MARIN HEALTH & HUMAN SERVICES
Health, Well-being & Safety

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Morbidity and Mortality Weekly Report (MMWR)

Notes from the Field: Severe Hand, Foot, and Mouth Disease Associated with Coxsackievirus A6 — Alabama, Connecticut, California, and Nevada, November 2011–February 2012

Weekly

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Hand, foot, and mouth disease (HFMD) is a common viral illness caused by enteroviruses that predominantly affects children aged <5 years. In the United States, outbreaks of HFMD typically occur during summer and autumn months. The most common cause of HFMD in the United States has been enterovirus serotype coxsackievirus A16. Most infections are asymptomatic; persons with signs and symptoms typically have a mild febrile illness with rash on the palms of the hands and soles of the feet, and sores in the mouth. HFMD also has been associated, often weeks after initial symptom onset, with nail dystrophies (e.g., Beau's lines or nail shedding).

From November 7, 2011, to February 29, 2012, CDC received reports of 63 persons with signs and symptoms of HFMD or with fever and atypical rash in Alabama (38 cases), California (seven), Connecticut (one), and Nevada (17). HFMD is not a reportable disease in the United States; the cases were identified as unusual by health-care providers or by a department of health that contacted CDC for diagnostic assistance. Clinical specimens were collected from patients in 34 of the 63 cases. Coxsackievirus A6 (CVA6) was detected in 25 (74%) of those 34 patients by reverse transcriptase–polymerase chain reaction and partial sequencing of the VP1 gene at CDC or at the California Department of Public Health. No enteroviruses were detected in the other nine patients.

Of the 63 patients, 40 (63%) were aged <2 years, and 15 (24%) were adults aged ≥18 years; 44 (70%) of the patients had exposure to a child care facility or school, and eight (53%) of the 15 adults had contact with children in child care where cases of HFMD were reported, or provided medical care or were related to a child with HFMD. Rash and fever were more severe, and hospitalization was more common than with typical HFMD. Signs of HFMD included fever (48 patients [76%]); rash on the hands or feet, or in the mouth (42 [67%]); and rash on the arms or legs (29 [46%]), face (26 [41%]), buttocks (22 [35%]), and trunk (12 [19%]). Of 46 patients with rash variables reported, the rash typically was maculopapular; vesicles were reported in 32 (70%) patients and scabs in 30 (65%) patients. Shedding of nails occurred after initial infection in two (4%) patients. Of the 63 patients, 51 (81%)

sought care from a clinician, and 12 (19%) were hospitalized. Reasons for hospitalization varied and included dehydration and/or severe pain. No deaths were reported.

The age ranges of patients, severity of illness, seasonality of disease, and identification of CVA6 in these cases were unusual for HFMD in the United States. CVA6 has been associated with more severe and extensive rash than HFMD caused by other enteroviruses (*1*). Since 2008, international outbreaks of CVA6 HFMD in children and adults have been described (*1–4*), but no outbreaks had been reported in the United States previously. Although all 25 of the CVA6 strains identified in the U.S. cases were genetically closely related (based on partial VP1 gene sequences) to CVA6 strains identified in recent international outbreaks, no epidemiologic evidence (e.g., travel history) has directly linked any of the U.S. cases to importation.

HFMD is spread from person to person by contact with saliva, respiratory secretions, fluid in vesicles, and feces. Transmission of HFMD can be reduced by maintaining good hygiene, including hand-washing and disinfection of surfaces in child care settings (*5*). CDC continues to receive reports of CVA6-associated HFMD. Persons who suspect a severe case of HFMD should contact their health-care provider. Local or state health departments may contact CDC for assistance with enterovirus laboratory diagnosis.

Reported by

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References

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California Department of Public Health
Infectious Diseases Branch
850 Marina Bay Parkway
Richmond, CA 94804-6403

HOSPITALIZED ENTEROVIRUS CASE REPORT

FAX # 415-473-6002
TEL # 415-473-4163

DRAFT – 6/24/2008

Patient Name – Last	First	Middle Initial	Date of Birth ____/____/____	Age ______ yrs	Sex ☐Male ☐Female
Address (number, street)	City		State	County	ZIP code
Telephone number – Home ( )	Work ( )			Occupation	

Ethnicity (check one)
☐Hispanic/Latino ☐Non-Hispanic/Non-Latino

Race (check all that apply)
☐African-American/Black ☐White ☐Native American ☐Asian/Pacific Islander ☐ Other________

If Asian/Pacific Islander, check all that apply: ☐Asian Indian ☐Cambodian ☐Chinese ☐Filipino ☐Guamanian ☐Hawaiian ☐Japanese ☐Korean ☐Laotian ☐Samoan ☐Vietnamese ☐Other____________

Any contact with these settings during 7 days before illness onset? ☐Day care/preschool ☐School ☐Health care ☐Other____________________

DATA ON PRESENT ILLNESS

Illness onset date ______/______/______	Medical record number	Did patient die? ☐Yes ☐No ☐Unk	Date of death _____/______/______

Physician name (first, last)	Phone/cell ( )	Fax ( )	Email

Hospital name	City	Zip code	Telephone ( )	Admit date ____/____/______	Discharge date ____/____/____

Signs and symptoms	Yes	No	Unk
Ulcers in throat, mouth or tongue			
Rash or blisters on palms or soles			
Rash on buttocks or groin			
Other rash (location _________)			
Fever (max temp___________)			
Cough			
Sore throat			
Headache			
Breathing difficulty			
Vomiting			
Diarrhea (max stools/24 hrs_________)			
Dehydration			
Stiff neck			
Muscle aches			
Paralysis			
Seizures			
Altered consciousness			
Increased sensitivity to light			
Cranial nerve deficits:_________			
Muscle twitches or jerks			

Syndrome(s)	Yes	No	Unk
Hand, Foot and Mouth Disease			
Flu-like illness			
Aseptic meningitis			
Encephalitis			
Myocarditis			
Pneumonia			
Pulmonary edema			
Pulmonary hemorrhage			
DIC			
Acute flaccid paralysis			
ICU admission			
Other syndrome OR symptom:			

Clinical history	Yes	No	Unk
Diabetes			
Hypertension			
Immunocompromised			
Other:			

Epidemiologic data

Any contacts with similar illness?
☐Yes ☐No ☐Unk

IF YES: Provide names, relationships, phone #'s:_______________________
____
____
____
____

Did patient travel outside U.S. in the 14 days before illness onset?
☐Yes ☐No ☐Unk

IF YES: Provide locations, dates of travel:
____
____
____

In 14 days before illness, did patient have contact with someone who had been outside the U.S.?
☐Yes ☐No ☐Unk

If YES: provide contact name(s) and tel. #'s:
Name(s)_________________________
Tel. #'s: __(____)__________________

Diagnostic and laboratory findings

CBC: Date___/___/_____WBC_____________% Diff: Seg________Lymph_________Mono________ Eo_________ HCT____ Platelets__________

CSF: Date___/___/______OP____________ RBC___________ WBC__________ % Diff: Seg_________Lymph________Mono________ Eo__________
Protein_____________ Glucose__________________

Chest X-ray: Date___/___/______ ☐Normal ☐Abnormal Findings_________________________________

Lung function tests: Date___/___/_____ ☐Normal ☐Abnormal Remarks_____________________________

Other pertinent labs (E-mix, viral culture, PCR, MRI, CT, etc: provide *specimen sources; collection dates; test results*)______________________
____

Local Health Jurisdiction	Investigator name	Telephone Number	Date _____/_____/_______

STATE USE ONLY **Case Counted** ☐Yes ☐No **Reason for case classification**

California Department of Public Health – Viral and Rickettsial Disease Laboratory

ENTEROVIRUS ENHANCED SURVEILLANCE SUBMITTAL FORM

The California Viral and Rickettsial Disease Laboratory (VRDL) is interested in obtaining samples from patients with suspected enterovirus infections, especially unusual presentations of “hand, foot and mouth” disease; patients hospitalized with neurological symptoms where enterovirus is the suspected causative agent and especially any outbreak for which enterovirus is the suspected causative agent.

Instructions for Submitting Samples

When to Collect Samples

The sooner after onset the sample is collected, the greater the probability of obtaining a viral isolate. Ideally specimens should be obtained during the acute phase of illness (within 48-72 hours of onset - when viral excretion is at its peak). Contact your local Public Health laboratory to discuss the utility of viral diagnosis and interpretation of the test results before collecting samples more than one (1) week after onset of symptoms.

What Samples to Collect

Overall, throat swabs are the single most useful specimen to detect enteroviruses. When lesions are present, collection of vesicle swabs significantly increases the ability to detect Enteroviruses. We are not recommending collecting stools from acute cases.

How to Collect Samples

Throat swabs should be taken with the aid of a tongue depressor, by carefully swabbing the lateral and posterior pharynx without touching the tongue or buccal mucosa.

For vesicle swabs, the skin was cleaned gently with 0.9% sterile normal saline, but not with alcohol, which kills viruses. A sterile 24-gauge needle was used to rupture the vesicle, and a swab was used to absorb the fluid. Alternatively, the swab was gently rolled over the vesicle to squeeze out fluid. Mouth ulcers were sampled by rolling the swab over the floor of the ulcer.

Storage and Transportation

Throat swabs and vesicle swabs should be placed in 1-2 ml of Viral Transport Medium (VTM). Samples should be kept at 4^0C and transported to the local Public Health Laboratory within 48 – 72 hours.

Where to Send

INSERT LOCAL PUBLIC HEALTH LAB INFO, **or**
Viral and Rickettsial Disease Laboratory
Specimen Receiving- Enterovirus Surveillance
850 Marina Bay Parkway
Richmond, CA 94804

Send with

For each patient, complete the Specimen Submittal Form below and attach either the Hospitalized Enterovirus Case Report or Outpatient HFMD Case Report

Patient's last name, first name			Patient's Local Health Jurisdiction: ___________________________ Reason for submitting sample: [ ] Suspected Enterovirus infection [ ] Patient hospitalized with suspected Enterovirus infection [ ] From a suspected Enterovirus outbreak
DOB	Age (with units)	Sex (circle): M F	
HFMD/ ENTEROVIRUS SURVEILLANCE		**Onset Date**:	**This section for Laboratory use only.** **Date received and Accession Number**
1st	Specimen type and/or specimen source	Date Collected	1st
2nd	Specimen type and/or specimen source	Date Collected	2nd
			Viral and Rickettsial Disease Laboratory California Department of Public Health 850 Marina Bay Parkway Richmond, CA 94804 phone (510) 307-8585 fax (510) 307-8578

Type or print submitter's complete mailing address above Enhanced Enterovirus Surveillance 02/17/2012

If this is an isolate (rather than an original clinical sample), please fill in below:

Submitted as cell culture isolate using passage # ____ of ________________ cells. [ ] Submitted as Nucleic Acid extract.
Source of original clinical sample: ________________________ [ ] Outbreak ID (if any) ____________________________
Identified (or tentatively identified as) _________________________________ by_____________________________________

Contact Name: ______________________________ Phone # (______) ______________ Fax # (______) _______________

Questions? Call LOCAL PUBLIC HEALTH LAB (415) 473-6849 or VRDL Medical Records Unit (510) 307-8585