



DRAFT\_ 04/06/2001

## Smallpox and bioterrorism

---

Contact: CDC Media Relations  
404 639-3286

### Biological Weapon

Smallpox was eradicated from the world in 1977. In 1980, the World Health Assembly recommended that all countries cease vaccination and that all laboratories destroy their stocks of variola (smallpox) virus or transfer them to one of two World Health Organization reference labs. All countries reported compliance.

The United States cannot, with complete certainty, verify that the virus is not being held in places other than the two WHO reference laboratories; therefore, the deliberate reintroduction of smallpox is regarded as a possibility.

Because this virus is relatively stable (not easily destroyed in the environment) and the infectious dose is small, an aerosol release of variola virus could disseminate widely.

A single suspected case of smallpox would be treated as a health emergency and should be brought to the attention of national officials through local and state health authorities. However, varicella, or chickenpox, which infects millions of children each year in the United States, is the disease most frequently confused with smallpox. (Chickenpox lesions are much more superficial and are almost never found on the palms and soles.)

### The Disease

Variola virus, which causes smallpox, belongs to a genus of viruses known as *Orthopoxvirus*; four of which can cause infection of varying degrees in humans. These include variola (smallpox), vaccinia, monkeypox, and cowpox.virus.

Smallpox outbreaks involve either variola minor or the more deadly variola major. Case fatality rates range from approximately 1 to 30 percent, with deaths most often occurring during the first or second week of illness.

The incubation period is about 12 days (range: 7 to 17 days) following exposure. Symptoms include high fever, fatigue, and head and back aches which are followed in 2-3 days by the rash.

Lesions in the mouth and throat that appear early in the illness ulcerate and release large amounts

of virus in the saliva. The most visible symptom of smallpox is a rash with lesions most dense on the face, arms and legs. The lesions are round, tense, and deeply embedded in the skin, and appear over a 1- to 2-day period, evolving at the same rate on the body. Lesions become pus-filled and begin to crust early in the second week of the rash. Scabs eventually develop which separate and fall off after about 3-4 weeks.

Two less common types of smallpox disease are hemorrhagic and flat-type (malignant). Health care providers seldom recognized these cases as smallpox unless an outbreak was in progress.

## **The Risk**

Smallpox is spread, most often, by an ill person releasing virus infected saliva droplets from their mouth into the air that are inhaled by a susceptible person in close contact with the ill person (face-to-face contact). Because virus titers in saliva are highest during the first week of illness, this is when people are the most infectious.

Disease is most often transmitted from the time the ill person first develops the rash throughout the first week of illness, however, the person is still infectious until the rash has resolved (all scabs have fallen off) . Virus is also present in the scabs that separate from the skin but these are much less infectious than saliva.

Routine vaccination against smallpox stopped in 1972 and few persons younger than 27 years of age have been vaccinated. Also, the level of immunity among persons older than 27 in the United States is uncertain. The duration of immunity has not been well measured. It must be assumed that the population at large is susceptible to infection.

## **Prevention**

Vaccine against smallpox is a live virus vaccine, made with a related virus called vaccinia virus. It does not contain smallpox virus.

The United States currently has a limited supply of smallpox vaccine (approximately 15 million doses) available for emergency use, if needed. New methods for the production of additional smallpox vaccine in large quantities are being explored. At this time, no preventive vaccination program is planned.

Smallpox vaccine is very effective and can lessen the severity or even prevent illness in people exposed to smallpox if given up to 4 days after exposure.

People with smallpox must avoid contact with unvaccinated individuals in order to prevent transmitting the disease to them.

## **Treatment**

At this time, there is no proven treatment for smallpox. Patients with the illness would be given non-specific supportive therapy as needed (intravenous fluids, medicine to control fever or pain, etc.) and antibiotics for any secondary bacterial infections that occur.

No antivirals have yet proved effective for treating smallpox; however, research is ongoing.

A smallpox outbreak would spread unless checked by vaccination and monitoring of contacts to smallpox patients and isolation of infectious smallpox patients.

All individuals in who smallpox is suspected should be placed under health monitoring.