ALBERTA PRECISION LABORATORIES
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Laboratory Bulletin

DATE:	May 14 2024 – **UPDATED April 22, 2025**
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 Messages

- Measles is a highly infectious virus, and up to 5 times more infectious than SARS-CoV-2.
- Although measles is not endemic in Alberta, there have been recent introductions from outbreaks in Ontario, USA and Africa, now resulting in outbreaks in Alberta.
- 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 presentation[3]:
  - Fever 38.3^{0}C or greater
  - Cough, runny nose and/or or conjunctivitis
  - Generalized maculopapular rash for at least 3 days
    - *the red blotchy rash appears 3-7 days after the fever, usually beginning behind the ears and on the face, then spreading down to the trunk followed by the arms and legs*
    - *on lighter skin tones the rash can appear red and blotchy whereas on darker skin it can be difficult to discern, as it can have a darker or purple presentation than the surrounding area or appear as blotchy patches. Pictures of rashes are available at https://www.cdc.gov/measles/signs-symptoms/photos.html*

- Key Contacts & Infection Control Measures:
  - If you suspect measles in a patient, you must notify public health by calling **1-844-343-0971.**
  - If you need additional support, you can call the MOH on call at the following numbers:
    - Calgary Zone: 403-264-5615
    - Central Zone: 403-356-6430
    - Edmonton Zone: 780-433-3940
    - North Zone: 1-800-732-8981
    - South Zone: 403-388-6111
  - If blood collection is required, the patient (or healthcare provider) MUST call **1-877-702-4486** [APL Appointment Booking line] BEFORE the patient presents at an APL Collection site
    - Please refer to the Measles Specimen Collection Pathway document available at: https://www.albertahealthservices.ca/assets/info/ppih/if-ppih-measles-specimen-collection-pathway.pdf for sample collection logistical details.
  - For measles laboratory questions, contact the ProvLab Microbiologist/Virologist-On-Call - Calgary (403-944-1110) or Edmonton (780-407-8822)

- **Laboratory Testing:-** Recommended samples for measles testing are listed in the Table below.
  However if there are restrictions due to local resources, scope of practice or safe collection options, collect as many as possible. For example, urine or a throat swab can be collected instead of a nasopharyngeal swab.

Presentation	Samples & Orderable		Comments
Acute illness, from rash onset to 7	Urine OR Nasopharyngeal swab OR throat swab	Order measles NAT [LAB4313]	Follow the Measles Specimen Collection Pathway

days later (symptomatic)	Serum	Order measles IgM & IgG	Send a convalescent serum 7 to 10 days after the acute blood if the 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
Nasopharyngeal (NP) 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

- It is strongly recommended that you and your staff are fully vaccinated to prevent acquiring measles
- You are considered immune if you meet one of the following criteria[3]:-
  - 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 Measles Information for Health Professionals at https://www.albertahealthservices.ca/msl/Page18877.aspx
- 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

Recommended Actions

- It is strongly recommended 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
  - Please refer to the Measles Specimen Collection Pathway for sample collection logistical details.
- 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
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Approved by
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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
Measles Information for Health Professionals: https://www.albertahealthservices.ca/msl/Page18877.aspx

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)