

GUIDELINES FOR SUBMITTING SPECIMENS FOR THE NATIONAL ENHANCED INFLUENZA AND/OR SARS-COV-2 SURVEILLANCE PROGRAMS AND DIAGNOSTIC ANTIVIRAL SUSCEPTIBILITY TESTING – NMLB WINNIPEG

The following is a recommendation for the collaboration of Canadian provincial/territorial and partner laboratories with the National Microbiology Laboratory Branch (NMLB) in Winnipeg, Canada. NMLB is Canada's WHO National Influenza Centre and contributes to WHO's Global Influenza Surveillance and Response System. Representative viral isolates produced from specimens submitted by provincial/territorial partners will be sent to a WHO Influenza Collaborating Centre (The Francis Crick Institute, UK) for further characterization.

The NMLB has established National Enhanced Influenza and SARS-CoV-2 Surveillance Programs that focuses on two virological-based platforms:

1. **Influenza and SARS-CoV-2 Antigenic Characterization Surveillance Program.** This program compares viral antigenicity of circulating isolates to current vaccine strains and provides early characterization of novel circulating strains. This is essential for early identification of novel pandemic strains and contributes to global influenza monitoring and WHO annual influenza vaccine selection.
2. **Influenza and SARS-CoV-2 Antiviral Susceptibility Surveillance Program.** This program identifies the emergence of viral resistance to antiviral therapeutics (influenza – Amantadine, Oseltamivir, Zanamivir; SARS-CoV-2 – Remdesivir and Nirmatrelvir/Ritonavir) and contributes to the overall prevention and control of influenza and SARS-CoV-2 viruses.

Please ensure that you are using the proper submission form for your request. This is important to avoid confusion with requested tests and delays in turn around times.

Submission forms for all Influenza, Respiratory Viruses and Coronavirus testing are available on the Guide to Services site: <https://cnphi.canada.ca/gts/laboratory/1013>

- **For Influenza:** Complete the “WHO Influenza Program (Antigenic Subtyping)” submission form available on the Guide to Services site: <https://cnphi.canada.ca/gts/laboratory/1013>
- **For SARS-CoV-2:** Complete the “Requisition for the National Enhanced SARS-CoV-2 Surveillance Program” submission form available on the Guide to Services site: <https://cnphi.canada.ca/gts/laboratory/1013>

All specimens will be cultured for antigenic characterization and a subset will undergo antiviral susceptibility testing. Please do not submit a separate submission form for antigenic characterization and antiviral susceptibility surveillance. A subset of cultured isolates will be forwarded to WHO; however, primary specimens will NOT be forwarded to WHO.

Sequence analysis is required for downstream testing; therefore, if the submitting lab has performed WGS analysis on the specimen, please provide the GISAID accession number on the requisition. If the submitting lab has not conducted WGS analysis, NMLB will perform a sequencing reaction on the specimen and submit the sequence data to the National Genomics Database and GISAID.

Please note: The NMLB provides separate antiviral susceptibility diagnostic testing (see below).

SPECIMEN CRITERIA: National Enhanced Influenza and/or SARS-CoV-2 Surveillance Programs

In order to collect and report surveillance data in a timely manner, please minimize batching of samples and submit specimens promptly to the NMLB. Specimens received three months after the collection date will not be tested unless an exception has been discussed with the section Chief or designate (see contact info below).

Specimen types include:

- Nasopharyngeal swab specimens
- Throat swab specimens
- Cultured isolates

Primary Specimens: **If possible**, please send specimen's with a **Ct value of <20**. If Ct values are not determined, still provide a random selection of specimens. All primary specimens should have a **minimum** volume of 1.0 ml to maximize the likelihood of propagating virus.

Virus Isolates: A volume of between 1.5 and 2.0 ml of virus isolates is required for analysis.

Specimens and isolates should be shipped frozen on dry ice.

Laboratories are encouraged to send 10% of their positive samples for each virus group, **up to a maximum of 20 specimens/week/virus** with any of the following conditions:

1. Representative circulating specimens collected during all phases of the seasonal wave: the pre-season-, initial-, peak-, and terminal-phases of a wave
2. Specimens from persons whose illness is related to international travel
3. Specimens from persons receiving antiviral agents whose illness is not resolving or from contacts who subsequently became ill
4. Specimens obtained during in-depth investigations of outbreaks occurring in immunized populations
5. For influenza: Specimens that cannot be subtyped
6. For influenza: Specimens which have a non-seasonal type or subtype (e.g. H1N2)
7. For influenza: Specimens from cases of suspected animal-to-human transmission of influenza virus
8. For SARS-CoV-2: Representative specimens of new and emerging variants/sub-variants of concern

SPECIMEN CRITERIA: Influenza or SARS-CoV-2 Antiviral Susceptibility Diagnostic Testing

If a laboratory requires diagnostic antiviral susceptibility testing, complete the following submission forms:

- **For Influenza:** Complete the “Drug Susceptibility Testing for Influenza Virus” submission form available on the Guide to Services site: <https://cnphi.canada.ca/gts/laboratory/1013>
- **For SARS-CoV-2:** Complete the “Requisition for Antiviral Susceptibility of SARS-CoV-2” submission form available on the Guide to Services site: <https://cnphi.canada.ca/gts/laboratory/1013>

Please do not use this form for specimens that are being submitted for the National Enhanced Influenza and/or SARS-CoV-2 Surveillance Programs.

Specimen types include:

- Nasopharyngeal swab specimens
- Throat swab specimens
- Cultured isolates

Specimens should be shipped frozen on dry ice.

SHIPPING SPECIMENS TO NMLB

Notification of Incoming Specimens/Cultures

Please complete the appropriate submission form(s) and fax it to the Influenza, Respiratory Viruses and Coronaviruses section at 204-789-2082 on the day of shipment.

Submission Forms

Laboratory and epidemiologic information about the specimens must be provided using the required submission forms on the Guide to Services site:

<http://open.cnphi-rcrsp.ca/gts/faces/public/laboratory.xhtml?labId=1013&lang=en>.

Shipping Temperature

Please ship frozen specimens on dry ice. Ensure the tubes are sealed and parafilmmed carefully.

Specimens/Cultures

Send all specimens/cultures in sterile, screw-capped (with O-ring), polypropylene, 2 mL tubes. Multiple tubes may be submitted if necessary. Do not send specimens/cultures in bijou bottles or glass tubes. Please ensure that specimens/cultures are shipped according to Transportation of Dangerous Goods regulations.

- Primary specimens: UN3373 - Biological Substance, Category B
- Cultured isolates: UN2814 – Infectious Substance, Affecting Humans

Address

Influenza, Respiratory Viruses and Coronaviruses
National Microbiology Laboratory
Canadian Science Centre for Human and Animal Health
1015 Arlington Street
Winnipeg, Manitoba R3E 3R2
nml.irv-ivr.lnm@phac-aspc.gc.ca

CONTACT PERSON

Any questions regarding shipping, selection of primary specimens to ship, laboratory procedures used in the identification and diagnosis of strains, as well as results on specimens submitted should be directed to:

Dr. Nathalie Bastien
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National Microbiology Laboratory
Canadian Science Centre for Human and Animal Health
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