



The Commonwealth of Massachusetts  
Executive Office of Health and Human Services  
Department of Public Health  
Division of Epidemiology and Immunization

## Clinical Measles Alert

April 30, 2015

**First measles diagnosis in Massachusetts in 2015.  
International traveler diagnosed while visiting MA. Multiple exposures in public settings identified.**

**The Massachusetts Department of Public Health (MDPH) has confirmed the first case of measles in the Commonwealth this year, in a visiting student from Europe.** The individual [visited several sites](#) in neighboring states, northeastern Massachusetts, and the metro Boston area while infectious (from 4-20-15 through 4-28-15). MDPH has been working with healthcare providers and local boards of health to notify individuals who may have been exposed and make recommendations concerning vaccination and quarantine of susceptible contacts. **Healthcare providers should proactively identify and update the immunity status of their patients and be vigilant for the possibility of additional cases of measles.**

During January 4–April 24, 2015 nationally, a total of 166 measles cases were reported to CDC. A recent analysis indicated over 80% of reported cases through early April had occurred among persons who were unvaccinated (45%) or had unknown vaccination status (38%), and 96% were associated with recent travel. One [outbreak](#) associated with an amusement park in California has accounted for 70% of all measles cases this year. Last year (2014) the United States experienced a record number of measles cases, with 668 cases from 27 states reported to CDC. This was the greatest number of cases reported in one year since measles elimination was documented in the U.S. in 2000. **In 2014, Massachusetts confirmed measles in eight residents.** Six out of eight involved recent international travel.

Importations of measles into communities with unvaccinated persons can lead to measles cases and outbreaks in the United States. Maintenance of high vaccination coverage, ensuring timely vaccination before travel, and early detection and isolation of cases are key factors to limit importations and the spread of disease.

Providers should consider measles in patients who

- present with febrile rash illness and clinically compatible measles symptoms (cough, coryza (runny nose) or conjunctivitis)
- recently traveled internationally or were exposed to someone who recently traveled
- have not been vaccinated against measles

Healthcare providers should also consider measles when evaluating patients for other febrile rash illnesses, including [dengue](#) and [Kawasaki disease](#).

If you suspect measles, do the following immediately:

1. **Promptly isolate patients** to minimize disease transmission (See Management of Patients below).
2. **Immediately report** a suspect measles case to your local board of health and to the MDPH Division of Epidemiology and Immunization at **617-983-6800**. Cases diagnosed in Boston should be reported to the Boston Public Health Commission at 617-534-5611.
3. **Obtain specimens** for testing from patients with suspected measles, including serum, an NP swab or throat swab, and urine (See Specimen Collection below).

### Management of Patients with Febrile Rash Illness

Ideally, all patients with suspect measles should be placed immediately into a negative air pressure room. This greatly reduces the risk of transmission of measles to others in the facility, and can minimize the post-exposure control measures required. The other steps listed below (e.g., masking patient, placing in a private room) may reduce the spread of measles, but usually do not eliminate the need for full post-exposure control measures.

- Only staff with evidence of immunity to measles should attend suspect measles patients.
- Assess, screen, and mask all patients with febrile rash illness immediately on arrival.
- Escort masked patients to a separate waiting area or place them immediately in a private room, preferably at negative air pressure relative to other patient care areas.

- Staff should wear N95 or higher level of protection respirators to filter airborne particles.
- If not admitted, maintain standard and airborne infection isolation (including while patient is exiting the facility). Patients should be told to remain in isolation at home through 4 days after rash onset.
- Measles virus can remain suspended in the air for up to 2 hours. Therefore, the room occupied by a suspect case should not be used for 2 hours after the patient's exit.

## Specimen Collection

The collection of clinical specimens for measles testing on all individuals with suspect measles is extremely important. MDPH offers free testing at the Hinton State Laboratory Institute (HSLI). Laboratory tests for acute measles include **viral culture and PCR of nasopharyngeal (NP) or throat swabs and urine**, and **serologic testing for measles-specific IgM antibody** on acute serum specimens. Testing at HSLI is preferred over testing at commercial laboratories. Contact an MDPH epidemiologist (available 24/7) at **617-983-6800** for technical guidance on specimen collection, necessary submission forms, and to arrange for transportation to the Hinton State Laboratory.

## Post-Exposure Control Measures Should Cases be Seen in Healthcare Facilities

- Measles is infectious for 4 days before through 4 days after onset of rash (day of onset is day 0); a total of nine days.
- **Identify** all exposed patients and staff, including individuals in the waiting and examination rooms at any time while the index case was present and up to 2 hours after, and all staff both with and without direct patient contact. Due to the airborne route of measles transmission, areas of shared air space well beyond those occupied by the patient may be considered exposed, potentially encompassing an entire facility.
- **Assess** all exposed individuals for acceptable evidence of immunity, as outlined in the table below.
- **Vaccinate all susceptibles or provide immune globulin.**
  - **Measles vaccine given within 72 hours of exposure may prevent disease.** However, we recommend administering vaccine even if it has been >72 hours.

### NEW:

- For infants aged 6 through 11 months, MMR vaccine can be administered in place of IG, if administered within 72 hours of exposure. These infants must still receive a normal 2-dose series beginning  $\geq 12$  months of age.
- HIV infected patients without evidence of current severe immunosuppression can be vaccinated. See the [June 2013](#) ACIP statement regarding measles, mumps and rubella for additional information.
- **Provide post-exposure prophylaxis with immune globulin within 6 days of exposure** to susceptible patients at increased risk of severe disease from measles (see below).
- **Exclude all susceptible contacts** from work from day 5 through day 21 after exposure if not vaccinated. (If the case is confirmed, even those healthcare staff vaccinated within 72 hours may need to be excluded.)
- **Surveillance** for early identification of secondary cases should be continued for two incubation periods (42 days).

## NEW: Post-exposure Prophylaxis with Immune Globulin (IG)

IG can prevent or modify measles in persons who are nonimmune if given within 6 days of exposure. There are three groups of patients at increased risk of severe disease from measles: infants <12 months; pregnant women without evidence of measles immunity; and severely immunocompromised individuals. The recommended dose of IG administered intramuscularly (IGIM) is 0.5 mL/kg of body weight (maximum dose = 15 mL) and the recommended dose of IG given intravenously (IGIV) is 400 mg/kg.

- **Recommended use of IGIM in infants <12 months:** IGIM should be administered to all infants aged <12 months who have been exposed to measles. For infants aged 6 through 11 months, MMR vaccine can be administered in place of IG if administered within 72 hours of exposure.
- **IGIV use in pregnant women without evidence of immunity:** IGIV should be administered to pregnant women without evidence of measles immunity who have been exposed to measles. IGIV is recommended to administer doses high enough to achieve estimated protective levels of measles antibody titers.
- **IGIV use in immunocompromised patients:** Severely immunocompromised patients who are exposed to measles should receive IGIV prophylaxis regardless of immunologic or vaccination status because they may not be protected by the vaccine.

Please refer to the [June 2013](#) ACIP statement regarding measles, mumps and rubella for additional information concerning IG and management of immunocompromised people.

## Review Patient Records

The Massachusetts Department of Public Health (MDPH) would also like to remind clinicians of the continued risk of measles, particularly among all international travelers, and urge you to make sure all of your patients and staff are appropriately vaccinated or have a documented positive titer. For children travelling internationally, those 6 to 11 months of age should receive one dose of MMR. Since the immune response to doses given before 12 months of age is variable, these children must receive a normal two-dose series starting at age 12 months.

**Maintaining high coverage with measles, mumps, and rubella (MMR) vaccination remains the most effective way to prevent outbreaks and limit them if they occur.**

### Acceptable Evidence of Immunity\*

1. Born in the US before January 1, 1957  
**Exception:** For **health care workers**, year of birth does **not** constitute acceptable evidence of immunity. If individuals in these groups do not have serologic evidence of immunity, they should have **2 doses** of MMR.
2. Two doses of measles-containing vaccine, given at least 4 weeks apart and beginning at  $\geq 12$  months of age, and the second dose given prior to or within 72 hours of exposure recommended for children, teens, college students, international travelers and healthcare workers and in outbreak settings. (In health care settings, vaccination after exposure will not always guarantee avoiding exclusion.) or
3. Serologic evidence of immunity or laboratory confirmation of disease.  
\*Physician-diagnosed disease is **not** acceptable for any group.

Note: Adults born in the US in or after 1957 who are not in high risk groups or in outbreaks settings, should have at least 1 dose of MMR.

## NEW: Treatment

There is no specific antiviral therapy for measles. Medical care is supportive and to help relieve symptoms and address complications such as bacterial infections. Severe measles cases among children, such as those who are hospitalized, should be treated with vitamin A. Vitamin A should be administered immediately on diagnosis and repeated the next day, for a total of two doses only. The recommended age-specific daily doses are:

- 50,000 IU for infants younger than 6 months of age;
- 100,000 IU for infants 6–11 months of age;
- 200,000 IU for children 12 months of age and older.

## Reporting

Please immediately report all cases or suspect cases of measles to your local board of health and to the MDPH Division of Epidemiology and Immunization at **617-983-6800**. Cases diagnosed in Boston should be reported to the Boston Public Health Commission at 617-534-5611.

For questions, please contact MDPH Division of Epidemiology and Immunization at **617-983-6800**.

## Resources

Measles – United States, January 4 – April 2, 2015. [Morbidity and Mortality Weekly Report](#), April 17, 2015.

Prevention of Measles, Rubella, Congenital Rubella Syndrome, and Mumps, 2013: Summary Recommendations of the Advisory Committee on Immunization Practices (ACIP). CDC, [Morbidity and Mortality Weekly Report](#), June 14, 2013.

Immunization of Health-Care Personnel, 2011: Recommendations of the Advisory Committee on Immunization Practices (ACIP). CDC, [Morbidity and Mortality Weekly Report](#), November 25, 2011.

[CDC Measles Homepage](#), CDC guidance for providers, travelers and the general public.

[Measles Chapter](#), VPD Surveillance Manual (6<sup>th</sup> Edition), CDC, 2013.

[Measles Chapter](#), The Pink Book (12<sup>th</sup> Edition), CDC, May 2012.

Red Book: 2012 Report of the Committee on Infectious Diseases, 29<sup>th</sup> Edition, American Academy of Pediatrics.

# Measles Control in Medical Settings – Initial Steps

Patients with fever, rash and respiratory illness may have measles. Measles usually starts with a prodrome consisting of mild to moderate fever, cough, conjunctivitis and/or coryza. This is followed by fever spikes, often as high as 104-105° F, and a red maculopapular rash that typically starts at the hairline, then face, then spreads rapidly down the body.

Patients who have recently (within three weeks) been in contact with other people with measles, have been in locations with recent cases of measles, have travelled internationally, or who have visited sites popular with international visitors (tourist attractions, airports) may be at increased risk.



## 1. Assess, screen and mask all patients with febrile rash illness immediately on arrival.

Only staff with evidence of immunity to measles should attend suspect measles patients and should wear N95 or higher level of protection respirators to filter airborne particles when attending suspect measles patients if possible.

2. **Isolate:** Escort masked patients with rash illness or suspect measles to a separate waiting area or private room, preferably at negative pressure relative to other patient care areas.
3. **Ask:** Ask patient about risk factors for measles, such as international travel, known exposure to a measles case, vaccine history, and progression of rash.
4. **Report:** Immediately report the suspect case to your local board of health and to the MDPH Division of Epidemiology and Immunization at 617/983-6800. Cases diagnosed in Boston should be reported to Boston Public Health Commission at 617/534-5611.
5. **Test:** Obtain specimens including serum, and NP swab or throat swab, and urine, for testing at the Hinton State Laboratory in Jamaica Plain (call 617/983-6800).
6. **Restrict:** Do not use the room which has been occupied by a suspect case for two hours following the case's exit.
7. **Identify:** Identify all exposed patients and staff. This includes:
  - a. Patients and families in the waiting and examination rooms up to two hours after suspect case was present;
  - b. All staff both with and without direct patient contact (e.g., maintenance, administrative support); and
  - c. Due to airborne route of transmission, areas of shared air space beyond those occupied by the patient may be considered exposed, potentially encompassing an entire facility.
8. **Document:** Acceptable evidence of immunity for healthcare workers:

Three options: Two doses of MMR, serologic evidence of measles immunity, or laboratory confirmation of disease.

## **Depending on test results and index of suspicion, next steps may include:**

**Notify patients quickly and offer MMR or immune globulin:** MMR within 72 hours of exposure may prevent illness. Beyond 72 hours it is usually still recommended, to provide protection against exposure to future cases of measles. For high-risk susceptibles and those ineligible for vaccination, IG ≤6 days after exposure may modify or prevent illness.

**Exclusions:** Your local health department and/or MDPH will provide assistance with quarantine requirements if exclusions are necessary. In general, susceptible individuals exposed to measles who are not appropriately vaccinated within 72 hours of the exposure may need to be excluded from all public activities from day 5 through day 21 after the exposure. In high-risk healthcare settings exclusion criteria may be more rigorous.