

Q and A

COVID-19: Non-Medical Masks

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Introduction

The [Public Health Agency of Canada](#) (PHAC) updated their guidance on November 3, 2020, regarding non-medical (cloth) masks (NMMs)¹ to now recommend that NMMs should be made of at least three layers, with the middle layer being a filter-type fabric. This aligns with guidance issued from the [World Health Organization in June 2020](#)². Using the most available evidence, this document provides responses to frequently asked questions regarding the updated advice on NMMs, as well as general questions, including how these differ from medical masks, and recommendations regarding construction of non-medical masks in order for these to function effectively.

Questions and answers

Non-medical mask versus medical mask

Q. What is the difference between a medical mask (i.e., a surgical mask) and a non-medical (cloth) mask?

Medical masks are a form of personal protective equipment (PPE) and are worn in conjunction with other types of PPE ([when indicated](#)) to protect the wearer from exposure to the potentially infectious respiratory droplets of others.³ When worn correctly, medical masks can also function as a form of source control, protecting those around the wearer from potential exposure to their respiratory droplets. Medical masks are intended to be worn once before being discarded.

Non-medical masks (e.g., those made of cloth or other masks not certified by Health Canada as medical grade) are worn for the purpose of [source control](#).⁴ When worn correctly, NMMs will protect those around the wearer from potential exposure to the wearer's respiratory droplets. NMMs (3-ply or 2-ply) are not PPE and are not to be worn in instances where the use of PPE is indicated (e.g., when providing direct care to or within 2m of an individual suspected or confirmed to be ill with COVID-19).³

3-ply (3 layer) versus 2-ply (2 layer) non-medical masks

Q. What is the scientific evidence for 3-ply (3 layer) vs 2-ply (2 layer) NMMs?

There is laboratory-based evidence regarding the filtering efficiency (the ability to remove droplets and aerosols from ambient air) of different materials, and combinations of materials that have been used to make NMMs.² The number of layers that will achieve a theoretical filtration efficiency is dependent on the material used. Materials with higher filtration efficiency may offer additional protection, but may i) be uncomfortable against the skin, ii) reduce breathability, iii) may still be inefficient if there is a poor fit of the mask. Therefore, the innermost layer that is touching the skin should be a cotton or cotton blend

material to avoid irritation. All layers should either be washable for re-use, or disposable (e.g., middle filter layer).

There are no epidemiological studies to evaluate the effectiveness of 3-ply versus 2-ply masks on transmission of SARS-CoV-2. The current evidence that NMMs reduce transmission of COVID-19 is population based, where widespread use of NMMs has been linked to lower rates of transmission when compared to populations where NMM use is low. However, this evidence is based on NMMs used to date, most of which would not be 3-ply NMMs and/or include a filter layer.⁵ Therefore, it is unknown whether or to what degree a 3-ply NMM with a filter layer would reduce the risk to the wearer of acquiring COVID-19 compared to a 2-ply NMM without a filter layer. All NMM (3-ply or 2-ply) should be considered as source control, and not PPE.

Q. Are 3-ply NMMs preferable to 2-ply NMMs?

There is a theoretical basis as to why 3-ply NMMs with a filter layer may offer a potential protective benefit to the wearer compared to 2-ply NMMs. For individuals seeking to obtain a **new** NMM, a homemade or purchased 3-ply NMM with a disposable or reusable filter-type layer may theoretically offer greater filtration compared to a 2-ply NMM with no filter, and is currently recommended by WHO and PHAC. However, consistent and appropriate use of either is the most important thing to do when unable to physically distance or in shared indoor spaces.

All NMMs, whether 3-ply or 2-ply, should¹:

- completely cover the nose, mouth and chin without gaping
- allow for easy breathing
- not contain an exhalation valve
- fit securely to the head
- fit comfortably to avoid frequent adjustments
- maintain its shape after washing and drying

Q. What should people do with their 2-ply NMMs?

The most important aspect of NMMs as a public health intervention for COVID-19 is for people to wear them consistently and appropriately when they are unable to physically distance and/or in shared indoor environments. Existing 2-ply NMMs can be used as before, and there is no need to discard existing 2-ply NMMs that are still well maintained and well-fitting.

Q. Does a 3-ply NMM change the risk of being exposed to COVID-19?

As there is only laboratory-based evidence of the differential benefit of a 3-ply with filter layer vs a 2-ply NMM, it is not known whether or to what degree use by a case and/or individual being exposed to COVID-19 affects the risk assessment of exposure for the contact. There are no changes to the public health risk assessment of contacts to consider 3-ply or 2-ply NMM use. The main factor for NMMs is consistent and appropriate use by the wearer for the duration of the interaction(s). Removal/partial removal of an NMM poses a greater risk for transmission.

Q. Does a 3-ply NMM count as Personal Protective Equipment?

Homemade or purchased 3-ply NMMs are not personal protective equipment (PPE), regardless of construction or the use of a filter-type layer.⁶ Individuals must still adhere to public health measures of physical distancing, hand hygiene, and avoiding crowded, closed spaces and close contact. Individuals who require a medical/surgical mask as PPE for their employment should not use a non-medical mask.

Non-medical mask construction and ongoing maintenance

Q. How should non-medical masks be washed in order for these to be safely reused?

Ideally reusable NMMs are to be washed after each use. [Non-medical masks](#) are recommended to be washed in a washing machine, using the warmest temperature setting with regular laundry detergent, followed by thorough drying in a dryer if available.⁷

If no laundering facilities are available, NMMs may be washed in a sink using [hot, soapy water](#), followed by thorough drying (air drying if a dryer is not available).⁸

If a sink is used, the sink is to be cleaned and disinfected before and after washing the mask in order to avoid potential cross-contamination.

Reusable NMMs with a non-woven filter layer should be washed as above. Reusable NMMs with a disposable filter layer should have their filter removed before washing. Disposable filters should be changed daily or as per manufacturer instructions.

Q. How should non-medical masks be constructed in order for these to function effectively as source control?

NMMs should be constructed of at least 2 layers of closely woven fabric (e.g., cotton or linen), preferably have layers with different materials, and be tightly fitting in order to effectively contain the respiratory droplets of the wearer (i.e., provide source control).⁹ A third layer filter-type layer may provide some protection to the wearer by filtering incoming ambient air;^{10, 11} however additional layers may make it more difficult for the wearer to breathe.¹¹ Filter layers may be single-use and discarded after a mask is worn (i.e., inserted into pocket between fabric layers), or may be able to be laundered and reused (e.g., inserted into a pocket between fabric layers, or sewn into the mask). Appropriate single-use filters include a tissue or a paper towel.^{10, 11} Reusable filters include those made of fabric, such as a third layer of cotton or linen, or a layer of non-woven polypropylene fabric (such as that used for crafting).¹⁰ Materials such as plastic, dryer sheets, cleaning or disinfecting wipes or other materials containing chemical products may cause breathing difficulty, respiratory or skin irritation.

Q. Are there any considerations when using polypropylene as a filter layer?

There are many different types of polypropylene. When choosing material suitable for use in a mask, PHAC recommends non-woven and washable polypropylene or a disposable filter between two layers of tightly woven fabric (e.g., cotton or linen).¹⁰ If it is uncertain whether the filter is able to withstand repeated laundering, consider using the 'no-sew' method¹⁰ so that this layer can be replaced as needed. Removable polypropylene layers can be inspected after laundering to ensure it is intact, and replaced once it shows signs of degradation.

Q. Can non-medical masks be shared by different individuals after laundering?

NMMs are not to be shared, even after laundering. NMMs should be assigned to individuals via a label with the wearer's name and reused by the same individual after laundering (with appropriate mechanical laundering and drying). Mechanical laundering of NMMs using the warmest compatible temperature setting followed by thorough drying is considered appropriate cleaning. If cloth masks cannot be assigned to individual wearers, then single-use disposable masks are recommended to be used.

Q. Will placing a non-medical mask in a freezer or closed container inactivate/kill COVID-19?

Studies that have looked at the [stability](#) of SARS-CoV-2 (the COVID-19 virus) under various temperature conditions have found that, similar to other enveloped viruses, COVID-19 may be more stable in cooler conditions than in warm, humid conditions.¹² Heat is believed to be more effective in inactivating COVID-19 virus than cold. Freezing is not recommended as a method to inactivate the SARS-CoV-2. If a non-medical mask will be worn again before being washed, then the mask is recommended to be stored in a single-use paper bag or in a cleanable container with a lid between uses.

Q. Will exposing a NMM to sunlight inactivate COVID-19?

NMMs are to be laundered after each use, as described above. Although some recent studies have shown that natural sunlight may inactivate SARS-CoV-2 on some non-porous surfaces such as stainless steel and plastic, its effectiveness is variable and influenced by the duration of exposure, whether exposure is direct or indirect (e.g., less effective when exposed to sunlight through a car windshield) and local weather conditions (e.g., cloud cover), meaning that this will vary from day to day and with geographic location.¹³

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