Provider Update— Measles Prevention, Prophylaxis, and MMR Recommendations

Resource Updated: February 5, 2019

The following frequently asked questions and example scenarios pertain to recommendations for providers during the winter 2019 measles outbreak activity in the Portland-metro area. These recommendations are intended to support clinical decision-making related to the administration of vaccine and immunoglobulin.

Q: When should MMR vaccination be offered to individuals who have not been exposed to measles?

If exposure to measles has not occurred, susceptibility to measles given the following considerations should inform whether vaccine is offered to an individual or group.

Oregon Health Authority (OHA) considers individuals immune to measles if they have written documentation (records) showing at least one of the following:

1. Birth before 1957 (but see healthcare personnel guidance below)
2. Laboratory-confirmed disease
3. Laboratory evidence of immunity (protective antibody titers); or
4. Documentation of vaccination as follows:

    Pre-school children: 1 dose
    Children in grades K–12: 2 doses
    Students in post-high-school educational institutions: 2 doses
    Women of childbearing age: 1 dose
    Healthcare personnel*: 2 doses
    International travelers ≥12 months of age: 2 doses
    Other adults: 1 dose

**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.*

The second dose of MMR can be administered as soon as 28 days after the first dose and would be expected to boost vaccine effectiveness at preventing measles from 93% for a single dose to

97%. An accelerated schedule is not required, but is acceptable and can be considered in the context of likelihood of future exposure during an outbreak.

Certain individuals should not receive the MMR vaccine, including pregnant women, those with immunocompromising conditions, or infants less than 6 months of age.

A single dose of MMR can be administered to infants aged 6-11 months if there is an ongoing risk of exposure. Infants who receive MMR prior to 12 months will still need two doses after they are 12 months old. Administering MMR between 6-11 months may blunt response to subsequent doses of MMR.

Q: Should those who received measles vaccine other than MMR and MMRV be revaccinated?

Persons who received measles vaccine of unknown type, inactivated measles vaccine, or further attenuated measles vaccine accompanied by IG or high-titer measles immune globulin (no longer available in the United States) should be considered unvaccinated and should be revaccinated with 1 or 2 doses of MMR vaccine, as outlined above.

Q: Should MMR vaccination be offered to individuals after exposure to measles?

The MMR vaccine, if administered within 72 hours of initial measles exposure, may prevent disease or reduce disease severity among susceptible persons. However, unless contraindicated, vaccination should be offered at any interval following exposure in order to offer protection from future exposures. Those who receive vaccine post exposure may still develop measles. In addition, approximately 5% of newly vaccinated individuals may develop a vaccine rash, which can be confused with measles. Patients and their caregivers should be instructed to monitor for measles symptoms. (See additional information in Q: Should individuals who receive IG or vaccine still monitor for symptoms of infection?)

Jurisdictional guidance may vary regarding the administration of vaccine to unvaccinated children and adults between days 4–21 post-exposure. This variation is reflective of outbreak characteristics and local epidemiology. In the context of current Oregon measles activity, an asymptomatic individual who requests vaccine after an exposure can be offered vaccine to protect from future exposures.

<u>Considerations for infants <12 months old:</u>

Infants younger than 6 months should not receive MMR vaccine, but should receive intramuscular immunoglobulin (IG) if within 6 days of exposure (see guidance for IG below). Infants aged 6–11 months, not otherwise immunocompromised, who had contact with a measles case should receive MMR vaccine as post-exposure prophylaxis if it can be administered within 72 hours. Infants who receive MMR prior to 12 months will still need two doses after they

are 12 months old. If unable to administer vaccine within 72 hours, see guidance for IG administration below. Note that MMR and IG should not be given at the same time.

Q: When should immunoglobulin (IG) be offered?

IG can be administered within six days of a measles exposure to protect individuals from developing disease or alter the clinical course following an isolated measles exposure. It is not used specifically to contain outbreaks as it does not confer protection against future exposures. IG is generally prioritized for exposed, susceptible individuals at high risk for severe disease, including:

- Infants under age 12 months* (intramuscular IG 0.5 mL/kg, max 15 mL)
- Pregnant women without evidence of immunity (400 mg/kg IVIG)
- Severely immunocompromised persons† regardless of vaccination history (400 mg/kg IVIG)

**For infants 6 through 11 months of age, MMR vaccine is recommended in place of IG, if it can be administered within 72 hours of exposure.*

†*Severely immunocompromised patients include patients with severe primary immunodeficiency; patients who have received a bone marrow transplant until at least 12 months after finishing all immunosuppressive treatment, or longer in patients who have developed graft-versus-host disease; patients on treatment for ALL within and until at least 6 months after completion of immunosuppressive chemotherapy; and patients with a diagnosis of AIDS or HIV-infected persons with severe immunosuppression defined as CD4 percent <15% (all ages) or CD4 count <200 lymphocytes/mm^3 (aged >5 years) and those who have not received MMR vaccine since receiving effective ART.*

OHA generally recommends the use of IG only for those at risk for severe disease (above). Prescribing healthcare providers may administer IG at their discretion, but should consider that receipt of IG extends the measles incubation period from 21 days to 28 days, which can have implications for active monitoring and school exclusion; and that those who receive IG cannot be given vaccine for a period of 6 months afterwards, because the antibodies inhibit replication of the attenuated vaccine virus, blunting the immune response. Note that MMR and IG should not be given at the same time.

Q: Who will provide IG?

Most health plans are likely to cover IG for patients who need it. Patients and providers should check with health plans to ensure that IG is covered before it is administered. Local hospitals often stock IG for privately insured patients who need it.

For high-risk patients (defined above) who have been exposed to measles but who cannot obtain IG because of lack of availability or insurance coverage, a local public health authority can request IG from OHA. Such requests will be approved on a case-by-case basis by the Acute and Communicable Disease Prevention section.

Q: Should individuals who receive IG or vaccine still monitor for symptoms of infection?

Yes, previously unvaccinated individuals with exposure to a measles case should be instructed to monitor for signs and symptoms of infection even if they have received post-exposure vaccine or IG. Exposed contacts who receive IG will monitored for 28 days, and those who receive post-exposure vaccine will be monitored for 21 days. An exposed, susceptible child will be excluded from school or daycare for the duration of this monitoring period. An unvaccinated child who received a dose of MMR within 72 hours of exposure may be allowed back at school or daycare at the discretion of the local health officer.

Post-prophylaxis, individuals should be instructed to alert their local health department immediately should symptoms develop. This includes monitoring for prodrome symptoms (cough, runny nose, conjunctivitis, and fever) and rash (typically appears within 3-4 days of prodrome symptoms). They should avoid contact with unvaccinated individuals and should remain home if any symptoms develop. Instruct patients that if they need to be evaluated in person, they should call ahead to avoid exposing others in healthcare settings.

Example scenarios during a measles outbreak and considerations for prophylaxis

Decision-making regarding prophylactic administration of IG or vaccine should be made in collaboration with the local health department.

Symptomless, 11-month old infant with 4-hour exposure to a confirmed measles case 2 days ago during playdate in a household. Measles case developed a rash the day after the playdate.

Considerations: This is a high-probability exposure to a measles case during their infectious period (typically 4 days before rash onset and 4 days after). Exposed infant is susceptible and at high risk for severe disease. Within the first 72 hours of exposure, MMR vaccination may provide protection against disease and would confer protection from near-future exposures. The infant would still require two additional doses of measles vaccine given after the age of 12 months and at least four weeks apart. Infant should be monitored for signs and symptoms of measles for the duration of the incubation period.

Symptomless, 5-month old infant with brother recently diagnosed with measles. Brother developed rash two days ago.

Considerations: It is likely that the earliest exposure to measles occurred six days ago (2 days post-rash + 4 days of communicability prior to rash onset). Child is susceptible to measles and at high risk for severe disease. IG can be given up to six days post-exposure. IG may prevent the disease, but the child should be monitored for symptoms of measles for the duration of the incubation period (28 days if IG administered; otherwise 21 days).

Symptomless 4-year old, unvaccinated child who was in large public space at the same time as a confirmed measles case 5 days ago.

Considerations: Child, unless immunocompromised, is not at high risk for severe disease. Risk of exposure, though possible, is low probability given the large public-area exposure. The child is within the window where IG could be administered (within 6 days of exposure), but it would not provide protection against future exposures, would extend the incubation period from 21 to 28 days, and would preclude vaccination for six months. Though it is outside of 72-window since exposure, MMR could protect against future exposures. Child should be monitored for signs and symptoms of measles for the duration of the incubation period.

Symptomless 4-year old, unvaccinated child who had close contact 6 days ago with a relative who has now been diagnosed with measles. The relative developed a rash the day before the exposure occurred.

Considerations: Child, unless immunocompromised, is not at high risk for severe disease, but had a high-probability exposure to a measles case. The child is (barely) within the window where IG could be administered (within 6 days of exposure), but it would not provide protection against future exposures, would extend the incubation period from 21 to 28 days, and would preclude vaccination for six months. Though it is outside of 72-window since exposure, MMR could protect against future exposures. Child should be monitored for signs and symptoms of measles for the duration of the incubation period.