MEASLES

MDHHS Measles Outbreak Guidance: Use of Vaccine and Immune Globulin

Pre-Exposure Recommendations:

- Measles, mumps, rubella (MMR) vaccine recommendations:
  - Routinely in childhood as a 2-dose series. Give dose 1 at 12 months, give dose 2 at 4-6 years.
    - *Note:* the minimum interval between 2 doses of MMR is 4 weeks. Providers should evaluate a child's risk of exposure to a community outbreak and use their clinical discretion to determine if a second dose of MMR should be given earlier than 4 years of age.
  - Catch up unvaccinated children and adolescents through 18 years of age: 2 doses at least 4 weeks apart.
  - Infants aged 6-11 months traveling internationally should receive 1 MMR before departure.
    - Revaccinate with the routine 2-dose series beginning at 12 months (ensure 4-week minimum interval between MMR doses is met).
  - Adults aged 18 years and older should receive 1 or 2 doses depending on indication.
    - Students at post-high school educational institutions, international travelers, household or close personal contacts of immunocompromised persons, and healthcare personnel born in 1957 or later should receive 2 doses.
  - Recommendations during an outbreak: for outbreaks with community-wide transmission, a second MMR dose should be considered for children aged 1-4 years or adults who have received 1 dose. During measles outbreaks involving infants <12 months with ongoing risk for exposure, infants aged ≥6 months can be vaccinated.
    - These situations are at the discretion of the healthcare provider.

Post-Exposure Recommendations:

- Post-exposure prophylaxis (PEP) vaccine or immune globulin (IG) is only recommended for those without evidence of immunity (i.e., susceptible). There is evidence that the efficacy of either form of PEP for preventing measles disease is greatest when administered as soon as possible after exposure.
- Acceptable evidence of immunity includes:
  - Documentation of age-appropriate measles-containing vaccine for persons who are not severely immunocompromised (for definition of severe immunosuppression, see page 3); or
  - Laboratory evidence of immunity (*Note:* equivocal lab results should be considered negative); or
  - Laboratory confirmation of disease; or
  - Born before 1957. *Note:* for healthcare personnel born before 1957 with no other evidence of immunity, consider 2 doses of MMR vaccine. However, during a measles outbreak in a healthcare facility, 2 doses of MMR vaccine are recommended for unvaccinated HCP regardless of birth year who lack laboratory evidence of immunity or disease.

- Prioritize people at high risk for severe illness and complications from measles to receive IG. This includes:
    - Infants <12 months
    - Pregnant women without evidence of measles immunity
    - Severely immunocompromised persons (regardless of previous measles vaccination status)
- Intramuscular IG (IGIM) can be administered to other persons who do not have evidence of measles immunity, but priority should be given to persons exposed in settings with intense, prolonged, close contact (e.g., household, daycare, and classroom)
- IG is not indicated for persons who have received 1 or more doses of measles-containing vaccine at age 12 months or older, unless they are severely immunocompromised (see page 3).
- Persons do not need IG if:
    - They have already received or are currently receiving intravenous IG (IGIV) therapy at a dose of at least 400 mg/kg within 3 weeks before measles exposure; or
    - They received subcutaneous IG at a dose of at least 200 mg/kg for 2 consecutive weeks before measles exposure.
- When administering IGIM, the recommended dose is 0.5 mL/kg of body weight with a maximum dose of 15 mL. The suggested volumes for a single IGIM injection site are as follows (infants and toddlers would fall at the lower end of these ranges, adolescents and adults generally fall on the higher end):
    - Deltoid: range 0.5 – 2 mL
    - Anterolateral thigh: range 1 – 5 mL
- Healthcare personnel without evidence of immunity who have been exposed to measles should receive PEP (see "Susceptible contact aged 1 year or older" in the table below). In addition, they should be excluded from work from day 5 after the first exposure to day 21 following their last exposure, regardless of whether they received vaccine or IG after the exposure.

Recommended Dose and Timing of Measles PEP

Risk Factor	Time from First Exposure	
	<72 Hours	**72 Hours Through Day 6**
Infant <6 months old	Give IGIM: 0.5 mL/kg	Give IGIM: 0.5 mL/kg
Infant 6 through 11 months	Give MMR or give IGIM: 0.5 mL/kg	Give IGIM: 0.5 mL/kg
Susceptible pregnant women	Give IGIV: 400 mg/kg	Give IGIV: 400 mg/kg
Severely immunocompromised (regardless of vaccine status)	Give IGIV: 400 mg/kg	Give IGIV: 400 mg/kg
Susceptible contact aged 1 year or older weighing ≤30 kg	Give MMR if no contraindications. Consider MMR for children 1-4 years if 4-week minimum interval after 1st dose is met.	May consider IGIM: 0.5 mL/kg
Susceptible contact aged 1 year or older weighing >30 kg	Give MMR if no contraindications. Consider MMR for children 1-4 years if 4-week minimum interval after 1st dose is met.	May consider IG at discretion of provider. *Note:* for IGIM, persons weighing >30 kg will receive less than the recommended dose and will have lower titers than recommended.

Note: the maximum dose of IGIM for all persons is 15 mL.

Intervals Between MMR Vaccine and IG

- Any susceptible person exposed to measles who received IG should subsequently receive MMR vaccine, provided the person is then aged ≥12 months and the vaccine is not otherwise contraindicated.
    - Give MMR no earlier than 6 months after IGIM administration.
    - Give MMR no earlier than 8 months after IGIV administration.
- If IG is administered within 2 weeks following MMR (or varicella) vaccine, the individual should be revaccinated. See above bullet for minimum intervals between IG and MMR.

Immunocompromised Persons

- Severely immunocompromised persons who are exposed to measles should receive IGIV prophylaxis regardless of immunologic or vaccination status. This includes:
    - Patients with severe primary immunodeficiency; patients who received a bone marrow transplant until at least 12 months after finishing all immunosuppressive treatment, or longer in patients with graft-versus-host disease; patients on treatment for acute lymphocytic leukemia (ALL) within and until at least 6 months after completing immunosuppressive chemotherapy; and patients with a diagnosis of AIDS of HIV-infected persons with severe immunosuppression defined as CD4 percent <15% (all ages) or CD4 count <200 lymphocytes/mm3 (aged >5 years) and those who have not received MMR vaccine since receiving effective antiretroviral therapy (ART).

Resources

CDC, "Prevention of Measles, Rubella, Congenital Rubella Syndrome, and Mumps, 2013: Summary Recommendations of the Advisory Committee on Immunization Practices (ACIP)," *MMWR*, www.cdc.gov/mmwr/preview/mmwrhtml/rr6204a1.htm

CDC, "General Best Practice Guidelines for Immunization," www.cdc.gov/vaccines/hcp/acip-recs/general-recs/index.html

CDC Measles Information for Healthcare Professionals: www.cdc.gov/measles/hcp/index.html

CDC, "Epidemiology and Prevention of Vaccine-Preventable Diseases," The Pink Book, 13th edition. www.cdc.gov/vaccines/pubs/pinkbook/index.html

CDC, "Manual for the Surveillance of Vaccine-Preventable Diseases," www.cdc.gov/vaccines/pubs/surv-manual/index.html.

Immunization Action Coalition, "Ask the Experts: Administering Vaccines." www.immunize.org/askexperts/administering-vaccines.asp

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