IDPH
Illinois Department of Public Health

Clinician Measles Mini-Toolkit

Last revised 5.1.2025

IDPH
ILLINOIS DEPARTMENT OF PUBLIC HEALTH

Evaluating a patient presenting with a fever and rash[1]

Contact your local health department to report all suspect cases of measles and to discuss testing options. IDPH may also be reached at 217-782-2016 or after-hours for emergencies at 217-782-7860.

START HERE

Needs ALL 3:
- ❑ Fever[2]
- ❑ Generalized, maculopapular rash
- ❑ No vesicular lesions / vesicles[3]

No → **Measles unlikely. If vesicular rash, consider varicella or alternative cause of rash.** ***If measles still suspected, contact local health department for guidance.***

Yes

Epidemiologic risk for measles in the 21 days before rash?
ANY of the following:
- ❑ International travel in the last 21 days.
- ❑ Domestic travel in the last 21 days to an area with known measles transmission.
- ❑ Known exposure to measles.

No → **Measles clinical criteria?[4]**
- ❑ Fever[2] and rash
  AND
- ❑ Cough, runny nose, OR conjunctivitis

No → **Measles unlikely.** ***If measles still suspected, contact local health department for guidance.***

Yes

Yes → **Suspect measles. Immediately contact local health department or IDPH to discuss testing options. See Laboratory Testing Recommendations.**

Received MMR vaccine in the last 21 days?

Yes → **Likely a reaction to MMR vaccination.[5]**

No

Prior measles vaccination?
- ❑ Age ≤6 years: 1 dose MMR*
- ❑ Age >6 years: 2+ doses MMR

*or other measles-containing vaccine

No → **Suspect measles. Immediately contact local health department or IDPH to discuss testing options. See Laboratory Testing Recommendations.**

Yes → **Measles is uncommon among people with age-appropriate vaccination. Measles can occur among vaccinated people, but generally during intense exposure (e.g., day care or household exposure).**

If measles is suspected based on clinical presentation or severity of illness, contact the local health department for guidance.

Adapted from the Centers for Disease Control and Prevention.

Last revised 5.1.2025

Notes

1. This testing algorithm is intended to be used by bedside providers in settings where there is no local measles transmission. This assumes that the pre-test probability for most people without known epidemiologic risk for measles and who do not meet case criteria will be low. In settings with active measles transmission, *the threshold at which to pursue testing may be lower*, and a more permissive algorithm could be considered. Please have a low threshold to discuss a suspected case with the local health department.
2. Either a measured or patient/family-reported fever is adequate; fever may not be measured at the time of health care evaluation due to normal fluctuation or to use of antipyretics (e.g., ibuprofen).
3. A vesicular rash is not consistent with measles and should prompt consideration for other causes of rash (e.g., varicella/chickenpox).
4. Measles clinical criteria (per CSTE* case definition) include ALL of the following:
   - ❑ Generalized maculopapular rash
   - ❑ Fever
   - ❑ Cough, coryza (runny nose), or conjunctivitis (also known as the "3 C's")
5. Up to 5% of MMR recipients will get a short-lived, mild febrile rash. This is more common with the first dose of MMR. People who experience this vaccine reaction are not contagious to others around them. If a person has received MMR within 21 days before rash onset, but also has epidemiologic risk for measles, then specialized testing may be required and should be discussed with local or state public health authorities.

Adapted from the Centers for Disease Control and Prevention.

*CSTE: Council of State and Territorial Epidemiologists: https://ndc.services.cdc.gov/case-definitions/measles-2013/

Measles Characteristics

- Classic symptoms
  - Fever (up to 105F) + generalized maculopapular rash + one of the “3 Cs”
    - 3 C’s: Cough, coryza (runny nose), conjunctivitis
  - Clues to measles:
    - Prodrome of fever and at least 1 of 3 Cs often starts 2–4 days before rash.
    - Rash starts on the head or face and spreads downwards.
    - Fever continues through the onset of rash, often peaking around the time when the rash starts.
- Measles is rare in vaccinated people, especially with two prior doses of MMR
    - 1 dose generally provides 93% protection, and 2 doses provide 97% protection from measles infection.

Adapted from the Centers for Disease Control and Prevention.

Other common causes of febrile rash in children

- **Parvovirus B-19 (“Fifth Disease”)**
  - Classic “slapped cheek” rash.
  - More common in school-aged children than infants.
- **Human Herpesvirus 6 (HHV-6, “Sixth Disease,” “Roseola”)**
  - Common cause of febrile rash in infants.
  - Rash commonly starts on the trunk (measles rash starts on the face/hairline).
  - Fever often resolves before the start of the rash (measles fever peaks around the time of rash onset).
- **Enteroviruses**
  - Common cause of hand/foot/mouth, rash can involve hands/feet, which are generally spared in measles.
  - Rash can be urticarial, which is not typical for measles.
- **Drug rash (commonly amoxicillin)**
  - May result from medications like antibiotics, often administered for ear infection or other respiratory tract infections, resulting in a fever + rash presentation.
  - Rash can be maculopapular, but the typical sequential progression is different from measles.

“Slapped Cheek” rash

HFM

Adapted from the Centers for Disease Control and Prevention.

Laboratory Testing Recommendations

- Contact the local health department to report the suspect case, to consult about the need for testing, and to obtain an authorization number for testing at an IDPH laboratory
- Collect a **nasopharyngeal (NP) or oropharyngeal/throat (OP) swab** for measles RT-PCR.
  - Refer to IDPH's Instructions for Measles Virus Submission for detailed instructions on specimen collection, storage, and transport.
- For measles **serologic** testing, consider the following:
  - Measles IgM testing is readily available at several commercial laboratories.
  - This test can be complicated to interpret if the individual has been previously vaccinated, and other illnesses can cross-react, increasing the likelihood of false-positive results.
  - In an unvaccinated individual, IgM antibodies appear within the first few days (1–4 days) of rash onset and will peak within the first week.
  - In vaccinated individuals, there may not be an IgM response, or it may be transiently present.
  - ***Serology results should not be used to rule out a measles diagnosis.***

Adapted from the Centers for Disease Control and Prevention.