Enterovirus – Fall 2023 Surveillance Bulletin

This message sent to: BC MHOs, Medical Microbiologists, Epidemiologists, Infection Control Practitioners, Infectious Disease Specialists, ER Docs, PHNLs, Provincial CD Nurses, BCCDC and others

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Enteroviruses (EV) are causative agents for a wide variety of illnesses ranging from the common cold to aseptic meningitis. They comprise enteroviruses, coxsackieviruses, rhinoviruses, polioviruses, and echoviruses.

EV activity is known to typically increase each year during the late summer to early fall. In keeping with this, surveillance screening of respiratory samples this fall at the BCCDC Public Health Laboratory shows that the number of positive tests and the test positivity for EV and rhinovirus (RV) have been gradually increasing since the beginning of September 2023 among adults and children. EV activity this year has remained below or within historical averages (2014/15-2018/19 seasons).

This bulletin summarizes BCCDC EV fall 2023 surveillance findings and trends, from the EV-D68 specific identification by real-time PCR to the EV molecular typing to identify any other serotype.

Key takeaways:

- EV-D68 is associated with biennial peaks, with the last peak year occurring in 2022. There was an absence of EV-D68 activity in BC this year, with no documented locally acquired cases of EV-D68 infection among BCCDC's surveillance cohort from July 27 to October 31, 2023.
- There are opportunities to improve the molecular surveillance of enteroviruses for severe outcomes. Clinicians are recommended to ask for molecular typing for patients testing positive with EV presenting with meningitis, or with severe clinical presentations.

Enterovirus D68

Enterovirus D68 (EV-D68) is an EV serotype. EV-D68 typically causes mild respiratory illness but has been associated with severe respiratory infections in the past, as well as acute flaccid myelitis, a rare but serious neurologic complication causing limb weakness primarily among children.

EV-D68 is associated with biennial peaks. In 2014, EV-D68 was associated with a large outbreak of severe respiratory illness in Canada and the USA, with subsequent peaks observed in the fall of 2016 and 2018. Some EV-D68 activity was also seen in 2020 but was limited because of COVID-19 public health measures. In 2022, increased activity of EV-D68 was observed in BC, at levels similar to what was seen in 2014. A total of 319 EV-D68 cases were reported between August and November 2022, which represented 27% of the subset of the EV/RV positive specimens that underwent EV-D68 screening by real-time PCR that season.

Further characterization of EV/RV positive specimens to assess for EV-D68 is undertaken upon clinician request or through targeted laboratory surveillance. In fact, for persons 18 years and under, routine EV-D68 specific identification by real-time PCR is being performed for surveillance purposes during summer and fall on a subset of respiratory samples when EV/RV is detected on a respiratory panel. **Note that this surveillance typing result is not routinely reported out to clinicians, so ordering clinicians should continue to request EV-D68 typing if there is a clinical suspicion of EV-D68 specifically.**

Based upon this surveillance, from July 27 to October 31, 2023, 710 EV/RV-positive respiratory collected specimens were screened at BCCDC Public Health Laboratory for EV-D68 by real-time PCR. A large proportion of these specimens were from children seen at BC Children's Hospital. Of all these specimens, only one was positive for EV-D68 and was likely travel-associated. **From July 27 to October 31, 2023, there were no documented locally acquired cases of EV-D68 infection among this surveillance cohort.**

Despite the absence of EV-D68 activity in BC this year, clinicians are recommended to:

- Consider EV-D68 as part of the differential diagnosis in children presenting with acute, severe respiratory illness (with or without fever) by testing for a range of viral pathogens including EV/RV.
- Consider acute flaccid myelitis in patients with acute flaccid limb weakness, especially occurring after respiratory illness or fever, particularly between August to November.
- **If a respiratory sample is being submitted, request EV-D68 typing specifically so that the result is reported to the ordering clinician.**

For more information on EV-D68, please see Enterovirus-D68 on the BCCDC website.

Instructions on requesting testing for clinical purposes using a respiratory panel able to detect multiple respiratory viruses can be found within the eLab Handbook (Search for 'enterovirus').

Other Enterovirus Molecular Surveillance

In BC, clinicians are recommended to ask for molecular typing for patients testing positive with EV presenting with meningitis, or with severe clinical presentations (e.g., neonates with myocarditis, hepatitis or other systemic manifestations).

Between July 1 and October 25, 2023, BCCDC sent nine EV-positive specimens for molecular typing to the National Microbiology Laboratory (NML), in Winnipeg. More than half of these specimens were among infants of less than one year of age. Of these nine EV-positive specimens provided for molecular typing, five were coxsackieviruses (two coxsackievirus B1, one B4, one B5, and one A9) and one was echovirus 21. Two specimens were enterovirus-negative on retesting at NML, and one result was pending.

This information is of note since the United Kingdom reported an outbreak of severe enterovirus myocarditis affecting 20 neonates between June 2022 and April 2023. Typing revealed that nine cases were coxsackie B3, six were B4, one was B1, one was B5, and three were unknown.

France has also reported an increase in severe neonatal sepsis due to echovirus 11 in three regions between July 2022 and April 2023. As of July 2023, 10 cases and seven deaths were reported, with a case fatality ratio of 78%. Croatia, Italy, Spain, Sweden and the United Kingdom have also reported cases of neonatal sepsis due to echovirus.