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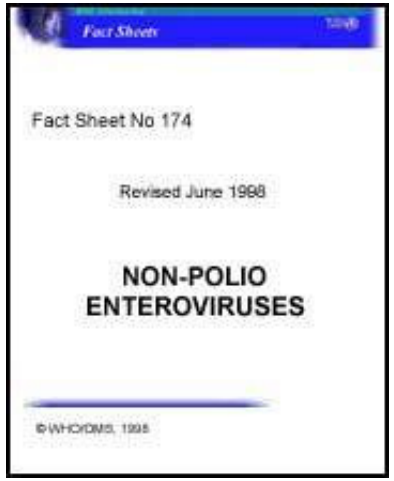

Fact sheet No 174: Non-polio Enteroviruses - Revised June 1998 (WHO, 1998, 3 p.)

- *(introduction...)*
- **Non-Polio Enteroviruses**

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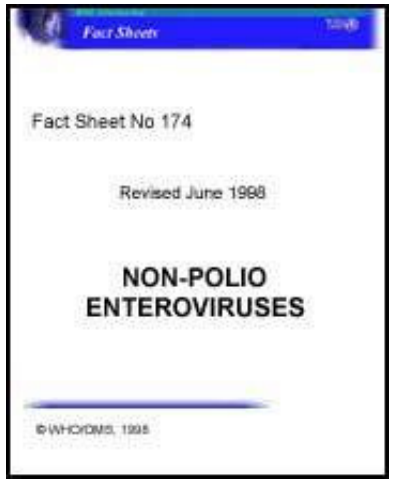

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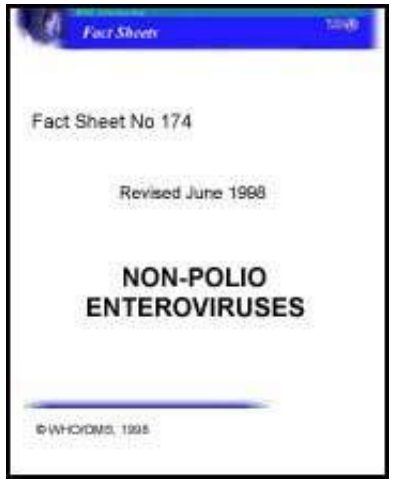

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- ***(introduction...)***
- **Non-Polio Enteroviruses**

Non-Polio Enteroviruses

Non-polio enteroviruses* are common and distributed worldwide. Infection with them often has no consequences for the affected patient. However, these viruses

are also associated with occasional outbreaks in which a larger-than-usual number of patients develop clinically-identifiable diseases, some of them with fatal consequences.

*** The term enterovirus is a general description for viruses that infect and replicate in cells of the gastrointestinal tract. A prominent family of viruses within the large group of viruses that are found in the intestinal tract are the *Picornaviridae*. Within this family are several genera (subgroups of viruses with similar properties that have specific names) including polioviruses, coxsackieviruses (two groups, A and B), echoviruses and enteroviruses (a specific name, as opposed to the general description above). The subject of this Fact Sheet is the non-polioviruses in the latter four genera.**

Clinical syndromes: Replication of the enterovirus begins in the gastrointestinal or respiratory tract and once the virus is present in the blood stream, the disease may affect various tissues and organs, causing a variety of distinctive diseases. Transmission of the virus occurs easily and the majority of infections are symptomless or mild in nature, the most common effect being a non-specific illness, with fever. Other manifestations include exanthems (rashes), herpangina (vesicular eruption and inflammation of the throat), acute respiratory disease, conjunctivitis, aseptic meningitis, encephalitis (inflammation of the brain), myopericarditis (inflammation of the heart tissue), and, occasionally, paralytic diseases. Many enteroviruses are associated with specific syndromes, for example, the group B coxsackieviruses more commonly cause meningitis or myopericarditis and enterovirus 71 causes hand-foot-mouth disease (vesicular eruption and inflammation of the throat and mouth with rash) with or without encephalitis.

Diagnosis: Clinically, it is difficult to distinguish the specific cause of most enteroviral infections. Diagnostic testing for non-polio enteroviruses requires specialised laboratory facilities. Diagnosis is made by detecting virus in throat or faecal samples or, more convincingly, from specimens collected from the affected part of the body, for example, cerebrospinal fluid (CSF), biopsy material, and skin lesions. A four-fold rise in the level of neutralizing antibody in specimens collected during the acute and convalescent phases of illness provides the best evidence for a recent infection. Serological testing is complicated because of the large number of serotypes and is usually performed to confirm that when a virus is detected in faecal samples, it has a causal role in the disease and is not a coincidental detection of a "passenger" virus, that is, a virus which is carried in the gastrointestinal tract without causing disease.

Epidemiology: Enteroviruses infecting humans are found worldwide and humans are the only known natural hosts. Young children are most susceptible to infection. In less developed areas, children may become infected during early infancy while in more socio-economically advanced areas, first infection may not occur until adolescence. Males more often develop clinically-recognizable diseases than females. Transmission is usually by the faeco-oral or by the respiratory route where there is an associated respiratory illness. The virus may be excreted in the stool for many weeks. Enteroviruses have been detected in water, soil, vegetables and shellfish and may possibly be transmitted in the community by contact with contaminated food or water. The epidemiological pattern varies by geographical region and climate, but the incidence of infection is higher in the summer and autumn months in temperate climates while remaining prevalent year-round in tropical climates.

Treatment: No specific antiviral agent is available for therapy of enterovirus infection. Treatment focuses on management of complications (for example, meningitis, abnormal cardiac rhythms, and heart failure). Intravenous administration of immune globulin may have a use in preventing severe disease in immunocompromised individuals or those with life-threatening disease.

Prevention and control: Transmission of enterovirus infections is increased by poor hygiene and overcrowded living conditions. Improved sanitation and general hygiene are important preventive measures. The viruses are resistant to many disinfectants so it is important to use chlorinated or iodized disinfectants in, for example, hospitals and schools. In addition, it may be necessary to close certain institutions such as schools or child care facilities during recognised epidemics in order to reduce transmission among young children.

Advice to travellers and people in epidemic areas: The risk of hand-foot-and-mouth disease (HFMD) or infection with enterovirus 71 for the international traveller is unknown but appears to be small. HFMD is moderately contagious. It is not spread by airborne transmission and is unlikely to be spread by contaminated food or water. Rather, infection is spread from person to person by direct contact with nose and throat secretions (e.g., nasal mucus or saliva) or from the stool of infected persons.

Many adults may have been infected with enterovirus 71 as children and, therefore, may be immune to re-infection. Infants, children, and adolescents are less likely to have previously been infected with enterovirus 71 and are more likely to be susceptible to infection.

Measures that can be taken to avoid getting infected with enterovirus 71 include frequent handwashing, especially after diaper changes; disinfection of contaminated surfaces by household disinfectants such as bleach (20 ml/litre of water) or rubbing alcohol (70% isopropyl); and washing soiled articles of clothing. Children are often excluded from child care programmes, schools, or other group settings during the first few days of the illness. However, children may minimize their risk of infection by avoiding prolonged, direct contact with persons who have HFMD and by observing the hygienic measures described above. Having children avoid public events (e.g. sports or entertainment) during an outbreak may also minimize the risk of infection. These measures may reduce the spread of infection, but they will not completely interrupt it.

Recent outbreaks: In April 1998, an outbreak of hand-foot-mouth disease began in Taiwan, Province of China. Enterovirus 71 has been reported as its cause, based on an autopsy revealing the presence of enterovirus 71 in the spinal cord and medulla of a fatal case. Up to 300 000 infants and children may have been infected with enterovirus throughout the island, while an increased number of children have been hospitalized with aseptic meningitis or encephalitis. Of those hospitalized, many had a febrile illness of 2-4 days' duration before sudden deterioration and death within 12-24 hours.

There are no travel restrictions to Taiwan, Province of China. All recipient health departments, travel agencies, airlines and shipping companies are requested to notify prospective travellers of the above advice.

In 1997 outbreaks involving enteroviruses were reported from Gaza (meningitis) and from Malaysia (hand-foot-mouth disease). In 1996, WHO responded to an

outbreak of aseptic meningitis in Cyprus caused by a non-polio enterovirus identified as coxsackievirus B5.