BOVID Monkeypo Conversation

Monkeypox – Updates, Recommendations and Resources

Matt M. Zahn, MD

Medical Director Epidemiology,Assessment, and Immunization Program Orange County Health Care Agency Welcome to tonight's Conversations

- All lines are muted during program
- Question-and-Answer box can be utilized to communicate with the moderators
- Webinar will be recorded and posted to the California Immunization Coalition website (https://www.immunizeca.org/) as well as the CIC YouTube page (https://www.youtube.com/channel/UCklkZ 1SZQNQLcpmNpeQpDAg)

Thank you



American Academyof Pediatrics CALIFORNIA Incorporated in California





Today's Hosts and Moderators



Dr. Pia Pannaraj

- Associate Professor of Pediatrics, Molecular Microbiology and Immunology, Keck School of Medicine, University Southern California
- Director, Pediatric Immunization Advancement Laboratory, Division of Infectious Diseases, Children's Hospital Los Angeles
- Co-Chair, Emerging Issues Committee, California Immunization Coalition



Dr. Eric Ball

- Primary Care Pediatrician, CHOC Primary Care Network
- Vice Chair, American Academy of Pediatrics, California
- Co-Chair, Emerging Issues Committee, California Immunization Coalition

Today's Speaker

Matt Zahn, MD

Medical Director Epidemiology, Assessment and Immunization Program Orange County Health Care Agency



Monkeypox: Updates, Recommendations, and Resources

Matt Zahn, MD

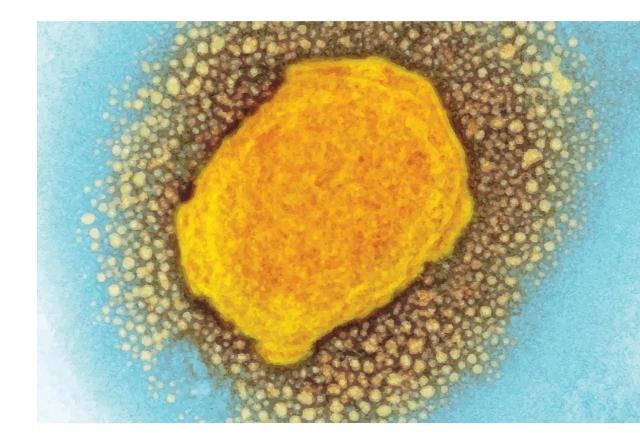
Deputy Health Officer

Orange County Health Care Agency



Monkeypox Virus

- Double-stranded DNA virus
- Human orthopoxvirus
- Other human orthopoxviruses include variola (smallpox), cowpox and vaccinia viruses



Monkeypox Disease Historically

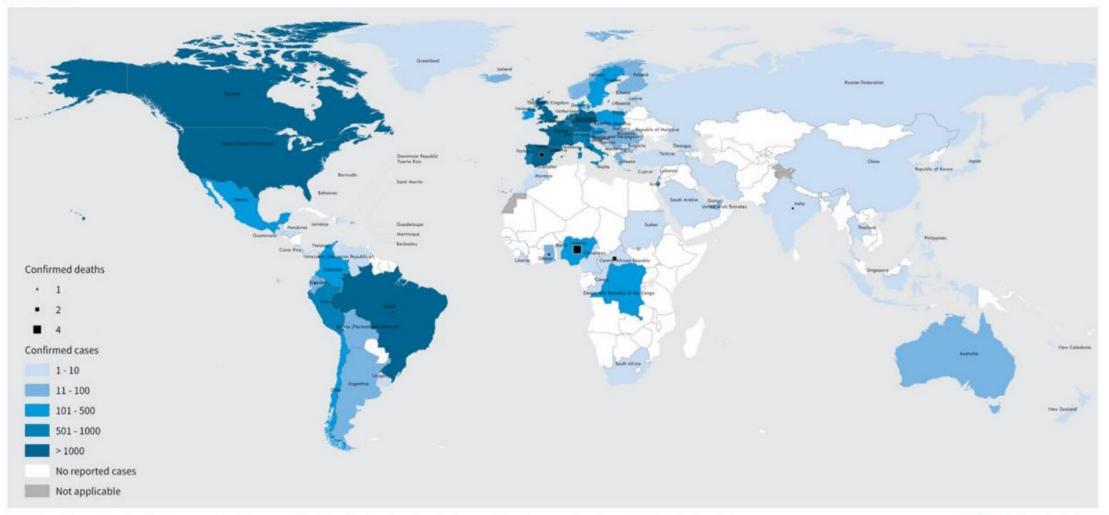
- The virus was originally identified in 1958 in monkeys in a Copenhagen monkey research colony
- Reservoir of the disease remains unknown though suspected to be African rodents
- The first human case was discovered in August 1970 when the virus was isolated from a 9-year-old child in rural areas of Democratic Republic of Congo (DRC) suspected of having smallpox



- MPX disease has been seen in several central and west African countries for decades
- Burden of observed disease has been increasing over time, particularly in the DRC
- The predominant source of identified human infections appear to have changed over time
 - Previously animal to human, later human to human
- Prior to 2022, nearly all monkeypox cases in people outside of Africa were linked to travel to Africa or through imported animals.



Figure 3. Geographic distribution of confirmed cases of monkeypox reported to or identified by WHO from official public sources from 1 January 2022 to 22 August 17:00 CEST



The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of WHO concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

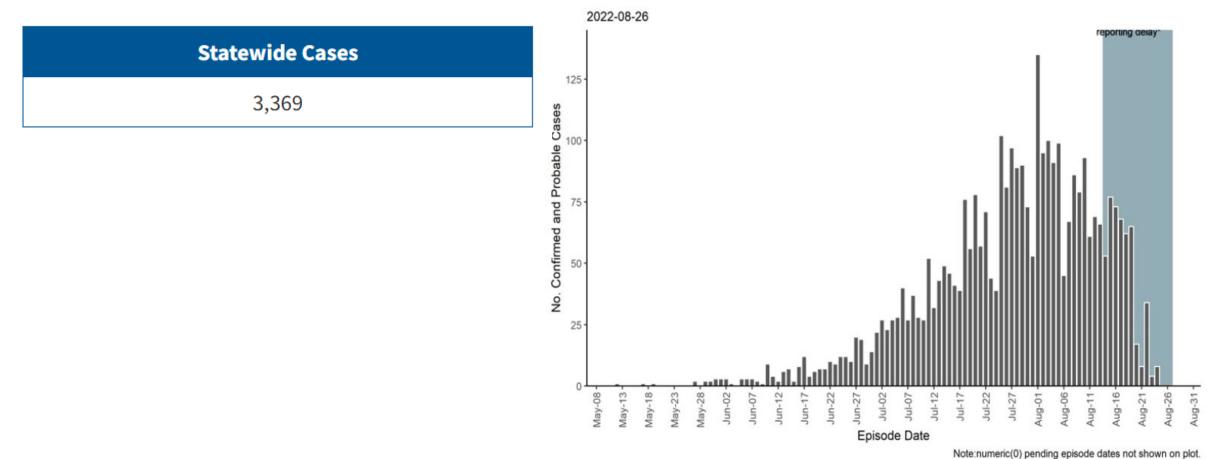
Data Source: World Health Organization Map Production: WHO Health Emergencies Programme Map Date: 23 August 2022



Monkeypox Data in California

Data are updated on Tuesdays and Fridays. Last updated August 26, 2022.

Number of reported probable and confirmed monkeypox cases in California



^{*}illnesses that began during this time may not yet be reported.

California Monkeypox Cases: Race and Ethnicity

Age Group	Ν	Percent*	
Under 18 years	6	0.2	
18-24	213	6.3	
25-34	1,264	37.5	
35-44	1,151	34.2	
45-54	494	14.7	
55-64	207	6.1	
65 years and older	34	1.0	
Unknown	0	NA	

Race/Ethnicity	N	Percent*
Hispanic or Latino	1,214	40.6
White	1,090	36.4
Black or African American	376	12.6
Asian	182	6.7
Other/Multiple Races	110	3.7
American Indian or Alaska Native	11	0.4
Native Hawaiian or Other Pacific Islander	10	0.3
Unknown	376 NA	

Gender Identity and Sexual Orientation for California Monkeypox Cases

Male	Ν	%**
Male	3252	97.5
Gay or same-gender loving	2066	85.3
Bisexual	229	9.5
Heterosexual or straight	111	4.6
Diverse Term	16	0.7
Unknown	830	-

Monkeypox Symptoms

Systemic Symptoms of Monkeypox

- May occur prior to, coincident with, or after rash develops:
 - Lymphadenopathy- over 50% of cases in many case series
 - Fever
 - Malaise
 - Headache
 - Muscle aches

Other Monkeypox Disease Manifestations

More serious cases can involve:

- Proctitis/Colitis
- Other rarer manifestations include ocular lesions, bronchopneumonia, encephalitis, septicemia
- Reasons for hospitalization have included:
 - Poor PO intake, dehydration
 - Pain management related to proctitis
 - Cellulitis caused by bacterial superinfection
- 4% of California cases have been hospitalized
- No deaths have been reported in the US
- 12 deaths (of 41,664 cases) have been reported worldwide

Monkeypox Rash

- Deep-seated, vesicular or pustular skin rash
- Frequently under 10 lesions
- Lesions are
 - Well circumscribed
 - Often umbilicate
 - Can become confluent
 - Progress over time to scabs
 - Painful initially
 - Becomes itchy later
- Frequently starts on perianal or genital region
- Can become disseminated



Testing Recommendations

Testing Is Particularly Recommended for:

- Those with rash and known epidemiologic risk factors such as:
 - Had close or intimate in-person contact with persons in a social network experiencing monkeypox infections. This includes MSM who meet partners through an online website, digital application ("app"), or social event (e.g., a bar or party) OR
 - Reports having contact with a person or persons with a similar appearing rash or with a person who has received a diagnosis of confirmed or probable monkeypox
- Any patients with classic rash

PCR Testing Is the Preferred Test to Diagnose Monkeypox

- PCR testing can be performed on swabs of unroofed vesicular lesions and exudate
 - Lesion crusts can also be tested
- Ideally from unroofed lesions
- No evidence that testing respiratory secretions is useful
- Test seems very sensitive and specific
- Testing sensitivity will be related to quality of specimen
- Other tests are available, but not routinely recommended: serology, culture

Testing is Now Broadly Available to Providers

- If there is concern, providers should generally test for monkeypox
- Only downside is the patient will need to isolate at home until results are back.
- Results come back in 2-4 days
- Providers should be mindful that the disease has been focused to a population with specific risk factors
- Providers should talk with their commercial lab to assure correct specimen collection process
- Confirmed cases must be immediately to public health

Treatment Recommendations

Tecovirimat

- Antiviral that acts by preventing the formation of extracellular virus by inhibiting the formation of a wrapping complex derived from late endosomal membranes
- Human clinical trial indicated the drug was safe and well-tolerated
- Proven to be effective in treating monkeypox in animal trials
- Not enough data to demonstrate effectiveness in treating human cases of MPX.
- Available for use from CDC or local public health

Tecovirimat Regimen

Oral

- 40 kg to <120 kg: 600 mg PO BID for 14 days
- ≥120 kg: 600 mg PO TID for 14 days
- Take within 30 minutes after eating a full meal

IV

- . Use if patients are unable to take PO
- If IV treatment is necessary, switch to capsules to complete 14-day treatment as soon as oral therapy can be tolerated
- In patients receiving an IV infusion, give the first oral dose at the next scheduled IV dosing
- . 35 kg to <120 kg: 200 mg IV over 6 hr q12hr for 14 days
- ≥ 120 kg: 300 mg IV over 6 hr q12hr for 14 days

Considerations for Use of Tecovirimat

- Tecovirimat should be considered broadly for treatment of monkeypox
- Empiric treatment can be considered if there is appropriate clinical indication prior to laboratory confirmation, especially in the context of limited or delayed testing.
- Situations where tecovirimat should be prioritized for use include patients with:
 - Severe disease, defined by evidence of sepsis or other clinical evidence of viremia, and lesion location or type
 - Evidence of illness complications or patient hospitalization
 - High risk for severe disease, defined as:
 - Severe immunocompromising conditions
 - Less than 8 years of age
 - Pregnant or breastfeeding
 - Diseases that could increase risk of stricture or fistula such as inflammatory bowel disease
 - Significant active exfoliative dermatologic conditions.

Close Contacts: Assessment and Recommendations

Prevention Measures:

- Always talk to your sexual partner/s about any recent illness and being aware of new or unexplained sores or rashes on your body or your partner's body, including on the genitals and anus
- Avoid close contact, including sex, with people with symptoms like sores or rashes
- Practice good hand hygiene
- Healthcare workers should wear appropriate personal protective equipment (PPE) (like a mask, gown, and gloves) when caring for others with symptoms
- Avoid contact with infected materials contaminated with the virus
- Avoid contact with infected animals

Human-to-Human Transmission

Occurs by contact with:

- Monkeypox skin lesions
- Respiratory secretions
- Infectious fomites (clothing, bedding, or towels)
- Typically requires significant interaction
 - Sexual contact
 - Household contact
- Airborne transmission is clearly a minimal player in transmission if it occurs at all

Duration of Infectiousness

- Infectious period starts from the onset of illness
- Lasts until all lesions have crusted over, those crusts have separated, and a fresh layer of healthy skin has formed under the crust.
- If there are questions about when isolation ends, OCHCA asks patients to review their situation with their provider
- CDC and OCHCA recommend that cases isolate at home until the end of their period of infectiousness
- Isolation period is *very long*

Additional CDC Comments on Isolation:

Ideally, people with monkeypox would remain in isolation for the duration of illness, which typically lasts two to four weeks. However, if a person with monkeypox is unable to remain fully isolated throughout the illness, they should do the following:

- While symptomatic with a fever or any respiratory symptoms, including sore throat, nasal congestion, or cough:
 - Remain isolated in the home and away from others unless it is necessary to see a healthcare provider or for an emergency.
 - This includes avoiding close or physical contact with other people and animals.
 - Cover the lesions, wear a well-fitting mask and avoid public transportation when leaving the home as required for medical care or an emergency.
- While a rash persists but in the absence of a fever or respiratory symptoms
 - Cover all parts of the rash with clothing, gloves, and/or bandages.
 - Wear a well-fitting mask to prevent the wearer from spreading oral and respiratory secretions when interacting with others until the rash and all other symptoms have resolved.

Interim Community Exposure Risk Assessment and Recommendations for Monitoring and Postexposure Prophylaxis in Individuals Exposed to Monkeypox Virus in a Community Setting

Degree of Exposure: Higher

Recommendations

- · Monitoring: Yes
- PEP[¶]: Recommended

Exposure Characteristics

- Contact between an exposed individual's broken skin or mucous membranes with the skin lesions or bodily fluids from a person with monkeypox -OR-
- Any sexual or intimate contact involving mucous membranes (e.g., kissing, oral-genital, oral-anal, vaginal, or anal sex (insertive or receptive)) with a person with monkeypox -OR-
- Contact between an exposed individual's broken skin or mucous membranes with materials (e.g., linens, clothing, objects, sex toys) that have contacted the skin lesions or bodily fluids of a person with monkeypox (e.g., sharing food, handling or sharing of linens used by a person with monkeypox without having been disinfected⁺ or laundered)

PPE for Healthcare Staff for Monkeypox Includes:

- Gown
- Gloves
- Eye protection (i.e., goggles or a face shield that covers the front and sides of the face)
- NIOSH-approved particulate respirator equipped with N95 filters or higher
- No cases of healthcare-related transmission have been identified during the current outbreak

OCHCA Contact Investigation Emphases:

- Reaching sexual partners and household contacts
- Healthcare workers with (relatively) higher degree of exposure
 - Not recommending follow up of other patients with no significant exposure to the patient
- Occasionally, other close contacts (rode in a car together longdistance)

OCHCA is Not Conducting Investigations for Casual Contacts

- Casual contact settings include:
 - Casual social exposures
 - Workplace exposures
 - Healthcare facility waiting rooms
 - CDC does not provide guidance for these settings because they are at no apparent risk of transmission
- CDC guidance for schools, Early Care and Education Programs, and Other Settings Serving Children or Adolescents:
 - Settings should follow their everyday operational guidance that reduces the transmission of infectious diseases.

Monkeypox Vaccination Options

JYNNEOS Vaccine

• Contains a live virus that does not replicate efficiently in human cells.

Table 2. Vaccination Schedule and Dosing Regimens for JYNNEOS Vaccine

JYNNEOS vaccine regimen	Route of administration	Injection volume	Recommended number of doses	Recommended interval between 1st and 2nd dose
Alternative regimen				
People age ≥18 years	ID	0.1 mL	2	28 days
Standard regimen				
<u>People age <18 years</u>	Subcut	0.5 mL	2	28 days
People of any age who have a history of developing keloid scars	Subcut	0.5 mL	2	28 days

What Protection Does Smallpox Vaccination Offer?

A study of 209 cases in Zaire from 1980-84 found that:

- 27 episodes showed evidence of human-to-human transmission, leading to 47 secondary cases
- 70% of close contacts had history of smallpox vaccination
 - No comments on how long ago immunization had occurred
- A comparison of close contacts who had/had not been vaccinated found 85% effectiveness against infection for household contacts

Fine PE et al. The Transmission Potential of Monkeypox Virus in Human Populations. Int. J. of Epi Vol 17 (3): 643. 1988

Monkeypox Vaccine Post-Exposure Prophylaxis (PEP):

- People can be vaccinated following exposure to monkeypox to help prevent illness from monkeypox virus.
- Jynneos and ACAM2000 are both PEP options.
- PEP within 4 days from the date of exposure is thought to prevent onset of the disease.
- 4 to 14 days after the date of exposure, vaccination may reduce the symptoms of disease, but may not prevent the disease.
- These PEP recommendations are based on animal trials.

Comparison of MVA Subcutaneous versus Intradermal Routes of Administration

- 149 participants received liquid SC MVA
- 146 participants received liquid ID MVA
- Similar peak GMT titers were seen in both groups:

Study visit day		
	Liquid SC 1x10 ⁸	Liquid ID 2x107
	N=149 GMT [95% CI]	N=146 GMT [95% CI]
Day 0	7.7 [7.4, 8.0]	7.7 [7.4, 7.9]
Day 14	10.0 [9.0, 11.1]	10.3 [9.3, 11.3]
Day 28	9.6 [8.7, 10.6]	10.8 [9.9, 11.9]
Day 42	45.2 [36.4, 56.2]	54.4 [43.7, 67.8]
Peak post vaccination 2	49.5 [40.0, 61.3]	59.6 [48.1, 74.0]

Frey, et al. Vaccine, 2015 33(2015) 5225-5234

Reactogenicity event	SC (%) N=166	ID (%) N=190
Feeling Tired	49.7	51.3
Muscle Aches	41.3	30.4
Headache	43.1	41.4
Nausea	21.6	23.0
Change in Appetite	15.0	20.4
Chills	12.6	14.7
Joint Pain	9.0	17.8
Pain at injection site	91.0	65.4
Erythema at injection site	81.4	99.5
Induration at injection site	69.5	99.5
Itchiness	48.5	89.0
Underarm pain	18.0	20.9
Underarm swelling	6.0	10.5

Table 2. Adverse reactions reported in >10% of individuals within 15 days following any dose

Data were not available for one individual in each of the two groups

https://www.fda.gov/media/160774/download

Table 1. Vaccination Strategies Used in the 2022 U.S. Monkeypox Outbreak

Strategy	Definition	Criteria
Post-Exposure Prophylaxis (PEP)	Vaccination after known exposure to monkeypox	 People who are known contacts to someone with monkeypox who are identified by public health authorities, for example via case investigation, contact tracing, or risk exposure assessment
Expanded Post- Exposure Prophylaxis (PEP++)	Vaccination after known or presumed exposure to monkeypox	 Any of the following: People who are known contacts to someone with monkeypox who are identified by public health authorities, for example via case investigation, contact tracing, or risk exposure assessment People who are aware that a recent sex partner within the past 14 days was diagnosed with monkeypox Certain gay, bisexual, or other men who have sex with men, or transgender and gender diverse people who have sex with men, who have had any of the following within the past 14 days: sex with multiple partners (or group sex); sex at a commercial sex venue; or sex in association with an event, venue, or defined geographic area where monkeypox transmission is occurring
Pre-Exposure Prophylaxis (PrEP)	Vaccination before exposure to monkeypox	 People in certain occupational risk groups*

*People at risk for occupational exposure to orthopoxviruses include research laboratory workers performing diagnostic testing for *Monkeypox virus*, and members of health care worker response teams designated by appropriate public health and antiterror authorities (see <u>ACIP recommendations</u>).

Moving Forward.....

- Efforts will continue to get high-risk populations vaccinated
- Uncertain to what degree spread will occur to other community groups
- We want to work hard to get tecovirimat out to providers
- Largest risk is still in Africa

Additional Information:

- New York City MPX Treatment Guidance: https://www1.nyc.gov/assets/doh/downloads/pdf/cd/monkeypoxtreatment-guidance-interim.pdf
- Information for Healthcare Providers on Obtaining TPOXX: https://www.cdc.gov/poxvirus/monkeypox/clinicians/obtainingtecovirimat.html

Thank you!

Discussion and Questions

California Department of Public Health

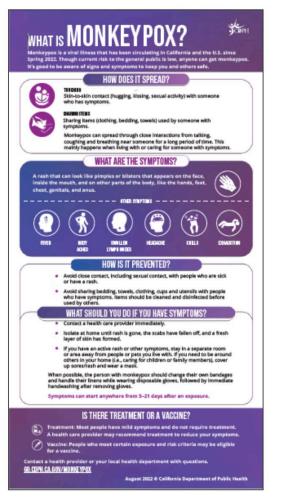
DIVISION OF COMMUNICABLE DISEASE CONTROL

MONKEYPOX

Home		August 24, 2022					
Q&As	×	Related Materials: Latest CDC Monkeypox Health Alert (cdc.gov) Latest California Monkeypox Health Alert CDC Health Alert Network (HAN) California Health Alert Network (CAHAN) Monkeypox Q&A					
Data		Latest News Releases: Statement on National Emergency Declaration State of Emergency State Provides					
Vaccines		Update on Monkeypox Response on July 29					
Guidance	•	The current monkeypox (MPX) situation is rapidly evolving and the information below will be updated as new					
Resources	•	information emerges. CDPH is closely monitoring MPX transmission in the U.S. and California to ensure rapid					
		identification of cases. The risk of MPX to the public is currently low based on the information available. While					
Usalth Cana Duavidana							

California Department of Public Health

Fact Sheets





https://www.cdph.ca.gov/Programs/OPA/Pages/Communications-Toolkits/Monkeypox.aspx

California Department of Public Health

Social Media Messaging



Anyone (monkey)

How it spreads to do if you ha[,]

•	•	•	•				
•	•	•	•				
•	•	•	•				
•	•	•	•				



DTHER SYMPTOMS

RASH, BUMPS, OR BL

Symptoms includ

These may appear anyw body, including the geni look similar to syphilis, he other common skin rashe



Skin-to-skin contact with someone who has monke including through:

- Hugging
- Cuddling
- Massage
- Kissing
- C

Suggested Messaging: Anyone can get monkeypox (MPX). While cases are low for the general public, it's important to stay informed about how it spreads and contact your health provider if you've been exposed or have symptoms. Learn more about

Intimate/sexual contar

MPX: <u>go.cdph.ca.gov/monkeypox</u>

Centers for Disease Control and Prevention

What To Do If You Suspect Monkeypox

<u>What To Do If You Suspect Monkeypox</u> 📙 [PDF – 2 MB]

Early detection can help stop the spread of monkeypo Know what to look for and what to do if you suspect n

MONKEYPOX What To Do If You Suspect Monkeypox

Signs and Symptoms
A new, maculo-papular rash that develops into vesici pustules. Lesions may be deep-seated, firm, well-cire and umbilicated. The rash max:

Appear anywhere on the body, including palms, solianogenital region

Be localized to a specific body site or diffuse
 Be the only symptom people experience
 Be painful, paintess, or itchy

 Fever, headache, malaise, chills, and lymphadenopath may occur.

 Patients may present with anorectal pain, rectal bleed or tenesmus in association with visible perianal skin li and proctitis.

Ask the patient: Within the last 21 days, I • Traveled to a country with recent monkeypex cases, or experienced prior outbreaks?

experienced prior outbreaks?

Had close or intimate contact with someone with a sim or confirmed mankayaox infection?

 Had close or intimate contact with someone in a social experiencing monkeypox infection?

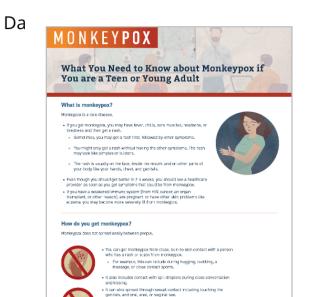
 Most U.S. cases have been among gay, bisexual, an men who have sex with men; many of whom had ar sex with someone they met on dating apps or sex w multiple partners at commercial sex venues or eve anenymous sex is common.



MONKEY**POX Testing Patients for Monkeypox** Generally, with vigerous swabbing, sufficient monkeypox virus DNA is present on the surface of a locion, and you don't need to do-not the locion before swabbing. Put each sweb into a separate container, either: What lesion specimens to collect Collect lesion specimens for initial monkeys testing at Laboratory Response Network (LRN) Laboratories located within your public health department or at authorized commercial Laboratories. comains, entre: = By breaking off or cutting the end of each swah's spolicitator into a 1.5-or 2-mit, screer-capped tube with 0-ring or other storile leak-proof container leg, statile urine cup) or = By putting the entire swab in a sterile container that hara a goaks seal. Use a plastic container insteed of a glass container, when possible. Skin lesion material is recommended. Contact the laboratory (LRN or commercial) for specifics on acceptable specimen type. For further characterization of a specimen at CDC. three types of specimens are accepted Dry swabs of lesion material How to ship specimens Swabs of lesion material in viral transport media [VTM] Specimens can be shipped as UN 3373 Biological Substance, Category B. Lesion crusts Specimens should first be tested by an LRN or authorized commercial Laboratory unless you an authorized to send specimens directly to CDC. How to collect lesion specimens If you are authorized to send specimens directly to CDC, or if you are sending specimens to CDC to Wear appropriate personal protective equipment reperts viral characterization Collect two swabs from each lesion, preferably from different locations on the body or from lesions which differ in appearance. Store refrigerated (2-8°C) or frozen (-20°C or lower) within an hour of collection. Ship specimens on dry ice, when possible Use sterile, dry synthetic swabs (including, but ipecimens received outside of acceptabl emperature ranges will be rejected. not limited to polyester, nylon, or Dacron swabs) with a plastic, wood, or thin aluminum shaft. (Any Include an electronic Global File Accessioning type of shaft is acceptable as long as it can be broken or cut). Template (GFAT) form and ensure that each specimen is labeled with a unique identifier GFAT. Do not use cotton swats If less than 20 specimens are being submitted to CDC, a CDC 56.34 form for each specimen may be submitted instead of a GFAT. Please include a printed manifest of you specimens with your shipment. Email the GFAT form to Powviruslab@cdc.gov or patients with confirmed monkeypox, health care providers may send serum to CDC directly for pox serology test. See <u>CDC Poxvirus Serology</u> for details. For more information, see <u>CDC's 2022 Monkeypox</u> Information for Healthcare Professionals.

Testing Patients for Monkeypox

Te Monkeypox Information for Teens and Young Adults



You can also get monkeypax from contact with objects

tabrics (clothing, bedding, or towels), and surfaces that

Monkeypox Information for Teens and Young Adu

Date: 8/19/22

Alternative Languages: <u>Spanish</u> [PDF – 5 MB]

Evaluation

At the end of this webinar an Evaluation will pop up on your screen.

The evaluation should take approximately 2 minutes to complete.

CIC and AAP-CA utilize the evaluation from our Conversation Series to guide us in future programs.

Thank you for protecting California!





American Academyof Pediatrics CALIFORNIA Incorporated in California



Stay tuned for future Conversations

Thank you for your support and your participation! Find previous COVID Conversations on our YouTube channel https://www.youtube.com/channel /UCklkZ1SZQNQLcpmNpeQpDAg

www.ImmunizeCA.org/Covid-19-Updates