# Proposed Policy Considerations Pertaining to Measles, Mumps, and Rubella

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# Outline

1. Acceptable presumptive evidence of immunity
2. Vaccination of persons with HIV-infection
3. Use of a third dose of MMR vaccine for mumps outbreaks
4. Measles postexposure prophylaxis

# Acceptable Presumptive Evidence of Immunity

- **Proposed changes**
  - Include "laboratory confirmation of disease"
  - Remove "physician diagnoses of disease" for measles and mumps
  - Clarify that age-appropriate vaccination supersedes results of subsequent serologic testing
- **Rationale**
  - Validity of disease history low, especially over last 30 years
  - Challenges with documenting history from physician records for adults
  - For consistency with recommendations for health-care personnel
    - Immunization of health-care personnel: recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR* 2011;60(RR-7):1-45

# Acceptable Evidence of Immunity Routine

| | Current | Proposed |
|---|---|---|
| Measles | (1) documentation of adequate vaccination:<br>- preschool-aged-children and, adults not at high risk: 1 dose<br>- school-aged children (grades K-12): 2 doses, or<br>(2) laboratory evidence of immunity, or<br>(3) born before 1957, or<br>~~(4) documentation of physician diagnosed measles~~ | (1) documentation of age-appropriate vaccination with a live measles virus-containing vaccine:<br>-children age 1-4 years: 1 dose<br>-school-aged children (grades K-12, age 5-18 years): 2 doses<br>-adults not at high risk: 1 dose, or<br>(2) laboratory evidence of immunity, or<br>(3) **laboratory confirmation of disease**, or<br>(4) born before 1957 |
| Rubella | (1) documented administration of one dose of live rubella virus vaccine, or<br>(2) laboratory evidence of immunity, or<br>(3) born before 1957 (except women of childbearing age who could become pregnant) | (1) documentation of vaccination with 1 dose of live rubella virus-containing vaccine, or<br>(2) laboratory evidence of immunity, or<br>(3) **laboratory confirmation of disease,** or<br>(4) born before 1957 (except women of childbearing age who could become pregnant) |
| Mumps | (1) documentation of adequate vaccination with live mumps virus vaccine:<br>- preschool-aged children and, adults not at high risk: 1 dose<br>- school-aged children (grades K-12): 2 doses, or<br>(2) laboratory evidence of immunity, or<br>(3) born before 1957, or<br>~~(4) documentation of physician diagnosed mumps~~ | (1) documentation of age-appropriate vaccination with a live mumps virus-containing vaccine:<br>-children age 1-4 years: 1 dose<br>-school-aged children (grades K-12, age 5-18 years): 2 doses<br>-adults not at high risk: 1 dose, or<br>(2) laboratory evidence of immunity, or<br>(3) **laboratory confirmation of disease**, or<br>(4) born before 1957 |

# Acceptable Evidence of Immunity
## Students at Post-High School Educational Institutions and International Travelers

| | Current | Proposed |
|---|---|---|
| Measles | (1) documented administration of 2 doses of live measles virus vaccine, or<br>(2) laboratory evidence of immunity, or<br>(3) born before 1957, or<br>~~(4) documentation of physician diagnosed measles~~ | (1) documentation of vaccination with 2 doses of live measles virus-containing vaccine, or<br>(2) laboratory evidence of immunity, or<br>(3) **laboratory confirmation of disease**, or<br>(4) born before 1957 |
| Rubella | (1) documented administration of one dose of live rubella virus, vaccine, or<br>(2) laboratory evidence of immunity, or<br>(3) born before 1957 (except women of childbearing age who could become pregnant) | (1) documentation of vaccination with 1 dose of live rubella virus-containing vaccine, or<br>(2) laboratory evidence of immunity, or<br>(3) **laboratory confirmation of disease**, or<br>(4) born before 1957 (except women of childbearing age who could become pregnant) |
| Mumps | (1) documented administration of two doses of live mumps virus vaccine, or<br>(2) laboratory evidence of immunity, or<br>(3) born before 1957, or<br>~~(4) documentation of physician diagnosed mumps~~ | (1) documentation of vaccination with 2 doses of live mumps virus-containing vaccine, or<br>(2) laboratory evidence of immunity, or<br>(3) **laboratory confirmation of disease**, or<br>(4) born before 1957 |

# Proposed Evidence of Measles and Mumps Immunity and Subsequent Testing

- In the event that a person who has two 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.
- Documented age-appropriate vaccination supersedes the results of subsequent serologic testing.

# Proposed Evidence of Rubella Immunity and Subsequent Testing

- In the event that a person (except women of childbearing age) who has one dose of rubella-containing vaccine is tested serologically and is determined to have negative or equivocal rubella 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.
- Vaccinated women of childbearing age who have IgG levels that are not clearly positive can be administered 1 additional MMR vaccine and do not need to be retested for serologic evidence of rubella immunity

# Acceptable Presumptive Evidence of Immunity

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- **Rationale**
  - Validity of history low, especially over last 30 years
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    - Immunization of health-care personnel: recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR* 2011;60(RR-7):1-45

# Vaccination of Persons with HIV Infection

- **Proposed changes**
  - Remove distinction between asymptomatic and symptomatic HIV infection
  - Change timing of the two doses to 12-15 months and 4-6 years
  - Include recommendation for revaccination of persons with perinatal HIV infection who were vaccinated prior to effective HAART
  - Expand recommendation to vaccinate close contacts of all immunocompromised persons with 2 doses of MMR vaccine
- **Rationale**
  - With "symptomatic" staging, one cannot be restaged to a less severe stage
  - Availability of HAART has improved immune status of patients
  - Immunocompromised persons are at high risk for severe complications if infected with measles through their close contacts

# Current Recommendations
# Persons with HIV Infection

- MMR vaccination is recommended for all asymptomatic HIV- infected persons who do not have evidence of severe immunosuppression and for whom measles vaccination would otherwise be indicated.
- MMR vaccination should also be considered for all symptomatic HIV-infected persons who do not have evidence of severe immunosuppression.
- Measles vaccine is not recommended for HIV-infected persons with evidence of severe immunosuppression.

# Proposed Recommendations
# Persons with HIV Infection

- Two doses of MMR vaccine is recommended for all persons aged ≥12 months with HIV infection who do not have evidence of current severe immunosuppression (i.e., must have CD4≥15% in the prior 6 months) or other current evidence of measles, rubella, and mumps immunity.
- MMR vaccine is not recommended for HIV-infected persons with current evidence of severe immunosuppression.

# Current Recommendations
# Timing of Doses for Persons with HIV Infection

- HIV-infected infants without severe immunosuppression should routinely receive MMR vaccine as soon as possible upon reaching the first birthday (i.e., at age 12 months).
- Consideration should be given to administering the second dose of MMR vaccine as soon as 28 days (i.e., 1 month) after the first dose rather than waiting until the child is ready to enter kindergarten or first grade.

# Proposed Recommendations
# Timing of Doses for Persons with HIV Infection

- The first dose of MMR vaccine should be administered at age 12-15 months and the second dose at age 4-6 years, or as early as 28 days after the first dose.

# Proposed Recommendations
# Persons with Perinatal HIV Infection

- **Children and adolescents with perinatal HIV infection who were vaccinated with measles-, rubella-, or mumps-containing vaccine prior to establishment of effective HAART should be considered unvaccinated and should be revaccinated with two doses of MMR vaccine once effective HAART has been established (≥6 months with CD4≥15%), unless they have other acceptable current evidence of measles, rubella, and mumps immunity.**

# Recommendations
# Vaccination of Household and Close Contacts of Immunocompromised Persons

## Current Recommendation

- All family and other close contacts of HIV-infected persons should be vaccinated with MMR vaccine, unless they have acceptable evidence of measles immunity.

## Proposed Recommendation

- All family and other close contacts of immunocompromised persons should receive two doses of MMR vaccine unless they have other evidence of measles immunity.

# Vaccination of Persons with HIV Infection

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  - Expand recommendation to vaccinate close contacts of all immunocompromised persons with 2 doses of MMR vaccine
- **Rationale**
  - Availability of HAART has improved immune status of patients
  - With current "symptomatic" staging, one cannot be restaged to a less severe stage
  - Immunocompromised persons are at high risk for severe complications if infected with measles through their close contacts

# Use of a Third Dose of MMR Vaccine for Mumps Outbreaks

- **No current recommendations**
- **Propose permissive recommendation**
- **Rationale**
  - Occurrence of large mumps outbreaks among highly 2-dose vaccinated populations
  - Use of standard outbreak control measures have not prevented some very large outbreaks
  - Provides an additional tool for outbreak control

# Proposed Recommendation
# Permissive Use of a Third Dose of MMR Vaccine during Mumps Outbreaks

- **During mumps outbreaks, authorities may consider administering a third dose of MMR vaccine.**
- **Criteria to be considered include:**
  - High 2 dose vaccination coverage (i.e., >90%)
  - Intense exposure settings (e.g., schools, colleges, correctional facilities, or congregate living facilities)
  - High attack rates (e.g., > 5 cases per 1,000 population)
  - Ongoing transmission for at least two weeks in the target population (i.e., population with the high attack rates)

# Proposed Recommendation
# Permissive Use of a Third Dose of MMR Vaccine Health-Care Personnel and Routine Use

- A third dose of MMR vaccine may also be considered for health-care personnel during mumps outbreaks given the higher risk of exposure to disease and those at higher risk of complications.
- Routine use of a third dose of MMR vaccine is not recommended.

# Use of a Third Dose of MMR Vaccine for Mumps Outbreaks

- **No current recommendations**
- **Propose permissive recommendation**
- **Rationale**
  - Occurrence of large mumps outbreaks among highly 2-dose vaccinated populations
  - Use of standard outbreak control measures have not been completely effective in some situations
  - Provides an additional tool for outbreak control

# Measles Postexposure Prophylaxis

- **Proposed changes**
  - Remove wording that limits use to exposure settings
  - Increase the recommended dose of IGIM
  - Include use of IGIV
  - Recommend use of IG for all infants aged <12 months
- **Rationale**
  - Simplify recommendations
  - Measles antibody concentrations in IGIM may be lower now than the past due to changes in donor demographics
  - Multiple IG preparations available
  - Infants may have increased susceptibility younger ages

# Current Recommendations
# Use of IG for Postexposure Prophylaxis

- IG is indicated for susceptible household contacts of measles patients, particularly those for whom the risk for complications is increased (i.e., infants aged <12 months, pregnant women, or immunocompromised persons).
- Infants <6 months of age are usually immune because of passively acquired maternal antibodies. However, if measles is diagnosed in a mother, unvaccinated children of all ages in the household who lack other evidence of measles immunity should receive IG.

# Proposed Recommendations
# Use of IG for Postexposure Prophylaxis

- **IG is indicated for close contacts of measles patients, particularly those for whom the risk for complications is increased (i.e., infants aged <12 months, pregnant women, or immunocompromised persons).**
- **Administration of IG to unvaccinated close contacts who do not have other evidence of measles immunity may be considered if their exposure to measles is likely to result in infection (e.g., household, daycare, classroom, etc.).**
  - Use of vaccine within 72 hours of initial exposure is also acceptable.

# Proposed Recommendations
# Use of IG for Postexposure Prophylaxis
# Infants aged <12 months

- IGIM should be given to infants aged <12 months who have been exposed to measles.
- For infants aged 6-11 months, MMR vaccine is an acceptable alternative to IG, if given within 72 hours of exposure.

# Proposed Recommendations
# Use of IG for Postexposure Prophylaxis
# Pregnant Women

- IG should be given to pregnant women without evidence of measles immunity who have been exposed. Either IGIM or IGIV can be used.

# Proposed Recommendations
# Use of IG for Postexposure Prophylaxis
# Immunocompromised Persons

- Severely immunocompromised patients* who are exposed to measles should receive IG prophylaxis regardless of vaccination status because they may not be protected by the vaccine. For these patients, IGIV is recommended.
- For exposed immunocompromised patients receiving subcutaneous immune globulin (IGSC) therapy, administration of at least 200 mg/kg body weight for two consecutive weeks before measles exposure should be sufficient.

*Including HIV-infected persons with CD4<15% and those who have not received MMR vaccine since receiving effective HAART. Some experts would include all HIV-infected persons, regardless of immunologic status or MMR vaccine history.

# Recommendations
# Dose of IGIM for Postexposure Prophylaxis

- **Current Recommendations**

  The usual recommended dose of IG is 0.25 mL/kg (0.11 mL/lb) of body weight (maximum dose = 15 mL).

  The recommended dose of IG for immunocompromised persons is 0.5 mL/kg of body weight (maximum dose = 15 mL).

- **Proposed Recommendations**

  The recommended dose of IGIM is 0.5 mL/kg of body weight (maximum dose = 15 mL).

# Recommendations
# Dose of IGIV for Postexposure Prophylaxis

- **Current Recommendations**

  For patients receiving IGIV therapy, a standard dose of 100-400 mg/kg should be sufficient to prevent measles infection after exposure occurring within 3 weeks after administration of IGIV.

- **Proposed Recommendations**

  The recommended dose of IGIV is 400 mg/kg.

# Recommendations
# Use of Vaccine for Postexposure Prophylaxis

## Current Recommendations

- For most persons aged ≥12 months who are exposed to measles in most settings (e.g., day care facilities, schools, colleges, health-care facilities), administration of MMR or measles vaccine is preferable to using immune globulin (IG).

## Proposed Recommendations

- For persons aged ≥12 months who are exposed to measles, MMR vaccine is preferable to using immune globulin (IG).

# Measles Postexposure Prophylaxis

- **Proposed changes**
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