

# FactSheet

Para Su Información

## Smallpox (Variola)

### What is smallpox?

Smallpox is an acute infectious disease caused by a virus. Smallpox infects only humans, and the last naturally acquired case of smallpox in the world occurred in 1977.

### Who gets smallpox?

No one has naturally contracted smallpox since 1977. (There have been a limited number of cases since 1977 where researchers have become infected from exposures that took place in a laboratory setting.)

When smallpox naturally occurred, the disease was highly contagious. People became infected from being exposed to the respiratory secretions of people with smallpox, through direct contact with smallpox lesions of the skin and mucous membranes, or through contact with items (e.g., bedding, clothing) that been contaminated by such lesions or scabs.

People who developed a cough when they had smallpox could spread the disease by coughing and were considered at very high risk of transmitting the disease to others.

### What were the symptoms of smallpox?

Symptoms in the initial stage of smallpox included fever, chills, headache, nausea, vomiting and severe muscle aches. This stage would usually last for two to four days and was, at times, accompanied by flushing of the skin. By the fourth day of illness, the fever dropped and the characteristic smallpox rash appeared. The rash started out as flat or slightly thickened spots (known as macules) and quickly progressed to raised spots (known as papules). These papules continued to enlarge and became filled with a clear fluid. The lesions were then referred to as vesicles. The fluid in the vesicles would gradually change from clear to pus-like, and

the lesions were then referred to as pustules. During the pustule stage, a fever would again be common and the pustules would start to form into scabs. Over time, the dried scab material would fall off of the skin. This entire process took three to four weeks, and the areas affected by the rash were often permanently scarred.

There were two types of smallpox: variola major and variola minor. Variola major was the more severe form and would usually kill 30-50 percent of people infected with it who were unvaccinated (3 percent of those vaccinated), typically between the fifth and seventh day of their illness. Variola minor would usually kill 1-2 percent of people infected with it who were unvaccinated. There were also two rare and more serious forms of smallpox. In the most severe form, known as purpura variolosa or hemorrhagic-type smallpox, the initial stage of the illness (before the rash appeared) would be accompanied by a dark, purplish, blotchy flushing of the skin. People who developed purpura variolosa usually had a severe loss of blood into the skin and internal organs (hemorrhage), and died before the typical smallpox rash would appear. About 3 percent of those with variola major would develop purpura variolosa.

Another rare and deadly form of smallpox was referred to as flat-type smallpox that affected about 5 percent of those with variola major. People with this form of the disease would have lesions that developed more slowly, never raised above the surface of the skin, and felt soft to the touch. If people with flat smallpox survived, they rarely experienced severe scarring. Both purpura variolosa and flat smallpox were virtually never seen in people infected with variola minor. Smallpox was

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

- The initial symptoms of smallpox were much more severe than chickenpox i.e., high fever, severe muscle aches, etc.
- Smallpox rash was 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 tended to be at the same state 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 soon after exposure did symptoms appear?**

The first symptoms of smallpox usually occurred within 10 to 12 days after exposure, with the rash appearing two to four days later. The first symptoms could appear, however, as early as six days after exposure, or as late as 22 days.

### **How was smallpox diagnosed?**

Smallpox was often diagnosed based on the patient's clinical signs and symptoms; however, the disease could be definitively diagnosed by isolation of the virus from the blood or lesions, or by identification of antibodies in the blood that were made in response to the virus.

### **What was the treatment for smallpox?**

There were no medicines available to treat smallpox once the lesions began to develop. Antiviral medicines were sometimes useful at preventing the development of smallpox if they were given to a person immediately after exposure to the disease. Antibiotics might have been offered if the pustules of the rash appeared to be infected with a bacterium, but supportive nursing care was the primary therapy available.

Vaccinia immune globulin (VIG) was used primarily to treat complications of smallpox vaccination. VIG could also have been offered to people exposed to smallpox as a prophylaxis. However, VIG needed to be given before lesions began to develop, and it was most effective when given with smallpox vaccination.

### **How was smallpox prevented (and ultimately eradicated)?**

There is a vaccine to prevent smallpox that was routinely administered in the United States until the early 1970s. It is effective at preventing smallpox, and was used to eradicate the disease. The last case of smallpox was diagnosed in Somalia in 1977. In 1980, the World Health Organization declared that smallpox had been eradicated from the face of the earth.

While the smallpox vaccine is effective, it was associated with a significant risk of adverse events in vaccines. This risk of adverse events, accompanied by the rapid decrease in smallpox around the world in the 1970s, was part of the justification for the U.S. to discontinue routine vaccination against smallpox before the disease was eradicated in 1977.

Very limited stockpiles of smallpox vaccine and VIG are maintained by the Centers for Disease Control. Routine vaccination of the civilian population for this disease is not recommended, nor is smallpox vaccination required for international travel to any country. The only people currently recommended to receive smallpox vaccine are people working in a laboratory setting with smallpox or closely related viruses.

### **Where can I get more information?**

Contact your doctor or the Southern Nevada Health District, Office of Epidemiology at (702) 759-1300.



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