BC PUBLIC HEALTH MICROBIOLOGY & REFERENCE LABORATORY
Vancouver, BC

LABORATORY TRENDS

May 20, 2015

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Laboratory News

Food Safety Information Network

The Government of Canada recently announced an investment of $30.7M over 5 years to create the Food Safety Information Network (FSIN), aimed at strengthening Canada's food safety system. The FSIN will facilitate data sharing and analysis and link federal and provincial food safety authorities as well as private food testing laboratories across Canada. The hope is that detection and response time to foodborne events will be improved.

As part of this network, Dr. Judy Isaac-Renton, Public Health Laboratory Director, BC Public Health Microbiology & Reference Laboratory (BCPHMRL), Dr. Natalie Prystajecky and Brian Auk, members of the BCPHMRL Environmental Microbiology Program, recently met with Susan Armstrong-Laycock and Karen Jessett, representatives of the FSIN to discuss BCPHMRL's participation in the network. Representatives from BCPHRML and the Canadian Food Inspection Agency Burnaby Laboratory met with Cathy McLeod, Parliamentary Secretary to the Federal Minister of Health, to discuss the vision for the network and collaborative efforts for implementation.

The aim of the FSIN is to leverage the expertise of its federal, provincial and territorial partners to coordinate national capacities and capabilities and share best practices to better protect and respond to food safety incidents and emergencies. This includes the sharing of food safety information and laboratory data in near real-time with the implementation of web technologies. Overall, this collaborative network will strengthen laboratory response capacity for the detection of emergency and ongoing food safety threats.

From left to right: Katie Eloranta (CFIA Burnaby), Susan Armstrong-Laycock (CFIA-FSIN), Dr. Natalie Prystajecky (BCPHMRL), Cathy McLeod (Parliamentary Secretary to the Minister of Health and Western Economic Diversification - Kamloops-Thompson-Cariboo), Karen Jessett (CFIA-FSIN), and Rohini Pathak (CFIA Burnaby).

HIV 4th Generation Testing Announcement

On May 27, 2015 the BCPHMRL High Volume Serology, Central Processing & Receiving Laboratory located at the BC Centre for Disease Control will switch to the 4th generation HIV antigen/antibody screening test instead of the current 3rd generation anti-HIV test.

For most sites this will not require any change in the process of test ordering. All HIV screening requests will involve the 4th generation HIV screening test.

The 4th generation HIV antigen/antibody screening test narrows the seroconversion window from the current 22-23 days to approximately 17 to 18 days (Taylor *et al*, 2015). This will enable earlier detection of acute or recent HIV infections. The laboratory will continue to perform a 4th generation supplemental test (using a second manufacturer's instrument) on all screen reactive specimens. Where appropriate HIV Western Blot or HIV RNA testing will be performed to confirm or rule out HIV infection. A comprehensive interpretation will be included with the test results.

The laboratory will continue to perform pooled HIV nucleic acid testing on selected high-risk populations to identify pre-seroconversion infections.

Reference:

Taylor, D., Durigon, M., Davis, H., Archibald, C., Konrad, B., Coombs, D., Gilbert, M., Cook, D., Krajden, M., Wong, T., and Ogilvie, G. 2015. Probability of a false negative HIV antibody test result during the window period: a tool for pre- and post-test counselling. Int J STD AIDS. Mar; 26(4): 215-24.

Dengue Fever Cases in BC from Returning Travelers

Dengue is a century-old disease caused by the single-stranded RNA flavivirus. This virus causes a wide range of symptoms in humans, from a self-limited Dengue fever (DF) to a life threatening Dengue hemorrhagic fever (DHF) or Dengue shock syndrome (DSS). There are four antigenically different serotypes, DENV-1 to 4, very closely related to each other. First time exposure to any of the serotypes may cause a minor febrile illness; however, secondary infections with the same serotype or a different serotype may cause severe diseases (DHF, DSS) in both children and adults.

Currently almost 40% of the world's population live in areas where there is a risk of getting infected with Dengue virus. This includes over 100 countries in Asia, the Pacific, the Americas, Africa and the Caribbean. Year round British Columbians travel to many places including Mexico and the Caribbean and can potentially bring back the virus as an undesired souvenir. Fortunately, we do not have the mosquito vectors (*Aedes aegypti* and *Aedes albipictus*) in BC that can spread the virus from person to person.

If travelers experience sudden onset of high fever with severe headache, chills, body aches, and pain with eye movement, they should seek medical attention. The BCPHMRL offers serological testing to detect possible Dengue cases. The test requires a blood sample, which should be collected in serum separator tubes and be sent refrigerated to BCPHMRL. Blood samples should be collected during the febrile phase (acute), as well as 2 weeks after submission (convalescent) of the first (acute) sample. Interpretation of single sample test results is challenging.

BCPHMRL analyzed Dengue testing data from the last 5 years and it appears that test numbers have been steadily increasing since 2010. The seropositivity rate, however, has not shown a dramatic increase (Figure 1). Analysis of the average monthly data over the past five years shows that there is an increase in testing starting from November of the previous year until April of the following year. This may reflect travel habits over the winter/spring months as residents return from Dengue-risk areas with suspect infections. BC residents can prevent mosquito bites by using mosquito repellents containing DEET, while travelling abroad. This would also help in avoiding other mosquito-borne diseases such as Chikungunya virus infections.

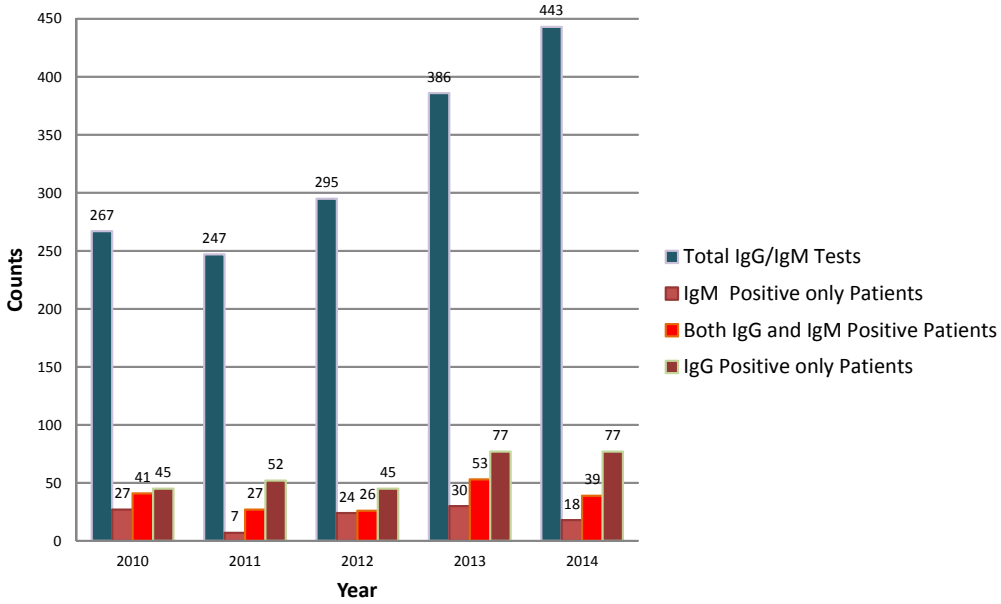


Figure 1 _____
Travel-related dengue virus cases 2010 - 2014, Zoonotic Diseases & Emerging Pathogens Program, BCPHMRL.

Influenza Surveillance

In the past two months since we reported on influenza testing, we have seen respiratory test volumes decrease (Figure 2). Influenza A positivity in March and April also decreased from detection rates in February and were between 0% and 8%. The dominant subtype continued to be A(H3N2) with only a handful of cases of influenza A(H1N1)pdm09. Influenza B rates continued to increase with rates between 8% to 16% (Figure 2).

Nationally, detections of influenza A have decreased in all provinces, although positivity rates in the Atlantic Provinces continued to be between 16% and 20% in March before decreasing April (Figure 3A). Rates of influenza B have steadily increased in all provinces in March and April with the Atlantic Provinces once again showing higher rates of between 20% to 26% (Figure 3B).

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

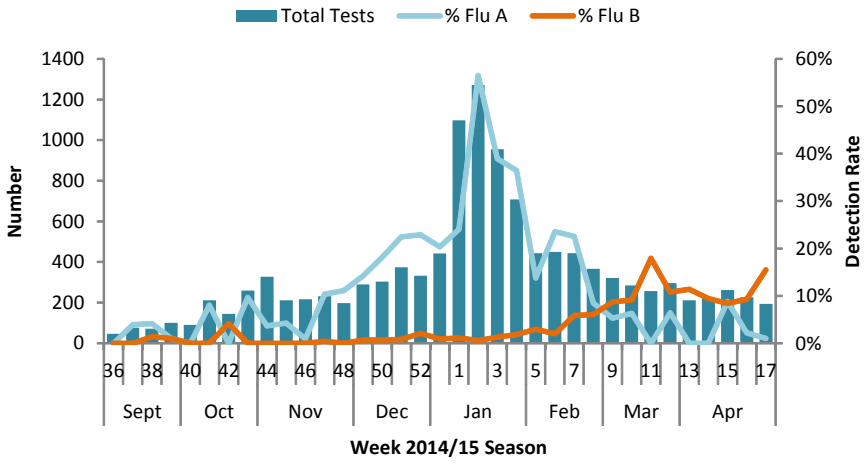
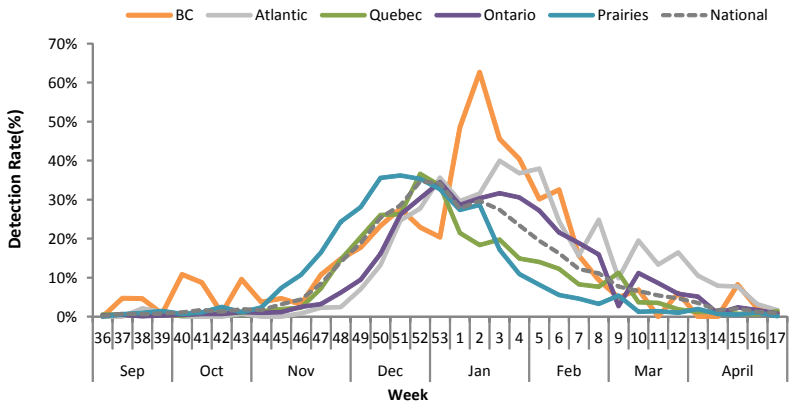
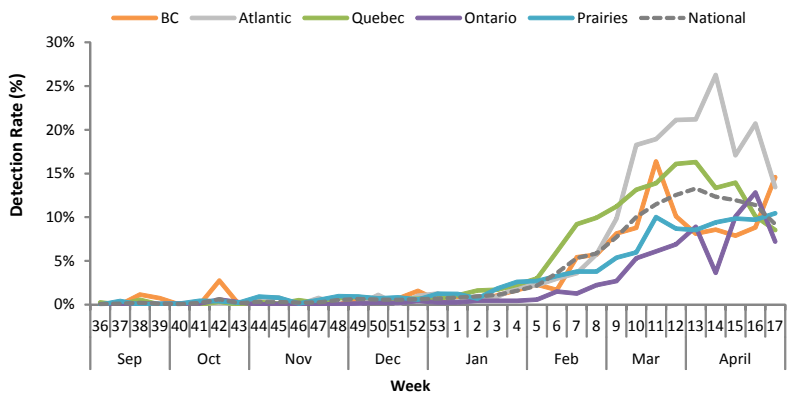


Figure 3
Influenza A (A) and influenza B (B) detection rates across Canada, September 2014 to present. Data derived from FluWatch reports. Note: While other laboratories test for influenza in the province, BC data is derived from reports by the BCPHMRL.

A



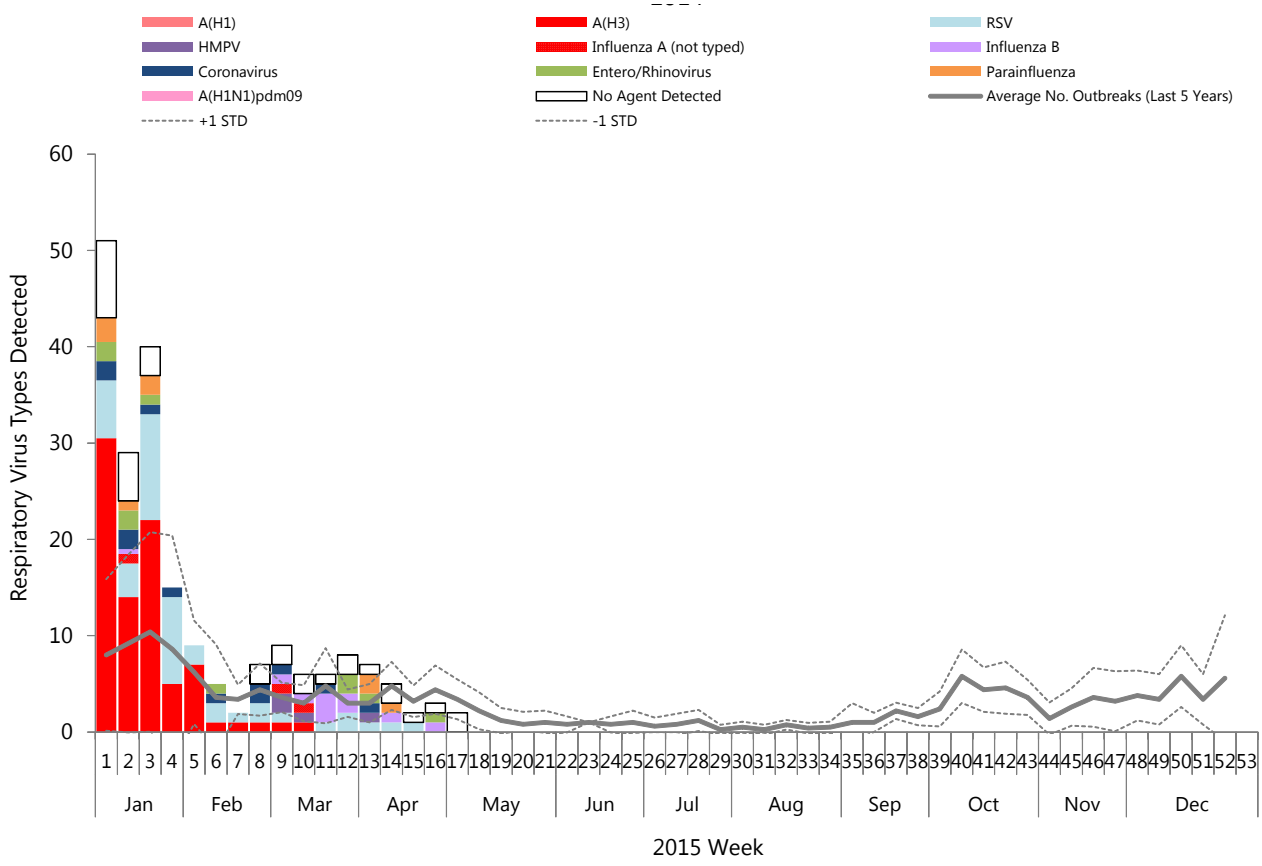
B



Influenza-Like Illness Outbreaks

In March and April, the Virology Program investigated 48 influenza-like illness outbreaks (Figure 4). This has been on the higher end of historical trends, but no where near the numbers seen in January. During this time, outbreaks occurred at 42 longterm care (LTC) facilities (88%) with the following detected: 17% (7) influenza B, 12% (5) respiratory syncytial virus (RSV), 10% (4) human metapneumovirus, 7% (3) parainfluenza virus, 7% (3) entero/rhinovirus, 5% (2) influenza A, 5% (2) influenza A(H3), 5% (2) coronavirus, and 2% (1) outbreak with both entero/rhinovirus and human metapneumovirus detected. There were 5 (10%) hospital-related outbreaks where RSV was detected in two outbreaks, influenza B detected in another outbreak and coronavirus was detected in another separate outbreak. Finally, there was one (2%) community-linked outbreak where influenza B was detected.

Figure 4
Influenza-like illness outbreaks investigated* in 2015, 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 influenza in the province.

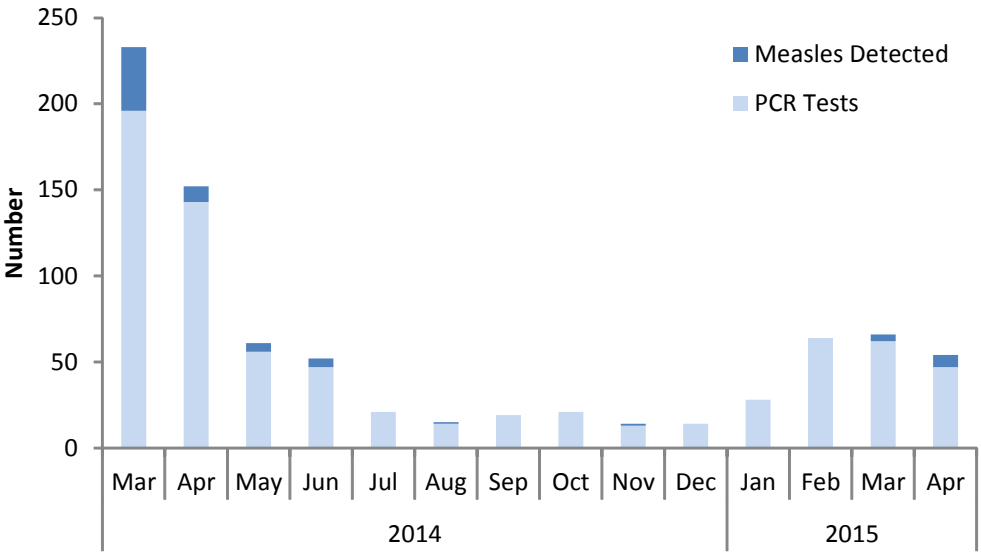
Measles Outbreaks

In March, an unvaccinated male high school student contracted measles following a school trip to China. Seven additional teenagers and 3 adults also became ill with measles following exposures to the index case during and following the trip and during the flight home to Vancouver. The genotype has been determined to be H1, a genotype that has been circulating in China.

The last measles outbreak in the province was last year from March-May in Fraser East. Over 400 cases were reported in a religious community with objections to immunization. The outbreak also eventually spread outside this community where a few cases were reported. Laboratory confirmation was available for 33 cases and the genotype, when available, was determined to be D8, the same strain imported to Canada from the Netherlands multiple times the previous year.

Samples for measles testing include nasopharyngeal, throat and urine samples for measles PCR and acute and convalescent sera for virus serology. Positive PCR samples are sent to the National Microbiology Laboratory for genotyping.

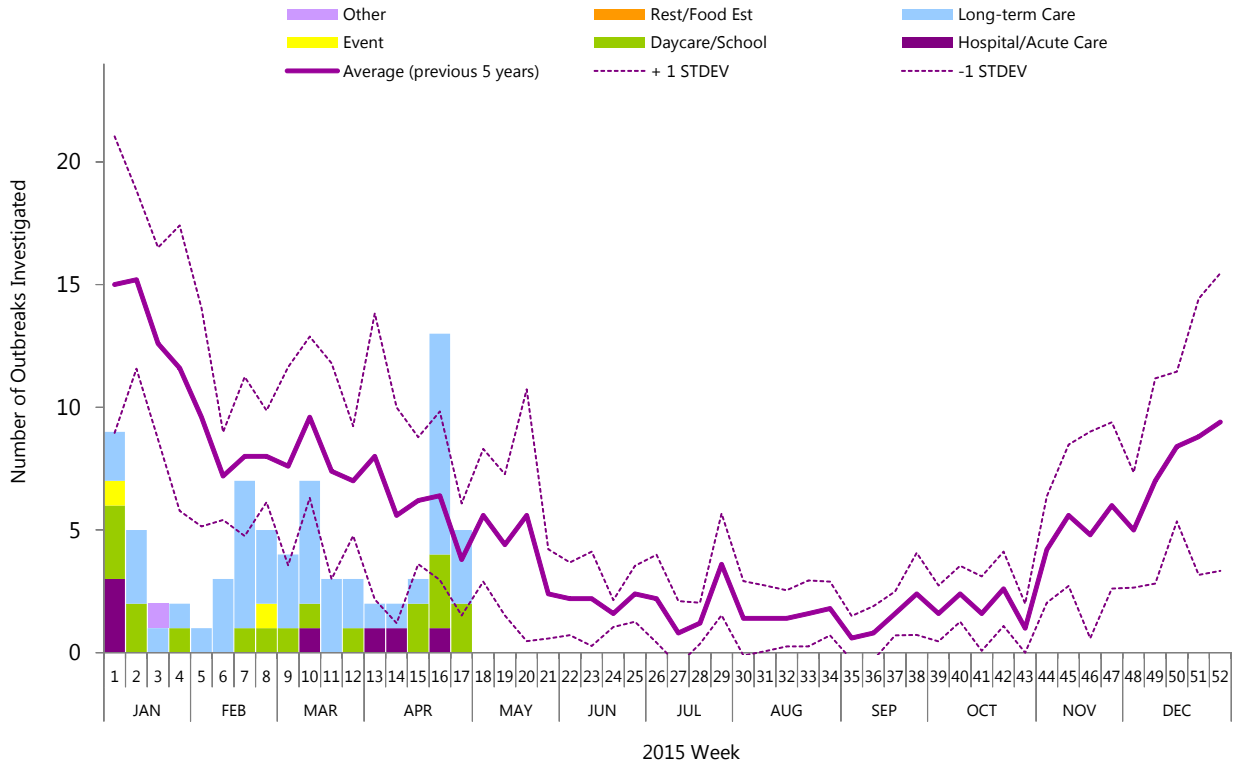
Figure 5
Measles PCR testing at the Virology Program, BCPHMRL.



Gastrointestinal Outbreaks

In March and April, the number of gastrointestinal outbreaks investigated (42) were at the lower end of historical averages until about the last two weeks in April (Figure 6). Outbreaks were investigated from 28 (67%) LTC facilities, 10 (24%) daycares/schools, and four (9%) hospitals. Samples were received from 24 (57%) of these outbreaks with norovirus detected in 21 (84%),

Figure 6
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.

LABORATORY TRENDS

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Vancouver, BC

May 20, 2015

LM LABS

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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