****This message sent to BC MHOs, PHNLs, CD Nurses, ICPs, ERDOCs, IDSPEC, MEDMICRO, BCCDC Internal Groups, National Surveillance Partners****

Dear Colleagues –

The US CDC has recently reported an increase in hospitalizations among children with severe respiratory illness associated with enterovirus D68 (EV-D68) infection.

Not unexpectedly, confirmed cases of EV-D68 have also been detected in Canada, including recent sporadic detections in British Columbia (BC).

Here we provide you with a brief overview of EV-D68 and offer some related action and advice.

Background

Enteroviruses

Enteroviruses are members of the family *Picornaviridae*, a large and diverse group of small non-enveloped, single-stranded, positive-sense RNA viruses. Human enteroviruses have recently been classified into species labelled A-D, and include serotypes of echoviruses, coxsackieviruses, polioviruses, rhinoviruses and the newer "numbered enteroviruses". Overall, more than 100 serotypes of enteroviruses and of rhinoviruses have been identified.

Enteroviruses cause a wide range of illness: most are subclinical or otherwise associated with common-cold like symptoms, a condition for which they are considered the second most common cause, but other enterovirus manifestations include lower respiratory tract, skin and mucous membrane, and central nervous system diseases.

Enteroviruses show a distinct seasonality with a marked summer/fall pattern in temperate climates.

Enterovirus D68 (EV-D68)

EV-D68 is a rare but known non-polio enterovirus that causes mild to severe respiratory illness. The full spectrum of clinical manifestations is still unknown but EV-D68 has been distinguished by its association with lower respiratory illness. Transmission occurs through respiratory secretions and close contact with infected persons; however, as with other enteroviruses, EV-D68 may also be spread by fecal-oral transmission.

EV-D68 was first identified in California in 1962 but since then has only rarely been reported in the United States compared to other non-polio enteroviruses. Between 2008 and 2010, EV-D68 was associated with several clusters of respiratory illness in Asia, Europe, and the United States, with cases disproportionately occurring among children. Recognition of outbreaks due to EV-D68 has likely been facilitated by improved molecular tests which can now distinguish among enterovirus types.

EV-D68 in the United States

In August 2014, a children's hospital in Kansas City, Missouri, and one in Chicago, Illinois reported increases in pediatric patients hospitalized with severe respiratory illness, including some admitted to intensive care units. Both hospitals reported general increases in the detection of enterovirus/rhinovirus on initial screening of nasopharyngeal specimens using a standard respiratory virus diagnostic panel. Subsequent sequencing of nasopharyngeal specimens collected from patients with severe symptoms identified EV-D68 in 19/22 from Kansas City and 11/14 from Chicago. The median age of patients was 4 years (Kansas City) and 5 years (Chicago), ranging from 6 weeks to 16 years. Clinical presentations

included difficulty breathing and hypoxemia, wheezing, and respiratory distress. Notably, 70% of children had a history of asthma or wheezing, and less than one-quarter were febrile. For more information, see: http://www.cdc.gov/mmwr/preview/mmwrhtml/mm63e0908a1.htm.

As of this morning (September 16), a total of 130 cases of respiratory illness caused by EV-D68 have been confirmed since mid-August in 12 US states [Alabama, Colorado, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Missouri, New York, Oklahoma, and Pennsylvania]. Investigations into clusters of children with severe respiratory illness, possibly due to EV-D68, in other states are ongoing. No deaths have been reported in association with the current outbreak, but some children have required ICU admission and mechanical ventilation.

EV-D68 in Canada

EV-D68 is not a reportable disease in Canada and laboratory testing for EV-D68 is not routinely performed (but is available upon request); consequently, cases are likely under-detected and under-reported. Since 1992, the National Microbiology Laboratory at the Public Health Agency of Canada has detected 82 cases of EV-D68.

On September 15, Alberta health officials reported 18 confirmed cases of EV-D68 including 10 in Calgary, 5 in Edmonton and 3 in central and northern Alberta in association with a spike in the number of children admitted for respiratory illness in the past several weeks. In Ontario, the Windsor Regional Hospital has also reported a sudden increase in pediatric patients attending the emergency department with some admitted for respiratory illness; however, confirmation of etiology is still pending.

EV-D68 in British Columbia

At this time, the BC Centre for Disease Control (BCCDC) has not been notified of any clusters/outbreaks or a similar increase in severe respiratory illness. Overall rates of influenza-like illness (ILI) remain low in BC and emergency department consultations for ILI at the BC Children's Hospital are consistent with expected rates for this time of year (see the most recent influenza bulletin, available here: http://www.bccdc.ca/dis-cond/DiseaseStatsReports/influSurveillanceReports.htm).

However, following investigations prompted by the current situation in several US states, 3 of 4 respiratory specimens recently collected from patients hospitalized in September in BC that were found on initial screen to be enterovirus positive, have today been confirmed at the BC Public Health Microbiology and Reference Laboratory (PHMRL) as EV-D68; the fourth result is pending. The cases have been found across the province and are not limited to a single cluster or health authority. Of note, all three cases in whom EV-D68 has been confirmed in BC were children or teenagers (ages 9-19 years), and two of three included neurologic manifestation (transverse myelitis) that has not been a prominent feature among cases reported thus far from the United States.

Action and Advice

Clinicians should consider EV-D68 infections in children presenting with severe respiratory illness and report any increase or unusual clusters/outbreaks of respiratory illness to their local health authority/Medical Health Officer. More severe respiratory presentations of EV-D68 may be anticipated in association with underlying comorbidity, notably a history of asthma. There is no specific treatment or vaccine for EV-D68. Clinical care is supportive.

Healthcare providers should implement routine infection control practices, including droplet and contact precautions for patients with suspected EV-D68 infection. Surfaces should be cleaned with a hospital-grade disinfectant with a DIN and label claim for non-enveloped viruses.

Only certain laboratories in the Lower Mainland conduct enterovirus testing; however, the PCR-based screening assays generally used do not identify the specific type of enterovirus. Molecular typing specific for EV-D68 by the BC PHMRL is required before cases can be considered confirmed. For hospitalized patients with severe respiratory illness and suspected EV-D68 infection (such as those with a positive enterovirus screening test), clinicians are requested to submit respiratory specimens (nasopharyngeal/oropharyngeal or other specimen as clinically indicated) to the BC PHMRL. If testing is required, please consult your local microbiologist and Medical Health Officer.

The BCCDC is monitoring the situation alongside our national and US partners and will notify you of any changes to the current situation.

Further Information
US CDC fact sheet on EV-D68: http://www.cdc.gov/non-polio-enterovirus/about/EV-D68.html.

Best wishes,
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