



LABORATORY TRENDS



January 20, 2015

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Laboratory News

Molecular Network for Public Health

Building on previous work from the BC Public Health Laboratory Network, the public health molecular leadership is provided by our Molecular Microbiology & Genomics Program (MMG). The focus of the Network is for the benefit of patients, population and microbiologist partnership for public health, by strengthening public health molecular microbiology across the province. Once approved, our team of molecular microbiology and genomic experts may assist Network members with validation panels, assay verification, QA/QC issues, joint molecular education and collaborative project work. Our new processes also outline how province-wide troubleshooting may be supported.

Members working with our team must first meet molecular laboratory standards set by the BC Diagnostic Accreditation Program and adhere to established communications protocols comprising of project applications and requests for assistance. New flowcharts of processes and procedures have been developed with the MMG by our Network Manager (Y. Chang, yin.chang@bccdc.ca) who is also our central point of contact for any troubleshooting or concerns related to molecular testing. All requests under the Molecular Network **must** be submitted to our Network Manager where they are reviewed and prioritized in context of other workload.

A project to transfer the BCPHMRL HSV/VZV assay to Island Health at Royal Jubilee Hospital is currently a pilot. We continue our communication with other health authorities by discussing processes and new developments in our public health Network.

Handling and Processing of Suspect Creutzfeldt-Jakob Disease (CJD) Samples

CJD is a progressive fatal neurological disease caused by prions, a transmissible and unusual group of infectious agents. Not only are prions unique in their lack of classic genetic structures (nucleic acids for replication and coding) but they are also highly resistant to standard microbial sterilization/decontamination methods. Stringent bio-safety handling processes and procedures must be used by laboratory staff to avoid exposure.

The BC Public Health Microbiology Reference Laboratory (BCPHMRL), as BC's reference laboratory, has developed an algorithm after recent review of national and international protocols (Figure 1). We depend on submitting laboratories to alert us to these high risk samples by properly labeling suspect CJD samples sent to us for any type of testing.

Although no occupational infections of CJD have been reported and there has been no increased incidence of CJD amongst laboratory professionals, there have been incidents in BC recently of high risk samples arriving with no notice. We request that medical microbiologists aware of and planning to send suspect samples to BCPHMRL for CJD or 14-3-3 protein testing, alert our medical microbiologists prior to transport. We highlight the process below for use across BC and will share this requirement for alerts prior to shipping widely through the BC Association of Medical Microbiologists and other laboratory professional groups.

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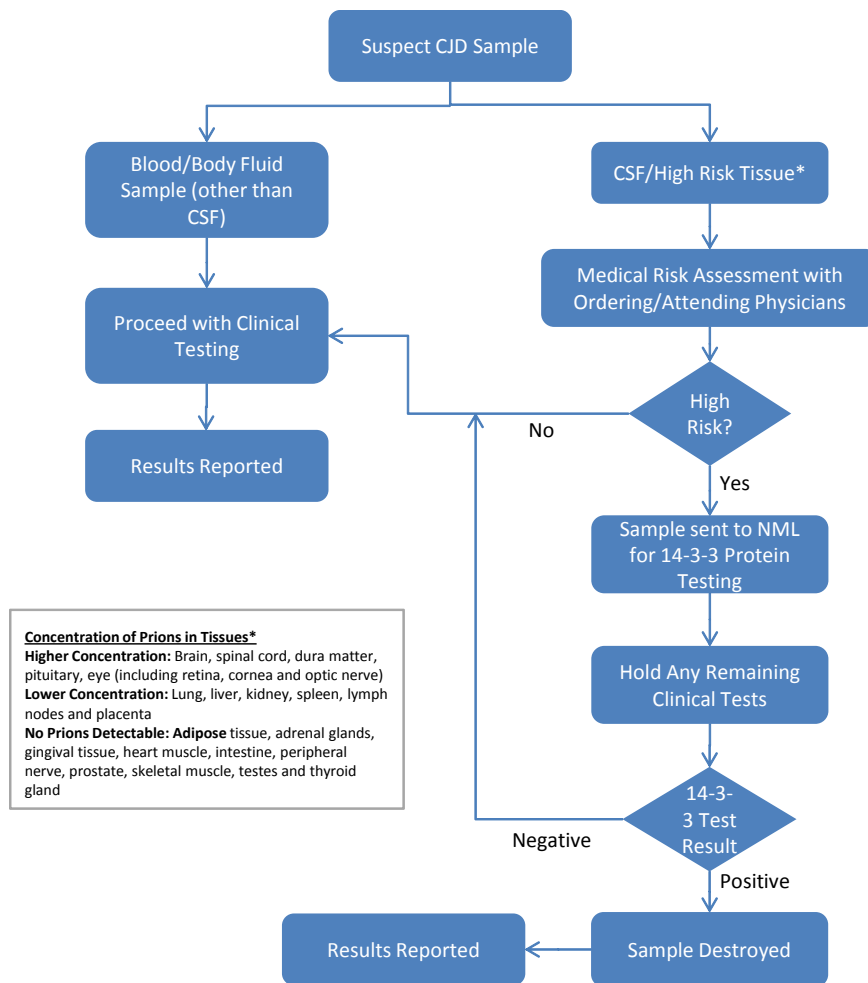


Handling and Processing of Suspect Creutzfeldt-Jakob Disease (CJD) Samples

...continued

Figure 1

Sample alert and processing for CJD/14-3-3 protein testing. Samples for CJD testing may have additional requests for diagnostic testing. If risk is deemed low, additional laboratory testing may proceed at the same time as CJD testing. If risk is deemed high, the sample will be sent for CJD/14-3-3 protein testing and held from further testing until results are available. If the test result is positive, the sample will be appropriately destroyed and will not be tested further.





Influenza Surveillance

In the weeks of December, volumes for respiratory testing have ranged from 289-337; at this time, influenza A positivity increased from 14% to 24% (Figure 2). In the last week of December/first few days of January, respiratory volumes dramatically increased to 676 tests performed with a detection rate of 46% (Figure 2). Influenza A(H3) has been the dominant subtype detected so far with only two cases of A(H1N1)pdm09 seen earlier this season. Rates of influenza B have been low from 1-2% (Figure 2).

Nationally, detections of influenza A have been on a steady rise since November. The Prairies have reported higher rates of influenza A up until the end of December/first week of January when all the provinces, except BC, observed comparable influenza A rates (33-36%) (Figure 3).

Figure 2 Respiratory testing volumes and influenza detection rates, Virology Program, BCPHMRL.

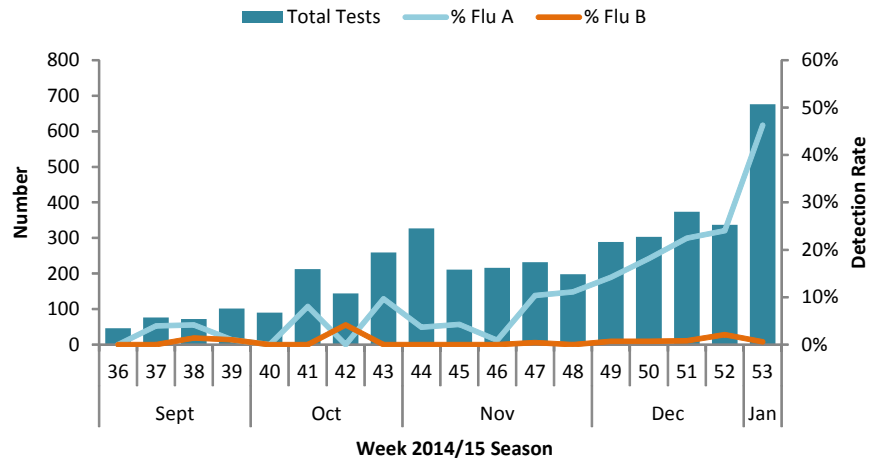
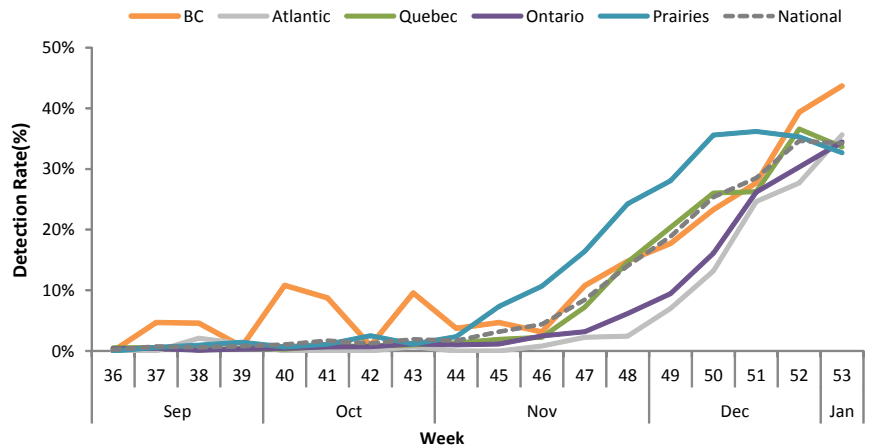


Figure 3 Influenza A detection rates across Canada, September 2014 to present. Data derived from FluWatch reports. Note: While other laboratories test for influenza in the province, BC data is derived from reports by the BCPHMRL.

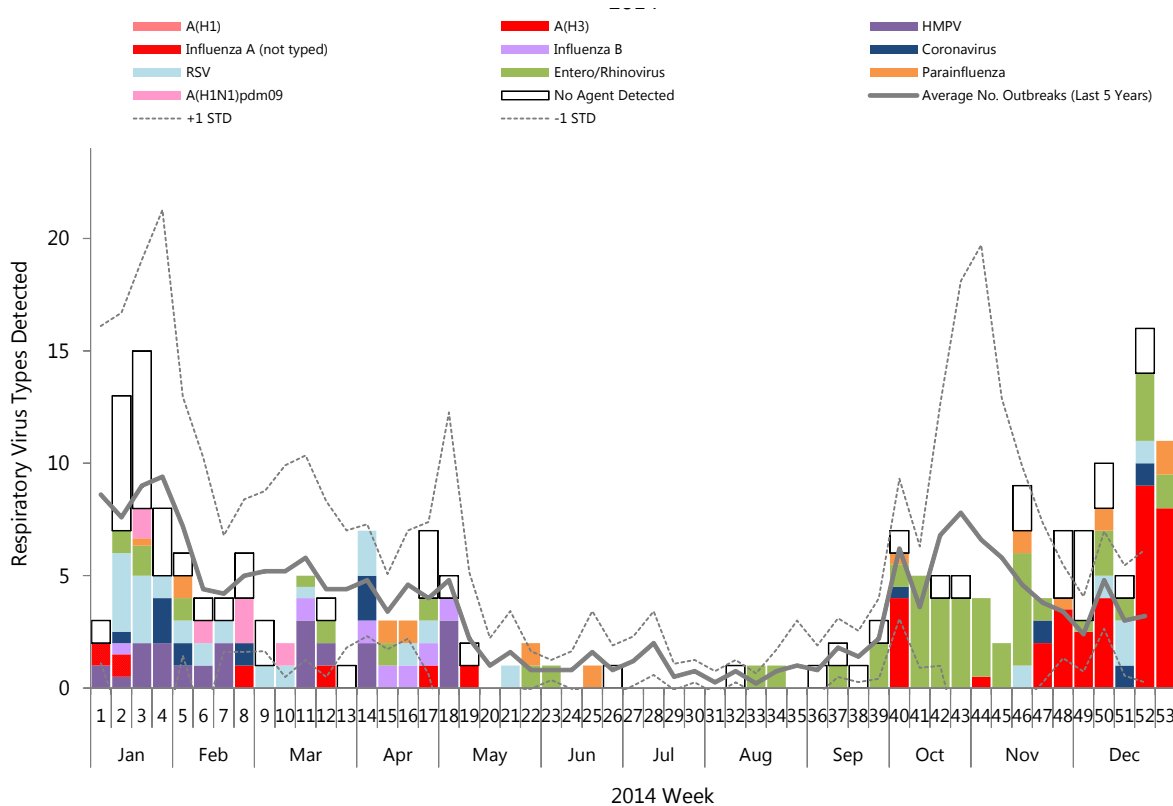




Influenza-Like Illness Outbreaks

In December there were 49 influenza-like illness outbreaks investigated. This has been beyond the higher end of what has been seen historically at this time of the year and is comparable to pandemic H1N1 levels during October-November, 2009 (Figure 4). Samples were submitted from 40 (82%) long-term care facilities, seven (14%) hospitals, one (2%) school and one (2%) community outbreak. A variety of viruses were detected from submitted samples, including: 23 (47%) outbreaks with influenza A(H3) detected, six (12%) outbreaks with entero/rhinovirus detected, four (8%) outbreaks with respiratory syncytial virus detected, two (4%) outbreaks with parainfluenza detected and one (2%) outbreak with coronavirus detected. Four outbreaks had mixed infections of entero/rhinovirus with another virus including two outbreaks with separate patient samples positive for entero/rhinovirus and coronavirus, one outbreak with with separate patient samples positive for entero/rhinovirus and parainfluenza and one outbreak with separate patient samples positive for entero/rhinovirus and influenza A(H3).

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



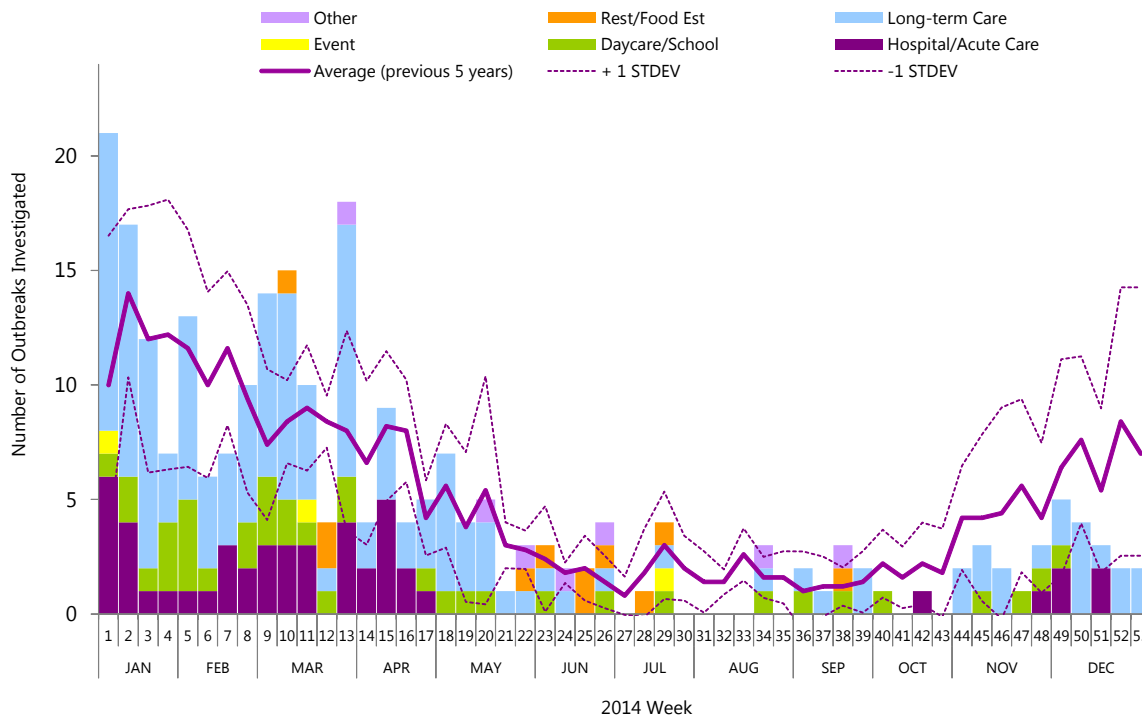
* The data available are from outbreaks in which the BCPHML has been notified. Some acute care microbiology laboratories are also testing for influenza in the province.



Gastrointestinal Outbreaks

In December, the BCPHMRL investigated 17 gastrointestinal (GI) outbreaks, which is below the average of what has been previously investigated at this time of the year (Figure 5). Outbreaks were identified from 12 (71%) long-term care facilities, four (23%) daycares and one (6%) daycare/school. Samples were submitted for 14 (82%) of these outbreaks with norovirus detected in five (36%) long-term care facilities and three (21%) hospitals.

Figure 5
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.



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.

Editor: Yin Chang

Contact: yin.chang@bccdc.ca

Website: www.bccdc.ca/PHSALaboratories

Co-Editors:

Biosafety, Biosecurity, Biohazard Containment Program

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