

Key Facts about Measles



Images courtesy of Public Health Image Library and Department of Paediatrics and Adolescent Medicine, Princess Margaret Hospital, Hong Kong

Although measles has been eliminated from the United States, it remains endemic and poorly controlled elsewhere in the world. Cases are imported every year, sometimes resulting in further spread and outbreaks domestically. In recent years there has been an increase in measles in the US and throughout the world.

Since 2000, when measles was declared eliminated from the U.S., the annual number of cases has ranged from a low of 37 in 2004 to a high of 1,282 in 2019. The majority of cases in the United States have been among people who are not vaccinated against measles. Measles cases occur as a result of importations by people who were infected while in other countries and from subsequent transmission that may occur from those importations. Measles is more likely to spread and cause outbreaks in communities where groups of people are unvaccinated.

Outbreaks in countries to which Americans often travel can directly contribute to an increase in measles cases in the United States. In recent years, measles importations have come from frequently visited countries, including, but not limited to, the Philippines, Ukraine, Israel, Thailand, Vietnam, England, France, Germany, and India, where large outbreaks were reported (<https://www.cdc.gov/measles/hcp/index.html>).

Achieving and sustaining high levels of population immunity, through routine immunization, are essential to maintaining elimination of measles in the U.S. Early recognition and appropriate response are keys to limiting spread of this highly contagious disease. Health care providers are advised to be familiar with this important though rare disease and its prevention and control.

Disease

- Acute viral infection resulting in febrile rash illness
- High fever: increases in stepwise fashion, often peaking as high as 103-105 degrees F (39.4-40.5 degrees C)
- Prodrome: fever, cough, coryza (runny nose), conjunctivitis (red, inflamed eyes), Koplik spots (punctate blue-white spots on the bright red background of the buccal mucosa, appearing 1-2 days before body rash)
- Rash: macular-papular (red, raised), starts on head and face, progresses down body involving trunk and extremities; discrete lesions become confluent (blotchy) and may darken

- A clinical case of measles is defined as an illness characterized by:
 - a generalized rash lasting 3 or more days, and
 - a temperature of 101 degrees F or higher (38.3 degrees C or higher) and
 - cough, coryza, and/or conjunctivitis
- Incubation: 10-12 days
- Transmission: airborne, respiratory (respiratory droplets through sneezing, coughing); highly communicable (4 days before through 4 after rash onset)
- Photos of measles rash – see page 1
Additional info at CDC Measles web page: <http://www.cdc.gov/measles>

Diagnosis and Testing

- Laboratory confirmation essential; isolate patient, prevent exposing others in clinical and other settings; contact health department
- Obtain clinical specimens as follows:
 - **Serum** for measles IgM antibody (if IgM is negative on serum collected less than 3 days after rash onset, obtain more serum and repeat IgM)
 - **Throat or nasopharyngeal** – essential for characterization of molecular epidemiology; use a synthetic swab (not cotton) and submit in viral transport media; arrangements for testing made through local/state health departments
 - **Urine** - 50 ml, clean catch mid-stream, sterile container.
- Additional diagnostic and testing info at MDHHS Measles Investigation Guidelines - http://www.michigan.gov/documents/mdch/Measles_388976_7.pdf

Reporting and Public Health Response

- Isolate patient at home; in a medical setting use negative-pressure room
- Report suspect cases to local health department: for Michigan local health department contact info, go to <https://www.michigan.gov/mdhhs/inside-mdhhs/county-offices/lhd>
- Identify susceptible contacts (those lacking documentation of 2 MMR doses or lab confirmation of immunity or lab-confirmed measles disease history). Persons born before 1957 can generally be considered immune
- Post-exposure prophylaxis
 - Within/up to 3 days of exposure: MMR vaccine (preferred)
 - Within/up to 6 days of exposure: Immune globulin (IG) 0.25ml/kg [0.11ml/lb] intramuscularly
- Occurrence of measles is considered a public health emergency in U.S.; endemic occurrence and transmission of measles has been eliminated as of 2000.
- Be proactive:
 - Assure that your patients are protected against measles (use the [Michigan Care Improvement Registry - MCIR](#))
 - Assure that all office staff have immunity to measles

- Implement procedures ahead of time for seeing ill, potentially contagious patients in a manner that prevents exposing others
- Consider measles in the assessment of fever, rash, and history of foreign travel
- Stock appropriate diagnostic supplies (swabs, viral transport media, etc.)
- Additional prevention/control and public health response info at MDHHS Measles Investigation Guidelines:
http://www.michigan.gov/documents/mdch/Measles_388976_7.pdf

Routine vaccination and prevention – Measles, mumps, rubella (MMR) vaccine

- Children: 2 doses
 - Dose 1: 12-15 months of age
 - Dose 2: 4-6 years of age
- Adults: at least 1 dose measles (MMR) vaccine
Immunize adults lacking documentation of immunity. Acceptable evidence of immunity is documentation of one of the following: receipt of vaccine; lab evidence of immunity, i.e. measles-specific IgG antibody; laboratory confirmation of disease; birth before 1957
 - ACIP recommends a 2nd dose of MMR for any adult born in 1957 or later who:
 - is a student in a post-secondary educational institution
 - plans to travel internationally
 - is a health care worker
 - is exposed to measles in an outbreak setting
 - was previously vaccinated with killed measles vaccine
 - was vaccinated with an unknown type of measles vaccine during 1963-1967
 - 1-2 doses of MMR can be given to any adult born before 1957 if there is no contraindication to the vaccine
- Health Care Personnel: 2 doses measles (MMR vaccine; minimum interval 28 days) or other acceptable documentation of measles immunity
 - ACIP also recommends a second dose of MMR vaccine to healthcare workers exposed to measles or mumps in an outbreak setting, regardless of age.
- International travel: For those who travel abroad, CDC recommends that all U.S. residents age 6 months or older be protected from measles and receive MMR vaccine, if needed, prior to departure
 - Children 6–11 months of age who are traveling outside the United States
 - Children in this age group should receive 1 dose of MMR.
 - MMR vaccine given before 12 months of age should not be counted as part of the routine series.
 - Children who receive MMR vaccines before age 12 months will need 2 more doses of MMR, the first of which should be administered when the child is 12 through 15 months of age and the second at least 28 days later or at the recommended age of 4-6 years.
 - Children 12 months or older, adolescents, and adults who are traveling outside the United States
 - Documented 2 doses of MMR or other live measles-containing

vaccine (minimum interval 28 days) unless there is other evidence of immunity to measles

- In the event of an outbreak, MDHHS and local health departments will provide additional guidance.