DEPARTMENT OF
PUBLIC HEALTH
AND WELLNESS

Current Measles Outbreaks – Information for Physicians

Washington State has declared a state of emergency due to a measles outbreak including 42 recent cases as of February 1. There are also current travel-related outbreaks of measles in New York City and State. In 2018, there were 372 confirmed measles cases in the U.S., and already in 2019, there have been 79 confirmed cases across 10 states[1].

Though we have not seen any measles cases in Louisville or in Kentucky yet, these recent outbreaks highlight the need for heightened awareness of possible measles cases locally. Prompt recognition, reporting, and investigation of measles are essential to minimize the spread of the disease through early case identification and vaccination of susceptible contacts[2].

Attached is information for healthcare providers about measles, which should help guide patient care. Remember the following:

1. Ask patients about recent travel, particularly internationally or to states where measles cases have been reported.

2. Ask patients about immunization history. Recommend MMR vaccine to unvaccinated patients without contraindications.

3. Have measles in your differential diagnosis for any respiratory or febrile disease, or for patients with a rash, particularly if they are unvaccinated.

4. Advise patients with possible measles to call ahead before visiting a clinic or emergency department to ensure appropriate precautions are in place to prevent exposure to other patients and healthcare facility staff.

5. Per 902 KAR 2:020, report cases of suspected or confirmed measles immediately by phone to LMPHW at (502) 574-6677 or FAX Epid 200 reports to (502) 574-5865. The Epid 200 form can be found at: https://louisvilleky.gov/sites/default/files/health_and_wellness/communicable_disease/epid_200_kentucky_reportable_disease_form.pdf

The Louisville Metro Department of Public Health communicable disease staff is available to assist you with any questions you may have. You can reach a team member at (502) 574-6677.

Thank you in advance for helping to protect our community through early recognition and reporting of any suspected or confirmed measles cases you encounter.

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Measles Information for Healthcare Providers

What is measles? Measles is a highly contagious disease, easily spread through respiratory droplets either by direct contact or from aerosolization with breathing, coughing and sneezing. Virus can remain in the air for up to two hours after an infectious person leaves an area. Ninety percent of exposed, unvaccinated individuals will develop the disease. The disease can be deadly, particularly in children; two to three out of every 1000 people infected will die from measles[2]. Encephalitis and subacute sclerosing panencephalitis (SSPE) can also result from measles. Healthcare providers should consider measles in patients presenting with febrile rash or other clinically compatible measles symptoms, especially if the person recently traveled internationally or was exposed to a person with febrile rash illness. Healthcare providers should report suspected measles cases to their local health department within 24 hours.

What are the symptoms[3]?

- Fever, usually 101°F up to 105°F
- Malaise
- Cough, coryza and conjunctivitis—the three "C"s
- Koplik spots - pathognomonic enanthema of clustered, white lesions on an erythematous background, the buccal mucosa opposite the upper 1st and 2nd molars
- Maculopapular rash usually appears about 14 days after a person is exposed.
    - Typically lasts 3 or more days
    - Spreads from the head to the trunk to the lower extremities
    - May not develop rash if immune compromised

Who is at risk of infection?

- Most outbreaks in the U.S. occur in unvaccinated individuals.
- Recent international travelers, or travelers to U.S. locations where a measles case has been identified, may be at risk. Recent outbreaks in the U.S. have been related to travel to Israel and Ukraine.

Who is at high risk for severe illness and complications from measles[3]?

- Infants and children aged <5 years
- Adults aged >20 years
- Pregnant women
- People with compromised immune systems, such as from leukemia and HIV infection

When is a person with measles contagious? Individuals are often contagious for several days prior to recognizing symptoms and seeking healthcare, or before being diagnosed with measles.

- The incubation period is 11-12 days
- Most people develop rash at day 14, but this can range between 7-21 days
- Most people are infectious from four days before until four days after the onset of rash
- People with measles should be quarantined (isolated) until infectious period is over, typically four days after rash onset

How do I test for measles? Laboratory confirmation is essential for all measles cases. Efforts should be made to obtain a serum sample and throat swab (or nasopharyngeal swab) from suspected cases at first contact[2]. The following are recommended options for laboratory testing:

- **Measles serum IgM antibody testing**. IgM antibodies usually appear within 1-4 days of rash onset, peak within a week after rash onset, and are undetectable by 6-8 weeks after the rash resolves. IgG can be useful in cases where IgM is negative and convalescent serum testing is needed[2].
- **Measles RNA by real-time polymerase chain reaction (RT-PCR) or viral culture**. This can be done on throat, nasopharyngeal swabs and urine. Virus isolation is most likely successful when collected within 3 days of rash onset, but may be detected up to 10 days after rash develops[2]. Vaccinated persons may not have an IgM response, so RT-PCR testing may be the best method to confirm such cases when IgM is negative.
- Staff at the CDC Measles Laboratory are available for consultation and can assist with confirmatory testing as needed for measles. For details on all types of specimens (serum, respiratory, urine) collection and transport, see the CDC Measles Laboratory website at http://www.cdc.gov/measles/lab- tools/index.html.
- Molecular analysis can also be conducted to determine the genotype of the measles virus. This helps health departments map the transmission pathways of measles viruses and identify potential links for cases. It also can distinguish between wild-type measles virus infection and a rash caused by recent measles vaccination[2].

What information should I report to the health department? Complete the **demographic and laboratory information** found on the **Epid 200 form** at https://louisvilleky.gov/sites/default/files/health_and_wellness/communicable_disease/epid_200_kentucky_reportable_disease_form.pdf. For measles cases, the additional clinical information is needed for all case investigations, and can be sent to the local health department, if known:

1. **Clinical symptoms**: Date of onset of symptoms, date of rash onset, prodromal symptoms, and any complications
2. **Outcome of the illness** (if known): Was hospitalization required? Were there any complications of the illness?
3. **Patient's Vaccination status**: Number of doses of measles vaccine received, dates of measles vaccination, & reason if not vaccinated
4. If applicable, postexposure prophylaxis type (vaccine, IGIV, IGIM) and date of administration of postexposure prophylaxis
5. **Additional Epidemiological Information:**
    - What setting was the disease transmitted, if known? (e.g., household, school, health care, event)
    - Is the source of infection known? (e.g., age, vaccination status, relationship to case, contact with probable or confirmed case, or contact with immigrants or travelers, or international travel)
    - Travel history internationally, out-of-state, or locally, in the three weeks prior to symptom onset

How do I prevent measles?

- **Make every effort to vaccinate non-immune individuals prior to exposure**
- Children aged 6 to 11 months who are in outbreak situations or travel internationally to endemic areas should receive one dose of MMR vaccine at least two weeks prior to travel. Children vaccinated before age 12 months should receive two additional doses of MMR or MMRV vaccine on or after the first birthday according to the routine recommended schedule[3].
- Children ≥12 months of age and adults who plan to travel outside the United States should receive two doses of MMR vaccine, separated by at least 28 days.

- Report suspected cases of measles immediately to LMPHW and provide appropriate Post-exposure Prophylaxis to contacts of cases
    - *Determine measles immunity in all* identified contacts.
    - For people exposed to measles who cannot provide evidence of immunity against measles, offer Post-exposure prophylaxis (PEP)
- MMR vaccine:
    - MMR vaccine, if administered within 72 hours of initial measles exposure, and immunoglobulin (IG), if administered within six days of exposure, may provide some protection or modify the clinical course of disease among susceptible persons. Any exposed individual who refuses vaccine should be excluded from school, hospital or childcare setting to protect others.
    - Vaccination should be offered at any interval following exposure in order to offer protection from future exposures.
    - Monitor contacts of cases for signs and symptoms consistent with measles for at least one incubation period after the exposure (21 days), even if MMR vaccine or IG has been administered.
- Immune Globulin:
    - People who are at risk for severe illness and complications from measles, such as infants younger than 12 months of age, pregnant women without evidence of measles immunity, and people with severely compromised immune systems, should receive IG.
    - Priority for IG administration should be given to people exposed in settings with intense, prolonged, close contact, such as a household, daycare, or classroom where the risk of transmission is highest.
    - For infants aged 6 through 11 months, MMR vaccine can be given in place of IG, if administered within 72 hours of exposure.
    - People with severely compromised immune systems who are exposed to measles should receive IGIV regardless of immunologic or vaccination status because they might not be protected by MMR vaccine.
    - The recommended dose of IGIM is 0.5 mL/kg of body weight (maximum dose = 15 mL) and the recommended dose of IGIV is 400 mg/kg.

When can someone exposed to measles return to work or school?

- **Except in healthcare settings**, unvaccinated people who receive their first dose of MMR vaccine within 72 hours after exposure may return to childcare, school, or work.
- Exclude healthcare personnel without evidence of immunity from duty from day 5 after first exposure to day 21 after last exposure, regardless of post-exposure vaccine.

What are the Isolation recommendations?

- Infected people should be isolated for four days after they develop the maculopapular rash
- Airborne precautions should be followed in healthcare settings. Regardless of presumptive immunity status, all healthcare staff entering the room should use respiratory protection consistent with airborne infection control precautions (use of an N95 respirator or a respirator with similar effectiveness in preventing airborne transmission).
- The recommended placement for patients who require airborne precautions is in a single-patient airborne infection isolation room (AIIR). Suspected or confirmed measles patients should be asked to wear a medical mask

How do I know if someone is adequately protected from measles? Acceptable presumptive evidence of immunity against measles includes at least **one** of the following:

- Written documentation of adequate vaccination:
    - One or more doses of MMR administered on or after the first birthday for preschool-age children and adults not at high risk
    - Two doses of MMR vaccine separated by at least 28 days, for school-age children and adults at high risk, including college students, healthcare personnel, and international travelers
- Laboratory evidence of immunity
- Laboratory confirmation of measles
- Birth before 1957
- Healthcare providers should not accept verbal reports of vaccination without written documentation as presumptive evidence of immunity.
- For additional details about evidence of immunity criteria, see Table 3 in Prevention of Measles, Rubella, Congenital Rubella Syndrome, and Mumps, 2013: Summary Recommendations of the Advisory Committee on Immunization Practices (ACIP)[4].

What is the treatment for measles?

- There is no specific antiviral therapy for measles. Supportive care and treatment of symptoms is indicated.
- The Centers for Disease Control and Prevention recommends treatment with vitamin A for severe measles cases among children. Vitamin A should be administered immediately on diagnosis and repeated the next day. The recommended age-specific daily doses are[3]:
    - 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

References

1. Centers for Disease Control and Prevention, National Center for Immunization and Respiratory Diseases, Division of Viral Diseases. *Measles Cases and Outbreaks.* Accessed February 1, 2019 from https://www.cdc.gov/measles/cases-outbreaks.html
2. Gastanaduy, PA; Redd, SB; Clemmons, NS; Lee, AD; Hickman, CJ; Rota, PA; & Patel M. *Measles.* Vaccine-Preventable Disease Surveillance Manual; 2018, chapter 7.
3. Center For Disease Control and Prevention, National Center for Immunization and Respiratory Diseases, Division of Viral Diseases. Accessed January 31, 2019 from https://www.cdc.gov/measles/hcp/index.html
4. Centers for Disease Control and Prevention. Prevention of Measles, Rubella, Congenital Rubella Syndrome, and Mumps, 2013 Summary Recommendations of the Advisory Committee on Immunization Practices (ACIP) MMWR 2013;62(No. 4):1-34.