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 other enteroviruses 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), vesicle (blister) fluid, 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 can 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 are defined as incidence of 10 or more confirmed and/or probable cases (individuals with symptoms consistent with

infection) occurring within 3 to 5 days and epidemiologically linked by a common exposure (i.e., within a single classroom, team, group, or event).

2. **Report Form**: **OUTBREAK/UNUSUAL DISEASE REPORT FORM (CDPH 8554)**

3. **Line List:** http://publichealth.lacounty.gov/acd/Diseases/EpiForms/HFMD-Line-List.xlsm

4. **Epidemiologic Data**:
   a. The investigator is expected to work with reporting facility point-of-contact to create and update the following documents: Line-list of cases including onset date, symptom history and common exposure(s).
   b. Other cases among persons attending a common group (e.g., daycare, after school program, or preschool).
   c. Optional: Creating an epidemiologic (epi) curve can be helpful in visualizing course of outbreak. Instructions for creating an epi curve can be found here: https://www.cdc.gov/training/QuickLearns/CreateEpi/.

CONTROL OF CASE, CONTACTS & CARRIERS

Investigate outbreaks within 24 hours.

CASE:

Precautions: Respiratory and enteric precautions. Children with HFMD should be kept home from daycare or school until 24 hours after resolution of fever, drooling is controlled, and the child feels well enough to participate in activities. In cases where rash is widespread, cases should not return unless the lesions can be covered or lesions have scabbed over.

CONTACTS:

Identify additional 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 while changing diapers.
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 exposing infants and young children to individuals with acute illness.
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: www.cdc.gov/hand-foot-mouth/index.html

LAC DPH Frequently Asked Questions
English / Spanish

DIAGNOSTIC PROCEDURES

HFMD is generally diagnosed clinically; laboratory testing is not routinely required or sought. Clinical and epidemiological history will determine which tests (if any) will be performed. After consultation with AMD, 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. Respiratory or vesicular specimens preferred.

Laboratory Form: Test is performed at the State Laboratory. Specimens should be sent to PHL. 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 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. 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.