

Monkeypox Multi-Country Outbreak

Update for Virginia Healthcare Providers

Lilian Peake, MD, MPH
State Epidemiologist
Virginia Department of Health
June 10, 2022

- 1 | Monkeypox Overview
- 2 | Collaboration with Public Health
- 3 | Tools For Healthcare Facilities
- 4 | Questions

Current Situation: Non-endemic Countries

- In 2022, cases have been identified in 29 countries not endemic for monkeypox virus
 - 1,088* cases have been confirmed (for monkeypox or orthopoxvirus)
 - No deaths have been reported
 - Majority have no established travel links to endemic countries



- *As of 6/7/22

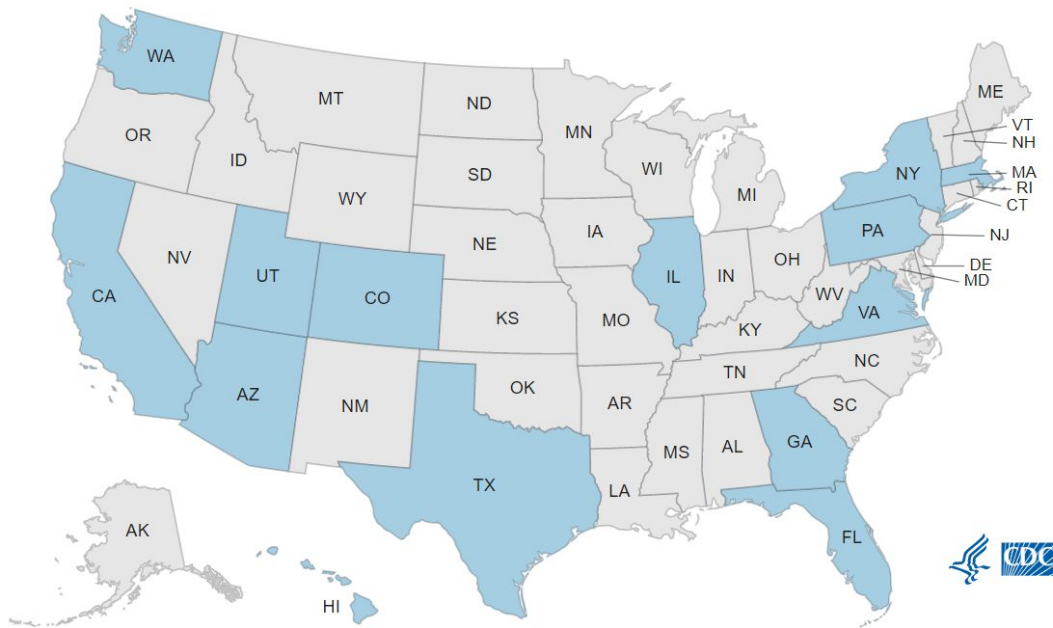
Endemic Countries

Monkeypox is endemic in these central and west African countries: Benin, Cameroon, the Central African Republic, the Democratic Republic of the Congo (DRC), Gabon, Ghana (identified in animals only), Ivory Coast, Liberia, Nigeria, the Republic of the Congo, Sierra Leone, and South Sudan

Cases of monkeypox in the WHO African Region reported to WHO from 1/1/22 to 6/1/22

Country	Confirmed cases	Suspected cases	Deaths
Cameroon	3	28	2
Central African Republic	8	17	2
Republic of Congo	2	7	3
Democratic Republic of the Congo	10	1 284	58
Liberia	0	4	0
Nigeria	21	66	1
Sierra Leone	0	2	0
Cumulative	44	1 408	66

United States



In 2022, 35* monkeypox cases have been reported in the United States, including one case in Virginia

*As of 6/7/22



Virginia

- One confirmed case
 - Adult female resident of Northern Virginia
 - Travel history to west Africa
 - Did not require hospitalization
 - Close contacts have been identified and are being monitored for 21 days; 3 receiving PEP
- VDH continues to evaluate reports of possible cases and coordinate testing

Number of Contacts by Risk Category	Risk Category*
1	High
6	Intermediate
22	Low/Uncertain
7	No Risk
36	TOTAL

*Risk Categories are from [CDC | Poxvirus | Monkeypox | For Clinicians | Monitoring People Who Have Been Exposed](https://www.cdc.gov/poxvirus/monkeypox/clinicians/monitoring.html)
www.cdc.gov/poxvirus/monkeypox/clinicians/monitoring.html

WHO Risk Assessment

- Risk to the U.S. general public is low
- Overall public health risk at global level = moderate
 - First time cases and clusters reported concurrently in widely disparate geographic areas and without known epidemiological links to endemic countries in West or Central Africa
 - Immediate action needed to avert establishment of monkeypox as a clinical condition in currently non-endemic countries



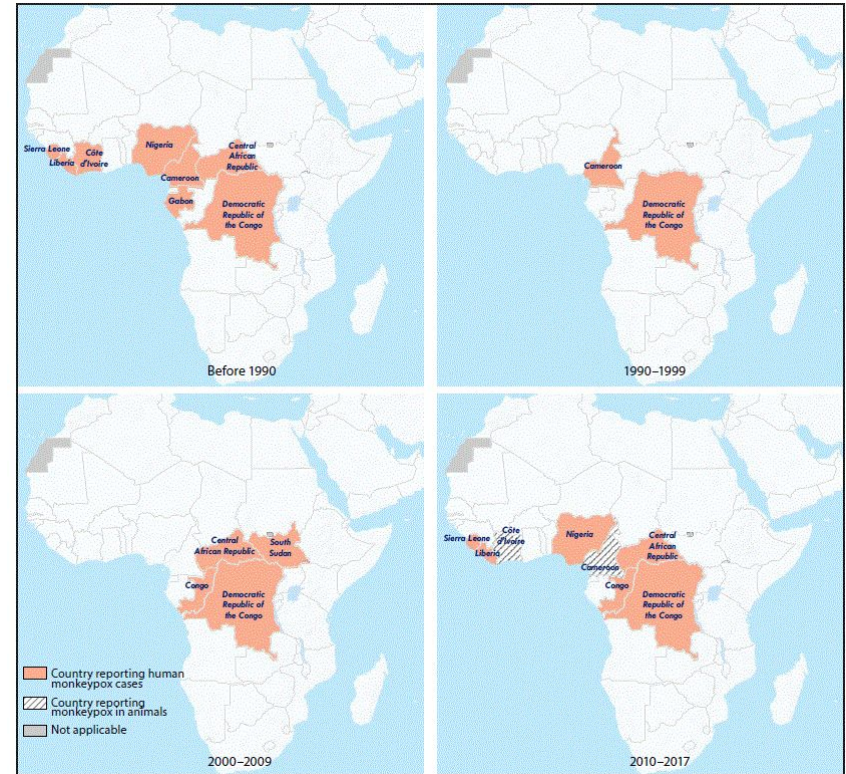
- Situation is rapidly evolving
- Healthcare providers should be on alert for patients with signs and symptoms of monkeypox
- [CDC Travel Alert-Level 2](#)

Monkeypox virus

- *Orthopoxvirus* genus
 - Genus includes variola virus (causes smallpox), vaccinia virus and cowpox virus
- Two clades of monkeypox virus
 - Central Africa clade (Congo Basin clade)
 - Causes more severe disease; Case Fatality Rate (CFR) up to 10%
 - Currently DRC reporting CFR among suspected cases around 3%
 - West Africa clade
 - Historically, caused less severe disease; Case Fatality Rate 1%
 - Was thought to be less transmissible
 - Since 2017, deaths associated with young age or untreated HIV infection
- West Africa clade has been identified in current outbreak
 - Several European countries and U.S. have published the genome sequences of monkeypox viruses identified in the current multi-country outbreak

Monkeypox virus

- Uncertainty remains as to the animal reservoir of the monkeypox virus
 - Some African rodents and non-human primates are hosts
- Historically, monkeypox disease has been rare
 - First human case in DRC in 1970
 - Sporadic exported cases outside of central and western African countries



Emergence of Monkeypox — West and Central Africa, 1970–2017

Transmission

Animal to Human

- Direct or indirect contact with body fluids or lesion material
- Bush meat preparation

Human to Human

- Close contact with lesions, body fluids, large respiratory droplets, contaminated materials

Incubation Period: Average 6-13 days (range = 5-21 days)

Infectious Period: Symptom onset until skin lesions resolved

Clinical Features

- Prodrome
 - Fever, chills, headache, myalgia, back pain, fatigue, lymphadenopathy
- Rash occurs 1-3 days after prodrome
 - Oral mucosal lesions
 - Cutaneous lesions progress through sequential stages - macules, papules, vesicles, pustules, scabs
- Illness is generally self-limited and lasts 2-4 weeks
- Atypical presentations noted among some cases in current outbreak
 - Relatively mild symptoms with localized rash (oral, perigenital and/or peri-anal distribution) and painful lymphadenopathy
 - No prodrome
- Differential diagnoses may include secondary syphilis, chancroid, herpes, chickenpox/shingles

Key Characteristics of Rash



- Well circumscribed, firm, deep-seated lesions that often develop umbilication
- Lesions are usually at the same stage of development over the body

Patient History

- Obtain thorough travel history
- Ask about close contact (including sexual contact) with someone with a rash
- Ask about animal exposures
 - Contact with a dead or live wild animal from or while traveling in an endemic country or using a product derived from such animals (e.g., game meat, creams, lotions, powders, etc.) or contact with an exotic pet (particularly rodents and non human primates)

Testing

- Consult with local health department (LHD) for testing of suspected cases at Virginia's state public health lab (DCLS)
 - Approval for testing is required at this time
- Collect 2-4 paired dry (no VTM/UTM) swabs of lesions on different body areas
 - Sterile, nylon, polyester or Dacron swabs with a plastic, wood or thin aluminum shaft
 - 1-2 swabs will be tested at DCLS
 - 1-2 swabs forwarded for confirmatory testing at CDC, if presumptive positive
- Samples should be refrigerated within 1 hour of collection and can be stored up to 7 days at 4°C
- Transport specimens refrigerated (on ice packs) using the routine DCLS courier

Testing

- DCLS performs real-time PCR for non-variola *Orthopoxvirus* and *Orthopoxvirus* for the presumptive identification of monkeypox virus
 - Identifies the presence of an *Orthopoxvirus*
 - Rules out the presence of variola virus
- At this time, DCLS test results provided within 5-6 hours from start of test
 - Positive test
 - Presumed positive case
 - Send to CDC for confirmatory testing of monkeypox and specific target test for the West African strain (turnaround time is 5-7 days for formal reporting of results)

Treatment Options

- No specific treatment has been approved in the U.S. but below are treatment options that may prove beneficial
- Can be accessed through the federal government under an EA-IND protocol

Treatment Option	Indication	Formulations Available
<u>Tecovirimat (TPOXX or ST-246)</u> *antiviral	FDA approved for the treatment of smallpox in adults and children >3 kg	Oral (200 mg capsule)* Injection for intravenous administration *ability to mix with semi-solid food for pediatrics < 13 kg
<u>Cidofovir (Vistide)</u> *antiviral	FDA approved for treatment of cytomegalovirus retinitis in patients with AIDS	Intravenous infusion single-unit vial
<u>Vaccinia Immune Globulin Intravenous (VIGIV)</u>	FDA licensed for treatment of complications due to vaccinia vaccination	Intravenous infusion single-dose vial

Treatment Options

- CDC is **currently developing** an EA-IND to help facilitate use of brincidofovir as a treatment option for monkeypox
- However, brincidofovir is **not currently available from the Strategic National Stockpile (SNS)**

Treatment Option	Indication	Formulations Available
Brincidofovir (Tembexa) *antiviral	FDA approved for the treatment of smallpox in adults and pediatrics, including neonates	Oral (100 mg tablet or 10 mg/mL suspension)

Infection Prevention and Control

- Isolate patient in a single room with a dedicated bathroom
 - Limit patient transport; mask patient & cover lesions during transport
- Use standard and transmission-based precautions
 - PPE: gown, gloves, N95 respirator, eye protection
 - Any procedures likely to spread oral secretions should be performed in an airborne infection isolation room
- Avoid activities that may spread material from lesions
 - Soiled laundry should be gently and promptly contained; avoid shaking or handling in a manner that may disperse infectious material

Infection Prevention and Control

- Collect specimens following [CDC IPC guidance](#)
- Perform routine environmental cleaning & disinfection
 - Use an EPA-approved product labeled with [Emerging Viral Pathogens claims](#)
 - Employ wet cleaning methods to avoid resuspending dried material from lesions (avoid dry dusting, sweeping, or vacuuming)
- Manage waste according to:
 - [U.S. Department of Transportation \(DOT\) Hazardous Materials Regulations](#) and
 - [State and local regulations](#)

Collaboration With Public Health

Notify the Local Health Department



HEALTH DEPARTMENT LOCATOR

Enter Your Address or
Zip Code

Search radius

25 mi

Results 25

Search

Richmond City Health Department

400 East Cary St.
Richmond Virginia 23219

Phone: 804-205-3500

Fax: 804-371-2207

[Business Hours \(Call For Information\)](#) ▾

[Directions](#)

Richmond City Health Department – WIC Community Hospital

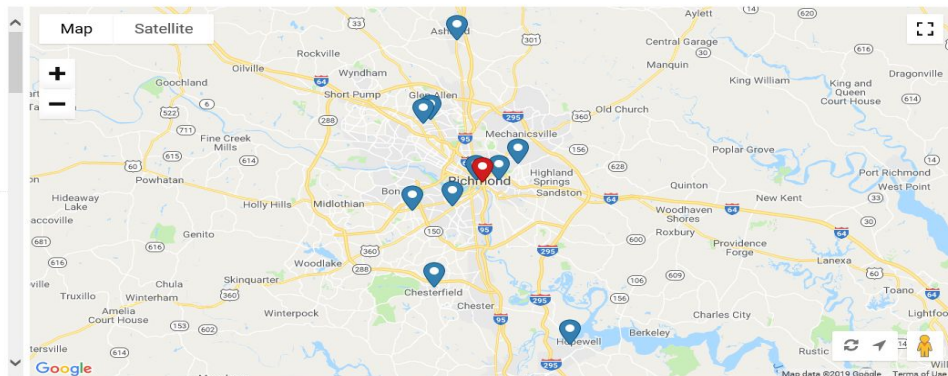
1510 North 28th St.
Suite 208
Richmond Virginia 23223

Phone: 804-786-3201

Fax: 804-225-7359

[Business Hours \(Call For Information\)](#) ▾

[Directions](#)



Public Health Response to Control Outbreak

- Intensify surveillance
- Identify cases early
- Conduct laboratory investigation
- Implement infection control measures
- Isolate cases
- Conduct contact tracing and monitor contacts
- Provide guidance and education
- Conduct outreach to social networks of MSM and their contacts

Current CDC Case Definitions for Epidemiologic Surveillance (Updated 6/3/22)

Suspect case: New characteristic rash OR meets one of the epidemiologic criteria within 21 days of onset and has a high clinical suspicion for monkeypox

Probable Case: a) No suspicion of other *Orthopoxvirus* exposure (e.g., Vaccinia virus in ACAM2000 vaccination) AND demonstration of the presence of either *Orthopoxvirus* DNA by PCR or *Orthopoxvirus* using immunohistochemical or electron microscopy testing methods; OR b) Demonstration of detectable levels of anti-*Orthopoxvirus* IgM antibody during the period of 4 to 56 days after rash onset

Confirmed Case: Demonstration of *Orthopoxvirus* DNA by PCR testing or Next-Generation sequencing of a clinical specimen OR isolation of monkeypox virus in culture from a clinical specimen

Current Epidemiologic Criteria (Updated 6/3/22)

Within 21 days of illness onset:

- Report having had contact with a person or people who have a similar appearing rash or 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) 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.)

Current Exclusion Criteria (Updated 6/3/22)

A case may be excluded as a suspect, probable, or confirmed case if:

- An alternative diagnosis can fully explain the illness OR
- An individual with symptoms consistent with monkeypox does not develop a rash within 5 days of illness onset OR
- A case where high-quality specimens do not demonstrate the presence of *Orthopoxvirus* or monkeypox virus or antibodies to *Orthopoxvirus*

Postexposure Prophylaxis

- Two vaccines available: JYNNEOS and ACAM2000
- CDC recommends that vaccine be given within 4 days from the date of exposure to contacts identified to have had high-risk exposure
 - Consider for contacts with intermediate-risk exposure
 - If given between 4-14 days after the date of exposure, vaccination may reduce the symptoms of disease, but may not prevent the disease

JYNNEOS

- Replication-deficient live vaccinia virus vaccine
- Licensed in the US in 2019 to prevent both smallpox and monkeypox
- Manufacturer: Bavarian Nordic A/S
- Administered by subcutaneous injection as a 2-dose series
- Recommended by CDC for people age 18 or older who are at high risk for monkeypox due to occupational exposure, or because they have been exposed to monkeypox virus



ACAM2000

- Proper Name: Smallpox (Vaccinia) Vaccine, Live
- Manufacturer: Emergent Product Development Gaithersburg, Inc.
- Requires 1 dose
- Administered using a droplet by the percutaneous route (scarification) using 15 jabs of a bifurcated needle; verify evidence of 'take' at days 6-8
- Approved in 2007 for active immunization against smallpox disease for persons determined to be at high risk for smallpox infection

Vaccine Risks & Contraindications

JYNNEOS

- Newer vaccine, clinical trials have not indicated specific safety risks at this time
- Contraindications: Allergy to vaccine component

ACAM2000

- Infection control measures required; contact with the vaccination site can result in auto-inoculation or infection to others
- Contraindications: Atopic dermatitis*, other active exfoliative skin conditions*, immunocompromised*, pregnancy*, age < 1 year*, breastfeeding, known underlying heart condition, ≥ 3 known cardiac risk factors, allergy to vaccine component
 - * Vaccinee or household contact

Accessing Medications and Vaccines

- Providers should make requests for medications and vaccines through their local health department as part of the case investigation process
- At this time, all requests must be made by VDH in consultation with CDC
 - States do have access to therapeutics and vaccines when indicated
- At this time, according to CDC, the U.S. has a sufficient supply of vaccine to respond to the current monkeypox outbreak

Tools For Healthcare Facilities

Preparedness Checklist for Healthcare Facilities

- ☐ Share situational awareness with all staff
- ☐ Provide education (e.g., rash identification) to clinicians
- ☐ Review triage procedures to ensure timely identification and isolation of suspect cases
- ☐ Designate points of contact responsible for:
 - ☐ Communicating with the local health department (e.g., Infection Prevention)
 - ☐ Providing internal updates to HCPs and volunteers
- ☐ Review infection prevention protocols for alignment with CDC guidance
- ☐ Ensure availability of appropriate PPE and supplies
- ☐ Review specimen collection, transport, and testing procedures
- ☐ Review environmental cleaning procedures
- ☐ Consult with linen vendor to determine if there are vendor-specific instructions for bagging/separating soiled linen from patients with suspected or confirmed monkeypox
- ☐ Prepare a waste management plan
- ☐ Ensure staff vaccination records are up-to-date and accessible
- ☐ Review procedures for screening and monitoring of potentially exposed or ill staff

HCP Risk Assessment Tool

- Use to assess exposures and monitor contacts
- Exposure assessment
 - High, intermediate, low/uncertain, or no risk
- Healthcare facilities to monitor their own staff members
 - Consult with LHD for unusual exposure situations
 - Exposed HCP do not need to be excluded from work if they remain asymptomatic

Monkeypox
VDH Guidance for Assessing and Managing Exposed Healthcare Personnel

State/Local ID:

Exposure risk assessment and public health recommendations for healthcare personnel exposed to a patient with monkeypox infection

Background: Transmission of monkeypox requires prolonged close interaction with a symptomatic individual. *Brief interactions and those conducted using appropriate personal protective equipment (PPE) in accordance with Standard Precautions are not high risk and generally do not warrant postexposure prophylaxis (PEP).*

Purpose: This tool is intended to assist with exposure assessment, monitoring, and PEP recommendations for healthcare personnel (HCP) with potential exposure to monkeypox in healthcare settings.

How to Use the Tool:

- Determine the degree of exposure using the *Healthcare Personnel (HCP) Exposure Risk Assessment to a Patient with Monkeypox*.
- Based on the degree of exposure, refer to the *Table of Recommendations by Exposure Risk* (pg. 4) for monitoring, post-exposure prophylaxis, and other public health recommendations.

Healthcare Personnel (HCP) Exposure Risk Assessment to a Patient with Monkeypox	
Degree of Exposure: High	
During the period of interest ¹ , did you have any unprotected skin or mucous membrane contact to the patient's skin, lesions, or bodily fluids (e.g., inadvertent splashes of patient saliva to the eyes or oral cavity, ungloved contact with patient, penetrating sharps injury from used needle), or contaminated materials (e.g., linens, clothing)?	<input type="checkbox"/> Yes <input type="checkbox"/> No
During the period of interest ¹ , were you inside the patient's room or within 6 feet of a patient <i>during any procedures that may create aerosols</i> ² from oral secretions, skin lesions, or resuspension of dried exudates (e.g., shaking of soiled linens) while you were not wearing a NIOSH-approved N95 or equivalent respirator (or higher) and eye protection?	<input type="checkbox"/> Yes <input type="checkbox"/> No
If Yes to any of the above, the degree of exposure is considered High and recommendations include: <ul style="list-style-type: none">• Monitor for symptoms (refer to table of recommendations by exposure risk below)• PEP: recommended (refer to table for details)	
If No to all of the above, proceed to assessing <i>Intermediate</i> degree of exposure risk below.	

Take Home Messages

- Risk to general public is low
- Now is the time to ensure your healthcare facility is prepared
- When evaluating patients, have a high index of suspicion for monkeypox if characteristic rash is present
- Consult and collaborate with your [Local Health District](#)
- Stay updated on latest information and recommendations regarding monkeypox via [CDC](#) and [VDH](#) websites

Resources

- CDC Monkeypox [website](#)
 - [Case definition](#)
 - [Information for clinicians](#)
 - [Infection prevention](#)
 - [Preparation and collection of specimens](#)
- CDC Health Alert Network health advisory [5/20/2022](#)
- COCA call [5/24/2022](#)
- VDH Monkeypox [Information for Healthcare Professionals](#)
 - [VDH Monkeypox website](#)
 - [Assessing and Managing Exposed Healthcare Personnel](#)
 - [Infection Prevention and Control Recommendations for Healthcare Settings](#)
 - [Monkeypox FAQs for HCP](#)
 - [Monkeypox Preparedness Checklist for Healthcare Facilities](#)
 - [DCLS Monkeypox testing and shipping instructions](#)
- NETEC [Waste Management](#)
- WHO Monkeypox [website](#)
- MMWR - [Monkeypox Outbreak – Nine States, May 2022](#)

Thank You!