# Health Advisory: Measles

**March 5, 2019**

## Situation

Measles has recently been confirmed in a San Francisco resident, the first such case since 2013. The patient is an adult who was exposed to measles during an international flight. Although measles is no longer endemic in the United States, measles epidemics overseas have resulted in imported cases and resulting secondary cases. Countries with large measles epidemics currently include Philippines, Indonesia, Israel, Ukraine, Romania, Brazil, and much of Western Europe.

The purpose of this advisory is to provide guidance for clinicians in the evaluation of patients with symptoms that could be consistent with measles, and to review measles reporting, infection control, testing, and vaccination recommendations.

## Reporting

Suspected measles cases should be reported immediately by phone, 24/7, to SFDPH Communicable Disease Control at (415) 554 – 2830. If calling after hours, follow instructions to reach the on-call physician. See https://www.sfcdcp.org/communicable-disease/disease-reporting/.

## Symptoms and Risk Factors

Measles symptoms include fever, rash that starts on the head and descends, and usually 1 or 2 of the "3 Cs" – cough, coryza, and conjunctivitis.

When patients present with symptoms that could be consistent with measles, providers should also take an ***exposure history to identify potential risk factors.***

With measles, ***fever*** typically:

- Precedes the rash
- Is high (>101ºF)
- Persists after the rash erupts
- Peaks on day 2 or 3 after rash onset, but can persist with secondary infection

With measles, the ***rash*** typically:

- Starts on the forehead at the hairline and behind the ears, then spreads downwards to the rest of the body; in vaccinated people the rash may be less intense and spread less widely.
- Is erythematous and maculopapular, progressing to confluence in the same order as the spread of the rash. Confluence is most prominent on the face.
- Clears on the third or fourth day in the same order it appeared; duration is usually 6-7 days, but sometimes less in vaccinated people.

- Is initially red and blanches with pressure, then fades to a coppery appearance, and finally to a brownish discoloration that does not blanch with pressure.
- Not itchy until at least the fourth day after onset

Other symptoms may include:

- At least one of the prodromal "3 Cs" – cough, coryza and conjunctivitis
- White (Koplik) spots in the mouth early in illness
- Feeling miserable; especially for children
- In previously vaccinated persons, symptoms may be milder, and all 3 Cs may not be present

***Risk factors that increase the likelihood of a measles diagnosis:***

- In the prior 3 weeks: travel outside of North America, transit through U.S. international airports, or interaction with foreign visitors, including at a U.S. tourist attraction
- Confirmed cases in our community
- Never immunized with measles vaccine and born in 1957 or later

Fever and rash occur in ~5% of MMR vaccine recipients, typically 6-12 days after immunization. Such reactions can be clinically identical to measles infection and result in positive lab testing for measles. However, this reflects exposure to measles vaccine virus rather than the wild virus, and such patients are not infectious for measles. If a recently vaccinated patient has fever and rash but none of the risk factors for measles described above, measles is highly unlikely, and testing is usually unnecessary.

Please consult SFDPH Communicable Disease Control at (415) 554 – 2830 with any questions.

## Incubation and Infectious Periods

Incubation period: the period from exposure to onset of prodromal symptoms (fever plus cough, coryza, and/or conjunctivitis) is generally 8-12 days. The rash typically appears 2-4 days later.

Infectious period: persons with measles are considered infectious from 4 days before rash onset through 4 days after rash onset (9 days total).

## Laboratory Testing

If after consideration of symptoms and risk factors, you suspect measles, please contact SFDPH Communicable Disease Control immediately by phone at (415) 554 – 2830. Collecting specimens while the patient is at your facility will prevent delays in confirmation of the diagnosis and limit the potential for additional healthcare visits/exposures. Once specimens are obtained, please hold them and SFDPH Communicable Disease Control will instruct on next steps.

***Polymerase chain reaction (PCR) is the preferred testing method for acute cases of measles and is performed in public health laboratories.*** SFDPH Communicable Disease Control will help coordinate specimen routing to our Public Health Lab.

Always obtain both of the following specimens for PCR testing:

- Throat or nasopharyngeal (NP) swab using a Dacron-tipped swab and place in liquid viral or universal transport media (throat is preferred over NP swab), and
- Urine sample (10-50 mL) in a sterile container (centrifuge tube or urine specimen container)

A serum measles IgM is not the preferred method of testing for acute cases of measles but may also be recommended depending on timing of presentation for testing.

You may access instructions from the SF Public Health Laboratory on specimen collection and storage (https://www.sfcdcp.org/public-health-lab/laboratory-test-menu/) and the General Requisition Form (https://www.sfcdcp.org/public-health-lab/forms-specimen-culture-submission/information).

## Infection Control

Prepare your facility for the possibility of patients with measles. See complete measles infection control guidance at http://tinyurl.com/yxes3amk.

- Confirm measles immunity of all health care staff. Document either a positive measles IgG test or 2 doses of measles-containing vaccine given in 1968 or later, separated by at least 28 days, with the first dose on or after the first birthday. Confirming staff immunity now avoids having to exclude staff from work in the event of an exposure
- Ask patients to call ahead first if they have fever and rash
- Post signage directing patients with fever and rash to notify staff (see http://eziz.org/resources/measles)
- Train staff to immediately implement airborne precautions if measles is suspected
- Do not allow suspect measles patients to remain in common areas; mask and isolate the patient in an airborne isolation room, or if unavailable then in a private room with door closed
- Do not re-use exam room for at least one hour after the patient has left the room

For patients who are not admitted to a medical facility, suspect measles cases should be instructed to remain in isolation at home until they are no longer infectious, or measles is ruled out.

## Vaccination Recommendations

Immunization is the most important preventive strategy. The effectiveness of vaccination with 1 or 2 doses of measles-containing vaccine in preventing measles is about 93% and 97%, respectively.

Prior to any international travel:

- All individuals planning any travel outside the United States should be brought up-to-date with measles immunization prior to departure
- MMR vaccination is routinely recommended for infants starting at age 12-15 months; however early immunization with MMR vaccine is recommended for infants aged 6-11 months prior to

initiating international travel. Infants who receive a dose of MMR before age 12 months still require two additional doses of MMR, and should receive the first of the 2-dose series beginning at age 12-15 months.

Clinicians should work with all their patients to ensure up-to-date measles immunization status per CDC recommendations (see schedules at https://www.cdc.gov/vaccines/schedules/hcp/index.html).

For general questions about measles vaccination, please contact our Immunization Program at (415) 554 – 2955 or AITC Immunization & Travel Clinic at (415) 554 – 2625.

Under some circumstances, MMR vaccine may be given as post-exposure prophylaxis (PEP) within 72 hours after exposure to a measles case. Pregnant women, infants aged <12 months, and persons with immune compromise should not receive MMR as PEP and may be eligible for immune globulin instead. For guidance please contact Communicable Disease Control at (415) 554 – 2830.

**Additional Resources**

Measles Info Pages:

- SFDPH: https://www.sfcdcp.org/infectious-diseases-a-to-z/measles/
- CDPH: https://www.cdph.ca.gov/Programs/CID/DCDC/Pages/Immunization/measles.aspx
- CDC: https://www.cdc.gov/measles/hcp/index.html

AITC Immunization & Travel Clinic: https://www.sfcdcp.org/aitc/ or www.TravelClinicSF.org

**Program Contact Information:**
Communicable Disease Control Unit
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