

Measles Testing and Immunization Toolkit

1. Background

Measles is a highly contagious, vaccine preventable virus. Up to 90% of susceptible close contacts will contract it. It spreads through infectious droplets and airborne particles, remaining airborne for up to 2 hours after an infected person leaves the area. Measles can cause serious complications such as encephalitis, pneumonia or death. Patients with compatible symptoms, who have either exposure risk or are susceptible require testing and isolation until measles is ruled out.

This toolkit helps staff quickly identify, test, manage, and immunize individuals at risk for measles in settings like Public Health Units, Primary Care, and Urgent Primary Care Centres (UPCCs). It provides clear criteria for testing suspect cases, infection control, specimen collection, patient education and immunization recommendations --- especially for high-risk individuals.

2. Indications for Testing

Offer measles testing if following criteria are met:

1. Symptoms* AND contact with a confirmed measles case or listed exposure setting
 2. Symptoms* AND susceptible to measles infection (0 or 1 dose of MMR vaccine)
- **Measles symptoms:** Prodrome fever, cough, coryza, conjunctivitis +/- Koplik spots on buccal mucosa, followed by a maculopapular rash beginning on the face and spreading downwards.
 - **Measles susceptibility:**
 - Individuals are considered immune (not susceptible) if they meet the following criteria:
 - a) birth date before January 1, 1970 (1957 for health care workers); or,
 - b) evidence of vaccination with 2 valid doses of live measles-containing vaccine on/after their 1st birthday and given at least one month apart; or,
 - c) laboratory evidence of immunity or previous infection.

Note: If individuals do not meet the above measles testing criteria and there is still a concern. Consult MHO for recommendations on testing and isolation. Call CD Intake during office hours at 604-675-3900 or after-hours at 604-527-4893 for MHO on-call.

3. Infection Prevention and Control (IPAC)

Measles is an airborne pathogen that can remain suspended in the air for up to 2 hours. Refer to [VCH Diseases and Conditions Table](#) for pathogen-specific IPAC information.

For patients with symptoms or suspected/confirmed measles

- Have the patient perform hand hygiene and don a mask.
- Immediately isolate the patient in a single occupancy room, with door close, and away from high-risk patients.
- If private room is not immediately available, have the patient mask and sit away from other patients.
- Follow airborne precautions in addition to routine practices.
- **All clinical staff**, should wear a properly fitted N95 respirator- perform seal check.
- If N95 masks are unavailable, staff should wear a medical mask.
- Clean and disinfect medical equipment using hospital approved cleaner/disinfectant product after every patient use.

- Measles can spread through the air for up to two hours after the patient leaves the room-- Wait at least 2 hours for air clearance before using the room for another patient.
- An [airborne precaution sign](#) may be posted outside the room.
- Alternatively, a stable patient can be seen at the end of the day to allow air clearance after clinic closes.
- If the patient has severe symptoms (e.g. symptoms of pneumonia, encephalitis) and needs to be seen in the ED, **please call ahead to ED** to ensure they can isolate the patient upon arrival.
- If the individual is pregnant or an infant under 12 months of age, they should be referred to ED.
- Notify VCH CD Team at **604-675-3900**, as soon as possible to initiate follow-up.

IPAC Consultation

- For IPAC consult during office hours, contact ICP-ambulatorycommunity@vch.ca.
- For afterhours IPAC consult, contact switchboard: 604-875-4111 and ask for the Medical Microbiologist on-call.



4. Patient Education

All tested patients should be advised to:

- Isolate at home until cleared by health care provider or public health.
- Maintain frequent hand hygiene and cough etiquette.
- If in a shared household, maintain separate air space (stay in room) and do not share cutlery, linens, washroom etc.
- Avoid high-risk individuals, such as those immunocompromised, children and elderly.
- Maintain good ventilation to outdoor space(s).
- Think of short-term isolation needs (if positive, public health will outline isolation, maximum 10 days)

5. Testing

- **For public health sites** only, please consult CD intake to determine MHO MSP to be used as ordering provider. Provider Address: #800-601 W. Broadway, Vancouver, BC, V5Z 4C2 Fax: 604-731-2756
- If patient is being tested for measles, the testing provider should notify Medical Microbiologist on-call at BCCDC PHL 604-661-7033 **re: STAT samples**.
- Collect BOTH respiratory and urine samples to increase likelihood of detecting measles virus.
- RT-PCR is most sensitive within 3 days of rash onset but can be positive up to 10 days post-rash onset.
- If applicable, please indicate date of exposure on the requisition.
- Ensure patient's **full name, date of birth, PHN** are clearly labelled on all specimens.

| Measles PCR Testing | | |
|--|---|--|
| Specimen | Container | Requisition |
| Swabs can be collected up to 8 days after rash onset <ul style="list-style-type: none"> Nasopharyngeal (preferred)* Throat | COPAN Red-Top with Universal Transport Media (UTM)**  | PHL Virology Requisition Measles testing section check appropriate test site(s) nasopharyngeal or throat <div> MEASLES <input checked="" type="checkbox"/> Nasal / Nasopharyngeal swab <input checked="" type="checkbox"/> Throat swab </div> |
| Urine can be collected up to 14 days after rash onset Measles urine collection | Sterile container – At least 5ml required  | PHL Virology Requisition Measles testing section select urine <div> MEASLES <input type="checkbox"/> Nasal / Nasopharyngeal swab <input type="checkbox"/> Throat swab <input checked="" type="checkbox"/> Urine </div> |

Notes: Collect BOTH nasopharyngeal (NP) or throat swab AND a urine sample at the time of presentation

*Registered Nurses follow steps for collecting [Nasopharyngeal](#) specimen. A demonstration video for NP swab can be found [here](#).

** COPAN red top UTM is preferred given the flexibility and size of the swab. COPAN blue cap UTM can be used for throat collection as an alternative.

6. Packaging

- Package STAT samples separately from regular samples.
- Package urine sample, NP/throat swabs and serology in **separate biohazard bags** -- Urine samples may leak leading to specimen rejection.
- Package with requisition in accordance with [Transportation of Dangerous Goods \(TDG\)](#) Division 6.2 – Infectious substance category B-UN 3373.
- Clearly label the interior and exterior package with "STAT"

Place the following supplies in the biohazard bags (one specimen per bag)

- Absorbent paper
- COPAN red-top UTM (labelled)
- Sterile urine container (labelled)

Place in biohazard bag sleeve

- [PHL Virology Requisition](#) (completed in advanced)

All specimens must be couriered STAT to PHL - Within a 48-hr transit window under refrigeration at 2-8°C

7. Ordering Supplies

Use [PHL Sample Container Order Form](#) and email kitorders@hssbc.ca or fax 604-707-2606

Order the following:

For NP/Throat - Swabs: COPAN (red-top) + Universal Transport Media

| | | |
|--|---|--|
| INFLUENZA / OTHER RESPIRATORY VIRUSES, MEASLES and MUMPS | COPAN (red-top) + Universal Transport Media | Nucleic Acid Testing (NAT) for nasal/nasopharyngeal and throat specimens. Do not use for Chlamydia trachomatis testing |
|--|---|--|

Vial and Jars: Orange Top Plastic Container - Sterile 120 mL

| | | |
|------------------------------|-----------------|--|
| ORANGE TOP PLASTIC CONTAINER | Sterile, 120 mL | Sputum, urine & other body fluids (all <i>Mycobacteria</i>) |
|------------------------------|-----------------|--|

Additional supplies can be ordered through [People Soft](#) :

- N95 masks
- Medical masks
- Biohazard bags
- Gloves

8. Immunizations

Measles, Mumps, Rubella (MMR) Vaccine

- Measles can be prevented by immunization - Most people are protected from measles through routine childhood immunization.
- Measles vaccine is available in two combinations as a Measles-Mumps-Rubella (MMR) or MMR + Varicella (MMRV) vaccine
- The MMRV vaccine (which also includes varicella/chickenpox) is recommended over MMR alone, as it reduces the number of separate vaccinations a child receives
- Children receive MMR at 12 months of age, and the second dose is routinely offered between 4–6 years of age (can be administered earlier upon request, such as travel).
- VCH PHNs now routinely screen for anticipated travel prior to turning 4 years of age at child's 18 months immunization appointment.
- If a child requires a second dose of MMR at 18 months immunization appointment due to planned travel, either of the following can be done:
 - **MMR** can be given as early as **4 weeks after** the first MMR dose.
 - **MMRV** can be given if it has been at least **12 weeks since** the last varicella dose and **at least 4 weeks since** the last MMR dose.
- Individuals born on or after January 1, 1970 should have two doses of a measles vaccine.
 - Many adults may not have complete immunization records.
 - In lieu of serology to check for immunity, it is recommended to give a dose of MMR vaccine now
 - Health care workers born 1957 or later are recommended to have two doses of MMR vaccine
 - Individuals born before 1970, can safely assume they are likely to be protected from measles illness in childhood; however, those who self-identify without a history of measles or mumps vaccine or disease may be considered susceptible and should be offered 1 dose of MMR vaccine to ensure they are fully protected
- Where to get vaccinated:
 - Public Health Immunization Clinics on [VCH Measles](#) page
 - [Pharmacies offering vaccines](#) - Lower mainland locations, pharmacists can immunize ages 4 and up (please call ahead)
 - Primary care and walk-in-clinics may carry MMR vaccine (please call ahead)

9. Immunoprophylaxis

The goal of measles post-exposure prophylaxis (PEP) is to prevent severe disease, including hospitalization, and potential mortality.

- BCCDC maintains a list of known measles exposure locations where Public Health is unable to identify and contact all those exposed.
- As a result, clients may receive enquiries about measles post-exposure prophylaxis from **susceptible patients** who were present at these locations at the indicated times.
- **PEP determination is done through consultation with VCH Medical Health Officer** to ensure all susceptible contacts receive PEP or biological product(s) within the appropriate prophylactic window.
- **Call CD Intake** during business hours (604-675-3900) or MHO on-call afterhours (604-527-4893) for recommendations for susceptible contacts of a measles case- Individuals may be eligible for IM or IV Immunoglobulins depending on their risk factors and exposure.
- Administer MMR vaccine (as PEP) as soon as possible for susceptible contacts within 72-hr window of exposure:
 - Immunocompetent contacts, 6 months or age and older
 - Those born after January 1, 1970 and have not had 2 valid doses of MMR
 - Those who are uncertain of their vaccine history and have never had measles infection
- Unless contraindicated, MMR vaccine should be given without delay awaiting MHO consult.
- The following contacts **should be referred immediately** to the VCH CD Intake for immune globulin PEP assessment:
 - [Immunocompromised individuals](#) See: Appendix A & B in Measles Chapter
 - Susceptible and pregnant
 - Infants 0-5 months of age who are within 6 days of exposure
 - Infants 6-11 months of age who are within 3-6 days of exposure

Notes: Refer to page 16 of [BCCDC Measles Guidelines](#) for summary of PEP recommendations for contacts

Further detail on MMR vaccine and PEP, can be found in [VCH Measles Q&A](#)

10. Resources

Provider Resources

[Physicians' and Nurse Practitioners' Update](#)
[Measles Mumps, Rubella and Varicella Test Guide](#)

Register for updates via email: VCHPhysiciansUpdate@vch.ca

IPAC

[VCH Infection Prevention and Control \(IPAC\) Diseases and Conditions Table](#)
[PHAC Routine Practices and Additional Precautions for Preventing the Transmission of Infection in Healthcare Settings](#)
[PICNET Measles Infection Prevention and Control Quick reference guide for health care workers](#)

Public Health

[BCCDC Measles Guidelines \(2024\)](#)

Client Education

[Measles Health File](#)
[Measles vaccines: Canadian Immunization Guide](#)
[MMR Health File](#)