

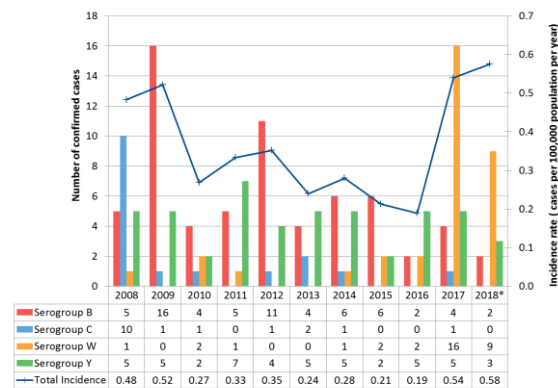
## Vaccine Preventable and Invasive Bacterial Diseases Quarterly Report 2018 Quarter 2: April 1 – June 30, 2018

### Highlights

- Increase in serogroup W invasive meningococcal disease started in 2017
- Continued increase in invasive pneumococcal disease incidence
- Two imported measles cases: the first measles importations since March 2017
- Highest invasive group A streptococcal disease incidence observed in BC

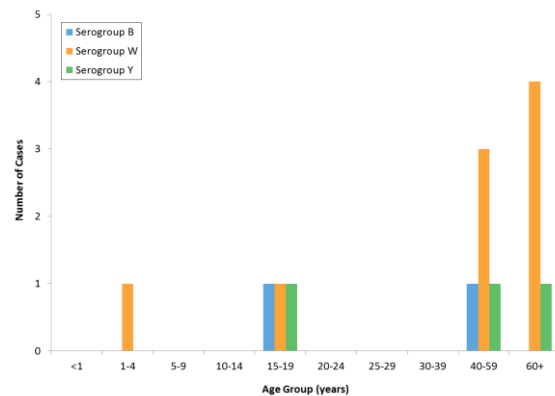
### Invasive Meningococcal Disease

Eight confirmed cases of invasive meningococcal disease (IMD) were reported in the second quarter of 2018: seven serogroup W and one serogroup Y. As of June 30<sup>th</sup>, a total of 14 IMD cases have been reported in British Columbia (BC) in 2018: nine serogroup W, three serogroup Y, and two serogroup B. The year-to-date (YTD) incidence rate is 0.58 cases per 100,000 population per year (Figure 1). One serogroup W case (in the 60+ year age group) was fatal.



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

The serogroup W cases were in Fraser (5), Vancouver Island (2), Vancouver Coastal (1), and Interior (1) Health Authorities. The serogroup B cases were in Fraser and Vancouver Island Health Authorities, and the serogroup Y cases in Fraser Health Authority. The majority of the 2018 IMD cases were over 40 years of age (Figure 2).



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

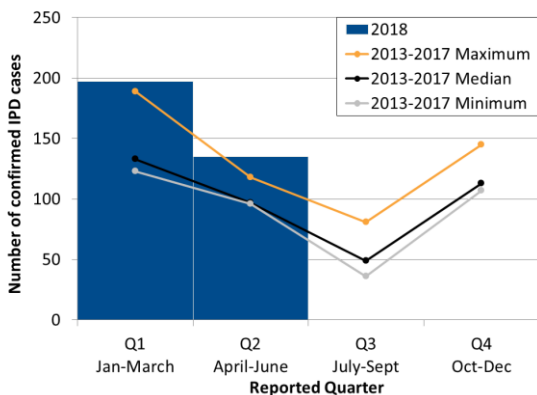
In late 2017, BC experienced an increase in serogroup W invasive meningococcal disease, with an outbreak among adolescents in the Interior Health Authority.<sup>1</sup> The outbreak strain was the ST-11 clonal complex. In addition to the five outbreak cases, there were ten ST-11 clonal complex cases in three Health Authorities in 2017. One of the 2018 cases was the ST-11 clonal complex (1-4 year age group from Vancouver Coastal) and one was ST-22 (60+ year age group from Interior). Typing for the remaining six serogroup W cases from 2018 is not yet available.

<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: July 20, 2018].

\* 2018 incidence rates have been calculated as annual incidence rates, without adjusting for seasonality.

## Invasive Pneumococcal Disease

In the second quarter of 2018, 135 confirmed cases of invasive pneumococcal disease (IPD) were reported in BC. This is a 39% increase compared to the median number of cases during the same quarter in 2013-2017 (n=97, Figure 3). The incidence of IPD has been increasing since 2016, with nearly as many IPD cases reported in the first half of 2018 as reported in the year 2013 (332 cases Jan-June 2018; 363 cases Jan-Dec 2013) (Figure 4).



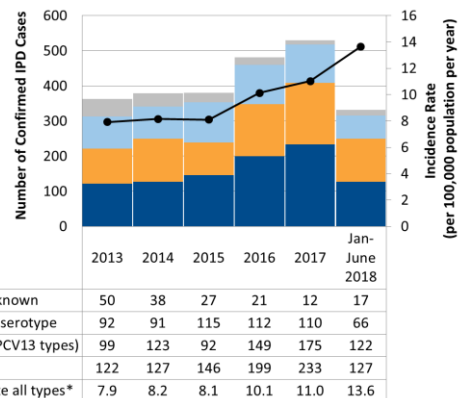
**Figure 3.** Number of IPD cases by quarter, BC, 2013-2017 and 2018

Two pneumococcal vaccines are available in the BC immunization program: a 13-valent pneumococcal conjugate vaccine (PCV13) and a 23-valent pneumococcal polysaccharide vaccine (PPV23). Eligibility varies by age and underlying health status.<sup>2</sup>

The BCCDC Public Health Laboratory provides National Microbiology Laboratory serotype results for cases. To date, 75% of 2018 IPD cases were due to serotypes contained in pneumococcal vaccines used in BC, 20% were due to non-vaccine preventable serotypes, and 5% were unknown serotype (Figure 4). Serotype 4 continues to be the most common serotype, with all cases occurring in adults 17 years of age and older (Table 1). Serotype 23B, a non-vaccine type, was identified in three cases in children less than 6 years old; this serotype had not been identified in this age group since 2015.

<sup>2</sup> <http://www.bccdc.ca/health-professionals/clinical-resources/communicable-disease-control-manual/immunization>

\* 2018 incidence rates have been calculated as annual incidence rates, without adjusting for seasonality.



**Figure 4.** Number of IPD cases by year and vaccine serotype group, BC, 2013-June 2018

## Measles

In June of 2018, two measles importations occurred in British Columbia; the cases, both laboratory confirmed, were not epidemiologically-linked and had no common exposures. The first case was imported from Pakistan and had one recorded dose of prior MMR vaccination. The National Microbiology Laboratory typed this case as genotype D3, which is currently circulating worldwide. The second imported case was from India and had unknown vaccination status. The measles genomic strain was D8, which is currently endemic in India. The second case attracted media attention generated by a BCCDC health alert due to potential exposure of contacts at the Vancouver International Airport.

The health authority involved initiated a public health investigation and contact identification and management. There were no recognized secondary transmissions within BC from either case.

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

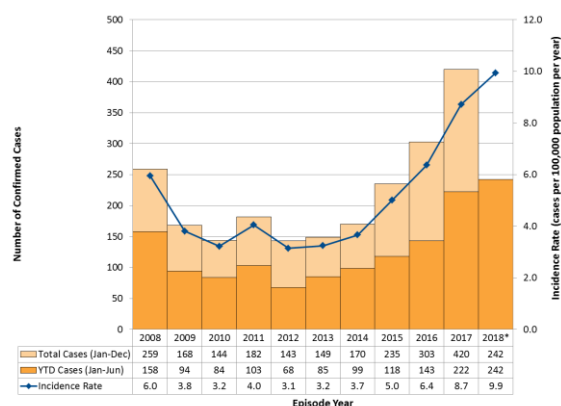
Serotype	Vaccine type†	Quarter 2 (April - June 2018)					2018 YTD (Jan - June 2018)				
		<6 years	6-16 years	17-64 years	65+ years	Q2 Total	<6 years	6-16 years	17-64 years	65+ years	YTD Total
4	PCV13	-	-	13	5	18	-	-	36	11	47
3	PCV13	-	-	8	4	12	2	-	16	13	31
7F	PCV13	-	-	4	1	5	-	-	21	6	27
12F	PPV23	1	-	11	-	12	1	-	32	1	34
20	PPV23	-	-	10	1	11	-	-	15	3	18
22F	PPV23	-	-	6	1	7	-	-	13	7	20
8	PPV23	-	-	4	3	7	-	-	6	4	10
9N	PPV23	-	-	4	2	6	1	-	8	4	13
11A	PPV23	-	-	2	3	5	-	1	4	9	14
23B	NVT	3	-	2	3	8	3	-	3	8	14
23A	NVT	-	-	1	5	6	-	-	2	5	7
Other*	-	2	-	15	12	29	3	2	44	31	80
Unknown	-	1	-	6	2	9	1	-	13	3	17

\*Serotypes occurring in <5 cases per quarter are grouped as “Other”. For this report “Other” includes: :6B, 9L, 10A, 13, 21, 28A, 11C, 17F, 34, 14, 35B, 35F, 38, 6A, 15B, 19F, 15C, 31, 7C, 6C, 16F, 33F, 15A, 19A

†Serotypes in both PCV13 and PPV23 are denoted as PCV13

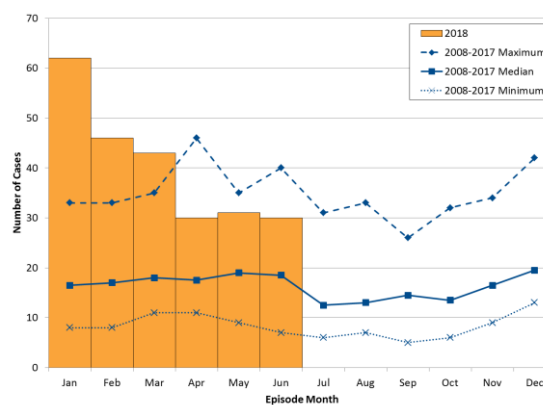
### Invasive Group A Streptococcal Disease

Ninety-one cases of invasive group A streptococcal disease (iGAS) were reported in the second quarter of 2018, bringing the total number of cases reported in BC this year to 242. The YTD incidence rate is 9.9 cases per 100,000 population per year (Figure 5), the highest incidence rate ever observed in BC.



**Figure 5.** iGAS case counts and year-to-date (YTD) incidence rates by year, BC, 2008–2018

The numbers of cases reported each month in the second quarter of 2018 were below the historic maximums, but above the medians (Figure 6). In the previous quarter, the monthly numbers of cases reported exceeded previously-observed maximums.



**Figure 6.** iGAS case counts by month, BC, 2008–2017 and 2018

\* 2018 incidence rates have been calculated as annual incidence rates, without adjusting for seasonality.

The iGAS YTD incidence rates have increased in Fraser, Vancouver Island and Vancouver Coastal Health Authorities, and decreased slightly in Interior and Northern Health Authorities (Figure 7).

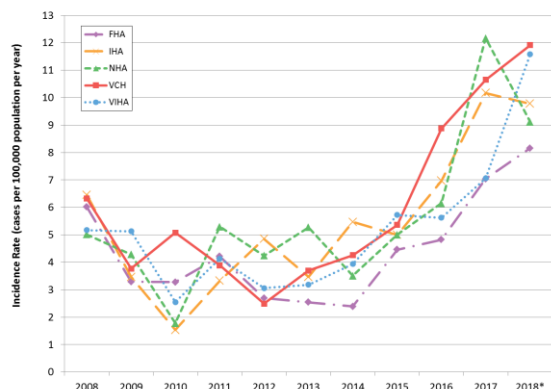


Figure 7. iGAS incidence by health authority and year, BC, 2008-2018

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 169 of the cases reported to date in 2018. The three most common *emm* types were *emm1* (26% of known *emm* types), *emm76* (20%) and *emm81* (12%). The *emm* distribution varies by health authority (data not shown). No single *emm* type explains the increased incidence.

Case characteristics varied by *emm* type. *Emm76* and *emm81* cases were more likely to report homelessness/under-housing (41% and 57%, respectively) and injection drug use (44% and 57%, respectively). *Emm1* cases were more likely to have severe presentations, including toxic shock syndrome and death, with a case fatality rate of 23%.

For a more detailed analysis of the BC iGAS surveillance data for 2018 (including *emm* distribution by health authority), please refer to the iGAS quarterly summaries available at: <http://www.bccdc.ca/health-professionals/data-reports/communicable-diseases>.

### 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/resource-gallery/Documents/Statistics%20and%20Research/Statistics%20and%20Reports/Immunization/Coverage/Mumps%20Epidemiologic%20Summary%20BC%20202017%20Final%20May%202011%202018.pdf>

#### Reportable Diseases Dashboard:

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

#### Additional data and reports:

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

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\* 2018 incidence rates have been calculated as annual incidence rates, without adjusting for seasonality.

**Summary Table of Select Reportable Diseases**

Disease		Quarter 2 (April 1-June 30, 2018)						Year to Date (January 1-June 30, 2018)					
		FHA	IHA	NHA	VCHA	VIHA	BC	FHA	IHA	NHA	VCHA	VIHA	BC
<i>Haemophilus influenzae</i> , type a	Count	-	-	1	1	1	3	-	-	2	1	1	4
	Incidence*	-	-	1.4	0.3	0.5	0.2	-	-	1.4	0.2	0.3	0.2
<i>Haemophilus influenzae</i> , type b	Count	-	-	-	-	-	-	-	-	-	2	-	2
	Incidence*	-	-	-	-	-	-	-	-	-	0.3	-	0.1
<i>Haemophilus influenzae</i> , type c	Count	-	-	-	-	1	1	-	-	-	-	1	1
	Incidence*	-	-	-	-	0.5	0.1	-	-	-	-	0.3	0.0
<i>Haemophilus influenzae</i> , type d	Count	-	1	-	-	-	1	-	1	-	-	-	1
	Incidence*	-	0.5	-	-	-	0.1	-	0.3	-	-	-	0.0
<i>Haemophilus influenzae</i> , type e	Count	-	-	1	1	-	2	2	-	1	2	-	5
	Incidence*	-	-	1.4	0.3	-	0.2	0.2	-	0.7	0.3	-	0.2
<i>Haemophilus influenzae</i> , type f	Count	2	2	-	-	-	4	5	2	1	1	-	9
	Incidence*	0.4	1.1	-	-	-	0.3	0.5	0.5	0.7	0.2	-	0.4
<i>Haemophilus influenzae</i> , non-typeable	Count	5	3	2	2	3	15	9	4	2	4	4	23
	Incidence*	1.1	1.6	2.8	0.7	1.5	1.2	1.0	1.1	1.4	0.7	1.0	0.9
Invasive group A streptococcal disease	Count	22	11	4	35	19	91	75	37	13	71	46	242
	Incidence*	4.8	5.8	5.6	11.7	9.6	7.5	8.2	9.8	9.1	11.9	11.6	9.9
Invasive pneumococcal disease	Count	37	21	16	28	33	135	94	59	22	87	70	332
	Incidence*	8.0	11.1	22.4	9.4	16.6	11.1	10.2	15.6	15.4	14.6	17.6	13.6
Invasive meningococcal disease	Count	5	1	-	1	1	8	9	1	-	1	3	14
	Incidence*	1.1	0.5	-	0.3	0.5	0.7	1.0	0.3	-	0.2	0.8	0.6
Measles	Count	2.0	-	-	-	-	2.0	2.0	-	-	-	-	2.0
	Incidence*	0.4	-	-	-	-	0.2	0.2	-	-	-	-	0.1
Mumps	Count	3	1	-	1	-	5	5	2	1	6	1	15
	Incidence*	0.7	0.5	-	0.3	-	0.4	0.5	0.5	0.7	1.0	0.3	0.6
Pertussis	Count	31	6	5	9	17	68	56	14	6	27	62	165
	Incidence*	6.7	3.2	7.0	3.0	8.6	5.6	6.1	3.7	4.2	4.5	15.6	6.8

\* Incidence rates are calculated as annual incidence rates (cases per 100,000 population per year), without adjusting for seasonality.

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