

# NEEDLE TIPS

from the Immunization Action Coalition — [www.immunize.org](http://www.immunize.org)

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## Suspect Measles; Vaccinate Against Measles

The U.S. is currently seeing the largest number of measles cases in 15 years, with 156 confirmed cases reported between January 1 and June 17, 2011. Most of these cases—136—were associated with importations from measles-endemic countries or countries where large outbreaks are occurring, primarily countries in Europe, Africa, and Asia. Health departments across the U.S. have issued press releases announcing measles cases. To access some of these releases, go to [www.immunize.org/newreleases/state-local.asp](http://www.immunize.org/newreleases/state-local.asp).

Easily transmitted through the air, the measles virus is highly contagious: Following exposure, more than 90 percent of susceptible people develop measles. Given how contagious measles is, it is imperative that healthcare professionals recognize measles in healthcare settings and isolate patients with suspected measles from other patients.

### Suspect measles

Because measles cases are occurring all across the U.S., you must maintain a high index of suspicion for this disease. A succinct summary of the signs and symptoms of measles appears in the Ask the Experts section below and continues on [page 22](#). To view a collection of photos of people with measles, visit IAC's website at [www.immunize.org/photos/measles-photos.asp](http://www.immunize.org/photos/measles-photos.asp).

**Isolate patients with suspected measles:** Your front desk staff, appointment scheduler, and office nurse are your practice's first line of defense in identifying patients who might be infected with measles. When scheduling a visit for a patient with a rash illness, make sure the scheduler either refers the caller to the office nurse, or is him- or herself well trained to ask appropriate questions so that a patient who might have measles is not allowed to enter the practice through the main waiting area where other patients potentially would be exposed. Ideally, any patient suspected of having measles should enter through a separate entrance and should be isolated from all other patients in a private room with the door closed. Do not use this patient's exam room for ANY patients for at least two hours after the suspected measles patient has left.

**Follow infection control guidance:** If you suspect your patient might have measles, contact your local health department while the patient is still in your office to determine the next steps for clinical evaluation, testing, and follow-up.

For helpful guidance on infection control in your healthcare setting, see the online document from the California Department of Public Health

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## Ask the Experts

IAC extends thanks to our experts, medical epidemiologist Andrew T. Kroger, MD, MPH; nurse educator Donna L. Weaver, RN, MN; and medical epidemiologist William L. Atkinson, MD, MPH. All are with the National Center for Immunization and Respiratory Diseases, Centers for Disease Control and Prevention (CDC).

**Please provide some details about the measles cases we're experiencing across the United States.**

We are currently seeing an increased number of measles importations into the U.S. due to recent

### Immunization questions?

- Call the CDC-INFO Contact Center at (800) 232-4636 or (800) CDC-INFO
- Email [nipinfo@cdc.gov](mailto:nipinfo@cdc.gov)
- Call your state health dept. (phone numbers at [www.immunize.org/coordinators](http://www.immunize.org/coordinators))

increases in measles cases in countries commonly visited by U.S. travelers (e.g., France, India). During 2001–08, a median of 56 measles cases were reported to CDC each year. By contrast, during the first 19 weeks of 2011, 23 states reported 118 cases. Of the 118 cases, 89% were associated with importation from other countries.

Of the 118 cases, 47 (40%) resulted in hospitalization. All but one hospitalized patient were unvaccinated. The vaccinated patient reported having received 1 dose of measles-containing vaccine and was hospitalized for observation only.

Measles-mumps-rubella (MMR) vaccine is safe and highly effective in preventing measles and its complications. Maintaining high immunization rates with MMR vaccine is the cornerstone of outbreak prevention.

### How serious is measles?

Measles can lead to serious complications and death, even with modern medical care. The 1989–91 measles outbreak in the U.S. resulted in over 55,000 cases and more than 100 deaths. The current outbreak in France has resulted in 10,000 cases during the first four months of 2011, including 12 cases of encephalitis, 360 cases of severe measles pneumonia, and 6 measles-related deaths. Of the 118 cases reported in the U.S. in the first

19 weeks of 2011, 40% had to be hospitalized and nine had pneumonia.

### What are the signs and symptoms healthcare providers should look for in diagnosing measles?

Healthcare providers should suspect measles in patients with a febrile rash illness and the clinically compatible symptoms of cough, coryza (runny nose), and/or conjunctivitis (red, watery eyes). A clinical case of measles is defined as an illness characterized by

- a generalized rash lasting 3 or more days, and

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IAC's  
"Ask the  
Experts"  
team  
from  
CDC



Andrew T. Kroger, MD, MPH



Donna L. Weaver, RN, MN



William L. Atkinson, MD, MPH

- a temperature of 38.3°C or higher (101°F or higher), and
- cough, coryza, and/or conjunctivitis.

Koplik spots, a rash present on mucous membranes, are considered pathognomonic for measles. Koplik spots occur from 1–2 days before the measles rash appears to 1–2 days afterward. They appear as punctate blue-white spots on the bright red background of the buccal mucosa.

Providers should be especially aware of the possibility of measles in people with fever and rash who have recently traveled abroad or who have had contact with international travelers.

Providers should immediately isolate and report suspected measles cases to their local health department and obtain specimens for measles testing, including viral specimens for confirmation and genotyping. Providers should also collect blood for serologic testing during the first clinical encounter with a person who has suspected or probable measles.

#### **How contagious is measles?**

Measles is highly infectious. It is primarily transmitted from person to person via large respiratory droplets. Airborne transmission via aerosolized droplets has been documented in closed areas (e.g., office examination room) for up to 2 hours after a person with measles occupied the area.

Following exposure, more than 90% of susceptible people develop measles. The virus can be transmitted from 4 days before the rash becomes visible to 4 days after the rash appears.

#### **How long does it take to show signs of measles after being exposed?**

It takes an average of 10–12 days from exposure to the appearance of the first symptom, which is usually fever. The measles rash doesn't usually appear until approximately 14 days after exposure, 2–3 days after the fever begins.

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#### **If a susceptible person is exposed to measles, can anything prevent them from developing the disease?**

If the person has not been vaccinated, measles vaccine may prevent disease if given within 72 hours of exposure. Immune globulin (a blood product containing antibodies to the measles virus) may prevent or lessen the severity of measles if given within 6 days of exposure.

#### **What are the recommendations for the use of MMR vaccine to prevent measles?**

MMR vaccine is recommended routinely for all children at age 12–15 months, with a second dose at age 4–6 years. The second dose of MMR can be given as early as 4 weeks (28 days) after the first dose and be counted as a valid dose if both doses were given after the child's first birthday. The second dose is not a booster, but rather is intended to produce immunity in the small number of people who fail to respond to the first dose.

Adults with no evidence of immunity (defined as documented receipt of 1 dose [2 doses 4 weeks apart if high risk] of live measles virus-containing vaccine, laboratory evidence of immunity, documentation of physician-diagnosed measles, or birth before 1957) should get 1 dose of MMR unless the adult is in a high-risk group. High-risk people need 2 doses; they include healthcare personnel, international travelers, students at post-high school educational institutions, people exposed to measles in an outbreak setting, and those previously vaccinated with killed measles vaccine or with an unknown type of measles vaccine during 1963–1967.

Infants age 6–11 months should receive 1 dose of MMR vaccine before international travel. Any dose of MMR administered before the first birthday should not be counted as part of the 2-dose series, and should be repeated when the child is age 12–15 months.

#### **We have measles cases in our community. How can I best protect the young children in my practice?**

First of all, make sure all your patients are fully vaccinated according to the U.S. immunization schedule.

In certain circumstances, MMR is recommended for infants age 6–11 months. Give infants this age

a dose of MMR before international travel. In addition, consider measles vaccination for infants as young as age 6 months as a control measure during a U.S. measles outbreak. Consult your state health department to find out if this is recommended in your situation. Do not count any dose of MMR vaccine as part of the 2-dose series if it is administered before a child's first birthday. Instead, repeat the dose when the child is age 12 months.

In the case of a local outbreak, you also might consider vaccinating children age 12 months and older at the minimum age (12 months, instead of 12–15 months) and giving the second dose 4 weeks later (at the minimum interval) instead of waiting until age 4–6 years.

Finally, remember that infants too young for routine vaccination and people with medical conditions that contraindicate measles immunization depend on high MMR vaccination coverage among those around them. Be sure to encourage all your patients and their family members to get vaccinated if they are not immune.

#### **My adult patient doesn't remember if he ever received MMR vaccine or had measles disease and is planning an international trip. How should I handle this situation?**

You have the choice of testing for immunity or just giving 2 doses of MMR at least 4 weeks apart. There is no harm in giving MMR vaccine to a person who may already be immune to one or more of the vaccine viruses. If you or the patient opt for testing, and the test indicates the patient is not immune to one or more of the vaccine components, give your patient 2 doses of MMR at least 4 weeks apart. If the test result is indeterminate or equivocal, consider your patient nonimmune. ACIP does not recommend serologic testing after vaccination because commercial tests are not sensitive enough to detect vaccine-induced immunity reliably.

#### **I'm a healthcare worker. How can I ensure I am protected against measles?**

If you are a healthcare worker and you do not have acceptable evidence of immunity—documented receipt of 2 doses of live measles virus-containing vaccine at least 4 weeks apart or laboratory evidence of immunity—either get tested for immunity or get 2 doses of MMR at least 4 weeks apart. If you choose the testing route, and your result is negative, indeterminate, or equivocal, get 2 doses of MMR at least 4 weeks apart. ACIP does not recommend serologic testing after vaccination.

#### **Can I give my patients measles vaccine instead of MMR?**

No. Merck has not produced single-antigen measles, mumps, and rubella vaccines for the U.S. market since 2008. Even before that time, ACIP recommended the combined MMR vaccine whenever one or more of the individual antigens were indicated.

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**Does the increase in measles cases indicate that vaccination with MMR isn't effective?**

No. Unvaccinated people accounted for 105 (89%) of the 118 cases. Among the 45 U.S. residents ages 12 months through 19 years who acquired measles, 39 (87%) were unvaccinated, including 24 whose parents claimed a religious or personal exemption and eight who missed opportunities for vaccination. Among the 42 U.S. residents age 20 years and older who acquired measles, 35 (83%) were unvaccinated, including six who declined vaccination because of personal objections to vaccination. Of the 33 U.S. residents who were vaccine-eligible and had traveled abroad, 30 were unvaccinated and one had received only 1 of the 2 recommended doses.

**I understand that at its June 2011 meeting, ACIP voted to recommend Tdap vaccination for pregnant women. Can you tell me more about this?**

Yes. ACIP voted that women's prenatal health-care providers administer Tdap to pregnant women who have not previously received their one-time dose of Tdap. Healthcare providers should administer Tdap to these women, preferably during the third trimester or late in the second trimester (after 20 weeks gestation). Alternatively, Tdap can be administered immediately postpartum. This national strategy is aimed at preventing pertussis in infants too young to be immunized. Infants younger than age 6 months account for most pertussis-related hospitalizations and deaths.

**We have a patient new to our office who at age 4 years received a dose of Pentacel (DTaP-IPV/Hib; sanofi) as the fifth DTaP/IPV dose that CDC recommends for children age 4–6 years. I know this use of Pentacel is not indicated on the manufacturer's package insert. Can we count the Pentacel dose our patient received as valid, or do we have to repeat the vaccinations?**

You do not need to repeat the vaccinations. However, giving Pentacel as the fifth (booster) DTaP dose in children age 4–6 years is a medical error and should not be repeated in your practice. Pentacel is licensed for the first 4 doses in children age

6 weeks through 4 years (i.e., prior to the child's fifth birthday). For example, it would not have been an error if the dose had been the fourth DTaP dose given to this child. Pentacel should not be used for any dose in the series in children age 5 years or older or as the fifth dose in children age 4–6 years. However, the DTaP and IPV components of Pentacel can both be considered "valid" doses for completing the primary series of DTaP and IPV vaccines in children younger than age 5 years, provided the interval between the last 2 doses of IPV is at least 6 months. If the child age 4 years had not received a final dose of Hib vaccine, the Pentacel dose erroneously administered as the 4- to 6-year booster dose would be considered valid for completing the primary series of Hib vaccines.

**Now that Menactra (MCV4; sanofi) is licensed for use in children as young as age 9 months, can you tell me which children should be vaccinated before their second birthday?**

In April 2011, FDA expanded Menactra licensing to include children ages 9 through 23 months. At its June 2011 meeting, ACIP voted to recommend that (1) high-risk children age 9 through 23 months receive a 2-dose series of Menactra, with a 3-month interval between doses and (2) these doses routinely be given at ages 9 and 12 months.

ACIP defines high-risk children age 9 through 23 months as (1) those with complement component deficiencies, (2) those in a community or institution where a meningococcal disease outbreak is occurring, or (3) those traveling to an area of the world where meningococcal disease is epidemic. Children who need protection prior to international travel can receive the second dose as early as 2 months after the first dose. Age 2 years remains the minimum age for vaccinating children with asplenia or sickle cell disease with MCV4. Children who remain at increased risk for meningococcal disease should receive a booster dose 3 years after the primary 2-dose series.

**I understand that in March 2011, FDA expanded the age indication for Zostavax (shingles vaccine; ZOS; Merck) to include the vaccine's use in people age 50 through 59 years (while retaining the age indication for use in people age 60 years and older). Can you tell me what ACIP recommends about this?**

At its June 2011 meeting, the ACIP reviewed the current status of ZOS licensure and the burden of herpes zoster (HZ) disease. ACIP declined to vote to expand the recommendations for the use of ZOS to include people age 50 through 59 years for the following reasons: (1) vaccines that contain varicella virus (i.e., varicella, ZOS, and MMRV vaccines) are in recurrent short supply in the U.S., (2) though the burden of HZ disease increases after age 50, disease rates are lower in this age group than they are in the 60-years-and-older age group, (3) currently, ZOS vaccination rates are less than 10 percent, and (4) a recommendation to vaccinate people age 50–59 years could result in more zoster disease if the limited supply of vaccine were to be

given to people whose risk of disease is lower than that of older, more vulnerable adults.

**Can pharmacists in all states administer Zostavax (ZOS)?**

According to the American Pharmacist Association, 45 states currently allow pharmacists to administer ZOS, including many who administer it on a walk-in basis, using a protocol or standing orders. Not all pharmacists in the 45 states provide vaccination services, and of those who do, not all administer ZOS. It is best to call pharmacies ahead of time to find out if they have ZOS to administer to your patients.

**We run a student health center and are wondering what the position is on discarding empty vaccine vials. Do they need to go in a sharps container after they are drawn up or can they go in the trash?**

Empty or expired vaccine vials are considered medical waste and should be disposed of according to state regulations.

**How can we expedite vaccination with Twinrix for international travelers?**

Twinrix (combined HepA-HepB, GSK) is licensed for use in adults age 18 years and older on a schedule of 0, 1, and 6 months. If protection is needed sooner (e.g., for pending international travel), the vaccine can be given as 4 doses, on days 0, 7, and 21–30, followed by a booster dose at month 12.

**Why is Merck now using gel packs instead of dry ice to ship its frozen vaccines (i.e., Varivax [varicella vaccine], MMRV, and Zostavax [shingles vaccine])?**

Merck instituted this improved shipping practice in June 2011 to prevent its frozen vaccines from being exposed to temperatures lower than -58°F (-50°C) and the chance that the vial stopper would contract and possibly expose the vaccines to contamination.

CDC and the vaccine manufacturer do not recommend transporting varicella-containing vaccines to off-site clinics. If transport of frozen vaccine to off-site clinics is necessary, CDC recommends transport with a portable freezer unit that maintains the temperature between -58°F and +5°F (-50°C to -15°C). According to the manufacturer's product information, varicella-containing vaccines may be stored at refrigerator temperatures, between 35°F and 46°F (2°C to 8°C), for up to 72 continuous hours prior to reconstitution. If transporting frozen vaccine under refrigerated conditions, monitor and document the following EXPLICITLY:

- (1) the time refrigerator storage began
- (2) the total time the vaccine was held under refrigerator storage
- (3) the storage temperature at which the vaccine was kept during refrigerator storage

If any vaccine remains unused when the clinic is over, call the manufacturer immediately for guidance before discarding it.

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