In 2011, there were 222 cases of measles reported from 30 states. Eighty-eight percent (n=194) were import cases from 22 countries and 87% (n=191) were unvaccinated or had undocumented vaccine status. Seventeen measles outbreaks (defined as more than 3 cases linked in time and place) occurred in 2011. The Advisory Committee on Immunization Practices (ACIP) of the Centers for Disease Control and Prevention updated its 1998 Measles, Mumps, and Rubella (See Figure 1) (MMR) statement in 2012.
The 2013 ACIP MMR recommendation statements clarify the 1998 policy language and include the following recommendations:1,2

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**

Acceptable evidence of immunity includes laboratory confirmation of measles and mumps, rather than a physician’s diagnosis. Because of the rarity of measles and mumps in the United States, with the exception of the recent endemics, ACIP believed that physicians may confuse the symptoms of measles and mumps with other diseases and, thus, recommended laboratory confirmation as evidence of immunity. In addition, there are challenges with documenting history from physician records for adults. The new guidelines clarify that age-appropriate vaccination supersedes results of subsequent serologic testing. (For consistency with recommendations for health care personnel, the reader is referred to the following Morbidity and Mortality Weekly Report article.)3

**Vaccination of persons with human immunodeficiency virus infection**

The current ACIP recommendations for persons with human immunodeficiency virus (HIV) infection are as follows: For children and adolescents with perinatal HIV infection who were vaccinated with measles, rubella-, or mumps-containing vaccine prior to the establishment of highly active antiretroviral therapy (HAART) should be considered unvaccinated and should be revaccinated with 2 doses of MMR vaccine once effective HAART has been established (>6 months with CD4 percentage of >5%), unless they have other acceptable current evidence of measles, rubella, and mumps immunity.

All family and other close contacts of immunocompromised persons should receive 2 doses of MMR vaccine, unless they have other evidence of measles immunity.

**Use of a third dose of MMR vaccine for mumps outbreaks**

During an epidemic of mumps, a third dose of MMR vaccine might be considered, according to ACIP. During recent mumps outbreaks among populations with high rates of 2-dose vaccination, standard outbreak control measures have not prevented the continued spread of mumps. Giving the third dose of the MMR appears to provide an additional tool for outbreak control. 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. The routine use of a third dose of MMR vaccine is not recommended as part of the routine immunization schedule.

**Measles postexposure prophylaxis**

ACIP recommends the use of intramuscular immune globulin (IGIM) or intravenous immune globulin (IGIV) to unprotected persons exposed to measles. Due to the increased susceptibility at younger ages, ACIP recommends immune globulin (IG) for all infants aged <12 months who are exposed to measles. Antibody concentrations in IGIM for measles may be lower now than in the past due to MMR use and the decrease in exposure to measles resulting in lower antibody titer of measles.

**Updated recommendations**

The updated ACIP recommendations are:4

1. IG is indicated for close contacts of measles patients, particularly those for whom the risk for complications is increased (ie, infants aged <12 months, pregnant women, or immunocompromised persons).
2. 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 (eg, those present in household, daycare, classroom).
3. For infants aged 6–11 months, MMR vaccination is an acceptable and preferred alternative to IG, if given within 72 hours of exposure. Older individuals may also have the MMR instead of IG, if given within 72 hours of exposure to measles.

ACIP’s previous recommendation for IG for immunocompromised persons was a dose of 0.25 mL/kg body weight (maximum dose of 15 mL). The new recommendation is a dose of 0.5 mL/kg body weight (maximum dose of 15 mL). The recommended dose of IGIV is 400 mg/kg body weight.

**Commonly asked questions about MMR**5

Q: Should a health care professional (HCP) who lacks evidence of immunity to MMR, regardless of age, be immunized with MMR?

Yes. ACIP recommends a routine 2-dose series of the MMR vaccine for HCPs who lack evidence of immunity, regardless of age.

Q: A new HCP has 2 documented doses of measles-mumps-rubella (MMR) vaccine, but the serologic testing doesn’t show immunity to measles. Is a third MMR followed by serological testing necessary?

No. Two documented doses of MMR vaccine is considered proof of immunity. ACIP considers receipt of 2 documented doses of MMR vaccine, given on or after the first birthday and separated by at least 28 days, to be proof of immunity to measles, mumps, and rubella. No serologic testing is required or recommended to confirm immunity in this instance.

Q: A 21-year-old woman is starting as a medical assistant at a local hospital. She does not have any documented doses of MMR. What are her options, because the hospital requires evidence of either vaccination with 2 doses of MMR vaccine or positive serologic results. Should she be given the 2 doses of MMR separated by 28 days?

**Figure 1.**

(A) This child shows a classic day-4 rash with measles. (B) Swelling above the jaw. (C) Rash on the skin of the face due to rubella.

Table 1. ACIP recommendations for measles, mumps, and rubella (MMR) vaccination

<table>
<thead>
<tr>
<th>MMR Vaccination Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Persons born before 1957 generally are considered immune to measles and mumps and require vaccination only if another risk factor is present. Health care personnel born before 1957 without evidence of MMR immunity or laboratory confirmation of disease should be vaccinated with 2 doses of MMR vaccine for measles and mumps or 1 dose of MMR vaccine for rubella.</td>
</tr>
<tr>
<td>Adults born during or after 1957 should have documentation of 1 or more doses of MMR vaccine unless they have a medical contraindication to the vaccine, laboratory evidence of immunity to each of the 3 diseases, or documentation of provider-diagnosed measles or mumps disease. For rubella, documentation of provider-diagnosed disease is not considered acceptable evidence of immunity.</td>
</tr>
<tr>
<td>High-risk adults should be vaccinated if they haven’t received their second dose of vaccine. At-risk groups include:</td>
</tr>
<tr>
<td>- students in postsecondary educational institutions</td>
</tr>
<tr>
<td>- health-care facility workers</td>
</tr>
<tr>
<td>- international travelers</td>
</tr>
<tr>
<td>- women of childbearing age (vaccinate during pre-pregnancy or postpartum)</td>
</tr>
</tbody>
</table>


Maybe, but she could be tested for immunity. If the test indicates that she is not immune to 1 or more of the vaccine components, she should receive 2 doses of MMR vaccine at least 4 weeks apart. ACIP does not recommend serologic testing after vaccination.

Q: The HCP in question 3 on page 16 is given an MMR vaccination and develops a rash and a low-grade fever 10 days later. Is she infectious?

No. Approximately 5%-15% of susceptible people who receive the MMR vaccination will develop a low-grade fever and/or mild rash 7-12 days after vaccination. The person is not infectious, and no special precautions (eg, exclusion from work) need to be taken.

Q: A patient born in 1960, who has a history of receiving 1 dose of MMR vaccine as a child, plans to travel to France soon. Should she be given a second dose of vaccine?

Yes. ACIP recommends a second dose of MMR vaccine for any adult born during 1957 or later who plans to travel internationally.

Q: An unvaccinated 18-year-old was exposed to a child with measles. Can he be given an MMR dose to protect him from developing measles?

Yes. Measles vaccine, given as MMR, may be effective if given within the first 3 days (72 hours) after exposure to measles. IG may be effective for as long as 6 days after exposure.

Q: A college student has no titer evidence of measles immunity. What type of vaccine should he receive?

Single-antigen vaccine is no longer available in the United States; therefore, the student should get the combined MMR vaccine. He should receive 2 doses of MMR vaccine separated by at least 1 month.

Q: A 30-year-old man needs a tuberculin skin test (TST) on the same day that an MMR vaccine is given on the previous day or earlier, the TST should be delayed for at least 1 month. Live measles vaccine given prior to the application of a TST can reduce the reactivity of the skin test because of mild suppression of the immune system.

Q: A 33-year-old patient is going back to college to complete her degree. She has a history of an “egg allergy.” Can she be given the MMR vaccination?

Yes. Several studies have documented the safety of measles and mumps vaccine (which are grown in chick embryo tissue culture) in patients with severe egg allergy. Neither the “Red Book” Committee of the American Academy of Pediatrics nor ACIP consider egg allergy as a contraindication to receiving the MMR vaccine.

Q: And the No. 1 question that is asked: Does the MMR vaccination cause autism?

No. This issue has been studied extensively in recent years, including a thorough review by the independent Institute of Medicine (IOM) of the National Academy of Sciences. The IOM issued a report in 2004 that concluded there is no evidence supporting an association between MMR vaccine and autism. To access the IOM committee minutes, as well as the executive summaries and full reports, visit www.iom.edu/CMs/3793/4705.aspx.

References

About the Author
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