

# LABORATORY TRENDS



.....  
A Report from the BCCDC Public Health Laboratory



## Inside this Issue

**LABORATORY NEWS 2**  
Vote for Dr. Morshed  
BCCDC Foundation funding

**SURVEILLANCE 3**  
Group A *Streptococcus*  
Seasonal influenza

**OUTBREAKS 5**  
Gastrointestinal outbreaks  
Respiratory outbreaks

## Vote for Dr. Morshed BCCDC Foundation funding

### Cast your vote for Dr. Morshed!



Dr. Muhammad Morshed, Clinical Professor University of British Columbia and Clinical Microbiologist at the BC Centre for Disease Control Public Health Laboratory (BCCDC PHL), was

recently shortlisted for the 2017 RBC Top 25 Immigrant Award. This “people’s choice” award recognizes outstanding immigrants who have come to Canada, achieved success and made a positive difference.

For him to potentially win this pan-Canadian competition, he will need your vote. Dr. Morshed has achieved many successes in his career to date. He is recognized locally, nationally and internationally for his expertise in Clinical Microbiology. We believe he is worthy to be recognized as one of the winners.

Between now and May 22, 2017 you can vote for Dr. Morshed. To vote go to <http://canadianimmigrant.ca/canadas-top-25-immigrants> and click on “CLICK HERE” under “Voting is now open!”. Scroll down to Dr. Morshed’s photo (10th row, far left). Check the white box under his photo, scroll down to the bottom below all the photos and provide your email address and click “VOTE NOW” to submit. The Top 25 winners will be announced online in June 2017 and will also be featured in the July print edition of Canadian Immigrant magazine. RBC will donate \$500 to charity on behalf of each winner.

Let’s try to get as many votes as possible for Dr. Morshed to win this well-deserved recognition!

### BCCDC Foundation for Public Health funding success

Drs. Linda Hoang and Natalie Prystajecy recently obtained funding from the BCCDC Foundation for Public Health. These Blue Sky awards provide funds for up to \$10,000 to support new research at the BCCDC.

Dr. Linda Hoang and team have been awarded funds for “Tracking plasmids in carbapenemase-producing organisms in British Columbia”. The aim of the project is to evaluate an alternative method of obtaining unambiguous plasmid sequencing data for carbapenemase producing organisms (CPOs) to assist in tracking drug resistance in DNA to better inform infection control and prevention. These funds are for a small section of a much larger study that was also recently awarded funds from Genome BC.

Dr. Natalie Prystajecy and team have been awarded funds for “Improving Food Safety in BC with Enhanced Surveillance of *Salmonella* Enteritidis via Whole Genome Sequencing”. Together with funds from multiple sources, the goal is to reduce the burden of this food safety threat to the healthcare system, agri/food industry and economy by implementing an enhanced surveillance program that utilizes routine whole genome sequencing for cluster identification and source attribution.



**BCCDC Foundation for Public Health**

*Driving Innovation. Advancing Service.*

The BCCDC Foundation Open Awards Program competition is open to faculty members at the BCCDC with a new research question to pilot in order to generate preliminary data that will lead to submissions for full funding from a major external funding organization. The program also provides funding for workshops and select travel for investigators to learn new techniques, exchange research information and prepare material for publication.

## Invasive Group A *Streptococcus*

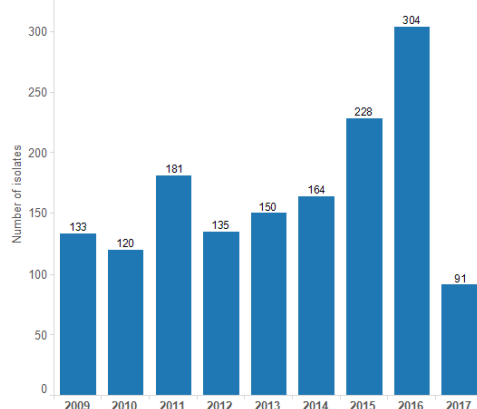
From 2009-2017 (March 26) there have been 1506 isolates submitted for *Streptococcus pyogenes* (Group A *Streptococcus*) serotyping. There was a 39% increase in submissions in 2015 compared to the previous year and a 33% increase in 2016 compared to what was submitted in 2015 (Figure 1).

The National Microbiology Laboratory serotypes *S. pyogenes* by the M protein virulence factor (*emm* typing). There are over 100 *emm* types known and with the exception of 2016, the most frequent serotype seen in the province since 2009 has been *emm* type 1, accounting for 9-31% of all serotypes isolated (Figure 2). In 2016, *emm* type 82 was the most frequent (20% of isolates), followed by *emm* type 101 (18% of isolates).

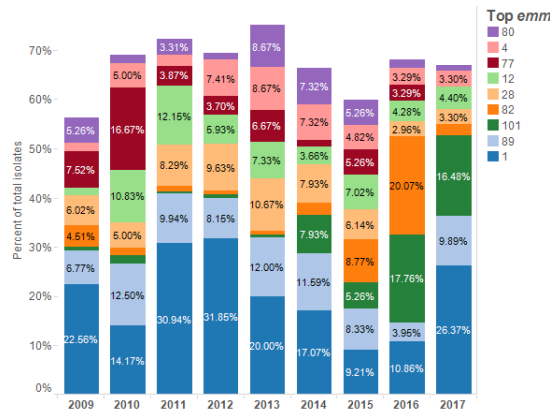
In 2016 *emm* type 82 was isolated most frequently in adults 40-49 years old while there were fewer *emm* type 101 isolated in this age group; there were some *emm* type 1 isolated in adults 40-49 years old while the majority were from those 60 years and older (Figure 3).

So far in 2017, *emm* type 1 has been the top serotype isolated (26% of isolates) followed by *emm* type 101 (16% of isolates) (Figure 2). Twenty-five percent of *emm* type 1 isolates are from patients 60 years and over while 21% are from patients 40-49 years old. Forty-seven percent of *emm* type 101 isolates are from patients 50-59 years old (Figure 4).

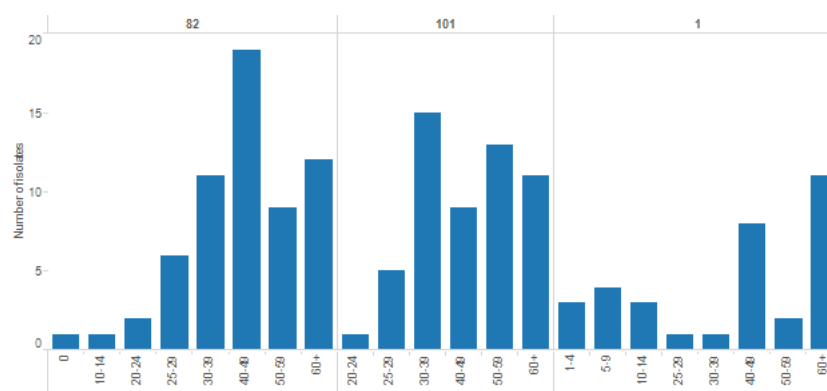
**Figure 1.** Total isolates submitted for serotyping, collected 2009-March 26, 2017, Advanced Bacteriology & Mycology Program, BCCDC PHL.



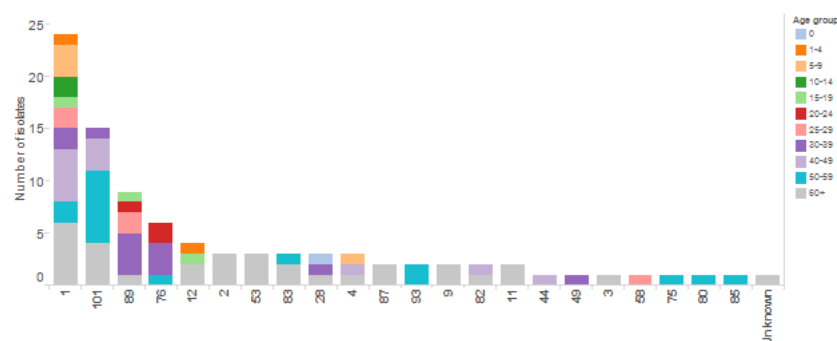
**Figure 2.** Percentage of top *emm* types, collected 2009-March 26, 2017, Advanced Bacteriology & Mycology Program, BCCDC PHL.



**Figure 3.** Number of isolates with *emm* types 82, 101 collected in 2016 from patients of various age groups, Advanced Bacteriology & Mycology Program, BCCDC PHL.



**Figure 4.** 2017 *emm* types and patient age groups, Advanced Bacteriology & Mycology Program, BCCDC PHL.



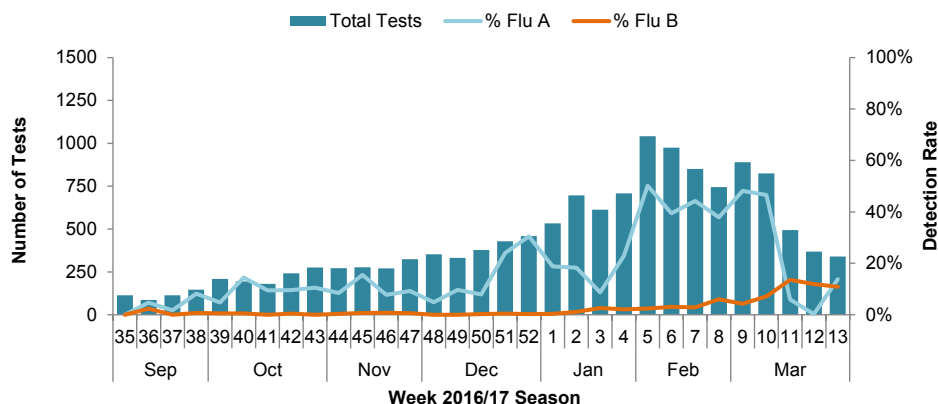
## Seasonal influenza

BC experienced a heavy influenza season this winter with influenza activity persisting through weeks in February and into March. Test volumes peaked at 1,041 samples in week 5 while the rest of the month there were from 745 to 974 respiratory tests performed. Influenza A positivity peaked at 50% in week 5 and fluctuated between 38-48% in the following weeks. Rates of influenza B was 2% in the beginning of February rising to 6% at the end of the month. By week 11, influenza B was the dominant influenza virus in the province with 14% positivity (Figure 5).

Cumulatively up to week 13 this season, the Virology Program tested 13,725 specimens and detected influenza A (89%) as the dominant virus compared to influenza B (11%). Influenza A(H3) (95.9%) has been the dominant subtype while A(H1N1)pdm09 (1%) constituted a small fraction of the influenza A detections thus far (Table 1).

Adults 60 years and older have accounted for over 60% of the influenza A(H3) cases in the current season compared to 36% of the influenza B cases. Comparatively, the largest proportion of influenza A(H1N1)pdm09 cases were adults 40-49 years old, followed by children 1-9 years old (Figure 6).

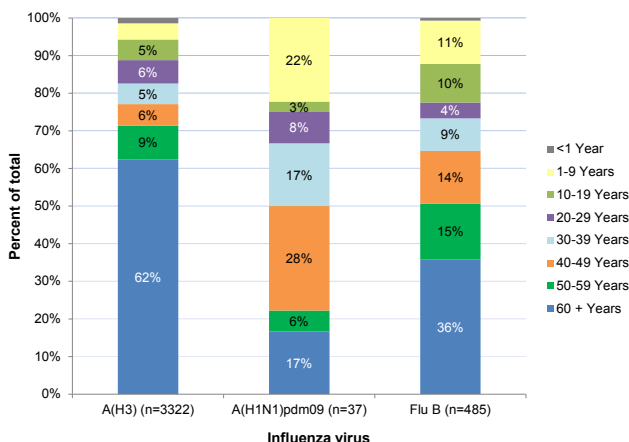
**Figure 5.** Respiratory testing volumes and influenza detection rates by week resulted, Virology Program, BCCDC PHL. Test volumes include initial screening and subtyping. Subtyping requests from other sites are not included.



**Table 1.** Influenza testing performed by the Virology Program, BCCDC PHL.

Cumulative since September 1, 2016 (Week 35)	
No. of specimens tested	13,725
No. of positive specimens (%)	3,887 (28%)
Positive specimens by type	
Influenza A (%)	3,460 (89%)
A(H3) (%)	3,317 (96%)
A(H1N1)pdm09 (%)	36 (1%)
Influenza B (%)	427 (11%)

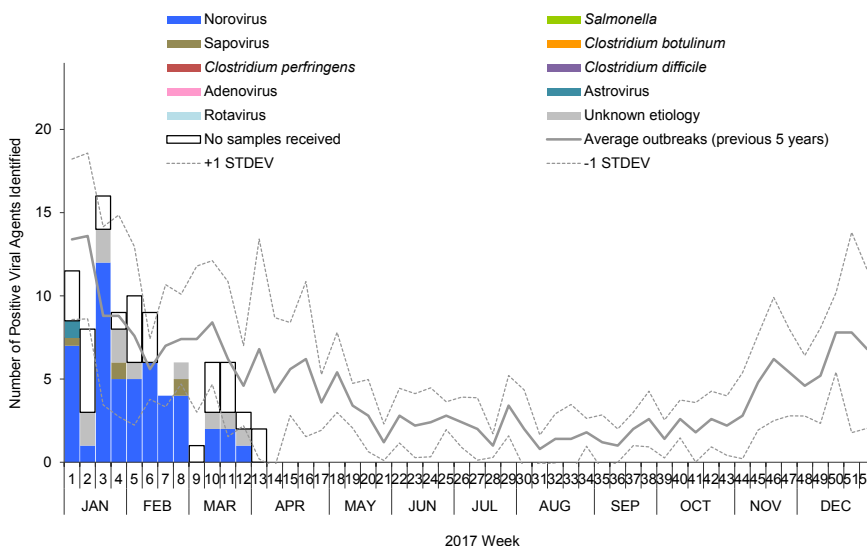
**Figure 6.** Age group of patients with influenza A (H3N2 and (H1N1)pdm09) and influenza B detected from weeks 35-13, 2016/17, Virology Program, BCCDC PHL.



## Gastrointestinal outbreaks

In February and March, there were 43 gastrointestinal outbreaks investigated (Figure 7). Outbreaks were investigated from 21 (49%) longterm care (LTC) facilities, 13 (30%) daycares, six (14%) hospitals, two (5%) restaurant/food establishments, and one (2%) correctional facility. Samples were received from 27 (63%) of these outbreaks with norovirus detected in 20 (74%) (from 12 LTC facilities, six hospitals and two restaurants/food establishments). Norovirus GII continues to be the dominant genogroup detected representing 85% (17) of the norovirus positive outbreaks. Sapovirus was detected in one LTC facility while four LTC, one daycare and one correctional facility had unknown etiologies for their outbreaks.

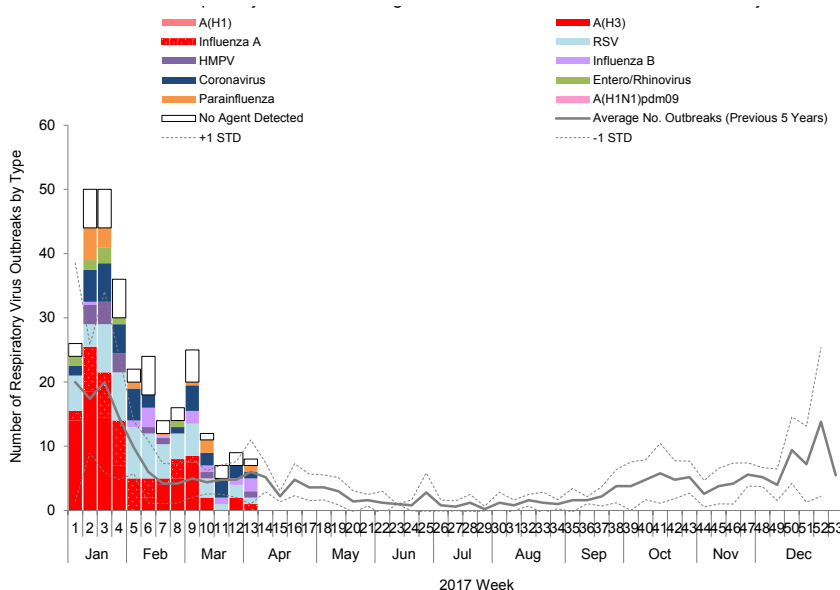
**Figure 7.** Gastrointestinal outbreaks investigated\* in 2017, Environmental Microbiology, Public Health Advanced Bacteriology & Mycology, Parasitology and Virology Programs, BCCDC PHL. The data available are from outbreaks in which the BCCDC PHL has been notified. Some acute care microbiology laboratories are also testing for norovirus in the province and these data may not include outbreaks from all health authorities.



## Respiratory outbreaks

In February and March, there were 123 influenza-like illness outbreaks investigated to date from 118 LTC facilities and four hospitals (plus one unknown facility) (Figure 8). The number of outbreaks surpassed historical weekly submissions from the past five years in February and into March before coming down at the higher end of past investigations. Influenza A/influenza A(H3) was detected in 33 (27%) of these outbreaks compared to 82 (47%) in January. With progressively fewer influenza A outbreaks, the other respiratory pathogens that were detected included respiratory syncytial virus (RSV) in 30 (24%) outbreaks, coronavirus in 17 (14%) outbreaks, influenza B in 10 (8%) outbreaks, human metapneumovirus (HMPV) in four (3%) outbreaks, parainfluenza in three (2%) outbreaks and entero/rhinovirus in one (0.8%) outbreak. Three outbreaks had multiple infections detected in different patients (one with RSV and parainfluenza, another with RSV and influenza A(H3)) and another with parainfluenza, influenza B and RSV).

**Figure 8.** Influenza-like illness outbreaks investigated in 2017 to date, Virology Program, BCCDC PHL. Note that some outbreaks are not reflected here if they are awaiting subtyping.



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

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](mailto:yin.chang@bccdc.ca)

Website: [www.bccdc.ca/publichealthlab](http://www.bccdc.ca/publichealthlab)

### Co-Editors:

#### **Biosafety, Biosecurity, Biohazard Containment**

Public Health Lead: Neil Chin

Assistant Biosafety Officer: John Tansey

#### **Environmental Microbiology**

Program Head and Medical Microbiologist: Dr. Linda Hoang

Team Lead: Frankie Tsang

#### **Molecular Microbiology & Genomics**

Program Head and Medical Microbiologist: Dr. Linda Hoang  
& Dr. Mel Krajden

Team Lead: Brian Auk

#### **Parasitology**

Program Head and Clinical Microbiologist: Dr. Muhammad  
Morshed

Team Lead: Quantine Wong

#### **Pre-Analytical, Central Processing & Receiving**

Program Head and Medical Microbiologist: Dr. Linda Hoang  
& Dr. Mel Krajden

Team Lead: Annie Mak

#### **Public Health Advanced Bacteriology/Mycology**

Program Head and Medical Microbiologist: Dr. Linda Hoang

Team Lead: Ana Paccagnella

Medical Microbiologist Locum for all Programs: Dr. Pat Doyle

#### **Public Health High Volume Serology**

Program Head and Medical Microbiologist (Viral Serology):

Dr. Mel Krajden

Clinical Microbiologist: Dr. Agatha Jassem

Program Head and Clinical Microbiologist (Syphilis and  
*H. pylori*): Dr. Muhammad Morshed

Team Lead: Annie Mak

#### **Laboratory Support Services**

Program Head and Medical Microbiologist: Dr. Linda Hoang  
& Dr. Mel Krajden

Team Lead: Dr. Mabel Rodrigues

#### **TB/Mycobacteriology**

Program Head and Medical Microbiologist: Dr. Mel Krajden

Team Lead: Dr. Mabel Rodrigues

#### **Virology**

Program Head and Medical Microbiologist: Dr. Mel Krajden

Clinical Microbiologist: Dr. Agatha Jassem

Team Lead: Brian Auk

#### **Zoonotic Diseases and Emerging Pathogens**

Program Head and Clinical Microbiologist: Dr. Muhammad  
Morshed

Team Lead: Quantine Wong