. N95 respirators are not required.

Guidelines for Use of procedural / surgical masks by health care providers

Mask use for COVID-19 and suspected COVID-19 patients

- Health care providers who are caring for COVID-19 and suspected COVID-19 patients should don a surgical/procedural mask, an isolation gown, protective eyewear and gloves. Masks should be substituted for N-95 respirators for the specific indications listed in the previous section.

When should we escalate mask use for other or all patient encounters?

- The assessment of risk posed to health care workers who are caring for the general public who have not been diagnosed with COVID-19 or suspected COVID-19 can be challenging as the risk varies based on care setting, type of care being provided, prevalence of asymptomatic infection in the population presenting for care and the extent to which the virus sheds from asymptomatic individuals. In addition, there are increasing reports of COVID-19 patients presenting with atypical symptoms, allowing them to pass through screening undetected.
- In some areas of the province where community spread is felt to be likely, some organizations, particularly hospitals, have taken the decision to provide two (2) masks per shift to all health care workers who are patient-facing. This action has been taken to show an abundance of caution in areas where the risk to health care workers posed by the general patient population is felt to be elevated.
- Other areas have not yet seen community spread and are comfortable maintaining a recommendation for health care workers to only use masks when treating COVID-19 or suspected COVID-19 patients.
- This kind of risk stratification is necessary and appropriate if we are to protect our health care workforce while at the same time conserving the supply of masks. Using masks injudiciously in low-risk environments could contribute to an undersupply later when risk everywhere is higher.
- Accordingly, a thoughtful, risk-based approach to mask allocation is recommended. It is recognized that, at any given moment in time, this will result in different mask allocation protocols across organizations in all sectors in health care. It is also recognized that individual organizations will need to change or escalate their allocation policies as risks change.
    - All surgical masks in the organization should be immediately secured (treated like narcotic supply)
    - All organizations (including acute care, COVID-19 assessment centres, primary care, outpatient and ambulatory care, long-term care and home and community care) **should establish a defined, phased approach to mask allocation** based on risk assessment with Phase 1 representing mask use for the highest risk scenarios, and Phase 4 representing the lowest risk scenarios.
        - One potential risk stratification scheme (from acute care, to serve as an example):

- PHASE 1: Unplanned urgent and emergent care (eg, EDs staff)
- PHASE 2: Planned urgent or emergent care (eg, dialysis, endoscopy, labour and delivery)
- PHASE 3: All remaining clinical areas and inpatient units
- PHASE 4: Non-clinical spaces

- Organizations in all care sectors should escalate through phases of mask allocation as risk escalates.
- Estimates of risk should be made on an organization-by-organization basis, depending on local prevalence of disease, evidence of community spread, and advice from local IPAC experts.
- Importantly, in a future scenario of restricted masks, these risk categories allow organizations to roll back mask allocation in a rational fashion.

General guidelines when using surgical/procedural masks:

- A surgical mask can be used over the course of many patients. Conserve your mask for as long as possible, but once wet, damaged, soiled, or removed, you should immediately dispose of the mask. Take extra care when removing this mask as this is when self-contamination may occur. Don a new mask for your next set of patient encounters, extending its use for as long as possible. In some circumstances this may necessitate more than 2 masks/shift. It is safe to wear your mask for multiple patient encounters. Take care not to touch your facemask, and if you do, immediately perform hand hygiene.
- Leave the patient care area to remove the facemask and perform hand hygiene afterwards.
- Take care not to touch your facemask, and if you do perform hand hygiene.

This guidance is current as of the release date noted. It will be updated from time to time. In regions where there is no community spread, this guidance will be most applicable. Regions that are currently experiencing large scale community spread may alter this approach to meet their current needs based on local epidemiology and infection control advice.

References:

Public Health Ontario. Updated IPAC Recommendations for Use of Personal Protective Equipment for Care of Individuals with Suspected or Confirmed COVID19 (March 12, 2020). https://www.publichealthontario.ca/-/media/documents/ncov/updated-ipac-measures-covid-19.pdf?la=en. Accessed March 23, 2020.

Health Protection Scotland. Aerosol Generating Procedures (AGPs). https://hpspubsrepo.blob.core.windows.net/hps-website/nss/2893/documents/1_tbp-lr-agp-v1.pdf. (November 2019). Accessed March 24, 2020.

Strategies for Conserving Personal Protective Equipment (PPE)

1. **Assess your existing supply of N95 respirators and other PPE**
    a) Gather and secure supplies from across your organization, including:
        i. From visitor and public areas.
        ii. Clinics or surgical areas not in use.

2. **Centralize distribution of N95 respirators, manage them as you would narcotics**
    a) Take stock of supplies, steward judiciously and track usage. Distribute only according to guidelines issued by Ontario Health.

3. **Where appropriate, limit number of patients going to hospital or outpatient settings for non-urgent care**
    a) Maximize virtual consults. Any patient who does not require a physical presence in a health care institution should not be there.
    a) Use drive-thru or virtual COVID-19 screening as much as possible.

4. **Minimize contact with patients suspected or confirmed to have COVID-19**
    a) Restrict healthcare workers entering rooms to only those involved in direct care (e.g. no learners).
    b) Assess what other staff/allied health professionals could be restricted. Minimize inpatient consults. Consider virtual inpatient consult options.
    c) Maximize trans-disciplinary (eg, caregiver who has to enter the room anyway for other reason can deliver a food tray).
    d) Caregivers should cluster their tasks to reduce the number of times they need to enter the room.
    e) Consider other changes to minimize use of PPE, e.g. moving infusion pumps outside patient rooms so alarms can be addressed without donning PPE or going to a dial flow non pump system to reduce the number of alarms.

5. **Alter care processes to minimize possible COVID-19 patient contact to as few providers as possible, with as little time in the hospital as possible.**
    a) For example, for low risk patients arriving to the emergency room, consider taking vitals at triage and history, then sending patients back to their cars to have a phone consult with the doctor, with re-entry only if diagnosis is not clear or more investigation is needed.

6. **Cohort patients with confirmed COVID-19 in the same room and on the same unit.**

7. **Assign a specialized team to care for a cohort of patients with suspect or confirmed COVID-19**

8. **Severely limit visitors to rooms/areas with patients suspected or confirmed to have COVID-19**

9. **Remove droplet/contact precautions as quickly as appropriately possible**

    a) COVID-19 results may be available on Connecting Ontario or OLIS prior to our laboratories receiving notification.

b) Contact infection control in a timely manner and prior to discontinuing precautions.

10. N95 Respirator Testing

a) Use N95 respirators beyond the manufacturer-designated shelf life for fit testing if necessary in the context of inadequate supply of non-expired product.

b) Limit the use of N95 respirators during mask fit testing to key staff.

c) Use your testing mask for patient care.

11. N95 Respirator Education

a) Offer education on the indications for use of N95 respirators in the care of patients with suspect or confirmed COVID-19 (see Guidelines for Use of N95 Respirators for Care of Individuals with Suspected Or Confirmed COVID-19 in the previous section).

12. Audit the use of PPE in your organization

a) Either conduct leadership rounds to deliver key messages and address variability observed in practice, or charge managers and directors with enforcing and reporting on appropriate PPE use on each unit.

13. Extend use of facemasks by wearing the same facemask for repeated close contact encounters with several patients without removing in between

a) The facemask should be removed and discarded if soiled, damaged or hard to breathe through.

b) Take care not to touch your facemask, and if you do perform hand hygiene.

c) Leave the patient care area to remove the facemask and perform hand hygiene afterwards.

d) Once the facemask has been removed dispose of in a bin for possible reprocessing.

14. Extended use of eye protection by wearing the same eye protection for repeated encounters with different patients without removing in between.

15. Extend the use of isolation gowns (disposable or cloth) by wearing the same gown for repeated encounters with different patients with COVID-19 without removing in between. Re-use of cloth isolation gowns (without washing in between). Remove after last patient encounter and do not reuse without reprocessing.

16. Reprocess PPE

a) Collect used masks for potential future reprocessing; early work suggests N95 masks could be irradiated and potentially used weeks later (current thought is that virus can survive on surfaces for 3 days) (Note: not recommended by 3M).
b) Consider moving from visors to goggles which can be cleaned.
c) Strongly consider moving to washable gowns. One hospital tested washing blue isolation gowns in-house and reported they laundered well.

17. **Prepare for last-resort scenario**:
    a) Use of respirators approved under standards used in other countries that are similar to NIOSH-approved N95 respirators (N100, P100, R100, N99, P99, R99, N95, P95, R95)
    b) Limited re-use of N95 respirators for patients with COVID-19 (implemented according the CDC guidance).
    c) Use of N95 respirators beyond the manufacturer-designated shelf life for delivering patient care – it is important to ensure a seal check is completed prior to providing patient care.
    d) Save expired N95 masks for last resort back-up or low-risk settings.
    e) Consider use of non-approved NIOSH masks for low-risk settings; Use of respirators from other countries (that are similar to NIOSH approved N95 respirators).

References:

Release of Stockpiled N95 Filtering Facepiece Respirators Beyond the Manufacturer-Designated Shelf Life: Considerations for the COVID-19 Response (February 28, 2020). https://www.cdc.gov/coronavirus/2019-ncov/release-stockpiled-N95.html. Accessed March 23, 2020.

Recommended Guidance for Extended Use and Limited Reuse of N95 Filtering Facepiece Respirators in Healthcare Settings (March 28, 2018): https://www.cdc.gov/niosh/topics/hcwcontrols/recommendedguidanceextuse.html. Accessed March 23, 2020.

Strategies for Optimizing the Supply of PPE (March 17, 2020). https://www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/index.html. Accessed March 23, 2020.

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