SLHS MEASLES GUIDANCE

Contents

Purpose:

This document is intended to provide interim guidance for a suspect or confirmed measles infections in the SLHS footprint. As measles infections are identified in Idaho and we learn more, this guidance may evolve.

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General Info:

Visit the CDC website for the most up-to-date information on active outbreaks in the U.S. and globally.

In the current anti-vaccination climate, we should expect to see the number of cases across the United States increase and should be prepared as a health system to handle cases as they arise. Complications of measles are serious, and include otitis media, pneumonia, encephalitis, blindness, and death; long-term sequelae include subacute sclerosing panencephalitis.

Clinical Presentation:

Please review the clinical presentation of measles and maintain high levels of suspicion in patients with potential for infection, especially returned travelers, those who are unvaccinated, too young to vaccinate, or have suspected contact with a case. Consider measles in susceptible patients who present with fever, maculopapular rash spreading from head to toe, conjunctival injection, and rhinorrhea. See the "Resources for Providers" section for more information.

Measles Screening:

When scheduling sick visits or arrival of patients with complaints of fever and rash use the Measles ED checklist or Clinic Checklist to screen for possible measles infection. Screening includes asking about possible exposure such as:

- Have they traveled to a state or country with a measles outbreak?
  OR
- Do they have any known or suspected exposure to a person with measles within the last 21 days?

  If yes, consider a parking lot visit as appropriate for an outpatient visit and initiate isolation precautions for suspected cases.

Infection Prevention Considerations:

Transmission:

- Measles is a highly contagious virus that lives in the nose and throat mucus of an infected person.
  - It can spread to others through coughing and sneezing.
  - If other people breathe the contaminated air or touch the infected surface, then touch their eyes, noses, or mouths, they can become infected.
- The virus can live for up to two hours in airspace.
- Infected people can spread measles to others from four days before through four days after the rash appears.

PPE:

- Personal Protective Equipment (PPE) for any suspected or confirmed measles patient includes:
  - Respirator (N95 or PAPR) required.
  - Gowns and gloves per standard precautions is recommended.

Isolation:

- **Airborne Precautions:** In addition to **Standard** Precautions patients with confirmed or suspected measles virus infections should be placed in **Airborne** Transmission Based Precautions and the status updated in the EMR.
    - A negative pressure room should be prioritized for suspected/confirmed cases. IF a negative pressure room is not available, keep door closed at all times; patient should wear a mask until placed in a negative pressure room.
    - *Outpatient:* Consider a parking lot visit and/or scheduling the patient for end of the day. If it is possible to have advance notice of a patient coming to the clinic for evaluation, arrange to use an alternate entrance that bypasses the waiting room, or provide the patient with a surgical mask and place the patient immediately in an exam room with door closed. Contact Infection Prevention for further guidance.
    - *Inpatient:* All inpatients should be placed in a negative pressure room with an "Airborne Precautions" sign posted, and staff should wear the recommended PPE.
- **Limit transport** of patient outside of the room for <u>only essential needs</u>.
    - If the patient is transported outside of the room consult HICS and ensure:
        i. The patient wears a well-fitting procedure mask, if tolerated. If the patient cannot wear a procedure mask (e.g., infant) consider covering the patient head to toe with a blanket to reduce aerosols. Ensure ventilated patients have a working HEPA filter installed in their vent.
        ii. The transport team wear a N95 mask or PAPR.
        iii. Use a transportation route and process that includes minimal contact with persons not essential for the patient's care.
        iv. Notify the HCP in the receiving area of the impending arrival of the patient and of the precautions necessary to prevent transmission.

    - When transport outside the facility is necessary, inform the receiving facility and the transport vehicle HCP in advance about airborne precautions being used.
- **Discontinuation of Isolation**:
    - Patients with measles should remain in Airborne Precautions for 4 days after the onset of rash (with onset of rash considered to be Day 0)
    - Immunocompromised patients with measles should remain in Airborne Precautions for the duration of illness due to prolonged virus shedding in these patients.
    - Consult Infection Prevention with questions on discontinuation of isolation.
- See SLHS policies IP057 & IP024 for more information.

High-risk Procedures:

- Any procedure where the airway is directly accessed (e.g., intubation or airway suctioning) is a high-risk procedure due to measles being transmitted by contact with infectious droplets or airborne spread.
- Perform diagnostic and therapeutic procedures, when possible, in a negative pressure room by HCP wearing PPE (N95/PAPR).

Disinfection:

- Disinfect surfaces and equipment. Commonly used disinfectants within the system are effective against measles virus including PDI wipes (Prime, bleach, Super-sani), Clorox hydrogen peroxide wipes, OxyCide,

or CaviCide. The EPA number for our common disinfectants can be found on the source here and used on the EPA website to confirm effectiveness for the measles virus.

Air Handling:

- 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. Shorter room turnover times may be possible depending on the room size, air exchange rate, and air exhaust features. Review IP057 and contact Infection Prevention for additional guidance.

Non-immune Healthcare Personnel:

- HCP who are not immune to measles should not enter a known or suspect measles patient's room if an immune HCP is available.
- Employee Health will identify non-immune HCP exposed to measles and provide post-exposure recommendations.

Visitors:

- When measles is identified in the local community, consider screening visitors for signs and symptoms of measles before entering the facility.
- Visitors without acceptable presumptive evidence of immunity should not enter the room of a patient with known or suspected measles.

Testing:

Providers should consider measles in patients presenting with febrile rash illness and clinically compatible measles symptoms, especially if the person recently traveled to an area with known measles transmission or was exposed to a person with febrile rash illness.

Laboratory confirmation is essential for all sporadic measles cases and all outbreaks.

- **Detection of measles RNA by PCR in a clinical specimen is the preferred test to provide laboratory confirmation of infection in patients during their communicable period.** Measles PCR testing is performed by the ID Bureau of Labs. Notify Public Health prior to specimen submission, see the " Inform and Report" section below for details.
    - **Measles IgM testing** in combination with PCR testing, clinical evidence of measles infection, and epidemiologic risk can be of clinical value. A positive IgM result can suggest recent infection or vaccination. In SLHS measles serology includes both IgM and IgG testing and is performed by ARUP.

SLHS Specific Information can also be found on the comprehensive test directory:

- PCR: **LAB20825**
- Serology: **LAB20826**

Note: Measles is also called rubeola. ***Not to be confused with rubella****. Double-check your orders for accuracy.*

Orders in Epic:

- Ensure collection directions are followed.
- For questions contact SLHS Client Services at 208-381-8829.

- Measles PCR
    - Epic order Test Code LAB20825 “Measles (Rubeola) by PCR, ID Bureau of Labs”
        - Results will be available as scanned copies.
        - Expected turnaround time is about 48 hours (business days)
- IgG & IgM Serology
    - Epic order test code LAB20826 “Measles (Rubeola) Antibodies, IgG and IgM”
        - Sent to ARUP and results are interfaced in Epic
        - Expected turnaround time is 1-6 days (business days)

Collection & Transport:

PCR

- Collect specimens on patients with suspected measles for diagnostic PCR testing:
    - Optimal Test Timing: PCR is most likely to detect measles in specimens collected on the first day of rash onset through the 3rd day of rash.
    - Appropriate sample types: throat, nasal, or nasopharyngeal swab
        - Swab **MUST** be a Dacron with plastic or aluminum shaft.
        - **DO NOT** use swabs with calcium alginate or cotton tips and wooden shafts.
    - Place in 1-3mL of Viral Transport Medium (VTM) or Universal Transport Medium (UTM).
        - **DO NOT** package a dry swab.
    - Refrigerate specimens immediately.
    - Ensure ID Bureau of Labs Clinical Test Form is included with sample and transport to lab.
        - Clinical Test Request Form: https://publicdocuments.dhw.idaho.gov/WebLink/ElectronicFile.aspx?docid=2779&dbid=0&repo=PUBLIC-DOCUMENTS
            - Reason for Test: Diagnosis
            - Analysis Requested: PCR Measles virus
            - Surveillance Data – complete this section with as much information as available

Serology

- Collect specimens on patients with suspected measles for IgM serology testing:
    - Optimal test timing: In unvaccinated individuals with an acute measles infection, IgM can be detectable 3 days after rash onset through week 8. Detection of IgM may be variable in persons with pre-existing immunity who develop measles. (Source: Pink Book).
    - Sample: 2 mL whole blood (1mL serum)
    - Parallel testing is preferred, and convalescent specimens **must** be received within 30 days from receipt of the acute specimens. **Mark specimens plainly as "acute" or "convalescent."**
    - Send to lab to separate serum from cells ASAP or within 2 hours of collection.
    - Store and transport refrigerated to ARUP.

Inform and Report:

Report:

If you suspect or test a patient for measles, report that patient to public health within **1 day** (Idaho Reportable Disease List) and preferably before discharge or transport.

- Public health can help coordinate prompt measles PCR testing at the ID Bureau of Labs.
- Public health will also investigate the report, identify clusters or outbreaks of infection, identify the source of infection, identify susceptible contacts, facilitate home isolation/quarantine and enforce restrictions from daycare and schools (IDAPA 16.02.10).

How to report to public health:
Contact the Public Health District Department where the patient lives or the State Bureau of Communicable Disease and Prevention.

- ***Note: If reporting after hours, on weekends or holidays, contact State Comm at 1-800-632-8000***

Health Districts in SLHS footprint:

- District 4, Central District Health
  - Counties: Elmore, Ada, Boise, and Valley
  - Report line: 208-327-8625
- District 3, Southwest District Health
  - Counties: Canyon, Owyhee, Gem, Washington, and Adams counties
  - Report Line: 208-455-5442
- District 5, South Central Public Health District
  - Counties: Camas, Blaine, Gooding, Lincoln, Jerome, Minidoka, Twin Falls and Cassia
  - Report Line: 208-737-5969
- District 2, North Central District:
  - Counties: Idaho, Clearwater, Latah, Nex Pierce, and Lewis
  - Report Line: Ph: 208-799-3100
- State Bureau of Communicable Disease and Prevention: Idaho Bureau of Communicable Disease and Prevention at (208) 334-5939

Inform:

Inform appropriate stakeholders including Leadership, Admin Supervisors, Infection Prevention, etc.
Use the contact information below to inform Admin Supervisor & Infection Prevention.

Administrative Supervisors – Contact Admin Sup by phone or Voalte

- Magic Valley, Jerome, Wood River:
  - Email: Mvadminsup@slhs.org
  - Phone: Magic Valley 208-814-0800
- Boise, Elmore, McCall:
  - Email: boiadminsup@slhs.org
  - Phone: Boise 208-381-1400
- Eagle, Meridian, Nampa, Fruitland:
  - Email: Nampa Administrative Supervisors at nampaadminsups@slhs.org
  - Email: Meridian Administrative Supervisors at meradminsup@slhs.org
  - Phone: Meridian 6-3302

Infection Prevention – Contact Infection Prevention during weekday business hours 08:00 – 16:30. If after hours, on weekend or a holiday, contact administrative Supervisor. Administrative Supervisor will contact IP after hours if necessary.

- Magic Valley/Jerome/Wood River: 208-814-5120
- Boise/McCall/Elmore/Rehab: 208-381-2147
- Meridian/Nampa/Fruitland: 208-706-1194
- Home & Community-based Services (HCBS): 208-381-2611 or 208-385-3384
- Ambulatory: 208-381-7179

If one confirmed or highly suspicion measles infection is identified within the SLHS footprint, Hospital Incident Command System (HICS) may be activated by leadership.

Prevention:

The MMR vaccine is the best defense against measles, offering 97% protection after two doses. To prevent measles transmission in a community, 95% "herd" immunity is required. Use this recent outbreak as an incentive to review immunization records of your clinic patients and reach out to families to get everyone up to date. All hospital employees are expected and/or required to demonstrate immunity to measles. Staff may be contacted by Employee Health if documentation is lacking.

Treatment and Prophylaxis:

Treatment

- Supportive care for most patients
- The WHO currently recommends vitamin A for all children with measles, regardless of their country of residence. Many US experts concur with administering vitamin A to all children in the United States with measles, regardless of hospitalization status. Vitamin A treatment of children with measles in resource-limited countries has been associated with decreased morbidity and mortality rates. Low serum concentrations of vitamin A also have been found in children in the United States, and children with more severe measles illness may have lower vitamin A concentrations. Vitamin A for treatment of measles is administered once daily for 2 days (ie, immediately on diagnosis and repeated the next day), at the following doses:
  - 200 000 IU (60 000 µg retinol activity equivalent [RAE]) for children 12 months or older;
  - 100 000 IU (30 000 µg RAE) for infants 6 through 11 months of age; and
  - 50 000 IU (15 000 µg RAE) for infants younger than 6 months.
  - An additional (ie, a third) age-specific dose of vitamin A should be given 2 through 6 weeks later to children with clinical signs and symptoms of vitamin A deficiency.

Prophylaxis

- Patients that do not have immunity to measles and are exposed to someone with measles should discuss with their HCP about getting an MMR vaccine.
  - If MMR vaccine is given within 72 hours of exposure to measles, you may get some protection or have a milder illness (see Table 3.32 below, Source 2021 Red Book).
  - Immunoglobin (IG) should be given to high-risk populations (see Table 3.33 below, Source 2021 Red Book) within 6 days of exposure to measles, which may provide some protection or may result in a milder illness. In addition to IVIG, SLHS carries a small quantity of IMIG (Gamastan) at BMC for system use in pediatric patients. For dosing recommendations, please contact pharmacy.

Note: Prophylaxis for HCPs exposed to measles are not included in the tables below. For employee exposure guidance contact Employee Health.

Table 3.32. Postexposure Prophylaxis (PEP) for People Exposed to Measles Who Are NOT Pregnant or Immunocompromised

Age Range	Measles Immune Status[a]	PEP Type Depending on Time After Initial Exposure		
		≤3 days (≤72 hours)	4–6 days	>6 days
All ages (≥6 mo)	Immune	• PEP not indicated. Exposed person has documented immunity.		
<6 mo	Nonimmune (because of age[b])	• Administer immune globulin intramuscular (IGIM)[c] • Home quarantine[d]		• PEP not indicated (too late). • Home quarantine[d]
6–11 mo	Nonimmune	• Administer MMR vaccine (MMR vaccine preferred over immune globulin [IG]) • No quarantine needed.[e]	• Administer IGIM[c] • Home quarantine[d]	• PEP not indicated (too late). • Home quarantine[d]
≥12 mo	Nonimmune	• Administer MMR vaccine • No quarantine needed[e]	• IG PEP usually not administered[f] • Home quarantine.[d] then administer MMR vaccine to protect from future exposures	
≥12 mo	1 dose of MMR vaccine	• Administer 2*nd* MMR vaccine dose if ≥28 days from the first dose • No quarantine needed (person had 1 dose when exposed)		

Table 3.33. Postexposure Prophylaxis (PEP) for People Exposed to Measles Who ARE Pregnant or Immunocompromised

Category	Measles Immune Status[a]	PEP Type Depending on Time After Initial Exposure		
		≤3 days (≤72 hours)	4–6 days	>6 days
Severely immunocompromised [b]	IG recommended regardless of measles immune status	• Administer immune globulin intravenous (IGIV)[c] • Home quarantine[d]		• PEP not indicated (too late) • Home quarantine[d]
Pregnant	Immune	• PEP not indicated		
	Nonimmune	• Administer IGIV[c] • Home quarantine[d]		• PEP not indicated (too late) • Home quarantine[d]

Resources for Providers:

Please contact Dr. Lundgren or Dr. Hilinski in pediatric infectious diseases for specific case-by-case guidance, if you strongly suspect measles in a susceptible pediatric patient.

CDC website has additional clinical resources:

- Clinical overview of measles
- Measles clinical diagnosis poster
- Clinical provider toolkit

The RedBook (http://redbook.solutions.aap.org/) – available in SLHS library
"Detection of viral RNA by RT-PCR provides a rapid and sensitive method for case confirmation. It is important to collect samples for RNA detection as soon as possible after rash onset, because viral shedding declines with time after rash. Specimen timing and quality greatly influence the results of RT-PCR testing, so a negative result should not be the only criterion used to rule out a case of measles."

Dr. Lundgren's favorite rhyme:
Paraflu 1 and 2 cause the little kids to croup,
Para 3 and RSV make 3-month-olds cough and wheeze.
Paramyxovirus mumps attacks your glands and gives you lumps,
MEASLES RASH FROM HEAD TO TOE, COUGH, RED EYES, AND RUNNY NOSE.

Additional Resources:

CDC:

- Interim Infection Prevention and Control Recommendations for Measles in Healthcare Settings
- Measles Home Page