

SMALLPOX FACT SHEET

Smallpox is one of history's greatest scourges, and its eradication is one of medicine's greatest triumphs. Because it is both highly contagious and highly lethal, smallpox presents a preeminent threat as a biological weapon.

Key Facts

- Smallpox is caused by the virus variola major.
- It spreads from person to person in droplets, creating a self-propagating epidemic.
- It kills 30% of those infected; there is no effective treatment.
- Vaccination before exposure prevents infection; vaccination within 4 days after exposure can reduce the severity of the disease.
- The incubation period, which is the time between infection and the onset of symptoms, is usually 12 to 14 days, but can be as short as 7 days.
- All infected patients develop fever and rash; there are no asymptomatic carriers.
- The virus infects only humans. Interruption of spread from human to human eradicated the disease.
- There are only two official stocks of smallpox virus in the world (U.S. and Russia). However, many tons of weaponized virus were secretly produced by the Soviet Union, and there is concern that other countries may now possess the virus
- Vaccination stopped in 1980, and many of the people vaccinated before this time have lost immunity. It is estimated that 75% of the world's population is now susceptible.
- Most countries have little or no vaccine. Global stockpiles, in toto, amount to fewer than 800 million doses—enough to vaccinate some 10% of the population.
- Only five companies now manufacture smallpox vaccine.

Transmission

Smallpox is transmitted from person to person, usually through face-to-face exposure. On rare occasions it can carry through the air for some distance. It can also be transmitted via contaminated clothes and sheets.

Under most circumstances one victim infects 2 to 5 other persons, but infection can occur only after the onset of fever and rash. Thus, early isolation of an infected patient is an important control measure.

Clinical Illness

- Symptoms start suddenly with high fever, severe headache, and muscle and abdominal pain. Victims are usually so sick that they take to bed.
- After 2 to 3 days a rash begins, at which point the patient becomes contagious.
- Pustules develop primarily over the face, arms, and legs. Similar pustules in the mouth and throat make eating and drinking difficult.
- Scabs form over the pustules and fall off after 3 to 4 weeks.
- Most survivors are left with permanent disfiguring facial scars, and some survivors are left blind.

History

- Throughout history, from the time of the pharaohs, smallpox has been the most devastating of all pestilential diseases.
- As recently as the 20th century, smallpox killed 300 million people before being eradicated.
- In 1967 the WHO launched a campaign to eradicate smallpox. The last case occurred in 1977, and smallpox was declared eradicated in 1980.

Control of Smallpox

In the global campaign, the principal strategy to contain smallpox and the one now recommended is called “surveillance and containment” or “ring vaccination.” This calls for the isolation of all patients, the vaccination of all persons who have been in contact with a patient since he or she became ill, and the vaccination of the patient’s household contacts. Healthcare workers are also vaccinated as a priority. During the eradication campaign, these measures proved to be more effective than mass vaccination.

During an outbreak, vaccination is recommended for all at risk of acquiring smallpox—even individuals who may experience more serious reactions. Vaccination under non-epidemic circumstances is not recommended for certain people who are more likely to experience complications—such as those whose immune system may be suppressed (patients with HIV and those receiving chemotherapy or radiation) or who have a history of eczema.

Now vs. 1980

- Many more people are traveling, and there is no way to identify travelers who may be infected but do not yet have symptoms.
- Urban populations are larger and immunity is much lower.
- Hospitals are functioning at full capacity, with little capacity to deal with patients in an epidemic.