FACT SHEET

Measles Outbreak Calls for Precautionary Measures

This WorkCare Fact Sheet provides information about the 2019 measles outbreak in the U.S., guidance on the management of suspected exposures and how to help prevent the spread of disease.

Measles is a highly contagious viral respiratory illness characterized by a red rash, fever, cough, congestion and conjunctivitis (pink eye). Complications from the measles have serious health effects and can cause death in vulnerable populations.

The 2019 measles outbreak accounts for the highest number of cases reported in the U.S. since 1994. More than 700 cases of measles were confirmed in 22 states between January and April, according to the Centers for Disease Control and Prevention (CDC).

Vaccination prevents the measles. Consistent good hygiene practices and other controls, such as avoiding contact if immunity is not established, help reduce the spread of illness in the workplace and other communal places such as schools and daycare centers, public transport, fitness and medical facilities, theaters, stores and homes.

Exposure Risk

Most cases of measles in the U.S. are linked to unvaccinated international travelers who have arrived in the U.S. after spending time in regions where measles is a public health threat. Measles is especially common in developing nations, but it also occurs in developed countries, the World Health Organization reports. In recent years, measles importations have come from frequently visited countries including England, France, Germany, India and the Philippines.

Although measles was declared eliminated in the U.S. in 2000, it has since reoccurred. Outbreaks typically affect pockets of the unvaccinated population.

The virus is transmitted by direct or airborne contact with infectious droplets spread when an infected person breathes, coughs or sneezes. Measles virus can remain infectious in the air for up to two hours after an infected person leaves an area. Measles is infectious from four days before the rash appears through four days after rash onset.

High risk: A person who is not vaccinated and who may experience severe illness if he or she becomes infected with measles is considered a high-risk contact. This also applies to someone with a high likelihood of exposure due to the intensity or duration of exposure.

People at high risk for severe illness and complications from measles include:

- Infants and children aged <5 years
- Adults aged >20 years
- Pregnant women
- Those with compromised immune systems

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Immunity: People are presumed to be immune to measles if they have:

- Written documentation of adequate vaccination, either one or more doses of a measles-containing vaccine administered on or after the first birthday for preschool-age children and adults not at high risk, or two doses of measles-containing vaccine for school-age children and adults at high risk, including college students, health care personnel and international travelers
- Laboratory evidence of immunity or confirmation of having had measles
- Birth before 1957

Vaccination

Measles can be prevented with vaccine, which is administered as the combination measles-mumps-rubella (MMR) vaccine, or in a combination that includes varicella (MMRV). Single-antigen measles vaccine is not available.

All 50 states and the District of Columbia require vaccinations for children entering kindergarten. All states allow medical exemptions to these requirements, and some states also offer exemptions for religious and philosophical reasons.

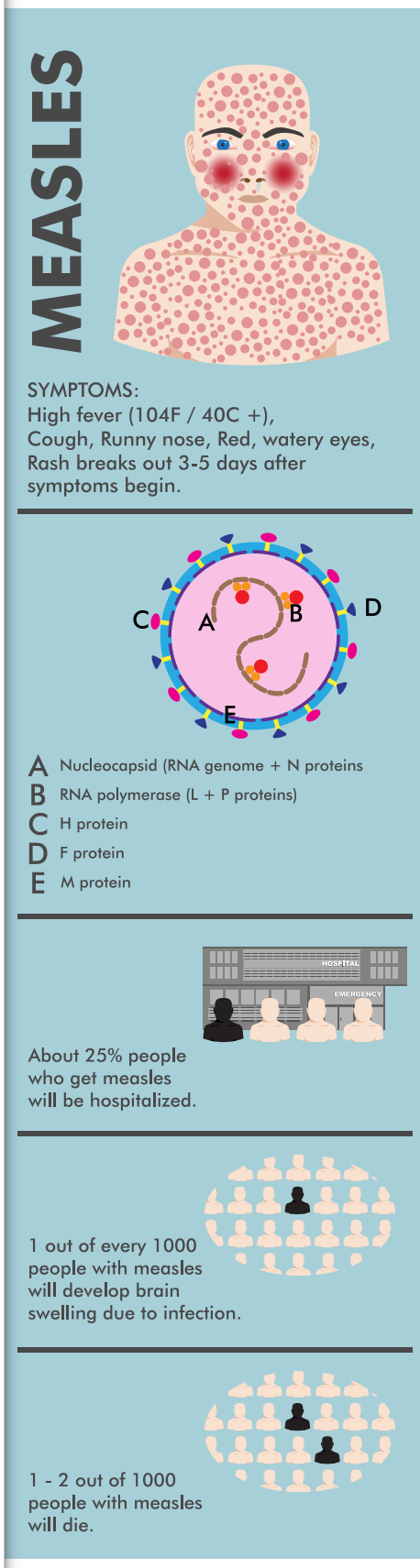
One dose of MMR vaccine is approximately 93 percent effective at preventing measles; two doses are approximately 97 percent effective. Almost everyone who does not respond to the measles component of the first dose of MMR vaccine at age 12 months or older responds to the second dose. After two doses, a booster vaccine is not needed later in life, according to public health officials.

What to Do in the Event of Exposure

The MMR vaccine, if administered within 72 hours of initial exposure, or immunoglobulin (IG), if administered within six days of exposure, may help prevent measles or lessen symptoms if measles develops. These interventions are called post-exposure prophylaxis (PEP).

Public health authorities recommend the following measures. (Refer to "Public health responses during measles outbreak in elimination settings: Strategies and Challenges," Human Vaccines and Immunotherapeutics, 14(9), 2018):

- Offering vaccination to non-immune individuals
- Providing PEP to susceptible contacts
- Practicing social distancing (isolation, quarantine, exclusion)
- Encouraging monitoring and reporting of symptoms



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U.S. public health recommendations include the following:

1. People without evidence of immunity and/or who have been exempted from measles vaccination for medical, religious or other reasons, and who do not receive PEP within the appropriate time frame should be excluded from affected institutions in the outbreak area until **21 days** after the onset of rash in the last case of measles.
2. If MMR vaccine is not administered within 72 hours of exposure as PEP, MMR vaccine should still be offered at any interval following exposure to the disease to provide protection from future exposures. People who receive MMR vaccine or IG as PEP should be monitored for signs and symptoms consistent with measles for at least one incubation period.
3. Infected people should be isolated for **four days** after they develop a rash.
4. Airborne precautions should be followed in health care settings regardless of presumptive immunity status. This includes use of respiratory protection consistent with airborne infection control precautions (use of an N95 respirator or a respirator with similar effectiveness in preventing airborne transmission). The preferred placement for patients who require airborne precautions is in a single-patient airborne infection isolation room.

Occupational Safety and Health Administration (OSHA) standards intended to help protect workers from exposure to measles include the Personal Protective Equipment standard (29 CFR 1910.132) and the Respiratory Protection standard (29 CFR 1910.134).

During outbreaks, jurisdictions and organizations may consider quarantines, postponing group events or taking advantage of opportunities to educate the public about measles prevention. In one case in early May 2019, for example, the island of St. Lucia prevented passengers and crew members from getting off a cruise ship at its port after someone on the vessel was diagnosed with measles.

Workplace policies: Employment law attorneys advise employers to develop policies regarding notifications of potential exposure or a confirmed case of measles.

Provisions in the Health Insurance Portability and Accountability Act (HIPAA) prohibit sharing of personal, protected health information. In addition, measles may be considered a protected condition under the federal Americans with Disabilities Act (ADA) and/or state and local law counterparts to the ADA. Disclosing that a particular employee has measles may violate one of these laws.

Personal responsibility: If you suspect or know you have been exposed to measles, it's important to immediately notify your personal health care

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provider. He or she can determine if you are immune to measles based on your vaccination record, age or laboratory evidence, and make arrangements to evaluate you, if needed, without exposing others.

Other Preventive Steps

In addition to vaccination to help prevent the spread of measles and other contagious diseases, such as the flu, it's important to practice good hygiene:

- Cover the mouth and nose with a tissue when coughing or sneezing, then throw the tissue away. Cough or sneeze into a sleeve, not the hands, if a tissue is not available.
- Wash hands often with soap and water.
- Avoid sharing drinks or eating utensils.
- Disinfect frequently touched surfaces such as doorknobs, tables and counters. Standard household disinfectants kill the measles virus.

Health Care Personnel: People who work in health care settings should have documented evidence of immunity against measles in accordance with recommendations of the Advisory Committee on Immunization Practice.

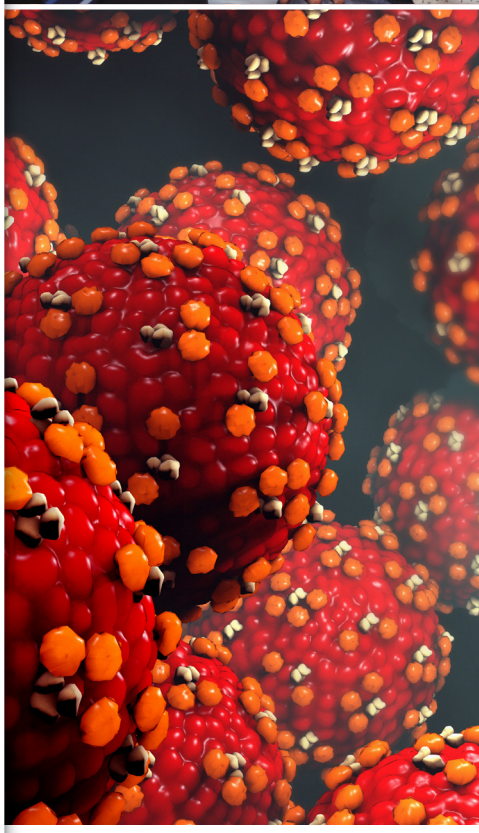
International Travelers: The CDC recommends the following for children older than 6 months and adults who will be traveling internationally:

- Infants 6 through 11 months of age should receive one dose of MMR vaccine
- Children 12 months of age or older should have documentation of two doses of MMR vaccine (the first dose of MMR vaccine should be administered at age 12 months or older; the second dose no earlier than 28 days after the first dose)
- Adults born before 1957 and teenagers without evidence of immunity against measles should have documentation of two doses of MMR vaccine, with the second dose administered no earlier than 28 days after the first dose

Women of Childbearing Age: Women are advised to get at least one dose of MMR vaccine before they get pregnant if they do not already have immunity. Studies show measles is associated with miscarriage and premature birth.

Born in 1957 or earlier: People who were born during or after 1957 who do not have evidence of immunity against measles are advised to get at least one dose of MMR vaccine. The measles vaccine was first produced in 1963; people born before 1957 are believed to have lifelong immunity due to presumed exposure to measles.

Vaccinated in the '60s: Between 1963 and 1968, an estimated 1 million people received what may have been a "killed" version of the measles vaccine. People who may have received this version of the vaccine are advised to get checked for immunity or get a single dose of the MMR vaccine.



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Childhood: The CDC recommends routine childhood immunization for MMR vaccine starting with the first dose at 12 through 15 months of age, and the second dose at 4 through 6 years of age or at least 28 days following the first dose.

Young adults: Students at post-high school educational institutions without evidence of measles immunity should receive two doses of MMR vaccine, with the second dose administered no earlier than 28 days after the first dose.

Some people should not get MMR vaccine because they have contraindications, which are listed on this CDC website.

Symptoms, Diagnosis and Treatment

Measles typically begins with a mild to moderate fever accompanied by cough, coryza (inflammation of mucous membranes in the nose) and conjunctivitis (pink eye). Diarrhea, nausea and vomiting may also occur. Two to three days later, Koplik's spots, a characteristic sign of measles, may appear, and fever often spikes to 104°F or even higher. A red blotchy rash appears, usually first on the face, along the hairline and behind the ears. The rash rapidly spreads downward to the chest and back, then to the thighs and feet. In about one week the rash fades in the same sequence that it appeared.

Common complications from measles include otitis media, bronchopneumonia, laryngotracheobronchitis and diarrhea. According to public health records:

- One out of every 1,000 measles cases will develop acute encephalitis, which often results in permanent brain damage.
- One or two out of every 1,000 children who become infected with measles will die from respiratory and neurologic complications.
- Subacute sclerosing panencephalitis (SSPE) is a rare, fatal degenerative disease of the central nervous system characterized by behavioral and intellectual deterioration and seizures that generally develop seven to 10 years after measles infection.

Laboratory tests of blood samples are used to verify a measles diagnosis. During an outbreak, medical providers are encouraged to consider measles in patients of any age who have a fever and rash.

There is no specific antiviral therapy for measles. Supportive medical care helps relieve symptoms and addresses potential complications such as bacterial infections. In severe measles cases among children, vitamin A is usually administered immediately on diagnosis and repeated the next day. Vitamin A deficiency is a recognized risk factor in severe cases.