Epidemiological alert Hand, foot, and mouth disease

26 March 2025

With the onset of the seasonal season of hand, foot, and mouth disease (HFMD) in several countries and territories of the Americas Region, the Pan American Health Organization / World Health Organization (PAHO/WHO) urges Member States to strengthen the prevention and control of hand, foot, and mouth disease, especially in children, due to their high vulnerability and the risk of serious complications in the central nervous system (CNS), especially in the context of outbreaks related to enterovirus A71 *(1)*.

Background

Recent epidemics of hand, foot, and mouth disease have demonstrated that infection caused by enterovirus A71 (EV-A71), unlike that caused by other enteroviruses, may be associated with central nervous system (CNS) complications, including aseptic meningitis, encephalitis, and acute flaccid paralysis *(1, 2)*. As reported by the American Public Health Association, Children with CNS involvement (encephalitis and acute flaccid paralysis), particularly those aged 5 years or younger, are at risk for severe, sometimes fatal, acute cardiac dysfunction and pulmonary edema. Warning signs of CNS involvement and systemic complications include persistent fever for more than 48 hours, body temperature above 39 °C, recurrent vomiting, unexplained irritability, lethargy, myoclonus, focal limb weakness, truncal ataxia, nystagmus, signs of respiratory distress, and skin mottling *(1)*. Scabies can sometimes be confused with hand, foot, and mouth disease, as it also causes pustules, vesicles or nodular lesions on hands and feet. Intense pruritus and involvement of the interdigital space are useful clinical signs of parasitic infestation *(1)*.

Hand, foot, and mouth disease

Hand, foot, and mouth disease (HFMD) is a common infection globally, especially in children, although it can also affect adolescents and occasionally adults *(2)*. In most cases, the disease is mild and resolves spontaneously. Symptoms include a brief fever with papulovesicular rash on the palms of the hands and soles of the feet, with or without multiple painful mouth ulcers. Occasionally, the rash may be maculopapular without vesicles. It may also affect the buttocks, knees or elbows, especially in young children and infants. The skin lesions heal spontaneously without scarring and usually persist for 3 to 5 days after the onset of the disease. Secondary bacterial skin infection is very unusual *(1)*.

Enteroviruses usually cocirculate with a predominant serotype, during outbreaks of hand, foot, and mouth disease they produce clinically indistinguishable skin and mucosal lesions. The main causative agents are: Coxsackievirus A16 (CV-A16) and *Enterovirus A71* but includes other *Enterovirus A* serotypes. It is less frequently associated with *Enterovirus B* serotypes CV-B2 and CV-B5 *(1)*.

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Hand, foot, and mouth disease has a seasonal distribution depending on the geographical region. In temperate regions, the peak incidence occurs during the summer and early autumn, while in tropical regions it can occur throughout the year *(1)*.

Humans are the reservoir of infection. The incubation period is usually 3 to 5 days. Transmission occurs mainly by direct contact with nasal and oral secretions, vesicular fluid, and feces of infected persons, as well as contaminated items such as toys and surfaces. It can also be spread by aerosolized droplets. Asymptomatic persons, including adults, represent an important source of infection. There is no reliable evidence that the disease is spread by insects, water, food, or sewage. The disease is most contagious during the first week of illness *(1)*.

Summary of the situation in the Americas Region

The epidemiological situation of some countries and territories of the Region of the Americas is described below, in alphabetical order:

In **Guyana**, on 19 March 2025, health authorities reported a suspected outbreak of hand, foot, and mouth disease in Region Four (Demerara-Mahaica). No information is available on the agent identified *(3, 4)*.

In **Mexico**, on 6 March 2025, health authorities in Puebla State reported an outbreak of hand, foot, and mouth disease with seven reported cases and others under investigation in the municipality of San Martín Texmelucan, Puebla. The cases were reported based on the clinical picture; no laboratory diagnosis is Available from this time *(5, 6)*.

In **Peru**, on 1 March 2025, the country's health authorities reported the occurrence of nine cases of hand, foot, and mouth disease during January 2025. All cases are residents of the Tacna Region. Of these, six were definitive diagnoses and three were presumptive *(7, 8)*.

In **Trinidad and Tobago**, on 25 February 2025, health authorities in Tobago County reported an outbreak of hand, foot, and mouth disease between 9 and 22 February 2025, with 41 cases reported. No information is available on the agent identified *(9,10)*.

In the **United States Virgin Islands**, on 7 March 2025, the U.S. Virgin Islands health authorities reported 189 cases hand, foot, and mouth disease for 2025 *(11)* In addition, a fatal case potentially linked to hand, foot, and mouth disease was reported on 11 March and is currently under investigation *(11-13)*.

Recommendations

The following is a summary of the main recommendations for surveillance, clinical management, prophylaxis, and risk communication in relation to hand, foot, and mouth disease *(1)*

Surveillance

Few countries have hand, foot, and mouth disease as a notifiable disease. In most, outbreaks are detected by either syndromic surveillance or event-based surveillance. Regardless of the approach used, it is crucial to be alert to the potential occurrence of outbreaks, especially in at-risk groups. This disease tends to occur frequently in outbreaks within groups of children such as day care centers, childcare centers, and large households with many young children *(1)*.

Diagnostics and laboratory

To date, more than 100 different enterovirus serotypes have been described *(1)*. With such a large number of overlapping serotypes and clinical syndromes, cross-reactivity makes interpretation of results difficult, limiting the usefulness of serology for confirmatory diagnosis *(1)*.

Current diagnostic tools for enteroviruses identification involve detection of viral ribonucleic acid (RNA) by molecular amplification using reverse transcriptase polymerase chain reaction (RT-PCR). These methods (e.g., RT-PCR, multiplex RT-PCR, real-time RT-PCR) typically target the 5' untranslated region of the enterovirus genome for genus identification, and one or more structural genes (VPI predominantly, VP2 and VP4) for molecular typing ("serotyping"). These methods are useful, as they can be performed directly on primary clinical specimens and identify the likely causative agent. However, for confirmatory diagnosis, the virus can be isolated (preferably from the infected site) by cell culture, followed by molecular typing. Since this is more complex, virus isolation and molecular identification from secondary sites (e.g., throat swabs, stool, blood) may provide information on the likely causative agent *(1)*.

Clinical management

No specific treatment is currently available, so supportive management is recommended. In most cases, isolation of the patient is recommended, avoiding contamination of the lesions by taking care of the skin and mouth, controlling fever and pain with analgesics and antipyretics, as well as adequate hydration *(1)*.

Early identification and treatment of CNS and systemic complications with respiratory *(14)* and cardiovascular *(15)* support is recommended. Intravenous immunoglobulin (IVIG) has been used to treat severe cases with CNS and systemic complications, but its clinical benefit is uncertain due to the absence of randomized clinical trials *(1, 16)*.

The implementation of standard and enteric precautions is recommended, including hand hygiene; use of gloves when handling secretions, diapers, or skin lesions; gown for patient care; surgical mask and eye protection, in case of close contact with respiratory secretions (especially in health care settings); and simultaneous disinfection of nasal and pharyngeal secretions. Proper disposal of waste is also recommended, and special attention should be paid to immediate hand washing when handling secretions, feces or soiled items *(1)*.

Contact and immediate environment management

Follow-up of contacts for clinical signs of hand, foot, and mouth disease is recommended.

Regarding environmental management, cleaning of contaminated surfaces and soiled items is recommended, first with soap and water, followed by disinfection with a dilute solution of

Sodium Hypochlorite (1 part product to 20 parts water; ~3000 ppm) with a contact time of at least 5 minutes. This is a very effective way to inactivate the virus, especially in institutional settings such as day care centers *(1, 17)*.

Prevention

Limit contact with sick people, whenever possible, by measures such as reducing crowds and isolating infected children. Promote hand washing with soap and water and other hygiene measures *(1)*.

Risk communication

Ensure that targeted communication campaigns are conducted to educate parents, guardians, and caregivers to take the child to the nearest clinic or hospital if the following warning signs of CNS and systemic complications are present: refusal to eat or drink; persistent vomiting or drowsiness; startled or myoclonic spasms *(1)*.

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