



Clinician FAQs

Updated July 5, 2022

Questions and Answers About Monkeypox for Healthcare Professionals

Please refer to CDC’s [Information for Healthcare Professionals](#) and [Considerations for Monkeypox Vaccination](#) for more information.

Monkeypox Transmission, Risk, and Strains

How is monkeypox transmitted? ^

Monkeypox is transmitted by symptomatic individuals through close contact with lesions, bodily fluids, or respiratory secretions and objects that have had contact with lesion crusts or bodily fluids (e.g., contaminated linens, bandages, dishes). (See: [Transmission | Monkeypox | Poxvirus | CDC](#))

When is someone with monkeypox contagious? ^

Stage of Disease	Transmissibility	Symptom monitoring or isolation?
Incubation Period	Not contagious	Monitor for symptoms
Prodrome	Possibly contagious	Isolate (at home or in a healthcare facility, as clinically indicated)
Rash	Contagious*	Isolate (at home or in a healthcare facility, as clinically indicated)

* A person is contagious until after all the scabs on the skin have fallen off and a fresh layer of intact skin has formed.

Who is at increased risk for severe monkeypox disease? ^

Young children (<8 years of age), individuals who are pregnant or immunocompromised, and individuals with history of atopic dermatitis or eczema may be at especially increased risk for severe outcomes from monkeypox disease.

What strains have been identified in this outbreak? ^

CDC lab experts have found at least two variants of monkeypox virus circulating in this outbreak. Both variants share common ancestors with strains present in Nigeria since 2017. It is likely that there were at least two separate events where the monkeypox virus spread from animals to people in Nigeria, and then began to spread person-to-person through close contact.

CDC lab experts are continuing to use genetic sequencing to better understand how cases might be linked to other cases in the US or in other countries.

Clinical Guidance

What should prompt clinical suspicion for monkeypox infection? 

Clinicians should be alert to patients presenting with a new characteristic rash or if the patient meets one of the [epidemiologic criteria](#) and there is a high clinical suspicion for monkeypox. The rash associated with monkeypox can be confused with other rashes encountered in clinical practice including herpes, syphilis, and varicella. Patients co-infected with *Monkeypox virus* and other infectious agents (e.g., varicella zoster, herpes, syphilis) have been reported. Clinicians should therefore have monkeypox on their differential diagnosis when presented with an STI-associated or STI-like rash, even if it is localized and not (yet) diffuse. Please refer to [CDC's Case Definitions for use in the 2022 Monkeypox Response](#).

I diagnosed my patient with another infection (e.g., a sexually transmitted infection). Can I assume  that they don't have monkeypox?

The cases of monkeypox described in the current outbreak have some atypical features. The rash may start in the genital and perianal areas, the rash may not always disseminate to other parts of the body and typical prodromal symptoms may be mild or absent. These features of the newest monkeypox cases can easily be confused with sexually transmitted infections (STI). It is important to comprehensively evaluate patients presenting with genital or perianal ulcers for STIs. However, co-infections with monkeypox and STIs have been reported and the presence of an STI does not rule out monkeypox. Patients with a new characteristic rash or who meet one or more of the [epidemiologic criteria](#) and in which there is a high suspicion should be tested for monkeypox.

My patient's orthopox or monkeypox test result is pending. What should I tell them to do in the meantime? 

Instruct patients with suspected monkeypox infection to isolate themselves and avoid close contact with other people and animals, including pets. Patients who do not require hospitalization, but who are potentially infectious to others, should be isolated at home. (See [When a patient is isolating in their home, what should they do?](#))

I suspect my patient has been exposed to monkeypox. What should I do? 

- Clinicians should first consult their state health department ([State Contacts](#) ) as soon as a monkeypox exposure is suspected. A risk assessment will need to be conducted to determine if post-exposure medication or vaccination is recommended. Unique circumstances (e.g., immunocompromise) can be factored into the risk determination, but these decisions should be made on a case-by-case basis. For more information about exposures, refer to CDC's [Monitoring People Who Have Been Exposed](#).
- Clinicians should advise the patient to isolate at home while diagnosis is being confirmed. See [When a Patient is Isolating at Home What Should They Do?](#)

- Patients who have been exposed to monkeypox, even if they do not have symptoms, may be eligible for post-exposure vaccination. For more information about available medications and vaccination, please refer to CDC's [Monkeypox and Smallpox Vaccine Guidance](#).
- After exposure, the patient should be educated about the clinical presentations of monkeypox infection (see [How should I counsel a patient with suspect or confirmed monkeypox on the expected course of illness](#)) and instructed to contact their physician if they exhibit any of these clinical signs and symptoms as soon as possible.

I suspect my patient has monkeypox. What should I do?

Clinicians should first isolate their patient in a single person room if available and immediately consult their state health department ([State Contacts](#) ) or CDC through the Emergency Operations Center (770-488-7100) as soon as monkeypox is suspected. Prompt notification is important to facilitate testing, exposure risk assessments for close contacts, and, for the patient or close contacts, consideration of available medications and vaccination. For specific information on Infection Prevention and Control, Isolation, and Personal Protective Equipment, refer to CDC's [Infection Prevention and Control of Monkeypox in Healthcare Settings](#). For more information about available medications and vaccination, please refer to CDC's [Monkeypox and Smallpox Vaccine Guidance](#).

How should I counsel a patient with suspect or confirmed monkeypox on the expected course of illness?

- Monkeypox disease is characterized by an incubation period, prodrome, and rash. See [Clinical Recognition | Monkeypox | Poxvirus | CDC](#) for additional information.
- Incubation Period: Infection with monkeypox virus begins with an incubation period where the person does not have symptoms and may feel fine. The incubation period is roughly 1-2 weeks. ***A person is not contagious during this period.*** Physicians are currently recommended to monitor patients up to 21 days.
- Prodrome: People with monkeypox infection may develop an early set of symptoms (prodrome). These symptoms may include fever, malaise, headache, sore throat, or cough, and (in many cases) swollen lymph nodes. Lymphadenopathy is a characteristic feature of monkeypox, and lymph nodes may swell in the neck (submandibular & cervical), armpits (axillary), or groin (inguinal) and can occur on both sides of the body or just one. ***A person may be contagious during this period.*** Instruct patients to isolate if they develop symptoms.
- Rash: In some recent monkeypox cases, people have presented with a rash without a recognized prodrome. Many of the recent cases have only had localized lesions and have not presented with diffuse rash often seen in figures. People with monkeypox infection develop lesions that typically progress from papules, macules, vesicles, pustules, and then scabs. ***A person is contagious until after all the scabs on the skin have fallen off and a fresh layer of intact skin has formed underneath.*** Decisions regarding discontinuation of [isolation precautions at a healthcare facility](#) and at home should be made in consultation with the local or state health department.

Vaccines and Treatment

Who is eligible to receive a monkeypox vaccine?

JYNNEOS vaccine is being allocated to jurisdictions for use for the following individuals:

- Known contacts who are identified by public health via case investigation, contact tracing, and risk exposure assessments
- Presumed contacts who may meet the following criteria:
 - Know that a sexual partner in the past 14 days was diagnosed with monkeypox

- Had multiple sexual partners in the past 14 days in a jurisdiction with known monkeypox

JYNNEOS doses should be prioritized for those people who are at risk for severe adverse events with ACAM2000 or severe disease from monkeypox (such as people with HIV or other immunocompromising conditions).

What vaccines are available to prevent monkeypox?

JYNNEOS™ (also known as Imvamune or Imvanex) and ACAM2000 are the two currently licensed vaccines in the United States to prevent smallpox. These vaccines are available from the US Strategic National Stockpile (SNS). JYNNEOS is also licensed specifically to prevent monkeypox. Both JYNNEOS and ACAM2000 can be used before and after exposure to monkeypox in an outbreak setting. Historically, those who receive pre-exposure vaccination include laboratorians and other personnel who work with monkeypox and other orthopoxviruses.

JYNNEOS

- JYNNEOS is [licensed by the FDA](#) to prevent monkeypox and smallpox. For pre-exposure vaccination recommendations, please refer to CDC's [Monkeypox and Smallpox Vaccine Guidance](#) or [Use of JYNNEOS \(Smallpox and Monkeypox Vaccine, Live, Nonreplicating\) for Preexposure Vaccination of Persons at Risk for Occupational Exposure to Orthopoxviruses: Recommendations of the Advisory Committee on Immunization Practices — United States, 2022](#).
- Because it's made from a non-replicating virus, JYNNEOS may be a better option for people with weakened immune systems, and in those who are pregnant or who have other health conditions.
- JYNNEOS is currently only approved for adults aged 18 and older, but CDC is working with FDA to expand eligibility for persons under age 18 through an Expanded Access Investigational New Drug Protocol (EA-IND) protocol. Providers can also file a single-use IND with FDA for pediatric use on a case-by-case basis.
- Currently, post-exposure vaccination is being offered to people based on an [exposure risk assessment](#) [109 KB, 1 page] conducted by public health professionals for individuals exposed to a patient with monkeypox.
- JYNNEOS is safe to administer to people with weakened immune systems, though they may be less likely to mount an effective response after vaccination.
- For more information, please refer to CDC's [Vaccine Information Statement](#) [149 KB, 2 pages].

ACAM2000

- ACAM2000 is licensed for immunization in people who are at high risk for smallpox infection. It can be used in people exposed to monkeypox if used under an EA IND.
- ACAM2000 contains live vaccinia virus, not a killed or weakened virus like many other vaccines. For that reason, people who are vaccinated with ACAM2000 must take precautions when caring for the place on their arm where they were vaccinated, so they can prevent the vaccinia virus from spreading.
- For most people with healthy immune systems, live virus vaccines are safe and effective. Sometimes after getting vaccinated with a live virus vaccine, like ACAM2000, people will experience mild symptoms such as rash, fever, and head and body aches.
- Vaccines like ACAM2000 were widely used during the campaign to eradicate smallpox. However, this vaccine has the potential for more serious side effects and adverse events than the newer vaccine, JYNNEOS. People who might be more likely to have these side effects include those with skin problems, including eczema, atopic dermatitis, psoriasis, or uncontrolled acne; a weakened immune system, such as people who have received a transplant, are living with HIV, are receiving treatment for cancer, or are taking medications that suppress the immune system.
- If administered, patients should be counseled that ACAM2000 may cause serious heart problems, including myocarditis and pericarditis. In studies, about 1 in every 175 persons who got the vaccine for the first time may have experienced myocarditis and/or pericarditis. On rare occasions these conditions can result in irregular heartbeat and death. These risks are lower for patients previously vaccinated with ACAM2000. Patients can have myocarditis or pericarditis even without symptoms. Call your healthcare provider or seek emergency help right away if you have: chest pain or pressure, fast or irregular heartbeat, or breathing problems.

- The CDC can assist physicians in the diagnosis and management of patients with suspected complications of vaccinia (smallpox) vaccination. Vaccinia Immune Globulin Intravenous (VIGIV) is indicated for certain complications of vaccination live vaccinia virus smallpox vaccine. For more information, please refer to FDA's factsheet: [Medication Guide Smallpox Vaccine, Live ACAM2000 \(fda.gov\) \[250 KB, 7 pages\]](#) .
- If vaccines are needed or additional information is required, physicians should contact the CDC EOC at 770-488-7100, Monday through Friday 8 AM to 4:30 PM Eastern Standard Time; at other times call (404) 639-2888.

Adverse Event Reporting

- Adverse reactions should be reported to the Vaccine Adverse Event Reporting System (VAERS). Visit the VAERS website at [vaers.hhs.gov](#) or call 1-800-822-7967. VAERS is only for reporting reactions, and VAERS staff members do not give medical advice.

Should all front-line healthcare workers get vaccinated?

CDC does not currently recommend pre-exposure vaccination [for most U.S. healthcare workers](#). Monkeypox primarily spreads through close contact and does not spread as easily as diseases like COVID-19. Proper use of personal protective equipment and [infection control practices](#) are effective at reducing the risk of transmission of the monkeypox virus when examining a patient or handling contaminated materials.

The risk of monkeypox for most front-line healthcare workers is low. Healthcare workers who are [exposed](#) to monkeypox may benefit from post-exposure prophylaxis with the JYNNEOS vaccine. CDC is working closely with partners to ensure there are enough vaccine doses available for those who are recommended to receive them.

For detailed recommendations on vaccination, see CDC's [Monkeypox and Smallpox Vaccine Guidance](#).

Can patients who are pregnant or breastfeeding be vaccinated?

Clinicians considering vaccinating patients who are pregnant or breastfeeding should consult public health authorities. Because human data is lacking, healthcare providers should discuss the risk and benefits with the patient using shared decision making.

JYNNEOS

1. **Pregnant patients.** Available human data on JYNNEOS administered to pregnant people are insufficient to determine vaccine-associated risks in pregnancy. Animal models, including rats and rabbits, have shown no evidence of harm to a developing fetus.
2. **Breastfeeding patients.** The safety and efficacy of JYNNEOS has not been evaluated in breastfeeding patients. It is not known whether JYNNEOS is excreted in human milk. Data are not available to assess the impact of JYNNEOS on milk production or the safety of JYNNEOS in breastfed infants. Because JYNNEOS vaccine is replication-deficient, it likely does not present a risk of transmission to breastfed infants and can be administered to patients who are breastfeeding if vaccination is critical.

ACAM2000

1. **Pregnant patients.** ACAM2000 has not been studied in pregnant patients. However, fetal vaccinia has been reported in fetuses and newborns of pregnant patients vaccinated with replication-competent smallpox vaccines. Smallpox vaccine may rarely cause infection in an unborn baby if the mother is vaccinated during pregnancy. This infection usually results in stillbirth or death. For this reason, ACAM2000 should not be administered to people who are pregnant or may be pregnant (Pregnancy Category D).

2. **Breastfeeding patients.** ACAM2000 has not been studied in persons who are lactating, so it is unknown whether the vaccine virus or antibodies are secreted in human milk. Live vaccine virus can be inadvertently transmitted from a lactating mother to her infant. Infants are at high risk of developing serious complications from live vaccinia smallpox vaccination.

Adverse Event Reporting

- Adverse reactions should be reported to the Vaccine Adverse Event Reporting System (VAERS). Visit the VAERS website at www.vaers.hhs.gov or call 1-800-822-7967. VAERS is only for reporting reactions, and VAERS staff members do not give medical advice.

What medications can be given to treat monkeypox?

Currently there is no treatment specifically approved for monkeypox virus infections. Antivirals developed for use in patients with smallpox may prove beneficial. See clinical guidance [CDC's Interim Clinical Guidance for the Treatment of Monkeypox](#) for additional details.

Tecovirimat (also known as TPOXX or ST-246)

- Available from the US Strategic National Stockpile (SNS).
- An antiviral [approved by the United States Food and Drug Administration \(FDA\)](#) [564 KB, 24 pages] for the treatment of human smallpox disease in adults and pediatric patients.
- In laboratory tests, tecovirimat has been shown to stop the growth of the virus that causes smallpox and to be effective in treating animals that had diseases similar to smallpox (e.g., monkeypox).
- Studies have shown that tecovirimat administered in healthy people is safe and causes only minor side effects.
- CDC holds an Expanded Access Investigational New Drug Protocol (EA-IND) that allows for the use of tecovirimat for treatment of non-variola orthopoxvirus infections (including monkeypox) in an outbreak.

Vaccinia Immune Globulin Intravenous (VIGIV)

- Available from the US Strategic National Stockpile (SNS).
- [Licensed by FDA](#) for treatment of complications due to vaccinia vaccination such as progressive vaccinia.
- CDC holds an EA-IND that allows the use of VIGIV for treatment of orthopoxvirus infections (including monkeypox) in an outbreak.

Brincidofovir* (also known as Tembexa)

- Not currently available from the US Strategic National Stockpile (SNS).
- Antiviral medication [approved by the FDA](#) [670 KB, 21 pages] for the treatment of human smallpox disease in adult and pediatric patients, including neonates.
- In laboratory tests, has been shown to stop the growth of the virus that causes smallpox and to be effective in treating animals that had diseases similar to smallpox (e.g., monkeypox).
- When administered in people who received brincidofovir following bone marrow transplants, the most common side effects were diarrhea, nausea, vomiting, and abdominal pain.
- CDC is currently developing an EA-IND to help facilitate use of brincidofovir as a monkeypox treatment.

Cidofovir* (also known as Vistide)

- An antiviral medication that is [approved by the FDA](#) [828 KB, 6 pages] for the treatment of cytomegalovirus (CMV) retinitis in patients with Acquired Immunodeficiency Syndrome (AIDS).
- In laboratory tests, cidofovir has also been shown to stop the growth of the virus that causes smallpox and to be effective in treating animals that had diseases similar to smallpox (e.g., monkeypox).

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- This drug continues to be evaluated for effectiveness and toxicity.
- CDC holds an EA-IND that allows for the use of cidofovir for treatment of orthopoxvirus infections (including monkeypox) in an outbreak.
- Brincidofovir may have an improved safety profile over cidofovir. Serious renal toxicity or other adverse events have not been observed during treatment of cytomegalovirus infections with brincidofovir as compared to treatment using cidofovir.

* Data is not available on the effectiveness of brincidofovir or cidofovir in treating human cases of monkeypox. Both have proven activity against poxviruses in *in vitro* and animal studies.

It is unknown whether a person with severe monkeypox infection will benefit from treatment with either antiviral, although their use may be considered.

- The CDC can assist physicians in the diagnosis and management of patients with suspected monkeypox. If VIGIV or antivirals are needed, or additional information is required, physicians should contact the CDC Emergency Operations Center at 770-488-7100, Monday through Friday 8 AM to 4:30 PM Eastern Standard Time; at other times call (404) 639-2888.

Advice for Monkeypox Patients to Reduce Transmission

How long does my patient need to isolate?



Patients with monkeypox should continue to isolate and follow prevention practices until cleared by public health officials after all lesions have resolved, the scabs have fallen off, and a fresh layer of intact skin has formed. The illness typically lasts 2-4 weeks. Decisions regarding discontinuation of isolation precautions at a healthcare facility should be made in consultation with the local or state health department. Please refer to CDC's [Isolation and Prevention Practices for People with Monkeypox](#).

When my patient is isolating in their home, what should they do?



- Patients should isolate until all lesions have resolved, the scabs have fallen off, and a fresh layer of intact skin has formed.
- People with monkeypox should adhere to these recommendations until cleared by public health:
 - Do not leave the home except as required for emergencies or follow-up medical care.
 - Persons without an essential need to be in the home should not visit.
 - Avoid close contact with others.
 - Avoid close contact with pets in the home.
 - Abstain from all sexual activity.
 - Do not share items that could be contaminated by the lesions (e.g., bed linens, clothing, towels, wash cloths). Do not share drinking glasses or eating utensils.
 - Routinely clean and disinfect commonly touched surfaces and items (e.g., counters, light switches) using an EPA-registered disinfectant (e.g., [List Q](#) ) in accordance with the manufacturer's instructions.
 - Wear a well-fitting mask or respirator for source control when in close contact with others at home.
 - Avoid use of contact lenses to prevent inadvertent infection of the eye.
 - Avoid shaving areas of the body with lesions as this can lead to spread of the virus.
- Bathroom usage:
 - If possible, use a separate bathroom if there are others who live in the same household.

- If there is not a separate bathroom in the home, the patient should clean and disinfect surfaces (e.g., counters, toilet seats, faucets) using an EPA-registered household cleaning product ([List Q](#) ) after using a shared space if the lesions are exposed (e.g., showering, toileting, changing bandages covering the lesions). Consider disposable glove use while cleaning if lesions are present on the hands.
 - Please refer to CDC's Home Infection Control page. [Infection Control: Home | Monkeypox | Poxvirus | CDC](#)
- Limit exposure to others:
 - Avoid contact with unaffected individuals until lesions have resolved, the scabs have fallen off, and a fresh layer of intact skin has formed.
 - Isolate in a room or area separate from other household members and pets when possible.
- Limit use of spaces, items, and food that are shared with other household members.
 - Do not share dishes and other eating utensils. It is not necessary for the infected person to use separate utensils if properly washed. Wash soiled dishes and eating utensils in a dishwasher or by hand with warm water and soap.
- Limit contamination within household:
 - Avoid direct contact with upholstered furniture and porous materials that cannot be laundered by placing coversheets, waterproof mattress covers, blankets, or tarps over these surfaces. Additional precautions such as steam cleaning can be considered if there is concern about contamination.

How can patients minimize risk of transmission to others?

Hand hygiene (e.g., use of an alcohol-based hand rub or hand washing with soap and water) should be performed by infected persons and household contacts after touching lesion material, clothing, linens, or environmental surfaces that may have had contact with lesion material.

- Persons with monkeypox should wear a well-fitting mask or respirator, especially those who have respiratory symptoms (e.g., cough, shortness of breath, sore throat) or significant oral lesions if close contact with others cannot be avoided (e.g., when obtaining medical care). Other household members should wear a well-fitting mask or respirator when in the presence of the person with monkeypox.
- Changing bandages and handling of contaminated linens should be performed by the person with monkeypox while wearing disposable gloves. Hand hygiene should be performed immediately following removal of gloves.
 - As a last resort, if assistance is needed with these activities, a household member should avoid extensive contact and wear, at a minimum, disposable medical gloves and a well-fitting mask or respirator. Any clothing that contacts the lesions during dressing changes should be immediately laundered. Gloves should be disposed of after use and hand hygiene performed.
- Cover skin lesions to the best extent possible (e.g., long sleeves, long pants). Gloves can be considered for covering lesions on the hands when not in isolation (e.g., emergencies, medical care).
- Contain and dispose of contaminated waste (e.g., dressings, bandages, gloves); See [Disinfecting Home and Other Non-Healthcare Settings](#).

Additional Advice for Monkeypox Patients

How should patients clean and disinfect their home?

The CDC provides general guidance on cleaning and disinfecting non-healthcare settings (e.g., homes, cars) where an individual with monkeypox spent significant time. (See: [Disinfecting Home and Other Non-Healthcare Settings](#))

Should patients be concerned about their pets?

- People with monkeypox should avoid contact with animals (specifically mammals), including pets.
 1. If possible, friends or family members should care for healthy animals until the owner has fully recovered.
 2. Keep any potentially infectious bandages, textiles (e.g., clothes, bedding) and other items away from pets, other domestic animals, and wildlife.
 3. There is currently no evidence that animals apart from mammals can become infected and transmit monkeypox.
- If you notice an animal that had contact with an infected person appearing sick (e.g., lethargy, lack of appetite, coughing, bloating, nasal or ocular secretions or crust, fever, pox lesions) contact the owner's veterinarian, state public health veterinarian, or state animal health official.

Do patients need to wear condoms if they have recovered from a monkeypox infection?

Safe sex, barrier practices (i.e., wearing condoms) are recommended, but there is little data to support the length of time patients need to wear condoms. Some other countries are recommending a minimum of 8 weeks, but we are still learning about this virus in the context of transmission through sexual contact. As public health experts learn more about monkeypox transmission this guidance will be updated.

How can patients help the public health response against the monkeypox outbreak?

Patients should seek prompt medical care as soon as they experience signs or symptoms associated with monkeypox or believe they were exposed to a monkeypox infection.

It is important that patients inform the physician and health department officials of other individuals who may have been exposed to monkeypox by the patient (i.e., contacts) so that the public health department can talk to them, and, if needed, to seek medical care. Identifying potential contacts will help them receive the proper treatments and protect others in the community from getting infected by monkeypox.