Clinical Care of Children/Youth (age 0 – 17 years) with Suspected or Confirmed Measles

June 2025

ASSESSMENT

SEE Presenting complaint of fever & rash	THINK Could it be measles? Consider travel / exposure / immunity	DO Infection prevention & reporting
Clinical signs • Fever ≥ 38.3°C **AND** 3Cs cough, coryza (runny nose), or conjunctivitis (non-purulent bilateral conjunctivitis). • Generalized red, maculopapular rash appearing 3–7 days after symptom onset, starting from head and spreading down body (following incubation period of 7–21 days). • Some patients may exhibit Koplik spots ("grains of salt") on buccal mucosa. Absence of Koplik spots does not exclude a clinical diagnosis of measles. Koplik spots may also be seen with other viral infections. • Consider mild/atypical presentation of measles in partially or fully immunized persons.	**Risk factors** • Known exposure to measles case or area with documented measles outbreak or recent travel. For updated case count and exposure locations visit: http://www.bccdc.ca/health-info/diseases-conditions/measles • All persons who have not had a previous measles infection or who have not had 2 doses of a measles-containing vaccine are at risk of measles infection. • Adults born before 1970 are generally presumed to have acquired immunity due to infection with measles when they were younger. • **Incubation period** is approximately 10 days from exposure to the onset of prodromal symptoms (ranging from 7 to 21 days).	**Precautions** • Initiate precautions as per your local airborne precautions infection prevention policy. • **If you suspect measles, notify** your Health Authority Communicable Disease team or Medical Health Officer on call as soon as possible and if the patient is in the emergency department/hospital ward, contact your local Infection Prevention and Control team.

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INVESTIGATIONS

Physician to assess for clinical signs of measles and risk factors (see above).
Date of onset of each sign should be noted, especially rash.

Send specimens for Measles NAT.

- Nasopharyngeal (NP) swab (with usual NP swab) OR throat swab (viral swab placed in universal transport media) for measles NAT; for those who will not tolerate these swabs, a self-collected oropharyngeal/nasal swab can be submitted as another option (Self-Collection of Upper Respiratory Track and Urine Specimens for Measles NAT Testing)
  - **Note:** a separate NP swab may be needed if testing for respiratory viruses is also needed – discuss with your local microbiology laboratory.

1. Urine for measles NAT (optimal 50 mL, minimum 5 mL, in sterile container).

NAT is preferred, but measles serology (IgM and IgG) testing may provide additional diagnostic value in specific clinical scenarios such as in suspect cases who did not have samples collected for NAT shortly after rash onset.

If you are seeing a suspect case in the emergency department or hospital ward, contact your local Infection Prevention and Control team.

TREATMENT

There is no specific antiviral treatment for measles infection. Medical management is supportive and aimed at symptom relief and management of complications.

If suspected secondary bacterial infection, before starting antimicrobial therapy, take blood and any other relevant samples for culture and treat with antibiotics (refer to the Empiric Antimicrobial Guide on PHSA SHOP.

- Moderate to severe otitis media — amoxicillin PO or amoxicillin-clavulanate PO
- Pneumonia — amoxicillin PO or ampicillin IV
- Sepsis — cefotaxime or ceftriaxone IV (refer to Provincial Pediatric Sepsis Recognition and Management Guideline on PHSA SHOP)

Use of Vitamin A: Vitamin A does NOT prevent or treat measles but there is evidence that patients with measles who are treated with vitamin A have decreased risk of mortality and severe ophthalmologic sequelae. Vitamin A should be given in the doses outlined below (higher doses pose risk of vitamin A toxicity).

Give vitamin A for confirmed or highly suspected diagnoses of measles in children who have not already had one or more doses of vitamin A if:

- they require **admission to hospital**
- OR they have **immune compromising conditions (even if admission to hospital is not needed)**

TREATMENT *(continued)*

In these situations, give vitamin A orally once daily for 2 days, as follows:

- Infants <6 months of age — 50,000 international units
- Infants 6 to 11 months of age — 100,000 international units
- Children ≥12 months — 200,000 international units

For patients with chronic kidney disease, consult pediatric nephrology at BC Children's Hospital (604-875-2345, page the pediatric nephrologist on call) prior to initiating vitamin A.

Two products of oral vitamin A are available:

- Vitamin A liquid containing 10,000 international units per drop (approx. 0.033 mL). This is the **preferred product** for pediatric patients. A dose of 100,000 international units is 10 drops or 0.33 mL.
- Vitamin A oral capsule containing 10,000 international unit per capsule (not appropriate for young children or for the dosages recommended in the management of measles).

COUNSELLING FAMILIES AND CAREGIVERS

- Counsel families/caregivers on the importance of immunization.
- A single dose of measles vaccine provides 85% to 95% protection against measles. With a second dose, protection is almost 100%.
- To schedule a measles vaccination, advise individuals to contact their local health unit/center.
- Individuals can look up their immunization records on BC Health Gateway, for children or dependents 11 years and younger this can also be added to the guardians Health Gateway account. Children 12 years and older must set up their own Health Gateway account.
- Non-immune household members or other close contacts may be eligible for post-exposure prophylaxis. Public health will follow up with the legal guardian of a pediatric patient with measles to provide direction.

Prior to discharge, remind families/caregivers about the risk of secondary bacterial infections (which persists beyond the resolution of measles symptoms) and the need to seek medical attention for signs and symptoms of:

- dehydration
- respiratory distress/pneumonia
- seizures
- decreased level of consciousness, or other concerning symptoms for sepsis or encephalitis

ISOLATION INSTRUCTIONS

Children/youth with measles should be isolated until 4 days after the appearance of the rash or for the full duration of the illness if the patient is immune compromised.

KEY CONTACTS & VIRTUAL SUPPORT

Refer to the Provincial Pediatric Virtual Support Pathway for support contacts (Physician, Nurse, RT) or scan QR code	
Patient Transfer Network (PTN) - Contact for higher level of care consult	**1-866-233-2337**
Consult local pediatrician on call or CHARLiE (virtual pediatrician for rural and remote sites). Call CHARLiE directly via Zoom using the RTVS PEDS (CHARLiE) contact	**CHARLiE** **1-236-305-5352**
BC Children's Hospital Switchboard for subspecialty service/advice	**1-604-875-2345**

Additional resources

Individuals in the community can be directed to:

- HealthLinkBC Understanding Measles
- Measles, Mumps, Rubella (MMR) Vaccine Information — HealthLinkBC
- Measles — CHEO
- Can vitamin A prevent or cure measles? — HealthyChildren.org

Health care providers should review the most current version of:

- BCCDC Measles Health Info
- BCCDC Communicable Disease Control Manual — Measles
- BCCDC Measles Update May 2025

Appendix 1: Information about measles in pediatric patients

What is measles?

Measles is a highly infectious disease caused by the measles (rubeola) virus, a member of the Paramyxoviridae family. It is a public health notifiable disease, characterized by:

- a prodrome of fever
- cough
- conjunctivitis
- coryza (runny nose)
- an enanthem (Koplik spots)
- a maculopapular erythematous rash that:
    - begins on the face
    - spreads to the trunk, arms and legs

Incubation period:

The incubation period is about 10 days from exposure to the onset of prodromal symptoms (ranging from 7 to 18 days). The interval from infection to appearance of rash averages 14 days, but the rash can appear as late as 19 to 21 days from infection.

Transmission:

- Measles is one of the most highly communicable infectious diseases with greater than a 90% secondary attack rate among people who are susceptible.
- The measles virus spreads through the air when a person who is infected breathes, coughs, sneezes or talks.
- It may also spread through direct contact with fomites or secretions from the nose and throat of a person who is infected.
- People with confirmed measles are infectious from 4 days before rash onset to 4 days after the appearance of the rash.
- The measles virus can persist in the air or on surfaces for up to 2 hours after a person who is infected has left the space. People who recover from measles have lifelong immunity to the disease.

Clinical manifestations:

Prodromal symptoms of measles begin 7 to 21 days after infection and include:

- fever
- malaise
- cough
- coryza (runny nose)
- conjunctivitis

Measles is characterized by a generalized maculopapular rash, which appears 3-7 days after onset of prodromal symptoms and approximately 14 days after infection. The rash lasts 4 to 7 days. It typically begins on the face, advances to the trunk/body and then to arms and legs. A pathognomonic enanthema (white spots on the buccal mucosa, known as Koplik spots) may appear 2 to 3 days after symptom onset.

Measles complications:

Common complications

- Otitis media (1 of every 10 cases)
- Bronchopneumonia (1 of every 10 cases)
- Croup (1 of every 10 cases)
- Diarrhea (less than 1 of every 10 cases)

Severe complications can include:

- Respiratory failure
- Sepsis
- Encephalitis (occurs in approximately 1 of every 1,000 reported cases, may result in permanent neurologic sequelae)
- Death (estimated to occur in 1–10 of every 10,000 cases in higher-income countries like Canada, mostly related to respiratory and neurologic complications)

Long-term sequelae can include:

- Blindness
- Deafness
- Permanent neurological sequelae
- Subacute sclerosing panencephalitis (SSPE) - SSPE is a rare and fatal degenerative central nervous system disease. It is characterized by behavioural and intellectual deterioration as well as seizures.
    - These changes occur 7 to 10 years after infection with the measles virus.
    - SSPE occurs at a rate of 4 to 11 in every 100,000 measles cases, with the highest rates in children infected before 2 years of age.