

General

- Monkeypox is a rare disease caused by infection with the monkeypox virus.
 - It is part of the **same family of viruses as variola virus, the virus that causes smallpox.**
 - Monkeypox symptoms are similar to smallpox symptoms, but milder, and monkeypox is rarely fatal. Monkeypox is not related to chickenpox.
- The virus can **spread from person to person** through direct **contact with the infectious rash, scabs, or body fluids.** It also can be **spread by respiratory secretions** during prolonged, face-to-face contact, or during **intimate physical contact**, such as kissing, cuddling, or sex.¹
- The virus has also been shown to be able to spread via indirect contact from contaminated objects or materials (also described as **fomite transmission**)
- The virus data suggest that widespread community **transmission of monkeypox has disproportionately affected gay, bisexual, and other men who have sex with men and racial and ethnic minority groups**²
 - Data published in *Morbidity and Mortality Weekly Report* and gathered by the Centers for Disease Control and Prevention (CDC) shows **99% of monkeypox cases in the United States are in males, and 94% of cases report recent male-to-male sexual or intimate contact.**³

Signs and symptoms:

- People with monkeypox get a rash that may be located on or near the genitals (penis, testicles, labia, and vagina) or anus and could be on other areas like the hands, feet, chest, face, or mouth.
- The rash will go through several stages, including scabs, before healing.
- The rash can initially look like pimples or blisters and may be painful or itchy.

Other symptoms of monkeypox can include:

- Fever, Chills, Swollen lymph nodes (lymphadenopathy)
- Exhaustion, Muscle aches and backache
- Headache
- Respiratory symptoms (sore throat, nasal congestion, or cough)
- Sometimes, people have flu-like symptoms before the rash.
- Some people get a rash first, followed by other symptoms.
- Others only experience a rash.

Duration:

- Symptoms **usually start within 3 weeks of exposure** to the virus.
- If someone has flu-like symptoms, they will usually develop a rash 1-4 days later.
- **Monkeypox can be spread from the time symptoms start until the rash has healed,**
 - All scabs have fallen off
 - A fresh layer of skin has formed.
 - **The illness typically lasts 2-4 weeks.**

Prevention

- Avoid close, skin-to-skin contact with people who have a rash that looks like monkeypox (shown below)
- Avoid contact with objects and materials that a person with monkeypox has used.
- Wash your hands often with soap and water or use an alcohol-based hand sanitizer, especially before eating or touching your face and after you use the bathroom.

Further prevention/Vaccination:

CDC recommends vaccination for people who have been exposed to monkeypox and people who may be more likely to get monkeypox, including:

- People who have been identified by public health officials as a contact of someone with monkeypox
- People who know one of their sexual partners in the past 2 weeks has been diagnosed with monkeypox
- People who had multiple sexual partners in the past 2 weeks in an area with known monkeypox

There are two vaccines that have been approved for the protection against Monkey Pox

- **JYNNEOS** vaccine is approved for the prevention of monkeypox and smallpox disease. The vaccine is made using weakened live vaccinia virus and cannot cause smallpox, monkeypox, or any other disease
 - **2-part vaccine series:** 2 injections which are 4 weeks apart. It takes 14 days after the second dose for maximum protection to develop.
 - **Booster doses** recommended every 2-10 years if a person remains at risk for contraction of monkeypox, smallpox, or other orthopoxviruses
 - **Immunocompromised populations:** The virus in JYNNEOS is non-replicating, therefore, the vaccine is safe for use in significantly compromised individuals who may not be indicated or recommended to receive certain live attenuated vaccines.⁴
 - **Potential adverse effects:** injection site reactions, redness, swelling, muscle pain, fatigue, nausea, and chills.
 - Certain people at increased risk of a condition called myocarditis (swelling of the heart muscle), including adolescent or young adult males, might consider waiting 4 weeks after JYNNEOS™ vaccination before getting an mRNA COVID-19 vaccine⁵
- **ACAM2000** vaccine is approved for immunization against smallpox disease and made available for use against monkeypox under an Expanded Access Investigational New Drug (EA-IND) protocol.
 - **ACAM2000 contains live vaccinia virus (a “pox”-type virus) to protect against smallpox disease. It is the more available of the 2 vaccines.**
 - The vaccine is **not indicated for immunocompromised individuals** like most live virus vaccines, but talk to your provider for further information regarding the vaccination options
 - **Procedure:** One time dosing. Your healthcare provider will make 15 needle pokes in the skin of your upper arm with a needle containing ACAM2000. It is important to care for the vaccination sites properly so that the virus doesn't spread to other parts of your body or to other people. You can infect another part of your body or other people until the scab falls off. It takes ~4 weeks following vaccination to get maximum protection.
 - **Possible adverse effects: greater risk for serious heart problems called myocarditis and pericarditis or swelling of the heart tissues.** Allergic reactions, injection site reactions (inflammation), blistering, along with others; talk with your healthcare provider for further information.⁶

Reference:

1. <https://www.cdc.gov/poxvirus/monkeypox/index.html>
2. <https://www.who.int/emergencies/disease-outbreak-news/item/2022-DON396>
3. Philpott D, Hughes CM, Alroy KA, et al. Epidemiologic and Clinical Characteristics of Monkeypox Cases — United States, May 17–July 22, 2022. MMWR Morb Mortal Wkly Rep. ePub: 5 August 2022. DOI: <http://dx.doi.org/10.15585/mmwr.mm7132e3>
4. <https://www.fda.gov/vaccines-blood-biologics/vaccines/key-facts-about-monkeypox-vaccine>
5. <https://www.cdc.gov/vaccines/hcp/vis/vis-statements/smallpox-monkeypox.pdf>
6. <https://www.cdc.gov/poxvirus/monkeypox/considerations-for-monkeypox-vaccination.html#vaccine-information>
7. <https://www.cdc.gov/poxvirus/monkeypox/vaccines.html>

Graphics:



Figure 1: Monkey Pox Skin Findings (Source: NHS England High Consequence Infectious Diseases Network)

**Smallpox Vaccination Site:
expected response after vaccination**



Figure 2: Pox vaccine vaccination site appearance progression as seen with ACAM2000 vaccine. This site should be protected with a waterproof bandage to other body parts and individuals from spread. (source: fda.gov)

Specific Population	JYNNEOS ¹	ACAM2000
People age <18 years	Administer subcutaneously (standard regimen) if vaccine is given.	Do not administer to infants age <12 months.
People of any age who have a history of developing keloid scars	Consider administering subcutaneously (standard regimen).	Do not administer.
Most adults age ≥18 years who are eligible for vaccination under the national monkeypox vaccine strategy (includes PEP, PEP++, or PrEP)	Can be administered intradermally (alternative regimen).	Administer percutaneously if vaccine is given.
People with prior history of smallpox vaccination ²	Consider administering intradermally (alternative regimen).	Can be administered if no contraindication is present.
People who are pregnant³ or breastfeeding⁴	Consider administering intradermally (alternative regimen).	Do not administer.
People with three or more major cardiac risk factors ⁵	Consider administering intradermally (alternative regimen).	Do not administer.
People with atopic dermatitis, eczema, or other exfoliative skin conditions ⁶	Consider administering intradermally (alternative regimen).	Do not administer.
People with prior history of monkeypox ⁷	See footnote about exceptions to the two-dose series.	Do not administer.

Figure 3: Specific Population Information Regarding Each Vaccine Option for Monkey Pox.⁷ Note, this chart excludes the immunocompromised population. For immunocompromised individuals, JYNNEOS vaccine should be prioritized over ACAM2000 because the virus in the vaccination lacks the ability to replicate