



Children largely spared during monkeypox outbreak; what pediatricians should know

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While recent data show monkeypox has been rare and generally mild in the pediatric population during the current outbreak, some children may be at increased risk for severe disease.

Therefore, pediatric health care providers should be familiar with the clinical presentation of monkeypox, risk factors for severe disease, and prevention and treatment options.

2022 outbreak

Monkeypox virus is a DNA virus of the *Orthopoxvirus* genus. Clade II is the primary group of variants circulating in the 2022 global outbreak and typically causes less severe disease than clade I.

As of Nov. 14, 28,947 cases and 11 deaths had been [reported](#) in the United States, including 127 verified cases among people younger than 18 years. The number of monkeypox cases in the U.S. peaked in August and is declining. Cases primarily have occurred in men who have sex with men; however, any person can acquire and transmit monkeypox.

Limited pediatric data on infection with clade I of monkeypox virus suggest increased risk of severe disease in children younger than 8 years of age. In the current outbreak, monkeypox infection appears to be infrequent in children and adolescents (only 0.3% of U.S. cases) and generally mild.

A [recent report in *Morbidity and Mortality Weekly Report*](#) described the epidemiologic and clinical features of 83 U.S. children and adolescents with monkeypox from May 17 to Sept. 24.

There were 16 cases among children younger than 5 years, 12 cases among children 5-12 years and 55 cases among adolescents 13-17 years. The most common exposure for children younger than 12 years was through close contact with an adult household member with monkeypox; for adolescents, the most common exposure was through male-to-male sexual contact. Eleven percent were hospitalized with none requiring intensive care.

Eighteen children and adolescents (22%) received tecovirimat (TPOXX), the antiviral developed for smallpox; all recovered without sequelae. The youngest infant was under 2 months of age and recovered after treatment with oral tecovirimat, intravenous vaccinia immune globulin (VIGIV) and intravenous antibiotics.

A [recent series](#) of 16 pediatric patients from Spain reported similarly mild disease, with no hospitalizations.

Clinical presentation

The clinical presentation of monkeypox in the current outbreak may not include the classic prodrome of fever, headache, malaise and lymphadenopathy.

Skin lesions typically progress through macular, papular, vesicular and pustular stages before scabbing over. Lesions typically are firm or rubbery, deep-seated and often umbilicated (see photos), may be present only or initially in anogenital areas and often are painful. Lesions can be confused with those of other infections (e.g., syphilis, herpes, varicella, molluscum contagiosum); co-infections also can occur.

[Rare complications](#) of monkeypox include superinfections, airway obstruction due to lymphadenopathy, keratitis and corneal scarring, encephalitis, pneumonia and sepsis.

Testing, treatment

When monkeypox is suspected based on clinical presentation and [a](#) probable exposure, lesions should be swabbed for polymerase chain reaction testing. Sexually active adolescents who are being tested for monkeypox also should be tested for HIV and other sexually transmitted infections.

Most people with monkeypox, particularly those with an intact immune system, have mild or moderate, self-limited disease.

Tecovirimat is the first-line agent for treatment of monkeypox and is available through health departments from the Strategic National Stockpile. Tecovirimat should be considered for

- children and adolescents with severe disease,
- children and adolescents with involvement of anatomic areas that might result in serious sequelae, and
- children who may be at high risk for severe disease, including very young children, children experiencing severe immunodeficiency or immunocompromise and children with a condition affecting skin integrity.

Other medications that can be used to treat monkeypox in children of all ages include VIGIV, brincidofovir or cidofovir.

[Combination therapy](#) may be considered in consultation with health departments and the CDC for very severe infections, when disease persists or progresses despite tecovirimat, or if tecovirimat is contraindicated or unavailable. Topical trifluridine can be considered if there is involvement near or in the eye.

Transmission

Monkeypox virus primarily is spread through direct skin-to-skin contact with lesions. People are considered infectious from the onset of symptoms until all lesions have healed with a new layer of skin formed.

Monkeypox virus also can be transmitted to a fetus during pregnancy or a newborn during or after birth. Adverse pregnancy outcomes, including congenital monkeypox infection, have been reported. The frequency of these complications is unknown.

[A recent case report](#) described a neonate with perinatally acquired monkeypox and adenovirus coinfection. The infant recovered after treatment with tecovirimat and cidofovir.

Prevention

Isolation and infection control measures can prevent the spread of monkeypox virus. Care should be taken for children to avoid close contact with people who have monkeypox. If unavoidable, children over 2 years of age should wear a mask when interacting with people who have monkeypox and avoid any contact with rash lesions or sharing of bedding, towels, cups or utensils.

Children and adolescents with close contact to people with monkeypox may be eligible for [post-exposure prophylaxis](#) (PEP). The JYNNEOS vaccine is preferred for PEP and has been used in infants as young as 4 months in the United States.

Children or adolescents with monkeypox should avoid contact with uninfected people and pets until the rash has resolved completely. No known cases of monkeypox transmission in schools or associated with sports have been reported.

In summary, monkeypox has been rare and generally not severe in the pediatric population during the current outbreak. Infants and young children, children with eczema and other skin conditions, and children with immunocompromising conditions may be at increased risk for severe monkeypox.

Pediatric health care providers can consult with health departments and the CDC for assistance with accessing therapeutics (see resources).

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Resources

- The CDC offers a clinical consultation service for health care providers and health departments at 770-488-7100.
- [Data from the CDC on the 2022 monkeypox outbreak](#)
- [CDC clinical considerations for monkeypox in children and adolescents](#)
- [MMWR report “Epidemiologic and Clinical Features of Children and Adolescents Aged 18 Years with Monkeypox — United States, May 17–September 24, 2022”](#)