

**What is hand, foot and mouth disease?**

Hand, foot and mouth disease (HFMD) is a common illness of infants and children. It is characterized by fever, sores in the mouth and a rash with blisters. HFMD begins with a mild fever, poor appetite, malaise ("feeling sick") and frequently a sore throat. One or two days after the fever begins, painful sores develop in the mouth. They begin as small red spots that blister and then often become ulcers. They are usually located on the tongue, gums and inside of the cheeks. The skin rash develops over 1-2 days with flat or raised red spots, sometimes with blisters. The skin rash does not itch and it is usually located on the palms of the hands and soles of the feet. It may also appear on the buttocks or genitalia. A person with HFMD may have only the rash or the mouth ulcers.

**Is HFMD the same as foot and mouth disease?**

No. HFMD is a different disease from foot and mouth (also called hoof-and-mouth) disease of cattle, sheep and swine. Although the names are similar, the two diseases are not related at all and are caused by different viruses. People do not get foot-and-mouth disease, and animals do not get hand, foot, and mouth disease.

**What causes HFMD?**

Several different viruses cause HFMD. The most common cause is *Coxsackievirus A16*; occasionally, other strains of *Coxsackievirus A* or *Enterovirus 71* cause HFMD. The coxsackieviruses are members of a group of viruses called the enteroviruses. The enterovirus group includes polioviruses, coxsackieviruses and echoviruses.

**Is HFMD serious?**

Usually not. Nearly all people with HFMD recover without medical treatment. HFMD usually resolves in 7- 10 days. Complications are uncommon. Rarely, the patient with *Coxsackievirus A16* infection may also develop aseptic or viral meningitis, in which the person has fever, headache, stiff neck and back pain, and may need to be hospitalized for a few days. Another cause of HFMD, enterovirus 71 (EV71), may also cause viral meningitis and, rarely, other more serious diseases, such as encephalitis or a polio-like paralysis. EV71 encephalitis can be fatal.

**Is it contagious?**

Yes. HFMD is moderately contagious. Infection is spread from person-to-person by direct contact with nose and throat discharges, saliva, fluid from blisters, or the stool of infected persons. A person is most contagious during the first week of the illness. HFMD is not transmitted to or from pets or other animals.

The viruses that cause HFMD can remain in the body for weeks after the patient's symptoms have gone away. This means that the infected person can still pass the infection to other people even though they appear well. Also, some persons who are infected and excreting the virus, including most adults, may have no symptoms.

**How soon will someone become ill after getting infected?**

The usual period from infection to onset of symptoms (the incubation period) is 3-7 days. Fever is often the first symptom of HFMD.

**Who is at risk for HFMD?**

HFMD occurs mainly in children under 10 years of age, but adults may also be at risk. Everyone is at risk of infection with viruses that cause HFMD, but not everyone who is infected becomes ill. Infants, children, and adolescents are more likely to be susceptible to infection and illness from these viruses because they are less likely than adults to be immune to them. Many adults have developed protective antibodies due to previous exposures to the viruses. Infection results in immunity to the specific virus, but a second episode of HFMD may occur following infection with a different member of the enterovirus group of viruses.

**What are the risks to pregnant women exposed to children with hand, foot, and mouth disease?**

Because enteroviruses, including those that cause HFMD, are very common, pregnant women are frequently exposed to them, especially during summer and fall months. For all adults, including pregnant women, the risk of infection is higher among those who do not have antibodies from earlier exposures to these viruses and for those who are exposed to young children—the primary spreaders of enteroviruses.

Most enterovirus infections during pregnancy cause mild or no illness in the mother. Although the available information is limited, currently there is no clear evidence that maternal enterovirus infection causes adverse outcomes of pregnancy, such as abortion, stillbirth, or congenital defects. However, mothers infected shortly before delivery may pass the virus to the newborn. Babies born to mothers who have symptoms of enteroviral illness around the time of delivery are more likely to be infected. Most newborns infected with an enterovirus have mild illness, but, in rare cases, they may develop an overwhelming infection of many organs, including liver and heart, and die from the infection. The risk of this severe illness in newborns is higher during the first two weeks of life.

Strict adherence to generally recommended good hygiene practices by pregnant women (see the section “Can HFMD be prevented?” below) may help to decrease the risk of infection during pregnancy and around the time of delivery.

**When and where does HFMD occur?**

Individual cases and outbreaks of HFMD occur worldwide, and in temperate climates, they occur more frequently in summer and early autumn. In the recent past, major outbreaks of HFMD attributable to enterovirus 71 have been reported in some Asian countries and Australia.

**How is HFMD diagnosed?**

HFMD is one of many infections that result in mouth sores. Another common cause is oral herpesvirus infection, which produces an inflammation of the mouth and gums (sometimes called stomatitis). Usually, the physician can distinguish between HFMD and other causes of mouth sores based on the age of the patient, the pattern of symptoms reported by the patient or parent and the appearance of the rash and sores on examination. A throat swab or stool specimen may be sent to a laboratory to determine which enterovirus caused the illness. Since the testing often takes 2-4 weeks to obtain a final answer, the physician usually does not order these tests.

**How is HFMD treated?**

No specific treatment is available for this or other enterovirus infections. Symptomatic treatment is given to provide relief from fever, aches and pain from the mouth ulcers.

**Can HFMD be prevented?**

Preventive measures include frequent hand washing, especially after diaper changes and after using the toilet; cleaning dirty surfaces and soiled items including toys, first with soap and water and then disinfecting them by cleaning with a solution of chlorine bleach (made by adding 1 tablespoon of bleach to 4 cups of water); avoiding close contact (e.g. kissing, hugging, sharing eating utensils and cups) with persons with HFMD.

**How should hand, foot, and mouth disease in the child care setting be handled?**

In the United States, HFMD outbreaks in child care facilities occur most often in the summer and fall months and usually coincide with an increased number of cases in the community. Children are often excluded from group settings during the first few days of the illness, which may reduce the spread of infection, but will not completely interrupt it. Exclusion of ill persons may not prevent additional cases since the viruses that cause HFMD can remain in the body for weeks after the patient's symptoms have gone away. This means that the infected person can still pass the infection to other people even though they appear well. Also, some persons who are infected and excreting the virus, including most adults, may have no symptoms. Exclusion is recommended if children have blisters in their mouths and drool or have weeping lesions on their hands or are too ill to participate in daily activities. If an outbreak occurs in the child care setting, make sure that all children and adults wash their hands frequently and thoroughly, especially after changing diapers or using the toilet. Thoroughly wash and disinfect contaminated items and surfaces, using a diluted solution of chlorine-containing bleach. Refer to the section above, "Can HFMD be prevented?" for further information regarding hygiene practices, cleaning and disinfection that may be helpful in preventing HFMD transmission.

**Can HFMD cause fingernail and toenail loss?**

There have been recent reports of nail loss occurring mostly in children within 4 weeks of their having hand, foot, and mouth disease (HFMD); however, the link between the disease and nail loss has not been confirmed. In the reports reviewed, the nail loss has been temporary and nail growth resolved without medical treatment.