

Enterovirus D68

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Recent concerns about Enterovirus D68

- Several clusters of upper respiratory infections have recently occurred throughout the U.S. Midwest (Colorado, Georgia, Illinois, Iowa, Kansas, Kentucky, North Carolina, Ohio, Oklahoma, Missouri)

- These outbreaks are characterized by symptoms like a very intense cold. Outbreak of “summer colds” are actually common. Often these are due to an enterovirus. The season often hits its peak in September. The difference between the common “summer colds” outbreak and these new outbreaks is the severity of symptoms that result in an unusual high number of hospitalizations.

- For example “the virus is sending 30 children a day to a Kansas City, Missouri, hospital.... In Kansas City, about 475 children were recently treated at Children's Mercy Hospital, and at least 60 of them received intensive hospitalization. ... The Kansas City hospital treats 90% of that area's ill children.” Approximately 15% of those illnesses have resulted in children being placed in an intensive care unit. Testing of specimens from several cases at a specialized laboratory at the Centers for Disease Control and Prevention (CDC) indicated that 19 of the 22 specimens were positive for Enterovirus D68 (EV-D68). Staff members noticed an initial spike on August 15th. After a peak, approximately between August 21-30, the number of cases leveled off. At least 19 of the 22 specimens from Kansas City children tested positive for EV-D68. (<http://health.mo.gov/emergencies/ert/alertsadvories/pdf/HA82914.pdf>)

More than 900 children have gone to Colorado's Children's Hospital emergency and urgent care locations since August 18th for treatment of severe respiratory illnesses, including enterovirus and viral infections.

It is likely that these severe cases are only the tip of the iceberg; the majority of mild cases are not seeking medical care and are not being diagnosed.

Enterovirus D68 epidemiology

Enteroviruses are very common viruses. There are more than 100 types of enteroviruses. It is estimated that 10 to 15 million enterovirus infections occur in the United States each year. Most people infected with enteroviruses have no symptoms or only mild symptoms, but some infections can be serious. Most enteroviruses cause mild upper respiratory illnesses, febrile rash

illnesses, or neurologic illnesses (such as aseptic meningitis and encephalitis); EV-D68 has been associated almost exclusively with respiratory disease.

Most enterovirus infections in the U.S. occur seasonally during the summer and fall; outbreaks tend to occur in several-year cycles.

Enterovirus EV-D68 is uncommon, but not new. It was first identified in California in 1962 from four children with bronchiolitis and pneumonia; there has been fewer than 100 cases reported since that time. The low number of case reports may be due to the difficulty in identifying the virus. This holds true for many upper and lower respiratory infections. Newer lab techniques make it easier to identify specific micro-organisms while in the past, it was not possible to do so.

Some cases of EV-D68 infections were diagnosed in the summer of 2013 in the U.S. and in various parts of the world. In previous years, clusters have been reported in Georgia, Pennsylvania, Arizona, and various countries including the Philippines, Japan and the Netherlands.

So far no clusters have been reported in Louisiana; the Infectious Disease Epidemiology Section's syndromic surveillance system (LEEDS) for upper and lower respiratory tract infections in the emergency departments does not show an increase in visits for these conditions. Influenza-like illness has also not increased in the state.

EV D68 diagnosis, prognosis, treatment

EV-D68 has been associated almost exclusively with respiratory disease. Many infections are mild and self-limited, requiring only symptomatic treatment. Symptoms include fever, body and muscles aches, sneezing, coughing and rash.

However, some patients with severe respiratory illness caused by EV-D68 may need to be hospitalized to receive intensive supportive therapy. There is no data on the number of deaths resulting from the most severe infections. Since the mild infections are not diagnosed, the full spectrum of illness caused by EV D68 is not known.

Available commercial, multi-pathogen detection systems can detect enteroviruses, and are approved by the Food and Drug Administration for use in clinical settings (Luminex® xTAG RVP, Idaho Technologies FilmArray Respiratory Panel). However, these systems use broadly reactive primers that amplify RNA from either human rhinoviruses (HRVs) or enteroviruses, and results are reported as "entero-rhinovirus" or "human rhinovirus/enterovirus". Most hospitals are not able to perform enterovirus typing to identify specific enterovirus. The gold standard test for EV-D68 detection is partial sequencing of the structural protein genes, VP4-VP2 or VP1.

Providers should consider sending a specimen to the state Laboratory for enterovirus testing when the cause of respiratory infection in a severely ill patient (hospitalized) is unclear, or a cluster of respiratory infections occurs including one or more severely ill patients.

Nasopharyngeal swabs are required for Respiratory Virus Panel (RVP) testing; nasal swabs are not acceptable. All samples submitted to the state laboratory must have a Lab 96 - Virology Test Request Form. Samples that are RVP positive at the state laboratory for Rhino/Enterovirus will be forwarded to the CDC for typing. Samples RVP positive for Rhino/Enterovirus at hospitals or reference labs can be forwarded directly to the CDC for typing, but must be coordinated with the Infectious Disease Epidemiology Section. A CDC submission form and notifications must be made prior to sample receipt.

There is no specific treatment for EV-D68 infections; specifically there are no anti-viral medications currently available for this purpose or vaccines. Many infections will be mild and self-limited, requiring only symptomatic treatment. Some people with severe respiratory illness caused by EV-D68 may need to be hospitalized and receive intensive supportive therapy.

Prevention

Clinicians should be aware of EV-D68 as one of many causes of viral respiratory disease, and should report clusters of unexplained respiratory illness to the Infectious Disease Epidemiology Section at 800-256-2748.

Preventive measures include:

- Washing hands often with soap and water for 20 seconds, especially after changing diapers; note that enteroviruses are small viruses without envelopes and therefore are more resistant in the environment than larger viruses with envelopes or bacteria. Hand sanitizers are less effective against enteroviruses; hand washing is the preferred method.
- Avoid touching eyes, nose, and mouth with unwashed hands.
- Avoid kissing, hugging, and sharing cups or eating utensils with people who are sick.
- Disinfect frequently touched surfaces, such as toys and doorknobs, especially if someone is sick.
- Stay home when feeling sick, and obtain consultation from your health care provider.