

Measles

Guidance and Response Training

March 21, 2024



DEPARTMENT OF
**PUBLIC HEALTH &
HUMAN SERVICES**

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Roadmap

- Measles Illness
 - Sign & Symptoms
 - Testing & Treating
 - Vaccination
- Suspect Case Management
 - Notification of LPH, CDEpi
 - Patient Care
 - Testing
 - Contact tracing
 - PEP recommendations
- Guidance for Healthcare Facilities
- Measles Care Package



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Measles Illness (Rubeola)



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Measles Virus

- **Airborne transmission** through respiratory droplets
- Highly contagious – 90% of unvaccinated, exposed persons will get measles
 - **MMR vaccines are safe and highly effective**, with two doses being 97% effective against measles (one dose is 93% effective).
- Transmissible 4 days prior and 4 days after rash appearance
- Incubation period = 11-12 days
 - Average is 14 days
 - Range of 7-21 days



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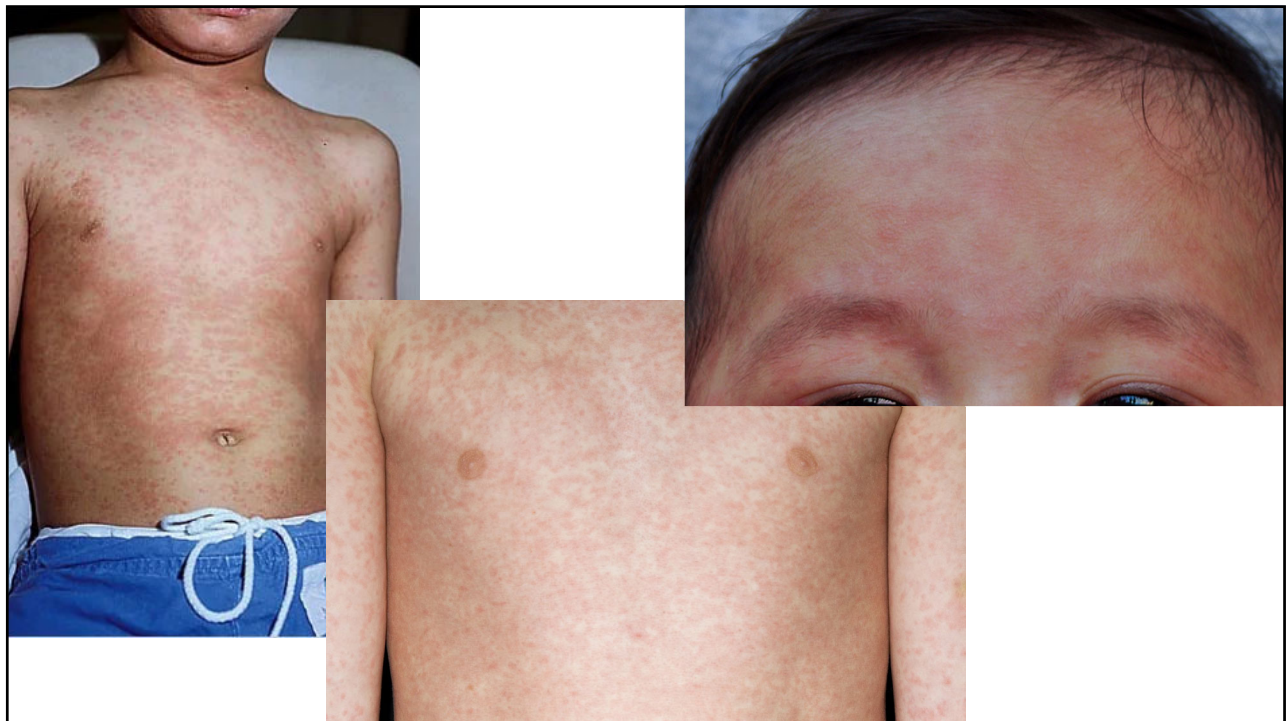
Measles Illness

- Prodrome of 2-4 days – fever, cough, coryza, conjunctivitis
 - Koplik spots
- Rash begins at hairline and moves down the body
- Complications include diarrhea, otitis media, pneumonia, encephalitis, sub acute panencephalitis (SSPE), death
 - More likely in kids under 5 and adults
 - Can occur in ~ 30% of cases
- Measles can affect immunity from previous vaccinations

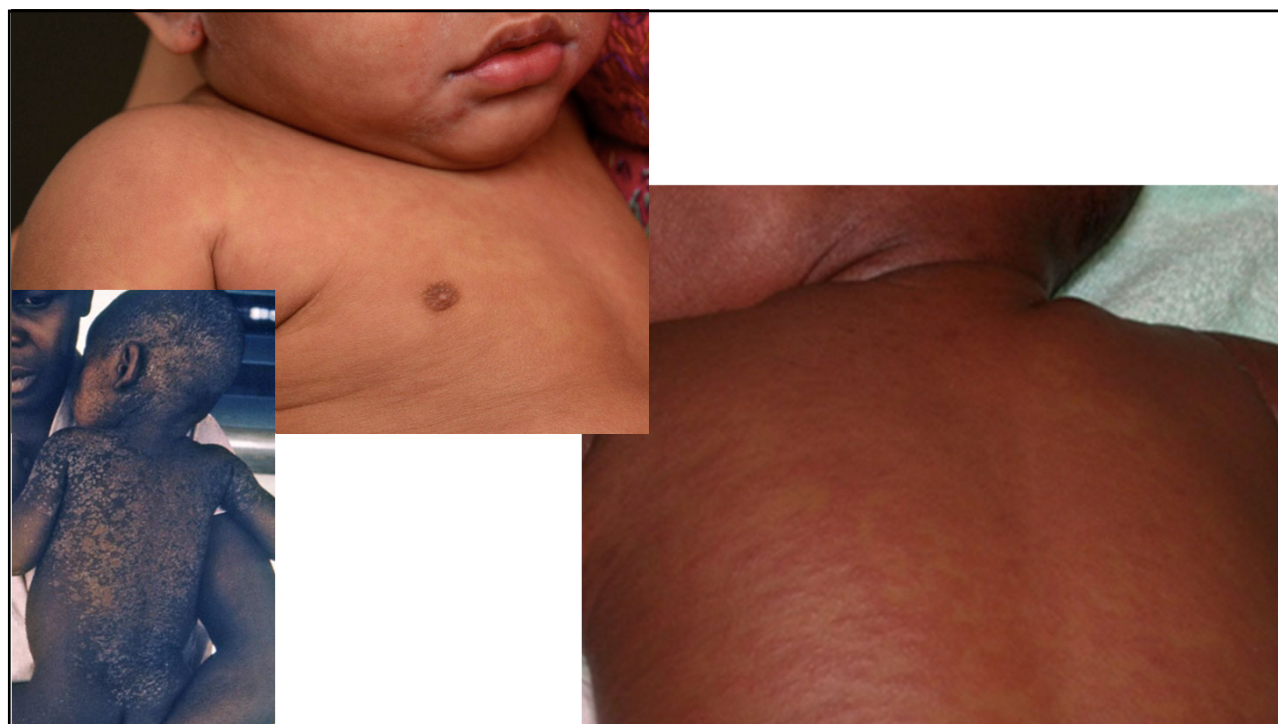
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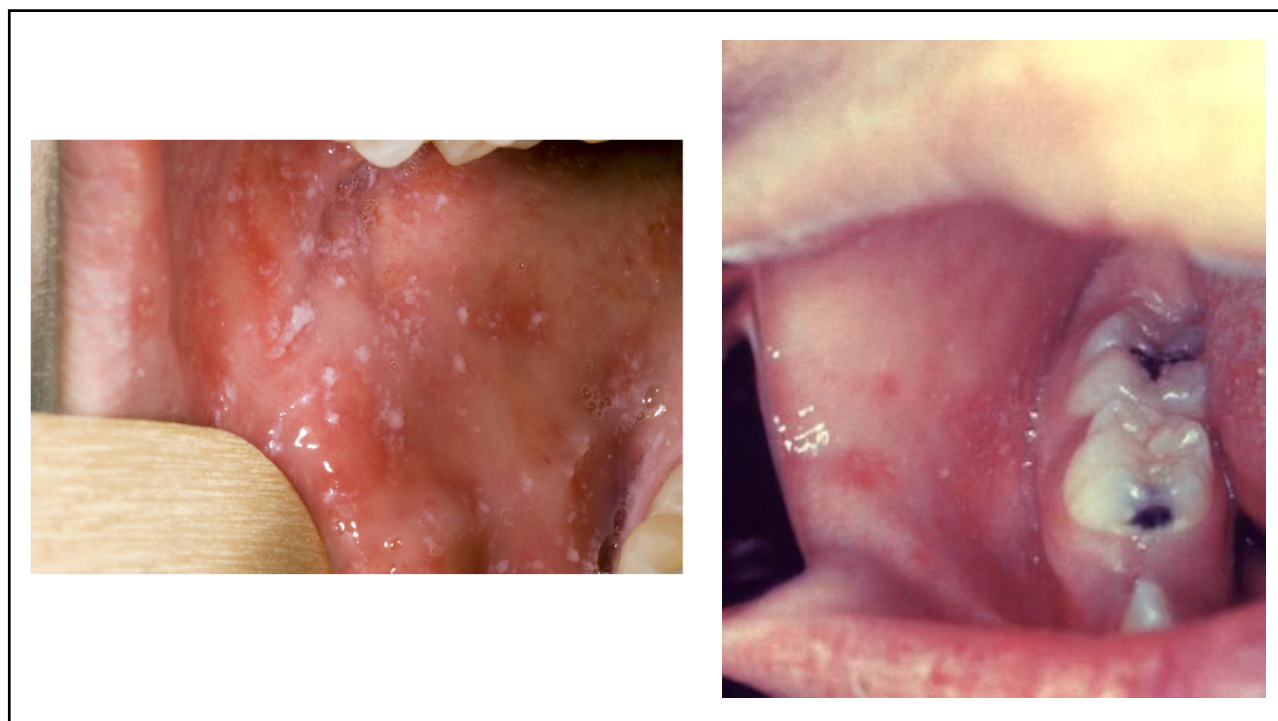
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Measles Laboratory Testing

- Set of 2 tests
 - RNA detection (PCR)
 - Measles-specific IgM antibodies (serology)
- Set of 2 specimens
 - Respiratory swab (throat, NP, nasal swab)
 - Serum
- **MUST HAVE BOTH SPECIMENS!**
- If your healthcare facility can do it in-house: several hours for results
- 1-2 days for testing

- Positives require confirmation at MT Public Health Lab in Helena



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Measles Treatment

- Supportive treatment
 - Fever-reducing medications
 - IV fluids for dehydration
 - Treatments for complications including secondary bacterial infections
- Vitamin A supplementation
 - May be considered if hospitalized



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Measles Vaccination

- Two vaccines available
 - MMR – Measles, mumps, and rubella
 - MMRV – with varicella
- 2-dose series
 - 1st dose 12-15 months
 - 2nd dose 4-6 years
- Vaccine Effectiveness
 - 1 dose = 93%
 - 2 doses = 97%
- Infants may get dose as early as 6 months if traveling in area where measles exposure is likely
 - Does **not** count for 2-dose series

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Montana MMR Vaccination Rates

Adolescents aged 13-17 years
2+ doses of MMR

- 2020: 95.5% (US 92.4%)
- 2021: 94.2% (US 92.2%)
- 2022: 93.4% (US 91.2%)

Children by age 24 months
1+ dose of MMR

- 2021: 90.5% (2019 birth year)
- 2022: 88.9% (2020 birth year)

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Measles: Suspect Case Management



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What makes a Suspect Case of Measles?

Symptoms

- Fever
- Cough
- Coryza/Runny nose
- Conjunctivitis/Red eyes
- Koplik spots
- Rash



Exposure

- Not immune to measles
 - Not vaccinated with 2 doses*
 - No history of illness
- Travel to an area with a measles outbreak
- Contact with a known measles case



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Suspect case of measles?

**Measles is an
immediately reportable condition!**

Providers: Call LHJ

LHJ: Call CDEpi (406-444-0273)



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Testing Suspect Cases

- Testing is recommended for ALL suspect cases – consult with CDEpi
- 2 specimens required – swab and serum
- Courier runs most of state, can arrange additional pick ups in advance with MT PHL
- MT PHL can test next day on weekdays

☐ Where can you test suspect cases in your jurisdiction?



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MTPHL Measles Testing Guidance

Montana Public Health Laboratory Guidance: Measles Testing



State communicable disease reporting rules require health care providers suspecting measles to report suspected cases to local public health authorities immediately. Public health authorities may implement immediate control measures to prevent transmission and/or arrange immediate transport of the specimen when warranted.

Specimen Criteria

Collect the following specimens to test for measles infection:

- Respiratory Specimen (Throat, NP, Nasal Swab)
- Serum

Specimen Collection for PCR Testing:

Collect specimens as soon as possible after appearance of rash, and ideally within 3 days of rash onset.

Detection can be possible up to day 7 following onset of rash. *Respiratory Specimen:* Throat, Nasopharyngeal, or Nasal Dacron swabs in viral transport media.

Consult with Public Health authorities regarding PCR testing prior to rash development of individuals who may have had a recent exposure to measles.

<https://dphhs.mt.gov/assets/publichealth/CDEpi/CDCPBResources/MTPHLMeaslesTestingGuidance.pdf>



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Laboratory Sample Transport Plan

- All local health jurisdictions are required to maintain a plan specific to their resources in order to send samples to MTPHL on an emergent basis.
- Work with CDEpi by dialing 406-444-0273, and we will help coordinate sample testing and arrival at MTPHL during a case investigation.
- Advice on packaging, forms, sample handling are also available from MTPHL.
- 24-hour MTPHL number 1-800-821-7284



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What do you do with a suspect case?

If at home:

- Remain at home unless seeking medical attention (Instruct case or parents to call healthcare facility first if able!)
- Monitor for complications that need medical attention
 - Difficulty breathing/shortness of breath
 - Confusion/altered mental status
 - Dehydration (from diarrhea)
 - Ear infection
 - Lethargy/unable to wake
 - Seizure/convulsions



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What do you do with a suspect case?

If in a healthcare setting:

- ISOLATE IMMEDIATELY!
- Patient should wear a facemask until in transmission-based precautions
- Use an Airborne Infection Isolation Room (AIIR) if available, otherwise a single room with the door closed
- Notify local public health!



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If you have a confirmed case of measles



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CDC's Guidance: Isolation of measles cases and exclusion of contacts without presumptive evidence of immunity

- Case-patients should be isolated for four days post rash onset.
- Exposed persons who cannot readily document presumptive evidence of measles immunity should be offered postexposure prophylaxis (PEP) or excluded from the setting (school, hospital, day care). For assessment of presumptive evidence of immunity of contacts, only doses of vaccine with written documentation of the date of receipt should be accepted as valid. Verbal reports of vaccination without written documentation should not be accepted.
- Persons who have been exempted from measles vaccination for medical, religious, or other reasons and who do not receive appropriate postexposure prophylaxis within the appropriate time should be excluded from affected institutions in the outbreak area until 21 days after the onset of rash in the last case of measles.

<https://www.cdc.gov/vaccines/pubs/surv-manual/chpt07-measles.html>



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After a Positive Result:

- **All cases should isolate until 4 days after rash onset**
- Activate your local EPI Team
- Enter case information into MIDIS
- Contact investigation
- Continue to administer prophylaxis as appropriate for close contacts
- Messaging to public
- Reporting
- Monitor for new cases



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Contact investigation

- **Establish timeline!**
- **Incubation period:** 21 days prior to onset of symptoms
- **Infectious period:** 4 days before onset of rash through 4 days after onset of rash
- Determine where patient was during the infectious period

Sun	Mon	Tue	Wed	Thu	Fri	Sat
				JUNE 1	2	3
4	5	6	7	8	9	10
		21 day incubation period begins				
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	JULY 1
INFECTION PERIOD						
Hiking with dad (tick on dad)		1 - fever onset (105) HA/myalgia/arthritis		2R VISIT 1 - rash onset	Rash D2	HOSP ADMIT Rash D3
Out of country travel						

Sun	Mon	Tue	Wed	Thu	Fri	Sat
2	3	4	5	6	7	8
igG POSITIVE PCR NEGATIVE CDEH 24/7 CALL Rash D4			igM NEGATIVE RMSF serum drawn			
	D/C hospital					



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What do you do with exposed people?

- This depends on multiple things:
 - Susceptibility of individual to measles
 - 2 doses of MMR/MMRV
 - Known history of measles illness
 - Birth prior to 1957
 - Setting where individual works – healthcare workers have special recommendations
 - Does this individual attend school or childcare?
 - Eligibility for prophylaxis following exposure



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Prophylaxis - Vaccination

Recommended for:

- Individuals without documented evidence of immunity
- Immunocompromised individuals
- Can be done in the health department or by a private provider

Not recommended:

- Infants <12 months of age
- Pregnant women
- Vaccinated individuals
- History of disease (e.g., born before 1957)



*Kids can return to school or childcare immediately after vaccination if vaccinated **within 72 hours of the exposure** (per CDC)



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Prophylaxis – Immune Globulin (IG)

Recommended for:

- Individuals at high risk for complications due to measles infection
 - Immunocompromised individuals
 - Pregnant women
 - Infants <12 months of age
- Most effective within 6 days of exposure
- Consult with providers regarding IG administration

* Persons who receive IG may have a prolonged incubation period of up to 28 days, so additional monitoring may be considered

* IG administration is not adequate for return to school or daycare settings.



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Contact investigation

WHERE	WHO	WHEN
Household	Household contacts	Infectious period
Classroom, common spaces (cafeteria, gym, library)	School contacts	From beginning of infectious period until last day attended school prior to onset
Church	Youth group contacts	Day(s) that case attended youth group during infectious period
Church	Church contacts	Day(s) that case attended services during infectious period
Emergency room	Medical staff	During office visit + 2 hours
Emergency room	People in waiting room	Patient arrival + 2 hours
Grocery store	Grocery store customers/staff	Time spent in store + 2 hours



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Monitor for New Cases

- Incubation period range = 7–21 days. Monitor for new cases for 2 incubation periods following the onset of the last identified case.
- Key Surveillance Partners include:
 - Local providers
 - Local laboratories
 - School nurse (or other school liaison)
- Continue community messaging for as long as you are actively looking for cases.



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Montana MCAs and ARMs related to school exclusion

MCA 50-2-118: Powers and Duties of Health Officers

"...local health officers or their authorized representatives shall:

...

(b) take steps to limit contact between people in order to protect the public health from imminent threats...

...

(d) Establish and maintain quarantine and isolation measures...

(e) Pursue action with the appropriate court if this chapter or rules... are violated"

MCA 20-5-405 Exclusions

(4) Whenever there is good cause to believe that a person for whom an exemption has been filed... has a disease or has been exposed to a disease listed in [20-5-403](#) or will as the result of school attendance be exposed to the disease, the person may be excluded from the school by the local health officer or the department until the excluding authority is satisfied that the person no longer risks contracting or transmitting that disease.

ARM 37.95.140

(8) If a child in attendance at the day care facility, a resident of the day care facility, or a staff member, or volunteer contracts any of the diseases for which this rule requires immunization, all individuals infected and all persons attending the day care facility who are not completely immunized against the disease in question or who are exempted from immunization must be excluded from the day care facility until the local health authority indicates to the day care facility that the outbreak is over.



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Montana MCAs and ARMs (cont.)

MCA 50-2-123 Compliance Order

(1) If a person refuses or neglects to comply with a written order of a state or local health officer within a reasonable time specified in the order, the state or local health officer may cause the order to be complied with and initiate an action to recover any expenses incurred from the person who refused or neglected to comply with the order.

MCA 50-2-120 Assistance from Law Enforcement

(1) A local health officer may request a sheriff, constable, or other peace officer to assist the health officer in carrying out the provisions in this chapter.

50-2-118. Powers and Duties of Local Health Officers

"...local health officers or their authorized representatives shall:

...

(b) take steps to limit contact between people in order to protect the public health from imminent threats...

...

(d) Establish and maintain quarantine and isolation measures...

(e) Pursue action with the appropriate court if this chapter or rules... are violated"



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HB 702 – Consult your Attorney

- Prohibits "discrimination based on vaccination status"
- Allows for school/daycare exclusions:
 - "(2) This section does not apply to vaccination requirements set forth for schools pursuant to Title 20, chapter 5, part 4, or day-care facilities pursuant to Title 52, chapter 2, part 7."



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What Can Local Public Health do Today?

- Understand your supply of MMR vaccine and immune globulin available in your jurisdiction
- Ensure healthcare providers have your afterhours contact information
- Check in with your Key Surveillance Partners in your community
- Check in with your neighboring county or tribal communities
- Review the Measles Care Package and share with your community partners
- Review your local public health plans related to measles and prepare communications in advance
- Review MCAs, ARMs, and HB 702 with your jurisdiction's attorney



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Guidance for Healthcare Facilities



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Infection/Condition	Type of Precaution	Duration of Precaution	Precautions/Comments
Measles (rubeola)	Airborne + Standard	4 days after onset of rash; duration of illness in immune compromised	<p>Interim Measles Infection Control [July 2019]</p> <p>See Interim Infection Prevention and Control Recommendations for Measles in Healthcare Settings</p> <p>Susceptible healthcare personnel (HCP) should not enter room if immune care providers are available; regardless of presumptive evidence of immunity, HCP should use respiratory protection that is at least as protective as a fit-tested, NIOSH-certified N95 respirator upon entry into the patient's room or care area. For exposed susceptibles, postexposure vaccine within 72 hours or immune globulin within 6 days when available [17, 1032, 1034]. Place exposed susceptible patients on Airborne Precautions and exclude susceptible healthcare personnel.</p>
<p>During 2001-2014, 6% of non-imported measles cases in the United States resulted from transmission in healthcare facilities. Fiebelkorn AP, Redd SB, Kuhar DT. Measles in Healthcare Facilities in the United States During the Postelimination Era, 2001-2014. Clin Infect Dis. 2015 Aug 15;61(4):615-8.</p>			

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Recommended Hospital Actions

- Institute airborne precautions for suspect cases and continue standard precautions until measles is ruled out
- Inform staff members that at this point measles is suspected, but not confirmed, and you are working to diagnose the cause of the rash
- Compile a list of those potentially exposed (staff, visitors, and patients) and their susceptibility to measles (occupational health staff)
- Vaccination for measles for those who are not immune can be done (because of the concern, they may be very motivated to vaccinate)
 - DO NOT WAIT FOR TESTING RESULTS TO VACCINATE
- Measles is highly infectious, but most healthcare workers should be immunized or have shown proof of immunity
- Work with public health on case investigation, messaging to staff, and case management

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Ways to Help Prevent Healthcare Exposures

- Have patient/family call healthcare facility prior to arrival
 - Make a plan for which entrance, hallway, room they will use
- Signage outside of facility about masking if ill
 - Source control when not in TBP
- Triage for rapid identification and isolation of patients
- Ensure staff are vaccinated for measles
 - 2 doses OR known history of disease
 - Those without immunity protection should NOT care for suspect or known measles patients



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Exposed Healthcare Personnel

- Susceptible HCP should be excluded from work beginning 5 days through the 21st day following exposure.
- Exclusion is recommended regardless if post exposure vaccine or immune globulin is administered.
- HCP who develop measles symptoms after exposure should be excluded from work until 4 days after rash onset or measles have been ruled out.
- The employee may need to be cleared by occupational/employee health prior to returning to work, per facility policy.



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What Can Healthcare Settings do Today?

- Identify where your AIIR are in your facility
 - May need to talk to facility/engineering manager
- Identify where your PPE is stored and ensure it is accessible
- Identify which staff should NOT care for this patient type
 - Not immune, pregnancy status, immunocompromised
- Identify a route a suspect case should take to the previously identified AIIR or other single room
- What limitations does your facility have?
- Do you have policies or procedures that need to be updated?
- Do you ask all patients about their recent travel history?



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Resources for Healthcare Settings

- CDC HAN: Increase in Global and Domestic Measles Cases and Outbreaks
<https://dphhs.mt.gov/assets/publichealth/HAN/2024/HANAD24-01.pdf>
- Measles Diagnosis at a Glance:
<https://www.cdc.gov/measles/downloads/Measles-fact-sheet-508.pdf>
- COCA Call: Measles Clinical Presentation, Diagnosis, and Prevention
https://emergency.cdc.gov/coca/calls/2023/callinfo_081723.asp
- CDC Measles for Healthcare Providers
<https://www.cdc.gov/measles/hcp/index.html>
- COCA Now: Stay Alert for Measles Cases
<https://emergency.cdc.gov/newsletters/coca/2024/012524.html>
- Interim Infection Prevention and Control Recommendations for Measles in Healthcare Settings
<https://www.cdc.gov/infectioncontrol/guidelines/measles/index.html>



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Measles Care Package

GREG GIANFORTE
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DEPARTMENT OF
PUBLIC HEALTH &
HUMAN SERVICES

CHARLIE BRERETON
DIRECTOR

TO: Local Health Departments

FROM: Communicable Disease Epidemiology

RE: Care package for suspect measles cases

March 21, 2024

[Alt:](#)

Given the increase in measles activity in multiple states the U.S., we wanted to refresh a 'care package' of materials that you can use to assist with planning as well as questions from your surveillance partners and the general public. You may want to distribute some of these to your healthcare providers and laboratories. See suggested intent below.

The items included are:

PAGE	ITEM	INTENDED FOR
2	Measles Suspicion Checklist	Local public health
3	Measles Case Definition	Local public health
4	Measles Timeline for local investigation	Local public health
5	Measles Flowchart	Healthcare Providers
6	Laboratory testing for measles	Local public health, healthcare providers, and laboratory partners



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When in doubt, call CD Epi!

406-444-0273 (24/7)

We can connect with others to
get you the resources you need.



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Questions?

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