

MEASLES

REPORTING INFORMATION

- [Class A\(1\)](#)
- Report all suspected and confirmed cases immediately by telephone to the local health department
- Requires completion of the [Measles Surveillance Worksheet](#). To be sent by the local health department to the ODH Immunization Unit, 35 E. Chestnut, PO Box 118, Columbus, OH 43266-0118.

AGENT

Measles virus, an RNA virus with one antigenic type. It is a paramyxovirus of the genus *Morbillivirus*.

CASE DEFINITION

Clinical case definition

An illness characterized by **all** of the following:

- a generalized rash lasting ≥ 3 days
- a temperature $\geq 101.0^{\circ}\text{F}$ ($\geq 38.3^{\circ}\text{C}$)
- cough, coryza, or conjunctivitis

Laboratory criteria for diagnosis

- Positive serologic test for measles immunoglobulin M antibody, or
- Significant rise in measles antibody level by any standard serologic assay, or
- Isolation of measles virus from a clinical specimen

Case classification

Suspected: any febrile illness accompanied by rash

Probable: a case that meets the clinical case definition, has noncontributory or no serologic or virologic testing, and is not epidemiologically linked to a confirmed case

Confirmed: a case that is laboratory confirmed or that meets the clinical case definition and is epidemiologically linked to a confirmed case. A laboratory-confirmed case does not need to meet the clinical case definition.

Comment

Confirmed cases should be reported [by the state health department] to NNDSS.

An *imported* case has its source outside the country or state. Rash onset occurs within 18 days after entering the jurisdiction, and illness cannot be linked to local transmission. Imported cases should be classified as:

International. A case that is imported from another country

Out-of-State. A case that is imported from another state in the United States. The possibility that a patient was exposed within his or her state of residence should be excluded; therefore, the patient either must have been out of state continuously for the entire period of possible exposure (at least 7-18 days before onset of rash) or have had one of the following types of exposure while out of state:

- a) face-to-face contact with a person who had either a probable or confirmed case or
- b) attendance in the same institution as a person who had a case of measles (e.g., in a school, classroom, or day care center).

An *indigenous* case is defined as a case of measles that is not imported. Cases that are linked to imported cases should be classified as indigenous if the exposure to the imported case occurred in the reporting state. Any case that cannot be proved to be imported should be classified as indigenous.

Note [applies in Ohio]: Two probable cases that are epidemiologically linked but not serologically confirmed would be considered to be confirmed. However, at least one case should be confirmed by

culture in each documented chain of transmission.

SIGNS AND SYMPTOMS

Measles infections classically are described as having a prodromal period with a fever of 103-104 degrees F, coryza, conjunctivitis, cough, and photophobia for two to four days. Then a maculopapular rash appears on the face which spreads to the trunk and finally to the extremities. The rash and other symptoms normally subside in seven to nine days. Koplik spots may be observed on the buccal mucosa just prior to and on the first day of the rash. Complications of measles include otitis media, pneumonia, cardiac manifestations, encephalitis, and occasionally death. A slow virus disease associated with the measles virus is subacute sclerosing panencephalitis (SSPE).

Atypical measles syndrome (AMS) occurs in individuals who have received two or more doses of inactivated measles vaccine and is characterized by a rash on the extremities, high fever, and frequently pneumonia.

Modified measles occurs in infants who still have maternal antibodies and in those who received measles vaccine or immune globulin soon after exposure.

DIAGNOSIS

IgM obtained 4 days after the onset of rash is the preferred laboratory diagnostic procedure. If the titer is negative at that time, it can be repeated at 7 days, or paired acute and convalescent sera can be tested for an increase in IgG antibody. The acute specimen should be taken as close to rash onset as possible and the convalescent specimen drawn two weeks after the acute. The latter method is less desirable because of the delay in definitive diagnosis.

EPIDEMIOLOGY

Source

Humans are the only natural host of the measles virus.

Occurrence

Prior to the licensure of measles vaccine, the disease was widespread and common in childhood with over 90% of individuals having the disease by 20 years of age. Recently measles has been seen most frequently in preschool children and in young adults attending high schools or colleges. Measles occurs primarily in late winter and early spring.

Mode of Transmission

By droplet spread or direct contact with nasal or throat secretions of infected persons. Tiny droplets can be suspended in the air for up to two hours or more. Measles virus is highly communicable.

Period of Communicability

Communicability is greatest from just prior to the prodrome to four days after the appearance of the rash.

Incubation Period

From 12 to 17 days, but usually 14 days, before the rash appears.

PUBLIC HEALTH MANAGEMENT

Case

Investigation

Local health agencies should screen suspect cases to see if they meet the case definition. Cases meeting the definition should be called immediately to ODH. A representative of the ODH Immunization Program will contact the suspect case and complete an investigation form. Acute and convalescent blood specimens should also be obtained when possible.

Isolation

The Ohio Administrative Code (3701-3-13 [N]) states that "a person with measles shall be isolated, including exclusion from school or child care center, for four days following the onset of rash."

Contact

All contacts should provide proof of a live measles immunization on or after their first birthday or previously physician diagnosed measles disease. In an outbreak situation involving child care or schools, demonstration of 2 doses of MMR will be required. Generally those born prior to 1957 can be considered immune. Contacts who might be susceptible should be immunized with measles vaccine as soon after exposure as possible. Measles vaccine given as long as five days after exposure might prevent or modify the disease. This approach is preferable to using immunoglobulin (IG) for persons less than 12 months of age. IG can prevent or modify measles in a susceptible person if given within six days of exposure. IG may be especially indicated for susceptible household contacts <1 year of age, pregnant women, or immunocompromised persons, for whom the risk of complications is increased. Subsequent immunization should then be delayed for at least three months (to allow passive antibody to disappear) and until the individual is at least 12 months old.

Prevention and Control

Susceptible persons who refuse immunization should be excluded from contact in schools, child care centers, etc., until two weeks after the last case has occurred.

IG should not be used in an attempt to control measles outbreaks.

Special Information

Children attending licensed day care centers and schools accredited by the Ohio Department of Education are required to have a live measles vaccination on or after their first birthday. Starting September, 1999, all children entering kindergarten and all students in grades 7-12 will be required to have received 2 doses of MMR.