

Provider Job Aid: Measles

Measles is a highly contagious viral illness. Up to 90% of susceptible people exposed to measles will become infected. Prompt isolation and testing is essential to mitigate transmission and confirm diagnosis.

When to suspect measles in an individual with rash and fever?

Ask patients about a history of international travel, contact with foreign visitors, transit through an international airport, or possible exposure to a measles patient in the 3 weeks prior to symptom onset. Check the [CDC measles outbreak website](#) and [CDPH measles HAN page](#) for up to date information on local and domestic exposure locations. If the patient has a history consistent with exposure or a clinical presentation highly suggestive of measles (with or without exposure history), then consider testing for measles. Clinical consultation with CDPH recommended.

What immediate steps should be taken?

1. Mask suspect measles patients and any accompanying family members immediately. If a surgical mask cannot be tolerated, other practical means of containment should be implemented (e.g., place a blanket loosely over the heads of infants and young children suspected to have measles when they are in the waiting room or other common areas).
2. Do not allow suspect measles patients to remain in the waiting area or other common areas; isolate them immediately in a negative pressure room if one is available. If such a room is not available, place patient in a private room with the door closed. See CDC [Interim Infection Prevention and Control Recommendations for Measles in Healthcare Settings](https://www.cdc.gov/infection-control/hcp/measles/index.html) (https://www.cdc.gov/infection-control/hcp/measles/index.html)
3. If possible, allow only healthcare personnel with documentation of 2 doses of live measles vaccine or laboratory evidence of immunity (measles IgG positive) to enter the patient's room. Personnel should also wear a fit-tested N95 respirator or a powered air purifying respirator (PAPR). See CDC [Recommended Vaccines for Healthcare Workers](https://www.cdc.gov/vaccines/adults/rec-vac/hcw.html) (https://www.cdc.gov/vaccines/adults/rec-vac/hcw.html)
4. If possible, do not allow susceptible visitors in the patient room.
5. Do not use the examination room for at least two hours after the possibly infectious patient leaves.
6. If possible, schedule suspect measles patients at the end of the day.
- 7. Notify CDPH immediately of any suspect measles patients; CDPH will help arrange for measles testing at a public health laboratory (see pages 2-3). Measles PCR should only be performed at the IDPH Laboratory.**
8. If the patient is being referred for additional clinical evaluation or laboratory testing, notify the staff about the patient's suspect measles status and do not refer suspect measles patients to other locations unless appropriate infection control measures can be implemented at those locations.
9. Instruct suspect measles patients and exposed persons to inform all healthcare providers of the possibility of measles prior to entering a healthcare facility so that appropriate infection control precautions can be implemented.
10. Make note of the staff and patients who were in the area during the time the suspect measles patient was in the facility and for two hours after they left. If measles is confirmed, contact tracing will need to be initiated.

Communicable Disease Reporting Line: 312-743-9000

Measles Testing Recommendations

Contact the health department immediately to facilitate testing:

Monday-Friday during normal working hours call: 312-743-9000

After hours, weekends, and holidays, call 311 and ask for the communicable disease physician on-call.

Measles Serology (*via commercial reference laboratory*)

1. Detection of specific **IgM** antibodies in a serum sample collected within the first few days of rash onset can provide presumptive evidence of a current or recent measles virus infection. However, because no assay is 100% specific, serologic testing of non-measles cases using any assay will occasionally produce false positive IgM results.
2. Draw 1-2 ml blood in a red top tube; spin down serum if possible. NOTE: 50-100 µl of capillary blood (approximately 3 capillary tubes) may be collected in situations where venipuncture is not preferred, such as for young children.
3. Draw blood for **IgM** antibody testing as soon as possible. Occasionally, false-negative measles IgM results occur when blood specimens are collected within 72 hours after rash onset. A second blood sample, collected 72 hours after rash onset, should be tested in this situation. A positive serologic test result for measles IgM antibody indicates recent infection or recent vaccination.
4. Obtain acute and convalescent serum specimens for measles specific **IgG** antibody to confirm a measles diagnosis. Acute and convalescent specimens should be tested as paired sera. Draw blood for acute IgG as early as possible when measles infection is suspected. For convenience, the blood drawn for measles IgM antibody testing may be used for the acute IgG. Draw blood for convalescent IgG approximately 2 weeks after blood was drawn for the acute IgG.

Measles RT-PCR (*Preferred Method at IDPH Laboratory*)

Measles RT-PCR can be performed at the IDPH Chicago laboratory on respiratory specimens *only*. The RT-PCR methodology has been validated by CDC and should be used in conjunction with serology testing. The preferred specimens for measles RT-PCR testing are nasopharyngeal (NP) and oropharyngeal (OP) / throat swabs. Attempt to obtain a specimen as soon as possible after the onset of the rash. Samples collected more than five days after rash onset have much lower chances of successful viral detection.

Instructions for Throat and Nasopharyngeal Swab Collection

The Chicago Department of Public Health does not provide specimen collection materials. It is the responsibility of the facility to acquire these materials and have the ability to store and transport specimens at proper temperature.

1. Do not use expired media or swabs. Store Viral Transport Media (VTM) or Universal Transport Media (UTM) in the refrigerator until use. Use Dacron- or Nylon-tipped swabs for collecting samples. Flocked swabs are preferred. Examples of acceptable swabs include FLOQSwabs™ (Copan) and BD flocked swabs. **Do not use cotton-tipped, wooden-shafted or calcium alginate swabs, as these contain PCR inhibitors. Samples collected using unapproved materials will be rejected from testing.**
2. Obtain specimens early in the acute phase of illness, preferably within three days of onset of symptoms.
3. **Collecting Nasopharyngeal Swab:** Aseptically remove sterile swab from package and collect the nasopharyngeal swabs by gently inserting swab through each nostril deeply into the nasopharynx (aiming towards the ear).
4. **Collecting Oropharyngeal Swab:** Aseptically remove sterile swab from package and collect epithelial cells by vigorously swabbing the posterior pharynx and tonsil regions of the throat. If collecting both a throat and a nasopharyngeal swab, both swabs should be combined in the same vial of viral transport medium.
5. Insert the swab into the transport medium and break the shaft of the swab at the scored line. Securely close the container.

6. Ensure that the patient's name, date-of-birth, and time/date of collection are recorded on the specimen tube along with the name or initials of the individual collecting the sample.
7. Complete all the demographic information on the Communicable Disease Laboratory Test Requisition form available at <http://dph.illinois.gov/topics-services/lab-testing-services/clinical-testing>. **The authorization number provided by CDPH MUST be included on the requisition form.**
8. Refrigerate the specimen between 2-8°C and ship the specimen(s) on cold packs. If the specimen was stored at ≤ -70°C, the specimen must be shipped on dry ice. Avoid freeze-thawing the specimen.
9. The specimen(s) must be received at the laboratory no later than 8 days from the date of collection. Do not ship specimens over weekends or holidays as they will not be received and cold-packs will not maintain the required 2-8°C specimen temperature.

To obtain an authorization number call 312-743-9000

Instructions for Transport

The Chicago Department of Public Health may be able to offer courier services for specimen pick-up and transport to the IDPH Laboratory. This is done on a case by case basis and may not be offered at all times.

1. Messenger/Courier by ground transport: Place specimen(s) into a biohazard labeled bag and seal securely. Place the test requisition(s) on the outside of the biohazard labeled bag. Place the sealed biohazard bag and test requisition(s) inside the shipping container. Place cold packs, which have been frozen for at least 24 hours, in the leak-proof outer container. The shipping container must be rigid, such as a Styrofoam cooler, and labeled with the UN 3373 Biological Substance Category B marking. Close securely.
2. Commercial carrier by ground/air transport: Place the specimen(s) inside a biohazard labeled bag and seal securely. Place the test requisition(s) on the outside of the biohazard labeled bag. Place the sealed bag and completed test requisitions(s) inside the outer shipping container. Place cold packs, which have been frozen for at least 24 hours, in the leak-proof outer container. Label the outer shipping container with the Illinois Department of Public Health laboratory address listed below. Complete the return address section to include the name of the person shipping the package, business name and address, and a business phone number. The shipping container must include the UN3373 Biological Substance Category B marking.
3. Ship specimens by overnight delivery to the attention of the Molecular or Virology lab at the Chicago testing laboratory. This can be accomplished by use of local courier, shipping corporations, or U.S. Postal Service.
4. The specimen(s) must be received at the laboratory no later than 8 days from the date of collection. Do not ship specimens over weekends or holidays as they will not be received and cold-packs will not maintain the required 2-8°C specimen temperature.

NOTE: Testing may be delayed, or specimens may be considered UNSATISFACTORY if the above instructions are not followed or the requisition form is not filled out completely. If there are any questions about specimen collection, handling, or shipping please contact the Illinois Department of Public Health Laboratory and speak to molecular laboratory personnel.

**Ship Specimens To:
Illinois Department of Public Health
Division of Laboratories
ATTN: Virology Lab
2121 W. Taylor Street
Chicago, IL 60612
Phone 312-793-4760**