

## **Measles Testing, Immunization, and Control Recommendations for Health Care Providers**

May 2008

### **LABORATORY TESTING**

- **Laboratory confirmation of suspected measles cases is essential.** Please consult with Public Health to facilitate testing of suspected measles cases at the Public Health Laboratory. Because prophylaxis of susceptible contacts has to occur within 3 to 6 days of exposure, disease control measures should proceed while results are pending.
- **Please call Public Health at 206-296-4774 to report suspected measles cases when measles testing is being considered or ordered.** We will expedite testing through the public health laboratory system. Results are typically available the same or next day and there is no charge to the patient. Commercial laboratory results are can be delayed or inaccurate.
- **Serology** is the most rapid method of confirming the diagnosis of measles.
  - **Measles IgM** antibody indicates acute infection. By the third day after rash onset, 99% of true measles cases will be measles IgM positive and 70-85% of measles cases will be positive at the time of rash onset. However, *if the test is negative another specimen may be required.*
  - **Measles IgG:** Both acute and convalescent sera are necessary to determine whether there has been a four-fold or greater rise in total measles antibody. Draw the first sample during the acute illness and the second (convalescent specimen) 2 to 3 weeks later. Both samples should be processed in the same laboratory run.
  - For serologic testing, draw 8-10 ml (minimum: 4-5 ml) blood in a red or tiger top tube (tubes without anticoagulants or preservatives). **Please notify your laboratory that the serologic specimens MUST go to the Public Health Laboratory for testing.**
- **Viral Culture** provides isolates for molecular analysis of relatedness to isolates from other cases (and geographic locations). Please obtain specimens for viral culture at the time you are drawing blood for serology.
  - **Urine** cultures are preferred. Fifty to 100 ml of clean voided urine in a sterile container should be collected as soon as possible and no later than one week after rash onset.
  - **Nasal wash** specimens should also be submitted when possible and when urine is not available. Nasal wash should be collected as soon as possible, and within one week after rash onset. Use 3 to 5 mls of sterile non-bacteriostatic saline and a bulb aspirator or syringe to rinse the nasal passage and draw secretions back into bulb aspirator or syringe. Place all of the recovered wash solution in a tube of viral transport medium.
- **Laboratory tests to rule out other causes.** Testing to rule out other potential causes of rash illness is recommended as clinically indicated (e.g., a throat culture for group A streptococcus in a child with fever, rash, and pharyngitis, testing for rubella, influenza, enterovirus, etc.).

## MEASLES IMMUNIZATION

- **Routine Measles, Mumps and Rubella (MMR) Immunization Recommendations:**
  - **All children should receive 2 doses of MMR vaccine**
    - The first dose at age 12 to 15 months and the second at 4-6 years (entry to kindergarten or 6<sup>th</sup> grade, depending on year of birth). The second dose can be given as early as 28 days after administration of the first dose.
  - **Adults born in or after 1957 should be immunized against measles unless they have documentation of immunity against measles.** Two doses are recommended for international travelers aged  $\geq 12$  months, healthcare personnel, and student at secondary and postsecondary educational facilities.
    - Older children and college entrants who have had only one dose of MMR should be given a second dose. (The minimum interval between doses is 28 days.)
  - Immunizations given before the first birthday or before 1968 may not be protective and should be repeated.
  - Children between 12 months and 5 years of age without documentation of prior MMR who present to medical facilities for any reason should be immunized. In previous measles outbreaks, many children with measles had missed opportunities for immunization at prior office visits.
  - MMRV (live, attenuated measles, mumps, rubella, and varicella vaccine) may be used for children 12 months to 12 years of age. Please see the Advisory Committee on Immunization Practices web site (<http://www.cdc.gov/vaccines/pubs/ACIP-list.htm>) and the *AAP Red Book* for details.
- **Contraindications to MMR Vaccination**
  - History of severe allergic reaction (i.e., hives, swelling of mouth or throat, difficulty breathing, low blood pressure, shock) following a prior dose of measles vaccine or vaccine component (e.g., gelatin, neomycin). Egg allergy is not a contraindication to MMR vaccination
  - Pregnancy.
  - Recent receipt of immune globulin or other blood products.
  - Significant immunosuppression.
  - Moderate to severe acute illness is a precaution, not contraindication, and vaccination may be considered during an outbreak.

## PREVENTING MEASLES TRANSMISSION IN HEALTH CARE FACILITIES

- **Measles spreads through both respiratory droplets and airborne transmission.**
- **Screen arriving patients for fever and rash.** Those with rash illness should be kept out of the waiting room and away from other patients.
- **Rapidly isolate persons with suspected measles.** Airborne infection isolation rooms are recommended, when available.
- **Patients should wear a surgical mask when possible to contain respiratory secretions.**
- **Minimize contact between suspected measles patients and other patients and health care workers (HCW).**
- **Assure all health care workers are immune to measles through vaccination or documentation of immunity.**
  - Review measles susceptibility of staff and identify potentially susceptible staff to assure that they are not exposed to suspected measles cases (including the room where such cases are seen).
- Other potential infection control measures to minimize transmission include:
  - Have the patient stay in the car for the evaluation
  - Use a separate entrance or room for patients with rash illness
  - Have the patient wear a surgical or procedure mask at all times.
  - Note that airborne transmission via aerosolized droplet nuclei has been documented in closed areas (e.g., exam rooms) for up to 2 hours after a person with measles occupied the area.

## MANAGING MEASLESE EXPOSURES IN HEALTH CARE FACILITIES

- **Start control measures based on clinical diagnosis;** do not wait for laboratory confirmation.
- **Identify susceptible patients, staff, and visitors exposed to the case.** Cases are infectious up to 4 days before through 4 days after rash onset. Potential exposures are those who were in the same room as a case, or within 2 hours of the room being last occupied by the case.
  - Health care workers who should be presumed susceptible to measles:
    - Those born in or after 1957, without one of the following: documented evidence of receiving two doses of valid measles vaccine, documented evidence of seroimmunity, or documented history of physician diagnosed measles.
    - Those born before 1957 without one of the following: documented evidence of receiving one dose of valid measles vaccine, documented evidence of seroimmunity, or documented history of physician diagnosed measles.
  - Patients and Staff (other than health care workers) who should be presumed susceptible to measles:
    - Patients and visitors older than 1 year of age, born in 1957 or later who do not have one of the following: documented evidence of receiving at least one dose of valid measles vaccine, documented evidence of seroimmunity (measles IgG positive), or documented history of physician diagnosed measles disease.
    - Infants less than 1 year of age.

*Note: measles vaccination before one year of age or before 1968 are not considered valid doses*

- **Consider immunoprophylaxis of exposed contacts**, depending on the nature and degree of exposure and the risk for severe disease.
  - Measles vaccine given within 72 hours after first exposure is sometimes successful in preventing infection.
  - Immune globulin (IG) is effective in preventing or modifying illness if given within 6 days after first exposure. The usual dosage is 0.25 ml/kg intramuscularly (IM), or 0.5 ml/kg IM for immunocompromised persons. The maximum dose in either instance is 15ml. IG is recommended primarily for the following exposed persons:
    - Infants under 1 year of age
    - Susceptible pregnant women
    - Immunocompromised persons
- **Notify all exposed persons (even if immunized or given IG) that they may develop measles within the next 21 days** and to be alert for prodromal symptoms (fever, cough, coryza, photophobia, conjunctivitis). Administration of IG may prolong the incubation period and attenuate symptoms of measles.
- **Exposed persons who develop prodromal symptoms should isolate themselves** and contact their employer, health care provider, and Public Health immediately. If they need medical attention, they should call ahead to alert medical staff so as to avoid exposing other patients.
- **For exposed health care workers:**
  - If a specimen drawn within 6 days after exposure is positive for measles IgG or total antibody, consider the person immune.
  - If the HCW has had 1 dose of measles vaccine given in 1968 or later and after the first birthday, give an additional dose of vaccine. If the 2nd vaccine dose can be given within 72 hours of exposure, consider the person immune. If vaccine cannot be administered within 72 hours, send measles serology, and consider the person immune if the test shows antibody.
  - If the HCW has had 2 documented doses of measles vaccine given after 1968 and after the first birthday, consider the staff person immune.
  - Exposed, susceptible HCWs should be relieved of direct patient contact from the 5th to the 21st day after exposure, even if they were given vaccine or IG after exposure. If not possible, staff should have their temperatures taken and be asked about prodromal symptoms as they come to work from days 5 through 21 after exposure, and should immediately be sent home if temperature is over 99.6°F or prodromal symptoms are present. This screening procedure must be followed rigorously to prevent staff members with prodromal phase measles from infecting others.
  - HCW who develop measles should avoid patient contact until at least 4 full days after rash onset.

***Immediately report known and suspected measles cases in King County to Public Health at 206-296-4774. Outside King County, contact your local health jurisdiction.***

#### **Resources**

- Public Health Measles Fact Sheet: [www.metrokc.gov/health/prevcont/measles.htm](http://www.metrokc.gov/health/prevcont/measles.htm)
- CDC Measles Resources: [www.cdc.gov/vaccines/vpd-vac/measles/dis-resources.htm](http://www.cdc.gov/vaccines/vpd-vac/measles/dis-resources.htm)
- ACIP vaccine recommendations: <http://www.cdc.gov/vaccines/pubs/ACIP-list.htm>