Date of last update: 3/1/25

PLAYBOOK

Measles (Rubeola)

Risk/Triage Scale – Level 2: Recommend increased awareness and planning

Texas DSHS Website: as of 2/26/25, 124 total cases since beginning of outbreak in January 2025; 1 death in unvaccinated school-aged child, 18 hospitalizations.

New Mexico DOH website: as of 2/25/25, 9 cases, all children

Background

Measles is a vaccine-preventable, highly contagious airborne disease that is easily spread, including in healthcare facilities, where exposures can be significant and highly impacting (California, 2024). Measles activity is currently expanding rapidly in the US (Measles Cases and Outbreaks | Measles (Rubeola) | CDC), and outbreaks have involved measles exposures within healthcare settings, leading to secondary cases and additional illness.

The best protection against measles is vaccination, which provides long-lasting protection.

Infection preventionists need to ensure their healthcare facilities have protocols that aid in identifying, isolating, managing, and reporting suspected and known measles cases, including policies for occupational exposures. Additionally, healthcare personnel (HCP) should be up to date with measles vaccine or be immune, per CDC criteria.

As of February 28, 2025 in the United States, 164 measles cases were reported by eight jurisdictions: Alaska, California, Georgia, New Jersey, New Mexico, New York City, Rhode Island, and Texas (CDC, 2025).

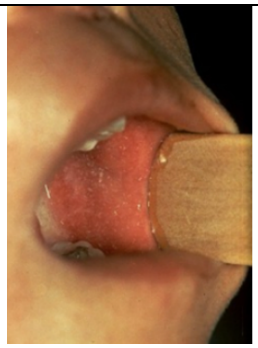
Prioritized Audiences

Hospitals (e.g., children, teaching, and community), outpatient settings, educational settings (e.g., daycare, schools), and congregate settings (e.g., detention facilities).

Guidance to Identify, Isolate, and Inform:

Identification

0) Screening Criteria (signs, symptoms) - CDC, July 15, 2024
   a. Fever (as high as 105°F)
   b. Malaise
   c. Cough
   d. Coryza (runny nose)
   e. Conjunctivitis
   f. Koplik spots (bluish/white spots on the inside of the mouth)
   g. Followed by a macular popular rash
      i. The rash appears about 14 days after exposure, starting from head to trunk and lower extremities.
      ii. Patients are contagious from 4 days before to 4 days after the rash appears.
      iii. Immunocompromised individuals may not develop rash.

Symptom	Image
Rash	 
Koplik Spots	
Conjunctivitis	

Examples of measles rash, Koplik spots, and conjunctivitis
(photos courtesy of Government of Canada Health and CDC)

1) Travel Considerations
    a. Current Measles data can be found:
        i. International / Foreign Travel
        ii. Domestic Travel (USA) Measles Cases and Outbreaks
2) Exposure Definition
    a. CDC, April 12, 2024
    b. Definition of exposure to measles for HCP in healthcare settings: HCP exposures to measles in a healthcare setting include spending any time while unprotected (i.e., not wearing recommended respiratory protection):
        i. In a shared air space with an infectious measles patient at the same time, or
        ii. In a shared air space vacated by an infectious measles patient within the prior 2 hours
            1. For spaces with a defined rate of air changes per hour (ACH), see the following for additional considerations about estimating the time for 99.9% removal efficiency of airborne contaminants: Table B1 "Air changes/hour (ACH) and time required for airborne-contaminant removal by efficiency" from the 2003 Guidelines for Environmental Infection Control in Health-Care Facilities (CDC, January 11, 2024).

3) Testing Information
    a. Healthcare providers should consider measles in patients presenting with febrile rash illness and clinically compatible measles symptoms, especially if the person recently traveled internationally or was exposed to a person with febrile rash illness. Healthcare providers are required to report suspected measles cases to their local health department (CDC, July 15, 2024).
    b. Laboratory confirmation is essential for all sporadic measles cases and all outbreaks. The detection of measles-specific IgM antibodies in serum and measles RNA by real-time polymerase chain reaction (RT-PCR) in a respiratory specimen is the most common method for confirming measles infection.
    c. Healthcare providers should obtain both a serum sample and a throat swab (or nasopharyngeal swab) from patients suspected to have measles at first contact with them. Urine samples may also contain viruses, and when feasible to do so, collecting both respiratory and urine samples can increase the likelihood of detecting measles virus (CDC, July 15, 2024).
    d. Molecular analysis can also be conducted to determine the genotype of the measles virus. Genotyping is used to map the transmission pathways of measles viruses. Genetic data can help to link or unlink cases and can suggest a source for imported cases. Genotyping is the only way to distinguish between wild-type measles virus infection and a rash caused by a recent measles vaccination (CDC, July 15, 2024).

4) Specimen Collection
    a. Follow standard specimen collection procedures for serum, throat swab, nasopharyngeal swab, and urine.

5) Differentiation from Similar Diseases
    a. Confirm not other viral rashes (exanthems) by using measles serology.

6) Bioterrorism Threat
    a. Measles is not considered a bioterrorism agent/disease (CDC, April 4, 2018).

7) Complications

a. People at high risk for complications include:
    i. Infants and children aged <5 years
    ii. Adults aged >20 years
    iii. Pregnant women
    iv. People with weakened immune systems, such as from leukemia and HIV infection
b. Common complications from measles include otitis media, bronchopneumonia, laryngotracheobronchitis, and diarrhea.
c. Even in previously healthy children, measles can cause serious illness requiring hospitalization.
    i. 1 out of every 1,000 measles cases will develop acute encephalitis, which often results in permanent brain damage.
    ii. 1 to 3 out of every 1,000 children who become infected with measles will die from respiratory and neurologic complications.
d. Subacute sclerosing panencephalitis (SSPE) is a rare, but fatal degenerative disease of the central nervous system characterized by:
    i. Behavioral and intellectual deterioration.
    ii. Seizures that generally develop 7 to 10 years after measles infection.
    iii. Antimicrobial Resistance
e. None

Prevent Transmission

1) Precautions to Prevent Transmission

a. Transmission-based precautions: adhere to airborne and standard precautions (CDC, April 12, 2024).
    i. Patients with measles should remain under Airborne Precautions for 4 days after the onset of the rash (with the onset of the rash considered to be Day 0).
    ii. Immunocompromised patients with measles should remain in Airborne Precautions for the duration of illness due to prolonged virus shedding in these individuals.
b. HCP Vaccination: Ensure that all HCPs have presumptive evidence of immunity to measles (CDC April 12, 2024):
    i. Presumptive evidence of immunity to measles for HCP includes:
        1. Written documentation of vaccination with 2 doses of measles virus-containing vaccine (the first dose administered at age ≥12 months; the second dose no earlier than 28 days after the first dose); OR
        2. Laboratory evidence of immunity (measles immunoglobulin G [IgG] in serum; equivocal results are considered negative); OR
        3. Laboratory confirmation of disease; OR
        4. Birth before 1957.
    ii. Consider vaccinating HCPs born before 1957 who do not have other evidence of immunity to measles.
    iii. During a measles outbreak in a healthcare facility, 2 doses of measles virus-containing vaccine are recommended for all HCPs, regardless of year of birth.
c. Minimize Potential Measles Exposures
    i. Before arriving to a healthcare setting

1. When scheduling appointments by phone:
    a. For persons with signs or symptoms of measles, provide instructions for arrival, including which entrance to use and the precautions to take (e.g., how to notify hospital staff, don a facemask upon entry, and follow triage procedures).
    b. Instruct Emergency Services to notify the receiving facility/accepting physician in advance when transporting a patient with known or suspected measles (CDC, April 12, 2024).

ii. Upon arrival to a healthcare setting
1. Utilize existing triage stations for rapid identification and isolation of patients with measles.
2. Persons with signs or symptoms of measles should be identified, provided with a face mask (either a procedure or surgical mask) to wear, and separated from other patients prior to or as soon as possible after entry into a facility (CDC, April 12, 2024).

d. Facilitate adherence to respiratory hygiene, cough etiquette, hand hygiene, and triage procedures.
i. Post visual alerts (e.g., signs, posters) in appropriate languages about respiratory hygiene, cough etiquette, and hand hygiene at the facility entrance and in common areas (e.g., waiting areas, elevators, cafeterias).
ii. Provide people with signs or symptoms of measles with instructions on all relevant infection control expectations.
iii. Make supplies to perform hand hygiene available to all persons in the facility.
iv. Provide supplies (e.g., facemasks) near the visual alerts if possible (CDC, April 12, 2024).

2) Personal Protective Equipment (PPE)
a. Assure use of OSHA-approved N-95 respirator or PAPR
b. HCPs without acceptable presumptive evidence of measles immunity should not enter a known or suspected measles patient's room if HCPs with presumptive evidence of immunity are available.
c. All healthcare staff should use respiratory protection consistent with airborne precautions such as N95 respirator or a respirator with similar effectiveness, regardless of immunity status.
d. Respiratory Protection:
i. HCP should use respiratory protection (i.e., a respirator) that is at least as protective as a fit-tested, NIOSH-certified disposable N95 filtering facepiece respirator, regardless of presumptive evidence of immunity, upon entry to the room or care area of a patient with known or suspected measles.
ii. Respirator use must be in the context of a complete respiratory protection program in accordance with Occupational Safety and Health Administration (OSHA) Respiratory Protection Standard 29 CFR 1910.134.
iii. HCP should be medically cleared and fit-tested if using respirators with tight-fitting facepieces (e.g., a NIOSH-certified disposable N95) and trained in the proper use of respirators, safe removal and disposal, and medical contraindications to respirator use (CDC, April 12, 2024).

3) Disinfection and Waste Considerations
a. Use an EPA-registered disinfectant for healthcare settings, per the manufacturer's instructions.

4) Patient Transport

a. Limit transport of patients with known or suspected measles to essential purposes, such as diagnostic and therapeutic procedures that cannot be performed in the patient's room or in the facility.
b. When transport within the facility is necessary, ensure:
    i. The patient should wear a facemask if tolerated.
    ii. Use a transportation route and process that includes minimal contact with persons not essential for the patient's care.
    iii. Notify the HCP in the receiving area of the impending arrival of the patient and of the precautions necessary to prevent transmission.
    iv. When transport outside the facility is necessary, inform the receiving facility and the transport vehicle HCP in advance about airborne precautions being used (CDC, April 12, 2024).

5) Air Handling

a. Immediately place patients with known or suspected measles in an airborne infection isolation room (AIIR).
b. The patient's facemask may be removed as long as they remain in the AIIR.
c. If an AIIR is not available, transfer the patient as soon as possible to a facility where an AIIR is available.
    i. Pending transfer, place the masked patient in a private room with the door closed. If feasible, the patient should continue to wear the mask for the duration of time spent in the non-AIIR room.
        1. Preferably, the patient should be placed in a room where the exhaust is recirculated with high-efficiency particulate air (HEPA) filtration.
        2. Measles has been reported to survive in the air for up to 2 hours. After the patient leaves the room, it should remain vacant for the appropriate time (up to 2 hours) to allow for 99.9% of airborne-contaminant removal. Table B1 "Air changes/hour (ACH) and time required for airborne-contaminant removal by efficiency" from the 2003 Guidelines for Environmental Infection Control in Health-Care Facilities (CDC, January 11, 2024).
d. An AIIR should meet current standards, including:
    i. Partner with facility management to ensure AIIR functionality.
    ii. Functionality includes:
        1. Providing at least six (existing facility) or 12 (new construction/renovation) air changes per hour.
        2. Directing exhaust of air to the outside.
        3. If an AIIR does not directly exhaust to the outside, the air may be returned to the air-handling system or adjacent spaces if all air is directed through HEPA filters.
e. When an AIIR is in use for a patient on Airborne Precautions, monitor air pressure daily with visual indicators (e.g., smoke tubes, flutter strips), regardless of the presence of differential pressure sensing devices (e.g., manometers).
f. Keep the AIIR door closed when not required for entry and exit (CDC, April 12, 2024).

6) Exposure Monitoring

a. For occupational exposure, see the section below.
b. For patient exposure, partner with the local health department for next steps.

7) Census Tracking

a. Trend census with measles cases to provide awareness and determine additional support and resources.

Providing Patient Care

1) High-Risk Procedures

a. Performing aerosol generating procedures on an infected patient (e.g. intubation, airway suctioning) (OSHA, n.d.)
b. Any procedure where the airway is directly accessed is a high-risk procedure due to measles being transmitted by contact with infectious droplets or airborne spread (CDC, July 15, 2024).
c. Perform diagnostic and therapeutic procedures when possible, in the patient's AIIR. (CDC, April 2024)

2) Facility Operations

a. Linen:
    i. Managed by using Standard Precautions, per facility policy. (CDC, January 2024)
b. Dietary:
    i. Managed by using Standard Precautions, per facility policy. Dietary staff entering the airborne infection isolation room must use the appropriate respiratory protection such as the N95 respirator
    ii. Meal trays and dishes do not require special handling. Disposable dishes and utensils are not required. (Alberta Health Services, May 2024).
    iii. Environmental surfaces may be contaminated with infectious respiratory secretions that can spread the virus for up to two hours (OSHA, n.d.)
c. Oxygen:
    i. Place a mask over the oxygen delivery device if the patient needs to leave the airborne infection isolation room.
    ii. Notify the respiratory therapy department for transport assistance.
    iii. Notify the receiving department well in advance of the transport.
    iv. Make the transport as fast as possible.
    v. Clear the elevator of all individuals, prior to access
    vi. Assure the transporters are wearing the appropriate PPE, depending upon if the patient's airway cannot be covered, or if additional patient handling is required during the transport.
    vii. Minimize patient contact with others e.g., patients, visitors, etc., during transport.
    viii. If intubated, use a closed system circuit for transport.

3) Visitation Management

i. If measles is in the community, consider screening visitors for signs and symptoms before entering the facility (CDC, April 2024).
ii. Visitors without acceptable presumptive immunity evidence should not enter the patient's room April 2024).
iii. Limit visitors to those that are necessary for the patient's well-being (CDC, April 2024).
iv. Consider offering visitors the same type of respiratory protection that is being worn by healthcare workers. Note that fit testing, per OSHA, is required for healthcare personnel/employees only. (OSHA, February 5, 2004), (OSHA, September 2019).

4) Infection Prevention Staffing Considerations

a. Assure infection prevention resources/consultations are readily available.

5) Post-Mortem
    a. No measles-specific guidance is available.
    b. Body bags should be used on all deceased infectious patients especially if there is a possibility of leakage of body fluids. (Northwest Territories, September 2008)
    c. PPE use and post-mortem care per facility policy.
    d. Minimize handling
    e. Environmental cleaning and disinfection with an effective EPA-registered disinfectant.
    f. OSHA's "Postmortem Care Workers and Employers" COVID-19 guidance with postmortem care tasks associated with exposure risk levels e.g., need for respiratory protection, risk assessment, etc., may be applied to measles (OSHA, No Date).

Patient Discharge

6) Communication Considerations
    a. Coordination with local health department considerations:
        i. Ensure the public health department has been notified of a suspected or confirmed measles case.
        ii. Notify public health authorities about patients who have been measles exposed and are being, or may have been, discharged April 2024)
    b. Hand-off communication to receiving facilities:
        i. Ensure nursing notifies the receiving facility, through both a verbal and written report, of the possible or confirmed diagnosis and the type of precautions being taken.
        ii. Notify the transporting team e.g., ambulance, during discharge planning.
        iii. Consider personally contacting the infection preventionist at the receiving facility.

7) Patient Discharge Information
    a. Notify the local health department of the pending discharge.
    b. Patient-focused instructions to prevent transmission (Arizona Department of Health Services, May 2016), (Los Angeles County Department of Public Health, February 1, 2024)
        i. If the patient remains communicable at the time of discharge, instruct the patient to wear a surgical mask until arriving home.
        ii. Stay home and avoid school, work, social activities, large public gatherings, etc., until additional instructions are received from the health department.
        iii. Avoid pregnant people, people with weakened immune systems, and infants less than 1 year old.
        iv. Prior to discharge, ensure household members are fully immunized against measles.
        v. Only have contact with people who are fully immunized against measles.
    c. Additional patient-focused instructions
        i. Per facility discharge instructions.

Occupational Health

1) Occupational Exposure Definition (CDC, April 12, 2024):
    a. HCP exposures to measles in a healthcare setting include spending any time while unprotected (i.e., not wearing recommended respiratory protection):
        i. In a shared air space with an infectious measles patient at the same time, or
        ii. In a shared air space vacated by an infectious measles patient within the prior 2 hours
            1. For spaces with a defined rate of air changes per hour (ACH), see the following for additional considerations about estimating the time for 99.9% removal efficiency of

airborne contaminants: Table B1 "Air changes/hour (ACH) and time required for airborne-contaminant removal by efficiency" from the 2003 Guidelines for Environmental Infection Control in Health-Care Facilities (CDC, January 11, 2024).)

2) Pre and Post Exposure Information
   a. Presumptive evidence of measles immunity: (CDC, September 2024)
      i. Two documented doses of measles/MMR vaccine, or
      ii. Serological evidence of immunity, or
      iii. Laboratory confirmation of disease
      iv. History of disease is no longer considered adequate presumptive evidence of measles. (Minnesota Department of Health, August 2023).
      v. If HCPs have one documented MMR dose, they should receive the 2nd dose at least 28 days after the first.
   b. Although birth before 1957 is considered acceptable evidence of measles immunity, 2 doses of MMR vaccine should be considered for unvaccinated HCP born before 1957 who do not have laboratory evidence of disease or immunity to measles (Immunize.org, January 2025).
      i. For these same HCP who do not have evidence of immunity, 2 doses of MMR vaccine are recommended during an outbreak of measles (Immunize.org, January 2025).
   c. Offer measles or MMR vaccine, unless medically contraindicated, within 72 hours following exposure, for post-exposure prophylaxis for exposed non-immune HCP (Minnesota Department of Health, August 1, 2023).
   d. Offer immune globulin to prevent or modify measles diseases in susceptible persons when given within 6 days following exposure (Minnesota Department of Health, August 1, 2023).

3) Employee Furlough
   a. Minnesota Department of Health, August 1, 2023.
      i. Susceptible HCP should be excluded from work beginning 5 days through the 21st day following exposure.
      ii. Exclusion is recommended regardless of whether a post-exposure vaccine or immune globulin is administered.

4) Return to Work Guidance
   a. Minnesota Department of Health, August 1, 2023.
      i. Susceptible HCP should be excluded from work beginning 5 days through the 21st day following exposure.
      ii. HCPs who develop measles symptoms after exposure should be excluded from work until 4 days after rash onset or measles have been ruled out.
      iii. The employee may need to be cleared by occupational/employee health prior to returning to work, per facility policy.

5) Contact Tracing
   a. Perform contact tracing beginning with identifying the individuals who transported the patient to the hospital.
   b. Additionally, all HCPs who meet the exposure definition must be identified.
   c. Identify any possible roommates and individuals in waiting areas.
   d. Partner with public health to identify potentially exposed communities and healthcare contacts.

e. A measles contact tracing form may assist in tracking efforts (Measles, Appendix B, Washington State Department of Health, January 2025).

6) High-Risk Employees
   a. Ideally, at the time of hire, healthcare personnel (HCP) should be up to date with recommended vaccines, including MMR (Minnesota Department of Health, November 7, 2022).
   b. Pregnant or immunocompromised individuals cannot receive the MMR vaccine.
      i. MMR vaccine is safe for breastfeeding women to receive (CDC, January 26, 2021).
      ii. Immunocompromised HCP may need to be reassigned; discuss with occupational/employee health and human resources.
   c. Supply chain:
      i. Ensure an adequate supply of N95 respirators, including an alternative N95 respirator for those who fail fit testing with the primary vendor.
      ii. Ensure an adequate supply of fit-testing ingredients.
      iii. Determine N95 respirator alternatives, such as the PAPR (Powered Air Purifying Respirator) for HCPs who fail fit testing but must still enter the airborne infection isolation room.
         1. Developing a cleaning/disinfection and storage protocol.
   d. Staffing re-assignment as a contingency:
      1. Staff with documented immunity should be identified to care for the patient and wear the required respiratory protection (April 2024)
      2. HCPs who lack measles immunity are considered susceptible and may require reassignment. (Minnesota Department of Health, August 1, 2023).

Outreach Considerations for Healthcare Stakeholders

1) Messaging for Senior Leadership
   a. Resources required
      i. Consider how to escalate resource requests to senior leaders/supervisor
   b. Impact to business continuity
      i. Anticipate how measles may impact daily operations and communicate to senior leadership/supervisor

2) Marketing and Communications
   a. Consider engaging the public health department prior to all communications and interviews
   b. Media management planning
      i. Ensure the public information officer (PIO) is updated regularly. If no PIO has been identified, assign a PIO. This person is typically responsible for representing the facility during interviews and media information requests.
   c. Communication for hospital staff and physicians
      i. Consider how staff and physicians prefer communication
      ii. Create a dated template so the team becomes familiar with the updated format
      iii. Consider how often staff and physicians want to be updated
      iv. Consider updates for patients, especially as guidance is updated

3) Public Health
   a. Consider adding the local and state health department phone numbers to work and personal phones.
   b. Case reporting requirements

i. Connect with local public health to understand what elements are required within reports, and how often information should be reported

c. Case Testing
   i. Connect with local public health to understand testing criteria, and if permission must be granted for testing. If permission is not required, public health may require notification for testing.

d. Patient transfer
   i. Connect with local public health to understand what reporting is needed prior to patient transfer or discharge.

e. Exposure communication
   i. Connect with local public health to understand reporting requirements for healthcare worker, patient, or visitor exposure

4) Pharmacy

a. Prophylaxis procurement
   i. Connect with pharmacy to understand prophylaxis options
   ii. If local public health distributes prophylaxis, understand the criteria required for prophylaxis release

b. Vaccine procurement
   i. Connect with pharmacy to understand vaccine options
   ii. If local public health distributes vaccines, understand the criteria required for vaccine release

c. Treatment requirements
   i. Connect with pharmacy to understand treatment options
   ii. If local public health distributes treatment, understand the criteria required for treatment release

5) Partnering Laboratories

a. Testing methodologies
   i. Connect with the laboratory to understand available testing methodologies, and what supplies are required.
   ii. See "Public Health" above if local public health is involved in testing

b. Testing procedure
   i. Connect with the laboratory to understand the testing procedure
   ii. Include testing procedures in communication to clinical teams
   iii. See "Public Health" above if local public health is involved in testing

c. Specimen shipment
   i. Ensure the laboratory is aware of shipping requirements and has the supplies on hand for shipping requirements.

d. Turnaround time for results
   i. Connect with the laboratory to understand testing turnaround times

e. Results reporting
   i. Connect with the laboratory to understand the reporting workflow
   ii. Plan with whom and how the laboratory will communicate the results. If testing is sent out, ensure a point of contact is named.

6) Supply Chain

a. PPE days on hand reporting
   i. Connect with supply chain to identify key PPE to monitor regularly
   ii. Include senior leadership in communication

iii. Identify reporting cadence

b. Contingency planning for PPE
    i. Identify thresholds to begin conservation and contingency plans
    ii. Provide PPE requirements so supply chain can identify backup, alternate supplies in the case of a shortage
c. Specific supply planning
    i. Plan for specimen collection supplies, test, and reagent supplies
    ii. Plan for cleaning supplies and disinfectants
d. Patient care supply identification
    i. Example: Ventilators
    ii. Treatment or supportive care supplies

Additional Resources

1. CDC, Measles Clinical Diagnosis Fact Sheet
2. Government of Canada. Measles: For health professionals, July 5, 2024