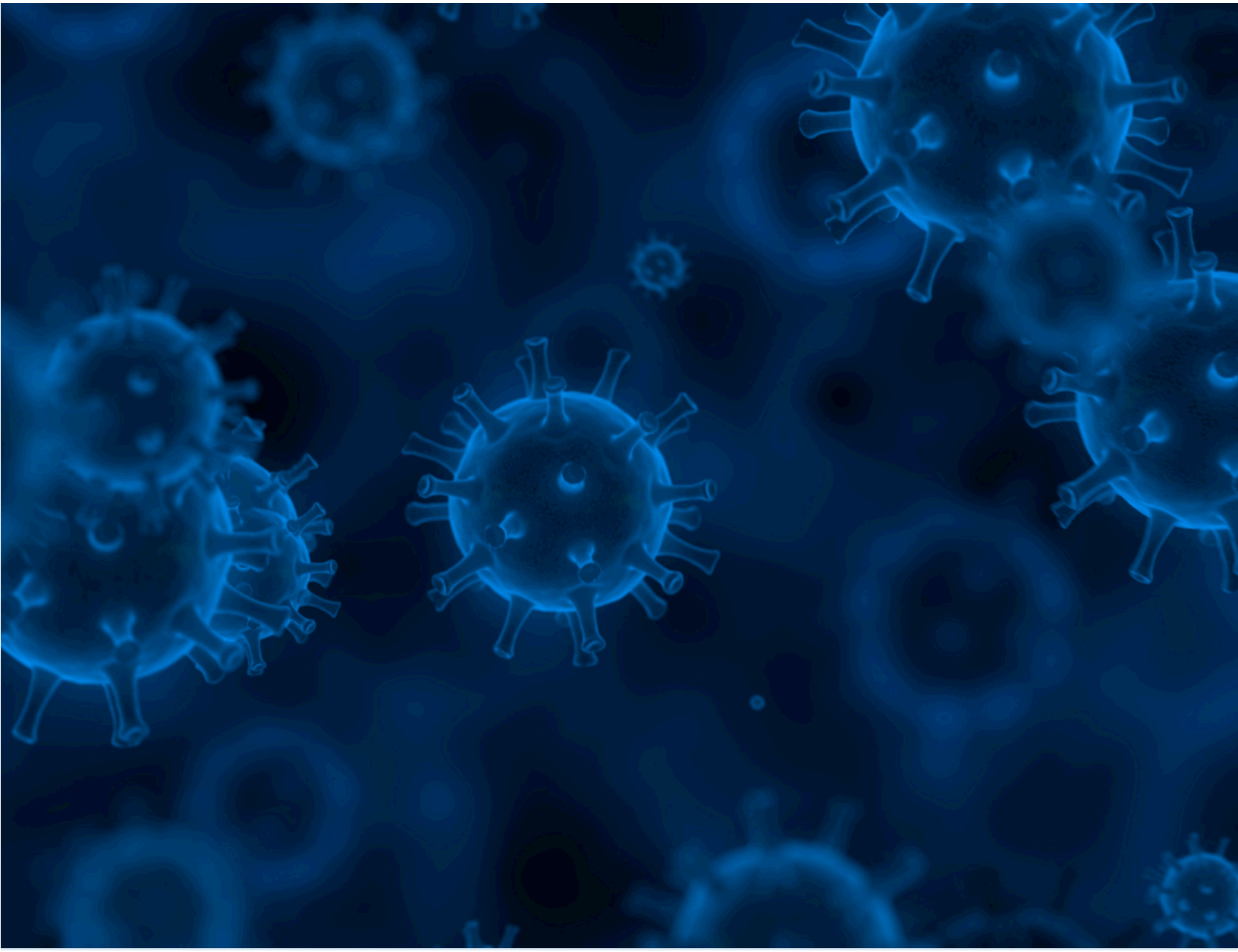
HEALTH DEPT.
MEASLES GUIDANCE



KANSAS CITY


M-M-R
• Measles
• Mumps
• Rubella
Vaccine
mL
2
3
4
5
6

MEASLES GUIDANCE FOR SCHOOL AND CHILD CARE SETTINGS

TABLE OF CONTENT

WHAT AND HOW TO REPORT TO THE KANSAS CITY HEALTH DEPARTMENT (KCHD)

All suspected measles cases, regardless of whether laboratory results are pending or confirmed, must be reported without delay within one calendar day upon suspicion.

Suspected cases require prompt attention and should be reported to KCHD or the State Health Department by telephone or followed up with a phone call if initially reported by fax.

IMPORTANT TELEPHONE AND FAX NUMBERS

Kansas City Health Department Communicable Disease Division
Phone: 816-513-6152, 816-513-6008
Emergency After Hours: 816-513-6008,
Pager: 816-717-6721
Email: health@kcmo.org
Fax: 816-513-6090

CLINICAL DESCRIPTION

Measles, (also known as rubeola, red measles, or hard measles) is a highly contagious viral illness. It typically begins with a prodrome marked by **high fever (up to 105°F)**, malaise, cough, runny nose (coryza), and conjunctivitis. **About 3 to 5 days** after these initial symptoms begin, a maculopapular rash develops. This rash usually starts on the face near the hairline and then spreads downward to the trunk, arms, and legs. During the prodrome phase, small white spots known as Koplik spots may appear inside the mouth on the buccal mucosa. *(Rash images are available on the CDC website)*

COMPLICATIONS

Measles can sometimes lead to complications such as diarrhea, ear infections, or pneumonia. Approximately one in every 1,000 children with measles develops encephalitis (inflammation of the brain), which can result in seizures, hearing loss, or intellectual disability.

MODE OF TRANSMISSION

Measles spreads from person to person through respiratory droplets. When an infected individual talks, coughs, or sneezes, the virus is released and can enter another person's body through the nose, mouth, or throat. Infection can also occur through contact with the saliva or mucus of someone who is infected. The measles virus can survive in the air and on contaminated surfaces for up to two hours after the infected person has left the area.

INCUBATION PERIOD

The incubation period typically ranges from 7 to 14 days from exposure to the onset of cold-like symptoms. The rash usually appears around 14 days after exposure, or 3 to 5 days after symptoms begin.

CONTAGIOUS PERIOD

A person is contagious from four days before to four days after the rash appears. They are considered most infectious from one to two days before the rash begins through the first four days of the rash. About 9 out of 10 people without immunity to measles will get measles when they are nearby someone with the infection.

DIAGNOSIS

Many viral illnesses can cause a rash. If measles is suspected, a blood test for measles antibodies should be performed 3 to 5 days after the rash appears in the most recently affected individual. The preferred method for PCR testing is a nasopharyngeal (NP) swab or throat (OP) swab.

Anyone exposed to measles should contact their healthcare provider if they develop cold-like symptoms along with a fever and rash**. They should NOT visit a healthcare facility without calling ahead, so appropriate precautions can be taken to separate the individual from others to prevent further spread.**

PREVENTION/CONTROL

Vaccination: The measles, mumps, and rubella (MMR) vaccine is the most effective protection against measles. The Advisory Committee on Immunization Practices (ACIP) recommends that children receive the first dose between 12 and 15 months of age, followed by a second dose at school entry, typically between ages 4 and 6. For children who missed these scheduled doses, refer to the vaccination catch-up immunization schedule. Two doses of the MMR vaccine are approximately 97% effective at preventing measles, while a single dose provides about 93% protection.

Adults who received at least one dose of a live measles-containing vaccine (available since 1968) on or after their first birthday are considered protected against measles.

Those vaccinated before 1968 with either the inactivated (killed) measles vaccine or a vaccine of unknown type should be revaccinated with at least one dose of the live, attenuated MMR vaccine. The killed measles vaccine, used between 1963 and 1967, was less effective.

Individuals born before 1957 are considered immune to measles, as they likely were exposed to the virus during childhood when it was common. However, those in certain high-risk groups, such as healthcare workers, may still need the MMR vaccine or other proof of immunity.

OTHER METHODS OF PREVENTION AND CONTROL

Clean and disinfect objects and surfaces that have been mouthed at least once a day and immediately if they become soiled.

Cover your nose and mouth with a tissue when you cough or sneeze or use your sleeve if a tissue is not available. Throw away used tissues immediately.

Frequent and thorough handwashing is the most effective way to prevent the spread of communicable diseases. Always wash your hands well with soap and warm running water after coming into contact with secretions from the nose or mouth.

CASE INVESTIGATION

The Kansas City Health Department (KCHD) is responsible for investigating suspected measles cases within its jurisdiction. KCHD Disease Investigators will collect relevant information to investigate suspected, probable, and confirmed cases.

1. KCHD will assess whether the individual's symptoms are consistent with measles and collect the following information:

- Demographics (including address, phone number, date of birth, gender, ethnicity, and race).
- Timing and sequence of symptoms:
  - When did the fever start? How long did it last? What was the maximum temperature?
  - When did the rash start? Where on the body did it start? What did it look like? How did it progress? How long did it last?
- Were there other respiratory symptoms (cough, coryza, and conjunctivitis)?
- Are there other possible diagnoses?
- Was the individual tested? Where did they go for testing?
- Has this person recently taken antibiotics or other medications?
- Does the patient have contacts with similar symptoms?

2. Determine if the case is susceptible to measles.

- KCHD will obtain immunization history, including MMR/MMRV vaccination dates from the medical provider, the case or case's guardian (if interviewed), or vaccine registries.
- Individuals born in the United States before 1957 likely contracted measles during childhood and are presumed to be immune.

3. Determine if the case was exposed to measles.

- KCHD will ask if the patient traveled outside of Kansas City or outside of the United States recently, including specific areas in the United States where outbreaks may be occurring.
- KCHD will document the patient's activities during the 7-18 days prior to the rash onset, including travel or contacts from other states or countries.
- KCHD will ask the case if they had contact with other people who are ill.

4. If a suspected case is considered highly likely to be measles, KCHD will:

- Obtain appropriate laboratory results.

- Establish a timeline of the patient's activities and contacts during the infectious period (defined as four days before through four days after rash onset, with the day of rash onset counted as day 0) including but not limited to:
    - Household members (significant others, children, dependents, etc.).
    - Visits to public areas like stores, restaurants, and health care facilities.
    - Attendance at school or work.
    - Social/religious/family events or gatherings.
    - Travel history (domestic or international).
    - Modes of transportation (rideshare, public transportation, personal vehicle).
    - House visitors/guests (cleaners, dog walkers, food/grocery delivery services, etc.).
    - Hospital visitors.
- Exclusion:
    - Individuals suspected or confirmed to have measles should be excluded from work, school, or childcare and should voluntarily self-isolate at home for four days after rash onset (counted as day 0).
    - Only Individuals with confirmed immunity to measles should have contact with the case until at least four days after rash onset.

CONTACT INVESTIGATION

Once a confirmed or highly suspect case is identified, KCHD will initiate an investigation to determine who may have been exposed to the case. The main purpose of identifying contacts is to determine which contacts are susceptible to measles and to determine appropriate disease control recommendations. Identifying, notifying, and evaluating contacts may happen in a different order or simultaneously, depending on how information is received.

1. Identify contacts

- KCHD will identify all settings where potential measles exposures may have occurred.
- Initial contact investigation and disease control efforts will focus on individuals in settings involving prolonged, close contact with the case such as households, childcare facilities, schools, health care settings, travel, and congregate settings.
- KCHD will work with each setting to obtain a list of individuals who were in the same location as the case or entered those areas within two hours after the case's departure and may have been exposed to measles

2. Notification of contacts

- Consult with KCHD to determine the most appropriate methods for notifying individuals who may have been exposed.
- Notification methods can vary depending on the situation and urgency, and may include:
  - **Direct outreach:** Individuals who have prolonged, close contact with the case and require measles immunity assessment will be contacted by phone by KCHD or a health care provider.
  - **School or childcare notifications:** Letters or emails may be sent to parents/guardians and staff to inform them about the m znts with a vaccine exemption. Consult with the KCHD before sending a notification letter.
  - **Public alerts:** Social media posts and press releases will be used to inform the public and recommend vaccination when exposures occur in public places where specific individuals cannot be identified, (e.g., grocery stores and malls).
  - **Travel-related exposures:** If the case was infectious while traveling, KCHD will coordinate with the State Health Department and the Centers for Disease Control and Prevention (CDC) to conduct contact notifications.

3. Assess immunity of contacts

- Individuals are generally considered immune to measles and therefore not susceptible if they meet one of the following criteria.
  - Documented measles vaccination:

At least one dose of a measles-containing vaccine given on or after the first birthday for preschool-age children and adults not at high risk.	Two documented doses of measles-containing vaccine for school-age children, adolescents, and adults at high risk, including college students, healthcare personnel,and international travelers.

  - Laboratory evidence of immunity
  - Born before 1957.
- **Individuals who are severely immunocompromised** should always be considered high-risk contacts and susceptible to measles, regardless of their vaccination history.
- KCHD will work with each setting to obtain a list of individuals who were in the same location as the case or entered those areas within two hours after the case's departure and may have been exposed to measles

POST-EXPOSURE PROPHYLAXIS (PEP)

1. Post-exposure vaccination (MMR)

- The MMR vaccine is recommended for individuals exposed to measles who lack evidence of measles immunity and have no contraindications to vaccination.
- To be effective as PEP, the MMR vaccine must be given within 72 hours of the first exposure.
- If the MMR cannot be given within 72 hours window, it should still be offered to non-immune contacts to protect against future exposures, particularly in settings with ongoing transmission.
- Individuals who have previously received one dose of MMR may be eligible for a second dose as part of post-exposure management.

2. Immune globulin (IG)

- Immune globulin (IG) may be given within six days of measles exposure to help prevent or reduce the severity of infection.
- For most individuals, MMR vaccination is the preferred form of post-exposure prophylaxis over IG.
- IG may prolong the incubation period for measles. Therefore, KCHD will monitor contacts who received IG for 28 days following their last exposure to the case.

3. Exclusion

- Contacts of measles cases who do not meet the criteria for immunity may be excluded from work, school, or childcare.

4. Monitoring Contacts

- Symptom monitoring, either active or passive, may be recommended for individuals exposed to measles who are at low risk for developing and spreading disease.
- Active monitoring:
    - Public Health Disease Investigators conduct daily check-ins with the contact throughout the incubation period to assess for measles symptoms, particularly fever and respiratory symptoms.
- Passive monitoring:
    - Public Health Disease Investigators provide education on measles signs and symptoms and a phone number to call if symptoms develop.
    - If there are concerns that a contact may not self-report symptoms, active monitoring may be recommended instead.

- If a contact develops symptoms during the monitoring period, the Public Health Disease Investigators will advise them to:
    - Call their healthcare provider before seeking in-person care.
    - Wear a mask around others, especially when visiting a healthcare facility.

5. Quarantine

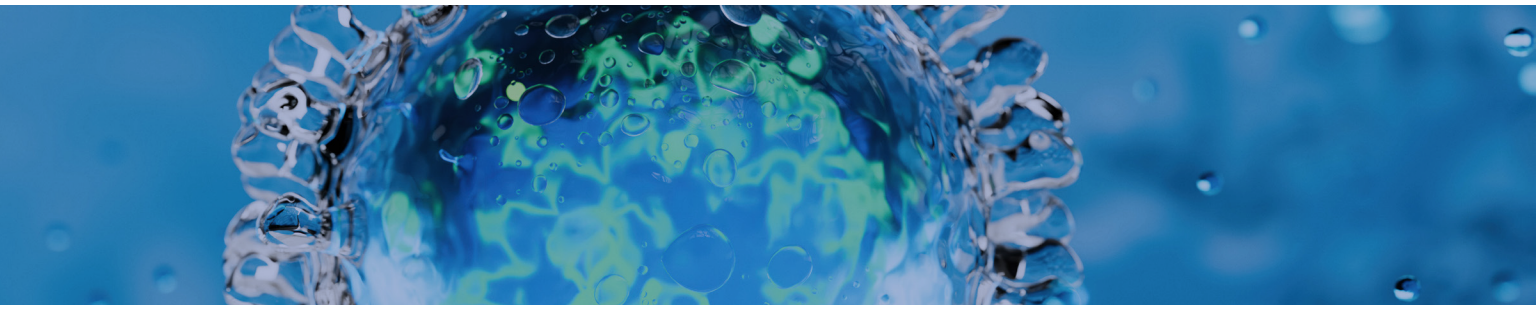
- Quarantine is a public health measure that requires an individual to remain at home and separated from others for a specific period, typically 7-21 days after exposure, to prevent the potential spread of measles.
- KCHD Communicable Disease Investigators can issue both an exclusion letter and readmit letter to be used for the quarantine period.
- During quarantine, individuals will receive regular follow up from the health department to monitor for the onset of measles symptoms

6. Isolation

- Isolation involves separating individuals who are sick from those who are well to prevent the spread of disease.
- Anyone who develops symptoms consistent with measles should remain isolated at home or in a healthcare facility, as determined by public health guidance.

7. Environmental measures

- If a person infected with measles is examined in an examination room, the examination room should remain closed for two hours after their visit.
- Following this period, the room should be cleaned using routine cleaning procedures by someone with documented measles immunity.



MANAGING SPECIAL SITUATIONS

OUTBREAKS

- A measles outbreak is defined as three or more related cases.
- During an outbreak:

- Individuals who cannot provide written documentation of measles immunity should either be vaccinated or excluded from the affected setting (school, hospital, childcare). Only vaccine doses with written records showing the date of administration are considered valid. Verbal reports of vaccination are not acceptable.
- KCHD recommends that individuals who have received only one dose of MMR receive a second dose as post-exposure prophylaxis.
- Individuals with medical or non-medical exemptions to measles vaccinations should be excluded from affected institutions until 21 days after last exposure to a measles case.
- In certain situations, such as outbreaks in schools with many unvaccinated individuals, it may be necessary to limit social gathering.

CASE INVESTIGATION IN A CHILDCARE OR SCHOOL FACILITY

- The Kansas City Health Department will determine dates during which the individual attended or worked at a childcare facility or school while infectious. The Communicable Disease Investigator will consider the following factors:
  - What classrooms were they in,
  - What other areas of the facility did they visit,
  - Was there any mingling with other grade levels or classrooms,
  - Extracurricular activities,
  - Before and after school care, and
  - If school transportation was used.
- Staff and/or public health personnel should review the measles vaccination records of all children and staff at the facility to determine who at the facility is susceptible to measles.
- These guidelines also apply to children's camp settings.

EXCLUSION

- Individuals with measles must be excluded from childcare or school and remain isolated at home for four days following the onset of rash (with rash onset counted as day 0).
- Contacts who receive IG Post-exposure Prophylaxis should be excluded from childcare settings with infants under 12 months of age for 28 days.

  Excluded students and staff are not to attend in-person school or childcare, or extracurricular activities such as clubs or sports, or camps.

MONITORING

- Exposed students and staff will be monitored for symptoms for 21 days (or 28 days if they received IG), regardless of immunization status. Students and staff should report development of symptoms to the health department immediately to quickly identify cases and prevent further spread.

QUARANTINE

- Quarantine may be recommended by the Kansas City Health Department for individuals who do not have evidence of immunity and did not receive PEP within the recommended time frame after exposure to measles.
- Quarantine is different from school exclusion as it requires avoiding all public places including places of work, stores, public transportation, and social gatherings, in addition to all school-related activities.
    - Quarantine may not always be required when exclusion is recommended.

STEPS TO TAKE IF THERE HAS BEEN A PERSON WITH MEASLES AT YOUR FACILITY

- Immediately isolate individuals with measles or suspected measles. Isolation should be at home and away from others until 4 days have passed since the rash began. The day of rash is day zero.
- Place a mask on the student suspicious of measles and call their parent/guardian for immediate pickup. Ensure the parent/guardian has documented immunity against measles.
- Advise parents/guardians of suspected measles cases to immediately reach out to their health care provider for testing. Advise them to notify the provider before arrival if measles is suspected and to wear a mask.
- Close off room to the rest of the student population for a minimum of 2 hours after the student left and perform disinfection.
- Immediately notify the health department.
- Review the attendance records for all students and staff during the time the person with measles may have been at school and track the following:
    - Student or staff first and last name
    - Parent/guardian first and last name
    - Address
    - Phone number
    - Date of birth
    - Classroom of student or staff
    - Bus information for student
    - MMR vaccination status and dates

- Implement the public health recommendations that the health department has determined may have been exposed to measles and could potentially spread measles to other people.

WHAT CAN SCHOOLS/CHILDCARE FACILITIES DO TO PREPARE FOR A CASE OF MEASLES?

- Know the signs and symptoms of measles.
- Encourage students and staff to stay home when sick.
- Promote respiratory hygiene and cough etiquette.
- Encourage frequent handwashing. If soap and water are not available, use hand sanitizer.
- Disinfect frequently touched surfaces such as doorknobs, tables, and counters.
- Check immunization records for all children, staff, members, and volunteers and ensure they are up to date with their MMR vaccine.
- Encourage staff to confirm they have received their MMR vaccine or have immunity to measles.
- Develop a plan and implement strategies to rapidly identify staff and students susceptible to measles.
- Communicate broadly with all parents and staff reminding them of immunization recommendations.

RESOURCES

CDC: Clinical Overview of Measles, https://www.cdc.gov/measles/hcp/clinical-overview/index.html

Missouri Department of Health and Senior Services: Preventing Spread in Schools and Child Care Centers, preventing-spread-in-schools-and-child-care.pdf

CDC: Measles Vaccinations, https://www.cdc.gov/measles/vaccines/index.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fvaccines%2Fvpd%2Fmmr%2Fpublic%2Findex.html

CDC: Cleaning and Disinfecting, https://www.cdc.gov/hygiene/about/how-to-clean-and-disinfect-early-care-and-education-settings.html

CDC: When Students or Staff are Sick, https://www.cdc.gov/orr/school-preparedness/infection-prevention/when-sick.html

Missouri Department of Health and Senior Services: Measles County Level Fact Sheets, Measles | Health & Senior Services