Cincinnati Children's Hospital Medical Center

Measles Evaluation, Diagnosis, and Treatment Toolkit

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Approved by: Felicia Scaggs-Huang, MD, MS
Maria Hasanat, MBBS, CIC
Kate Maguire, MS, MPH, CIC
Lara Danziger-Isakov, MD, MPH
William Otto, MD, MSCE
Kerry Iles, MD

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Overview

Measles, also known as rubeola, is an acute viral illness caused by the measles virus, an enveloped RNA virus member of the genus *Morbillivirus* in the *Paramyxoviridae* family.

Patients present with a prodrome of fever, cough, coryza, and conjunctivitis, followed by a maculopapular rash beginning on the face and spreading cephalocaudally and centrifugally. During the prodromal period, a pathognomonic enanthema (known as Koplik spots) may be present. Complications of measles, including otitis media, bronchopneumonia, laryngotracheobronchitis (croup), and diarrhea, occur commonly in young children and immunocompromised hosts. Acute encephalitis occurs in about 1 out of 1000 cases. In the post-elimination era in the United States, death, predominantly resulting from respiratory and neurologic complications, has occurred in 1 to 3 of every 1000 cases reported.

Recent studies suggest that children who have had measles have blunted immune responses to other pathogens and increased mortality for several years after infection. Mortality rates are increased in children <5 years of age, pregnant people, and immunocompromised children, including children with leukemia, human immunodeficiency virus (HIV) infection, or severe malnutrition (including vitamin A deficiency).

Measles remains an ongoing risk in the United States as cases have continued to rise over the last few years and measles, mumps, and rubella (MMR) vaccination rates are decreasing. Ohio, Kentucky, and Indiana remain below the 95% vaccination rate needed for herd immunity, posing a continued risk in our region.

This toolkit provides guidance on prevention of measles, care of exposed persons, testing for suspected cases of measles, and treatment of children with confirmed measles.

Key Information for Clinicians

For additional resources related to measles or active outbreaks of measles, please contact your local health department at:

- Ohio Department of Health (ODH): (614) 466-3543
  - Hamilton County Health Department: 513-946-7800
  - Butler County Public Health: (513) 863-1770
- Northern Kentucky Health Department (NKY): 859-341-4264
- Indiana Department of Health: (317) 233-7125

Information can also be obtained at the Centers for Disease Control and Prevention website: https://www.cdc.gov/measles/

Vaccination to Prevent Measles

All immunocompetent children aged >12 months of age should receive age-appropriate MMR vaccination per CDC and AAP recommendations. Additional doses beyond the routine vaccination schedule are not recommended. Acceleration of the vaccine schedule is not recommended for patients between 6-12 months of age without risk factors for measles exposure.

Key Information for Clinicians

Risk factors that would prompt early or accelerated vaccination against measles include:

- International travel (give dose at least 2 weeks prior to travel)
- Travel to an area where there is an active community outbreak
- A community outbreak where local public health recommends early vaccination for eligible patients

Information can also be obtained at the Centers for Disease Control and Prevention website: https://www.cdc.gov/measles/

All immunocompromised patients who are able to receive live viral vaccines, should be vaccinated with a two-dose MMR series per institutional protocols.

1. Live vaccines should not be administered during chemotherapy
2. Hematopoietic cell transplant (HCT) with active graft-versus-host disease (GVHD) or receiving ongoing immunosuppression should not receive live vaccines.
3. For solid organ transplant (SOT) patients, please check with the organ-specific transplant team for eligibility.

Please call the Immunocompromised Infectious Diseases team with questions.

Previously unvaccinated contacts of individuals who are ineligible for live vaccines should undergo MMR vaccination.

Notes:

- Doses received prior to the first birthday (“dose zero”) do not count toward the recommended 2-dose series
- MMRV should not be administered to children <12 months of age

Definition of a Patient Measles Exposure

A single case of suspected or confirmed measles is considered a public health emergency.

Contact your Infection Prevention & Control program (if part of a healthcare system) or your local public health department if considering evaluating a patient for measles or if a patient reports being exposed to measles.

Key Information for Clinicians

Definition of a patient measles exposure:

A patient is considered to have been exposed to measles if:

- They were exposed to a suspected or confirmed measles case during the 4 days before and the 4 days after rash onset AND
- They were in the same shared space at the same time OR the exposed patient had been in the same air space up to 2 hours after the measles case had vacated the space AND
- The exposed patient was not wearing personal protective equipment (fit-tested N-95 respirator or PAPR)

A patient should be considered to have a measles exposure if the patient or family reports that they have been notified by the health department or a health care facility that they were exposure to a measles case

Other epidemiologic criteria that may increase risk of measles exposure

- History of international travel within the previous 30 days
- History of domestic travel to areas of concern within the previous 30 days
- History of domestic travel through an international airport within the previous 30 days
- Contact with an international traveler or international visitor with compatible clinical signs and symptoms

If a patient meets criteria for a measles exposure, you may be asked to assist public health or Infection Prevention & Control with confirming the exposed patient's vaccine status to determine if post-exposure prophylaxis or quarantine are needed.

Care of Patients Exposed to Measles

Patients with immunity to measles (documentation of two MMR vaccines or history of natural infection) do not require additional interventions if exposed to measles. No post-exposure prophylaxis (PEP) or quarantine is needed. Pediatric patients will likely be referred to Cincinnati Children's Hospital or the local public health clinic for either vaccine or immune globulin if appropriate.

Key Information for Clinicians

Post-exposure prophylaxis is under the direction of local and state public health authorities. See Appendix C: Measles Exposure Response Plan for measles PEP escalation pathway.

Patients <6 months of age

- If ≤6 days since exposure, intramuscular immune globulin (IGIM) should be given at a dose of 0.5 mL/kg of body weight (max dose 15 mL)
- If IGIM is contraindicated, intravenous immune globulin can be given

Unvaccinated or under-vaccinated patients ≥6 months of age and not severely immunocompromised

- If it has been less than 72 hours since exposure, a dose of MMR should be administered
  - No quarantine is needed if the patient receives MMR as PEP unless the person works in a healthcare setting
  - If the child is <12 months of age, this dose would be considered "dose 0" and the child will require the standard two-dose series once they reach 12 months of age

IGIM is generally for patients that are 6-11 months of age, but it can be given to other persons (eg, ≥12 months of age) who are pregnant or immunocompromised. The IGIM dose is 0.5 mL/kg of body weight (max dose 15 mL) for patients weighing ≤ 30 kg. If the patient weighs > 30 kg, they should receive IGIV (400 mg/kg) as they would receive a lower dose if given IGIM preparations. Priority should be given to persons exposed via intense, prolonged, close contact. Live viral vaccines should not be given until 8 months after IGIV or until 6 months after IGIM.

Post-exposure prophylaxis (PEP) should be offered to severely immunocompromised patients who do not have documented immunity to measles within 6 days of exposure. Call Physician Priority Link® (1-888-9877997) if outside of the CCHMC system or the CCHMC Immunocompromised Infectious Diseases attending on-call to discuss the need for PEP.

Intravenous immune globulin (IGIV, dosed at 400 mg/kg of body weight) is the recommended PEP formulation for severely immunocompromised hosts, regardless of immunologic or vaccination status

- For patients who already are receiving IGIV, a dose of 400 mg/kg should be adequate for measles prophylaxis if exposure occurs within 3 weeks of the last dose of IGIV
- Pre-exposure prophylaxis with IGIV to prevent measles is not recommended

Key Information for Clinicians

Severely Immunocompromised patients are:

- Actively receiving chemotherapy
- Within 6 months of completion of chemotherapy for acute lymphoblastic leukemia (ALL)
- Within 12 months of hematopoietic cell transplantation OR at least 12 months after finishing all immunosuppressive treatment in patients who have current or prior GVHD
- Within 12 months after solid organ transplantation (SOT)
- Within 6 months of anti-thymocyte globulin for treatment of SOT rejection
- Receiving daily corticosteroid therapy with a dose ≥20mg (or >2 mg/kg/day) for ≥14 days
- Receiving certain biologic agents, including tumor necrosis factor alpha blockade or rituximab
- Diagnosed with combined primary immunodeficiency disorders
- Diagnosed with HIV infection with a CD4 T-lymphocyte count <200 cells/mm3 (age >5 years) and percentage <15%

Quarantine

- Home quarantine is required for non-immune patients exposed to measles, and non-compliant patients should be reported to public health. Appendix D: Measles Knowing Note for family instructions.
- The quarantine period is 21 days after the last exposure for exposed patients who do not receive PEP
- If IGIV/IGIM is administered, patients must remain in home quarantine for 28 days as IGIV/IGIM can prolong the incubation period for measles
- Non-immune patients must be placed in N-95/airborne transmission-based precautions if seeking health care during their quarantine period
- Exposed, non-immune patients who work or volunteer in healthcare settings must be excluded (quarantined) from such activities for 21 days, even if they received the MMR vaccine as PEP.

Care of Patients with Suspected Measles

Consider telemedicine visit for counseling and evaluation if appropriate. If the patient meets clinical and epidemiologic criteria for suspect measles, testing should be considered (see "Laboratory Testing" below). Notify testing facility prior to patient arrival to decrease transmission risk.

If an in-person visit is needed, **patients with suspected measles should be immediately masked (if age and developmentally appropriate) or "tented" (place blanket or sheet over infant/toddler) and placed in airborne isolation infection room (Aiir) if available. If no Aiir available, place patient in a private room and keep the door closed.** Patients with suspected measles should not remain in the waiting room or other common areas of a healthcare facility. See Appendix A: Suspect/Confirmed Measles Cases Operations Checklist and Appendix D: Measles Knowing Note for more detailed instructions if needed.

Key Information for Clinicians

Symptoms of Measles

- Fever AND
- Maculopapular rash, which begins on the face and spreads cephalocaudally and centrifugally, AND
- Cough OR Coryza (runny nose or congestion) OR Conjunctivitis

Koplik spots (small, white spots that appear on the inner lining of the cheeks) may also be present. See Appendix B: Measles Clinical Pathway if needed.

Patients with fever and a rash who do not have risk factors for measles (travel to an area with measles cases or known measles exposure) likely have another etiology for their clinical syndrome.

Care of Patients with Suspected Measles

All suspected cases of measles are considered a public health emergency. CCHMC employees should notify IP&C for all cases of suspected measles. Independent providers should notify the local public health department or their healthcare system IP&C.

Key Information for Clinicians

When **assessing patients with suspected measles**:

- A patient's exposure history should be taken
- The patient's vaccination status (specifically MMR) should be obtained

Clinicians should remember that the differential diagnosis for patients with fever and rash is broad and includes viral infections, bacterial infections, and inflammatory conditions such as Kawasaki Disease.

- Fully vaccinated patients are very unlikely to have measles. Consider alternative diagnoses.
- Unvaccinated patients without epidemiologic risk factors such as travel to region with active measles are unlikely to have measles. Consider alternative diagnoses.

Some patients may develop a mild rash within the 3 weeks following MMR vaccination. This does not typically require measles testing or public health intervention as the vaccine reaction is not contagious unless the patient also has a suspected measles exposure.

Laboratory Testing

Laboratory testing should be pursued in all patients with suspected measles who meet clinical criteria (fever AND maculopapular rash AND cough or coryza or conjunctivitis) and exposure criteria (exposed to a suspected or confirmed measles case during the 4 days before and the 4 days after rash onset AND in the same shared space at the same time OR the exposed patient had been in the same air space up to 2 hours after the measles case had vacated the space AND he exposed patient was not wearing personal protective equipment (fit-tested N-95 respirator or PAPR).

Step 1: Notification is required for all cases of suspected measles.

- CCHMC Employees: Contact Infection Prevention & Control (IP&C) on-call.
- Independent providers: Call ODH Emergency Response (614-722-7221), NKY Epidemiology On-Call (859-391-5357), or Indiana Epidemiology On-Call (317-233-1325) if unsure of next steps.

Step 2: Testing for measles. Order measles (rubeola) PCR swab AND rubeola Ab IgM. *Notify testing facility prior to patient arrival to limit exposure to public areas.*

Step 3: Ordering instructions

- For serologies, test is placed in Epic as rubeola (measles) IgM. More information can be found at https://www.testmenu.com/cincinnatichildrens/Tests/431925
- For measles PCR: ordering instructions through CCHMC Epic (NOTE that this varies based on location of patient at time of testing)
    - If approved by public health, recommend sending through local public health lab for quicker turnaround time (24-48 hours if on weekdays). Public health departments are no longer accepting tests if patients do not meet clinical criteria for measles.
        - For Ohio testing locations: Order as an "Unlisted Lab":
          Test Name: Measles PCR - ODH
          Specimen type needed: Nasopharyngeal or oropharyngeal
          Container type needed for collection: Viral transport media container
          Enter special instructions (i.e. name and address of lab to perform tests if not CCHMC): -70 degree storage
          Review specimen collection/storage/prep: https://odh.ohio.gov/know-our-programs/microbiology/resources/measles-virus
        - For NKY testing locations: Order as an "Unlisted Lab":
          Test name: Measles PCR – NKY
          Specimen type needed: Nasopharyngeal or oropharyngeal
          Container type needed for collection: Viral transport media container
          Enter special instructions (i.e. name and address of lab to perform tests if not CCHMC): -70 degree storage.
          Review specimen collection/storage/prep: Kentucky Measles Response Guide – page 11
    - If not approved by public health and testing is desired, test is placed in Epic as rubeola (measles) PCR and processed through LabCorp. More information can be found at https://www.testmenu.com/cincinnatichildrens/Tests/1249102. Expected turnaround time of 3-5 days.
    - *If patient received MMR vaccine in previous 4 weeks, discuss with local lab or public health if an additional swab is needed for genotyping to differentiate vaccine from wild-type strain.*

Step 4: Collection instructions

- If sending patient to a test referral center, notify them prior to patient arrival to avoid exposure to others. Do not refer patients to the Emergency Department for testing alone.

- CCHMC employees: Call Send Outs (513-636-3061) M-F 6:00AM-6:30 PM or Lab Support (513-636-6165) is available 24/7.
    - The ordering clinician would request: Viral transport media, Dacron tipped swab, and Ice Pack
- Independent Providers: Collect samples in-house. Otherwise, refer patient to a test referral center for collection (notify prior to patient's arrival). For test-related questions, call your local public health department.

Step 5: Patient must be placed in Aiir if being hospitalized or discharged with instructions to isolate at home until PCR and IgM results are returned and 1) negative or 2) positive and 4 days after rash onset. See Appendix D: Measles Knowing Note for further instructions.

Key Information for Clinicians

When **testing for Measles**, recommend pairing rubeola IgM and PCR for suspected measles cases.

Blood specimen for serology testing (Rubeola IgG and IgM)

- IgM is most sensitive 3 or more days after rash onset, so a negative IgM within 3 days of rash onset should be interpreted with caution
- False-positive IgM can occur due to cross-reactivity with other causes of febrile rashes (e.g., Parvovirus).
- IgG positivity indicates immunity and is not required for suspect measles evaluation.

Measles reverse transcription polymerase chain reaction (RT-PCR)

- Nasopharyngeal (NP) swab or throat swab recommended for RT-PCR testing
- Most sensitive within 3 days of rash onset but can be positive up to 10 days after rash onset
- Performing a urine PCR may improve sensitivity of testing, especially if collected near the end of the 10-day window after rash onset
- *If patient was vaccinated with MMR in the preceding 4 weeks, discuss with local laboratory/public health if an additional swab is needed for genotyping to differentiate vaccine from wild-type strains.*

Patients with measles testing in process must remain in quarantine until test results return negative and cleared by public health to resume community activities. See Appendix D: Measles Knowing Note for family instructions.

Care of Patients with Confirmed Measles

General Assessment

- Only healthcare personnel with evidence of measles immunity should provide care to the patient
- The severity of illness should be determined for children presenting with confirmed measles
- Clinicians should assess for acute complications of measles include:
  - Diarrhea or stomatitis, which may lead to decreased oral intake and dehydration
  - Encephalitis and acute disseminated encephalomyelitis
  - Otitis media, tracheitis, croup, and respiratory distress are common
  - Measles pneumonia causes clinical symptoms and radiographic findings that may mimic bacterial pneumonia, though bacterial superinfections can occur
  - Purulent conjunctivitis, keratitis, and xerophthalmia can occur
- Isolation:
  - N-95/airborne transmission-based precautions are indicated for 4 days after rash onset in healthy children and for duration of illness in immunocompromised patients

Outpatient

- Children with confirmed measles seen in outpatient clinics should be evaluated via telehealth or as the last visits of the day, to avoid exposure of other patients
- Leave the room vacant until adequate air changes have occurred (60 min for CCHMC ambulatory rooms; IC-4.6, IC-4.7)
- Outpatient care is supportive with antipyretics and oral re-hydration fluids.

Urgent Care and the Emergency Department

- For ill patients who may require hospitalization, notify the Emergency Department prior to the patient's arrival for prompt triage and room placement.
- For children seen in Urgent Care or the Emergency Department and discharged home, follow-up with their primary care physician should occur within 1-2 days to assess hydration status
  - Telehealth should be prioritized for these patients

Hospitalized Patients

- Consult the Infectious Diseases service to help guide treatment of measles and associated complications

- If ocular symptoms (pain, photophobia, erosion, or opacity) are present, consult Ophthalmology

Treatment of Confirmed Measles

The Infectious Diseases service should be contacted for all patients that will receive treatment for confirmed measles. There is no approved antiviral therapy for measles. However, vitamin A is recommended as low vitamin A levels have been found to correlate with illness severity.

Key Information for Clinicians

Vitamin A

All patients with confirmed measles should receive vitamin A under the guidance of an Infectious Diseases physician or another clinician with expertise in the treatment of measles.

The following doses of vitamin A should be used:

- Age <6 months: 50,000 IU
- Age 6-11 months: 100,000 IU
- Age ≥12 months: 200,000 IU

Vitamin A is intended to be used for treatment of confirmed measles. Vitamin A should not be used to prevent measles infection and is not a substitute for MMR vaccination.

Vitamin A is traditionally formulated in oral formulations, most commonly soft gel capsules

- Children with measles who are not requiring hospitalization should be prescribed vitamin A at the above dosing if they can swallow capsules
- All hospitalized children with measles should be prescribed vitamin A, regardless of ability to swallow capsules
- If the child cannot swallow capsules and the outpatient pharmacy is unable to draw up the correct dose, then vitamin A may need to be deferred

Alternative treatments such as budesonide and cod liver oil are not recommended. Parents should be discouraged from offering other agents that may contain vitamin A to avoid toxic ingestions.

Measles Toolkit Appendix A

Suspect/Confirmed Measles Case Operations Checklist

Patient Scheduling

- ☐ For patients with suspect or confirmed measles, a telemedicine appointment should be utilized to avoid exposure to other patients.
- ☐ If telemedicine is not available, evaluate patient:
  - At a location that has an airborne isolation infection room (Aiir)
  - Out-of-doors, or
  - As last appointment of the day

Patient Arrival

- ☐ If patient is seen in-person, they must be escorted by a healthcare worker (HCW) directly to a private room to minimize contact with others and ensure compliance (Appendix A).
  - The HCW should wear a fit-tested N-95 respirator or PAPR if available.
- ☐ Patient (and caregivers') faces should remain covered during transport within facility.
  - Older patients should utilize a face mask.
  - Infants/toddlers may have face covered with a sheet or similar covering (IC-4.7).

Patient Encounter

- ☐ Patient room door must remain closed throughout encounter.
- ☐ Only healthcare workers immune to measles should care for patient (condition of employment).
  - All HCW who care for patient should wear fit-tested N-95 respirator/PAPR if available.
- ☐ Standard hand hygiene recommendations are sufficient.

Clinical Management

- ☐ Notify Infection Prevention & Control of suspect cases to assist with public health reporting, testing process, and infection control recommendations. If not part of Cincinnati Children's, contact public health directly.
- ☐ Contact Infectious Diseases for questions about differential diagnosis or treatment.

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- ☐ Testing recommended only if patient has clinical and epidemiologic criteria of measles. Obtain rubeola/measles IgM (serum) and PCR (nasopharyngeal) either outside or in Aiir if possible. Follow TRC process as appropriate.

Patient discharge

- ☐ No additional staff or patients should enter the room without PPE until appropriate air clearance (60 minutes for CCHMC ambulatory rooms; IC-4.6, IC-6.3).
- ☐ Discharge cleaning may be performed without N-95 respirator if adequate time has lapsed for clearance of aerosols.
    - Routine cleaning of room and equipment is appropriate (IC-1.2).
- ☐ Patient and family instructed to quarantine/isolate at home until they receive further instructions from their local public health department or provider (Appendix D).

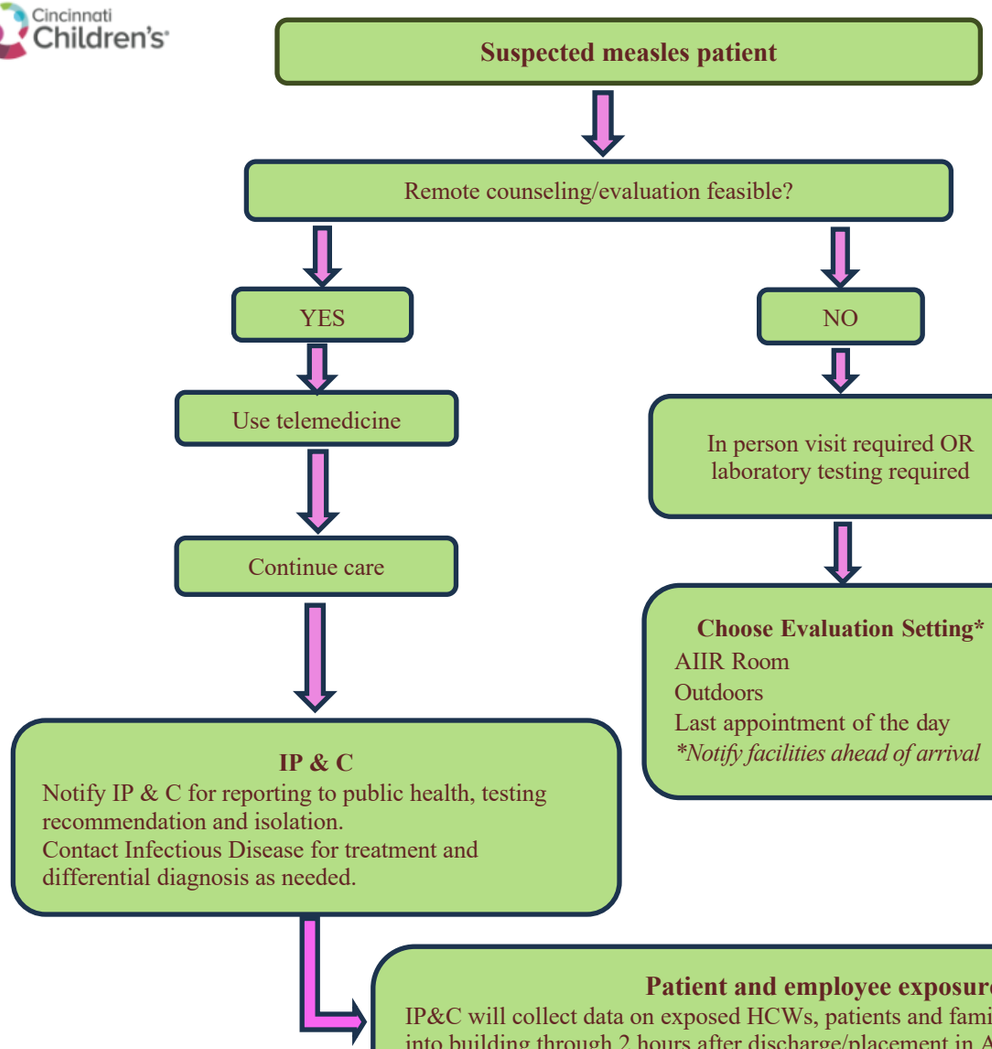
Patient and employee exposures (External clinicians call public health directly)

- ☐ IP&C or a designee will request information on exposed HCW and patients/families (name, contact information) from time of patient building entry through 2 hours after discharge/placement in Aiir as directed by public health through unit/clinic OpEx leaders.
- ☐ Employee Health will confirm HCW vaccine status; non-immune HCW will be quarantined.
- ☐ Recommend for patient/family to quarantine non-immune household contacts/isolate ill household contacts at home until contacted by public health.
- ☐ Post-exposure prophylaxis will be directed by public health and/or IP&C (Appendix C).

See Measles Toolkit for detailed instructions

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Appendix B: Measles Clinical Pathway



Measles Symptoms	Fever **AND** Maculopapular rash, which spreads from face to torso and extremities **AND** Cough OR Coryza (runny nose or congestion) OR Conjunctivitis OR Koplik spots
Exposure	In shared space with measles case (4 days before through 4 days after rash) within prior 2 hours Travel to area with loca transmission *Exposure should be assumed if received notification from a health department or healthcare facility.*
Immunization History	Number of MMR doses and dates (child is considered non-immune until 2-3 weeks after first dose of MMR)
Immunocompromised	Primary immunodeficiency, history of BMT, current chemotherapy, solid organ transplant, HIV infection, daily steroid therapy > 2 weeks

Measles Exposure Response Plan

Health Department

Contacts CCHMC Infection Control department with information about patient who tested positive.

Contacts patients and families. Determines who in household is vulnerable and what pediatric patients need support.

Communicates message that CCHMC will be contacting them to make an appointment for pediatric patients.

Infection Control

Creates list of patients who were exposed.

Receives list of patients with treatment needed (MMR vaccine, IMIG, or IVIG infusion).

CCHMC Leadership

Patient Services AVP and Infection Control Leadership decide whether Burnet or Liberty clinic will be used, confirm clinic hours, and identify providers to care for the patients.

Contact Operations (Kelly Brown, Sr. Specialist) to reserve the rooms.

Coordinate RN/MA staff to support clinic hours and/or notify the Infusion Center.

Call x64100 to open a ticket for Clinical Systems Support to notify them the clinic is opening.

Communicate clinic location, schedule, and providers to Scheduling Center and send the list of patients to be scheduled including the treatments needed.

Scheduling Center

Release the providers to the CCM or LIB OP Overflow clinic for visit type [24962] and/or the CCM or LIB Infusion Center for an IVIG visit type.

Call family to schedule the patient for Exposure Clinic if MMR Vaccine or IMIG treatment indicated or Infusion Center for IVIG according to the list.

Review visit type instructions with the family: Arrive 15 minutes before the appointment. A mask will be required for the patient and anyone accompanying them upon arrival to the location. Patient will be receiving the treatment described by the health department (MMR vaccine, intramuscular immune globulin, or an IV immune globulin infusion.)

Provider

Review list of patients and treatments planned.

MMR Vaccine or IMIG?

- No → **Create orders-only encounter using IV Immune Globulin for Measles Exposure order set to sign and hold IVIG orders for release on the Infusion Center encounter.**
- Yes → **Wait for patient to arrive.**

Measles Exposure Ordering Tools – Right-click or CTRL+Click for Hyperlink

Review triage data and place orders with Measles Exposure smartset.

File charge using LOS.

Write note and close encounter.

Exposure Clinic Staff

Patient arrives for scheduled appointment.

Full registration completed (no copy, no wristband prints).

Obtain height, weight, vital signs, and assessment of current health status.

Fever or unwell?

- No → **Administer Vaccine or IMIG as ordered.** → **Monitor for side effects for 15 minutes** → Give patient AVS along with vaccine information sheet (VIS) if received MMR and discharge to home.
- Yes → **Talk with provider before administering vaccine or IMIG.**

Infusion Center

Patient arrives for scheduled appointment.

Full registration completed.

Obtain height, weight, vital signs, and assessment of current health status.

Fever or unwell?

- No → **Release orders from signed and held state.** → **Carry out orders including the administration IVIG.** → **Monitor for side effects as specified in order.** → Give patient AVS and discharge to home.
- Yes → **Talk with provider before administering vaccine or IMIG.**

Billing

Exposure Clinic - Professional charge, facility fee, and medication charge dropped after medication administered. Infusion Center – normal charges drop

All overflow clinic revenue goes to Patient Services based on existing Bill Area and Cost Center. Infusion Center revenue routes per usual.

Measles Vaccine:
- **Insurance billed for any services provided.**
- **For patients without insurance, use VFC process.**

Measles prophylaxis IM or IVIG:
- **Insurance billed for any services provided.**
- **For patients without insurance, use self-pay, balance bill and refer for additional Financial Advocate support if needed.**

CCHMC reimbursed by patient/family or 3rd party payor.

Measles

Measles, also called rubeola, is a highly contagious viral illness that usually consists of a fever with cough, runny nose, and pink eye. Measles cases in the US have surged, with 2026 cases surpassing 1,800 by early May. This has been the highest level of measles cases we have seen since elimination in 2000 (CDC).

Measles spread easily through the air. You are contagious with measles from 4 days before you see a rash to 5 days after developing a rash.

- Early symptoms: high fever (up to 104F), cough, runny nose, red eyes.
- Later symptoms: ongoing fever, full body rash.
- Possible complications: ear infections, diarrhea, pneumonia, and encephalitis (brain inflammation).

Watch for troubled breathing, troubled drinking, diarrhea, or difficulty waking. Call your child's doctor if symptoms get worse.

Older children with suspected/confirmed measles or measles exposure should wear a mask in the ER or doctor's office. For young children who cannot wear a mask, lightly cover their stroller or car seat with a blanket ("tenting").

People are considered immune to measles if they have had the recommended MMR vaccines, a previous measles infection, or a positive immunity test. People born before 1957 are generally immune. Those with weakened immune systems may not be fully protected.

Exposure Date OR Rash Onset Date	End of Quarantine/Isolation Date

Next Steps

- ☐ **My child was exposed to measles and did not get any medicine (immunoglobulin or vaccine) after exposure.**

Your child should stay home for 21 days after exposure. For 21 days after exposure your child should avoid contact with people who are unvaccinated or at high risk for measles complications (pregnant, people very old and very young, and immunocompromised). Your child should not attend school or other go to other public

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spaces until quarantine is completed. Continue watching your child's symptoms after exposure. If they develop symptoms, call their provider.

☐ **I think my child might have measles and I am waiting for test results.**

Your child should stay at home until testing is complete and negative OR until the end of the isolation date. Your child should not attend school or go to other public spaces until isolation is completed. If your child needs medical care, call ahead so others are not exposed to measles. Avoid contact with people who are unvaccinated or at high risk for measles complications (pregnant, people very old or very young, immunocompromised).

☐ **I think my child might have been exposed to measles but has had the MMR vaccine.**

Your child may go to school and other activities if already immune to measles (previous infection or vaccination) and after getting the MMR vaccine after measles exposure. After your child is vaccinated, keep an eye out for any symptoms. If symptoms appear, have them stay home and contact their healthcare provider.

☐ **Your child has been exposed to measles and received immunoglobulin to lower their chance of getting measles and make symptoms less serious if they develop infection.**

After receiving immunoglobulin, your child should stay home and quarantine for 28 days. Your child should not attend school or other go to other public spaces until quarantine is over. Watch your child for symptoms of measles. Avoid contact with people who are unvaccinated or at high risk for measles complications (pregnant, immunocompromised, those very young and very old) If they become ill, contact your child's doctor to discuss the next steps. If your child needs medical care, call ahead so others are not exposed to measles. After the quarantine period has passed, talk to your doctor about getting the MMR vaccine to protect your child from getting measles in the future.

For any questions or concerns related to measles, contact your child’s primary care provider.