Measles post exposure prophylaxis FAQ

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Who should get post exposure prophylaxis?

Any exposed, susceptible individual within the product specific efficacy window may benefit, however priority should be given to those with high risk and/or sustained close contact, especially in an outbreak setting where supplies may be limited.

First priority; high risk, exposed

- Infants under 12 months of age (vaccine not recommended until 12 months)
- Pregnant women without evidence of immunity
- Severely immune compromised, regardless of immunization status
  - Severe primary immunodeficiency
  - Bone marrow transplant recipients 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
  - AIDS diagnosis or 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 ART

Second priority; moderate risk, exposed

- Susceptible individuals over 12 months with intense, prolonged, close contact, such as a household, daycare, or classroom where the risk of transmission is highest

Third priority; moderate risk, exposed but not close contact

- Susceptible individuals over 12 months without close contact (e.g. single exposure in public setting)

What counts as evidence of immunity? (https://www.cdc.gov/mmwr/preview/mmwrhtml/rr6204a1.htm)

<table>
<thead>
<tr>
<th>Routine</th>
<th>Students at post-high school educational institutions</th>
<th>Health-care personnel¹</th>
<th>International travelers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measles</td>
<td>(1) Documentation of age-appropriate vaccination with a live measles virus-containing vaccine⁶: -preschool-aged children: 1 dose -school-aged children (grades K-12): 2 doses -adults not at high risk⁷: 1 dose, or (2) Laboratory evidence of immunity,⁸ or (3) Laboratory confirmation of disease, or (4) Born before 1957</td>
<td>(1) Documentation of vaccination with 2 doses of live measles virus-containing vaccine,⁹ or (2) Laboratory evidence of immunity,⁸ or (3) Laboratory confirmation of disease, or (4) Born before 1957</td>
<td>(1) Documentation of age-appropriate vaccination with a live measles virus-containing vaccine: -infants aged 6-11 months⁸⁸: 1 dose -persons aged ≥12 months⁸⁹: 2 doses, or (2) Laboratory evidence of immunity,⁸ or (3) Laboratory confirmation of disease, or (4) Born before 1957</td>
</tr>
</tbody>
</table>

- Vaccine doses with written documentation of the date of administration at age ≥12 months are the only doses considered to be valid.
- Serologic screening for measles, rubella, or mumps immunity before vaccination is not necessary and not recommended if a person has other acceptable evidence of immunity to these diseases.
- Postvaccination serologic testing to verify an immune response is not recommended.

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• Documented age-appropriate vaccination supersedes the results of subsequent serologic testing.
  o If a person who has 2 documented doses of measles- or mumps-containing vaccines is tested
    serologically and is determined to have negative or equivocal measles or mumps titer results, it is not
    recommended that the person receive an additional dose of MMR vaccine. Such persons should be
    considered to have presumptive evidence of immunity.
• Women of childbearing age who have 1 or 2 documented doses of rubella-containing vaccine and have rubella-
  specific IgG levels that are not clearly positive should be administered 1 additional dose of MMR vaccine
  (maximum of 3 doses) and do not need to be retested for serologic evidence of rubella immunity.

What to use for prophylaxis:

MMR vaccine is preferred over immune globulin for those able to receive it (age greater than 6-12 months, not pregnant
or immune compromised, within 72 hours of exposure)

IGIM is preferred for infants under 6-12 months, and can be used in older susceptible, exposed individuals under 30 kg
from 72 hours up to 7 days after exposure.

IVIG is preferred for pregnant women and severely immune compromised, or other high risk or close contact exposed
over 30 kg if unable to receive MMR.

Options for asymptomatic, exposed, susceptible patients within the efficacy window are:

<table>
<thead>
<tr>
<th>Age/status</th>
<th>Time from exposure</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infant less than 6 months</td>
<td>IGIM 0.5 mL/kg</td>
<td>MMR vaccine as regularly scheduled at 12 months</td>
</tr>
<tr>
<td></td>
<td>IGIM 0.5 mL/kg</td>
<td></td>
</tr>
<tr>
<td>Infants 6-11 months</td>
<td>MMR -OR-</td>
<td>MMR vaccine as regularly scheduled at 12-15 months, at least 6 months after IGIM or 8 months after IVIG</td>
</tr>
<tr>
<td></td>
<td>IGIM 0.5 mL/kg</td>
<td></td>
</tr>
<tr>
<td>12 months and up, if susceptible</td>
<td>MMR</td>
<td>Those exceeding 30 kg should be considered for IVIG instead</td>
</tr>
<tr>
<td></td>
<td>IGIM 0.5 mL/kg</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(max dose 15 mL)</td>
<td></td>
</tr>
<tr>
<td>Pregnant women, if susceptible</td>
<td>IVIG 400 mg/kg</td>
<td>If already receiving IVIG for another indications, please review need/dose (below)</td>
</tr>
<tr>
<td></td>
<td>IVIG 400 mg/kg</td>
<td></td>
</tr>
<tr>
<td>Severely immune compromised, regardless of vaccine</td>
<td>IVIG 400 mg/kg</td>
<td>If already receiving IVIG for another indication, please review need/dose (below)</td>
</tr>
<tr>
<td>history</td>
<td>IVIG 400 mg/kg</td>
<td></td>
</tr>
</tbody>
</table>

*24 hour expansion on efficacy window from package insert with supporting literature/expert opinion.

What if someone wants prophylaxis outside of the window?

The window of efficacy on the package insert for IGIM says 6 days, however available data demonstrate efficacy after
day 6, declining with each day prior to symptom onset, for disease modification or prevention. We have expanded the
recommendation for our population to exposed, susceptible, asymptomatic patients within 7 days of exposure after
discussion with several infectious diseases physicians and another expert opinion from the CDC.

What should be done if exposed patients are exhibiting symptoms of measles?

Symptomatic patients should be masked and sent home to prevent further exposure; treatment, prophylaxis, or vaccine
is not recommended and will not alter disease at this point.

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What if exposed patients, susceptible are exhibiting symptoms of non-specific viral infection, but not measles?

As long as symptoms of active measles have been ruled out, IG is not expected to interfere with a normal immune response to a standard viral upper respiratory tract infection – exposed, susceptible patients with non-specific viral URI symptoms may receive IG as recommended.

What if an exposed, susceptible patient is already receiving IVIG for another indication?

Administration of at least 400 mg/kg body weight within 3 weeks before measles exposure should be sufficient to prevent measles infection. For patients receiving subcutaneous immune globulin therapy, administration of at least 200 mg/kg body weight for 2 consecutive weeks before measles exposure should be sufficient.

How effective is post exposure prophylaxis for measles exposure?

Combined evidence suggests immune globulin given at appropriate doses within a 7 day window of efficacy reduces infection rates in susceptible, exposed individuals by about 83%. The same analysis supported the conclusion that MMR, if given within 72 hours, was more effective than immune globulin.

What safety concerns are there with IG products?

Generally, infusion reactions including flushing, malaise, fever, flu-like symptoms, and chills occur in 5-15% of patients. Premedication with acetaminophen or diphenhydramine may prevent or lessen the severity of infusion reactions.

What recommendations are available for treatment, rather than prophylaxis, of measles?

Treatment of measles is primarily supportive care, although oral supplementation with vitamin A is recommended for children with severe measles who are hospitalized. Children requiring hospitalization for measles may require transfer to a children’s hospital. Vitamin A is not currently stocked at PeaceHealth SW. Vitamin A deficiency contributes to delayed recovery and to the high rate of post-measles complications. In addition, measles infection may precipitate acute vitamin A deficiency and xerophthalmia. 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

To be administered immediately upon diagnosis and repeated on day 2 for severe (hospitalized) cases. There is no specific, recommended antiviral treatment for measles, although several experimental treatments are available. These should not be routinely recommended without guidance from a pediatric infectious diseases specialist.

Resources:
CDC MMWR: https://www.cdc.gov/mmwr/preview/mmwrhtml/rr6204a1.htm
Immunize.org: http://www.immunize.org/askexperts/experts_mmr.asp
Cochrane Review: https://www.researchgate.net/publication/261256487_Post-exposure_passive_immunisation_for_preventing_measles