



New York State  
Department of Health  
**Bureau of Emergency Medical Services**

**POLICY STATEMENT**  
*Supersedes/Updates: New*

No. 19 - 03  
Date: July 19, 2019

**Re: EMS Measles  
Response Guidance**

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This document is designed to provide guidance to Emergency Medical Services (EMS) providers, agencies and systems responding to a patient with suspected measles. This guidance should be considered for the development of measles response plans and is not intended to supersede any infectious disease response plan that has been developed and approved by local, State or Federal authorities legally charged to do so. This guidance does not constitute a response protocol but serves as a reference for general considerations and the protection of responders.

EMS agencies are encouraged to adopt policies and procedures regarding response and treatment of all patients with communicable diseases. EMS agencies should assure that all personnel are provided with factual information regarding the measles virus and any necessary personal protective equipment (PPE), such as N95 respirators, including guidelines for the use of such PPE.

### **Measles Epidemiology**

Measles can be severe and is highly contagious; following exposure, up to 90% of susceptible persons develop measles. The virus is transmitted by direct contact with infectious droplets or by airborne spread when an infected person breathes, coughs, or sneezes.

Measles virus can remain infectious in the air for up to 2 hours after an infected person leaves the ambulance, room, or area. The time from exposure to the onset of a rash averages 14 days with a range of 7 to 21 days. Persons with measles are infectious from 4 days before the onset of rash to 4 days after rash onset.

### **Clinical Features**

Symptoms of measles include a prodrome of:

- Fever (up to 101-105 degrees F)
- Runny nose (coryza)
- Cough
- Red, watery eyes (conjunctivitis)
- Koplik Spots (blue-white spots on the bright red background of the buccal mucosa may be present, often before the rash develops, but are often not seen and are not required for the diagnosis of measles)

A red, blotchy rash presents 3-7 days after the prodrome begins and lasts 4-7 days. It usually starts on the face and proceeds down the body to involve the extremities last and may include the palms and soles. The rash is usually discrete but may become confluent on the upper body; it resolves in the same order that it appeared.

Anyone with measles can have serious complications but those under 5 years old and those older than 20 are at greatest risk, along with pregnant women and any immunocompromised individuals. Complications may include: ear infections; diarrhea; pneumonia; encephalitis; pre-term labor; deafness; or death.

### **EMS personnel**

EMS providers are at increased risk of exposure to measles and there is increased risk for transmission from EMS personnel to high risk individuals. It is recommended that all agencies have documented evidence of immunity against measles on file for all First responders, including EMS personnel, to protect personnel and prevent any potential spread to other susceptible patients.

Presumptive evidence of measles immunity for healthcare providers includes any of the following:

- Written documentation of vaccination with 2 doses of live measles or MMR vaccine administered at least 28 days apart<sup>1</sup>
- Laboratory evidence of immunity
- Laboratory confirmation of disease, or
- Birth before 1957<sup>2</sup>

For healthcare personnel who have had two documented doses of MMR vaccine, serologic testing for immunity is not recommended. In the event that a HCP who has two documented doses of MMR vaccine is tested serologically and determined to have negative or equivocal measles titer results, it is not recommended that the person receive an additional dose of MMR vaccine. Such persons should be considered to have presumptive evidence of measles immunity. Documented age-appropriate vaccination supersedes the results of subsequent serologic testing.

### **Assessment & Screening**

EMS providers should suspect measles in clinically compatible cases, especially those individuals who reside in or have spent time in the geographic areas experiencing measles outbreaks, have recently traveled internationally, or who were exposed to a person with febrile

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<sup>1</sup>The first dose of measles-containing vaccine should be administered on or after the first birthday; a second dose should be administered no earlier than 28 days after the first dose.

<sup>2</sup> For healthcare personnel born before 1957 who lack other evidence of immunity, consider administering two doses of MMR outside of the outbreak areas. Whereas, for healthcare personnel born before 1957 who are in outbreak areas or caring for persons from outbreak areas, recommend two documented doses of MMR. Alternatively, assess serologic testing for evidence of immunity.

rash illness. This is particularly important in those who report that they are not fully vaccinated. It is important to remember that individuals who were exposed and not immune to measles could develop signs and symptoms of measles 7-21 days after the initial exposure. To identify areas where measles outbreaks may be occurring, please visit the local health department webpage where the patient resides or regularly spends time.

- Only those with known immunity should approach patients who are suspected to have measles.
- Evaluate relevant information from dispatch for clinical indicators consistent with measles.
- Consider restricting entry of unnecessary EMS personnel to the scene and ambulance if no life-threatening symptoms are present in order to decrease first responder exposure.
- Conduct a “doorway evaluation” if possible. If stable and verbal, minimize contact with the patient until appropriate PPE is donned.
- The level of PPE required should be based on the patient’s history, along with any signs and symptoms. Change to standard precautions if there is no suspicion of measles.
- Perform hand hygiene before and after all patient care activities.

## **Infection Control**

To expedite public health containment strategies, EMS providers should implement appropriate infection control measures, including airborne precautions when measles is suspected.

Providers should remain vigilant for persons presenting with febrile rash illness particularly among people who reside in or have spent time in geographic areas experiencing measles outbreaks, have recently traveled internationally, or who were exposed to a person with febrile rash illness.

- Measles is spread via airborne transmission and direct contact with infectious droplets.
- EMS providers should institute standard and airborne precautions using an N95 respirator.<sup>3</sup>
- Patients presenting with febrile rash illness should immediately be placed in a surgical mask and, when transporting a patient through the hospital or other common areas, the patient should remain masked. Transport through the hospital should be minimized.
- The receiving facility must be notified prior to arrival so that appropriate infection control precautions can be implemented, as the preferred placement for patients who require airborne precautions is in a single-patient airborne infection isolation room (AIIR).

## **Personal Protective Equipment**

PPE carried by EMS agencies shall be utilized to provide protection from a suspected measles patient. In addition to these considerations, EMS providers are required to follow their local infectious disease emergency response plan. The following PPE is recommended for use by EMS when treating a patient with suspected measles infection:

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<sup>3</sup> Regardless of presumptive immunity status, all healthcare staff 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). Because of the possibility, albeit low, of MMR vaccine failure in healthcare providers exposed to infected patients, they should all observe airborne precautions in caring for patients with measles.

- Standard Precautions and
- Disposable NIOSH-approved, fit-tested N95 respirator.
  - EMS agencies may use powered air purifying respirators (PAPRs) with full hood and high efficiency particulate air (HEPA) filter for airborne precautions for employees that cannot safely fit test on N95 respirators due to facial hair, facial structure, etc.
- Provide a surgical mask (N95 is not recommended) for all patients with febrile rash illness.
  - Patients who are intubated should be ventilated with a bag-valve device or ventilator equipped with a HEPA filter on exhalation port
- Provide tissues to patients for secretion control and encourage patient hand hygiene and cough etiquette practices.

### **Transport Considerations**

- Standard transportation to appropriate hospital receiving facility.
- It is recommended to have the patient compartment exhaust vent on high and to isolate the driver compartment from the patient compartment. It is also recommended to have the driver compartment ventilation fan set to high without recirculation.
- If driver/pilot compartment is not isolated from the patient compartment, the vehicle operator should don a NIOSH-approved, fit-tested N95 respirator.
- The receiving facility must be notified prior to arrival so that appropriate infection control precautions can be implemented.
- When providing notification, please indicate if any family or supports are accompanying the patient, as they too may need to be isolated. EMS agencies should have a plan for family members wishing to accompany the patient that prevents crew exposures.
- Complete the Measles Contact Form for any suspected measles-related ambulance transport and fax to NYS DOH EMS.

EMS personnel must notify the receiving hospital before arrival if they are transporting a patient with fever and a rash, to their facility.

Agency officers should speak with hospital personnel in advance to discuss what procedures are in place for accepting such patients. Hospitals may request EMS personnel deliver such patient(s) through a separate secure entrance.

A hospital may not refuse patients with suspected measles infection unless a municipal response plan designed to do so has been activated.

### **Decontamination Considerations**

- Any visibly soiled surface must first be decontaminated using an Environmental Protection Agency (EPA)-registered hospital disinfectant according to directions on the label.
- Disinfect all potentially contaminated/high touch surfaces including the stretcher with an EPA-registered hospital disinfectant according to directions on the label.
- Medical equipment (stethoscope, blood pressure (BP) cuff, etc.) making patient contact should be disposable or cleaned and disinfected before use on another patient.

- Consideration should be given, when feasible, to place the transporting vehicle out of service for that period to protect EMS personnel and subsequent patients.
- Measles has been reported to survive in the air for up to two hours, therefore, the ambulance used to transport a patient with suspected measles infection should not be used for a period of two (2) hours after the patient exits the vehicle. Additional factors may be considered in the development of decontamination policies and procedures to reduce vehicle downtime. EMS agencies are encouraged to consult with the ambulance manufacturer to determine the vehicle's passenger compartment airchanges per hour (ACH) for 99.9% removal of airborne contaminants to establish a safe time period for reintroduction of the vehicle less than the 2 hour recommendation.<sup>4</sup>

If an EMS agency is using less than 2 hour recommendation after speaking with the ambulance manufacturer, documentation from the ambulance manufacturer and the agency policy and procedure should be maintained on file.

### **Post Exposure Follow-up**

Confirm EMS personnel immunity status and, if unsure, consult with designated Infection Control Officer, Medical Director, and/or personal health care provider for guidance. If potentially exposed, notify the appropriate agency contact per your agency policies and procedures. Even those with evidence of immunity should watch for signs/symptoms of measles for 21 days following an exposure and should report immediately if they become ill.

EMS personnel exposed to measles without presumptive evidence of immunity should receive the MMR vaccine within 72 hours, or immunoglobulin (IG) should be administered within 6 days. Exclude from duty all EMS personnel without evidence of immunity to measles, from Day 5, even if PEP of MMR vaccine or IG was given. Such personnel must be excluded for 21 days, if MMR is received, or for 28 days if IG is received.

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<sup>4</sup> 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

<https://www.cdc.gov/infectioncontrol/guidelines/environmental/appendix/air.html#tableb1>

## References

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