

DATE:	14 May 2024
TO:	All Health Care Providers
FROM:	Public Health Laboratory, Alberta Precision Laboratories
RE:	Laboratory Testing for Suspected Measles

PLEASE POST OR DISTRIBUTE AS WIDELY AS APPROPRIATE

Key Message

- Measles is a highly infectious virus, and up to 5 times more infectious than SARS-CoV-2. Suboptimal vaccination rates in Alberta make outbreaks and sporadic infections a strong possibility.
- Measles is not endemic in Alberta, therefore measles will most likely be acquired from travel to areas where measles is currently circulating such as, Pakistan, India, United Kingdom, and now with sporadic cases in the USA, and Canada (Quebec, Ontario, British Columbia & Saskatchewan).
- Unvaccinated persons are at the highest risk of acquiring measles occasionally with severe outcomes; one dose of a measles-containing vaccine provides 85-90% protection, and two doses of measles-containing vaccine is considered optimal.
- Clinical presentation³:
 - Fever 38.3°C or greater
 - Cough, coryza or conjunctivitis
 - Generalized maculopapular rash for at least 3 days
 - *the red blotchy rash appears 3-7 days after symptom onset, beginning behind the ears and on the face, then spreading down to the trunk and lastly to the extremities*
- Key Contacts & Infection Control Measures:
 - Suspect measles case(s) – First contact the zone Medical Officer-on-Call for direction on management and laboratory testing
 - If blood collection is required, the Healthcare provider MUST call **1-877-702-4486** [APL Appointment Booking line] BEFORE the patient presents at an APL Collection site
 - For measles laboratory questions, contact the ProvLab Microbiologist/Virologist-On-Call - Calgary (403-944-1110) or Edmonton (780-407-8822)
- **Laboratory Testing:- Required samples for measles testing listed in Table below**

Presentation	Samples and Orderable		Comments
Acute illness	Nasopharyngeal OR throat* swab OR Urine	Order Measles NAT [Lab 4313]	Collect nasopharyngeal & throat swabs at the Clinic/Office, as the APL PSC staff cannot collect them. Note: When possible, collect a urine together with EITHER a nasopharyngeal OR throat swab and serum to improve the detection of a measles infection.
	Serum	Order measles IgM & IgG	Send a convalescent serum 7 to 10 days after the acute blood if measles IgM antibody is negative and measles is still strongly suspected
Immunity Testing	Serum	Order Measles IgG ONLY [LAB657]	Do NOT order measles IgM for immunity status as it is inappropriate and can result in a false-positive result

**There are no studies directly comparing the sensitivity of nasopharyngeal versus throat swabs, but various studies suggest the sensitivity for both sample types is similar. Consequently, throat swabs will be accepted for testing but reported as non-validated sample type as the ProvLab measles assay was validated for nasopharyngeal swabs.*



- **Nasopharyngeal (NP) or Throat swab in Universal Transport medium** - follow collection instructions given in the collection insert or on the ProvLab website @ <http://www.albertahealthservices.ca/assets/wf/plab/wf-provlab-collection-of-nasopharyngeal-and-throat-swab.pdf>
- **Urine sample** – about 10 mL in sterile container, preferably the first void of the day (morning sample)
- **Serum** - collect 3-5 mL blood in Serum Separator tube (SST – Gold Top vacutainer)
- **Required Clinical information:** Use the **ProvLab Serology Molecular Testing requisition** (link below) and provide the following:-
 - Vaccination history
 - Dates of recent travel, and to which place(s) or contact with suspect or confirmed case
 - Symptoms and date of onset<https://www.albertahealthservices.ca/frm-20676.pdf>

Background

- Measles is a highly infectious virus (Ro 14-18) compared with SARS-CoV-2 (Ro 3.5 - 6)^{1,2}, usually transmitted from person to person by the airborne route and direct contact with respiratory secretions from an infected person. Unvaccinated and immunocompromised persons are at the highest risk for getting infected often with severe outcomes and death. Severely Immunocompromised persons can have a case fatality rate up to 55%.
- Post COVID, there has been a strong resurgence of measles both in developed and developing countries therefore reintroduction and circulation within Canada is a strong possibility, due to low vaccination rates. The recognition and quarantining of suspect cases is a high priority to prevent spread within this province in vulnerable populations.

How this will impact you

- Ensure that you and your staff are fully vaccinated to prevent acquiring measles
- You are considered immune if you meet one of the following criteria³:-
 - Received two documented doses of measles-containing vaccine, given at appropriate intervals, on or after 1 year of age
 - Serological proof of immunity (positive measles IgG result)
 - Have laboratory confirmed evidence of a prior measles infection
- If uncertain contact your local healthcare provider or call Health Link at 811 to discuss or refer to the CMOH/SMOH Measles: Situational Awareness and Guidance Communication (March 19, 2024) (link below)
- Cases of measles could present at your clinic in the highly infectious acute phase which will expose you, your staff and patients to this infection
- Suspect measles cases should be told to stay at home until their lab results are completed and NEGATIVE
- Positive measles results will be notified to the zone MOH first who will in turn contact you

Action Required

- Ensure that you and your staff are fully vaccinated to prevent acquiring measles
- Familiarize yourself with the clinical presentation of measles
- Check that you have sufficient supplies of nasopharyngeal swabs, Universal/Viral Transport medium and sterile urine containers for sample collection, and the Transport medium has NOT expired (expiry date on container)
- Familiarize yourself and your nursing staff on how to collect a nasopharyngeal swab



- <https://www.albertahealthservices.ca/assets/wf/plab/wf-provlab-collection-of-nasopharyngeal-and-throat-swab.pdf>
- Ensure that you have sufficient supplies of personal protective equipment especially N95 masks available
- **Before** sending a suspect measles patient to have their blood collected first contact the designated Patient Service Centre so that they are ready
- Refer to the Alberta Precision Laboratories Guide to Services (link below) for additional information
- Refer to the AHS IPC Acute Care Resource Manual (link below) for additional information

Effective Immediately

Questions/Concerns

- Contact Dr. Kevin Fonseca, Clinical Virologist, Public Health (ProvLab), APL
kevin.fonseca@albertaprecisionlabs.ca

Approved by

- Dr. Graham Tipples, Medical-Scientific Director. Public Health, APL

Links

- **APL Guide to Services Link to Measles Page:**
<https://www.albertahealthservices.ca/webapps/labservices/indexAPL.asp?id=5516&tests=&zoneid=1&details=true>
- **AHS IPC Acute Care Resource Manual:** <https://www.albertahealthservices.ca/ipc/page6854.aspx>
- **CMOH/SMOH Measles: Situational Awareness and Guidance Communication (March 19, 2024)** link

References

- 1> Fiona M Guerra et al. The basic reproduction number (R_0) of measles: a systematic review. Lancet Infect Dis 2017;17(12):e420-e428. doi: 10.1016/S1473-3099(17)30307-9
- 2> Ruian Ke et al. Estimating the reproductive number R_0 of SARS-CoV-2 in the United States and eight European countries and implications for vaccination. J Theor Biol. 2021; 517: 110621. doi: 10.1016/j.jtbi.2021.110621
- 3> Alberta Public Health Disease Management Guidelines : Measles <https://open.alberta.ca/publications/measles> (accessed March 2024)

Effective September 1, 2023, APL has become the sole provider of all public lab services in Alberta. As a result, community lab services formally provided by DynaLIFE Medical Labs will become the responsibility of Alberta Precision Labs (APL). This change impacts all zones.