BC PUBLIC HEALTH MICROBIOLOGY & REFERENCE LABORATORY

Vancouver, BC

LABORATORY TRENDS

October 17, 2014

In this Issue:

New Ebola Virus Testing Capacity

The British Columbia Public Health Microbiology Laboratory (BCPHMRL) is now able to offer Ebola Virus Disease (EVD) PCR testing on blood samples. This has been made possible through collaboration with the National Microbiology Laboratory (NML) and the Canadian Public Health Laboratory Network.

Any request for EVD laboratory testing requires the notification of facility/regional laboratory leaders as well as the BCPHMRL Medical Microbiologist On-Call (604-661-7033) who are the Emergency Response Assistance Plan (ERAP) Provincial/Territorial Response Coordinators for the province. If EVD testing is approved, appropriate transport to the BCPHMRL will be coordinated with our Biosafety Officer.

This service is available 7 days a week for approved requests. All PCR positive results will be confirmed by the NML.

General Questions and Answers Related to EVD Testing

1. What samples should be submitted for EVD nucleic acid testing (NAT)?

Send two 5 mL EDTA tubes for EVD NAT and two 5 mL tubes gold top serum SST for other tests as determined by the assessment and differential diagnosis. *There needs to be at least three days of symptoms for the test to reliably rule in or out infection.*

2. What is the sensitivity and specificity of the test?

The sensitivity is unknown, but for a symptomatic case with at least three days of clinical signs/symptoms of EVD one would expect the sensitivity to approach ~99%. The specificity is unknown but likely ~99%.

3. At what point in the clinical course of EVD will the test have 100% sensitivity? And, would there be times (*e.g.* if a person has early-onset symptoms or symptoms due to another cause) when a negative test would need to be repeated to fully rule-out EVD infection?

Repeat EVD NAT testing is required if a patient is tested too early during symptomatic phase. Most people become symptomatic with 6 to 12 days post exposure depending on the type of exposure, with a range of 2 to 21 days. Patients need to be symptomatic for at least three days to reliably detect EVD by NAT. Given that the differential diagnosis for most cases will be broad, it may be important to diagnose other common infections to appropriately manage suspect cases unless EVD is at the top of the differential.

4. What are the hours and days that the test will be offered?

Testing will be available 24/7. An immediate teleconference will be convened with the MHO, clinician, local Micro/ID and BCPHMRL Med Micro On-Call to agree on the risk assessment and the testing plan.

5. What is the test ordering protocol to collect and send specimens?

Testing will be coordinated with Clinician/MHO/local Med Micro/ID/BCPHMRL Med Micro On-Call. The team will also coordinate sample transport using ERAP to ship samples to the BCPHMRL/BCCDC.

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6. Does the BCPHMRL EVD NAT replace sending specimens to the NML?

Sites will not send directly to NML unless approved by BCPHMRL. Screening by EVD NAT will be done by BCPHMRL. Any positive results are preliminary until confirmed by NML.

7. What is the expected turnaround time for results and at what point can hospitals react to the results?

The expected turnaround time is about 4 hrs from receipt of the sample at the BCPHMRL. The risk assessment team will reassess patient and public health management based on test results.

8. What is the reporting procedure?

Results will be called to the clinician/MHO/local Med Micro/ID/BCPHMRL Med Micro On-Call. Based on test results, the team will update the risk assessment and communicate next steps.

9. What is the process to manage tests that have been drawn or performed prior to EVD being considered?

This will require a risk assessment by the team who will provide direction.

Source: Dr. M. Krajden, Virology Program

Diagnostic Accreditation Program

The BCPHMRL was recently audited as part of the 4 year accreditation cycle of Accredited Laboratory Medicine Facilities. During the two-day audit, surveyors assessed the BCPHMRL on conformance to these provincial DAP accreditation standards for Laboratory Medicine Accreditation Standards.

In the summation conference, the BCPHMRL was informed that there was no mandatory standards citations. Staff were congratulated on outstanding work and on a successful audit.

These audits are two days within the timeframe of continuous and routine application of quality standards for facilities. Maintaining the quality framework takes dedication and teamwork from all staff at all levels of the organization and is an investment in time and effort on the part of all. Preparing for these audits provide opportunities for team learning and work to ensure ongoing continual quality conformance. At the BCPHMRL, a core team of voluntary quality champions became internal auditors last year. Mock inspections were provided by the internal auditors to identify gaps and non-conformances prior to the scheduled inspections. Our volunteer internal auditors generated opportunities for improvement while at the same time promoted and reinforced best practices.

Respiratory Illness Associated with Enterovirus D68

Since August, enterovirus-D68 (EV-D68) has been causing some severe, respiratory illnesses in young children in Canada and the United States (US). Increases of severe respiratory illness with patients in pediatric intensive care units were first reported in Kansas and Illinois with intensified spread within the US with now 46 states reporting EV-D68-like illness activity. Canada first reported cases of EV-D68 in September and has now also observed its spread to most provinces.

The BCPHMRL has been able to identify 38 EV-D68 positive samples from 36 patients. These are from 24 (67%) males and 12 (33%) females. Twenty-three (64%) cases are under 10 years of age, 7 (19%) cases are between the ages of 10-19 years and 5 (14%) cases are between the ages of 20-34 years (Figure 1). In addition, 1 case (80-84 years) from an outbreak at a long-term care facility has also been laboratory confirmed. Sample collection dates ranged from the first cases at the end of August through mid-September; the bulk (78%) of the cases had samples collected from the end of September to present (Figure 2). Cases residing in all health authorities have been laboratory confirmed.

Figure 1
Age distribution of EV-D68 cases to date, Virology and Molecular Microbiology & Genomics Programs, BCPHMRL.

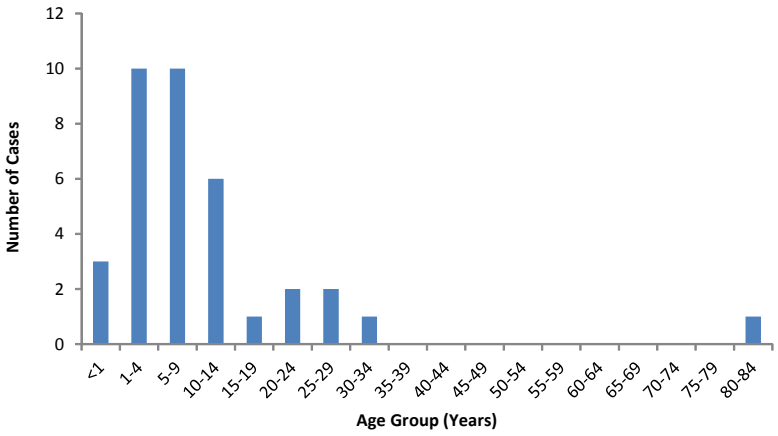
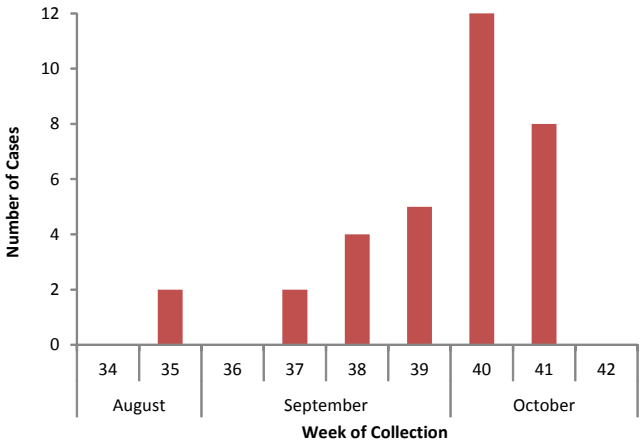


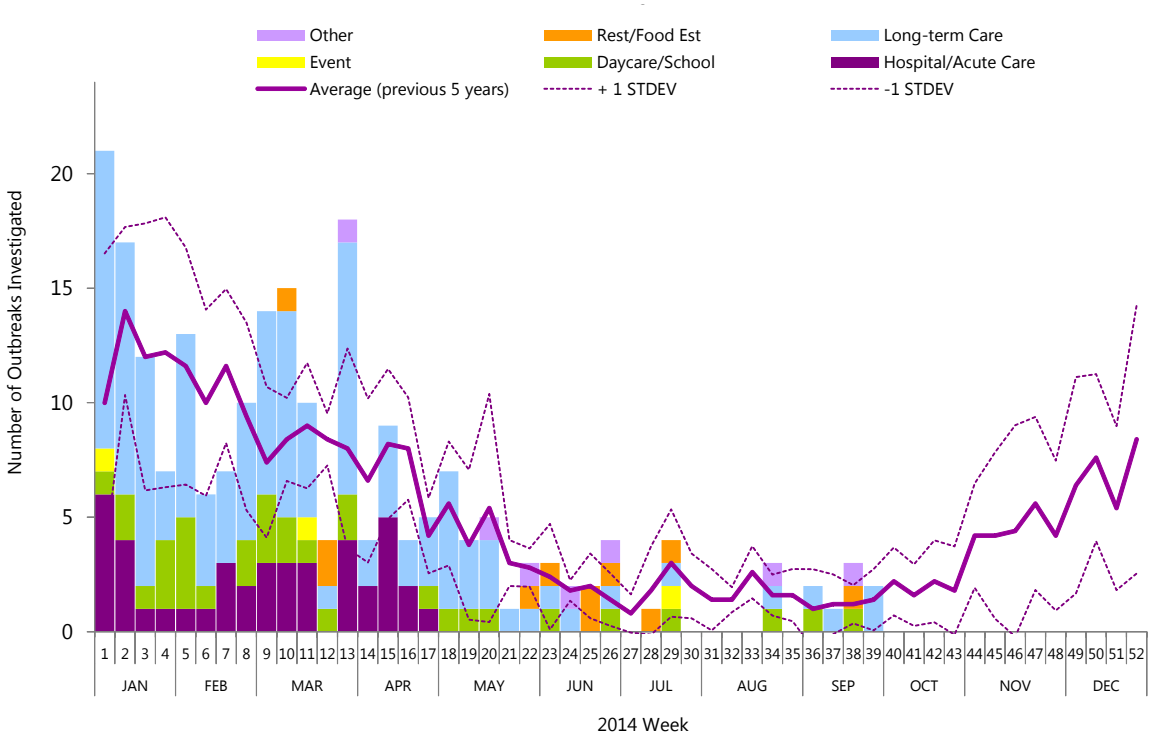
Figure 2
Period of sample collection of EV-D68 cases to date, Virology and Molecular Microbiology & Genomics Programs, BCPHMRL.



Gastrointestinal Outbreaks

In September, the BCPHMRL investigated 8 gastrointestinal (GI) outbreaks, consistent with what is expected at this time of the year (Figure 3). Outbreaks were identified from 4 long-term care facilities, 2 daycares, 1 food service establishment and a cruise ship. Samples were submitted for 4 (50%) of these outbreaks with norovirus detected in 3 (75%).

Figure 3
Gastrointestinal outbreaks investigated* in 2014, Environmental Microbiology, Public Health Advanced Bacteriology & Mycology, Parasitology and Virology Programs, BCPHMRL.

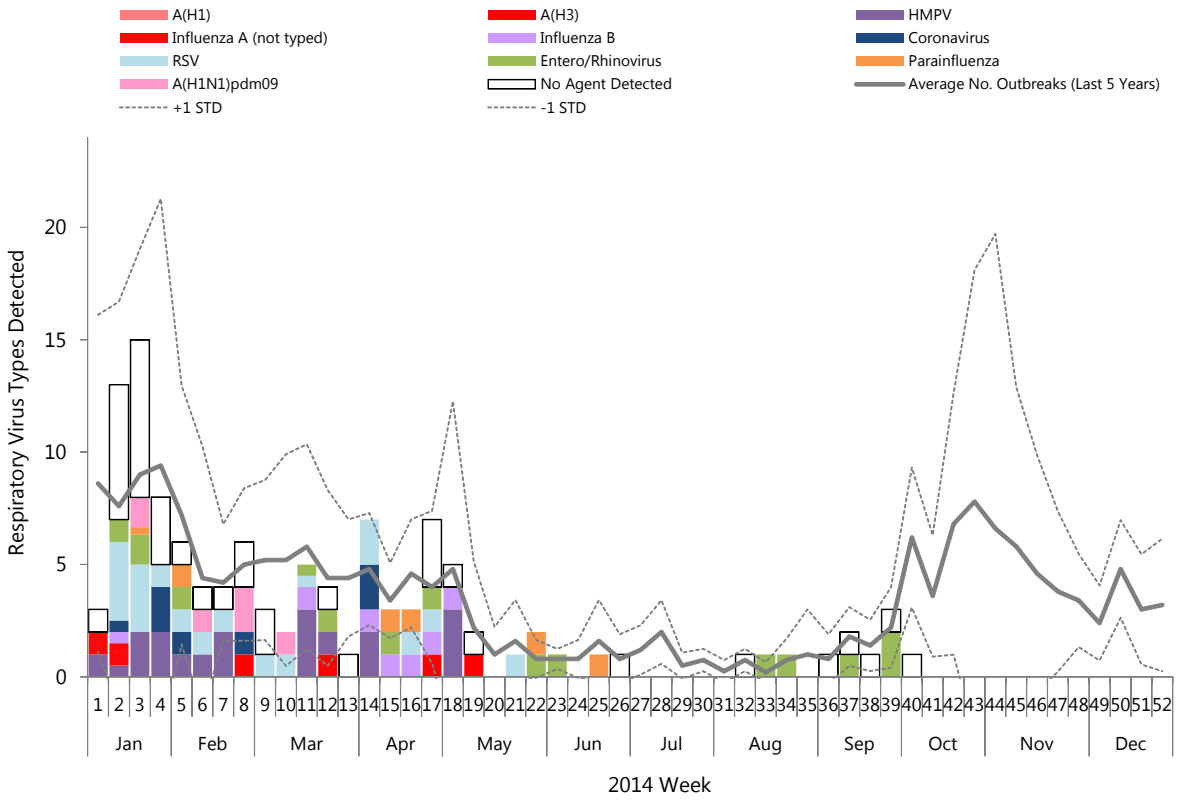


* The data available are from outbreaks in which the BCPHMRL has been notified. Some acute care microbiology laboratories are also testing for norovirus in the province and these data may not include outbreaks from all Health Authorities. Given the nature of GI outbreaks, samples are not always available for testing.

Influenza-Like Illness Outbreaks

In September there were 8 influenza-like illness outbreaks investigated which is consistent with the historical trend at this time of the year (Figure 4). Samples were submitted from long-term care facilities with entero/rhinovirus detected from samples from 3 (37%) of these outbreaks.

Figure 4
Influenza-like illness outbreaks investigated* in 2014, Virology Program, BCPHMRL.



* The data available are from outbreaks in which the BCPHMRL has been notified. Some acute care microbiology laboratories are also testing for norovirus in the province and these data may not include outbreaks from all Health Authorities. Given the nature of GI outbreaks, samples are not always available for testing.

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A Report of the BC Public Health Microbiology & Reference Laboratory, Vancouver, BC

The BC Public Health Microbiology Reference Laboratory (BCPHMRL) at the BCCDC site provides consultative, interpretative testing and analyses for clinical and environmental infectious diseases in partnership with other microbiology labs and public health workers across the province and nationally. The PHMRL is the provincial communicable disease detection, fingerprinting and molecular epidemiology centre providing advanced and specialized services along with international defined laboratory core functions province-wide.

This report may be freely distributed to your colleagues. If you would like more specific information or would like to include any figures for other reporting purposes, please contact us.

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