



## VACCINE OVERVIEW

### The Smallpox Vaccine

The smallpox vaccine is the only way to prevent smallpox infection. The vaccine is made from a virus called *vaccinia* which is another "pox"-type virus related to smallpox. The smallpox vaccine helps the body develop immunity to smallpox. It contains the "live" *vaccinia* virus not dead virus like many other vaccines. For that reason, the vaccination site must be cared for carefully to prevent the virus from spreading. Also, the vaccine can have side effects (see below). The vaccine does not contain the smallpox virus and cannot give you smallpox.

Currently, the United States has a big enough stockpile of smallpox vaccine to vaccinate all Americans in an emergency. Production of new vaccine is underway.

### Length of protection

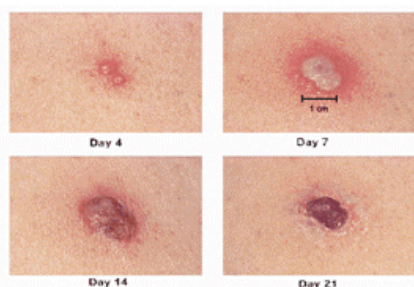
Past experience indicates that the first dose of the vaccine offers protection from smallpox for three to five years, and sometimes as long as 10 years or more. If a person is vaccinated again later, immunity lasts even longer. Historically, the vaccine has been effective in preventing smallpox infection in 95 percent of those vaccinated. In addition, the vaccine was proven to prevent or severely lessen infection when given within a few days of exposure. It is important to note, however, that at the time when the smallpox vaccine was used to eradicate the disease, testing was not as advanced or precise as it is today, so there may still be things to learn about the vaccine and its effectiveness and length of protection.

### Receiving the vaccine

The smallpox vaccine is not given with a normal hypodermic needle. It is not a shot as most people have experienced. The vaccine is given using a bifurcated (two-pronged) needle that is dipped into and holds a droplet of the vaccine. The needle is used to poke the skin about 15 times in a few seconds. The poking is not deep, but it will cause a sore spot and one or two droplets of blood to form. The vaccine can be administered in the upper arm, or on the thigh.

If the vaccination is successful, a red and itchy bump will develop at the vaccine site in three or four days. In a week, the bump becomes a large blister and fills with pus and begins to drain. During week two, the blister begins to dry up and a scab forms. The scab falls off in the third week, leaving a small scar. People who are being vaccinated for the first time have a stronger reaction than those who are being revaccinated. The following pictures show the progression of the site where the vaccine is given.

## Smallpox vaccination site Days 4 through 21



### Post-vaccination care

After the vaccine is given, it is very important to follow instructions to care for the site of the vaccine. Because the virus is “live,” it can spread to other parts of your body, or even to other people. The vaccinia virus (the live virus in the smallpox vaccine) may cause rash, fever and head and body aches. In certain groups of people (see below), complications from the vaccinia virus can be severe.

### Benefit of vaccine following exposure

Vaccination within 3 days of exposure will completely prevent or significantly modify smallpox in the vast majority of persons. Vaccination 4 to 7 days after exposure will also likely offer some protection from disease or modify severity of disease.

### Smallpox vaccine safety

The smallpox vaccine is the best protection you can get if you are exposed to the smallpox virus; however, the vaccine does have some risks. People most likely to have side effects are: women who are pregnant; people who have now, or have ever had, skin conditions, (especially eczema); and, people with weakened immune systems, such as those who have received a transplant, are HIV positive, or are receiving treatment for cancer. Historically, rates of complication for people receiving the vaccine for the first time are such that for every 1 million people who receive the vaccine, about 15 will have life threatening side effects. The death rate is about 1 or 2 persons per 1 million people vaccinated.

### Smallpox vaccine availability

Routine vaccination of the American public against smallpox stopped in 1972 after the disease was eradicated in the United States. Until recently, the U.S. Government provided the smallpox vaccine only to a few hundred scientists and medical professionals who worked with smallpox and similar viruses in a research setting.

After the events of September and October, 2001, however, the U.S. Government took further actions to improve its level of preparedness against terrorism. One of many such measures - designed specifically to prepare for an intentional release of the smallpox virus - included updating and releasing a smallpox response plan. In addition, the U.S. Government ordered production of enough smallpox vaccine to immunize the American public in the event of smallpox outbreak.

In the event of smallpox outbreak the U.S. Government has prepared emergency guidelines to quickly vaccinate and contain a smallpox epidemic. The government policy for pre-event vaccination is under consideration, but as of October 4, 2002, no decision has been made.

For more information, visit [www.cdc.gov/smallpox](http://www.cdc.gov/smallpox), or call the CDC public response hotline at (888) 246-2675 (English), (888) 246-2857 (Español), or (866) 874-2646 (TTY).

October 5, 2002