

COVID-19 Polymerase Chain Reaction (PCR) Testing: Preferred Specimen Collection Methods

Objective

To provide an overview of the preferred specimen collection methods for novel coronavirus disease (COVID-19) polymerase chain reaction (PCR) testing

Key Messages

The following methods are preferred for specimen collection for COVID-19 PCR testing:

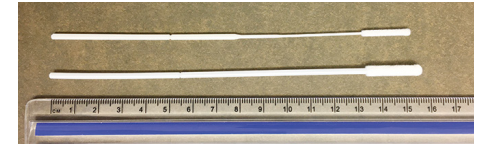
- **Nasopharyngeal (NP) swabbing is commonly considered a preferred specimen collection method**
 - Several other specimen types (listed below) are also considered preferred methods for COVID-19 PCR testing and may be collected instead of NP specimens in certain patient groups (e.g., for some children, when repeat sampling is likely, if NP swabs are unavailable)
- **Other preferred methods** of specimen collection for COVID-19 PCR testing include:
 - **Combined swabbing of the throat and both nostrils**
 - **Combined oral (buccal) and deep nasal swabbing**
 - **Deep nasal swabbing**
 - **Saliva** (note: only a limited number of non-Public Health Ontario laboratories in Ontario are accepting saliva specimens for COVID-19 PCR testing)
- For further information on specimen collection methods, please refer to Public Health Ontario's website, *Specimen Types for COVID-19 testing by Patient Characteristic*: <https://bit.ly/2QbeEZm> and Public Health Ontario's evidence brief, *The Use of Alternate Specimen Collection Methods for COVID-19 PCR Testing*: <https://bit.ly/3nQ7fdQ>

Important Considerations

- The collection of an **NP specimen is a controlled act**; thus, only certain regulated health professionals or those to whom the act has been delegated may collect this type of specimen through a direct order or medical directive. **The collection of oral (buccal), throat, anterior nasal, deep nasal swabs, and saliva are not controlled acts**, thus can be performed by anyone with appropriate training
- NP swabs are intended for NP specimen collection; however, if NP swabs are the only type of swab available, they can also be used to collect oral (buccal), throat, nasal, or deep nasal specimens
 - **The larger throat/nasal swabs cannot be used for NP specimen collection**
- To avoid testing delay or rejection, complete all fields of the COVID-19 Test Requisition, including specimen type and collection date: <https://bit.ly/312lmDj>

COVID-19 PCR Specimen Collection Kits

Typical nasopharyngeal swab (top) and typical throat/nasal swab (bottom)



Please see Public Health Ontario's website for more information on **COVID-19 PCR collection kits** for procurement.

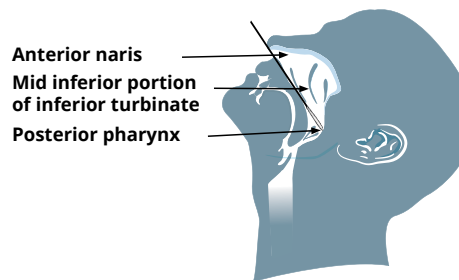
<https://bit.ly/36MYlrQ>

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Preferred Specimen Collection Types for COVID-19 PCR Testing

Nasopharyngeal (NP)

1. Tilt patient's head back
2. Insert flexible shaft mini-tip swab through nares parallel to palate (not upwards) until:
 - a. Resistance is met, OR
 - b. Distance is equivalent to half the distance from the patient's ear to their nostril
3. Gently rub and roll the swab
4. Leave swab in place for several seconds to absorb secretions
5. Slowly remove the swab while rotating it and immediately place in sterile tube containing transport medium



In a seated position, tilt the head back as illustrated in the picture

Recommendation:

A preferred specimen type for hospitalized and non-hospitalized patients

Approximate Sensitivity to Detect SARS-CoV-2:

94%¹

Controlled Act:

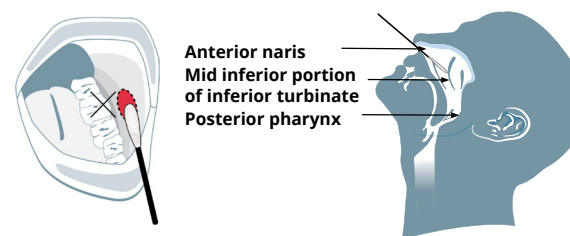
Yes

Swab Type:

NP swab only

Combined Oral (Buccal) and Deep Nasal

1. Insert swab between the cheek and lower gums. Turn swab three times (3x)
2. Repeat step 1 on the other side
3. Tilt head back
4. Using the same swab, insert swab about 2.5 cm (~1 in)* straight back (not up) into nostril – stop when you meet resistance
5. Rotate swab several times against the nasal wall
6. Leave swab in place for several seconds to absorb secretions
7. Using the same swab, repeat for the other nostril
8. Immediately place in sterile tube containing transport medium



*Swab insertion distance will differ for paediatric patients

Recommendation:

A preferred specimen type for non-hospitalized patients

Approximate Sensitivity to Detect SARS-CoV-2 Relative to NP Specimens:

95%²

Controlled Act:

No

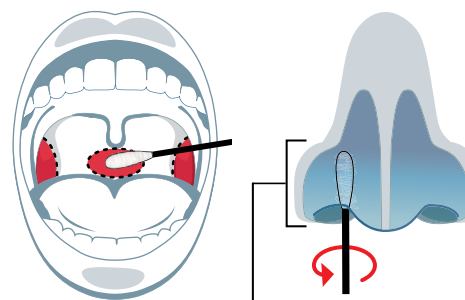
Swab Type:

Throat/nasal swab **or** NP swab

Combined Throat and Both Nostrils (Nasal/anterior nares)

Video Demo: <https://bit.ly/3kbKvmu>

1. Insert swab in posterior pharynx and tonsillar areas
2. Rub swab over posterior pharynx and bilateral tonsillar pillars; avoid tongue, teeth, and gums
3. Using the same swab, insert about 1 cm (0.5 in) inside nares*
4. Rotate swab several times against the nasal wall
5. Leave swab in place for several seconds to absorb secretions
6. Using the same swab, repeat for the other nostril
7. Immediately place in sterile tube containing transport medium



*Swab insertion distance will differ for paediatric patients

Recommendation:

A preferred specimen type for non-hospitalized patients

Approximate Sensitivity to Detect SARS-CoV-2 Relative to NP Specimens:

92%¹

Controlled Act:

No

Swab Type:

Throat/nasal swab **or** NP swab

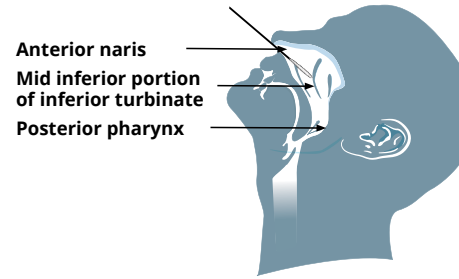
¹LeBlanc JJ, Heinstein C, MacDonald J, Pettipas J, Hatchette TF, Patriquin G. A combined oropharyngeal/nares swab is suitable alternative to nasopharyngeal swabs for detection of SARS-CoV-2. J Clin Virol. 2020;128: 10442. Available from: <https://doi.org/10.1016/j.jcv.2020.104442>

²Gertler M., et al. Self-collected oral, nasal and saliva samples yield sensitivity comparable to professional-collected oro-nasopharyngeal swabs in SARS-CoV-2 diagnosis Available from: <https://www.medrxiv.org/content/10.1101/2021.04.13.21255345v1>

Preferred Specimen Collection Types for COVID-19 PCR Testing

Deep Nasal

1. Tilt patient's head back
2. Insert swab about 2.5 cm (~1 in)* straight back (not up) into nostril – stop when you meet resistance
3. Rotate swab several times against the nasal wall
4. Leave swab in place for several seconds to absorb secretions
5. Using the same swab, repeat for the other nostril
6. Immediately place in sterile tube containing transport medium



In a seated position, tilt the head back as illustrated in the picture

***Swab insertion distance will differ for paediatric patients**

Recommendation:

A preferred specimen type for non-hospitalized patients

Approximate Sensitivity to Detect SARS-COV-2 Relative to NP Specimens:

83%³

Controlled Act:

No

Swab Type:

Throat/nasal swab **or** NP swab

Saliva – Neat or Mouth Rinse

Video Demo: neat (<https://bit.ly/3nT2cdf>) and **mouth rinse** (<https://bit.ly/3nYgvgB>)

Collecting a saliva specimen consists of spitting saliva into a collection tube via a funnel (Figure 1) or a straw (Figure 2).

The saliva specimen method can be neat (spitting directly into the collection tube via funnel or straw) or include a mouth rinse step (swish and gargle with saline). Please review the detailed, step by step instructions here:

- [Neat saliva with a funnel](#) or [a straw](#)
- [Mouth rinse/swish saliva for funnel](#) or [a straw](#)



Figure 1: A funnel



Figure 2: A straw

Recommendation:

A preferred specimen type for non-hospitalized patients

NOT appropriate for hospitalized patients and patients/resident in institutional settings (e.g., long-term care home)

Approximate Sensitivity to Detect SARS-COV-2 Relative to NP Specimens:

83%⁴

Controlled Act:

No

Swab Type:

N/A

Source: Adapted from Public Health Ontario, 2020 <https://bit.ly/3dnX3oh> | **Detailed specimen collection instructions from Public Health Ontario:** <https://bit.ly/2GUwTh8>

³Ontario Agency for Health Protection and Promotion (Public Health Ontario). The Use of Alternate Sample Collection Methods for COVID-19 PCR Testing. Toronto, ON; Queen's Printer for Ontario; 2020. Available from: <https://bit.ly/3nQ7fdQ>

⁴Butler-Laporte G, et al. Comparison of Saliva and Nasopharyngeal Swab Nucleic Acid Amplification Testing for Detection of SARS-CoV-2: A Systematic Review and Meta-analysis. JAMA Intern Med. 2021;181(3):353–360. Available from: <https://doi.org/10.1001/jamainternmed.2020.8876>