Scientists investigate evolution of new polio virus

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Scientists at the University of Liverpool have completed the first major review of diagnostic methods and treatments for a rapidly evolving virus that causes hand, foot and mouth disease in children.

The virus, called enterovirus 71, is closely related to poliovirus, and was first detected in California in the 1960s. Since then the virus has spread across Asia, affecting mostly children and some adults. Serious cases of the disease can include neurological disorders such as meningitis, paralysis and encephalitis.

As a result of a global health campaign, polioviruses have almost been eradicated in many areas of the world. Enterovirus 71, however, has caused major outbreaks of hand, foot, and mouth disease and it is still unclear why such a high number of cases occur in the Asia-Pacific region. In the first major review of diagnostic and treatment measures for the disease, the Liverpool team, in collaboration with Universiti Malaysia Sarawak, has revealed that the virus evolves rapidly and is transmitted amongst family members more easily than previously thought.

Professor Tom Solomon, Head of the Institute for Global Health and Infection, explains: "The condition is difficult to diagnose as there are many viruses that can cause hand, foot and mouth disease. It takes time to test all the likely virus samples and identify the cause, so we have now developed a new method to allow scientists to test the most likely samples first and ensure early detection."

Dr Mong How Ooi, who led the study from Malaysia, added: "The biggest challenge to doctors looking after children with this infection is to ascertain if a child could develop serious brain infection. We have produced predicative tests, which include peak temperature measurements and monitoring the duration of fever, as well as looking for signs of lethargy. These assessments allow medics to decide which patients are most at risk from brain infection."

The team analysed current preventative measures, which rely on guidance to families for improving personal and domestic hygiene. It is thought that the virus is most likely spread through faeces, although scientists have now found evidence to suggest it can also be spread through coughing and sneezing.

The review highlighted that more work is needed to understand how effective drug treatments are for the disease. Scientists emphasised that preventative measures, such as the development of vaccines, are the next steps to ensure that the virus does not continue to spread across Asia and other areas of the world.

More information: The research is published in two companion articles in the Lancet Infectious Diseases and the *Lancet Neurology*.

Provided by University of Liverpool