



LABORATORY TRENDS



April 19, 2013

In this Issue:

Laboratory News	1
Laboratory Testing of A(H7N9).....	2
Gastrointestinal Outbreaks	3
Respiratory Outbreaks	4
Respiratory Surveillance	5

Laboratory News

Human Pathogens and Toxins Act (HPTA)

Since HPTA was brought into law in Canada in June 2009, the Pathogen Regulation Directorate of the Public Health Agency of Canada (PHAC) is now leading Phase 3 of the federal government consultation with provinces and their laboratories, in preparation for regulation development and implementation. Sessions for diagnostic and academic laboratories have occurred in British Columbia (BC). As a member of the Canadian Public Health Laboratory Network (CPHLN), the BC Public Health Microbiology & Reference Laboratory (BCPHMRL) will have a separate consultation because of its unique role in BC, providing outbreak, emergency response and surveillance services for public health. Elements of licensing, inventory control and bio-safety officer training are being discussed along with overlap with current accreditation and auditing of laboratories. BCPHMRL Head of Bio-Safety, Mr. Neil Chin, is currently the national Chair of the Bio-Safety Officers Network (BSON), laboratory experts who share and communicate on issues of bio-safety improvements and developments; BSON is also providing feedback to the HPTA regulatory development process.

Requirement for Two Identifiers on Samples

As part of the ongoing work on Continuous Quality Improvement, we want to remind our partners that all samples being sent to the BCPHMRL for testing **must** have at least two identifiers on both the requisition (and electronic order) and on the sample container itself. As you know these clearly labeled identifiers allow us to process your work faster and are an important part of patient safety. Examples of identifiers include patient name (surname and given name), date of birth, PHN, accession number and unique random numbers. Please refer to our [Guide to Programs and Services](#) (page 11) for more information.





Laboratory Diagnosis of Novel H7N9 Influenza A

On March 31, 2013, China reported three human infections of a novel avian influenza A(H7N9). Severity of infections are high and as yet no epidemiological links between cases have been made and there is no evidence of human-to-human transmission; infection appears to be zoonotic. Cases originally came from the eastern provinces of China (regions around Shanghai, Anhui and Jiangsu) and have now spread to other parts of the country. As of April 18, 2013, 82 influenza A(H7N9) human infection cases have been reported nationwide with 17 deaths. Cases have been confirmed in Shanghai (31), Zhejiang (25), Jiangsu (20), Anhui (3), Henan (2) and Beijing (1).

In consultation with the BCPHMRL, bulletins from the BCCDC Respiratory Epidemiology Team have gone out to MHOs and the clinician network. In the context of vigilance for Severe Acute Respiratory Illness (SARI), procedures in BC for the laboratory diagnosis of this novel Influenza A are outlined below:

- Testing in consultation with MHO/BCCDC/BCPHMRL (On Call Medical Microbiologist, 604-661-7033)
- Standard pneumonia work-up at clinician's discretion at local facility
- In consultation with MHO/BCCDC/BCPHMRL, samples for influenza A(H7N9) work-up: naso-pharyngeal swab, sputum and if indicated, BAL/tracheal aspirate
- BCPHMRL testing algorithm:
 - RT-PCR for Flu A/B:
 - o If negative, Luminex for other respiratory viruses
 - o If positive, RT-PCR for H1/H3 and
 - o If negative, RT-PCR and/or sequencing for H7
- Serological investigations may be considered for epidemiological purposes with both acute and convalescent sera requested by BCCDC/BCPHMRL.
- Diagnostic medical laboratories carrying out influenza virus detection are asked to send all untypeable influenza A positive samples to BCPHMRL (after consultation with Virologist (Dr. Mel Krajden or Dr. Martin Petric)) and consult with public health.

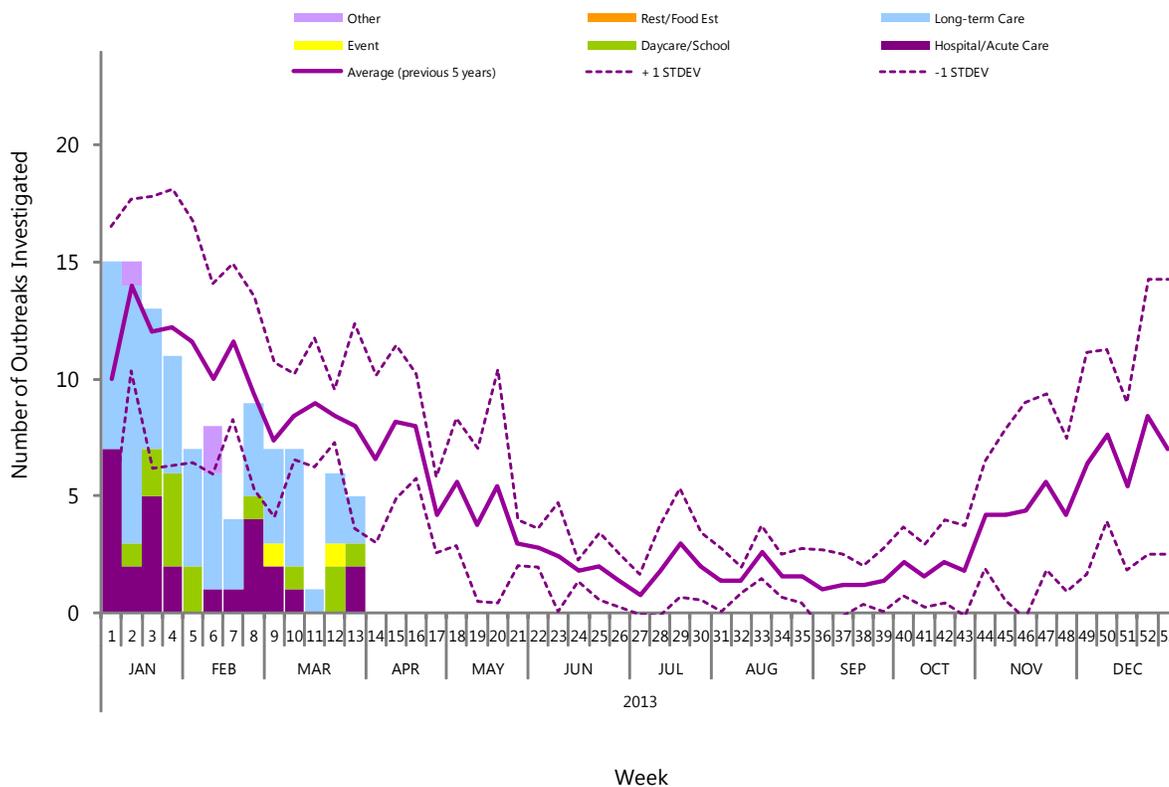
Medical microbiology laboratories should work closely with public health for suspect cases with SARI. All suspect H7 influenza samples should be sent to BCPHMRL for above testing after consultation with the Medical Microbiologist On-Call (604-661-7033).



Gastrointestinal Outbreaks

The Environmental Microbiology Program at the BCPHMRL investigated 21 gastrointestinal (GI) outbreaks in March 2013 which is on the lower end of what has typically been observed at this time over the past 5 years (Figure 1). Outbreaks were identified from 12 long-term care facilities, 4 daycares/schools, 3 hospitals and 2 events (Figure 1). Samples for laboratory testing to date were submitted for 18 (86%) of these outbreaks. Of these, norovirus was confirmed in 17 (94%) of these outbreaks at 11 long-term care facilities, 3 hospitals, 2 events and 1 daycare/school; 1 (6%) outbreak had unknown etiology.

Figure 1
Gastrointestinal outbreaks investigated* since January, 2013, Environmental Microbiology, 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.

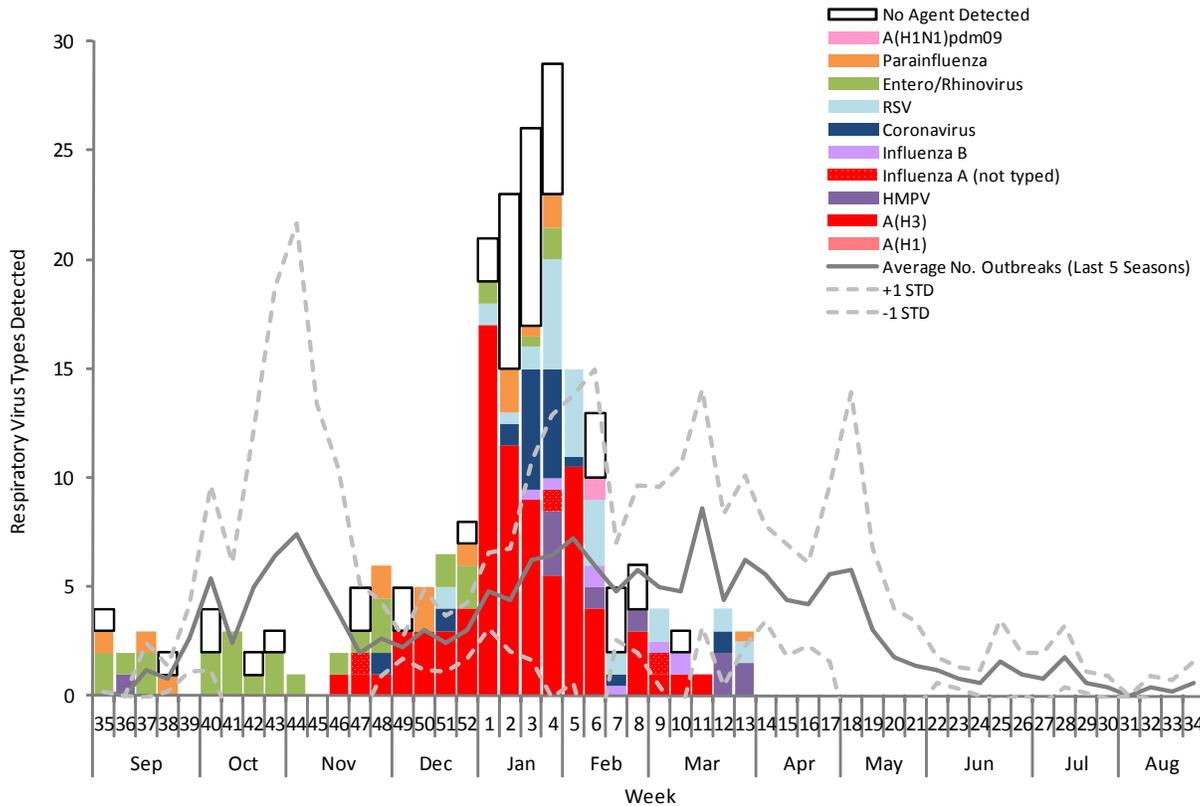


Respiratory Outbreaks

In March, samples were submitted for 11 respiratory outbreak investigations at the BCPHMRL from 10 long-term care (LTC) facilities and 1 school (Figure 2). The number of outbreaks investigated in has been consistent with what has been historically observed (Figure 2).

Influenza A(H3) was detected in 2 (18%) of these LTC outbreaks while influenza B was detected in the school outbreak (9%). Using PCR and Luminex methods, HMPV was detected in 3 LTC outbreaks; RSV was detected in 2 LTC outbreaks; corona virus was detected in the 1 LTC outbreak and both parainfluenza and HMPV was detected in the final LTC outbreak.

Figure 2
Respiratory outbreaks investigated* by respiratory season, Virology Program, BCPHMRL.



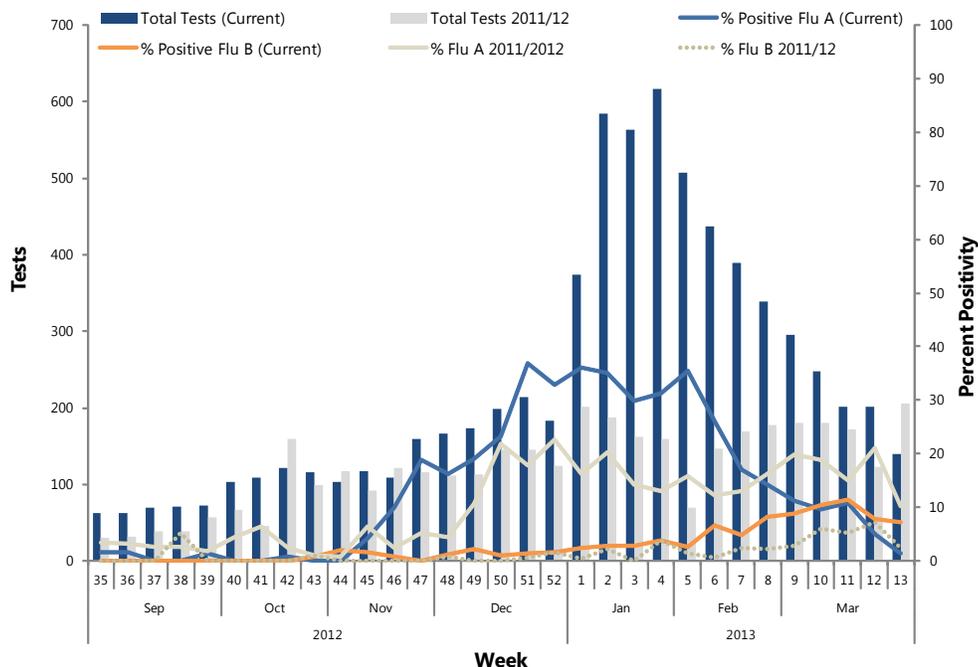
* Figure 2 reflects respiratory sample results submitted for investigation to the PHMRL and may not be representative of respiratory outbreaks in the entire BC community.



Respiratory Surveillance

Test volumes for respiratory testing in the BCPHMRL Virology Laboratory decreased over the weeks of March and approached test volumes similar to that of the 2011/12 season (Figure 3). Influenza A positivity rates decreased over the month, ranging from 1-11%; these have been lower than rates seen at this time in the previous season (Figure 3). Influenza B rates increased slightly in week 11 but fell in weeks 12-13, with detection rates of 7-11%, compared to 2-7% in the 2011/12 season (Figure 3). RSV positivity rates continue to remain high with positivity rates of 15-20%.

Figure 3
Respiratory testing volumes and influenza percent positivity, Virology Program, BCPHMRL.



Nationally, influenza A activity generally decreased in all provinces in March with detection rates below the previous season (Figure 4).

Influenza B rates continued to increase in most provinces in March and has been either generally consistent with or below national rates from the previous season (Figure 5).

Figure 4
Influenza A percent positivity across Canada, 2012/2013 season.
Source: FluWatch, Public Health Agency of Canada

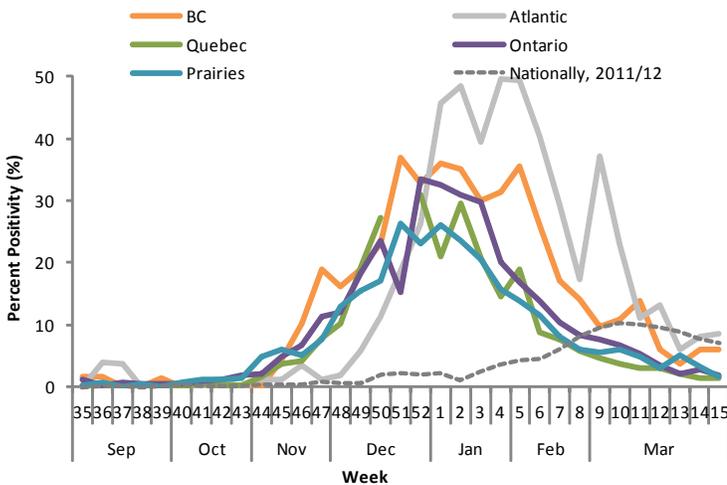
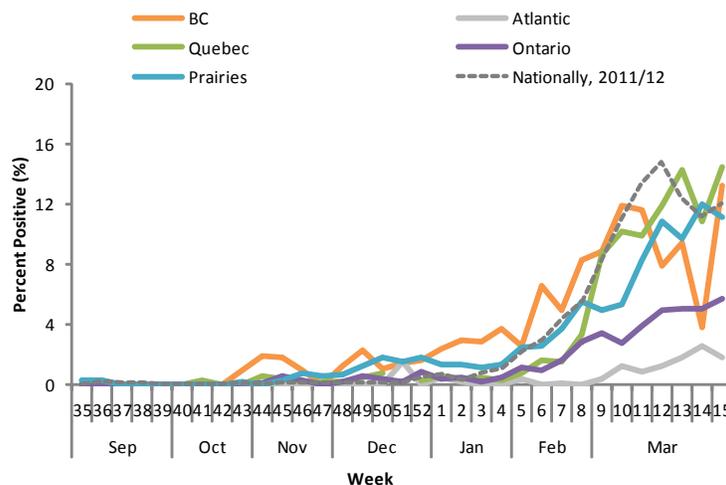


Figure 5
Influenza B percent positivity across Canada, 2012/2013 season.
Source: FluWatch, Public Health Agency of Canada





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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