

## California Department of Public Health Measles Investigation: Single Case - 2008

### Measles infectious period

Four days before rash onset through four days after rash onset (day of rash onset is day 0).

### Measles exposure

Sharing the same airspace with a person who is infectious with measles (4 days prior through 4 days after rash onset), e.g., same classroom, home, clinic waiting room, airplane etc., or were in these areas up to 2 hours after the infectious person was present. No minimum time period.

### Measles incubation period

Onset of prodromal symptoms is typically 8-12 days after exposure and rash onset is typically 14 days (range 7-18 days) after exposure (day of exposure is day 0).

### Measles immunity

Persons are considered immune to measles if:

- they were born prior to 1957\*; or
- they have written documentation with dates of vaccine administration of age appropriate vaccination (one dose for children 1-4 years and for adults except those in high risk groups), 2 doses of measles containing vaccine for others born after 1968† (school and college students, healthcare personnel) separated by at least 28 days, with the first dose on or after their first birthday; or
- they have a positive antibody (IgG) test for measles; or
- a history of physician diagnosed measles\*.

\* Confirm immunity (IgG+ or 2 documented doses MMR) in exposed healthcare personnel born <1957.

† Vaccination prior to 1968 is not considered adequate evidence of immunity unless there is documentation of live attenuated measles vaccine administration.

### Recommendations for follow-up of persons exposed to measles

Category	IgG test	Vaccinate	*Home quarantine	*Active symptom monitoring	Passive symptom watch
Born before 1957‡ (~5% will be susceptible)	No	No	No	No	Yes
<b>Born during or after 1957</b>					
2 documented doses MMR prior to measles exposure (~1% will be susceptible)	No	No	No	No	Yes
IgG positive (<1% will be susceptible)	No	No	No	No	Yes
1 documented dose MMR prior to measles exposure in children aged 1-4 years and adults who are <u>not</u> healthcare personnel, college students, or international travelers (~5% will be susceptible)	No	Vaccinate if <72 hours of exposure	No	Yes	N/A
1 documented dose MMR prior to measles exposure in adults for whom 2 doses are recommended, i.e., healthcare personnel, college students, and international travelers (~5% will be susceptible)	Yes	Yes§	No	Yes	Yes
First MMR dose given <72 hours of exposure	No	-	No	Yes	N/A
IG given <6 days of exposure	No	No	No	Yes	N/A
Unknown status	Yes	Yes§	Yes	Yes	N/A
Unvaccinated/nonimmune/not given IG	Yes	Yes§	Yes	Yes	N/A

\* Daily calls to exposed person to monitor for development of measles symptoms (see next page for information on time period).

‡ Confirm immunity (IgG+ or 2 documented doses MMR) in exposed healthcare personnel born <1957.

§ Vaccinate at the same time blood is drawn for serology.

|| Immune globulin (IG) recommended for exposed infants <1 year of age, susceptible household members who did not receive MMR. <72 hours of exposure, immunocompromised persons, and susceptible pregnant women.

### **Immune Globulin (IG)**

Recommended dose is 0.25 mL/kg (maximum dose=15 mL) IM given within 6 days of exposure. Immunocompromised persons should receive 0.5 mL/kg (maximum dose=15 mL). For persons receiving IGIV therapy,  $\geq 100$  mg/kg <3 weeks before measles exposure should be sufficient to prevent measles infection.

### **Home quarantine/active symptom monitoring period**

Day 7 after first exposure through day 18 after last exposure (day of exposure is day 0). If symptoms consistent with measles develop, patient should be immediately isolated through day 4 after rash onset (day of rash onset is day 0). Exposed people not being quarantined or monitored should watch for symptoms and contact their local health department immediately if symptoms occur.

### **Symptoms**

- Fever
- Dry cough
- Runny nose
- Inflamed eyes (conjunctivitis)
- Sensitivity to light
- Koplik's spots (tiny red spots with bluish-white centers found inside the mouth on the inner lining of the cheek)
- A erythematous maculopapular rash made up of large, flat blotches that often flow into one another

### **Measles clinical case definition**

- Cough, coryza, or conjunctivitis; and
- fever  $\geq 101^{\circ}$  F ( $\geq 38.3$  C); and
- generalized rash lasting  $\geq 3$  days.

### **Measles laboratory criteria for diagnosis**

- Positive serologic test<sup>¶</sup> for measles IgM antibody; or
- Significant rise in measles antibody level by any standard serologic assay; or
- Isolation of measles virus or detection of viral RNA (RT-PCR) from a clinical specimen.

<sup>¶</sup>Capillary blood (finger or heel stick) can be used for serology if venous blood cannot be obtained. Micro collection devices consisting of a capillary tube and a serum separator microtube should be used (heparinized tubes are acceptable) and a minimum of 100  $\mu$ l of blood are required; fill 2-3 capillary tubes even if 100  $\mu$ l is collected in the first tube. Express collected blood into serum separator microtube and cap. Keep specimens cool (not frozen) during transport (e.g., in a Styrofoam container with freeze packs). Upon receipt at the laboratory, specimens must be microfuged before processing.

### **Case classification**

- **Suspected:** Any febrile illness accompanied by a rash.
- **Probable:** A case that meets the clinical case definition, has non-contributory or no serologic or virologic testing, and is not epi-linked to a confirmed case.
- **Confirmed:** A case that is lab-confirmed (lab-confirmed cases do not need to meet the clinical case definition); or a case that meets the clinical case definition and is epi-linked to a confirmed case.

### **The course of measles infection**

Measles typically begins with a mild to moderate fever, which is accompanied by cough, coryza, and conjunctivitis. Two to three days later, Koplik's spots, a characteristic sign of measles, may appear. At this time the fever spikes, often as high as 104-105°F. At the same time, a red blotchy maculopapular rash appears, usually first on the face, along the hairline and behind the ears. This slightly itchy rash rapidly spreads downward to the chest and back and, finally, to the thighs and feet. In approximately one week, the rash fades in the same sequence that it appeared.