Monkeypox Update

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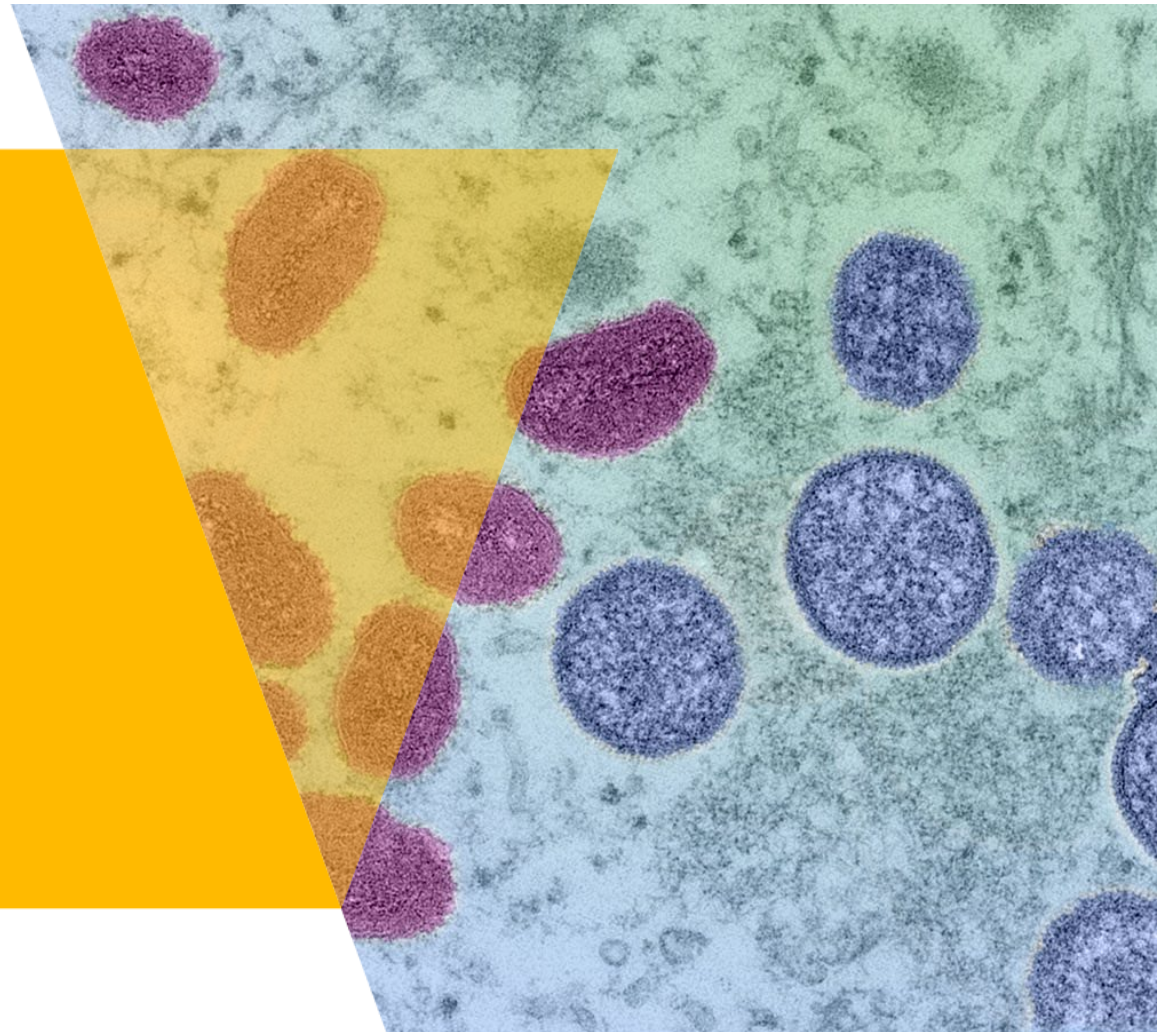

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Amy Britton, MS, RN, CCRN	Faculty	Nothing to disclose - 06/22/2022
Lilian Peake, MD	Faculty	Nothing to disclose - 07/01/2022
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No Conflicts of Interest

Outline:

1. Epidemiology: Historical Context and Current Outbreaks
2. Identification: Clinical Features
3. Isolation: Transmission Mechanisms and PPE Recommendations
4. Special Considerations for Healthcare Settings
5. Panel Question and Answer

Epidemiology from PAST Experience:

- Sporadic human monkeypox cases in Africa in setting of animal contact in 75% of cases
- Attack rate among unvaccinated exposures 8-9% (household contacts)
- Smallpox vaccinia vaccine 85% protective
- Reservoirs likely rodents but can infect primates as well as humans.
- Prior to 2003, Monkeypox only seen in Africa, with most cases in children <15 yrs, 86% in those younger than 10
  - Severity illness correlating loosely with overall burden of lesions, mortality 10%

2003 US Outbreak: Prairie dogs transmitted to humans, found to have been infected in transport with rodents from Ghana: Ghambian rat, rope squirrel, and dormouse on the shipment (exotic pets) were confirmed positive for the virus

? More mild illness: 3/37 had complications and no deaths

Mandell, Douglas, and Bennett's Principles and Practice of Infectious Diseases. Ninth edition. Philadelphia, PA: Elsevier, 2020.

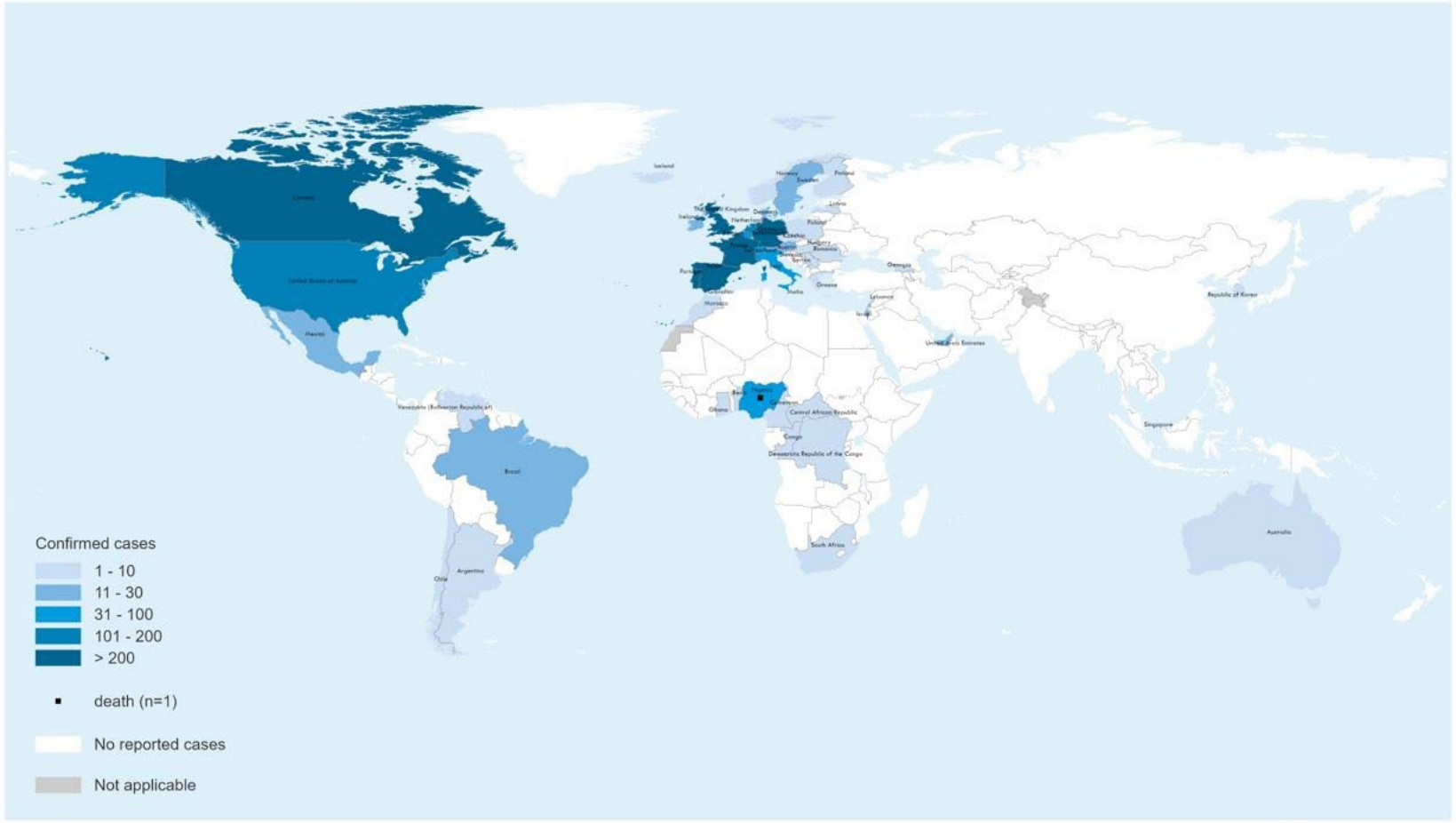
Classic Clinical Presentation:

- Prodrome of fever/malaise/myalgias before onset of rash
- Lymphadenopathy: submandibular, cervical, sublingual
- Rash presenting on face/extremities predominantly
- Uniform evolution from macules > papules > vesicles > pustules > scabs > scars

https://www.cdc.gov/poxvirus/monkeypox/clinicians/clinical-recognition.html

Epidemiology: Current Outbreak

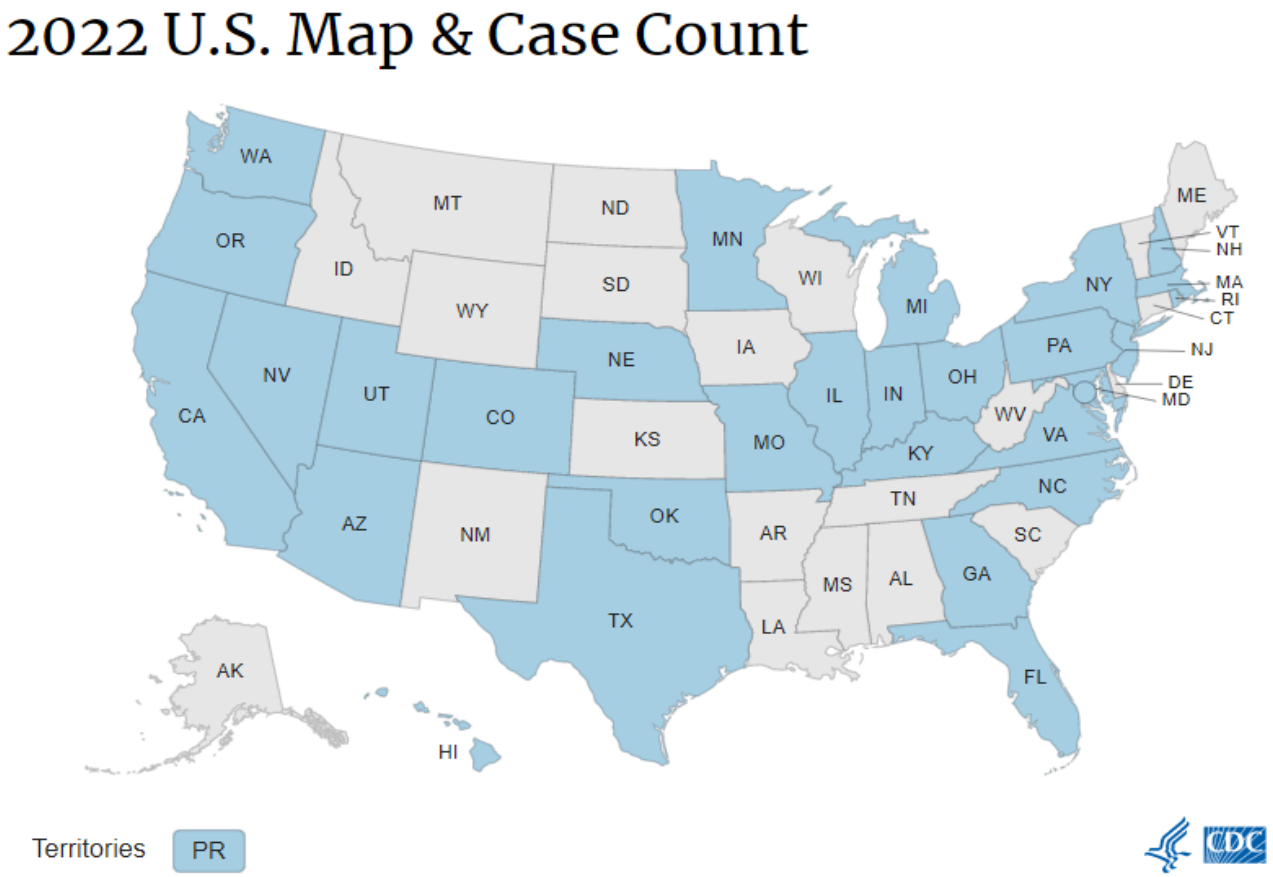
- WHO reporting community transmission occurring in many sites outside of Africa resulting in 85+ laboratory confirmed cases PER DAY as of mid-June.
- >80% of cases outside of Africa are in Europe, but the US continues to accumulate cases.



https://www.who.int/emergencies/disease-outbreak-news/item/2022-DON392

Epidemiology: Current Outbreak

- CDC reports a total confirmed case count of 396 as of 6/30, with CA, NY accounting for the highest numbers
- Virginia has 8 cases as of 6/30



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

Epidemiology: Current Outbreak

- Predominantly cases occurring in men, MSM, with many cases identified in sexual health clinics
- Lesions may be atypical: anal/genital distributions only, lesions at different stages of evolution, ulcerative or vesicular appearance, lack of associated symptoms (prodrome/fever/lymphadenopathy)
- Genetic analysis confirms West African Clade (good news, mortality 1% versus 10% for the Congo Basin or Central African Clade).
- Milder cases may go undetected.
- Smoldering activity over many months reported in Endemic countries: suggestion of underappreciated spread during COVID-19 pandemic – genetic analysis suggests multiple introductions of the virus into Europe via travelers over the last several months

Identify

Identification of Monkeypox

Incubation period: 7-14 days (can range from 5-21)

- no symptoms/ not contagious

Prodrome: fever, malaise, headache, weakness, swelling of lymph nodes

- may be contagious

Rash: following prodrome, lesions typically begin to develop simultaneously and evolve together on any part of the body

- contagious

Special note: Unlike cases in recent years, the current outbreak of Monkeypox does not always start with flu-like symptoms prior to onset of rash. Perianal or genital lesions without a fever have been reported.

https://www.cdc.gov/poxvirus/monkeypox/clinicians/clinical-recognition.html

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 same stage of development on a single site of the body (ex: pustules on face or vesicles on legs)
- Fever before rash
- Lymphadenopathy common
- Disseminated rash is centrifugal (more lesions on extremities, face)
- Lesions on palms, soles
- Lesions are often described as painful until the healing phase when they become itchy (crusts)

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https://www.cdc.gov/poxvirus/monkeypox/clinicians/clinical-recognition.html

Suspect Case= New characteristic rash + Epidemiologic Criteria

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.)

https://www.cdc.gov/poxvirus/monkeypox/clinicians/case-definition.html

Variation in Lesion Appearance:

https://phil.cdc.gov/

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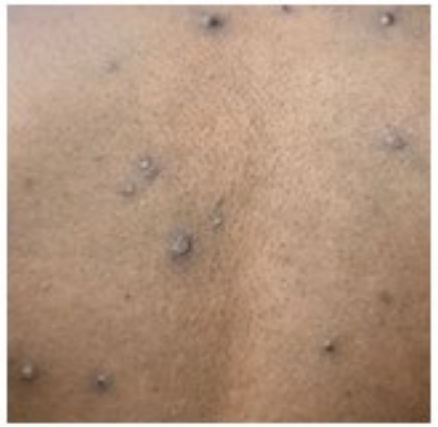


Photo Credit: NHS England
High Consequence Infectious Diseases Network

https://www.cdc.gov/poxvirus/monkeypox/clinicians/clinical-recognition.html

Isolate

Isolation/ PPE

Isolate Patient

- Single occupancy/ Dedicated bathroom
- Door should be kept closed
- Transport and movement of patient outside of room should be limited

Intubation and extubation, and any procedures likely to spread oral secretions should be performed in airborne infection isolation rooms.

Standard/ Airborne/ Contact Precautions

Healthcare workers wear: Face shield/ Goggles, Gown, Gloves, N-95 respirator

Donned and doffed the same way as for COVID precautions

Duration of isolation:

- Coordinated decision with local health department and HIPP team
- Continued until all lesions have resolved and a fresh layer of skin has formed

https://www.cdc.gov/poxvirus/monkeypox/clinicians/infection-control-healthcare.html

Rationale for PPE Recommendations: Transmission

In general, close contact with infectious lesions are necessary for person-to-person transmission

- “Risk to the general public is low”

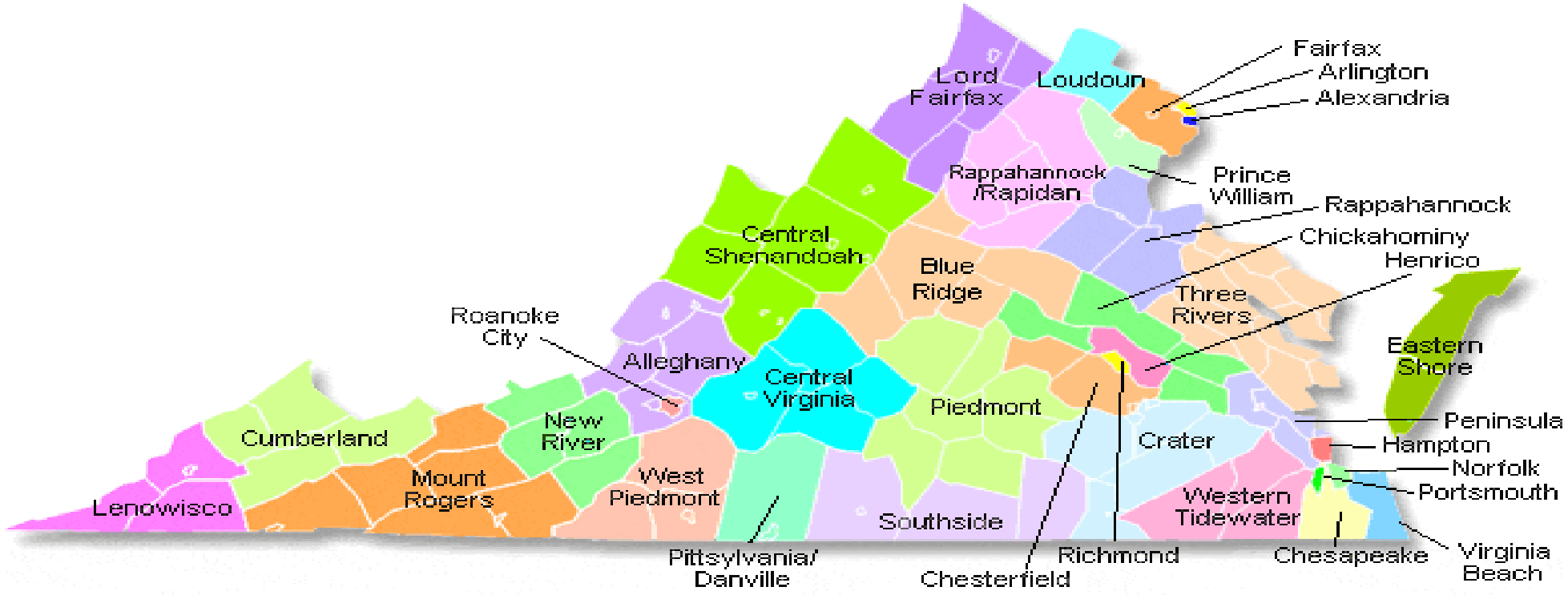
However, transmission events have been associated with activities such as shaking off infectious bedding, and prolonged face-to-face contacts likely via exposure to respiratory secretions

- Rationale for airborne precautions in healthcare settings as available – this does NOT mean it is a typical mode of transmission

https://www.vdh.virginia.gov/clinicians/monkeypox-update-for-virginia-june-14-2022/

Inform

Contact your local health department:



https://www.vdh.virginia.gov/surveillance-and-investigation/monkeypox-information-for-healthcare-professionals/

Confirm and Mitigate Risk:

Testing:

- Currently, laboratory testing is done at Virginia's State Lab (DCLS):
- Healthcare facilities are required to coordinate testing with their local epidemiologist
  - Approval is needed for testing via DCLS based on clinical/epidemiologic case definition
- Test is a real-time PCR, requiring 2 to 4 dry swabs of lesions on different areas of the body
  - **The swabs ARE considered to be infectious once collected**
- Swabs are then placed in separate dry, sterile tubes and sent to DCLS

- DCLS testing will identify an Orthopoxvirus if Monkeypox is present
- TO confirm Monkeypox (as opposed to other Orthopoxvirus family members), CDC will then perform confirmatory testing specific to Monkeypox.
- Turn-around time for initial DCLS testing: "Presumptive Positive" or "negative" is 5-6 hours from start of testing at the lab
- Turn-around time for CDC confirmatory testing is 5-7 days from receipt of specimen

https://www.vdh.virginia.gov/clinicians/monkeypox-update-for-virginia-june-14-2022/

Exposures: Risk Assessment for HCP

HIGH Risk 1. Unprotected contact with skin or mucous membranes, lesions, bodily fluids 2. Inside patient's room or w/in 6 feet during potentially aerosolizing procedures (including shaking of linens) without an N95 and eye protection	Monitor for symptoms x 21 days PEP is recommended
INTERMEDIATE Risk 1. Within 6 feet for 3+ hours of an un-masked patient while provider also NOT wearing at least a level 3 surgical mask 2. Activities resulting in provider skin/clothing contact with patient skin lesions or body fluids, soiled linens (ie provider was not wearing gloves/gown) 3. Potential aerosol exposure	Monitor for symptoms x 21 days PEP could be considered
LOW Risk Entered patient room w/o eye protection w/in 6 feet of patient <3h w/o a mask	Monitor for symptoms x 21 days No PEP

https://www.cdc.gov/poxvirus/monkeypox/clinicians/monitoring.html

Post Exposure Prophylaxis:

Vaccines in the US Strategic National Stockpile (access via VDH if appropriate from risk assessment):

ACAM2000: replication competent live virus Vaccinia virus vaccine, for use for certain US persons at risk for occupational exposure to orthopoxviruses

- Potential for more serious side effects, including

JYNNEOS: replication deficient live Vaccinia virus vaccine, recommended since late 2021 by ACIP for PREP as an alternative to ACAM2000

- Can be used safely in the immunosuppressed

Pregnancy?: Lack of data for JYNNEOS, but shouldn't be able to replicate, versus clear evidence of risk of vaccinia in fetus from experience with ACAM2000

https://www.cdc.gov/poxvirus/monkeypox/clinicians/faq.html

Who is at Risk for Severe Disease?

- Most infections in the current outbreak are self-limited and not severe
- Those w/o severe infections do not require hospitalizations
  - Home quarantine if medically appropriate

Those groups thought to be at higher risk for severe disease include:

- Immunosuppressed
- Children under 8 y/o
- Pregnant and Breastfeeding
- Serious dermatologic conditions

https://www.cdc.gov/poxvirus/monkeypox/treatment.html

Treatment?

Cidofovir, Brincidofovir: antiviral drugs, typically used for CMV infections

- Have some activity against Orthopoxviruses in animal studies
- Lack of human data
- Cidofovir widely available

Tecovirimat (ST-246, TPOXX): approved for treatment of Smallpox, US National Stockpile

- Effectiveness supported by animal data and has shown safety in healthy humans
- Available via Expanded access IND from CDC

https://www.cdc.gov/poxvirus/monkeypox/treatment.html

Special Considerations

Special Considerations: Waste Management
Recent updated guidance for the CDC

Waste Management for West African clade (Current 2022 Outbreak):

Regulated Medical Waste

- Handled in the same manner as other potentially infectious medical waste (soiled dressing, contaminated sharps)

Special procedure for trash management for Congo Basin clade:

Category A Waste

- Special procedure/ Coordinated removal of trash with EVS
- Please keep all trash in the room until time to remove from room
- Double bagged/ red bag trash
- Everything except medical equipment leaves through the trash removal process (linen, trash, food trays)

https://www.cdc.gov/poxvirus/monkeypox/clinicians/infection-control-healthcare.html

Special Considerations

Linen: Soiled laundry should be handled with care.

- Avoid contact with lesion material that may be present on the laundry
- Gently and promptly contained in appropriate laundry bag
- Never shake or handle in a manner that may disperse infectious materials

Food and Nutrition:

- Routine procedures

Medical Equipment:

- Cleaned before and after leaving patient room with disinfectant wipes

Visitation:

- Limited to those essential for the patient's care and wellbeing

Lab:

- Procedure is still being finalized
- Ensure communication with lab before obtaining/ sending specimens

Interfacility Transport:

- Limited to medically essential purposes
- patient should wear medical grade mask and any exposed lesions covered with sheet or gown

https://www.cdc.gov/poxvirus/monkeypox/clinicians/infection-control-healthcare.html

Special Considerations

EVS:

- Coordinated trash collection process (if needed for category A waste)
- Dry dusting, sweeping or vacuuming should be avoided
- Wet cleaning methods preferred
- Terminal clean with operations manager sign off
- Tru- D at discharge

Environmental Infection Control:

- Standard cleaning and disinfection procedures should be performed using an EPA- registered hospital-grade disinfectant with an emerging viral pathogen claim.
- EPA's List Q
- Follow manufacturer's directions for concentration, contact time, and care and handling
- Common hospital disinfectants that are effective: quaternary ammonium/ethanol/ isopropanol, bleach, and hydrogen peroxide

https://www.cdc.gov/poxvirus/monkeypox/clinicians/infection-control-healthcare.html

Helpful links:

Centers for Disease Control and Prevention (CDC):

CDC Monkeypox Overview

CDC Clinical Recognition

National Emerging Special Pathogens Training and Education Center (NETEC):

NETEC Monkeypox Infection Prevention Controls and Waste Management

World Health Organization (WHO)

WHO Overview Monkeypox

WHO Monkeypox Outbreak Update 5/29

Virginia Department of Health

https://www.vdh.virginia.gov/epidemiology/epidemiology-fact-sheets/monkeypox/