

Case Definition

Confirmed Case:

Laboratory confirmation of infection in the absence of recent (previous 28 days) immunization with measles-containing vaccine:

- Isolation of measles virus from an appropriate clinical specimen.
OR
- Detection of measles virus RNA.
OR
- Seroconversion or a significant (e.g. fourfold or greater) rise in measles IgG titre by any standard serologic assay between acute and convalescent sera.
OR
- Positive serologic test for measles IgM antibody using a recommended assay in a person who is either epidemiologically linked² to a laboratory-confirmed case or has recently traveled to an area of known measles activity.
OR
- Clinical illness¹ in a person with an epidemiologic link² to a laboratory-confirmed case.

Probable Case:

Clinical illness¹ in the absence of recent (previous 28 days) immunization with measles-containing vaccine

AND:

- A positive serologic test for measles IgM antibody using a recommended assay in a person who is not epidemiologically linked to a laboratory-confirmed case or has not recently traveled to an area of known measles activity.
OR
- In a person who has recently travelled to an area of known measles activity and without an epidemiologic link² to a laboratory-confirmed case.

Clinical Evidence

Clinical illness is characterized by **all** of the following features:

- Fever of 38.3°C or greater; AND
- Cough, coryza or conjunctivitis; AND
- Generalized maculopapular rash for at least 3 days.

Laboratory Comments

Molecular detection of measles RNA is the best test to diagnose acute infection. Nasopharyngeal swab (NPS) (preferred) or throat swab in universal transport medium and a urine (at least 5ml) should be sent in a dry sterile container for PCR as soon as the diagnosis of measles is being considered. In addition, after the rash has appeared for 7 days, serology can also be used for diagnosis. However, serology should not be used as

¹ See Clinical Evidence section.

² A case has an epidemiological linkage if one or more of the following criteria are met:

- Contact with a confirmed measles case
- Travel during the 21 days prior to onset of rash to a geographic area where measles is endemic or an outbreak of measles is occurring
- Belonging to a defined risk group during an outbreak

the only test for measles diagnosis in most scenarios. IgM serology has the potential for false-positive results. If the clinical presentation is inconsistent with a diagnosis of measles or in the absence of recent travel/exposure history, IgM results must be confirmed by the other listed confirmatory methods.

Most acute measles cases develop IgM after 3 days post rash onset. If the case has serum collected less than 3 days after rash onset it may test IgM negative. NPS/throat and urine specimens for PCR and a repeat serology test should be performed after the rash has been present for 3 days.

Further strain characterization may be used for epidemiologic, public health and control purposes.

Reporting Requirements

Report confirmed cases **immediately** to DHW Surveillance via Panorama and the Surveillance Inbox.

Additional Forms

None.

Outbreak Definitions

As measles has been eliminated in Canada, a single case would be considered unusual or unexpected. The following provides working definitions for identifying a measles outbreak:

- One confirmed case of measles with no travel history (i.e., locally acquired).
- Two or more confirmed cases linked, either epidemiologically or virologically, regardless of travel history.³

For additional information, see PHAC's [Guidelines for measles outbreak in Canada](#).

Suspect Case (Outbreak Only):

Regardless of recent (previous 28 days) immunization, clinical illness¹ in a person with a maculopapular rash of any duration, who does not meet the confirmed or probable case definition, and where the clinician has a high index of suspicion of measles.

¹ See Clinical Evidence section.

³ Multiple cases associated with unrelated travel history are not considered an outbreak.