

Medical News

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HAND, FOOT AND MOUTH DISEASE (HFMD)

Historical

The Coxsackieviruses were named after an Algonquin Indian village in Upper New York State. It was first discovered by G. Daldorf and Sickles who were virologists at the New York State Department of Health. The “Cox” portion of the village’s name should be pronounced as if it were spelled “Cook” rather than “Cox”.

The Coxsackieviruses are part of a larger family of viruses known as the Picornaviruses. The viruses found in this family are among the most diverse viruses (200 known serotypes). Hand, Foot and Mouth disease (HFMD) is one of the oldest viral infections known and was described in Egyptian hieroglyphs dating back to 1,400 BC.

The Viral Agent(s)

Most cases of the disease known as hand, foot and mouth disease are caused by three serotypes in the Coxsackievirus genus (namely A16, A5 and A10). A much smaller number of cases are the result of infection by Enterovirus 71. They are all RNA viruses. The word “Pico” means small.

Clinical Findings associated with Disease

Most cases of infection are benign and exhibit symptoms that are no more serious than those associated with a common cold and/or sore throat. Most cases, in fact, are subclinical and hence not diagnosed.

The clinical findings associated with coxsackie infections include:

- An incubation period of three to seven days,
- Sore throat,
- Fever,
- Vesicular lesions on the gums, cheeks, sides of tongue, hands and feet.

The clinical descriptive term used to describe the disease is “Enteroviral vesicular stomatitis with exanthem”. In addition to appearing in the usual places, feet), the vesicles occasionally appear on the buttocks about two to three days after the fever. They range from three to seven mm in diameter and are painless. Occasionally, they go on to ulcerate.

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Coxsackievirus lesion in the mouth of a small child
Courtesy of CDC

Epidemiology and Transmission

Most cases of HFMD are moderately contagious with the person being most contagious during the first week of infection. Transmission can occur via direct contact with nasal and throat discharges, saliva, fluids from blisters and in the stool. Most cases are among young children (newborns to about four years of age).

Virus particles can continue to be excreted for up to a month in stool specimens.



Coxsackievirus vesicles on the hand
Courtesy of the Sarawak Health Agency

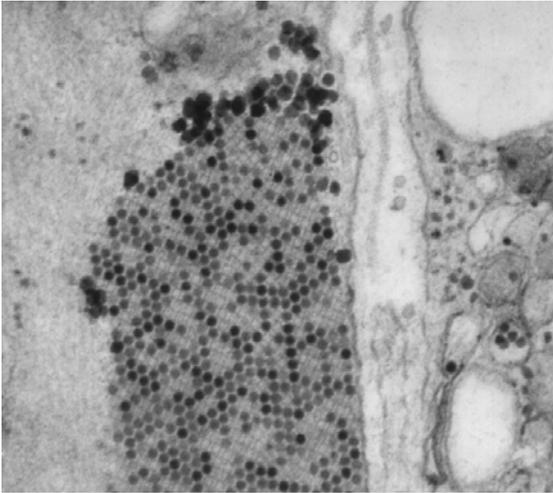
Generally, HFMD is a mild disease and recovery is usually complete within seven to ten days. Occasionally, there are neurological complications and these can lead to death. Fatal cases of meningitis associated with HFMD occurred in Malaysia in 1997 and in Taiwan in 1998. These were associated with EV71.



HFMD vesicles on the bottom of feet.
Courtesy of Coxsackieviruspictures.com

The Causative Viral Agents

The most common causes of HFMD are Coxsackievirus A16, A5, A10 and Enterovirus 71 (EV 71)



Transmission electron micrograph of the Coxsackievirus
Public domain

Diagnosis

The disease is usually diagnosed by physical examination. Additionally, throat swabs and stool samples can also be tested by the laboratory for the presence of the virus.

Quest Diagnostics has antibody panels available for both Coxsackieviruses A and B. Additional tests are available for the detection of Enterovirus RNA.

Free CME/CEU credits

Dengue fever: a re-emerging target for travelers.

Click [here](#) to access free CME/CEU offering.

On-line testing for HIV: hopefully a step forward.

Click [here](#) to access free CME/CEU offering.

Depression may lower shingles vax. Click [here](#) to access free CME/CEU offering

HIV linked to sudden loss of hearing. Click [here](#) to access free CME/CEU offering

Give Tdap during every pregnancy. Click [here](#) to access free CME/CEU offering.

Allergies tied to antibiotic resistance. Click [here](#) to access free CME/CEU offerings

Swine flu shot linked to sleep disorders in kids.

Click [here](#) to access free CME/CEU offering

Treatment

There are no effective treatments for this disease. For children who are old enough to do so, gargling with warm water and salt may give some relief.

Infection Control Practices

The most effective infection control practices are exceptional handwashing and the disposal or laundering of potentially contaminated cloth and bedding.

Isolation of the patient is not very practical inasmuch as the virus can be shed in feces for many weeks (even months) after symptoms have disappeared. Lesions on the feet and hands should be covered and allowed to dry and heal naturally. Care should be taken not to puncture vesicles.

Recommended References

Abzug, 2011. M.J. Nonpolio enterovirus. In Kliegman, R.M. *et al.*, Eds., *Nelson Textbook of Pediatrics*, 19th Ed., Chap. 242. Saunders Elsevier Philadelphia, PA.

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Centers for Disease Control and Prevention. 2011. Nonpolio enterovirus infections. Click [here](#) to access website.

Centers for Disease Control and Prevention. 2012. Notes from the field. Severe hand, foot, and mouth disease associated with coxsackievirus a6 – Alabama, Connecticut, California, and Nevada. November 2011 – February 2012. *Morbidity and Mortality Weekly Report* **61**: 213-214. Click [here](#) to access complete article.

Daldorf, G. and G. Sickles. 1948. An unidentified filterable agent isolated from the feces of children with paralysis. *Science* **108**: 61-62. This is the original discovery paper for these viruses.

Mayo Clinic. 2012. Hand, foot and mouth disease. Click [here](#) to access website.

World Health Organization. 2011. A guide to clinical management and public health response to hand, foot and mouth disease (HFMD). Click [here](#) to access website.

Other Infectious Disease News

How do Unnecessary Antibiotics contribute to *Clostridium difficile* Infection

Investigators at a Veterans Affairs Medical Center recently reviewed medical and pharmacy records of 246 patients with new-onset *Clostridium difficile* Infection (CDI). They found that antimicrobial use (other than drugs to treat CDI) during and for up to 30 days after totaled 2,147 antimicrobial-treatment days and 445 antimicrobial sources.

Two reviewers checked over the records independently and found that 85 % of the treatments were unnecessary. When they put their heads together and discussed the results, they agreed on another 14 %. That means that just about 99 % of the antibiotics were **not** needed.

75 % of the CDI patients received at least one course of unnecessary antibiotics and 26 % of the patients received only unnecessary antibiotics. The drugs used unnecessarily were frequently fluoroquinolones and the β -lactams.

The conclusion of the study was that there should be increased awareness concerning the use of antimicrobials in the case of patients with recent CDI.

Shaughnessy, M.K. *et al.* 2013. Unnecessary antimicrobial use in patients with current or recent *Clostridium difficile* infection. *Infection Control and Hospital Epidemiology* **34**: 109-116. Click [here](#) to access abstract.

BCG Vaccine may have Protective Role for Adults

This writer was taught that the major documented protective effect from the BCG vaccine was against tubercular meningitis and disseminated TB during childhood. As the child grows into adulthood, protection wanes.

Investigators recently examined 2,385 participants in Taiwan prisons to see if there was any protection

against TB in adulthood as a result of the BCG vaccine.

The bottom line of the studies was that the BCG vaccine seems to have some protective effect in adults decades after they received the BCG vaccine.

Cha, P.-C. *et al.* 2013. Lower prevalence of tuberculosis infection in BCG vaccines: a cross-sectional study in adult prison inmates. *Thorax* **68**: 263-268. Click [here](#) to access abstract.

Tedizolid: a new antibiotic effective against MRSA

Here's a "look alike" drug for linezolid but has one other **big** advantage: a six-day course of tedizolid is as effective as a 10-day course of linezolid (Zyvox®) for the treatment of acute bacterial skin and skin structure infections (ABSSSI). Also, both drugs appear to be equally safe.

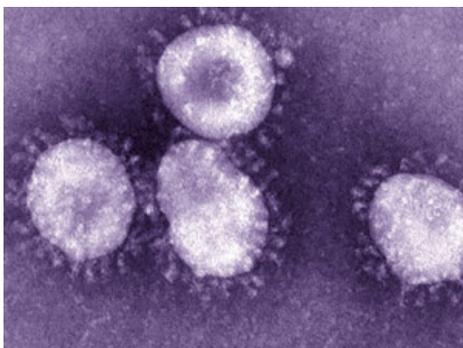
The early clinical response for tedizolid was 79.5 %, while the early response for linezolid for 79.4 %)

Prokocimer, P. *et al.* 2013. Tedizolid phosphate vs. linezolid for treatment of acute bacterial skin and skin structure infections. *Journal of The American Medical Association* **309**: 559-569. Click [here](#) to access abstract.

New SARS-like Virus Reported to have Spread between Humans

In September 2012, The World Health Organization (WHO) and CDC reported on a new virus with many similarities to the virus responsible for SARS. This novel coronavirus was given the name of "hCoV-EMC" which stands for "Human Coronavirus-Erasmus

Medical Center". Studies thus far have indicated that this new isolate has the potential to be considerably more dangerous than SARS. The virus causes fever, cough, shortness of breath and breathing problems. Worldwide, 13 cases have been confirmed as of March 16th. Three deaths occurred in Saudi Arabia (out of five patients) and two in Jordan.



Electron micrograph of hCoV-EMC.
Courtesy of CDC

Thus far, there have been **no** cases reported in North and South America. Three cases were recently reported in Great Britain that indicate the virus can indeed be transmitted from person-to-person. Within one family, a patient with this virus returned from the Middle East. Two other family members, who had not traveled recently, also acquired the disease.

Hitherto, it was a little bit confusing as to how the virus was transmitted since it has been demonstrated that there are receptor sites in bats, pigs and humans. This suggests the possibility of a zoonotic role in transmission.

Centers for Disease Control and Prevention. 2013. Severe respiratory illness associated with a novel coronavirus – worldwide, 2012-2013. *Morbidity and Mortality Weekly Report* 62: 1-2 (early release). Click [here](#) to access full report.

U.K. Health Protection Agency. Third case of novel coronavirus identified in family cluster. 15 February 2012. Click [here](#) to access press release.

Müller, M.A. *et al.* 2012. Human coronavirus EMC does not require the SARS-coronavirus receptor and maintains broad replicative capability in mammalian cell lines. *mBio* 3: e00515-12. Click [here](#) to access complete article online.

World Health Organization (WHO). 2012. Revised interim case definition – novel coronavirus. Click [here](#) to access website.

Zaki, A.M. *et al.* 2012. Isolation of a novel coronavirus from a man with pneumonia in Saudi Arabia. *New England Journal of Medicine* 376:

The Burden of Human Metapneumovirus (hMPV) Among Young Children

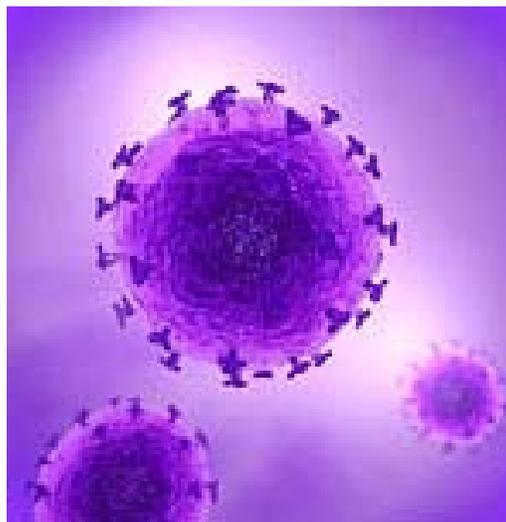
Human Metapneumovirus (hMPV) was first isolated in the Netherlands in 2001. It is now recognized as the second most common cause of lower respiratory tract infections among young children after the respiratory syncytial virus (RSV).

Just how much of a burden among young children (\leq five years of age) this virus represents was a subject of research for the New Vaccine Surveillance Network.

They found that about 6 % of hospitalized children tested positive for this virus using reverse-transcriptase PCR.

Among nonhospitalized healthy controls, the percentage was approximately 1 %.

The authors concluded that hMPV is associated with a substantial burden of hospitalizations during the first five years of life.

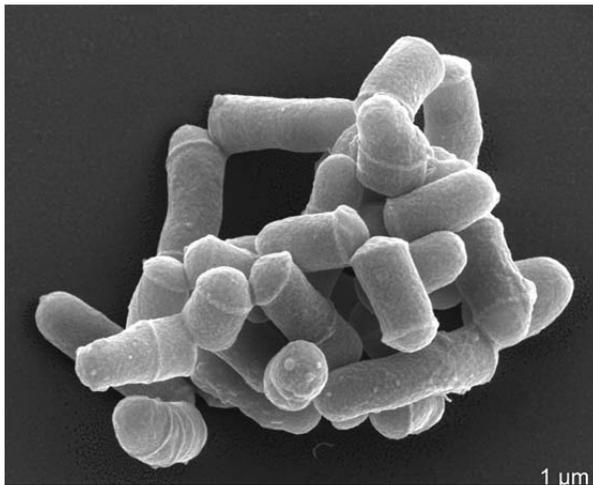


Artist's rendition of an electron micrograph of hMPV
Courtesy of Bode Science Center

Edwards, K.M. *et al.* 2013. Burden of human metapneumovirus infection in young children. *New England Journal of Medicine* 368: 633-643. Click [here](#) to access abstract.

Sternal Wounds in Three Patients Following Open Heart Surgery transmitted from A Healthcare Worker

In one hospital, three sternum infections were found to be caused by *Gordonia bronchialis*. Formerly known as *Rhodococcus*, this is definitely not a very common organism.



Electron micrograph of *Gordonia bronchialis*
SIGS Standards in Genome Sciences

The outbreak was eventually traced back to scrubs worn by a nurse anesthetist that had been laundered at home in her own washing machine. When this practice ceased, so did the infections.

Wright, S.N. *et al.* *Gordonia bronchialis* sternal wound infection in 3 patients following open heart surgery: intraoperative transmission from a healthcare worker. *Infection Control and Hospital Epidemiology* **33**: 1238-1241. Click [here](#) to access abstract.

New CDC Guidelines for Carbapenem-resistant Enterobacteriaceae

There have been many reports to the effect that carbapenem-resistant Enterobacteriaceae (CRE) is spreading at an alarming rate. It's even become a very popular subject in newspapers and magazines. As a consequence, CDC has issued a health advisory expanding their previous guidelines for the prevention of the spread of these organisms.

The new guidelines contain the following recommendation:

“When a CRE is identified in a patient (infection or colonization) with a history of an overnight stay in a

healthcare facility (within the last six months) outside the U.S., the isolate should be sent to a reference laboratory for confirmatory susceptibility testing and test to determine the carbapenem resistance mechanism. At a minimum, this should include evaluation for *Klebsiella pneumoniae* carbapenemase and New Delhi metallo- β -lactamase”.

The guidelines have been expanded because most CREs isolated in the U.S. have come from patients who have received overnight treatment in medical facilities outside the U.S.

Readers should be mindful of earlier recommendations made by CDC. The precautions indicated in these are as follows:

- Make sure that healthcare providers adhere closely to hand hygiene procedures,
- Use stool, rectal or perirectal cultures to screen patients who may have come in contact with CRE-colonized patients,
- Alert hospitals when a CRE-colonized patient is transferred,
- Dedicate rooms and staff to CRE patients whenever possible,
- Remove temporary medical devices as soon as they have fulfilled their purpose.

CDC, in their advisory, pointed out that unusual forms of CRE, while still relatively uncommon, are increasing. Of the 37 unusual isolates of CRE that have been reported in the U.S, at least 15 of them have been reported in the last six months.

Official CDC Advisory. 2013. New carbapenem-resistant Enterobacteriaceae warrant additional action by healthcare providers. Click [here](#) to access the entire article via the Health Alert Network.

Composition of the 2013-2014 Northern Hemisphere Influenza Vaccine

The World Health Organization (WHO) has recommended vaccine viruses for the 2013-2014 Northern Hemisphere vaccines, and the Food and Drug Administration's Vaccines and Related Biological Products Advisory Committee (VRBPAC) has made recommendations for the composition of the 2013-2014 influenza vaccines to be used in the United States.

Both agencies recommend that trivalent vaccines contain an A/California/7/2009-like (2009 H1N1) virus, an A(H3N2) virus antigenically like the cell-propagated, or cell-grown, virus A/Victoria/361/2011 (A/Texas/50/2012), and a B/Massachusetts/2/2012-like (B/Yamagata lineage) virus. It is recommended that quadrivalent vaccines containing an additional influenza B virus contain a B/Brisbane/60/2008-like (B/Victoria lineage) virus in addition to the viruses recommended for the trivalent vaccines.

These recommendations were based on global influenza virus surveillance data related to epidemiology and antigenic characteristics, serological responses to 2012-2013 seasonal vaccines, and the availability of candidate strains and reagents.

World Health Organization. 2013. Recommended composition of influenza virus vaccines for use in the 2013-14 northern hemisphere influenza season. Click [here](#) to access WHO website.

Gonorrhea cases in England Increases By 25 %

Within the last year, the number of gonorrhea cases in England has increased by 25 %. In 2011, nearly 21,000 new cases were diagnosed. One third of these were among gay men and more than a third were among persons who previously have had gonorrhea.

English Authorities there have also noted a gradual decrease in susceptibility to the cephalosporin drugs which are normally recommended for these infections. The emergence of multi-drug-resistant strains of *N. gonorrhoeae* is of great concern.

The disease is quite prevalent in South and Southeast Asia and in the sub-Saharan Africa region. In the U.S., there are about 7,000 cases reported annually.

Public Health England (formerly U.K. Health Protection Agency). 2013. Press release: New action plan launched to combat emerging threat of untreatable gonorrhea in England and Wales. Click [here](#) to access press release.

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Training Phlebotomists on Blood Cultures

One of the biggest problems with regards to blood cultures is “volume”. If you are able to collect twice the volume in the blood culture bottle, then you will literally double your chances of finding a pathogen in the blood stream. That makes perfect sense.

Laboratorians in a Netherlands hospital met with the phlebotomy teams and provided them with a short, but concise inservice as to the need to collect adequate samples of blood for cultures.

The result was that the volume of the blood specimens collected post-training literally doubled.

Van Ingen, J. *et al.* 2013. Education of phlebotomy teams improves blood volume in blood culture bottles. *Journal of Clinical Microbiology* 51: 1020-1021. Click [here](#) to access abstract.

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FROM THE EDITOR'S DESK

SHAYS REBELLION – A POPULIST UPRISING AGAINST OPPRESSIVE DEBT COLLECTION AND TAXES POLICIES IN MASSACHUSETTS 1786-1787

Very few persons know that there was a little “mini” rebellion up the Western end of Massachusetts (the “Berkshires”) shortly after the War for Independence ended. It only lasted for a little over a year but was the impetus for the country to dump the articles of Confederation and ratify the Constitution.

Daniel Shays joined the local militia during the Revolution and rose to the rank of Captain by 1777 in one of the Massachusetts Regiments. He fought in the Battle of Bunker Hill, the Lexington Alarm and the Battle of Saratoga. Following the battle of Saratoga, he was presented with a sword by the Marquis de Lafayette for his courage in battle. He was wounded in 1780 and had to leave the military.

Upon arriving home, he was summoned to court for unpaid debts even though he himself had been paid for his military service.

Over a thousand former Revolutionary soldiers from the poorest end of Massachusetts rose up and tried to shut the courts down. They even tried to capture the Springfield Armory. The rich debtors from Boston wanted “hard species” (that means coins of gold, silver or copper) and would not accept the Continental dollars that the soldiers had received for payment for their services.. What really irked them was that Governor John Hancock (he’s the fellow who signed the Declaration of Independence) went after them with a vengeance. By 1787, they were beaten down and had to surrender.

Eventually, the rebels were all pardoned and Shays found his way to New York where he died on September 29, 1825.



Capt. John Shays Public Domain



This whole rebellion in some ways was really about these little pieces of paper – referred to as “Continental Dollars”



A marker at the site of the final battle of Shays Rebellion, Feb. 27, 1787. Picture by author

