

## Monkeypox

### Signs and Symptoms (usually 5-21 days for the first symptom to appear<sup>1</sup>):

- Fever/Chills	- Swollen Lymph Nodes
- Headache	- Muscle aches and backache
- Exhaustion	- Rash that looks like pimples/blisters

### Transmission:

- Direct contact with infectious rash, scabs, or bodily fluids
- Respiratory secretions during prolonged, face-to-face contact, or during intimate physical contact
- Touching items that previously touched infectious rash or body fluids
- Pregnant mothers can spread virus to their fetus through the placenta
- Currently, as of 7/26/2022, most but not all cases are among gay, bisexual, or other men who have sex with men.
  - o 19,188 total confirmed cases world-wide, with majority within United States and Europe<sup>8</sup>
  - o 3,487 total confirmed cases in the United States<sup>7</sup>

### What Clinicians Need to Know: Diagnosis

- o Recommendations for clinicians:
  - Be vigilant to possibility of monkeypox if rash present
  - Know that illness is presenting atypically
  - Clinicians working in outpatient clinics may be first to suspect monkeypox
    - o Many patients have mild symptoms
    - o Could be confused with STI and varicella zoster virus
    - o STI diagnosis does not exclude monkeypox infection
  - Obtain sexual and travel history
- o Obtain specimens
- o Notify health department<sup>9</sup>
  - Consider initiating contact tracing and monitoring
  - Facilitate laboratory testing
  - California Department of Public Health: 916-328-3605

### What You Need to Know for Prevention<sup>6,10,11</sup>:

- **Two vaccines licensed by the FDA, see table below.**
- No data are available yet on the effectiveness of these vaccines in the current outbreak.

	<b>Jynneos (Imavume, Imvanex)</b>	<b>ACAM 2000</b>
<b>Vaccine Virus</b>	Live, replication-deficient vaccine	Live, replication-competent vaccine
<b>Number of doses</b>	2 doses, 28 days apart	Single dose
<b>“Take” – defined as a major cutaneous reaction seen as a pustular lesion or area of induration around a lesion which indicates successful vaccination.</b>	Does not occur	Occurs
<b>Time to fully vaccinated status</b>	2 weeks after 2 <sup>nd</sup> dose	4 weeks after
<b>Adverse reactions</b>	Headache, fatigue, chills, localized pain, myalgia	Lymph node pain, headache, fatigue, malaise, skin reaction, localized pain, myalgia
<b>Where to find vaccines</b>	Refer to county’s Department of Public Health <ul style="list-style-type: none"> <li>• LA County: 211 or 213-240-7941<sup>9</sup></li> <li>• DPH Public Health Centers in La County<sup>15</sup> <ul style="list-style-type: none"> <li>o Antelope Valley Health Center, North Hollywood Health Center, Central Health center and more.</li> </ul> </li> </ul>	

### Vaccine Schedule<sup>6</sup>

<b>Monkeypox Vaccine Post-Exposure Prophylaxis (PEP)</b>	<ul style="list-style-type: none"> <li>• For the current outbreak, this approach can be considered as “standard PEP” for monkeypox.</li> <li>• CDC recommends that the vaccine be given within 4 days from the date of exposure for the best chance to prevent onset of the disease.</li> <li>• If given between 4 and 14 days after the date of exposure, vaccination may reduce the symptoms of disease, but may not prevent the disease.</li> </ul>
<b>Outbreak Response Monkeypox Vaccine Post-Exposure Prophylaxis (PEP)++</b>	<ul style="list-style-type: none"> <li>• For the current outbreak, this expanded approach can be considered as “individual-directed PEP” for monkeypox.</li> <li>• People with certain risk factors are more likely to have been recently exposed to monkeypox. The PEP++ approach aims to reach these people for post-exposure prophylaxis, even if they have not had documented exposure to someone with confirmed monkeypox.</li> <li>• When coupled with self-isolation and other prevention measures when symptoms first occur, PEP++ may help slow the spread of the disease in areas with large numbers of monkeypox cases.</li> </ul>
<b>Monkeypox Vaccine Pre-Exposure Prophylaxis (PrEP)</b>	<ul style="list-style-type: none"> <li>• This approach refers to administering vaccine to someone at high risk for monkeypox (for example, laboratory workers who handle specimens that might contain monkeypox virus).</li> </ul>

References available upon request



Treatment Options Provided by CDC as of 7/26/2022 (no current indications specifically for

monkeypox)2,3,4,5:

There are no treatments specifically for monkeypox virus infections. However, monkeypox and smallpox viruses are genetically similar, which means that antiviral drugs and vaccines developed to protect against smallpox may be used to prevent and treat monkeypox virus infections. Although many cases of monkeypox resolve on their own, those that are more severely affected may be treated with antivirals commonly used for smallpox<sup>12,13</sup>.

	Tecovirimat (TPOXX, ST-246) <sup>2</sup>	Vaccinia Immune Globulin Intravenous (VIGIV) <sup>3</sup>	Cidofovir (Vistide) <sup>4</sup>
<b>Indication</b>	Treatment of human smallpox disease caused by variola virus in adults and pediatric patients weighing at least 13 kg.	Treatment of complications due to vaccinia vaccination.	Treatment of CMV retinitis in patients with AIDS.
<b>Mechanism of action</b>	Tecovirimat inhibits the activity of the orthopoxvirus VP37 protein and blocks its interaction with cellular Rab9 GTPase and TIP47, preventing the virus to spread.	Antibodies obtained from pooled human plasma of individuals immunized with the smallpox vaccine provide passive immunity	Cidofovir is converted to cidofovir diphosphate (the active intracellular metabolite); cidofovir diphosphate selectively inhibits viral DNA synthesis which results in reductions in the rate of viral DNA synthesis
<b>Dosage</b>	TPOXX should be taken within 30 minutes after a full meal of moderate or high fat. <ul style="list-style-type: none"> <li>Adults: 600 mg twice daily for 14 days</li> <li>Pediatrics patients weighing 13 kg or more:  <ul style="list-style-type: none"> <li>13 kg to less than 25 kg: 200 mg of TPOXX twice daily for 14 days</li> <li>25 kg to less than 40 kg: 400 mg of TPOXX twice daily for 14 days</li> <li>40 kg or more: 600 mg of TPOXX twice daily for 14 days</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Adults: 6,000 units/kg intravenously as soon as symptoms appear. May repeat dose based on severity of symptoms and response to treatment; 9,000 units/kg may be considered if patient does not respond to initial dose. Single doses up to 24,000 unit/kg were tolerated in healthy volunteers.</li> <li>Pediatrics: 6,000 units/kg IV as soon as symptoms appear. May repeat dose based on severity of symptoms and response to treatment; 9,000 units/kg may be considered if patient does not respond to initial dose. Single doses up to 24,000 unit/kg were tolerated in healthy volunteers.</li> </ul>	<ul style="list-style-type: none"> <li>Adults: <b>Initial dosage:</b> 5 mg/kg/dose IV once weekly for 2 consecutive weeks with concomitant probenecid. <b>Maintenance dosage:</b> 5 mg/kg/dose IV once every 2 weeks with concomitant probenecid.</li> <li>Pediatrics: 5 mg/kg/dose IV once weekly or 5 mg/kg/dose IV once weekly for 2 doses then 5 mg/kg/dose IV every 2 weeks or 1 mg/kg/dose IV 3 times weekly; use with concomitant probenecid and hydration.</li> </ul>
<b>Miscellaneous</b>	CDC-held Emergency Access Investigational New Drug Protocol allows use of Tecovirimat for Non-Variola Orthopoxvirus Infection  <ul style="list-style-type: none"> <li>TPOXX is available through the Strategic National Stockpile. To request TPOXX, may contact their state/territorial health department or CDC 770-488-7100; Poxvirus@cdc.gov)</li> <li>Treatment with TPOXX can begin upon receipt of the medication and after obtaining informed consent. No pre-registration is required.</li> <li>Forms requested under the EA-IND can all be returned to CDC <b>after</b> treatment begins.</li> </ul>	CDC holds an expanded access protocol for the treatment of orthopoxviruses (including monkeypox) in an outbreak.  Available through the Strategic National Stockpile.  Data are not available on the effectiveness of VIG in treatment of monkeypox virus infection. Use of VIG has no proven benefit in the treatment of monkeypox and it is unknown whether a person with severe monkeypox infection will benefit from treatment with VIG. However, healthcare providers may consider its use in severe cases.	CDC holds an expanded access protocol for the treatment of orthopoxviruses (including monkeypox) in an outbreak.  Available through the Strategic National Stockpile.  Data is not available on the effectiveness of Cidofovir in treating human cases of monkeypox. However, it has shown to be effective against orthopoxviruses in <i>in vitro</i> and animal studies.
<b>Who should be considered for treatment<sup>16</sup></b>	<ul style="list-style-type: none"> <li>People with severe diseases (conditions that require hospitalizations)</li> <li>People who may be at high risk of severe diseases such as immunocompromised people, pediatric population, people with active exfoliative skin conditions, pregnant or breastfeeding women</li> <li>People with monkeypox virus aberrant infections</li> </ul>		

References available upon request