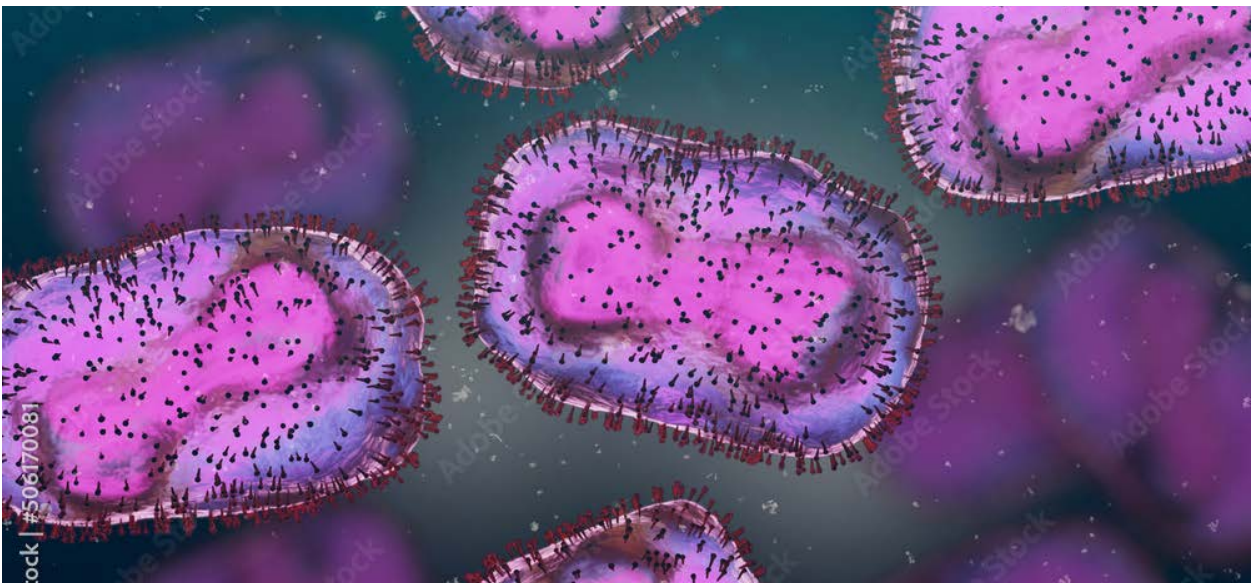




CLINICAL CONSIDERATIONS FOR MONKEYPOX IN PREGNANCY

Treatment recommendations, vaccination, and postpartum care



WHAT WE KNOW

- Monkeypox can be transmitted to the fetus during pregnancy or to the newborn through close contact during and after birth. Spontaneous pregnancy loss and stillbirth, and preterm delivery, have been reported in confirmed cases.
- Neonatal monkeypox has been reported.
- Monkeypox is similar to smallpox (variola virus) but seems to be less severe in its manifestations and resulting illnesses during pregnancy, including hemorrhagic complications and death. Variola virus infection during pregnancy has been reported to cause pregnancy loss, stillbirth, preterm birth, and congenital infection.

SIGNS AND SYMPTOMS

- The signs and symptoms of monkeypox infection in pregnant women appear like those in nonpregnant women, including prodromal symptoms such as fever, headache, lymphadenopathy, malaise, sore throat and cough, and rash.
- The cause of fever may be difficult to identify until the rash appears.
- It is important to differentiate a monkeypox diagnosis from dermatoses of pregnancy, including pruritic urticarial papules and plaques of pregnancy.
- Monkeypox lesions can mimic the appearance of other infections. Patients with rashes that appear to be more common, such as from varicella-zoster virus or sexually transmitted infections (STIs), need to be evaluated for a

characteristic monkeypox rash. Providers should also consider diagnostic testing, especially if epidemiologic risk factors for monkeypox virus infection are present. The Centers for Disease Control and Prevention recommends a broad approach to testing as simultaneous infections of monkeypox virus and STIs have been reported.

GUIDANCE

Providers should prioritize currently or recently pregnant and breastfeeding women with monkeypox infection for treatment before those who are nonpregnant, because of the likely increased risk of severe disease, fetal transmission during pregnancy, and severe newborn infection via close contact during and after birth.



OBSTETRICS

TREATMENT

Tecovirimat

- No treatment has been approved specifically for monkeypox infection. However, antivirals developed for use in patients with smallpox may be beneficial.
- If treatment is indicated, tecovirimat (Tpoxx) should be considered as the first-line antiviral for pregnant, recently pregnant, or breastfeeding patients. Tecovirimat is an FDA-approved antiviral medication for the treatment of smallpox in children and adults. It is expected to have antiviral activity against monkeypox and is FDA-authorized for this indication under an expanded access protocol.
- Information regarding the effects of tecovirimat on fetal and reproductive development is limited to data from animal studies, in which subjects were given a dose that was 23 times higher than the recommended human dose. No specific fetal effects were noted, but it is unclear whether the drug prevents congenital monkeypox.
- Tecovirimat was present in the subjects' breast milk, but it is unknown whether the levels are sufficient for treating a breastfeeding child with monkeypox infection. If indicated, children who are breastfeeding and have monkeypox infection should be treated independently.

Cidofovir and brincidofovir

Although cidofovir (Vistide; Gilead Science) and brincidofovir (Tembexa; Chimerix) are considered alternative antiviral therapies for treating monkeypox infection, findings from animal studies have shown evidence of teratogenicity; thus, these agents should not be used to treat patients in their first trimester of pregnancy. The drugs' presence in breastmilk is also unknown, so their use should be avoided in patients who are breastfeeding in case of serious adverse reactions in the infant.

Vaccinia Immune Globulin Intravenous

As investigators have not conducted animal reproduction studies with vaccinia immune globulin intravenous (VIVIG), few data exist on whether it can cause fetal harm during pregnancy or affect a person's future fertility. However, immunoglobulins have been used during pregnancy for many years without any apparent reproductive adverse effects. Providers should evaluate the risks and benefits of VIVIG for each individual patient and exercise caution when administering the product to those who are breastfeeding, as it may be excreted in breast milk.

Vaccines

Jynneos

- Jynneos is a live, nonreplicating viral vaccine licensed for the prevention of smallpox and monkeypox infection.
- The vaccine-associated risks in pregnancy are unknown, but data from animal studies indicated no evidence of harm to a developing fetus.
- Due to its nonreplicating quality, Jynneos should not present a risk of transmission to breastfed infants, making it the vaccine of choice for pregnant and breastfeeding women.

ACAM2000

- ACAM2000 is a replicating viral vaccine licensed for smallpox prevention. It is contraindicated in pregnant and breastfeeding women due to risk of pregnancy loss, congenital defects, and fetal-infant vaccinia virus infection.

Prophylaxis

- Pre- and postexposure prophylaxis should be offered when indicated to pregnant or breastfeeding patients.
- As with any treatment, shared decision-making is advised when discussing the risks and benefits with patients.

Skin-to-skin contact during isolation

- Direct contact between a patient in isolation for monkeypox and their newborn is not advised. Separating the patient from their newborn is the best way to prevent transmission, and full-time rooming-in is not recommended during the infectious period. Providers should counsel the patient on the transmission risk and potential consequences for severe disease in newborns. If the patient chooses to have contact with their infant during their infectious period, the following precautions should be taken:
 - No direct skin-to-skin contact should be made.
 - The infant should be fully clothed or swaddled, and after contact occurs, the clothing or blanket should be replaced.
 - The patient should always wear gloves and a fresh gown, covering all visible skin below the neck.
 - Soiled linens should be removed from the area.
 - The patient should wear a medical mask or other well-fitting source control during the visit.
- Discharge planning should consider the duration of a patient's isolation period, their ability to strictly adhere to isolation recommendations, and the availability of alternate caregivers.
- Breastfeeding should also be delayed until the isolation period has concluded.