



El Dorado County  
Emergency Medical Services Agency  
Education and Training Update:

# Monkeypox

August 9, 2022

# What is Monkeypox?

- Monkeypox is a disease caused by the monkeypox virus. It is part of the same family of viruses as the variola viruses (orthopoxviruses).
- The symptoms are like smallpox, but usually milder.
- Monkeypox is rarely fatal.
- The source of the disease is unknown, but it is believed that African rodents and non-human primates (like monkeys) may harbor the virus and infect people.



# Monkeypox Outbreak 2022

- Since early 2022, cases of monkeypox have been reported from countries where the disease is not usually found, including the United States.
- There are 2 types of monkeypox: West African and Congo Basin. Infections in the current outbreak are from the West African type.
- Infections of West African type are rarely fatal. Most people who get this form of monkeypox are likely to survive (99%).



# Signs/ Symptoms of Monkeypox

- Fever
- Headache
- Muscle aches and backache
- Swollen lymph nodes
- Chills
- Exhaustion
- A rash that can look like pimples or blisters that appears on the face, inside the mouth, and on other parts of the body, like the hands, feet, chest, genitals, or anus

People with monkeypox may experience all or only a few of these symptoms. Most will develop a rash or sores.



# Key Characteristics for Identifying Monkeypox

- Lesions are well circumscribed, deep seated, and often develop umbilication (resembles a dot on the top of the lesion).
- Lesions are relatively the same size and stage of development on a single site of the body (e.g., pustules on the face or vesicles on legs).
- Fever is present before a rash.
- Lymphadenopathy is common.
- Disseminated rash is centrifugal (more lesions on the extremities and face).
- Lesions are present on palms and soles.
- Lesions are often described as painful until the healing phase when they become itchy as they crust.



# Characteristics of the Monkeypox Rash:



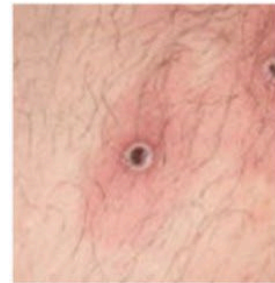
a) Early vesicle, 3mm diameter



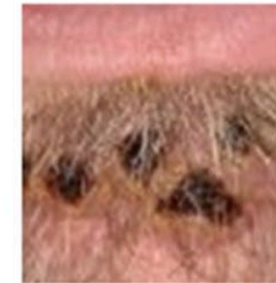
b) Small pustule, 2mm diameter



c) Umbilicated pustule, 3-4mm diameter



d) Ulcerated lesion 5mm diameter



e) Crusting of mature lesions



f) Partially removed scab



# Transmission

- Direct contact with the infectious rash, scabs, or body fluids
- Respiratory secretions during prolonged, face-to-face contact, or during intimate physical contact, such as kissing, cuddling, hugging, massaging, or sex
- Touching items (such as clothing or linens) that previously touched the infectious rash or body fluids
- Living in a house and sharing a bed with someone with monkeypox

Note: Pregnant people can spread the virus to their fetus through the placenta. Evidence also shows that people can infect mammals, including household pets. These infected animals can become sick and spread the disease to other people.

## **Monkeypox is NOT spread through:**

- **Casual brief conversations**
- **Walking by someone with monkeypox, like in a grocery store**



# Course of Disease

- After infection, there is an incubation period of roughly 1-2 weeks. A person does not have symptoms and may feel fine. They are not contagious during this period.
- The development of initial symptoms marks the beginning of the prodromal period (ex., fever, chills, swollen lymph nodes, body aches). A person is contagious at this stage.
- About 1-3 days after the prodrome, lesions will develop in the mouth and on the body. Lesions progress through several stages before falling off. A person is contagious at this stage.
- Once all the scabs have fallen off, a person is no longer contagious.
- The illness typically lasts around 2-4 weeks.





# Infectious Period

Someone with monkeypox is infectious from when they first start developing symptoms (e.g., fever, chills, fatigue, rash, etc.) until all lesions have healed, the scabs on their skin have fallen off, and a fresh layer of intact skin has formed underneath.



# Isolation

- People with confirmed or suspected monkeypox should be isolated. People who do not require hospitalization but who remain infectious should isolate at home.
- Isolation precautions should be continued until all lesions have resolved, scabs have fallen off, and a fresh layer of intact skin has formed.
- Decisions regarding discontinuation of isolation precautions should be made in consultation with the local or state health department.

Note: People with monkeypox should avoid contact with animals (specifically mammals) including pets. If possible, have a friend or family member care for pets until the person has recovered. If encountering an animal that has had contact with a person appearing sick, contact the owner's veterinarian, state public health veterinarian, or state animal health official.



# Who is at risk for severe disease?

- Young children (< 8 years of age)
- Individuals who are pregnant or breastfeeding
- Individuals who are immunocompromised
- Individuals with a history of atopic dermatitis or eczema



# Prevention of Monkeypox

- Avoid close, skin-to-skin contact with people who have a rash that looks like monkeypox:
  - Do not touch the rash or scabs of a person with monkeypox.
  - Do not kiss, hug, cuddle, or have sex with someone with monkeypox.
  - Do not share eating utensils or cups with a person with monkeypox.
- Do not handle or touch bedding, towels, or clothing of a person with monkeypox.
- Talk to your sexual partner(s) about any recent illness and be aware of new or unexplained sores or rashes on your or your partner's body.
- Wash your hands often with soap and water or use an alcohol-based hand sanitizer.
- Use appropriate personal protective equipment (PPE) (e.g., mask, gown, and gloves) when caring for someone with symptoms.
- Avoid contact with infected animals.



# Information for First Responders

- Consider monkeypox in your differential if a patient has unexplained fever, swollen lymph nodes, and/ or rash.
- Obtain sexual and travel history from patients:
  - Determine if any contacts have/ had a similar rash.
  - Determine if patient has had recent travel to central or west African countries where monkeypox has been reported.
- Remember that the disease may be confused with an STI or chickenpox. Monkeypox can be concurrent with an STI diagnosis.
- If a patient is suspected to have monkeypox:
  - Wear appropriate PPE, including N95 mask – see next slide
  - Exercise caution when performing aerosol-generating procedures.
  - Use an EPA-registered hospital-grade disinfectant on surfaces after patient contact.
  - Wash hands with soap and water after patient contact.
  - Trash/ linens should be bagged and contained immediately. Avoid shaking or handling trash in a manner which may disperse infectious particles.



# PPE for Healthcare Personnel

- Gown
- Gloves
- Eye protection (e.g., goggles or a face shield that covers the front and sides of the face)
- NIOSH-approved particulate respiratory equipped with N95 filters or higher

Droplet precautions are recommended by the CDC.

Any procedures likely to spread oral secretions, such as intubation and extubation, should be performed in an airborne infection isolation room if possible.

Here is a link to a Recently Published Toolkit for EMS Providers:

<https://www.cambridge.org/core/services/aop-cambridge-core/content/view/77F2BA506A873425C81BD232713531DB/S1049023X22001121a.pdf/monkeypox-2022-a-primer-and-identify-isolate-inform-3i-tool-for-emergency-medical-services-professionals.pdf>



# World Health Organization Declaration and Case Numbers

- On July 23, 2022, the WHO declared monkeypox a global health emergency.
- A global health emergency is an event which requires a coordinated international response and constitutes a public health risk to other countries. An emergency is declared when more global resources and attention are needed for an outbreak.
- As of August 5, 2022, globally more than 27,000 monkeypox cases have been identified and there have been at least 10 deaths.



# Monkeypox Case Numbers

- As of August 5<sup>th</sup>, 2022, there were 7,500 confirmed cases in the United States.
- In the U.S., the first monkeypox case from the current outbreak was identified on May 18, 2022. As of today, there are about 27,000 cases worldwide and approximately 7,500 cases diagnosed in the US, including nearly 800 in California - including cases in both Placer and Sacramento Counties:  
<https://www.cdc.gov/poxvirus/monkeypox/response/2022/us-map.html>
- Cases have been identified in almost every state.





# Treatment

- Treatment is mainly supportive. The illness is usually mild and most of those infected will recover in a few weeks without treatment.
- There is no treatment approved specifically for monkeypox, but cidofovir<sup>1</sup>, Vaccinia Immune Globulin Intravenous<sup>2</sup> (VIGIV), and tecovirimat<sup>3</sup> may be used to treat monkeypox.
- Vaccination can be used for both pre- and post-exposure and is up to 85% effective in preventing monkeypox. People vaccinated against smallpox in childhood may experience a milder disease.

<sup>1</sup> Cidofovir/Vistide is an antiviral medication approved by the FDA for the treatment of CMV retinitis in patients with AIDS. It has also shown effectiveness against orthopoxviruses invitro and in animal studies. The CDC holds an expanded access protocol that allows for its use for the treatment of monkeypox in an outbreak.

<sup>2</sup> VIGIV is a medication used to treat complications of vaccinia vaccination. The CDC holds an expanded access protocol that allows for its use for the treatment of monkeypox in an outbreak.

<sup>3</sup> Tecovirimat (aka TPOXX or ST-246) is an antiviral that is approved for the treatment of human smallpox diseases caused by the Variola virus. However, its use for monkeypox is not approved by the FDA. The CDC holds a non-research expanded access Investigational New Drug protocol that allows for the use of tecovirimat for early or empiric treatment of monkeypox.



# CDC Vaccination Recommendations

The CDC recommends vaccination for people who have been exposed to monkeypox and people who are at higher risk of being exposed to monkeypox, including:

- People who have been identified by public health officials as a contact of someone with monkeypox
- People who may have been exposed to someone with monkeypox, such as:
  - People who are aware that 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
- People whose jobs may expose them to monkeypox, such as:
  - Lab workers who perform testing for monkeypox or similar viruses
  - Lab workers who handle cultures or animals with monkeypox or similar viruses
  - Some designated healthcare or public health workers



# Vaccines for Monkeypox

- There are two vaccines that can be used for monkeypox:
  - JYNNEOS
  - ACAM2000
- Both vaccines are in the Strategic National Stockpile; however, California is only using the JYNNEOS vaccine.
- There have been concerns with the ACAM2000 vaccine. It has a risk of severe adverse effects, including myocarditis. It cannot be used for people with a history of cardiac disease, immune deficiency, eczema, pregnancy, or other health conditions. In addition, people who receive this vaccine must take special precautions after vaccination to prevent the spread of the virus.



# JYNNEOS Vaccine

- JYNNEOS is authorized for use in adults 18 and older and is administered as a subcutaneous two dose injection series in the upper arm 28 days apart.
- Individuals are considered fully vaccinated 2 weeks after receiving their second dose.
- Most people who receive the JYNNEOS vaccine have only minor reactions to the vaccine, including pain, redness, swelling, and itching at the injection site. Some people may experience muscle pain, headache, fatigue, nausea, chills, and fever.
- People who should not receive the JYNNEOS vaccine include individuals who have had a serious allergic reaction to a previous dose or a component in the vaccine (e.g., gentamicin, ciprofloxacin, benzonase, sodium chloride, tromethamine, MVA-BN live virus, and/ or egg protein).
- Currently, data is insufficient to determine the risks and benefits for administering the JYNNEOS vaccine to pregnant or breastfeeding people. People who are pregnant or breastfeeding should talk to their doctor about the risks and benefits.



# Pre-exposure prophylaxis (PrEP) and post-exposure prophylaxis (PEP)

- Pre-Exposure Prophylaxis (PrEP) can be given to individuals at risk of exposure to monkeypox.
- The CDC advises that people who have been exposed to monkeypox be given the vaccine to prevent them from developing the disease (post-exposure prophylaxis, or PEP).
  - The vaccine is most effective at preventing monkeypox if given within 4 days of exposure.
  - If given between 4-14 days after the date of exposure, the vaccine may help reduce symptoms but may not prevent the infection from developing.



# Pre-exposure prophylaxis (PrEP)

Individuals who qualify for PrEP:

- Clinical laboratory personnel who perform testing to diagnose monkeypox
- Research laboratory workers who directly handle cultures or animals contaminated or infected with monkeypox
- Healthcare and public health response team members designated by public health authorities to be vaccinated for preparedness purposes



# Post-exposure prophylaxis (PEP)

Individuals who qualify for PEP:

- Known close contacts of monkeypox cases who are identified by public health via case investigation, contact tracing, and risk exposure assessments
- Individuals with certain risk factors who are more likely to have been exposed to monkeypox even if they have no documented exposure to someone with confirmed monkeypox

Note: Current evidence shows the risk for transmission of monkeypox to healthcare workers is low. CDPH does not recommend vaccinating healthcare workers currently. There can be consideration given to immunizing a limited group of healthcare workers who will be routinely and frequently caring for persons with monkeypox infection.



# Populations prioritized for PrEP/ PEP

- Gay, bisexual, and other men who have sex with men and have a recent history of: sexually transmitted disease, history of HIV, recent sex with other men (including group sex, transactional sex, or survival sex), anonymous male partners, and/ or have attended sex-on-premise venues
- People in congregate settings such as jail facilities, correctional facilities, detention centers, congregate housing, or dormitories
- People who are experiencing homelessness or people who use shelter services
- People in residential substance use treatment centers





# Other groups who qualify for PrEP/ PEP

- People who have been identified by public health officials as a contact of someone with monkeypox
- People who may have been exposed to someone with monkeypox, such as:
  - People who are aware that 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
- People who attended an event or venue where there was known monkeypox exposure



# References

*Monkeypox.* (2022, June 30). Centers for Disease Control and Prevention. [www.cdc.gov/poxvirus/monkeyvirus/index.html](http://www.cdc.gov/poxvirus/monkeyvirus/index.html)

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*Monkeypox: Background information.* (2022, June 24). UK Health Security Agency. <https://www.gov.uk/guidance/monkeypox#clinical-features>

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On Behalf of the El Dorado  
County EMS Agency

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THANK YOU !