

## Vaccine Preventable and Invasive Bacterial Diseases Quarterly Report 2018 Quarter 4: October 1 – December 31, 2018

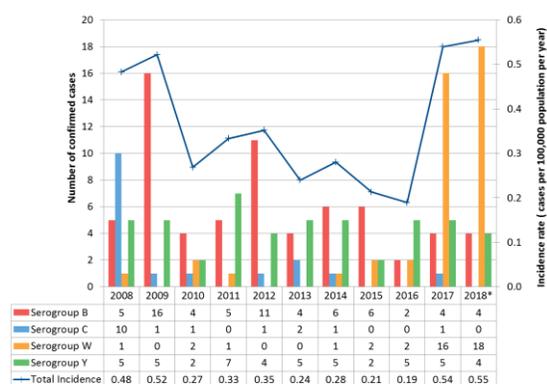
### Highlights

- The increase in serogroup W invasive meningococcal disease has continued
- The high invasive group A streptococcal disease incidence rate observed in 2017 levelled off in 2018
- One imported measles case resulted in secondary transmission
- The invasive pneumococcal disease incidence rate is the highest observed in the last 11 years

### Invasive Meningococcal Disease

Seven confirmed cases of invasive meningococcal disease (IMD) were reported in the fourth quarter of 2018: four serogroup W, one serogroup B, one serogroup Y and one non-typeable. A total of 27 IMD cases were reported in British Columbia (BC) in 2018: 18 serogroup W, four serogroup Y, four serogroup B, and one non-typeable. The annual incidence rate\* was 0.55 cases per 100,000 population per year (Figure 1). Two serogroup W cases (both in the 60+ year age group) were fatal.

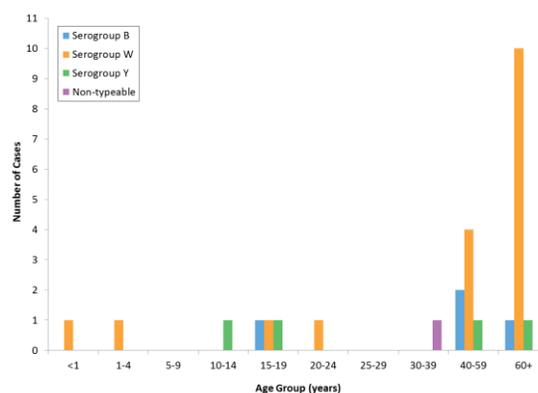
Seventy percent of the 2018 IMD cases were over 40 years of age (Figure 2).



**Figure 1.** IMD case counts by serogroup and incidence rates, BC, 2008-2018

In late 2017, BC experienced an increase in serogroup W invasive meningococcal disease, with an outbreak among adolescents in the Interior

Health Authority.<sup>1</sup> The serogroup W outbreak strain was the ST-11 clonal complex (ST-11cc). In addition to the five outbreak cases, there were ten ST-11cc cases in three health authorities in 2017.



**Figure 2.** IMD cases by serogroup and age group, BC, 2018

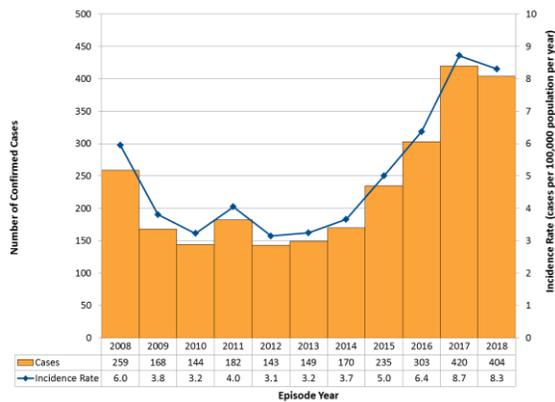
High rates of serogroup W disease have continued in 2018; however no epidemiologic links have been identified between cases. Seven of the 2018 serogroup W cases were the ST-11cc and one was ST-22cc. Typing for the remaining ten serogroup W cases from 2018, including the four new cases in the fourth quarter, is not yet available. The ST-11cc cases were from Fraser (3), Vancouver Island (2), Interior (1), and Vancouver Coastal (1) Health Authorities. Four of these ST11-cc cases were aged 40-59 years and there was one case in each of the following age groups: 1-4 years, 20-24 years and 60+ years.

<sup>1</sup> BC Centre for Disease Control. Three cases of meningococcal disease among adolescents in Interior Health. Available online at: <http://www.bccdc.ca/about/news-stories/news-releases/2017/meningococcal-disease> [Accessed: January 21, 2019].

\* 2018 case counts and incidence rates are preliminary.

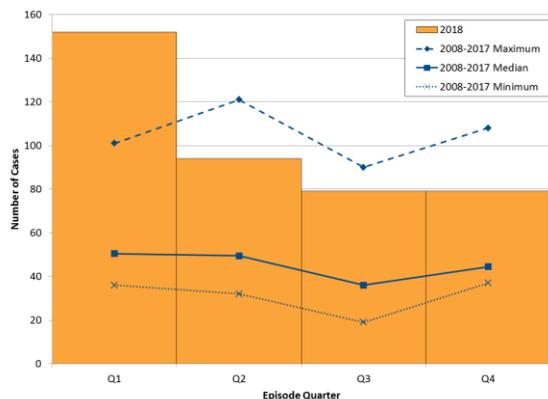
### Invasive Group A Streptococcal Disease

Seventy-nine cases of invasive group A streptococcal disease (iGAS) were reported in the fourth quarter of 2018, bringing the total number of cases reported in BC in 2018 to 404. The 2018 annual incidence rate\* was 8.3 cases per 100,000 population (Figure 3). This is slightly lower than the 2017 incidence rate, which was the highest incidence rate ever observed in BC.



**Figure 3.** iGAS case counts and incidence rates by year, BC, 2008–2018\*

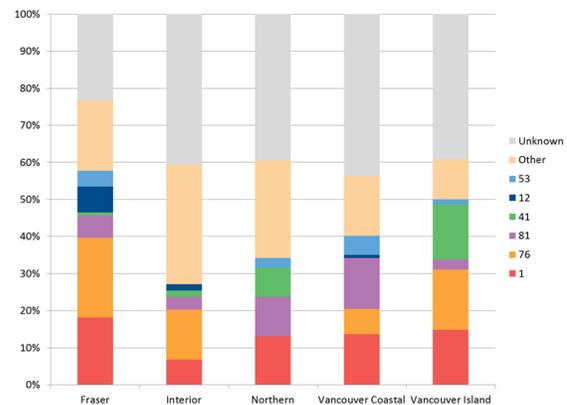
The number of cases reported in the first quarter of 2018 exceeded the maximum numbers reported during the first quarters of the previous ten years (Figure 4). In the following three quarters, the quarterly numbers of cases reported were below historic maximums, but above the medians.



**Figure 4.** iGAS case counts by quarter, BC, 2008–2017 and 2018

No unusual clustering by onset date or age group was identified in the provincial dataset.

The BCCDC Public Health Laboratory provided National Microbiology Laboratory *emm* typing results for 258 of the cases reported to date in 2018. The three most common *emm* types were *emm1* (22% of known *emm* types), *emm76* (21%) and *emm81* (12%). The *emm* distributions varied by health authority (Figure 5) and month (data not shown). No single *emm* type explained the high incidence.



**Figure 5.** iGAS *emm* type distribution by health authority BC, 2018

Case characteristics varied by *emm* type. *Emm76* and *emm81* cases were more likely to report homelessness/under-housing (34% and 58%, respectively) and injection drug use (40% and 55%, respectively). *Emm1* cases were more likely to have severe presentations, including toxic shock syndrome and death, with a case fatality rate of 18%.

For a more detailed analysis of the BC iGAS surveillance data for 2018, please refer to the iGAS quarterly summaries available at:

<http://www.bccdc.ca/health-professionals/data-reports/communicable-diseases> under Respiratory Diseases.

\* 2018 case counts and incidence rates are preliminary.

### Measles

In November 2018, one case of measles occurred in a Fraser Health resident with recent travel to Asia. Genomic typing performed at the National Microbiology Laboratory identified the case as genotype B3, a genotype circulating in the region of Asia where the case traveled. A secondary case resulted from this importation in an epidemiologically-linked Vancouver Coastal Health resident. Laboratory testing confirmed the virus strain type identified in the second November case was identical to the first. The immunization status of the primary case was unknown, while the secondary case had documented receipt of two doses of measles-containing vaccine.

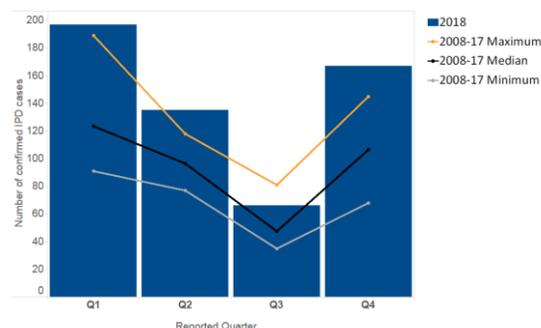
### Invasive Pneumococcal Disease

In the fourth quarter of 2018, 167 confirmed cases of invasive pneumococcal disease (IPD) were reported in BC, bringing the annual number of cases reported in 2018 to 565 (11.6 per 100,000 population per year\*); the highest observed in BC over the last eleven years (Figure 6).



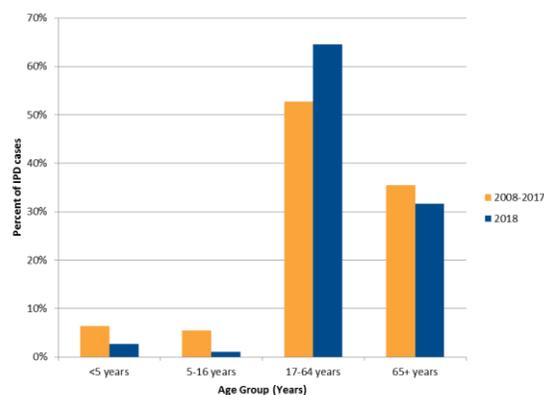
**Figure 6.** Number of IPD cases and rates, BC 2008-2018\*

Except for the third quarter of the year, IPD quarterly case counts were higher than the 2008-2017 quarterly maximums (Figure 7).



**Figure 7.** Number of IPD cases by quarter, BC, 2008-2017 and 2018

The age and gender distribution of IPD cases in 2018 differed from the distributions observed for 2008-2017 cases. Sixty-five percent of 2018 cases were male, compared to 56% of 2008-2017 cases. The proportion of IPD cases aged 17-64 years increased by 12% in 2018, with 65% of cases in this age group compared to 53% over the previous 10 years (Figure 8).



**Figure 8.** Age distribution of IPD cases, BC 2008-2017 and 2018

To date, the BCCDC Public Health Laboratory has provided National Microbiology Laboratory serotype results for 532 of the cases from 2018. Serotype 4 was the most common serotype in BC, accounting for 17% of 2018 cases with serotype information available. All serotype 4 IPD cases occurred in people 17 years of age and older (Table 1).

\* 2018 case counts and incidence rates are preliminary.

**Table 1.** Serotype distribution of confirmed invasive pneumococcal disease (IPD) cases, by age group, BC, 2018

Serotype	Vaccine type†	Quarter 4 (Oct - Dec 2018)					All Quarters (Jan - Dec 2018)				
		<5 years	5-16 years	17-64 years	65+ years	Q3 Total	<5 years	5-16 years	17-64 years	65+ years	2018 Total
4	PCV13	-	-	33	4	37	-	-	78	15	93
3	PCV13	-	-	10	7	17	2	-	28	24	54
12F	PPV23	-	-	12	1	13	1	-	44	3	48
7F	PCV13	-	-	10	-	10	-	-	34	7	41
20	PPV23	-	-	9	5	14	-	-	27	8	35
22F	PPV23	-	-	7	2	9	-	-	21	10	31
9N	PPV23	-	-	5	5	10	1	-	13	10	24
8	PPV23	-	-	4	3	7	-	-	11	9	20
19A	PCV13	-	-	3	2	5	-	-	11	7	18
23B	NVT	-	-	-	2	2	3	-	4	11	18
Other‡	-	2	2	15	18	37	7	5	70	68	150
Unknown	-	1	-	3	2	6	1	1	24	7	33

†The top ten serotypes of 2018 shown, all other known serotypes are grouped as "Other". For this report other includes: 10A, 11A, 11C, 13, 14, 15A-C, 16F, 17F, 19F, 21, 23A, 28A, 29, 31, 33F, 34, 35B, 35F, 38, 6A-C, 7C, 9L

‡Serotypes in both PCV13 and PPV23 (4, 6B, 9V, 14, 18C, 19F, 23F, 1, 5, 7F, 3, 19A) are denoted as PCV13. NVT = Non-vaccine serotype.

**Data Notes**

Data for invasive meningococcal disease, invasive group A streptococcal disease, measles, and mumps are sourced from reporting by BC health authorities using forms specifically designed for each disease, and sometimes reconciliation with laboratory data. Data for all other diseases are sourced from the health authorities' investigation reports in Panorama.

To calculate incidence rates, population numbers were from the BC Stats Population Estimates for years prior to 2018, and from the BC Stats P.E.O.P.L.E. (Population Extrapolation for Organizational Planning with Less Error) Projection for 2018 (<https://www2.gov.bc.ca/gov/content/data/about-data-management/bc-stats>). The Population Estimates were updated April 2017 and the P.E.O.P.L.E. Projections were updated September 2018.

Numbers in this report were generated January 17-18, 2018 and are subject to change due to possible late reporting and/or data clean up.

\* 2018 case counts and incidence rates are preliminary.

**Additional BCCDC Reports**

**Influenza Surveillance Reports:**  
<http://www.bccdc.ca/health-professionals/data-reports/communicable-diseases/influenza-surveillance-reports>

**Influenza Infographics:** <http://www.bccdc.ca/health-professionals/data-reports/communicable-diseases/influenza-infographics>

**Invasive Group A Streptococcal Disease (iGAS) in British Columbia, 2017 Annual Summary and 2018 Quarterly reports:** <http://www.bccdc.ca/health-professionals/data-reports/communicable-diseases> see Respiratory Diseases

**Mumps Epidemiological Summary, 2017:**  
<http://www.bccdc.ca/health-professionals/data-reports/communicable-diseases> see Vaccine Preventable Diseases

**Reportable Diseases Dashboard:**  
<http://www.bccdc.ca/health-info/disease-system-statistics/reportable-disease-dashboard>

# BC Centre for Disease Control

An agency of the Provincial Health Services Authority

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### Summary Table of Select Reportable Diseases

Disease		Quarter 4 (October 1-December 31, 2018)						2018 Annual (January 1-December 31, 2018)					
		FHA	IHA	NHA	VCHA	VIHA	BC	FHA	IHA	NHA	VCHA	VIHA	BC
Diphtheria - carrier	Count	-	-	-	-	1	1	1	-	-	-	1	2
	Incidence*	-	-	-	-	0.5	0.1	-	-	-	-	0.1	0.04
Haemophilus influenzae, type a	Count	-	-	2	1	-	3	-	-	4	2	1	7
	Incidence*	-	-	2.8	0.3	-	0.2	-	-	1.4	0.2	0.1	0.1
Haemophilus influenzae, type b	Count	-	-	-	-	-	-	-	-	-	3	-	3
	Incidence*	-	-	-	-	-	-	-	-	-	0.3	-	0.1
Haemophilus influenzae, type c	Count	-	-	-	-	-	-	-	-	-	-	1	1
	Incidence*	-	-	-	-	-	-	-	-	-	-	0.1	0.02
Haemophilus influenzae, type d	Count	-	-	-	-	-	-	-	1	-	-	-	1
	Incidence*	-	-	-	-	-	-	-	0.1	-	-	-	0.0
Haemophilus influenzae, type e	Count	-	1	-	-	-	1	2	1	2	2	-	7
	Incidence*	-	0.5	-	-	-	0.1	0.1	0.1	0.7	0.2	-	0.1
Haemophilus influenzae, type f	Count	2	-	-	1	1	4	7	2	-	2	1	12
	Incidence*	0.4	-	-	0.3	0.5	0.3	0.4	0.3	-	0.2	0.1	0.2
Haemophilus influenzae, non-typeable	Count	3	2	2	3	1	11	17	9	4	8	6	44
	Incidence*	0.7	1.0	2.8	1.0	0.5	0.9	0.9	1.2	1.4	0.7	0.7	0.9
Haemophilus influenzae, type unknown	Count	-	1	-	-	1	2	1	1	-	-	1	3
	Incidence*	-	0.5	-	-	0.5	0.2	0.1	0.1	-	-	0.1	0.1
Invasive group A streptococcal disease	Count	17	8	9	28	17	79	116	59	38	117	74	404
	Incidence*	3.7	4.2	12.8	9.4	8.5	6.5	6.3	7.7	13.5	9.8	9.2	8.3
Invasive pneumococcal disease	Count	37	36	19	32	43	167	155	106	45	136	43	565
	Incidence*	8.1	18.9	27.0	10.7	21.5	13.7	8.5	13.9	16.0	11.4	5.4	11.6
Invasive meningococcal disease	Count	4	1	-	-	2	7	17	3	-	1	6	27
	Incidence*	0.9	0.5	-	-	1.0	0.6	0.9	0.4	-	0.1	0.7	0.6
Measles	Count	1	-	-	1	-	2	4	-	-	2	-	6
	Incidence*	0.2	-	-	0.3	-	0.2	0.2	-	-	0.2	-	0.1
Mumps	Count	-	-	-	-	-	-	4	2	2	12	1	19
	Incidence*	-	-	-	-	-	-	0.2	0.3	0.7	1.0	0.1	0.4
Pertussis	Count	22	1	3	25	26	77	109	17	12	61	105	304
	Incidence*	4.8	0.5	4.3	8.4	13.0	6.3	6.0	2.2	4.3	5.1	13.1	6.2

\* Quarterly incidence rates are calculated as annual incidence rates (cases per 100,000 population per year), without adjusting for seasonality. The 2018 case counts and annual incidence rates are preliminary.

**Note:** No cases were reported for the following diseases: diphtheria - acute case, tetanus, poliomyelitis, and rubella. Influenza surveillance data are provided in the British Columbia [Influenza Surveillance Reports](#).