

Michigan Department of Community Health Frequently Asked Questions About Smallpox

What should I know about smallpox?

Smallpox is a viral illness caused by the virus, variola. Smallpox infects only humans, and the last naturally acquired case of smallpox in the world occurred in 1977. **Smallpox does not occur in nature.** People cannot get smallpox by traveling to a foreign country, nor can they get it from people visiting this country. **Other than through a criminal act, the risk of exposure to smallpox is zero.** While the chance of a criminal act occurring is very low, the Michigan Department of Community Health, the Michigan State Police Emergency Management Division, and other federal, state, and local agencies are seriously working to ensure that if such an act occurs public health authorities are prepared to deal with it quickly and effectively.

Is the smallpox virus that causes smallpox still around?

Although smallpox disease has been eradicated, two countries still keep smallpox virus (variola) stocks in secure laboratories for research only. These are the World Health Organization (WHO) Collaborating Centres in Atlanta, USA, and Koltsovo, Russian Federation.

If someone comes in contact with smallpox, how long does it take to show symptoms?

The incubation period is about 12 days (range: 7 to 17 days) following exposure. Initial symptoms include high fever, fatigue, and head and back aches. A characteristic rash, most prominent on the face, arms, and legs, follows in 2-3 days. The rash starts with flat red lesions that evolve at the same rate. Lesions become pus-filled after a few days and then begin to crust early in the second week. Scabs develop and then separate and fall off after about 3-4 weeks.

What is the difference between smallpox and chickenpox?

Smallpox was sometimes confused with chickenpox, but several features of these diseases were significantly different:

- The initial symptoms of smallpox are much more severe than those of chickenpox (i.e., high fever, severe muscle aches, etc.).
- Smallpox rash is most common on exposed portions of the body: face, forearms, wrists, palms, lower legs, feet, and soles. (Chickenpox is most common on covered areas of the body.)
- Smallpox rash lesions tend to be at the same stage of development, and there was only one eruption of pox lesions. (With chickenpox, it is common to have more than one eruption of pox lesions and the lesions may be in different stages of maturation.)

Smallpox lesions tended to be deeper in the skin than chickenpox lesions, hard to the touch, and the vesicles were tough to break.

How is smallpox spread?

In the majority of cases, smallpox is spread from one person to another by infected saliva droplets that expose a susceptible person having face-to-face contact with the ill person. People with smallpox are most infectious during the first week of illness, because that is when the largest amount of virus is present in saliva. However, some risk of transmission lasts until all scabs have fallen off, usually about 3 or 4 weeks

after the start of the rash. Contaminated clothing or bed linen could also spread the virus. Special precautions need to be taken to ensure that all bedding and clothing of patients are cleaned appropriately with bleach and hot water. Disinfectants such as bleach and quaternary ammonia can be effectively used for cleaning contaminated surfaces.

What should people do if they suspect they have been exposed to smallpox or suspect that smallpox has been released in their area?

Report suspected cases of smallpox or suspected intentional release of smallpox to your local health department. The local health department is responsible for notifying the state health department and local law enforcement. The state health department will notify the Centers for Disease Control and Prevention (CDC), Michigan State Police Emergency Management, and the Michigan office of the Federal Bureau of Investigation (FBI).

What should you do when you have been exposed to smallpox?

Your doctor or the public health department will instruct you to minimize contact with others. If you have contracted the disease, symptoms will appear between 7 to 17 days after exposure. Individuals should stay at home and monitor themselves daily for the development of a temperature higher than 101°F (38°C). Immediately contact your local health department to receive guidance on how to isolate yourself (either at home or a designated care site) to minimize the risk of exposure to others. Public health authorities will discuss with you the need for vaccination if necessary.

How can we stop the spread of smallpox after someone comes down with it?

People with smallpox can spread the virus. Patients will be placed in medical isolation so that they will not continue to spread the virus. In addition, people who have come into close contact with smallpox patients will be notified to receive vaccination and closely watched for symptoms of smallpox. If the vaccine is given within 4 days after exposure to smallpox, it can lessen the severity of illness or even prevent it. Vaccine and isolation are the strategies for stopping the spread of smallpox.

Is there any treatment for smallpox?

There is no proven treatment for smallpox, because modern treatments were not available when this disease occurred naturally. But, research to evaluate new antiviral agents is ongoing. Patients with smallpox can benefit from supportive therapy (e.g., intravenous fluids, medicine to control fever or pain) and antibiotics for any bacterial infections that may occur.

Is smallpox fatal?

For people exposed to smallpox, the vaccine can lessen the severity or even prevent illness if it is given within 4 days after exposure. Vaccine administered after exposure has been shown to provide significant protection against death from smallpox. The majority of patients who contract smallpox recover, but death may occur in up to 30% of cases.

Will ciprofloxacin protect me against smallpox?

No. Because smallpox is caused by a virus, antibiotics such as ciprofloxacin will not fight the smallpox infection. The only cure is to prevent disease by getting the vaccine within a few days of exposure to the virus.

What is the smallpox vaccine, and is it still required?

The vaccine against smallpox is made with a virus related to the smallpox virus called vaccinia virus. **It is not made with smallpox virus.** The vaccine is a highly effective immunizing agent against smallpox infection. It was successfully used to eradicate smallpox from the human population. It is not used widely today because rare risks from the current vaccine outweigh the risk of getting the disease.

If I am concerned about a smallpox attack, can I go to my doctor and request the smallpox vaccine?

No. Your doctor cannot give you the smallpox vaccine. In the United States, routine vaccination against smallpox ended in 1972 when the disease was fully controlled. Since the vaccine is no longer recommended, the vaccine is not available for routine use. The CDC maintains an emergency supply of vaccine that can be released quickly, if necessary.

Are there plans to manufacture more vaccine in case of a bioterrorism attack using smallpox?

Yes. In 2000, CDC awarded a contract to a vaccine manufacturer to produce additional doses of smallpox vaccine. The additional funds will allow the department to stockpile as much vaccine as needed to protect the nation, or some regions, in the remote event of an outbreak of smallpox.

If people got the vaccination in the past when it was used routinely, will they be immune?

Not necessarily. Routine vaccination against smallpox ended in 1972. The level of immunity, if any, among persons who were vaccinated before 1972 is uncertain; therefore, these persons are assumed to be susceptible. For those who were vaccinated, it is not known how long immunity lasts. Most estimates suggest immunity from the vaccination lasts 3 to 5 years. This means that nearly the entire U.S. population has partial immunity at best. Immunity can be boosted effectively with a single revaccination. Prior infection with the disease grants lifelong immunity.

How safe is the smallpox vaccine?

Smallpox vaccine is considered safe. However, some people with conditions such as eczema or immune system disorders have a higher risk for having complications from the vaccine. Adverse reactions have been known to occur that range from mild rashes to rare fatal encephalitis and disseminated vaccinia. Smallpox vaccine should not be administered to persons with a history or presence of eczema or other skin conditions, pregnant women, or persons with immunodeficiency diseases and among those with suppressed immune systems as occurs with leukemia, lymphoma, generalized malignancy, or solid organ transplantation.

Should you get the smallpox vaccine if you're immuno-compromised?

No, not unless there is a smallpox outbreak in which case the patient's physician and public health authorities would discuss the risks and benefits with the patient. Vaccinations could cause deaths in people with weakened immune systems: those undergoing chemotherapy, organ transplant patients, and those with AIDS. There is no need to take that risk until there is evidence of an outbreak. But the U.S. should have the vaccine ready if needed as an "insurance policy."

Are some people still receiving the smallpox vaccination today?

Yes, vaccine is recommended for laboratory workers and others who directly handle cultures, animals contaminated or infected with vaccinia virus other orthopoxviruses that infect humans. The vaccine is not made from the smallpox virus. Vaccination is not recommended for people who do not directly handle these virus cultures or materials or who do not work with animals contaminated or infected with these viruses.

Why are health responders being vaccinated against smallpox, but the general public is not?

Vaccinating key public health and medical personnel will ensure Michigan is well prepared to quickly respond in the event of a smallpox disease outbreak. The first group of individuals considered for voluntary pre-event smallpox vaccination include the vaccinators themselves, public health response teams to be mobilized in the case of smallpox reintroduction and health care response teams at designated hospitals. These vaccinations are expected to begin soon, and will include approximately 5,000-7,000 people in Michigan. After these initial vaccinations are successfully completed, smallpox vaccine may be offered to the other health workers, emergency responders, police and fire fighters in Michigan, approximately several hundred thousand individuals.

Are there risks to health care volunteers receiving the smallpox vaccine?

“The smallpox vaccine is very effective at preventing disease, however, it does have some significant risks. Out of every one million people vaccinated, one or two may die as a result of life-threatening reactions to the vaccine,” said Dr. Johnson. “In the absence of actual smallpox disease, careful screening of potential vaccine recipients is essential to ensure that those at increased risk for adverse reactions do not receive the vaccine. If we have smallpox disease, all persons exposed and potentially exposed should be vaccinated.”

Individuals who should NOT be vaccinated as a pre-event measure include people with the following conditions AND those who live with someone who has such a condition:

- Expectant mothers;
- People with eczema or atopic dermatitis, or a history of either;
- People being treated for cancer;
- People who are HIV-positive; and
- People who have had an organ transplant.

Individuals who should not receive the smallpox vaccine also include:

- People who are allergic to the vaccine or any of its ingredients;
- People who have a moderate or severe short-term illness; and
- Anyone who is less than 18 years of age.

Is every American going to be vaccinated for smallpox?

If there is an outbreak of smallpox, vaccinations of people may only be needed in the area around the cases of smallpox to contain the spread. If health officials are not able to contain the outbreak, vaccination of a wider group of people may be required. U.S. health officials are increasing the stock of smallpox vaccine to be ready to vaccinate as needed.

If the decision is made that everyone needs to be vaccinated, how will this occur and who will pay for it?

There will be a systematic administration of the vaccine in coordination with public health that will be paid for by the United States government. The Michigan Department of Community Health and the Michigan State Police Emergency Management Division have been closely working with the CDC, local health departments, and other state and local agencies to develop such distribution plans for pharmaceuticals.

How many people would have to get smallpox before it is considered an outbreak?

One suspected case of smallpox is considered a public health emergency. Smallpox surveillance in the United States includes detecting a suspected case or cases, making a definitive diagnosis with rapid laboratory confirmation at CDC, and preventing further smallpox transmission. A suspected smallpox case should be reported immediately by telephone to state or local health officials. They should immediately obtain advice regarding isolation of the patient or patients, and on laboratory specimen collection.

What should be done if there is a smallpox outbreak?

If an outbreak occurs, the first step will be to properly isolate those with the disease. Health officials will be diligent regarding use of adequate isolation facilities and precautions. If they are at all uncertain about correct procedures for isolating patients, they will contact the state health department. All people with close contact to the patient will be vaccinated as soon as possible.

Is there a test to indicate whether smallpox is in the environment like there is for anthrax?

Scientists believe that if smallpox virus is released as an aerosol and not exposed to sunlight, it may live for as long as 24 hours or somewhat longer under favorable conditions. However, by the time patients become ill, which takes about 12 days after infection with the virus, and it has been determined that a release of smallpox virus had occurred, there would be no living smallpox virus left in the environment to detect. Trying to detect the virus everywhere at all times without any indications of any illness in people would not be feasible.

Who can I contact if I have more questions about smallpox?

For more information contact your public health department or visit the “Public Health Emergency and Response” section under the “Providers” heading on the MDCH website (www.michigan.gov/mdch).

Adapted from the following sources:

- Centers for Disease Control and Prevention: www.bt.cdc.gov
- Association of State and Territorial Health Officials: <http://www.astho.org>
- Ohio Department of Health: <http://www.odh.state.oh.us/Resources/publications/IDCManual/Dcmweb/smalldfs1.PDF>
- Utah department of Health: <http://hlunix.hl.state.ut.us/els/epidemiology/epifacts/smallpox.html>

