Title:Updated Measles Investigative Guidelines

Dear Partners,

Recent measles related Health Alert Network (HAN) and clinician alerts included recommendations that were not previously included in the Oregon Health Authority (OHA) Measles Investigative Guidelines (IGs). We updated the Measles IGs to reflect these recommendations to align with the Council for State and Territorial Epidemiologists (CSTE) Measles 2013 Case Definition. This alignment avoids discrepancies between counts reported by the Centers for Disease Control and Prevention (CDC) and OHA.

Attached you will find the revised OHA Measles Investigative Guidelines which have also been updated on our website. All changes have been highlighted for review, including the following:

* A clarification that all cases of measles are immediately reportable to OHA

* Alignment with the CSTE Measles 2013 Case Definition

    - Note that the confirmed case definition encompasses previous definitions of both confirmed and presumptive cases

    - Note that the probable case definition encompasses the previous definition of suspect cases

    - Note that the suspect case definition has been removed

* A reminder that OSPHL does not offer serologic testing for measles

* Revised language regarding specimen collection, in order of preference and by date of specimen collection following rash onset

* Updated recommendations for post-exposure prophylaxis, with a recommendation that all persons 6 months of age and older received MMR

If you have any questions, please contact Dr. Melissa Sutton (melissa.sutton@oha.oregon.gov).

Measles Investigative Guidelines
January 2026

REPORT IMMEDIATELY

1. DISEASE REPORTING

1.1 Purpose of Reporting and Surveillance

1. To identify measles cases.
2. To prevent the spread of measles.
3. To identify groups of unimmunized children and adults.

1.2 Laboratory and Physician Reporting Requirements

Physicians are required to report all cases (including suspected cases) immediately. Labs are required to report all measles-specific positive tests (e.g., IgM, virus isolation, PCR) immediately, day or night. According to OAR 333-018-0018, positive **PCR specimens must be sent to the Oregon State Public Health Laboratory (OSPHL) for additional characterization**; positive IgM samples must be forwarded to OSPHL upon request of public health.

1.3 Local Public Health Authority Reporting and Follow-Up Responsibilities

1. Report all cases (see definitions below) to the Acute and Communicable Disease Prevention Program immediately, day or night. Call 971-673-1111 to reach the state epidemiologist on call.
2. Begin follow-up investigation within 24 hours. Submit all case data electronically within 7 days of initial report. If measles is suspected, facilitate collection and transport of specimens immediately to OSPHL. Collect data that must accompany all specimens sent to OSPHL (see §3.4).
3. Initiate special control measures within 24 hours of initial report (see §5)
   - Identify contacts of the case during the period of communicability.
   - Alert infection prevention programs for all healthcare facilities visited by the case during the period of communicability.
   - Alert healthcare partners to the potential for additional cases; encourage them to consider measles in patients presenting with compatible symptoms. Make special arrangements for patient flow to minimize potential

exposures. Advise healthcare workers to immediately report any suspected case. For more information on isolation precautions see §6.2.

- Consider special clinics as needed to immunize susceptible persons.
- If indicated, prepare and distribute a press release in conjunction with OHA.
- Identify and exclude susceptibles (i.e., unimmunized children and staff) when measles has been identified in a school or childcare facility (see §§5 and 6). For more information on susceptibles in a medical setting see §6.2.

2. THE DISEASE AND ITS EPIDEMIOLOGY

2.1 Etiologic Agent

The measles virus—a single-stranded, RNA-encoded paramyxovirus.

2.2 Description of Illness

Measles is characterized by a generalized maculopapular rash, fever, and prodrome which typically includes one or more of the following: cough, coryza, conjunctivitis, or Koplik spots. There are three stages of illness:

1. Prodrome

Measles has a distinct prodromal stage that begins with a mild to moderate fever and malaise. Usually within 24 hours there is an onset of conjunctivitis, photophobia, coryza (sneezing, nasal congestion, and nasal discharge), an increasingly severe cough, swollen lymph nodes (occipital, postauricular and cervical at the angle of the jaw), and Koplik spots (seen only for a day or two before and after onset of rash). These spots are seen as bluish-white specks on a rose-red background appearing on the buccal and labial mucosa usually opposite the molars and are not always present.

2. Rash

The rash begins with flat, faint eruptions of upper lateral parts of the neck, behind the ears, along the hairline and on the posterior parts of the cheeks. The rash may appear from 1–7 days after the onset of the prodromal symptoms, but usually appears within 3–5 days. Individual lesions become more raised as the rash rapidly spreads down the body to affect the trunk, arms, legs and feet. The rash may coalesce as it spreads. In mild cases, the rash may be macular and more nearly pinpoint, resembling that of scarlet fever.

3. **Fever**

Fever is mild to moderate early in the prodrome and goes up when the rash appears. Temperatures may exceed 40°C (104°F), and usually fall

2–3 days after rash onset. High fever persisting beyond the third day of the rash suggests that a complication (e.g., otitis media) may have occurred.

2.3 Reservoir

Other acutely infected humans.

2.4 Modes of Transmission

Virus is spread directly from person to person by inhalation of suspended droplet nuclei or by contact with infective nasopharyngeal secretions. It can also be transmitted indirectly by objects (fomites) contaminated with nasopharyngeal secretions. Measles virus is labile. Half the infectivity is lost every 2 hours at 37 C, so it depends on the initial number of viral particles in the droplet. It does not survive drying on a surface, so it has a short survival time on contaminated fomites. It is effectively spread as an aerosol. The virus survives drying in microdroplets in the air relatively well, as opposed to drying on a flat surface. Measles is one of the most contagious of all infectious diseases, with >90% attack rates among susceptible close contacts.

2.5 Incubation Period

The average incubation period for measles is 11–12 days, and the average interval between exposure and rash onset is 14 days, with a range of 7–21 days. The administration of immune globulin (IG) early in the incubation period may extend this period to 28 days.

2.6 Period of Communicability

Persons infected with measles are infectious 4 days before rash onset through 4 days after rash onset. Immunosuppressed persons might have a longer period of communicability.

2.7 Treatment

No specific treatment.

3. CASE DEFINITIONS, DIAGNOSIS, AND LABORATORY SERVICES

3.1 Clinical description:

- An acute illness characterized by:
  - Generalized, maculopapular rash lasting ≥3 days; and
  - Temperature ≥101°F or 38.3°C; and
  - Cough, coryza, or conjunctivitis

3.2 Confirmed Case Definition

- An acute febrile rash illness* with:
  - Isolation of measles virus† from a clinical specimen; or
  - Detection of measles virus-specific nucleic acid† from a clinical specimen using polymerase chain reaction; or
  - IgG seroconversion† or a significant rise in measles immunoglobulin G antibody† using any evaluated and validated method; or
  - A positive serologic test for measles immunoglobulin M antibody†‡; or
  - Direct epidemiologic linkage to a case confirmed by one of the methods above.

3.3 Probable Case Definition

- In the absence of a more likely diagnosis, an illness that meets the clinical description with:
  - No epidemiologic linkage to a laboratory-confirmed measles case; and
  - Noncontributory or no measles laboratory testing.

Note: When a patient with suspected measles has been vaccinated 6–45 days prior to blood collection, neither IgM nor IgG antibody responses can distinguish measles disease from the response to vaccination. Determination of the measles genotype is necessary when measles symptoms occur following an exposure to wild-type virus and MMR vaccine was subsequently provided as postexposure prophylaxis.

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* Temperature does not need to reach ≥101°F (38.3°C), and rash does not need to last ≥3 days.

†Not explained by MMR vaccination during the previous 6–45 days.

‡ Not otherwise ruled out by other confirmatory testing or more specific measles testing in a public health laboratory.

In the absence of strain typing to confirm wild-type infection, cases in persons with measles-like illness who received measles vaccine 6–45 days before onset of rash should be classified as confirmed cases if and only if a) they have rash + fever of at least 38.3 C + at least 1 of the 3 Cs. and b) they are epidemiologically linked to a laboratory-confirmed case. Services Available at the Oregon State Public Health Laboratory (OSPHL)

3.4 Services Available at the Oregon State Public Health Laboratory (OSPHL)

OSPHL performs RT-PCR for suspect cases of measles (see testing algorithm on page 20). Serology for measles is not available at OSPHL.

All specimens submitted for measles PCR testing at OSPHL must be coordinated with and approved by ACDP.

Whom to Test

It is important to restrict testing to those patients most likely to have measles (i.e., those who have clinical symptoms compatible with disease, especially if they have risk factors for measles, such as being unvaccinated, recent history of travel abroad, no alternate explanation for symptoms). Individuals vaccinated in the previous 45 days that do not have documented or plausible contacts with measles cases and without recent history of travel to an area where measles is circulating, should not be tested at the public health lab and are presumed to be vaccine-associated cases.

Specimen Collection

If measles is considered a real possibility:

- Contact ACDP epidemiologists for approval to test specimens using PCR at OSPHL. ACDP will notify OSPHL of approval. Tests for measles can also be ordered from most commercial laboratories, however, turn-around time may be lengthy.
- After the request has been approved, refer to the OSPHL Lab Test Menu (www.healthoregon.org/labtests) for all specific instructions to collect, store, and transport PCR specimens properly.
- Collect specimens as soon as possible after rash onset in order of preference:
    1. Nasopharyngeal or oropharyngeal swab for measles RT-PCR: this is the preferred test for acute measles infection. Swabs should be collected within 5 days of rash onset. After 5 days, NP or OP swabs should be accompanied by urine.
    2. Urine for measles PCR: urine PCR is most sensitive 3–10 days

following rash onset.
3. Serum for measles IgM and IgG: measles IgM may not be positive until 3 days after rash onset and typically remains positive until 30 days after rash onset. False positive results may occur.

Specimens for PCR testing must be accompanied by a completed OSPHL Virology/Immunology Test Request Form, available at www.bitly.com/phl-forms. Collect the following required information: submitter, method of transport, expected specimen arrival date, tracking number, patient initials, DOB, rash onset date, specimen collection date, specimen type(s), and test(s) requested.

The laboratory diagnosis of measles is most often made by detection of measles RNA by RT-PCR. A negative PCR does not rule out measles because this method is affected by the timing of specimen collection and the quality and handling of the clinical specimens. RNA detection is more likely to be successful when samples are collected on the first day of rash through 3 days following onset of rash; however, it is possible to detect virus up to day 10 following rash onset.

The diagnosis can also be made by detection of measles IgM antibody in a single serum specimen. In most instances, a serum sample should be collected for measles IgM at the first clinical encounter. However, 30% of serum samples obtained in the first 72 hours after measles rash onset give false-negative results. Negative results from serum collected in the first 72 hours after rash onset should be confirmed with a second serum obtained 72 hours or longer after rash onset. IgM is detectable for at least 30 days after rash onset and frequently longer.

Often there is a blunted, transient production of IgM, and therefore a negative IgM test in a vaccinated person suspected of having measles should not be used to rule out the case; RT-PCR testing is recommended to confirm such cases. If viral testing results are noncontributory, additional testing can be performed at CDC for highly suspicious cases (e.g., plaque reduction neutralization assay and avidity of IgG). Prior approval should be obtained from the CDC measles laboratory. Consult with ACDP.

False-positive IgM results for measles may be due to the presence of rheumatoid factor in serum specimens. Serum specimens from patients with other rash illnesses, such as parvovirus B19 infection, rubella, roseola and dengue have been observed to result in false-positive reactions in some IgM

tests for measles. In these situations, confirmatory tests may be done at CDC. Because IgG confirmation requires two specimens, and because a confirmed diagnosis cannot be made until the second specimen is obtained, IgM tests are generally preferred. However, if the IgM test remains inconclusive, a second (convalescent) serum specimen, collected 14–30 days after the first (acute) specimen, can be used to test for an increase in the IgG titer.

Among persons with a recent MMR vaccination, determination of the measles genotype is necessary to distinguish between wild-type virus infection and a measles-vaccine-induced rash. In addition, the genotype is important for molecular epidemiologic surveillance.

4. ROUTINE CASE INVESTIGATION

4.1 Identify the Source of Infection

Efforts should be made to identify the source of infection for every confirmed case of measles. Cases or their caregivers should be asked about contact with other known cases. When no history of contact with a known case can be found, opportunities for exposure to unknown cases should be sought. Such exposures may occur in schools, during air travel, through other contact with recent travelers or foreign visitors, while visiting tourist locations (casinos, resorts, theme parks), in health care settings, or in churches. Unless a history of exposure to a known case within 7–21 days prior to onset of rash in the case is confirmed, cases or their caregivers should be closely queried about all these possibilities.

Ask about:

- Names, addresses and phone numbers of any householder, playmate or other contact who was sick or had a rash;
- Any indoor group activity attended (e.g., churches, theaters, tourist locations, air travel, parties, athletic events, family gatherings, and the like);
- Any visit to a doctor’s office, clinic, or hospital (find out exact time and date);
- Any healthcare employment;
- Attendance or work at a school, child care, college, prison, etc.;
- Any travel within and outside of Oregon; and,
- Any visitors from areas where measles is circulating

4.2 Identify Potentially Exposed Persons (Contacts)

Identify persons who may have been exposed to the case during the period from 4 days before through 4 days after onset of rash.

Measles is spread by the airborne route and is potentially transmissible after only brief exposure and at distances as great as 30 meters. The virus can remain airborne for up to 2 hours.

There is no accepted, data-based definition of measles "exposure" that demands public-health follow-up. For practical reasons during a case investigation, some lines must nonetheless be drawn. In typical circumstances, "exposure" may be defined as

- any period of time spent indoors
- within 10 meters of a case's location
- within 20 minutes of the case's having been there.

These are operational guidelines only, and a more aggressive definition may be called for in some circumstances—e.g., a case who is coughing vigorously, or a case in an under-immunized population or in a school with high exemption rates. Conversely, cases are less contagious after the rash appears—which is when most of them seek medical attention—lessening the risk of transmission in healthcare settings. In a hospital setting, the hospital's Infection Prevention Program might choose to use a broader time interval to define measles "exposure."

Of those exposed, determine which have no evidence of immunity (as in §4.3), and implement appropriate prevention measures (§5.4).

4.3 Determine Measles Immune Status of Exposed Contacts

Nothing is foolproof, but any of the following are considered acceptable evidence of immunity:

- Birth before 1957 (but see §6.2)
- Laboratory-confirmed disease
- Laboratory evidence of immunity (protective antibody titers); or
- Documentation of vaccination as follows:
  - Pre-school children: 1 dose
  - Children in grades K–12: 2 doses
  - Women of childbearing age: 1 dose
  - Healthcare personnel born during or after 1957: 2 doses
  - Students at post-high-school educational institutions: 2 doses
  - International travelers ≥12 months of age: 2 doses

[§] A child receiving a measles-containing vaccine dose at this age should still receive the standard 2-dose MMR vaccine series starting at age 12 months. This child would receive a total of 3 MMR doses.

- Children 6–11 months who plan to travel internationally: 1 dose[§]
- All other adults: 1 dose

Only doses with written documentation of the date of administration are considered valid; self-reported doses should not be counted. The vaccination status of persons for whom vaccination is not documented should be classified as “unknown.” Persons are categorized as “unvaccinated” if they report that they had no history of being vaccinated; if available, immunization records should be checked to verify lack of vaccine receipt.

4.4 Environmental Evaluation

None.

5. CONTROLLING FURTHER SPREAD

5.1 General Comments

An outbreak is defined as three or more cases linked by time and place. However, outbreaks are now rare in Oregon, where two doses of measles vaccination have been required since 1998. High vaccination rates have interrupted the endemic transmission of measles in the United States, though they have been falling in recent years. In 2024, about 95% of K–12 kids had received two doses. When vaccination rates remain high, aggressive measures are not needed to control measles. Consider asking the reporting provider questions like “might the rash be due to antibiotics? Have you tested for other viruses?”

5.2 Education

Case should be isolated for four days post rash onset. Instruct contacts or parents to look for signs and symptoms of measles 7–21 days after the first day of contact with the ill person during the communicable period. If suggestive symptoms develop, they must call the local health department ASAP. It is important to avoid exposing people who may coincidentally be present at a healthcare facility or doctor’s office. Persons with possible measles should call ahead first to alert staff at such facilities so that special arrangements can be made to prevent contact with other patients or employees, pending an evaluation. Ideally, for individuals for whom measles is a distinct possibility, the LHD will facilitate a plan for entry into the evaluating health care facility in a way that

minimizes the likelihood of exposing others.

5.3 Isolation of Cases and Vitamin A

Keep hospitalized patients under airborne precautions for 4 days after rash onset. Exclude cases with confirmed and presumptive measles from child care, school or work as long as they could be contagious (ORS 433.255; OAR 333-019-0010. Advise cases to stay home and avoid contact with others.

Under the supervision of a healthcare provider, vitamin A may be administered to infants and children in the United States with measles as part of supportive treatment. Under a physician's supervision, children with severe measles, such as those who are hospitalized, should be given vitamin A—preferably immediately on diagnosis and repeated the next day for a total of 2 doses. Inappropriate dosing may lead to hypervitaminosis A. The recommended age-specific daily doses are:

- 50,000 IU for infants younger than 6 months of age
- 100,000 IU for infants 6–11 months of age
- 200,000 IU for children 12 months of age and older

5.4 Prioritization of Contacts

During investigation, postexposure prophylaxis of household contacts without presumptive evidence of immunity should not be delayed pending the return of laboratory results. Other high-priority groups for contact investigation are 1) close contacts other than household (e.g., persons who shared the same room or airspace in various settings), 2) persons exposed in health care settings because of the risk of transmission to persons at high risk of serious complications, and 3) persons exposed in schools, child-care centers, colleges, churches, or other close settings where a defined number of persons have congregated because of high contact rates and transmission potential. In particular, one should identify individuals at high risk for severe disease, including infants who are not vaccinated, immunocompromised individuals, and pregnant women.

Exposed persons who cannot readily document presumptive evidence of measles immunity should be offered postexposure prophylaxis 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; purported doses without written documentation should not be counted.

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 last exposure. Persons excluded from school or work should be advised to call ahead before visiting all healthcare facilities (including outpatient clinics, urgent care, and emergency departments), to ensure appropriate precautions are in place prior to patient arrival. These arrangements will minimize potential exposure of healthcare workers, patients, and visitors. Close collaboration with healthcare infection preventionists is recommended.

If resources are constrained, other exposure settings will more commonly be lower priority for investigation, though public health decisions should be guided by the epidemiologic findings. For exposures in venues like restaurants, stadiums, and malls, communicating with the general public through radio, TV, or other media (rather than through individual contact tracing) may be used to reach potentially exposed persons.

5.5 Protection of Contacts

Active Immunization with Measles Vaccine

Vaccination remains the most effective tool we have in preventing measles transmission. Individuals without immunity are highly susceptible to measles and clinicians should reinforce the importance of vaccination.

For routine vaccination of children living in areas with ongoing measles transmission, early administration of MMR may be considered. The first dose of MMR may be given as early as 6 – 12 months. Children who receive their first dose of MMR prior to 12 months of age should receive two additional doses separated by at least 28 days after 12 months of age. The second dose of MMR may be given as early as 28 days after the first dose in children > 12 months of age.

Providers should consider post-exposure prophylaxis for patients who were exposed to measles and are susceptible to measles.

There are two types of post-exposure prophylaxis for measles:

- MMR vaccine: must be administered within 72 hours of initial measles exposure.
- Immunoglobulin (IG): must be administered within six days of exposure.

For vaccine-eligible people aged ≥6 months exposed to measles, administration of MMR vaccine is preferable to using IG, if administered within 72 hours of initial

exposure. For infants 6–12 months of age, either MMR vaccine or IG may be provided.

The MMR vaccine, if administered within 72 hours of initial measles exposure, may provide some protection or modify the clinical course of disease among susceptible persons who otherwise have no contraindications to MMR vaccination (e.g., severe immunocompromise, age <6 months, pregnancy). However, vaccination should be offered at any interval following exposure to offer protection from future exposures.

Passive Immunization with Immune Globulin

The following patient groups are at risk for severe disease and complications from measles and should be prioritized to receive IG: infants aged <6 months, pregnant women without evidence of measles immunity, and severely immunocompromised people. Do not administer MMR vaccine and IG simultaneously.

IG, if administered within six days of initial measles exposure, may provide some protection against measles or modify the clinical course of disease among susceptible persons. IG is the only option for PEP for populations which cannot receive MMR (infants less than six months of age, severely immunocompromised people, and pregnant women).

Recommended dosages and routes of administration of IG for measles post-exposure prophylaxis are as follows:

- Infants <12 months of age: 0.5 mL/kg of body weight, given *intramuscularly* (maximum dose = 15 mL). For infants aged 6–11 months, MMR vaccine is an acceptable alternative to IG, if given within 72 hours of exposure.
- Pregnant women without evidence of measles immunity: 400 mg/kg of body weight, given *intravenously*.
- Severely immunocompromised persons, irrespective of evidence of measles immunity: 400 mg/kg of body weight, given *intravenously*.
- IG (0.5 mL/kg of body weight; maximum dose = 15 mL) can be given *intramuscularly* to other persons who lack evidence of measles immunity, but priority should be given to persons exposed in settings with intense, prolonged, close contact (e.g., household, child care, classroom, etc.). However, postexposure use of intramuscular IG might be limited because of the required volume; persons who weigh >30 kg will receive less than the recommended dose.

Patients should be warned that IG may only modify measles infection and may increase the incubation period to 28 days. IG should never be used as an outbreak control measure. To be effective, IG must be administered ASAP but not more than 6 days after exposure.

The recommended interval before measles- or varicella-containing vaccine administration is available at: https://public.health.oregon.gov/PreventionWellness/VaccinesImmunization/ImmunizationProviderResources/Documents/SOMMR-MMRV.pdf

5.6 Contact Follow up

Quarantine

Broad, mandatory quarantine is not generally indicated to control measles outbreaks. However, targeted (most commonly voluntary) quarantine may be implemented, especially where unvaccinated or populations at risk are affected. In such situations, susceptible persons who have been exposed to measles should be advised to stay home during days 5–21 after exposure. Under special circumstances, such as during outbreaks in schools attended by large numbers of persons who refuse vaccination, restriction of an event or other quarantine measures might be warranted (see §6).

5.7 Activation of Person Under Monitoring (PUM) Approach

If the event that a local measles case is identified and exposures (defined loosely above) occurred, a Person Under Monitoring (PUM) approach may be used, where asymptomatic persons with exposure to a measles case and without evidence of immunity to measles, are actively monitored by LHD staff for 21 days following exposure (28 days if IG was administered). Active monitoring involves frequent (at least 3 times/week) reporting of temperature and symptoms to public health staff without visual contact. Direct active monitoring with visual contact is not typically necessary in measles investigations. The use of the PUM approach ensures ongoing follow-up with public health staff, allows for immediate scale-up of response steps should symptoms begin, and facilitates safe entry to health care settings when medical care is needed.

6. MANAGING SPECIAL SITUATIONS

6.1 Case among Employees or Attendees at School or Child care Facility

1. Establish symptom watch for all identified school or child care contacts, requesting a call to the local health department for any prodromal signs,

symptoms, or rash illnesses compatible with measles occurring within 21 days from the last date of attendance by any measles case. Offer vaccine for those who are not up to date with age-appropriate vaccination (first dose to unvaccinated, second dose to those with one documented dose can be given at least 28 days after the first dose). Active surveillance, with periodic check-ins, is recommended for susceptible contacts and those who received post- exposure prophylaxis because of the measles exposure.

2. Encourage those with suspected infections to stay home while symptomatic so as not to expose susceptibles. To prevent healthcare-associated transmission, parents should call their children's healthcare provider about the possibility of measles prior to arriving to the clinic, urgent care, or emergency department. Parents should also be instructed to immediately notify the local health department if symptoms develop. The LHD should facilitate special arrangements with the healthcare facility, to minimize potential exposure of healthcare workers, patients, and visitors. Upon arrival to the facility, suspected patients should be met outside the building and masked before entering (surgical or procedure mask). Ideally, the medical evaluation should be scheduled for the end of the day to further minimize exposures. Close collaboration with healthcare infection preventionists is recommended. Airborne precautions include isolation in a negative air pressure isolation room, also known as airborne infection isolation (AII) or airborne infection isolation room (AIIR). *In clinic settings where a negative air pressure isolation room may not be available, a single room with the door closed and away from susceptible contacts may be used when evaluating persons in whom measles is suspected.* The door should be kept closed as much as possible. After the patient leaves, that exam room should not be used, with the door kept closed for 2 hours after the patient leaves. Suggest that the clinic places a "do not enter" sign on the door with the time that the patient exited.

3. Exclude all unimmunized children and staff without evidence of natural immunity (including susceptible siblings of a case attending other schools). Susceptible children and staff attending school (including susceptible siblings of a case attending other schools) at the time the case was communicable should be excluded for 21 days after the last date of attendance of the last measles case. However, these individuals should be monitored for signs and symptoms of measles, and age-appropriate vaccination should be encouraged. At the health officer's discretion, these persons can be readmitted once vaccinated. Except in health care settings, unvaccinated persons who receive their first dose of MMR vaccine within 72 hours postexposure may return to childcare, school, or work. Persons who

have been exempted from measles vaccination for medical, religious, or other reasons and who do not receive MMR within 72 hours should be excluded from affected institutions in the outbreak area until 21 days after the onset of rash in the last case of measles.

6.2 Case in a Medical Setting

Control efforts in medical settings should focus on reviewing existing immunization policies, employee immunization records, and patient isolation practices.

Healthcare workers (volunteers, trainees, nurses, physicians, technicians, receptionists and other clinical support staff) should be immunized before exposure. Documentation of immunity should be easily and readily available.

When a person suspected of measles visits a healthcare facility, airborne isolation precautions should be followed stringently. The patient should wear a mask (procedure or surgical mask) until isolated in a negative air pressure isolation room, also known as airborne infection isolation (AII) or airborne infection isolation room (AIIR). If an AIIR is not available, the patient should be placed in a private room with the door closed and be asked to wear a surgical or procedure mask. Only staff with presumptive evidence of immunity should enter the room of a person with suspect or confirmed measles. Ideally, for individuals for whom measles is a distinct possibility, the LHD will facilitate a plan for entry into the evaluating health care facility in a way that minimizes the likelihood of exposing others.

If a case with measles in any stage of communicability was treated at a healthcare facility, identify potentially exposed healthcare workers (see §4.2 above) and assess their documented immune status to confirm that they are immune. In an abundance of caution, all susceptible healthcare personnel who have been exposed to measles should be relieved from all patient care, and excluded from the facility from the 5th to the 21st day after exposure, regardless of whether they have received vaccine or immune globulin after the exposure. Personnel who become ill should be relieved from all patient care and excluded from the facility until 4 days after the rash appears. This includes any ill physicians. The desirability of a priori immunity is obvious. If immune globulin is administered to an exposed person, observations should continue for signs and symptoms of measles for 28 days after exposure since immune globulin may prolong the incubation period.

Case-patient contacts should likewise have their immune status assessed and be given vaccine if they are not immune; school and work restrictions for

exposed, susceptible contacts apply. Obtain a line list of patients exposed from the infection control nurses at the hospital. This line list should include all necessary information to be able to contact such patients, including – name, DOB, address, phone #s, etc.

When calling exposed patients, inquire about any visitors who may have visited these patients during their stay in the hospital and who, consequently, were also exposed.

During an outbreak of measles, healthcare facilities serving the outbreak area should recommend 2 doses of MMR vaccine for unvaccinated personnel, including those born before 1957 who lack laboratory evidence of measles immunity or laboratory confirmation of disease.

We occasionally get questions about potential risk to persons in distant locations, but which share an air supply—e.g., via ventilation ducts. Priority in contact tracing and management should first be given to immediate close contacts of ill patients or healthcare workers. Subsequently, contact identification may proceed at the discretion of the facility's infection preventionists for those who may have been exposed via the air flow in other areas of the hospital, if the nature of the HVAC system suggests true potential for exposure.

6.3 Case on an Aircraft

Although measles transmission has been documented during air travel, it is uncommon; a CDC study found 9 secondary cases of measles among 3,399 passengers potentially exposed on one of 108 flights by one of 74 measles cases who flew while contagious. All secondary cases were exposed on international flights lasting 6.9–15 hours and sat within 11 rows of the case.[**] Notify the ACDP epidemiologist on-call if the case has traveled while infectious.

Please collect the following information: name and DOB of patient, names and DOB of travel companions, travel dates (include airline name, flight number), seat number and any information about whether the index case plans to continue travel while infectious.

An admittedly arbitrary definition has been devised to cover who may have been sufficiently exposed to warrant notification.

[**] Nelson K, Marienau K, Schembri C, Redd S. Measles transmission during air travel, United States, December 1, 2008–December 31, 2011. Travel Med Infect Dis 2013; 11:81–9

Persons aboard the plane who are considered exposed:

- In planes with >50 passengers:
  - passengers sitting in the same row, and in the 2 rows in front of and behind the ill passenger (except that the Bulkhead is considered a barrier);
  - all children younger than 2 years seated on adult passengers' laps anywhere on the plane; and
  - any flight crew serving case.
- In planes with ≤50 passengers: all passengers and crew, including the pilots. Passengers who are contacted should be informed of their exposure, queried about their age and immune status, and offered post-exposure immunoprophylaxis with vaccine or IG as appropriate.

Exposed persons without evidence of immunity should be offered MMR vaccine, be excluded from high-risk settings (school, hospital, day care), and advised to avoid travel during the incubation period, and if symptoms develop, to avoid contact with others. If health care is required, they should call the office or emergency department beforehand to make arrangements to be seen where others will not be exposed. Please enter the exposed people to the contact tracker database.

A second dose of measles vaccine is recommended for people who travel internationally and were born in 1957 or later (absent a history of measles infection).

6.4 Going Public

Consult with ACDP/Immunization staff before going public. They will help you draft your press release and can assist with contacting media representatives who are outside your local area (e.g., Portland TV stations, the Oregonian), as well as public health officials in other counties and neighboring states.

UPDATE LOG

January 2026. Case definitions aligned with CSTE. Testing, vaccine, and post-exposure prophylaxis recommendations updated. (Howard Chiou, Juventila Liko, Melissa Sutton, Lex Zhang)

March 2025. Vit A recommendation added. (Juventila Liko)

December 2024. Confirmed case definition updated, outbreak OSPHL testing criteria removed, laboratory reporting requirements clarified, and serology testing availability at Washington State Public Health Laboratory removed. (Paul

Cieslak, Juventila Liko).

July 2024. OSPHL testing criteria temporarily modified because of the ongoing outbreak. (Juventila Liko).

February 2021. Reporting period updated for LHDs. It's now immediately reportable. (Juventila Liko)

October 2020, Editing of some language and fixed formatting issues. (Juventila Liko)

November 2019. Updated flight investigation to reflect CDC/DGMQ guidance. (Juventila Liko)

June 2019. Second MMR recommended for eligible persons exposed to measles. Reference to Algorithm for assessment of persons exposed to measles added. (Paul Cieslak, Juventila Liko; algorithm created by Alex Wu)

November 2018. Sections on laboratory testing and contact investigation revised including introduction of PUM approach. (Juventila Liko, Becca Pierce)

August 2018. Added clarification for laboratory testing approvals. (Sarah Humphrey, Juventila Liko)

June 2018. Added PCR testing at the OSPHL. (Juventila Liko)

April 2017. Confirmed case definition revised. (Juventila Liko)

March 2017. Lab section revised for clarity and to transport specimens to the OSPHL. (Juventila Liko)

October 2016. Table on the recommended interval before measles- or varicella-vaccine containing administration is deleted. Reference to the standing order added. (Juventila Liko)

May 2015. Added CDC's language about laboratory testing. (Juventila Liko)

March 2015. Added flowchart for testing criteria. (Juventila Liko)

February 2015. The lab section was updated to reflect the most recent OSPHL guidelines. (Juventila Liko)

September 2014. Added clarification about other potential diagnosis for measles-like illnesses. (Juventila Liko)

March 2014. Urine specimen recommended in addition to NP swab; passive surveillance for UTD contacts and language clarified in several places. (Juventila Liko)

August 2013. Outbreak definition revised to be more in line with the national definition. (Juventila Liko)

March 2013. The acceptable evidence of immunity is updated. Dosage of the immune globulin for measles post exposure prophylaxis is increased since IG levels have been going down in the donor population in the vaccine era and available evidence suggests that the dose of 0.25ml/kg may not provide adequate protection. (Juventila Liko)

December 2012. Clarified LHD responsibilities regarding measles testing at WSPHL. (Juventila Liko)

January 2012. Typo corrected in section 6.2 Healthcare workers should be excluded for 4 days after rash onset, not 7. (Paul Cieslak)

September 2011. Minor wordsmithing of case definitions and the acceptable evidence of immunity. Reporting responsibilities revised. Also, revised the lab section adding testing availability at WSPHL for cases when disease is considered a possibility. Section 6.4 “Going Public” was added. (Juventila Liko)

March 2011. Minor wordsmithing of case definitions. (Juventila Liko)

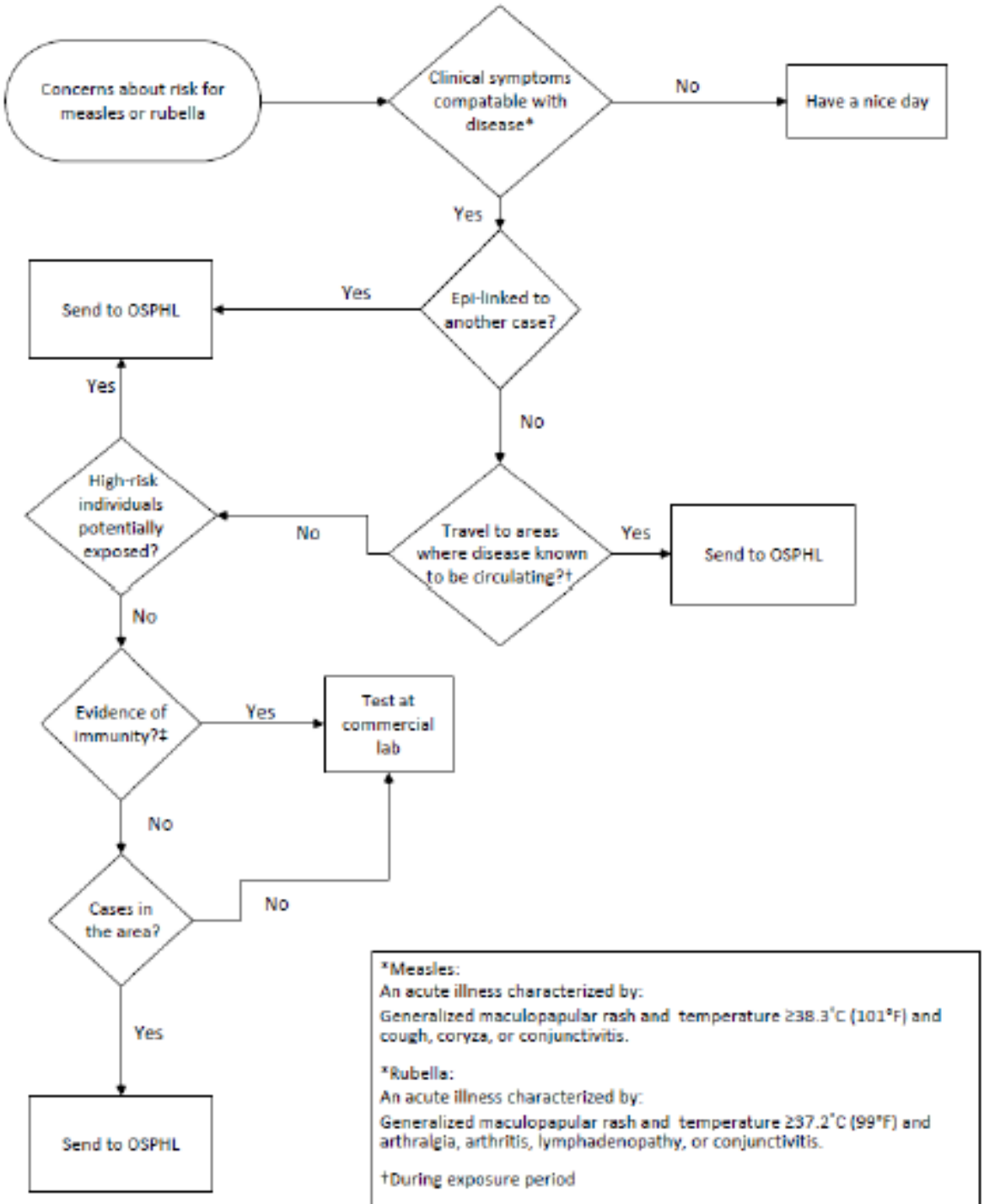
April 2010. Services available at OSPHL updated. (Juventila Liko)

April 2008. Revised 2.4, 3.4, 4.2, 4.3, 5.1, 5.4, 5.5, 6.2, 6.3 to reflect a concerted approach to the control of measles in Oregon based on high levels of measles vaccination in the community, national recommendations, and a focused attack on measles outbreak. Recommendations concerning identification of contacts were revised to recommend “20 minutes-10 meters rule” (down from 2 hours cutoff). (Paul Cieslak, Juventila Liko)

October 2007. Case definitions revised to require symptoms. This is more in line with the national definition and acknowledges the fact that with our incidence of disease being so low, IgM has a poor positive predictive value. (Juventila Liko)

July 2006. The confirmed case definition was modified from "IgM antibody to measles virus" to "positive IgM serology to measles." Several people had misinterpreted the older language to mean that the presence of any IgM antibody was indicative of a confirmed case. Recommendations concerning follow- up to potential airborne exposures were revised to recommend a 2-hour cutoff (down from 4 hours). Longer periods are certainly possible, but the risk beyond 2 hours is apparently low enough that the juice isn't worth the squeeze. Not coincidentally this makes our recommendations more consistent with CDC's. (Juventila Liko)

Testing criteria for measles and rubella



Oregon Health Authority, June 2024