



Monkeypox Update
Dupage county HEART task force
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What is Monkey-Pox?

- Pox virus family
- *Orthopox* genus: monkey-pox, variola (Smallpox), cowpox, vaccinia virus (smallpox virus vaccine), others
- Other Pox virus genus: Molluscipoxvirus: Molluscum contagiosum virus, Parapoxvirus: ORF, bovine papular stomatitis, Yatapoxvirus, Capripoxvirus, Suipoxvirus

History of Monkey-Pox

- Discovered in 1958 when two outbreaks of a pox-like disease occurred in colonies of monkeys kept for research
- Source of the disease remains unknown, but there is an animal reservoir in African rodents
- African rodents and non-human primates might harbor the virus and infect people
- First human case of monkeypox reported 1970
- West African clade less severe than Congo basin clade
- Sporadic cases of Monkeypox in some African countries prior to 2017
- Outbreak in United States in 2003 from prairie dogs sold as pets
- Outbreak Nigeria in 2017
- Isolated cases outside Africa, since 2017, in travelers and their secondary contacts

2003 outbreak in United States

The Journal of Infectious Diseases, Volume 194, Issue 6, 15 September 2006, Pages 773–780, <https://doi.org/10.1086/505880>

- 47 Monkeypox cases linked to Prairie dogs sold as pets
- A shipment of 800 small animals from Ghana, introduced monkeypox virus into the United States
- Two African giant pouched rats, nine dormice, and three rope squirrels, in the shipment, were found to be infected with monkeypox virus
- After importation, some infected animals were housed near prairie dogs at the facilities of an Illinois animal vendor.
- All human cases had contact with infected pet prairie dogs
- No cases attributed exclusively to person-to-person contact.
- Outbreak was contained through elimination of infected prairie dog population, embargo of prairie dogs sold as pets, and restriction on importation of rodents from Africa

Monkeypox in Nigeria

- Resurgence since 2017
- Associated with fall in population immunity to smallpox (70% in 1970, compared to 10% in 2016), population growth, deforestation, interactions with animals
- Confirmed cases in Nigeria: 88 in 2017, 212 from 2017-2021, 653 total suspected 2017-2022
- Two cases in US residents who travelled to Nigeria in 2021

Key Indicators	Number
Total confirmed cases in Epi Week 23, 2022	4
Total suspected cases from January 1 st to 12 th June 2022 (Epi week 1 to 23)	141
Total confirmed cases from January 1 st to 12 th June 2022 (Epi week 1 to 23)	36
Total death from January 1 st 2022 to 12 th June 2022 (Epi week 1 to 23)	1
Total deaths Sept 2017- 12 th June 2022	9
Total confirmed cases in 2017	88
Total confirmed cases in 2018	49
Total confirmed cases in 2019	47
Total confirmed cases in 2020	8
Total confirmed cases in 2021	34
Grand total confirmed cases (Sept 2017 – 12 th June 2022)	262
Grand total suspected cases (Sept 2017 – 12 th June 2022)	653

2022 outbreak

- Cluster of cases was found in the UK
- Early case May 2022 with travel links to Nigeria
- Subsequently other cases not linked to travel found predominantly in Europe, but also in North, South America, Asia
- West African Clade of Monkeypox
- 1st US case identified in Massachusetts on May 17
- 52,570 confirmed cases in over 100 countries through Sept 1
- 19,000 confirmed cases in the United states through Sept 2
- 1,087 cases in Illinois: Chicago(872), Suburban Cook(106), Dupage(19), Will(27), Kane(11), Kendall(4)

<https://www.cdc.gov/poxvirus/monkeypox/response/2022/us-map.html>

How is Monkeypox spread?

- Primarily through direct skin to skin contact with infectious sores, scabs, or body fluids.
- It can also spread by respiratory secretions during prolonged face-to-face contact in households
- It can spread during intimate contact between people, including during sex, kissing, cuddling, or touching parts of the body with MPV lesions
- Monkeypox can be spread from the onset of symptoms start until the rash has healed, all scabs have fallen off, and a fresh layer of skin has formed

Symptoms

- After exposure, incubation period 5-13 days (about 1 week)
- Prodrome of fever, malaise, headache, muscle aches, swollen lymph nodes (historically more common than in recent outbreak)
- When there is a prodrome, rash develops in 1-4 days
- Starts as red spots (macules), followed by fluid filled blisters (vesicles), pus filled blisters (pustules), then become deep seated (umbilicated), and scab over.
- Lasts 2-4 weeks
- Recent cases have begun atypically, with lesions in the genital and perianal region and without subjective fever or other prodromal symptoms.
- Recent cases might be confused with more commonly seen infections such as varicella zoster(chicken pox), Molluscum Contagiosum, or sexually transmitted infections (STIs) (e.g., genital herpes or syphilis).

MONKEYPOX

VISUAL EXAMPLES OF MONKEYPOX RASH



Photo Credit: UK Health Security Agency



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MONKEYPOX

VISUAL EXAMPLES OF MONKEYPOX RASH



Photo Credit: NHS England High Consequence Infectious Diseases Network



CS328947-EK

Characteristics of cases in the United States

Epidemiologic and Clinical Characteristics of Monkeypox Cases — United States, May 17–July 22, 2022

Weekly / August 12, 2022 / 71(32);1018-1022

On August 5, 2022, this report was posted online as an MMWR Early Release

- 2,891 cases reported in the United States from May 18 to July 22 were evaluated for characteristics
- 99% were men
- 94% reported recent male-to-male sexual or close intimate contact
- 42% did not report the typical prodrome as their first symptom
- 46% reported one or more genital lesions during their illness
- 41% had HIV infection
- Widespread community transmission of monkeypox has disproportionately affected gay, bisexual, and other men who have sex with men and racial and ethnic minority groups
- Compared with historical reports, current cases are less likely to have a prodrome and more likely to have genital involvement.

Suspect Monkeypox when someone has the characteristic rash or Epidemiologic criteria

- Deep-seated and well-circumscribed lesions, often with central umbilication
- Lesion progression through specific sequential stages—macules, papules, vesicles, pustules, and scabs
 - can be confused with other more common infections (e.g., secondary syphilis, herpes, and varicella zoster)
- Co-infection with *Monkeypox virus* and other infectious agents (e.g., varicella zoster, syphilis) have been reported, so patients with a characteristic rash should be considered for testing, even if other tests are positive.

Suspect Monkeypox when someone has symptoms AND

- Epidemiologic Criteria
- Within 21 days of illness onset:
 - Reports having contact with a person or people with a similar appearing rash or who received a diagnosis of confirmed or probable monkeypox **OR**
 - Had close or intimate in-person contact with individuals in a social network experiencing monkeypox activity, this includes men who have sex with men (MSM) who meet partners through an online website, digital application (“app”), or social event (e.g., a bar or party) **OR**
 - Traveled outside the US to a country with confirmed cases of monkeypox or where *Monkeypox virus* is endemic **OR**
 - Had contact with a dead or live wild animal or exotic pet that is an African endemic species or used a product derived from such animals (e.g., game meat, creams, lotions, powders, etc.)

Testing for Monkeypox for health care

- Testing can only be done from skin lesions (need to have a rash to be tested)
- Testing done at facilities that can ensure appropriate patient isolation and PPE for the healthcare professionals
- Two sterile synthetic swabs(not cotton) (including, but not limited to polyester, nylon, or Dacron) with a plastic, wood, or thin aluminum shaft, swab the lesion vigorously to collect adequate DNA.
- It is not necessary to de-roof the lesion before swabbing
- Break off the end of each swab's applicator into a 1.5-or 2-mL screw-capped tube with O-ring or place the entire swab in a sterile container that has a gasket seal and is able to be shipped under the required conditions
- Two swabs from each lesion should be collected, preferably from different locations on the body or from lesions which differ in appearance
- Swabs and other specimens should each be placed in different containers. If using transport media, only VTM is accepted at CDC at this time; do not use universal or other transport media.
- Specimens sent to IDPH need approval from the health department
- Specimens sent to commercial lab do not need approval but need to be reported to health department as suspected cases.

Monkeypox treatment: Tecovirimat (TPOXX)

- FDA-approved for the treatment of human smallpox disease caused by *Variola virus* in adults and children
- However, its use for other orthopoxvirus infections, including monkeypox, is not approved by the FDA
- CDC holds a non-research expanded access Investigational New Drug (EA-IND) protocol that allows for the use of tecovirimat for primary or early empiric treatment of non-variola orthopoxvirus infections, including monkeypox, in adults and children of all ages.

CDC criteria for IND use of Tecoviramat

- Tecoviramat may be considered for treatment in people infected with *Monkeypox virus*:
- With severe disease (e.g., hemorrhagic disease, confluent lesions, sepsis, encephalitis, or other conditions requiring hospitalization)
- Who are at high risk of severe disease:
 - People with **immunocompromising conditions** (e.g., HIV/AIDS, leukemia, lymphoma, generalized malignancy, solid organ transplantation, therapy with alkylating agents, antimetabolites, radiation, tumor necrosis factor inhibitors, high-dose corticosteroids, being a recipient with hematopoietic stem cell transplant <24 months post-transplant or ≥24 months but with graft-versus-host disease or disease relapse, or having autoimmune disease with immunodeficiency as a clinical component)
 - Pediatric populations, particularly **patients younger than 8 years of age**
 - **Pregnant or breastfeeding women**
 - People with a history or presence of **atopic dermatitis, people with other active exfoliative skin conditions** (e.g., eczema, burns, impetigo, varicella zoster virus infection, herpes simplex virus infection, severe acne, severe diaper dermatitis with extensive areas of denuded skin, psoriasis, or Darier disease [keratosis follicularis])
 - People with one or more complication (e.g., secondary bacterial skin infection; gastroenteritis with severe nausea/vomiting, diarrhea, or dehydration; bronchopneumonia; concurrent disease or other comorbidities)
- With aberrant infections involving accidental implantation in eyes, mouth, or other anatomic areas where *Monkeypox virus* infection might constitute a special hazard (e.g., the genitals or anus)

Prevention

- Men who have sex with men make up the majority of cases in the current monkeypox outbreak at this time
- Anyone, regardless of sexual orientation or gender identity, who has been in close, personal contact with someone who has monkeypox is at risk.
- CDC page lists several prevention steps, including getting vaccinated if exposed or eligible (on next slide)

Prevention steps listed by CDC

- JYNNEOS vaccination recommended for individuals at high risk for exposure to MPX
- Avoid high risk behaviors prior to getting vaccine & when between first and second shots of vaccine. Protection is highest two weeks after second dose of vaccine
- Avoid skin to skin contact, especially to areas where there are skin changes
- Partners should communicate and be aware about any unexplained rash or lesions in the mouth, genitals, or anus.
- Limit number of sex partners
- Seek immediate evaluation by healthcare provider, and avoid close contact, sex, if any symptoms develop
- Especially avoid touching any rash, and sharing any towels or personal items when sick
- Since condoms may not be sufficient when there is exposure to other areas of affected skin consider wearing gloves
- Consider non touch virtual options, keep distance if group masturbation, wash sex toys, keep clothes on during sex to avoid contact to other skin lesions

Monkeypox vaccines

- JYNNEOS vaccine is approved for the prevention of **monkeypox and smallpox disease**.
- 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
 - No real-world effectiveness studies to date
 - Vaccinated individuals should continue to take steps to protect themselves from infection
 - by avoiding close, skin-to-skin contact, including intimate contact, with someone who has monkeypox.

ACAM2000

- ACAM2000 is indicated for immunization against smallpox for persons at high risk for smallpox infection
- Replicative competent vaccinia virus (a “pox”-type virus)
- Causes a localized virus infection in the skin at the inoculation site
- >95% of persons undergoing primary vaccination develop neutralizing antibodies
- National stockpile can be mobilized should there every be another resurgence of smallpox
- Can be used if mass vaccination needed for smallpox
- Benefit of mass vaccination against smallpox (mortality of 10-20%) would outweigh risk of severe adverse events
- May not be appropriate for monkeypox outbreak given scale of vaccine needed, proportion of population HIV positive/immune compromised, and low mortality of monkeypox compared to small pox

JYNNEOS vaccine

- JYNNEOS (modified vaccinia Ankara vaccine)
- live, **non-replicating** virus vaccine (enters cells but cannot make copies of itself)
- Developed to prevent smallpox, as an alternative to ACAM2000, in immune compromised individuals
- Approval added for Monkeypox in 2019
- 2 dose series 28 days apart
- After 2nd dose, vaccinia neutralizing antibody titer was significantly higher than after 2nd dose of AMCAM-2000 vaccine
- The efficacy of JYNNEOS was evaluated in animal challenge studies, including non-human primates. Across all studies, 80-100% of JYNNEOS-vaccinated animals survived compared to 0-40% of control animals.

Jynneos administration

- Standard administration : subcutaneously
- Alternative administration: intra-dermal
- A 2015 clinical study of the MVA vaccine evaluated a two-dose series given intradermally at one fifth the dosage compared to subcutaneously at full dosage
- Intradermal elicited similar immune response to subcutaneous administration.
- Intradermal route resulted in more redness, firmness, itchiness and swelling at the injection site, but less pain
- Intradermal route allow expansion to greater population
- FDA added emergency use authorization (EUA) for intradermal use in adults ≥ 18 , but only subcutaneously for children < 18 years of age
- <https://www.youtube.com/watch?v=TLv1mR6mECQ>

Jynneos distribution

- Vaccination within 4 days of a high-risk exposure may protect against infection.
- Vaccination between 4-14 days after exposure may protect against severe infection.
- Vaccination also recommended in groups that may have increased risk of exposure
- Examples of groups that have higher risk of exposure: Gay, bisexual, transgender, who are sexually active with multiple anonymous sexual partners, or at social venues
- Jynneos vaccine can be requested by health care providers from local health department
- Individuals can go to vaccination sites through local health departments, and multiple PEP partners in Chicago (on last slide)
- In Dupage county, individuals in high-risk groups can schedule vaccine at the health department (630)-682-7400
- Additional vaccine clinic at Naper-Pride Fest 9/10/22 (12pm-5pm)



DUPAGE COUNTY HEALTH DEPARTMENT

CAREVAN

BRINGING CARE TO THE COMMUNITY

Naper Pride Fest Monkeypox and COVID-19 Vaccine Clinic

Clinic is free and open to all eligible individuals.

September 10, 2022		
Location	Date & Time	Services Offered
Naper Settlement 523 South Webster Street, Naperville	Saturday, September 10 12:00 pm - 5:00 pm	Jynneos monkeypox vaccine Pfizer COVID-19 monovalent vaccine & booster

COVID-19 Vaccination

The Care Van will offer the Pfizer Monovalent vaccine:

- Ages 6 months to 4 years requires three doses each, 8 weeks apart.
- Ages 5+ requires two doses, 8 weeks apart.

You will need to sit in observation for at least 15 minutes and possibly up to 30 minutes based on clinical history.

- You will need to keep the vaccination card with the date of your first dose on it. The Pfizer vaccine, requires two doses AT LEAST 8 weeks from your first dose.
- You are not considered "fully" vaccinated until 2 weeks after your final dose of vaccine.
- Health insurance or legal immigration status is not needed to receive a COVID-19 vaccine.
- Anyone under 18 years old must have a parent or legal guardian accompany them.

Monkeypox Vaccination

Currently, people who may be eligible for vaccination include named contacts of identified cases of monkeypox in occupational and community settings and Gay, bisexual, and other men (cisgender or transgender) who are 18 years or older who;

- Have intimate or sexual contact with other men in social or sexual venues; or
- Have given or received money or other goods for services in exchange for sex; or
- Have intimate or sexual contact with multiple or anonymous partners

Second doses are available 28 days after your second dose.

You are not considered "fully" vaccinated until 2 weeks after your final dose of vaccine.

Vaccine is also available by appointment at DCHD's central office in Wheaton.

- Call (630) 682-7400 to schedule an appointment and a screening.



Individuals are not eligible for a COVID-19 and monkeypox vaccine at the same time



Chicago and suburban Cook County

- City of Chicago (Malcom X College), PEP clinic partners

Eligibility:

-Chicago and other IL residents

-Close contact (e.g., household members with close physical contact or intimate partners) with someone diagnosed with MPX

OR

-Sexually active gay, bisexual, or other man who has sex with men or transgender

<https://www.chicago.gov/city/en/sites/monkeypox/home/vaccine.html>

Malcolm X College on Saturday, September 3, from 9 a.m. to 2 p.m.

Register here: <https://events.juvarre.com/IL-IDPH/xudqs/>

- Cook County <https://monkeypox.cookcountyhealth.org/sign-up>

833-308-1988

City of Chicago

<https://www.chicago.gov/city/en/sites/mokeypox/home/vaccine.html>

AS OF 8.18.22 YOU ARE ELIGIBLE FOR A MPV VACCINE IF YOU:

1. Live anywhere in Chicago or Illinois and have not previously been infected with MPV **AND meet the criteria below:**
2. Have had close contact (e.g., household members with close physical contact or intimate partners) with someone diagnosed with MPV **regardless of sex, gender, or sexual orientation**
OR
Are a gay, bisexual, or other man who has sex with men and/or transgender person **who is sexually active.**

If you meet eligibility criteria, especially consider getting vaccinated if you met recent partners through online applications or social media platforms (such as Grindr, Tinder or Scruff), or at clubs, raves, sex parties, saunas, or exchange good or services for sex. At this time, MPV vaccine is NOT recommended for the general public. As vaccine supply increases, guidance may evolve.



FOR MORE INFO, VISIT
CHICAGO.GOV/MPV

Chicago Department Of Public Health: PEP Partners

CENTER	HOW TO SCHEDULE
CDPH Lakeview Clinic	getvaxchi.chicago.gov
CDPH Austin Clinic	getvaxchi.chicago.gov
CDPH Roseland	getvaxchi.chicago.gov
Calor	calor.org
Howard Brown Health Clark	773-388-1600
Howard Brown Health Sheridan	
Howard Brown Health 63rd	
Howard Brown Health 55th	
Wellness Home-Lakeview	773-296-2400
Wellness Home-Halsted	773-621-7725
RMR Core Center	312-572-4500
Rush University	888-352-7874
Esperanza	773-584-6200 Esperanza MPV site
Project Wish/ UIC	UIC MPX (Monkeypox) Outreach Sign-Up Form
UI Health Eye and Ear Infirmary	monkeypox.uihealth.care
Alivio Medical Center	aliviomedicalcenter.org
Center on Halsted - North Side	centeronhalsted.org/mpvaccine.html
Center on Halsted - South Side/Woodlawn	