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Tier 1: Treatment and Vaccine Guidelines for Monkeypox

Applicability

Henry Ford Health

Scope

This guideline is intended for use at all Henry Ford Health acute care facilities, emergency departments, and ambulatory clinics

Background

Monkeypox is a rare disease caused by monkeypox virus, an orthopoxvirus. In 2022, the World Health Organization declared monkeypox a global public health emergency. In 2022, cases are predominantly spreading among gay, bisexual, transgender women, nonconforming gender and gender non-binary individuals who have sex with men (MSM). However, anyone with close physical contact can become infected with monkeypox.

Definitions

Suspected Cases per CDC case definition:

- New characteristic rash (see presentation below), especially if epidemiologic criteria are present **OR**
- Meets one of the epidemiologic criteria and has a high clinical suspicion for monkeypox. Clinical suspicion may exist if presentation is consistent with illnesses confused with monkeypox (e.g., secondary syphilis, herpes, and varicella zoster).

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.)

Exclusion Criteria

A case may be excluded 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

Guideline

Presentation

Incubation: 5-13 days on average (range 4-17 days).

Prodrome: fever, malaise, headache, weakness and lymphadenopathy is classic, but may be absent or follow rash onset.

Rash can appear before or after prodromal symptoms. Rash can be macular, papular, vesicular or pustular and scattered or localized to a body site instead of diffuse. Lesions scab over and resolve after ~2-4 weeks.

Monkeypox 2022 rash typically starts in mucosal areas (genital, perianal, oral) and associated with:

- Proctitis: anorectal pain, tenesmus, rectal bleeding; associated with visible skin lesions.
- Oropharyngitis: tonsillar swelling, abscess, dysphagia.

Young children and immuncompromised patients are more likely to experience serious complications like pneumonitis or pneumonia, encephalitis, ocular infection, myocarditis, or bacterial superinfection and sepsis.

Testing

Suspected cases who meet criteria above should be tested for Monkeypox. Notify local Infection Prevention and Control and Infectious Diseases for suspected cases.

Refer to Managing a Suspected Monkeypox Patient for testing guidance.

Patients with suspected monkeypox should undergo sexually transmitted infection testing, including syphilis, chlamydia, gonorrhea, and HIV (if negative or unknown status). Test both genital and extragenital sites for chlamydia and gonorrhea, if indicated based upon sexual history. Refer to CDC Sexually Transmitted Infections Guideline.

Questions about infection prevention:

- Hospitals: Call hospital infection preventionists and/or hospital medical director of infection prevention
- Ambulatory / Behavioral Health / Maplegrove / Community Care Services: call ambulatory infection prevention / Dennis Cunningham
- For more information: https://onehenry.hfhs.org/departments/infectionpreventionandcontrol/Pages/Monkeypox.aspx

Treatment

First line therapy: Tecovirimat (TPOXX®) - FDA approved for smallpox. A 14-day course is available for monkeypox in oral and intravenous formulations through a CDC emergency investigational new drug (eIND) protocol. Henry Ford Health has an active expanded access protocol under CDC central IRB "Expanded Access IND Protocol: Use of Tecovirimat (TPOXX®) for Treatment of Human Non-Variola Orthopoxvirus Infections in Adults and Children".

Criteria for tecovirimat: PCR confirmed non variola orthopoxvirus PLUS at least one of the following:

- Severe disease (e.g., hemorrhagic disease, confluent lesions, sepsis, encephalitis, ocular involvement, or other conditions requiring hospitalization).
- At high risk of progression to severe disease:
    - Immunocompromising conditions (e.g., (HIV/AIDS with CD4 < 350 cells/mm^3, or with viremia HIV RNA > 1000 copies/mL, or not on therapy), 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.
    - 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]).
    - One or more complication of monkeypox infection (e.g., secondary bacterial skin infection; gastroenteritis with severe nausea/vomiting, diarrhea, or dehydration; bronchopneumonia; concurrent disease or other comorbidities).
- With infections involving anatomic sites resulting in inability to swallow, urinate, or defecate.

Contraindications to tecovirimat

- Patients (or their legally authorized representatives) who are unwilling to sign an informed consent and refuse tecovirimat treatment.
- Patients with known allergy to tecovirimat and/or excipients of tecovirimat.
- IV tecovirimat should not be administered to patients with severe renal impairment (CrCl <30mL/min) due to the present of beta-cyclodextrin solubilizing agent. Oral formulation indicated for this population.

Other safety considerations with tecovirimat

- Use IV formulation with caution in patients with moderate (CrCl 30-49 mL/min) or mild (CrCl 50-80 mL/min) renal impairment.
- Use IV formulation with caution in pediatric patients < 2 years of age given immature renal tubular function.
- Adverse effects with oral: headache (12%), nausea (5%), abdominal pain (2%), and vomiting (2%). Neutropenia was observed in one study participant.
- Adverse effects with IV: infusion site pain (73%), infusion site swelling (39%), infusion site erythema (23%), infusion site extravasation (19%), and headache (15%).

Tecovirimat process and mandatory forms

1. Due to eIND status, discuss with the Medical Director of Infection Prevention and Control or their designee (refer to appendix) and confirm patient meets criteria for tecovirimat (see above - PCR confirmed plus at least one criteria).
2. Obtain informed consent from the patient prior to initiating tecovirimat and include a scanned copy of the signature page in the electronic medical record.
3. The Medical Director of Infection Prevention and Control or designee should first contact their local health department (refer to appendix). Some health departments have supply of tecovirimat and may be able to provide courses directly to providers.
4. If no tecovirimat is available at the local health department, the Medical Director of Infection Prevention and Control or designee will coordinate with pharmacy to request drug from the Strategic National Stockpile. Oral formulation is strongly preferred unless contraindication to enteral. Capsules may be opened and mixed with food as needed.
    1. Email CDC IMS 2022 Multinational MPX Clinical Escalations and CC Dr. Geehan Suleyman and Rachel Kenney: eocevent482@cdc.gov
    2. Include the shipping address
    3. Provide a point of contact at the shipping address with email address, phone number, and a 24/7 monitored phone (if available)
    4. Number of people to receive treatment and their total body weight
    5. If IV is requested, specify the number of days of IV treatment. For many patients, 7 days (14 vials) is sufficient and then the patient can be converted to oral
    6. Specify the days/times that the shipping address is not available to receive a shipment

5. After drug arrives, provider will enter an order in Epic for tecovirimat at indicated dose for a 14 day duration.
6. Within 72 hours of treatment initiation: Submit informed consent and patient intake form to regaffairs@cdc.gov or at ShareFile
7. An in person or virtual visit must be completed DURING and AFTER tecovirimat treatment. Evaluate patient and submit clinical outcome form:
    1. Day 1-7 OR Day 8-14 AND
    2. Day 7-10 after the last tecorvirimat dose.
8. Report all life-threatening or serious adverse events with a Medwatch form.

Supportive care:

- Maintain adequate fluid balance, pain management, treatment of bacterial superinfections of skin lesions and treatment of co-occurring sexually transmitted infections.
- Pain management strategies should be multi-modal and include both topical and systemic strategies. Initial pain control for mild symptoms may be achieved with use of over the counter products such as acetaminophen and non steroidal anti-inflammatory drugs. Moderate to severe pain may require the initiation agents such as gabapentin and low dose opioids.
- Pruritus can be managed with oral antihistamines as well as topical products. Calamine containing lotions may be applied to open lesions to reduce pain and for painful areas of skin that are intact or where lesions have crusted over capsaicin creams and topical lidocaine may be applied.
- For painful genital, anorectal lesions and proctitis, warm sitz baths lasting at least 10 minutes several times per day are recommended.
- Initiate docusate and senna for anorectal lesions, especially if opiod analgesia is prescribed. Rectal bleeding is expected to be self-limited, however, patients with rectal bleeding should be evaluated by a health care provider.
- For oral lesions viscous lidocaine 2% at a dose of 15 ml may be swished and spit or gargled by patients to reduce pain. This may be administered no more frequently than every three hours and with a max of 8 doses per day. To keep oral lesions clean and to potentially improve oral pain patients can utilize a mild sodium bicarbonate mouthwash (1 teaspoon of salt and sodium bicarbonate each in 1 liter of water).
- For severe pain that is not controlled with strategies above, consultation with pain specialist may be indicated.
- Nausea and vomiting may be controlled with anti-emetics as appropriate. Diarrhea should be managed with appropriate hydration and electrolyte replacement.

Other treatment options

Other treatment options are under investigation and not recommended at Henry Ford Health at this time, including cidofovir, brincidofovir, and vaccinia IV immunoglobulin.

Post-exposure prophylaxis

Vaccination

Vaccination with Jynneos, an attenuated non-replicating virus vaccine is proposed to prevent disease if given within 4 days of exposure and reduce disease severity if given within 4-14 days of exposure. At this time, Jynneos is not available at Henry Ford Health and is managed by local health departments. **Prescribers should refer patients exposed to monkeypox to the local health department for vaccination.** Michigan is using a three phase strategy for vaccination.

Phase 1 PEP: Post-Exposure Prophylaxis

- within 4 to 14 days of exposure to monkeypox virus.

Phase 2 PEP++: Expanded Post-Exposure Prophylaxis

- people with certain risk factors with high likelihood of exposure in the last 14 days.
- Gay, bisexual or other men who have sex with men, transgender, gender non-conforming, or gender non-binary and 18 and older and have had multiple sex partners in the last 14 days in an area with known monkeypox transmission.

Phase 3 PrEP: Pre-Exposure Prophylaxis (future, not currently being offered)

- Phase 3 vaccination, of individuals undergoing at risk sexual practices in an area without known monkeypox virus transmission, may be available in the future based on available data and resources.
- ACIP recommends pre-exposure prophylaxis ONLY for laboratory and personnel with occupational exposures.

Jynneos vaccine safety considerations

- People with a severe allergy to gentamicin, ciprofloxacin or egg protein should not receive Jynneos.
- Safe for people with HIV and atopic dermatitis.
- No data in people who are pregnant or breastfeeding, however, animal data do not show evidence of reproductive harm; pregnancy and breastfeeding are not contraindications.
- Adverse reactions include injection site reactions such as pain, swelling, and redness.

Michigan Department of Health and Human Services considerations for vaccination

Michigan monkeypox (MPV) vaccine strategy information for health care providers

Related Documents

Managing a Suspected Monkeypox Patient

Related EHR

tecovirimat Epic order

References/ External Regulations

Monkeypox (hfhs.org)

https://www.michigan.gov/mdhhs/keep-mi-healthy/communicablediseases/diseasesandimmunization/mpv

Case Definitions† for Use in the 2022 Monkeypox Response | Monkeypox | Poxvirus | CDC

Information for Healthcare Providers on Obtaining and Using TPOXX (Tecovirimat) for Treatment of Monkeypox | Monkeypox | Poxvirus | CDC

Considerations for Monkeypox Vaccination | Monkeypox | Poxvirus | CDC

Appendix. Tecovirimat eIND prescribers

Vivek Kak (Jackson)

Nasir Husain (Macomb)

Tricia Stein (West Bloomfield)

Asgar Boxwalla (Wyandotte)

Geehan Suleyman, Mayur Ramesh, Indira Brar, Erica Herc, Anita Shallal (Detroit)

Appendix. Local Contacts for Vaccination

Detroit STD Clinic. 50 East Canfield, Detroit, MI 48201. (313) 577-9100. Dr. Heisler sheisler@med.wayne.edu

- Criteria for vaccine include:
    - Contacts of confirmed or probable cases (household, sexual and other close contacts) within 14 days of exposure.
    - Participation in event/venue with high-risk exposure such as a rave, bathhouse, sauna, sex party, ballroom party, etc. with known monkeypox transmission (within 14 days of exposure).
    - Gay , bisexual or other men who have sex with men, transgender, nonconforming or gender non-binary who have had 2 or more sex partners in the last 14 days in an area with known monkeypox transmission.
- For patients eligible for vaccine, advised to have full sexually transmitted infection screening. For HIV negative patients, HIV PrEP should be offered.

Local Health Department Maps (michigan.gov)

City of Detroit. 100 Mack Avenue (Third Floor), Detroit, MI 48201. (313) 876-4000

Jackson County. 1715 Lansing Ave., Suite 221, Jackson, MI 49202. (517) 788-4420

Macomb County. 43525 Elizabeth Road, Mt. Clemens, MI 48043. (586) 469-5235

Oakland County. 1200 N. Telegraph Road, Bldg. 34 East Pontiac, MI 48341. (248) 858-1280

Wayne County. 3303 Van Born Road, Wayne, MI 48184. (734) 727-7000

All Revision Dates

8/18/2022

Approval Signatures

Step Description	Approver	Date
Chair of MMC	David Lanfear: SecHd-AdvHeartFailure/TransCar [SL]	8/18/2022
VP-Pharmacy Shared Svcs	Rox Gatia: VP-Pharmacy Shared Svcs	8/17/2022
System Policy Management Office	System Policy Management Offic	8/17/2022
EHR Impact	Lori Doyle: IT Architect - Epic	8/17/2022
Document Owner	Sara Lanfear: Pharmacy Specialist	8/16/2022