Hand, Foot, & Mouth Disease (HFMD)- Enterovirus

Description
Hand, foot, and mouth disease (HFMD) is a common viral illness of infants and children. The disease causes fever and blister-like eruptions in the mouth and/or a skin rash. HFMD is often confused with foot-and-mouth (also called hoof-and-mouth) disease, a disease of cattle, sheep, and swine; however, the two diseases are not related—they are caused by different viruses. Humans do not get the animal disease, and animals do not get the human disease.

Illness
- The disease usually begins with a fever, poor appetite, malaise (feeling vaguely unwell), and often with a sore throat.
- One or 2 days after fever onset, painful sores usually develop in the mouth. They begin as small red spots that blister and then often become ulcers. The sores are usually located on the tongue, gums, and inside of the cheeks.
- A non-itchy skin rash develops over 1–2 days. The rash has flat or raised red spots, sometimes with blisters. The rash is usually located on the palms of the hands and soles of the feet; it may also appear on the buttocks and/or genitalia.
- A person with HFMD may have only the rash or only the mouth sores.

Cause
- HFMD is caused by viruses that belong to the enterovirus genus (group). This group of viruses includes polioviruses, coxsackie viruses, echoviruses, and enteroviruses.
- Coxsackie virus A16 is the most common cause of HFMD, but other coxsackie viruses have been associated with the illness.
- Enteroviruses, including enterovirus 71, have also been associated with HFMD and with outbreaks of the disease.

How It Is Spread
- Infection is spread from person to person by direct contact with infectious virus. Infectious virus is found in the nose and throat secretions, saliva, blister fluid, and stool of infected persons. The virus is most often spread by persons with unwashed, virus-contaminated hands and by contact with virus-contaminated surfaces.
- Infected persons are most contagious during the first week of the illness.
- The viruses that cause HFMD can remain in the body for weeks after a patient’s symptoms have gone away. This means that the infected person can still pass the infection to other people even though he/she appears well. Also, some persons who are infected and excreting the virus, including most adults, may have no symptoms.
- HFMD is not transmitted to or from pets or other animals.

Factors That Increase the Chance for Infection or Disease
- Everyone who has not already been infected with an enterovirus that causes HFMD is at risk of infection, but not everyone who is infected with an enterovirus becomes ill with HFMD.
- HFMD occurs mainly in children under 10 years old but can also occur in adults. Children are more likely to be at risk for infection and illness because they are less likely than adults to have antibodies to protect them. Such antibodies develop in the body during a person’s first exposure to the enteroviruses that cause HFMD.
- Infection results in immunity to (protection against) the specific virus that caused HFMD. A second case of HFMD may occur following infection with a different member of the enterovirus group.

Diagnosis
- HFMD is one of many infections that result in mouth sores. However, health care providers can usually tell the difference between HFMD and other causes of mouth sores by considering the patient’s age, the symptoms reported by the patient or parent, and the appearance of the rash and sores.
- Samples from the throat or stool may be sent to a laboratory to test for virus and to find out which enterovirus caused the infection and illness because they are less likely than adults to have antibodies to protect them. Such antibodies develop in the body during a person’s first exposure to the enteroviruses that cause HFMD.
- Infection results in immunity to (protection against) the specific virus that caused HFMD. A second case of HFMD may occur following infection with a different member of the enterovirus group.

Treatment and Medical Management
- There is no specific treatment for HFMD. Consult with your private health care practitioner for treatment advice.

Prevention
- A specific preventive for HFMD is not available, but the risk of infection can be lowered by following good hygiene practices. Good hygiene practices that can lower the risk of infection include:
  - Washing hands frequently and correctly and especially after changing diapers and after using the toilet
  - Cleaning dirty surfaces and soiled items, including toys, first with soap and water and then disinfecting them by cleansing with a solution of chlorine bleach (made by adding 1 tablespoon of bleach to 4 cups of water)
  - Avoiding close contact (kissing, hugging, sharing eating utensils or cups, etc.) with persons with HFMD
- General cleanliness and frequent handwashing are probably effective in reducing the spread of these viruses (see the CDC’s site “Handwashing” in: An Ounce of Prevention: Keeps the Germs Away. At http://www.cdc.gov/ounceofprevention/).

Vaccination Recommendations
- No vaccine is available to protect against the enteroviruses that cause HFMD.

What are the risks of enterovirus infections in pregnancy?
- Because enteroviruses are very common, pregnant women usually have developed antibodies against many 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 enteroviral 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. Newborns infected with an enterovirus usually have mild illness, but rarely they may develop an overwhelming infection.