



Gavin Newsom  
Mayor

Communicable Disease Control & Prevention  
101 Grove Street, Room 408  
San Francisco, CA 94102  
Phone: (415) 554-2830 Fax: (415) 554-2848  
www.sfdcpc.org

## HEALTH ALERT

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### MEASLES in SAN FRANCISCO BAY AREA

There have been 4 cases of measles diagnosed in the San Francisco Bay Area within the last two weeks:

- One in an older adult who traveled to Europe, and two others in unvaccinated toddlers who traveled to Europe and Asia.
- The 4th case of measles was confirmed in an unvaccinated adult San Francisco (SF) resident last week. The SF confirmed case had no travel history, and no known link to the other 3 cases.
- An additional adult SF case was confirmed in December 2009 without a travel history or known link to other cases, but who worked in a setting with international travelers.
- The 2 recent adult cases presented with mild illness, thus measles was not high on their clinician's differential diagnosis when they first presented to health care.

In addition to multiple cases with international exposures to endemic countries, the San Francisco case who lacks a travel history raises a concern that there may be transmission locally. Measles should be considered in the differential diagnosis for mild or significant febrile rash illness. Although measles classically causes high fever and malaise (along with rash), this was not seen in recent lab-confirmed cases. Measles should be suspected not only in patients with febrile rash illness who have a history of international travel or contact with international visitors in the prior 3 weeks, but also in patients without known international exposures. The San Francisco Department of Public Health (SFDPH) has identified the majority of the individuals and groups who were exposed to the SF case during the case's infectious period, and is working to prevent further transmission. However, additional measles cases may occur from exposures to these northern California cases, or in the future, to measles contracted overseas. Because measles is extremely contagious and can be life threatening to susceptible individuals, we are alerting clinicians and Infection Control Professionals and requesting they follow these recommendations.

*The San Francisco Department of Health provides this guidance based on the best current information. Recommendations may change, and SF recommendations may sometimes differ from those issued by the national Centers for Disease Control and Prevention, or the California Department of Public Health. Visit our website for the most current updates, forms, FAQs and useful links: <http://www.sfdcpc.org/index.html>.*

#### **ACTIONS REQUESTED OF ALL CLINICIANS:**

1. **Be alert** for cases of measles. Consider measles in any patient with fever and rash, especially in people with known exposure to a case of measles, with recent international travel or with exposure to a visitor from abroad or a US resident who has recently returned from international travel.
2. Implement **airborne precautions** immediately for all patients with **fever and measles-like (morbilliform) rash: isolate and provide** a face mask for the patient to wear.
3. **Immediately report** suspect cases to the Communicable Disease Control Unit (CDCU) 24 hours/7 days a week at 415-554-2830 [or your Local Health Department if you are in a County other than San Francisco]; in addition, if the case is or was in the hospital, report to your hospital Infection Control Professional (ICP).
4. Coordinate **diagnostic testing** with the CDCU.
5. Work with your ICP (if in a hospital) or the CDCU (if in other settings) to **identify exposed susceptible contacts** and assess them for **post-exposure prophylaxis** and the need for **exclusion from work or home quarantine**.
6. **Provide post-exposure prophylaxis** for susceptible contacts identified by SFDPH or **laboratory testing for measles immunity for contacts** who cannot document receipt of 2 doses of measles-containing vaccine or who have received only 1 dose.

**Description of measles:**

Due to a successful vaccination program, measles has been uncommon in the US. However, since 2008, there has been a significant rise in cases in several states. Imported cases, from both developed and developing nations, initiated outbreaks that subsequently involved mostly unvaccinated persons. Clinicians should suspect measles in patients presenting with fever and measles-like (morbilliform) rash and should ask patients about recent travel and other possible exposures.

Measles is a highly infectious, acute viral disease characterized by a prodrome of fever (which can be as high as 103-105 °F), malaise, cough, coryza and conjunctivitis, which usually occurs 10-12 (range 7 to 18) days after exposure. The classic measles-like rash develops 1-4 days after the prodrome. This rash is generally an erythematous maculopapular rash that begins on the face and upper neck and then progresses downward and outward. Pathognomonic oral lesions (Koplik spots) may occur. People who have received vaccinations against measles can have a more mild clinical presentation (modified measles) and people who have received antibodies (e.g. newborns receiving maternal Ab and people who have received Ig) can have an atypical presentation (rash progresses in opposite fashion). Complications of measles include bronchitis, pneumonia, encephalitis and death.

**Infection Control:**

Measles is transmitted person-to-person via large respiratory droplets and via aerosolized droplet nuclei. People with measles are infectious from 4 days before rash onset to 4 days after rash onset. Airborne precautions should be used immediately with all suspect cases. Patients should be given a surgical mask to wear at all times and should be placed in a private negative air pressure room. If an airborne isolation room is not available, the patient should be placed in a private room with the door closed. Anybody entering the patient's room should wear respiratory protection (N95 respirator) regardless of prior immunity. Patient movement should be minimized. Patients should not go to other areas of the facility for blood draws or other tests. Remind clerical and triage staff to identify and request assistance for patients with fever and a measles-like rash. Airborne precautions should be used for any patient with a fever and a measles-like or vesicular rash. Vesicular rash can be indicative of chicken pox or small pox, both of which require airborne precautions. To download a flyer to post in health care setting please go to: <http://www.sfdcp.org/healthalerts.html>

**Notifications and responsibilities:**

Immediately report **all suspect cases** to the SFDPH Communicable Disease Control Unit (CDCU) at 415-554-2830 [or your Local Health Department if you are in a county other than San Francisco]. In addition, if the case is or was in the hospital, report to your hospital Infection Control Professional (ICP). Do not wait for laboratory results before notifications.

Before having contact with patients suspected to have measles, health care workers should be protected by vaccination or documented to have immunity. **To protect healthcare workers from future exposures, please ensure now that they are vaccinated or have immunity to measles.**

**Diagnosis:**

Testing via the Public Health Laboratory system should be pursued as soon as possible for all suspect cases. Do not delay diagnosis by sending specimens to commercial laboratories. Measles can be diagnosed by serology (a positive IgM [collected 2-28 days after rash] or a significant rise in IgG), and by isolation and/ or nucleic acid amplification testing from nasopharyngeal or urine specimens. Obtain serum in a serum separator tube, a nasopharyngeal swab on a Dacron-tipped swab placed in viral transport media and a urine sample in a sterile cup. After consultation with CDCU, specimens should be sent to the SFDPH Public Health Lab. Go to our website to download the laboratory form: <http://www.sfdcp.org/diseasereporting.html>. When filling out the form please write-in the request for measles (rubeola) testing.

**Identification of exposed persons (contacts):**

A person is considered a contact if during the infectious period they:

- a) lived with the case,
- b) shared air space directly with an unmasked case or for up to two hours after the unmasked case was present.
- c) were in a health care setting, did not use an N95 mask and shared air space directly with an unmasked case or for up to two hours after the unmasked case was present

All contacts of suspect measles cases should be identified, their susceptibility determined and reported to CDCU. In hospital settings, ICP's will usually coordinate the process. In clinics and offices, clinicians should collaborate with CDCU. In non-medical settings, CDCU manages identification of contacts.

**Identification of susceptibility or immunity:**

A person is considered susceptible to measles if they answer "No" to ALL the questions below. A person is considered immune if they answer "Yes" to any of these questions.

- a) Were you born before 1957?
- b) Do you have documentation of 2 doses of measles vaccine?
- c) Do you have a history of measles with a physician's documentation of the infection?
- d) Do you have laboratory evidence of measles immunity?

Some contacts to a measles case are unable to produce documentation of receipt of two doses of measles-containing vaccine, and some have received only one dose of measles containing vaccine. These persons may request measles serology testing to (IgG) to assess for immunity. Providing this testing may prevent or shorten the duration of quarantine if immunity to measles can be demonstrated by serologic testing.

**Restriction of Exposed, Susceptible Health Care Workers:**

Exposed, susceptible health care workers should be removed from all patient contact and excluded from the facility from the 5<sup>th</sup> day after first exposure until 18 days after the last exposure (28 days if immune globulin was given).

**Post-exposure prophylaxis:**

If additional cases occur and are promptly recognized, PEP should be pursued for exposed susceptible contacts:

a. Measles-mumps-rubella (MMR) vaccine is recommended as PEP for most susceptible persons aged  $\geq 12$  months. Administration of MMR is preferable to using IG, except as noted below. If administered within 72 hours of initial exposure, MMR may provide some protection.

- MMR may be given before 12 months of age but should not be counted as a valid dose. An MMR dose administered before 12 months of age may provide protection from current exposure, but repeat vaccination is still recommended. For young infants, you may wish to consult with a pediatric infectious disease specialist.
- A second dose of MMR may be given any time at least 28 days after the 1<sup>st</sup> dose. It may boost antibody titers in some persons.

b. Immune globulin (IG) can prevent or modify measles in a non-immune person if given within 6 days of exposure. IG is indicated for susceptible close contacts at high risk for developing severe measles, including infants < 12 months old, pregnant women, immunocompromised persons and others for whom the vaccine is contra-indicated. Severely immunocompromised patients and other symptomatic HIV-infected patients exposed to measles should receive IG, regardless of vaccination status because they may not be protected by the vaccine. If measles is diagnosed in a mother, unvaccinated children in the household who lack evidence of measles immunity should receive IG.

Susceptible contacts who receive PEP are potentially infectious and may require home quarantine.

**International Travel:**

Providers should make sure that patients travelling outside of the U.S. are up to date on all routine vaccinations. Children between 6-11 months who are travelling or live outside of the U.S. should receive a dose of measles

containing vaccine prior to departure. This dose will not count towards the routine MMR series. Such children should receive the normal 2 doses of MMR, the first dose being administered between 12-15 months and the second dose administered at least 28 days later. Infants < 6 months may be protected from measles by maternal antibodies but if exposed should be prioritized for PEP. Children  $\geq$ 12 months should have documentation of having received the MMR series prior to departure.

**Additional Resources:**

Measles FAQs and information about the public health response to measles cases and contacts are posted on our website: <http://www.sfdcp.org/measles.html>.

**Measles Chapter. Centers for Disease Control and Prevention. Epidemiology and Prevention of Vaccine-Preventable Diseases. Atkinson W, Wolfe S, Hamborsky J, McIntyre L, eds. 11th ed. Washington DC: Public Health Foundation, 2009. <http://www.cdc.gov/vaccines/pubs/pinkbook/downloads/meas.pdf>**

**Categories of urgency levels**

**Health Alert:** conveys the highest level of importance; warrants immediate action or attention

**Health Advisory:** provides important information for a specific incident or situation; may not require immediate action

**Health Update:** provides updated information regarding an incident or situation; unlikely to require immediate action