



SMALLPOX

ABOUT THIS DISEASE

Before smallpox was eradicated (eliminated), it was a serious infectious disease caused by the variola virus. It spread from person-to-person and caused a fever and a distinctive skin rash.

Most people with smallpox recovered, but about 3 out of every 10 people with the disease died. Many smallpox survivors have permanent scars over large areas of their body, especially their faces. Some are left blind.

Thanks to the success of vaccination, smallpox was eradicated, and no cases of naturally occurring smallpox have happened since 1977. The last natural outbreak of smallpox in the United States occurred in 1949.

SIGNS AND SYMPTOMS

A person with smallpox goes through several stages as the disease progresses.

Initial Symptoms (lasts about 2 to 4 days):

- High fever
- Head and body aches
- Sometimes vomiting

Early Rash (lasts about 4 days):

- Rash starts as small red spots on the tongue and in the mouth
 - Spots change into sores that break open and spread large amounts of the virus into the mouth and throat
 - Fever continues
- Rash appears on the skin, starting on the face and spreading to arms and legs, then to hands and feet (within 24 hours)
 - Fever begins to decline
 - By 4th day, skin sores fill with thick, opaque fluid, often with a dent in the center
 - Once skin sores fill with fluid, fever may rise again and remain high until scabs form over the bumps

Pustular Rash and Scabs (lasts about 10 days):

- Sores become pustules (raised, usually round and firm to the touch)
- After about 5 days, pustules begin to form a crust and then scab
- By the end of the 2nd week after the rash appears, most of the sores have scabbed over

Scabs Fall Off (lasts about 6 days):

- Scabs begin to fall off, leaving marks on the skin
- Three weeks after the rash appears, most scabs will have fallen off

No Scabs:

- Four weeks after the rash appears, all scabs should have fallen off
- Once all scabs have fallen off, the person is no longer contagious

TRANSMISSION

Before it was eradicated, smallpox spread mainly by direct and prolonged face-to-face contact between people. Smallpox patients became contagious once the first sores appeared in their mouth and throat. They spread the virus when they coughed or sneezed and droplets from their nose or mouth spread to other people. They remained contagious until their last smallpox scab fell off.

These scabs and the fluid found in the patient's sores also contained the variola virus. Smallpox can spread through contact with the patient's scabs or sores, or through objects contaminated by them, such as bedding or clothing.

Rarely, smallpox has spread through the air in enclosed settings, such as a building (airborne route).

Smallpox can be spread by humans only.

DIAGNOSIS

Many rash illnesses can present with vesicles (fluid-filled blisters) and pustules. It is unlikely, though possible, that a person with a rash illness will have smallpox.

The Centers for Disease Control and Prevention (CDC) has developed a protocol for evaluating patients with an acute, severe, vesicular or pustular rash, providing a standard method to differentiate smallpox from other rash illnesses. For patients with a high risk of having smallpox, laboratory testing will be done after consultation with CDC.

TREATMENT

There is no proven treatment for smallpox disease, but some antiviral drugs may help treat it or prevent it from getting worse.

Treatment of smallpox patients generally involved supportive care. Vaccination can prevent or lessen the severity of disease if given within 2 to 3 days of the initial exposure. Vaccination may decrease symptoms if given within the first week of exposure.

Treating smallpox patients in a healthcare setting requires isolation and proper infection and environmental controls.

IMMUNITY

Recovery from smallpox gives a person long-lasting immunity.

Vaccination protects against smallpox for about 3 to 5 years. After that time, its ability to protect decreases. Those needing long-term protection, may need to get a booster vaccination.

RISK IN HAWAII

Summary of Reported Cases of Notifiable Diseases:

<http://health.hawaii.gov/docd/resources/reports/summary-of-reported-cases-of-notifiable-diseases/>

PREVENTION

After smallpox was eliminated from the world, routine vaccination against smallpox among the general public was stopped because it was no longer needed. Routine smallpox vaccination among the American public was stopped in 1972. However, because of concern that variola virus might be used as an agent of bioterrorism, the U.S. government has stockpiled enough smallpox vaccine to vaccinate everyone who would need it if a smallpox outbreak were to occur.

When there is NO smallpox outbreak, the only persons who should receive smallpox vaccine are:

- Laboratory workers who work with the virus that causes smallpox or other viruses that are similar to it

When there IS a smallpox outbreak, persons should get the smallpox vaccine if:

- They are directly exposed to the smallpox virus (e.g., had prolonged face-to-face contact with someone who has smallpox).

If there is a smallpox outbreak, public health officials will work with CDC to determine who else should get the vaccine.

Historically, the vaccine has been effective in preventing smallpox infection in 95% of those vaccinated. In addition, the vaccine was proven to prevent or substantially lessen infection when given within a few days after a person was exposed to the smallpox virus.

ADDITIONAL RESOURCES

- CDC Website: <https://www.cdc.gov/smallpox/>
- Medication Guide for vaccination with ACAM2000:

<https://www.fda.gov/downloads/BiologicsBloodVaccines/Vaccines/ApprovedProducts/UCM142576.pdf>

INFORMATION FOR CLINICIANS

- CDC Website: <https://www.cdc.gov/smallpox/clinicians/index.html>
- Hawaii Department of Health Disease Reporting: <http://health.hawaii.gov/docd/for-healthcare-providers/reporting-an-illness-for-healthcare-providers/>
- Hawaii Department of Health Public Health & Environmental Laboratories: <http://health.hawaii.gov/statelab/pox/>