

**V**accinia is an orthopoxvirus related to smallpox. The vaccinia vaccine is a live virus vaccine that can be transmitted to other parts of the body or to other people who are in close contact with the vaccinated individual. It provides a high level of immunity for three to five years and a “booster” shot will extend this immunity.

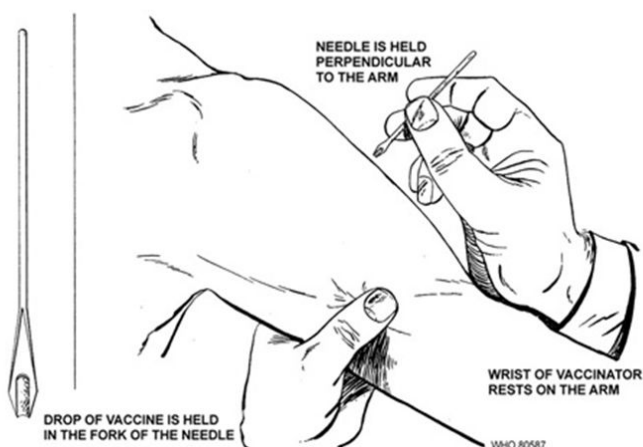
The Advisory Committee on Immunization Practices (ACIP) recommends routine vaccination with live smallpox vaccine, currently ACAM2000, for laboratory personnel who directly handle cultures or animals contaminated or infected with replication-competent vaccinia virus, virulent vaccinia strains, or other orthopoxviruses that infect humans (e.g., monkeypox, cowpox, and variola).

**NOTE:** Vaccination is not recommended for those using replication-defective vaccinia strains such as MVA, NYVAC, TROVAL, and ALVAC.

### **Can anyone receive the vaccination?**

No. People with certain health conditions should not be vaccinated or be in close contact with a vaccinated individual. These conditions include:

- Pregnant women or those who may become pregnant
- Nursing women
- Individuals who have a compromised or suppressed immune system due to a health condition or medication
- Individuals with a heart condition with or without symptoms
- Individuals with eczema



Source: WHO - Diagnosis of Smallpox, 2003

### **What I need to know...**

- ✓ Consider vaccination if working with replication-competent vaccinia.
- ✓ Wear bandages to completely cover the vaccination site.
- ✓ Avoid touching or rubbing or scratching the vaccination site.
- ✓ Avoid certain activities and contact with individuals during the incubation period.
- ✓ Consult a physician if I'm considering receiving the vaccinia vaccination
- ✓ Contact EH&S at [biosafety@usc.edu](mailto:biosafety@usc.edu) for more information.

Anyone considering the vaccinia vaccine should consult a physician.

### **How is the vaccine delivered?**

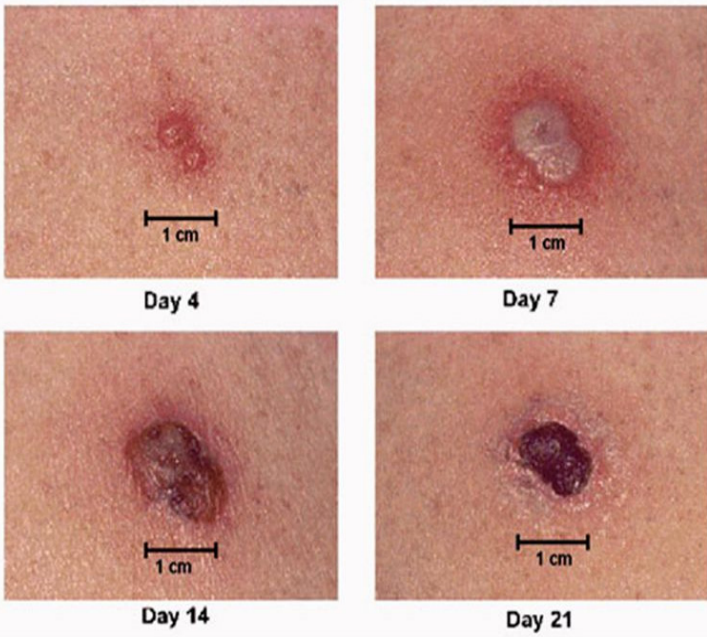
The vaccine is administered with a bifurcated (two-pronged) needle that is dipped into the vaccine solution. The needle is used to prick the skin several times in quick succession. See illustration at left.

After vaccination, the following effects are observed at the vaccination site:

- Day 3 or 4 - red, itchy bump appears
- Week 1 - bump becomes a large blister and fills with pus and begins to drain
- Week 2 - blister begins to dry up and a scab forms
- Week 3 - scab falls off leaving a small scar

**NOTE:** The vaccination site is considered infectious until the scab has formed and fallen off on its own.

### Primary Vaccination Site Reaction



Source: Smallpox Vaccine, J. Michael Lane, MD, MPH/CDC 2003

### What are the potential side effects?

- Injection site erythema, pruritus, pain, swelling, myalgia, itching, swollen lymph nodes, sore arm, fever, headache, body ache, rash and fatigue.
- Inadvertent inoculation at other sites is the most frequent complication of vaccination. The most common sites involved are the face, nose, mouth, lips, genitalia, and anus.
- Serious adverse events include: myocarditis, pericarditis, encephalitis, encephalomyelitis, encephalopathy, progressive vaccinia, generalized vaccinia, severe vaccinia skin infections, and erythema multiforme major (including STEVENS-JOHNSON SYNDROME) and eczema vaccinatum resulting in permanent sequelae or death, ocular complications, blindness and fetal death have occurred following either primary vaccination or revaccination with smallpox vaccines.

### What are the post vaccination precautions and care?

- Follow care instructions for the vaccination site:
  - Wear bandages to cover the entire vaccination site.
  - Wear sleeves to cover the site.
  - Wash your hands often.
- Avoid close contact with individuals in your household, i.e. avoid sexual intercourse, sharing clothes or other materials that have come in contact with the inoculation site.
- Avoid touching the inoculation site.

### What to avoid for the 4 weeks after vaccination AND until the vaccination site has healed.

- Getting pregnant
- Handling babies or breastfeeding
- Swimming or hot tub use
- Donating blood
- TB testing
- Rubbing, scratching or touching the vaccination site
- Contact with people who cannot get the vaccine due to a health condition such as pregnancy, compromised immune system, heart condition or skin condition
- Sharing a bed, clothes, towels, linen or toiletries with unvaccinated individuals
- Sexual contact with unvaccinated individuals

### Additional Information

CDC

<https://emergency.cdc.gov/agent/smallpox/vaccination/live-virus.asp>

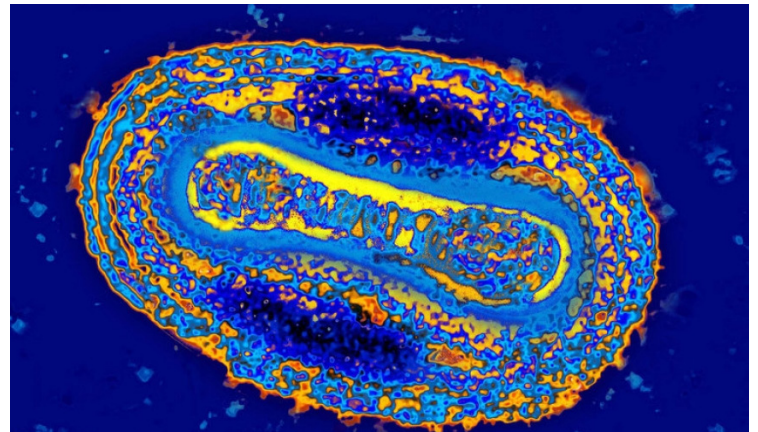
Sanofi Pasteur company

<http://www.sanofipasteur.us/vaccines/ACAM2000>

FDA

<http://www.fda.gov/BiologicsBloodVaccines/Vaccines/QuestionsaboutVaccines/ucm078041.htm>

Smallpox virus seen under an electron microscope



Source: Getty Images

**NOTE:** The information provided on this fact sheet should not be used in lieu of a physician's consultation and does not provide comprehensive medical information about the vaccinia vaccine.