

# SMALLPOX VACCINE

## WHAT YOU NEED TO KNOW

### 1 What is smallpox?

Smallpox is a serious disease.

It is caused by a virus called **variola**, which is spread from person to person through close contact.

Smallpox can cause:

- a severe rash, which can leave scars when healed
- high fever
- tiredness
- severe headaches and backache
- blindness
- death (in up to 30% of those infected)

The last case of smallpox was in 1978.

### 2 Why get vaccinated?

Smallpox vaccine protects people who work with smallpox or related viruses. It is also used to protect emergency response teams and others who are likely to be exposed to smallpox virus during a terrorist attack or emergency.

During an outbreak or emergency, smallpox vaccine can protect anyone exposed to smallpox virus.

### 3 Smallpox vaccine

Smallpox vaccine is made from a virus called **vaccinia**. Vaccinia virus is similar to smallpox virus, but less harmful. In a vaccine it can protect people from smallpox. The vaccine does not contain smallpox virus.

Getting the vaccine *before* exposure will protect most people from smallpox. Getting the vaccine *within 3 days after exposure* can prevent the disease or at least make it less severe. Getting the vaccine *within a week after exposure* can still make the disease less severe. Protection from infection lasts 3 to 5 years, and protection from severe illness and death can last 10 years or more.

### 4 Who should get smallpox vaccine and when?

**Routine Non-emergency Use (No Outbreak)**

- Laboratory workers who handle cultures or animals contaminated or infected with vaccinia or other related viruses (e.g., monkeypox, cowpox, variola).

- Public health, hospital, and other personnel who may have to respond to a smallpox case or outbreak.

**Emergency Use (Smallpox Outbreak)**

**Who?**

- Anyone directly exposed to smallpox virus.

**When?**

One dose as soon as possible after exposure.

**Who?**

People at risk of exposure to smallpox virus, such as:

- People in close contact with smallpox patients, such as family members.
- People involved in medical care, evaluation, or transportation of smallpox patients.
- Laboratory personnel who collect or process specimens from smallpox patients.
- Anyone else at increased likelihood of contact with infectious materials from smallpox patients.
- Other groups (e.g., medical, law enforcement, emergency response, or military personnel), as recommended by public health authorities.

**When?**

One dose when risk of exposure occurs or becomes known.

*Vaccinated persons may need to be revaccinated after 3-10 years, if still at risk.*

### 5 After the vaccination

A blister should form at the vaccination site. Later it will form a scab. Finally the scab will fall off, leaving a scar.

**Until the scab falls off, you can spread vaccinia virus to other people or to other parts of your own body.** To prevent this, keep this area loosely covered with a gauze bandage. (Health care workers may need additional measures, such as a semi-permeable dressing covering the gauze.)

Change the bandage every 1-2 days, and keep the area dry. Cover with a waterproof bandage while bathing. Don't touch the vaccination site and then another part of your body without washing your hands first. Don't scratch or put ointments on the vaccination site. **Don't touch your eyes or any part of your body after changing the bandage or touching the vaccination site.** Wash your hands after touching the vaccination site or bandages, clothing, sheets or towels that have touched the site. Put used bandages in a plastic zip bag before throwing them away. Do the same with the scab when it falls off. Launder items that have touched the vaccination site.

**The vaccination site should be checked after about 7 days to make sure the vaccine is working.**

## 6

### Some people should not get smallpox vaccine or should wait.

#### Routine Non-emergency Use (No Outbreak)

- Anyone who has eczema or atopic dermatitis, or has a past history of either condition, should not get smallpox vaccine.
- Anyone with a skin condition that causes breaks in the skin (such as an allergic rash, severe burn, impetigo, chickenpox, shingles, or severe acne) should wait until the condition clears up before getting smallpox vaccine.
- Anyone whose immune system is weakened should not get smallpox vaccine, including anyone who:
  - Has HIV/AIDS or another disease, such as lupus, that affects the immune system.
  - Is being treated with drugs that affect the immune system, such as steroids for 2 weeks or longer.
  - Has leukemia, lymphoma, or most other cancers.
  - Is taking cancer treatment with x-rays or drugs.
- Pregnant women should not get smallpox vaccine.

*Anyone who has close personal contact with a person who has any of the above conditions also should not get smallpox vaccine.*

- People should not get smallpox vaccine who have ever had a life-threatening allergic reaction to **polymyxin B**, **streptomycin**, **chlortetracycline**, **neomycin**, or a **previous dose of smallpox vaccine**.
- People who are moderately or severely ill at the time the vaccination is scheduled should usually wait until they recover before getting smallpox vaccine.
- Breastfeeding mothers should not get smallpox vaccine.

#### Emergency Use (Smallpox Outbreak)

- **Anyone** who has been directly exposed to smallpox virus should be vaccinated, regardless of age, allergies, pregnancy, or medical conditions.
- Anyone who **may** have been exposed should follow the advice of their physician or public health officials.

## 7

### What are the risks from smallpox vaccine?

A vaccine, like any medicine, can cause serious problems, such as severe allergic reactions. The risk of smallpox vaccine causing serious harm, or death, is very small.

#### Mild to Moderate Problems

- Mild rash, lasting 2-4 days.
- Swelling and tenderness of lymph nodes, lasting 2-4 weeks after the blister has healed.
- Fever of over 100°F (about 70% of children, 17% of adults) or over 102°F (about 15%-20% of children, under 2% of adults).
- Secondary blister elsewhere on the body (about 1 per 1,900).

#### Moderate to Severe Problems

- Serious eye infection or loss of vision, due to spread of vaccine virus to the eye.
- Rash on entire body (as many as 1 per 4,000).
- Severe rash on people with eczema (as many as 1 per 26,000).
- Encephalitis (severe brain reaction), which can lead to permanent brain damage (as many as 1 per 83,000).
- Severe infection beginning at the vaccination site (as many as 1 per 667,000, mostly in people with weakened immune systems).
- Death (1-2 per million, mostly in people with weakened immune systems).

**For every million people vaccinated, between 14 and 52 could have a life-threatening reaction to smallpox vaccine.**

*People who come in direct contact with the vaccination site of a vaccinated person, or with materials that have touched the site, can also have a reaction. This is from exposure to virus from the vaccination site.*

## 8

### What if there is a moderate or severe reaction?

#### What should I look for?

- Any unusual condition, such as a high fever or behavior changes, severe rash over entire body, or a reaction that spreads from the vaccination site and does not get better. Signs of a serious allergic reaction can include difficulty breathing, hoarseness or wheezing, hives, paleness, weakness, a fast heart beat or dizziness.

#### What should I do?

- Call a doctor, or get the person to a doctor right away.
- Tell your doctor what happened, the date and time it happened, and when the vaccination was given.
- Ask your doctor, nurse, or health department to file a Vaccine Adverse Event Reporting System (VAERS) form, call VAERS yourself at **1-800-822-7967**, or visit their website at <http://www.vaers.org>.

## 9

### How can I learn more?

- Ask your doctor or nurse. They can show you the vaccine package insert or suggest other sources of information.
- Call your local or state health department.
- Contact the Centers for Disease Control and Prevention (CDC):
  - Call **1-888-246-2675** (English)
  - Call **1-888-246-2857** (Español)
  - Call **1-866-874-2646** (TTY)
  - Visit CDC's smallpox website at <http://www.bt.cdc.gov/agent/smallpox/>



**U.S. Department of Health & Human Services**

Centers for Disease Control and Prevention  
National Immunization Program