



HAND FOOT AND MOUTH DISEASE (HFMD)

(Outbreaks only)

1. **Agent:** Hand, foot, and mouth disease (HFMD) is caused by viruses belonging to the Enterovirus genus. Coxsackievirus A16 is the most common cause of HFMD in the United States, but other coxsackieviruses and enterovirus 71 have been associated with the illness. HFMD is a very common viral illness that usually affects infants and children younger than 5 years old but adult cases can occur. Outbreaks of HFMD typically occur during summer and autumn months.

2. Identification:

- a. **Symptoms:** HFMD usually starts with a fever, poor appetite, malaise, and sore throat. About 1 or 2 days after fever starts, painful sores usually develop in the mouth (herpangina); beginning as small red spots often in the back of the mouth that often blister and ulcer. A skin rash develops over 1 to 2 days as flat or raised red spots, sometimes with blisters. Characteristically, the rash is on the palms of the hands and soles of the feet; but it may also appear on the knees, elbows, buttocks or genital area. Symptomatic illness is usually seen in young children; outbreaks occurring in nursery schools and daycare centers are especially common. Infection in older children and adults is often asymptomatic.
- b. **Differential Diagnosis:** HFMD is one of many infections that cause mouth sores. Health care providers can usually tell the difference between mouth sores caused by HFMD and other causes by considering age of cases, symptoms, and rash/mouth sore characteristics.

3. **Incubation:** 3–5 days.

4. **Reservoir:** Human: Virus can be found in nose and throat secretions, blister fluid, and feces of case.

5. **Transmission:** Exposure to the virus can occur in several ways, including:

- a. Respiratory secretions (saliva, sputum, nasal mucous), feces.
- b. Close personal contact with infected individuals, such as, caring for individuals with illness, diaper changing, or sharing contaminated toys.
- c. Touching surfaces or objects contaminated with virus, and then placing their hand in their eyes, nose or mouth. Enterovirus can remain on environmental surfaces long enough to allow transmission via fomites.

6. **Communicability:** Most contagious during illness symptomatic phase while case is shedding virus via respiratory route, blister fluid, and feces; virus may persist in feces for days or weeks after symptoms resolve.

Persons working with young children should pay special attention to environmental hygiene. HFMD is common in these settings and the virus can spread rapidly.

7. **Specific Treatment:** None. For dehydrated patients, implement supportive treatment with correction of fluid and electrolyte deficits. Cases may have difficulty swallowing due to painful mouth sores. Most illness recovers in 7-10 days without need for medical treatment. Children should not receive aspirin or medication with salicylate.

8. **Immunity:** Virus specific immunity of unknown duration occurs with infection.

REPORTING PROCEDURES

1. **Outbreak Definition:** Individual cases are not reportable. Outbreaks reportable, *California Code of Regulations*, Section 2500. Investigation should be conducted by telephone unless directed by the AMD. In-person site visits might be considered for locations that require extra guidance, have special considerations (i.e., locations with vulnerable or special needs populations), or if requested. Outbreaks include a minimum of 5 confirmed cases and/or individuals with symptoms consistent with infection occurring within a 72-hour (3 day) period and



epidemiologically linked (i.e., within a single classroom, team, or group).

2. **Report Form:** [OUTBREAK/UNUSUAL DISEASE REPORT FORM \(CDPH 8554\)](#)¹

3. **Epidemiologic Data:**

The reporting location is expected to monitor the incidence of infection to include:

- a. Line-listing of cases noting onset date, symptom history and common exposure(s).
- b. Other cases among persons attending a common facility (e.g., daycare or preschool).
- c. Creating an epidemiologic curve can be helpful in visualizing course of outbreak.

CONTROL OF CASE, CONTACTS & CARRIERS

Investigate outbreaks within 24 hours.

CASE:

Precautions: Respiratory and enteric precautions. Limit group settings exposure. Symptomatic cases should not attend group activities. Children with HFMD should be kept home from daycare or school until 24 hours after resolution of fever and mouth sores have healed.

CONTACTS:

Search for other cases among individuals at the same setting. Increase personal hygiene.

PREVENTION/EDUCATION

1. Implement hygienic measures applicable to diseases transmitted via respiratory, fecal-oral, or contaminated fomites route.
2. Extra attention should be given to handwashing and personal hygiene, especially during diaper changing.
3. Shared toys can be vehicles for transmission. Wash or discard articles (toys) soiled with respiratory secretions, vesicle fluid or feces.
4. Disinfect surfaces that may be contaminated with virus.
5. Prevent exposure of infants and young children to individuals with acute illness.

¹
<http://publichealth.lacounty.gov/acd/Diseases/EpifForms/OBUnusualDiseaseReportCDPH8554.pdf>

6. Site visit to observe conditions and cleaning procedures can be particularly helpful, especially in large or ongoing outbreaks

More information on the CDC HFMD website at: <http://www.cdc.gov/hand-foot-mouth/index.html>

LAC DPH Frequently Asked Questions sheet in English and Spanish at:

<http://www.lapublichealth.com/acd/docs/HandFootMouthEnglish.pdf>

<http://www.lapublichealth.com/acd/docs/HandFootMouthSpanish.pdf>

DIAGNOSTIC PROCEDURES

Laboratory diagnosis of HFMD is not routinely required or sought. Clinical and epidemiological history will determine tests to be performed. After consultation with AMD, please contact ACDC if unusual circumstances exist, such as more severe clinical complications or hospitalizations.

If specimen collection is directed:

Material & Container: Acceptable specimens for testing include respiratory specimens (nasopharyngeal, oropharyngeal or throat swabs) in M4 viral transport media; vesicular specimens including vesicle swab or fluid in M4 viral transport media; and fecal specimens including 2-4 g stool in sterile 30 mL screw-cap container or rectal swab in M4 viral transport media. Fecal specimens are less desirable.

Laboratory Form: Test is performed at the State Laboratory. Please use the following: 1) Public Health Laboratory Test Requisition and Report Form H-3021. **Note:** On Form H-3021. Check “other” box and write-in “Enterovirus”. Forms available at PHL website <http://publichealth.lacounty.gov/lab/labforms.htm> 2) State VRDL General Purpose Specimen Submittal Form and 3) Hand, Foot and Mouth Disease Outpatient Case Report form. State VRDL forms are available at their website. https://www.cdph.ca.gov/Programs/CID/DCDC/Pages/VRDL_Specimen_Submittal_Forms.aspx

Storage: Keep specimens refrigerated at 4-8°C and deliver to the Public Health Laboratory as soon as possible. If unable to deliver within 72 hours, freeze immediately after collection at -70°C and transport on dry ice. Do not freeze any specimen if the clinical background suggests VZV, CMV, or RSV.