Measles Clinical Information

Report suspected measles cases

If you suspect measles in a patient:

- **Call MDH** immediately at 651-201-5414 or toll-free at 1-877-676-5414 to report
- **Collect specimens** for RT-PCR and serologic testing

Laboratory testing

Refer to the Lab Testing for Measles at the MDH-Public Health Laboratory (www.health.state.mn.us/diseases/measles/hcp/labtesting.html) for specimen collection instructions and requirements.

Epidemiology of measles

Before measles vaccine was licensed in 1963, an average of 549,000 measles cases and 495 measles deaths were reported annually in the United States. Measles was declared eliminated from the U.S. in 2000, which means endemic transmission is no longer occurring.

However, continued success in maintaining measles elimination depends upon keeping vaccination rates high as it is still commonly transmitted in many parts of the world, including Europe, Africa, Asia, India and the Philippines. Globally, an estimated 20 million people get measles and 146,000 people, mostly children, die from measles each year. On average, Minnesota reports 1-2 imported cases each year.

Clinical presentation

Measles clinical case definition:

- Fever of 101°F (38.3°C) or higher and
- Cough, coryza, or conjunctivitis and
- A generalized, maculopapular rash lasting three days or more

Classic measles begins with a prodrome of stepwise increasing fever (often as high as 104-105°F) accompanied by cough, coryza, and/or conjunctivitis. Koplik spots (tiny red spots with bluish-white centers inside mouth on the lining of the cheek), which are diagnostic for measles, may appear in the 2-3 days before rash and fade 1-2 days later.

The measles rash is maculopapular and lesions blanch with pressure initially. As rash begins, fever continues and starts to decrease gradually as the rash spreads. Rash may coalesce, appearing first on the face along the hairline and behind the ears, then spreading downward to the chest, back, thighs and feet. In 5-7 days, the rash fades in the same order that it appeared.

Atypical measles occurs only in persons who received inactivated ("killed") measles vaccine (KMV, available between 1963-1967) and are exposed to wild type measles. The illness is characterized by fever, pneumonia, pleural effusions, edema and a maculopapular or petechial rash with urticarial, purpuric or vesicular components, first appearing on the wrists or ankles.

Modified measles occurs primarily in patients who received immune globulin (IG) as post-exposure prophylaxis and in young infants who have some residual maternal antibody. It is characterized by a prolonged incubation period, mild prodrome, and sparse, discrete rash of short duration. Similar mild illness has been reported among previously vaccinated persons.

Diagnosing measles

Many U.S. healthcare providers have never seen a case of measles. Without proper laboratory testing, measles cannot be diagnosed.

Providers should consider measles in patients who meet the clinical case definition. Since measles is uncommon, providers should ask the patient about known exposures or travel history (domestic or international) in the 30 days prior to symptom onset.

Differential diagnoses

Providers should also consider other infectious and non-infectious etiologies that may cause fever and generalized rash, including:

- Rubella, Scarlet fever, Roseola infantum, Kawasaki disease, Erythema infectiosum (Fifth Disease), Coxsackievirus, Echovirus, Epstein-Barr virus, HIV, Pharyngoconjunctival fever, Influenza
- Dengue, Rocky Mountain spotted fever, Zika virus
- Dermatologic manifestations of Viral hemorrhagic fevers
- Toxic Shock Syndrome, cutaneous syphilis
- Drug reactions (e.g., antibiotics, contact dermatitis)

Communicability of measles

If measles is suspected, follow the steps in Minimize Measles Transmission in Healthcare Settings (www.health.state.mn.us/diseases/measles/hcp/minimize.html).

- The incubation period for measles averages 10-12 days from exposure to prodrome and 14 days (range 7-21) from exposure to rash onset.
- Measles is infectious from 4 days prior to 4 days after rash onset.
- There are no asymptomatic infectious carriers.
- Airborne transmission via aerosolized droplet nuclei is the primary route of transmission.
- Airborne precautions are recommended.

Complications of measles

Around 30 percent of cases have one or more complications (more common in children under 5 years old and adults 20 years and older).

- Common: diarrhea, otitis media, pneumonia
- Less common: acute encephalitis, seizures, death
- Rare: Subacute sclerosing panencephalitis, a degenerative CNS disease caused by measles virus infection in the brain; onset occurs an average of 7 years after measles infection

Measles illness in pregnancy results in a higher risk of premature labor, spontaneous abortion, and low-birth-weight infants.

Measles in an immunocompromised person may be severe, with atypical rash and prolonged course. It is reported mainly in persons with T-cell deficiencies.

Treating measles

There is no specific antiviral therapy for measles. Severe measles cases among children, such as those who are hospitalized, should be treated with vitamin A. Vitamin A should be administered immediately and repeated the next day. The recommended age-specific daily doses are:

- 50,000 IU for infants less than 6 months old
- 100,000 IU for infants 6–11 months old
- 200,000 IU for children 12 months and older

See Measles Post-Exposure Prophylaxis for Non-Symptomatic Susceptible Contacts (www.health.state.mn.us/diseases/measles/hcp/measlespep.pdf) for more information.

Recommend exclusion

- Suspect and confirmed measles cases should be isolated at home with no visitors until day 5 of rash (rash onset is considered day 0).
- Additional recommendations on exclusion or isolation should be made in collaboration with MDH and/or local health department.

Preventing measles: vaccination

Vaccination is the best way to prevent measles. Get more information at Measles Vaccination Recommendations (www.health.state.mn.us/diseases/measles/hcp/vaxrecs.html).

Vaccine Preventable Disease Section
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www.health.state.mn.us/measles

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