

# Monkeypox and Pregnancy: What Maternal-Fetal Medicine Subspecialists Need to Know

7.19.22

The Society for Maternal-Fetal Medicine (SMFM)

## Introduction

[Since May 2022, more than 6900 cases of monkeypox virus infection have been reported in 52 countries.](#) Although most cases have occurred in males, there are reports of infected females as well as congenital monkeypox when infection occurs in pregnancy. We wanted to take this opportunity to provide information on diagnosis, prevention, and treatment of monkeypox virus infection and monkeypox virus infection during pregnancy.

## What is monkeypox and how is it transmitted?

The monkeypox virus is an orthopoxvirus that exhibits features similar to smallpox or variola virus. Monkeypox virus has two different strains, one of which, the *Congo basin*, is associated with more severe illness and case fatality. [As of July 2022, 6924 confirmed cases of monkeypox virus infection had been reported in 52 nonendemic countries; 1053 of these cases occurred in United States residents.](#)

Transmission occurs person-to-person through (1) direct contact with an infected rash, scab, or body fluid; (2) respiratory secretions during prolonged or intimate physical contact; and (3) contact with fomites (contaminated items, such as clothing or bedding).

## What is the clinical presentation of monkeypox virus?

Patients may present with a viral prodrome of fever, lymphadenopathy, malaise, headache, and myalgia. Typically, a vesicular or pustular rash develops 1-4 days after initial symptoms and can persist 2 -4 weeks. The lesions are often firm, well-circumscribed, and may be confluent or have

central umbilication. Although most lesions begin centrally and progress outwards, in the current outbreak, all the lesions have begun in mucosal areas (eg, genital, perianal, and oral).

## What are the pregnancy implications of monkeypox virus infection?

[The information regarding monkeypox virus infection is limited to case reports describing 5 laboratory-confirmed cases in the literature.](#) Among these cases, 3 resulted in pregnancy loss (2 spontaneous abortions and 1 intrauterine fetal demise). One resulted in the live birth of an infant with a generalized rash suggestive of congenital infection. Congenital infection, miscarriage, and stillbirth have been reported with other orthopoxvirus infections.

## Can patients with monkeypox virus breastfeed?

Clinicians should discuss the risks and benefits of breastfeeding during active infection. As monkeypox virus is spread by close contact and neonatal monkeypox infection may be severe, delaying breastfeeding until all lesions have resolved, the scabs have fallen off, and a fresh layer of intact skin has formed should be considered. Breast pumping will allow patients to maintain supply during a breastfeeding pause.

## What is the evaluation for a person with suspected monkeypox infection?

For any patient with a rash or anogenital lesion, clinicians should collect a detailed travel and sexual history and perform a physical examination that includes an evaluation of lymph nodes and oral, genital, and rectal mucosa. Two-step diagnostic testing includes obtaining multiple samples from different lesions and sending the sample for an initial orthopoxvirus polymerase chain reaction test. If orthopoxvirus is confirmed, the specimens are sent for monkeypox virus-specific testing. [Clinicians should contact local hospital infection control officials and state health departments if they suspect monkeypox.](#)

Additionally, [clinicians should use appropriate infection prevention measures](#) when collecting specimens for monkeypox evaluation. These measures include the use of eye protection, gown, gloves, and NIOSH-approved particulate respirator.

## What is the current guidance for the treatment of monkeypox and data for use during pregnancy and lactation?

Most people with infection have a mild, self-limiting illness. Severe disease consists of hemorrhagic disease, sepsis, encephalitis, or other conditions requiring hospitalization.

[There are no specific treatments for monkeypox virus infection. Two antivirals and vaccinia immune globulin are available from the Strategic National Stockpile under expanded access investigational new drug protocols held by the Centers for Disease Control and Prevention. As CDC recommends, if treatment is indicated, tecovirimat should be considered the first-line antiviral for pregnant, recently pregnant, and breastfeeding people.](#)

**Table.** Drugs Used for Treatment of Monkeypox

<b>Drug</b>	<b>Availability</b>	<b>Administration</b>	<b>Pregnancy data</b>	<b>Breastfeeding data</b>
<a href="#">Tecovirimat (TPOXX, ST-246)</a>	Limited to health department/CDC expanded access protocol	Weight-based Intravenous and oral	Pregnant patients not included in pharmacokinetic studies  Adverse events not observed in animal reproduction studies	Breastfeeding patients not included in pharmacokinetic studies  Not known if present in breastmilk
<b>Cidofovir (Vistide)</b>	Off-label  Available for use in an outbreak setting	Intravenous  Contraindicated in patients with CrCl $\leq 55$ mL/min, serum Cr $> 1.5$ mg/dL; use with or within 7 days of nephrotoxic agents	No human data  Animal data suggest embryoletality and teratogenicity	No human data  Breastfeeding not recommended during period of exposed lesions
<a href="#">Brincidofovir (CMX001, Tembexa)</a>	Availability limited to Strategic National Stockpile distribution	Oral  Weight-based  Dose adjustment for hepatic impairment  No contraindications in manufacturer labeling	Animal data suggest embryoletality and teratogenicity	No human data  Breastfeeding not recommended during period of exposed lesions
<b>Vaccinia intravenous immune</b>	Limited to health department/CDC	Intravenous	No human or animal data	No human or animal data

<b>globulin (VIGIV)</b>	expanded access protocol		Immune globulins known to cross placenta without severe adverse effects	Immune globulins known to cross placenta without severe adverse effects
-------------------------	--------------------------	--	---	---

CDC, Centers for Disease Control and Prevention; Cr, creatinine; CrCl, creatine clearance;

## Vaccines against monkeypox and administration during pregnancy

[There are currently two vaccines directed against monkeypox available.](#) ACAM2000 is a replicating viral vaccine licensed for the prevention of smallpox. It is contraindicated in pregnant or breastfeeding people due to the risk of pregnancy loss, congenital defects, and vaccinia virus infection.

JYNNEOS is a live, nonreplicating viral vaccine licensed for the prevention of both smallpox and monkeypox disease. Available human data on JYNNEOS administered to pregnant people are insufficient to determine if there are any vaccine-associated pregnancy-specific benefits or risks. Animal studies have not shown evidence of harm, and the vaccine should not be withheld from pregnant individuals who otherwise would be eligible in the context of shared decision making. The JYNNEOS vaccine requires two doses administered 28 days apart for maximum effectiveness. Currently, JYNNEOS is in limited supply and available to individuals through state health departments who meet the following criteria:

- [Postexposure prophylaxis](#) either within 4 days of a known exposure to monkeypox to reduce the likelihood of infection or between 4 and 14 days postexposure to reduce the severity of symptoms
- Known contacts of monkeypox cases identified by public health via case investigation, contact tracing, and risk exposure assessments (may include sexual partners, household contacts, and healthcare workers)
- Presumed contacts who meet the following criteria:
  - Know that a sexual partner in the past 14 days was diagnosed with monkeypox; or
  - Had multiple sexual partners in the past 14 days in a jurisdiction with known monkeypox.