**Hand, Foot, and Mouth Disease (HFMD)**  
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**Overview**

Hand, foot, and mouth disease (HFMD) is a transmissible viral infection that mostly impacts immunocompromised individuals, infants, and children under the age of five. Coxsackievirus A16 (CA16) and human enterovirus 71 (EV71) are the two main causes of HFMD (Luo, K. 2020). Many studies report that small, painful sores or blisters around the lips, hands, and feet can be present. Fever, sore throat, and discomfort are possible additional symptoms (Apriasari, M. L. 2019). Most mild cases can resolve without intervention in 7–10 days (Li, X. 2020).

**Etiology**

Research indicates that the cause of HFMD have been coxsackievirus A16 (CA16), human enterovirus 71 (EV71), and other human enterovirus infections (Luo, K. 2020). According to studies, enteroviruses are tiny, non-enveloped RNA viruses that belong to the family Picornaviridae. The Coxsackie virus is an RNA virus that is a member of the Picornaviridae family (Apriasari, M. L. 2019). Person-to-person contact, and contaminated surfaces are the main ways that HFMD spreads (Li, X. 2020).

**Clinical Presentation**

Objective Clinical manifestations of HFMD include small, red spots or lesions that can develop into painful blisters that appear in the oral cavity and integumentary system. These usually show up within the mouth, on the palms of the hands, and on the soles of the feet. Fever is a common symptom of HFMD and is typically one of the initial signs of infection. The incubation period for HFMD is usually 5–10 days after exposure to the virus. Patients may report discomfort, tenderness, itching, or pain associated with blisters, especially when walking or using their hands. Also, patients may feel fatigue and lack of energy associated with fever and loss of appetite. Patients may have difficulty swallowing, which leads to decreased oral intake because lesions may be present on all oral mucosal surfaces, including the gingival, tongue, lip, and cheeks. Sometimes parents note that children may have difficulty sleeping, which is associated with irritability as well as expressing anxiety and frustration. These combined objective and subjective descriptions provide a comprehensive understanding of the clinical manifestations of HFMD. Keep in mind that individual experiences may vary, and the severity of symptoms can differ among patients.

**Demographic**  
 According to the study article "Epidemiological characteristics of hand, foot, and mouth disease in China," children under the age of five are the primary victims of HFMD. In addition, the occurrence of HFMD varies with various nations, areas, times of year, latitudes, climates, and other variables. The incidence of HFMD is higher in southern China, where the weather is wet, humid, and temperatures are high. When schools, families, and communities focus on HFMD prevention in locations with favorable respiratory conditions and sanitary circumstances, the incidence of HFMD will gradually decline (Chen, B. 2021).

**Biopsy / Histology / Radiographs**

According to the article "Hand, Foot, and Mouth Disease," the major method of diagnosing hand, foot, and mouth illness is clinical. However, specific laboratory tests might be carried out if the diagnosis is unclear or if a serious illness is suspected. To differentiate hand, foot, and mouth illness from other viruses like chickenpox or herpes simplex virus, light microscopy can be utilized. Enteroviruses and coxsackieviruses can be detected via polymerase chain reaction (PCR) testing. Typically, samples from the upper respiratory tract, feces, blisters, or scrapes are investigated (U. of M., 2023).

**Differential Diagnosis**

Based on the combined objective and subjective clinical criteria, they have similar conditions with HFMD, such as primary herpes simplex gingivostomatitis, primary varicella zoster (chickenpox), and eczema. (Apriasari, M. L. 2019). However, clinically, each disease has a different etiology. First, painful oral lesions can result from primary herpes simplex gingivostomatitis. A herpes simplex virus infection can cause eczema herpetic, a severe and extensive rash in those who already have eczema. Second, the varicella-zoster virus is the principal cause of chickenpox, a primary infection that strikes children who have not received a vaccination (Apriasari, M. L. 2019). The illness can present with a rash that includes vesicles and a fever. After the first infection, this neurotropic virus enters a dormant state. The trigeminal ganglia are the primary site of latency. The latent virus can reactivate to be Shingle after a few years (Apriasari, M. L. 2019). The distribution of the rash and the absence of oral lesions may help distinguish it from HFMD, as lesions of HFMD are on the oral mucosa, lips, hands, and feet without affecting other parts of the body. In addition, “primary herpes simplex gingivostomatitis and varicella zoster infection are mediated by the herpes virus, thus requiring the prescription of Acyclovir, which can block the virus’s DNA. However, the etiology of HFMD is Enterovirus 71 or Coxsackie virus, both of which constitute RNA viruses” (Apriasari, M. L. 2019).

**Treatment**

Hand, foot, and mouth disease (HFMD) has no specific antiviral treatment, according to the Centers for Disease Control and Prevention, and supportive care is the best course of action. Most cases of the sickness resolve on their own without the need for special medical attention because they are usually self-limiting. The goals of the treatment are to prevent dehydration and relieve symptoms. For instance, ibuprofen (Advil, Motrin) or acetaminophen (Tylenol) can lower fever and ease discomfort. However, due to the possibility of Reye's syndrome, do not give aspirin to children who have viral illnesses. Furthermore, it's important for the patient to drink enough water, especially if they have oral lesions that make swallowing difficult for them. Dehydration can be avoided by promoting fluid or water consumption and providing cold, soft foods. It's vital to remember that treatment recommendations can vary, so getting the most recent information is advised by speaking with a healthcare provider. To stop the virus from spreading, parents should teach their children to wash their hands frequently with soap and water and to avoid close contact with other people, especially infants. Preventive measures should also be implemented in the home and school communities, such as routinely disinfecting frequently touched surfaces.

**Prognosis**

In most cases, the disease resolves on its own without therapy. The goal of treatment is to support the patient's general health while also addressing symptoms. Hydration, painkillers, and other supportive interventions can assist in reducing discomfort.

**Professional Relevance**

It is important for dental hygienists to comprehend hand, foot, and mouth disease (HFMD) for several reasons. First, in order to identify HFMD early and provide the right care, it is crucial to recognize its oral manifestations. Dental hygienists should inform patients and parents about the condition, its symptoms, and preventive measures. Second, the competence of a dental hygienist is to distinguish these lesions through accurate diagnoses and, if necessary, appropriate referrals to healthcare professionals. According to the article, oral lesions associated with HFMD could be mistaken for other conditions, such as primary herpetic infections or primary varicella zoster (chickenpox). Third, dental hygienists are responsible for maintaining strict infection control protocols in dental settings because HFMD is a contagious viral disease with potential transmission through respiratory droplets or contact with oral lesions.

In conclusion, a multidisciplinary strategy involving community education, public health campaigns, and medical research is needed to combat hand, foot, and mouth disease. We can reduce the negative effects of HFMD on the health and wellbeing of our youngest population by pooling our resources.

**Citations**

Luo, K., Rui, J., Hu, S., Hu, Q., Yang, D., Xiao, S., Zhao, Z., Wang, Y., Liu, X., Pan, L., An, R., Guo, D., Su, Y., Zhao, B., Gao, L., & Chen, T. (2020). Interaction analysis on transmissibility of main pathogens of hand, foot, and mouth disease: A modeling study (a STROBE-compliant article). *Medicine (Baltimore)*, *99*(11), e19286–e19286. <https://doi.org/10.1097/MD.0000000000019286>

Li, X., Wang, Q., Chen, Z., Duan, X., Han, Y., Luan, R., & Long, L. (2020). Viral shedding in patients with hand, foot and mouth disease induced by EV71, CA16, or CA6: a protocol for systematic review and meta analysis. *Medicine (Baltimore)*, *99*(29), e21258–e21258. <https://doi.org/10.1097/md.0000000000021258>

Apriasari, M. L. (2019). The different symptoms determining management of hand foot and mouth disease and primary varicella zoster infection. *Dental Journal*, *52*(1), 32–35. <https://doi.org/10.20473/j.djmkg.v52.i1.p32-35>

Chen, B., Yang, Y., Xu, X., Zhao, H., Li, Y., Yin, S., & Chen, Y.-Q. (2021). Epidemiological characteristics of hand, foot, and mouth disease in China: A meta-analysis. *Medicine (Baltimore)*, *100*(20), e25930–e25930. <https://doi.org/10.1097/MD.0000000000025930>

the U. of M. (2023). Hand, foot, and Mouth Disease (HFMD). Retrieved from <https://nccid.ca/debrief/hand-foot-and-mouth-disease/>

CDC. (2023). Retrieved from <https://www.cdc.gov/hand-foot-mouth/index.html>