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Ontario Respiratory Pathogen Bulletin | 2016-2017 SURVEILLANCE SEASON (September 1, 2016 – August 31, 2017)

Unless otherwise stated, **this issue of the Ontario Respiratory Pathogen Bulletin provides information on the surveillance season from September 1, 2016 to August 31, 2017.** Data extraction occurred on Tuesday, October 17, 2017.

Summary of respiratory pathogen activity in Ontario, September 1, 2016 to August 31, 2017

- Overall, the number of laboratory-confirmed cases of influenza reported in the influenza A(H3N2) dominant 2016-2017 surveillance season was higher than the influenza A(H1N1)pdm09 dominant 2015-2016 season. Unlike the 2015-2016 season where elevated activity for influenza A(H1N1)pdm09 and influenza B more closely overlapped, in the 2016-2017 season, there were two distinct periods of elevated influenza activity representing the circulation of influenza A(H3N2) and influenza B. In the 2016-2017 season, the period with highest influenza activity occurred during December 18, 2016 to February 25, 2017 (Weeks 51–8) (Figures 1, 2, 5).

    - **Laboratory-confirmed influenza cases:** A total of 12,518 laboratory-confirmed influenza cases were reported for the 2016-2017 season. The majority of influenza cases in the 2016-2017 season were influenza A, which accounted for 87.3% (10,924/12,518) of cases (Table 1). There were 1,587 cases of influenza B and 7 cases of influenza A and B co-infection reported in the 2016-2017 season.

    - **Laboratory detection of influenza:** The dominant circulating influenza A subtype was H3N2, representing 98.9% (6,045/6,112) of influenza A cases with a subtype reported in iPHIS (Table 1).

        - For the season as a whole, positivity for influenza A was 12.8% and influenza B positivity was 1.6% (Table 2). Peak percent positivity was 33.9% for influenza A and 8.7% for influenza B (Figure 5).
        - Among influenza A isolates from Ontario characterized by the National Microbiology Laboratory (NML), all of the 48 Ontario influenza A(H1N1)pdm09 isolates were antigenically similar to A/California/07/09, the H1N1 strain component of the 2016-17 Northern Hemisphere seasonal influenza vaccine. Of the 242 Ontario influenza A(H3N2) viruses that were strain-typed, all were antigenically similar to the A/Hong Kong/4801/2014 strain, which is the influenza A(H3N2) component of the 2016-17 Northern Hemisphere seasonal influenza vaccine (Table I).
        - Of influenza B viruses from Ontario characterized by NML, 78.1% (236/302) were the B/Phuket/3073/13-like strain, which belongs to the B Yamagata lineage, the influenza B component of the 2016-2017 Northern Hemisphere quadrivalent influenza vaccine(Table I).

    - **Timing of influenza activity:** The timing of influenza activity is dependent on circulating influenza strains (e.g. influenza A(H3N2) usually circulates earlier in the influenza season). In the 2016-2017 season, multiple indicators showed peak influenza A activity occurring during weeks 52-1 (Figures 1, 5, 7, 8, 11,12, I). In the 2016-2017 season, peak influenza B activity occurred during weeks 14-15 (Figures 2, 5, I).

    - **Geographic distribution:** The highest reported incidence rates of influenza were observed in Grey Bruce, Porcupine, and North Bay Parry Sound District public health units, with 166.1, 143.1, and

139.1 cases per 100,000 population, respectively (Figure 3). The largest proportion (25.0%, 3,134/12,518) of cases in the 2016-2017 season were reported in Toronto, which proportionately represents 20.6% of Ontario's population (Table 1).

- **Age distributions:** The highest incidence rates of influenza A were reported among the elderly aged 90 and above (Figure 4). Generally, influenza A rates increased with age for those aged 45 and older rising to over 1,330 cases per 100,000 population. Cases 65 years of age and older accounted for 57.4% (6,274/10,924) of laboratory-confirmed influenza A cases reported in the 2016-2017 season. This reflects the dominance of the H3N2 subtype in the 2016-2017 season, as this subtype usually has a greater impact on adults aged 65 and above. The highest incidence rates of influenza B were reported among adults aged 65 and above.

- **Hospitalizations and deaths:** A total of 3,839 hospitalizations and 260 deaths[1] were reported among laboratory-confirmed influenza cases in the 2016-17 season (Table 3). The highest hospitalization rate occurred among adults 65 years of age and older (116.3 hospitalizations per 100,000 population). Similarly the highest mortality rate occurred among adults 65 years of age and older (10.4 deaths per 100,000 population), refecting the greater impact of the H3N2 subtype on the elderly.

  - The highest numbers of hospitalizations occurred in cases with episode dates in week 1, which was also the week with the most cases of influenza A reported (Figures 1 and 7).
  - The greatest number of deaths, based on date of death, occurred during week 3 (Figure 8), which reflects peak influenza A activity in the preceding weeks.

- **Respiratory infection outbreaks in institutions:** There were 1,871 confirmed institutional respiratory infection outbreaks reported in the 2016-17 season. This includes 642 (34.3%) outbreaks that were laboratory-confirmed as influenza A, 66 (3.5%) as influenza B, and 9 (0.5%) as influenza A and B combined (Table 4). No organism was reported in 10.5% (197/1,871) of outbreaks.

  - The majority of outbreaks were reported in long-term care homes (LTCHs), with 58.0% (1,086/1,871) reported in this setting, followed by 21.4% (401/1,871) in retirement homes, and 7.4% (139/1,871) in hospitals. The exposure setting was not reported for 12.8% (240/1,871) of respiratory infection outbreaks (Figure 9).
  - Non-influenza respiratory viruses were the most commonly identified aetiologic agent in outbreaks reported by all types of institutions, with the exception of hospitals where influenza was the most commonly identified aetiologic agent. (Figure 9).
  - Of the 139 respiratory infection outbreaks reported in hospitals, 56.8% (79/139) were reported in acute care hospitals, 37.4% (52/139) were reported in chronic care hospitals, and 5.8% (8/139) were reported in psychiatric care hospitals (Figure 10).

- **Other respiratory viruses:** While influenza had the highest percent positivity[2] among all circulating respiratory viruses in the 2016-2017 season at 14.4% overall, other respiratory viruses circulated as well. Rhinovirus (13.1%) and respiratory syncytial virus (RSV) (8.1%) had the second and third highest overall percent positivity (Table 2; Figures 5 and 6).

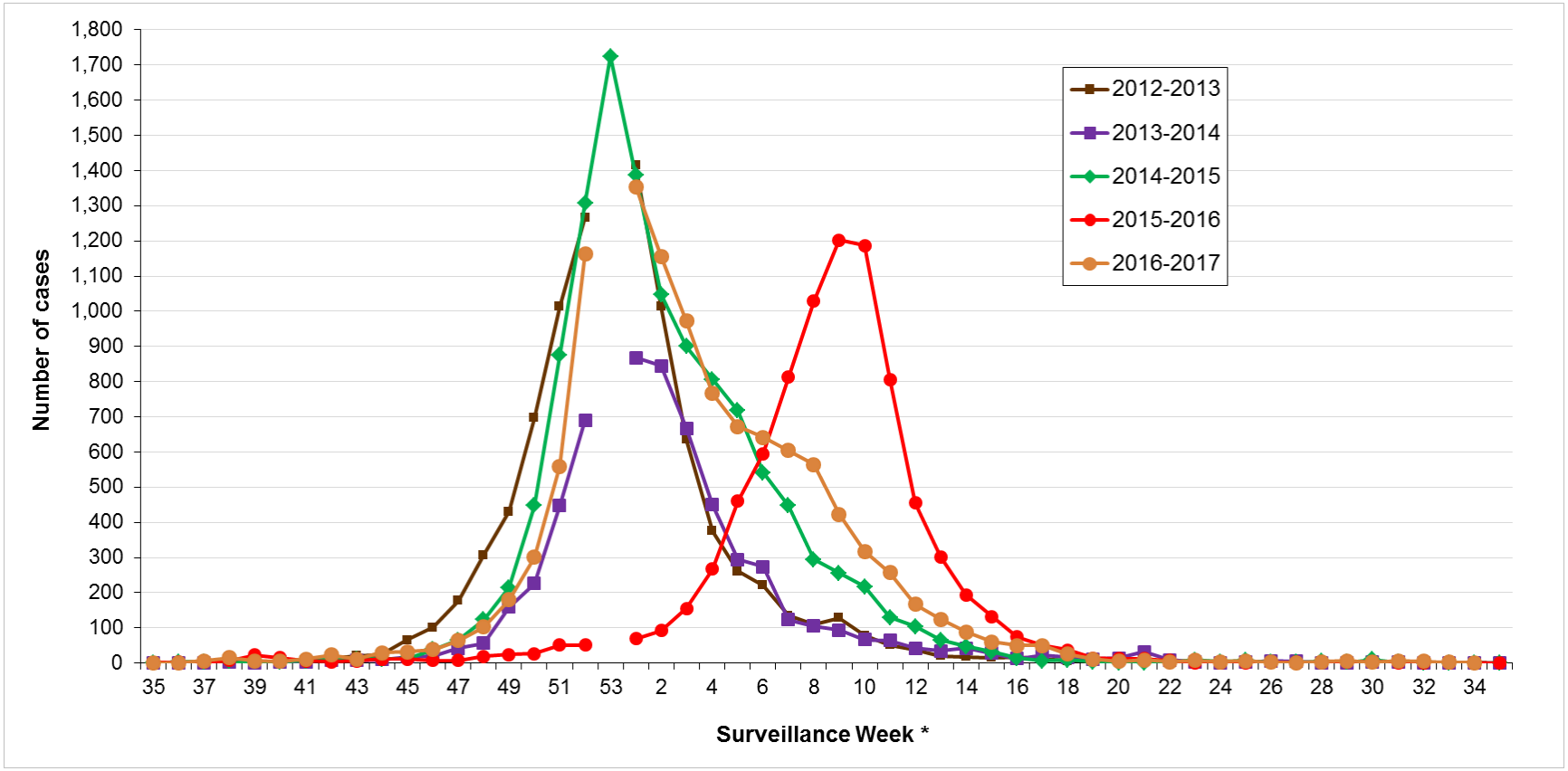
  - Rhinovirus had the highest percent positivity of all circulating respiratory viruses in the beginning (September 2016 to December 2016 – Weeks 36-49) and end of the season (April to August 2017 – Weeks 14-34) (Table 2; Figure 6).

Notes:

[1] In the 2014-15, 2015-16 and 2016-17 seasons, only a proportion of laboratory-confirmed cases were followed up by public health units, therefore it is anticipated that the number of hospitalizations and deaths is a greater under-estimation of the true numbers compared to what was reported in previous seasons.

[2] Positivity among specimens submitted for testing to laboratories reporting to the Centre for Immunization and Respiratory Infectious Diseases (CIRID).

Figure 1. Number of reported laboratory-confirmed cases of **influenza A** by surveillance week: Ontario, September 1, 2012 to August 31, 2017

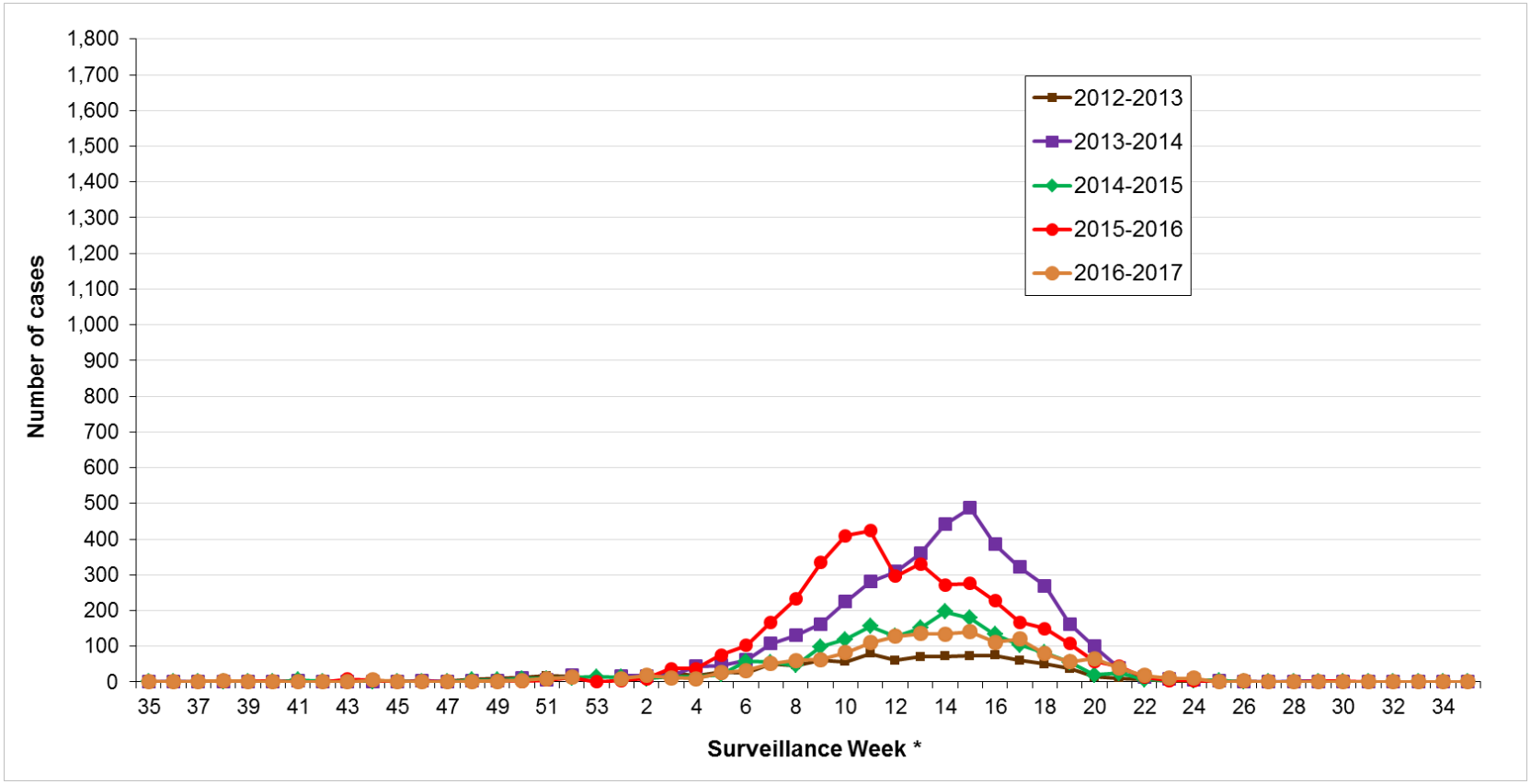


Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted by Public Health Ontario [2017/10/17].

Notes:

*Unlike the other seasons presented, the 2014-15 season includes a week 53; a week 53 occurs once every five to six years. Cases are assigned to a particular surveillance week based on the episode date entered in iPHIS for the case. Episode date for a case corresponds to the earliest date on record for the case according to the iPHIS hierarchy (Symptom Date > Clinical Diagnosis Date > Specimen Collection Date > Lab Test Date > Reported Date).

Figure 2. Number of reported laboratory-confirmed cases of **influenza B** by surveillance week: Ontario, September 1, 2012 to August 31, 2017



Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted by Public Health Ontario [2017/10/17].

Notes:

*Unlike the other seasons presented, the 2014-15 season includes a week 53; a week 53 occurs once every five to six years. Cases are assigned to a particular surveillance week based on the episode date entered in iPHIS for the case. Episode date for a case corresponds to the earliest date on record for the case according to the iPHIS hierarchy (Symptom Date > Clinical Diagnosis Date > Specimen Collection Date > Lab Test Date > Reported Date).

Table 1. Number of reported laboratory-confirmed influenza cases by health unit and health region: Ontario, September 1, 2016 to August 31, 2017

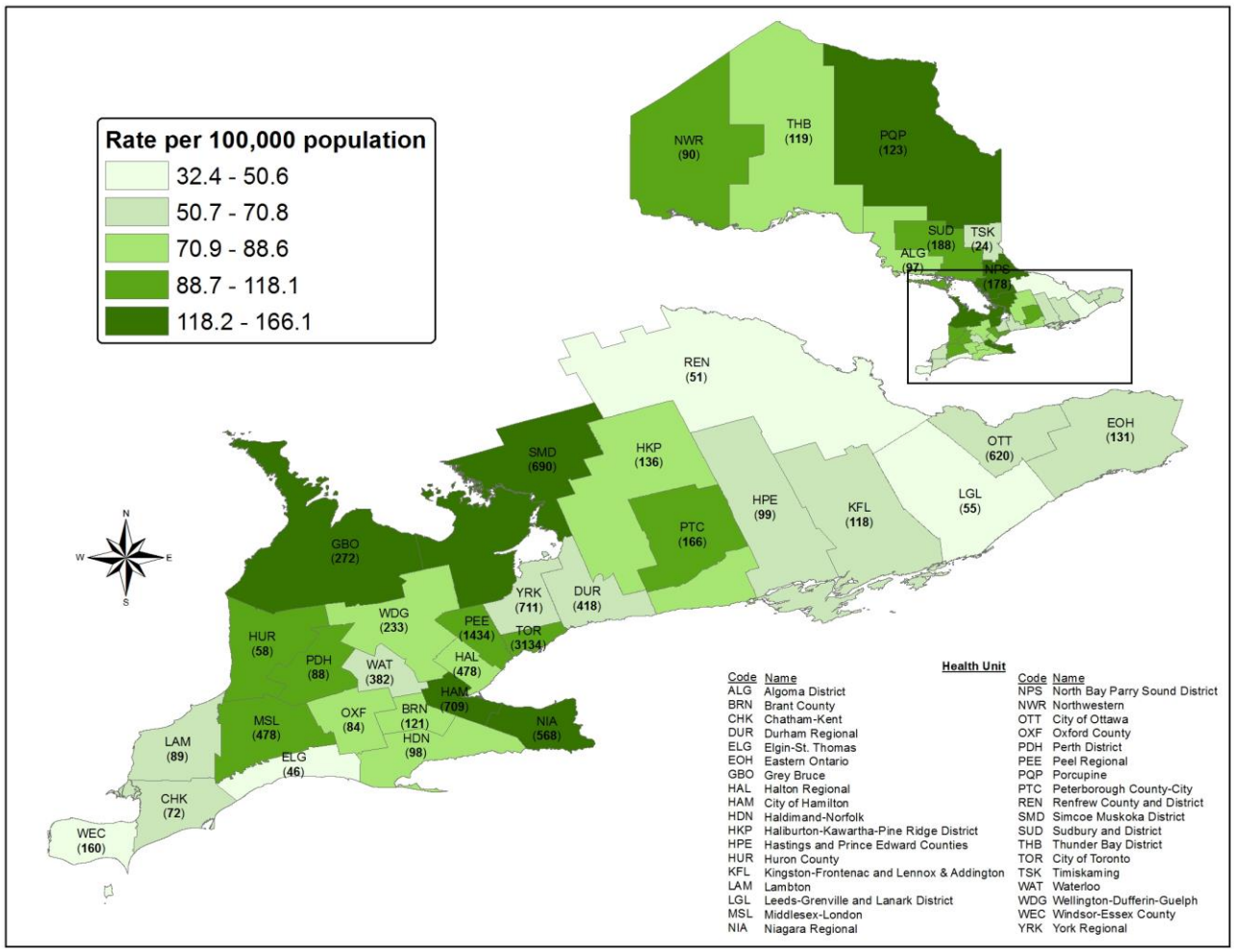
Health Unit and Region	Influenza A			Influenza A & B	Influenza B	TOTAL
	(H1N1) pdm09	H3	No subtype available			
Northwestern	0	52	2	0	36	90
Thunder Bay District	0	80	0	0	39	119
TOTAL NORTH WEST	**0**	**132**	**2**	**0**	**75**	**209**
Algoma	2	71	5	0	19	97
North Bay Parry Sound District	1	136	23	0	18	178
Porcupine	1	73	5	0	44	123
Sudbury & District	0	75	89	0	24	188
Timiskaming	0	17	0	0	7	24
TOTAL NORTH EAST	**4**	**372**	**122**	**0**	**112**	**610**
City of Ottawa	0	68	475	0	77	620
Eastern Ontario	1	61	57	0	12	131
Hastings & Prince Edward Counties	0	83	6	0	10	99
Kingston, Frontenac, Lennox & Addington	0	39	69	0	10	118
Leeds, Grenville And Lanark District	0	37	16	0	2	55
Renfrew County And District	0	18	27	0	6	51
TOTAL EASTERN	**1**	**306**	**650**	**0**	**117**	**1074**
Durham Region	1	200	181	0	36	418
Haliburton, Kawartha, Pine Ridge	0	108	9	0	19	136
Peel Region	20	749	426	0	239	1434
Peterborough County-City	0	132	9	0	25	166
Simcoe Muskoka District	3	493	113	0	81	690
York Region	4	594	16	1	96	711
TOTAL CENTRAL EAST	**28**	**2276**	**754**	**1**	**496**	**3555**
Toronto	14	1463	1309	5	343	3134
TOTAL TORONTO	**14**	**1463**	**1309**	**5**	**343**	**3134**
Chatham-Kent	0	41	19	0	12	72
Elgin-St. Thomas	1	31	10	0	4	46
Grey Bruce	0	182	65	0	25	272
Huron County	0	45	12	0	1	58
Lambton County	0	68	12	0	9	89
Middlesex-London	0	113	316	0	49	478
Oxford County	1	57	16	0	10	84
Perth District	1	58	24	0	5	88
Windsor-Essex County	4	128	10	0	18	160
TOTAL SOUTH WEST	**7**	**723**	**484**	**0**	**133**	**1347**
Brant County	1	73	37	0	10	121
City Of Hamilton	0	75	565	0	69	709
Haldimand-Norfolk	0	63	24	0	11	98
Halton Region	1	141	271	0	65	478
Niagara Region	1	79	392	0	96	568
Waterloo Region	4	152	186	0	40	382
Wellington-Dufferin-Guelph	6	190	16	1	20	233
TOTAL CENTRAL WEST	**13**	**773**	**1491**	**1**	**311**	**2589**
TOTAL ONTARIO	**67**	**6045**	**4812**	**7**	**1587**	**12518**

Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted by Public Health Ontario [2017/10/17].

Notes: The cumulative count includes laboratory-confirmed cases with an 'Episode Date' between September 1, 2016 and August 31, 2017.

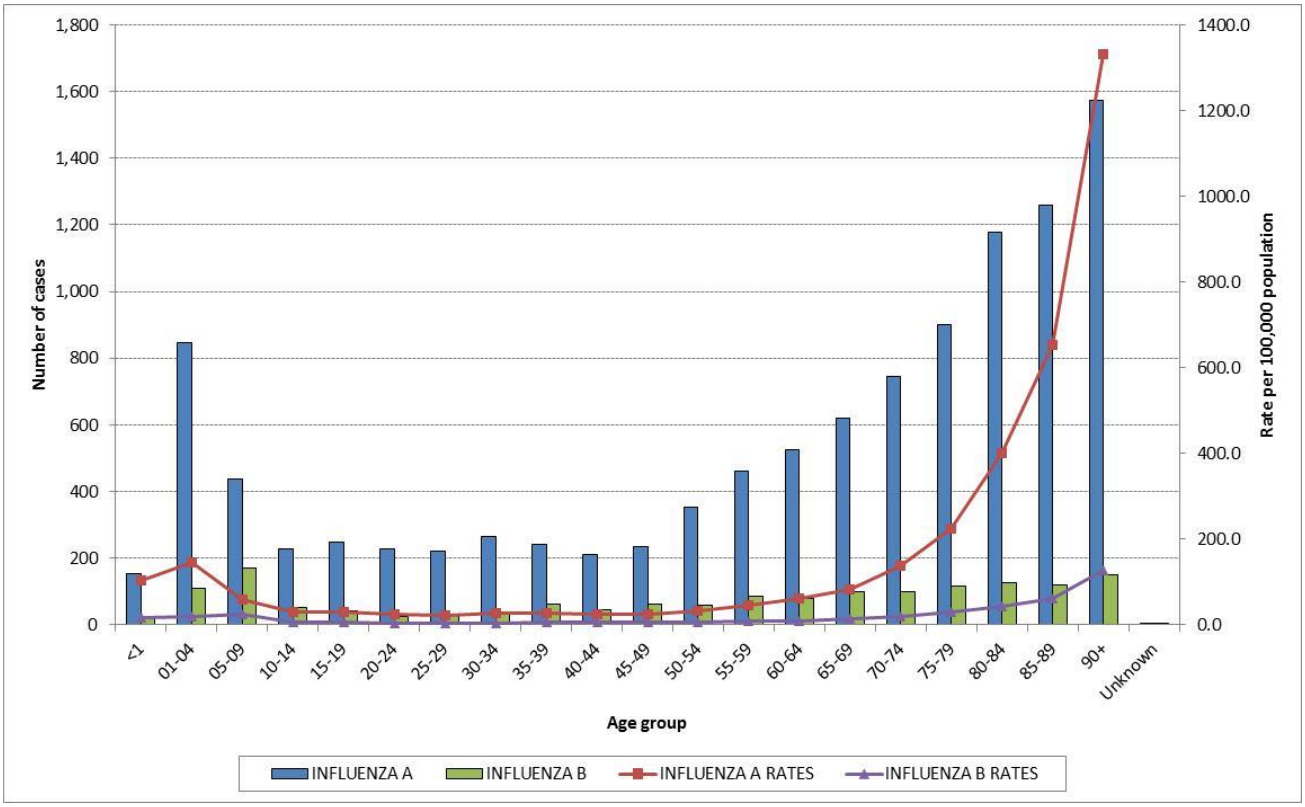
'No subtype available' includes influenza A isolates that were classified as not subtyped, untypeable, or indeterminate

Figure 3. Rate of reported laboratory-confirmed influenza per 100,000 population (and counts, in brackets), by health unit: Ontario, September 1, 2016 to August 31, 2017



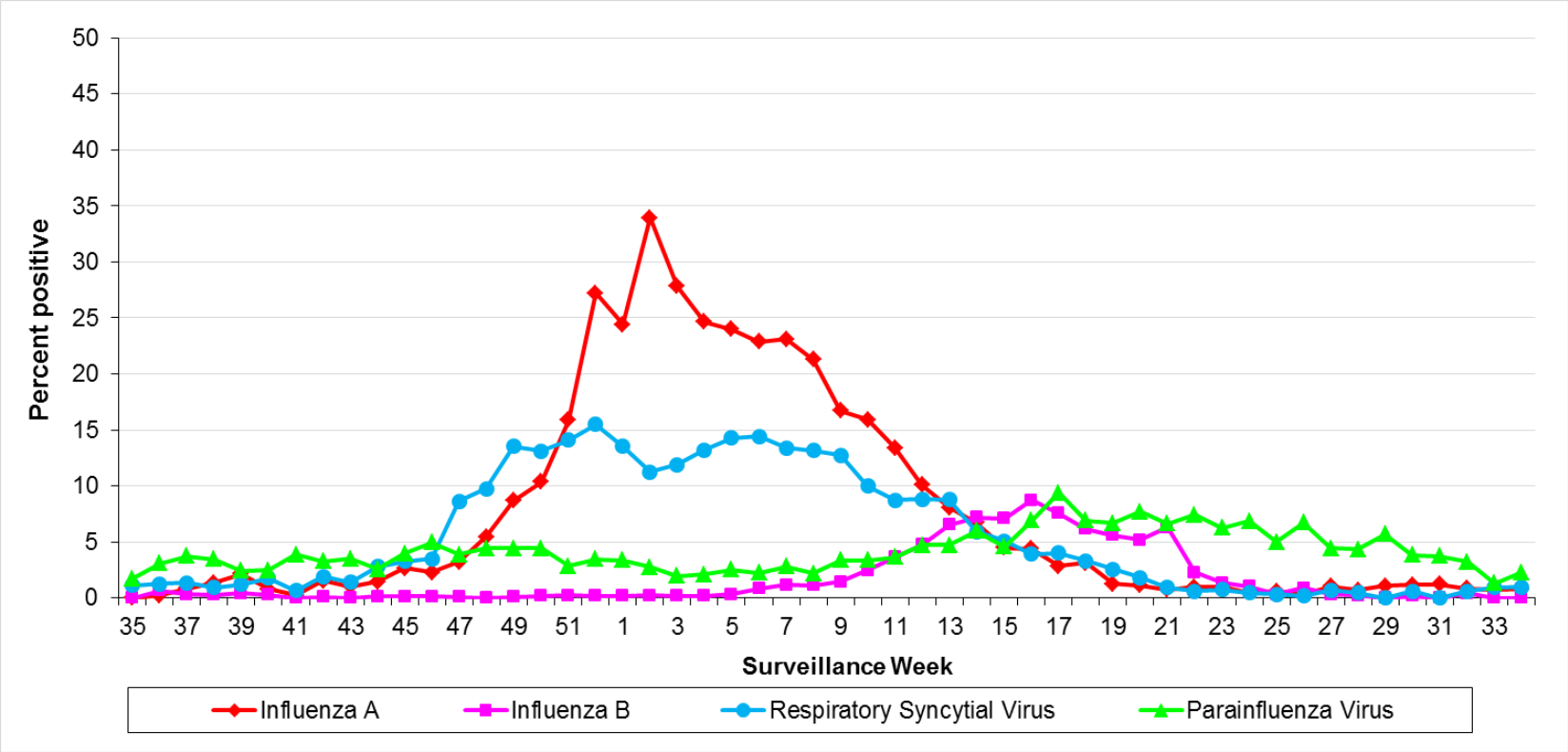
Source: Ontario Ministry of Health and Long-Term Care (MOHLTC), integrated Public Health Information System (iPHIS) database, extracted by Public Health Ontario [2017/10/17]. Population Projections [2016-2017], Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date extracted: [2017/02/01].

Figure 4. Rate of laboratory-confirmed cases of influenza per 100,000 population, by age group and type: Ontario, September 1, 2016 to August 31, 2017



Source: Ontario Ministry of Health and Long-Term Care (MOHLTC), integrated Public Health Information System (iPHIS) database, extracted by Public Health Ontario [2017/10/17]. Population Projections [2016-2017], Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date extracted: [2017/02/01].

Figure 5. Percentage of respiratory viral pathogens (influenza A, influenza B, respiratory syncytial virus, and parainfluenza virus) detected among specimens tested by all methods: Ontario, August 28, 2016 to August 26, 2017



Source: These data have been obtained from the Public Health Agency of Canada's (PHAC) Centre for Immunization and Respiratory Infectious Diseases (CIRID) respiratory virus detection tables as of August 30, 2017; they are based on data submitted to PHAC from 16 laboratories in Ontario.

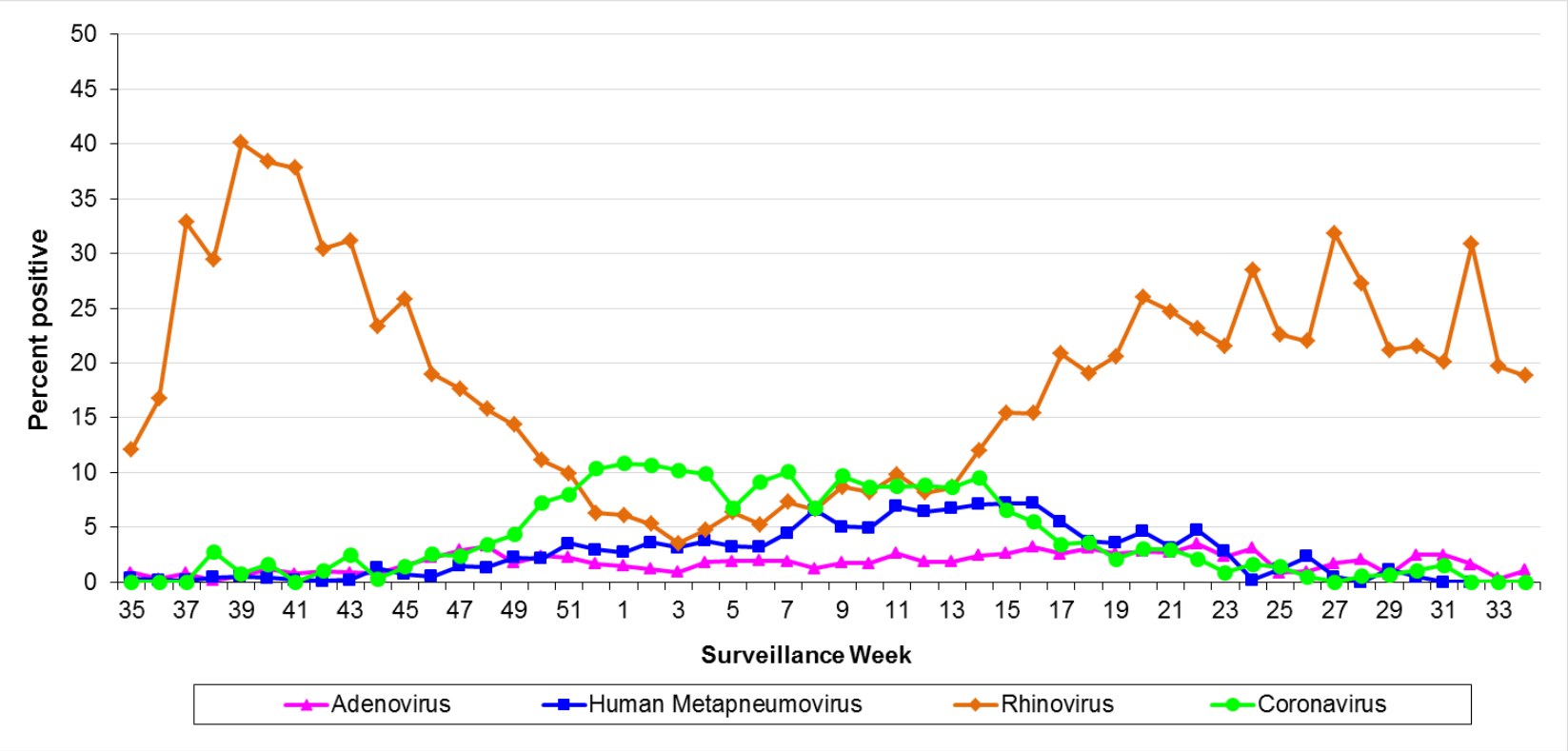
Notes:

The numbers reported in this figure represent results submitted to the CIRID by 16 participating laboratories in Ontario, including 11 Public Health Ontario Laboratories (PHOLs) and five hospital-based laboratories. Not all 16 Ontario laboratories report every week.

Results above are assigned to a particular surveillance week based on when test results are reported to PHAC; these data are not updated when results are submitted late for previous surveillance weeks. These data represent the number of specimens tested, which may not necessarily correspond with the number of patients as more than one specimen may have been submitted per patient.

Cumulative numbers for the season to date are also available through FluWatch: http://www.phac-aspc.gc.ca/fluwatch/

Figure 6. Percentage of respiratory viral pathogens (adenovirus, human metapneumovirus, rhinovirus and coronavirus) detected among specimens tested by all methods: Ontario, August 28, 2016 to August 26, 2017



Source: These data have been obtained from the Public Health Agency of Canada's (PHAC) Centre for Immunization and Respiratory Infectious Diseases (CIRID) respiratory virus detection tables as of August 30, 2017; they are based on data submitted to PHAC from 16 laboratories in Ontario.

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Cumulative numbers for the season to date are also available through FluWatch: http://www.phac-aspc.gc.ca/fluwatch/

Table 2. Number and percent positivity of respiratory specimens tested by all methods for influenza and other respiratory viruses: Ontario, August 28, 2016 to August 26, 2017

Detected viruses	Cumulative for Season		
	Number positive	Number tested	Percent positive
Influenza (All)	11,035	76,591	14.4%
Influenza A	*9,824*		*12.8%*
Influenza B	*1,211*		*1.6%*
Parainfluenza virus	2,157	54,754	3.9%
Adenovirus	997	54,336	1.8%
Respiratory syncytial virus	5,947	73,777	8.1%
Rhinovirus	6,265	47,920	13.1%
Human metapneumovirus	1,739	54,314	3.2%
Coronavirus	3,116	46,515	6.7%

Source: These data have been obtained from the Public Health Agency of Canada's (PHAC) Centre for Immunization and Respiratory Infectious Diseases (CIRID) respiratory virus detection tables as of August 30, 2017 they are based on data submitted to PHAC from 16 participating laboratories in Ontario and contain data representing cumulative counts.

Notes:
The data in this table are based on the date on which test results are reported.
These data represent the number of specimens tested, which may not necessarily correspond with the number of patients as more than one specimen may have been submitted per patient.
Cumulative numbers for the season to date are also available through FluWatch: http://www.phac-aspc.gc.ca/fluwatch/

Table 3. Hospitalizations and deaths among laboratory-confirmed influenza cases by age group: Ontario, September 1, 2016 to August 31, 2017

	HOSPITALIZATIONS		DEATHS	
Age Group	Count	Rate per 100,000	Count	Rate per 100,000
<1	142	96.1	0	0.0
1 – 4	205	35.5	1	0.2
5 – 14	165	11.1	1	0.1
15 – 24	63	3.5	1	0.1
25 – 44	151	4.1	2	0.1
45 – 64	443	11.3	16	0.4
65+	2670	116.3	239	10.4
Total	**3,839**	**27.5**	**260**	**1.9**

Sources:

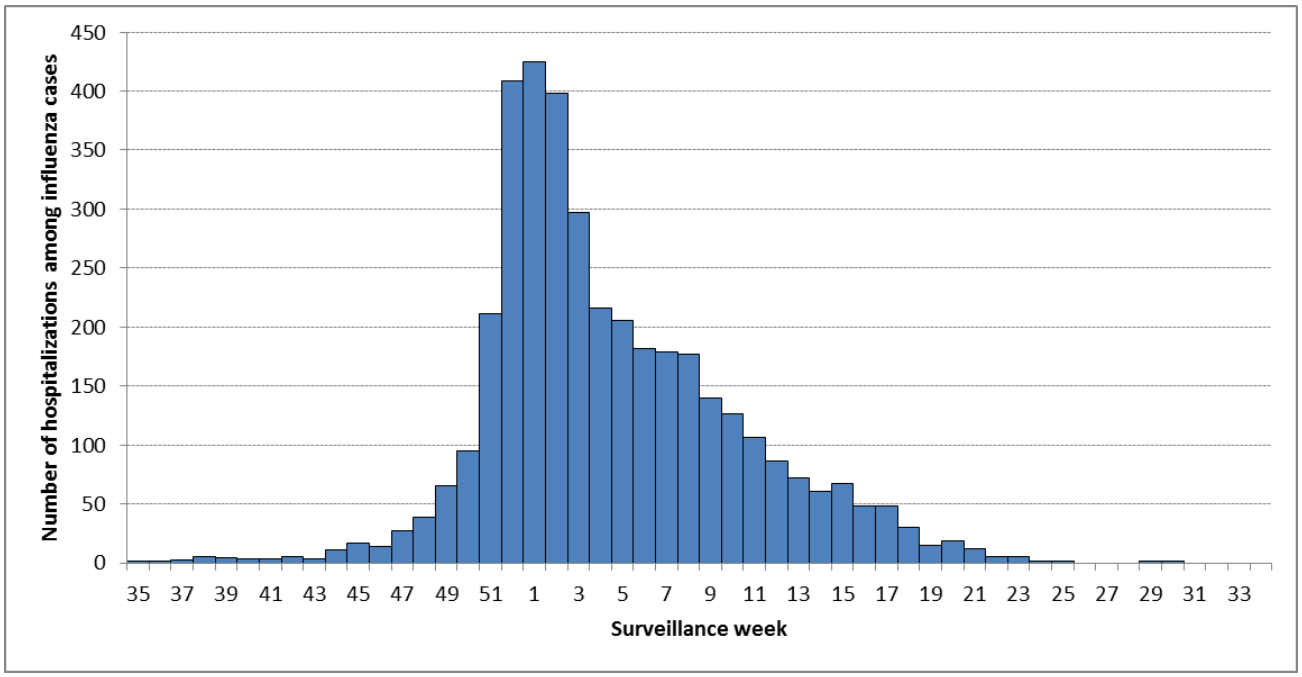
Case data: Ontario Ministry of Health and Long-Term Care (MOHLTC), integrated Public Health Information System (iPHIS) database, extracted by Public Health Ontario [2017/10/17].

Population data: Population Projections [2016-2017], Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: [2017/02/01].

Notes:

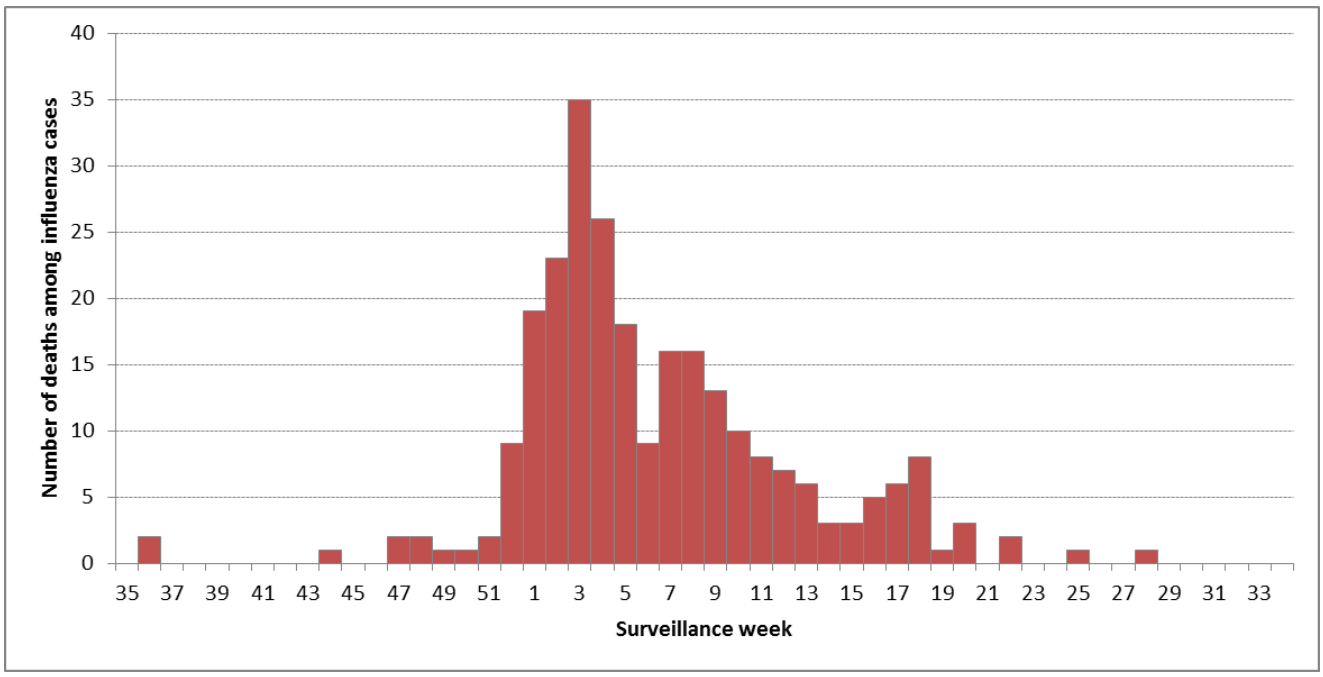
In the 2014-15, 2015-16 and 2016-17 seasons, only a proportion of laboratory-confirmed cases were followed up by public health units, therefore it is anticipated that the number of hospitalizations and deaths is a greater under-estimation of the true numbers as compared to what was reported in previous seasons.

Figure 7. Number of hospitalizations among laboratory-confirmed cases of influenza, by episode date: Ontario, September 1, 2016 to August 31, 2017



Source: Ontario Ministry of Health and Long-Term Care (MOHLTC), integrated Public Health Information System (iPHIS) database, extracted by Public Health Ontario [2017/10/17].
In the 2016-17 season, only a proportion of laboratory- confirmed cases were followed up by public health units, therefore it is anticipated that the number of hospitalizations is a greater under-estimation of the true number as compared to what was reported in previous seasons.

Figure 8. Number of deaths among laboratory-confirmed cases of influenza, by date of death: Ontario, September 1, 2016 to August 31, 2017



Source: Ontario Ministry of Health and Long-Term Care (MOHLTC), integrated Public Health Information System (iPHIS) database, extracted by Public Health Ontario [2017/10/17].

Notes:

All cases with a 'fatal' outcome entered in iPHIS were included in this figure, regardless of death attribution. 1 case with an unknown date of death was excluded from this figure.
In the 2016-17 season, only a proportion of laboratory confirmed cases were followed up by public health units, therefore it is anticipated that the number of deaths is a greater under-estimation of the true number as compared to what was reported in previous seasons.

Table 4a. Institutional respiratory infection outbreaks: Ontario, September 1, 2016 to August 31, 2017

Virus reported in outbreak	Number of outbreaks	Percentage of total
Influenza A[1]	642	34.3%
Influenza B[1]	66	3.5%
Both influenza A and B[1]	9	0.5%
Entero/rhinovirus	367	19.6%
Parainfluenza (All types)	79	4.2%
Respiratory Syncytial Virus (RSV)	117	6.3%
Human metapneumovirus, adenovirus, or coronavirus	251	13.4%
Two or more non-influenza viruses[1]	143	7.6%
No organism identified	197	10.5%
TOTAL	***1871***	***100.0%***

Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted by Public Health Ontario [2017/10/17].

Notes:
[1] Any outbreak where influenza was identified is reported under the appropriate influenza category ("Influenza A", "Influenza B" or "Both influenza A and B") regardless of what other virus was also identified in the outbreak.

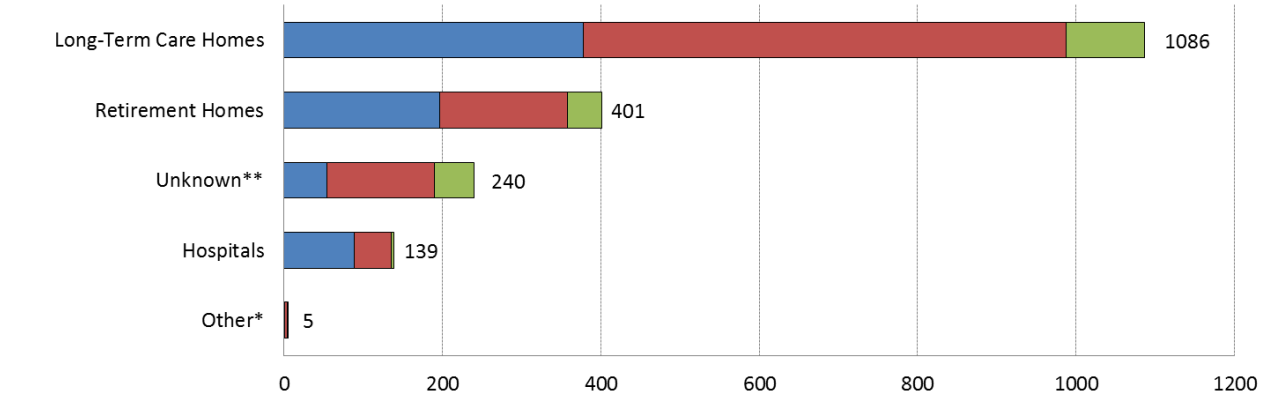
Table 4b. Institutional respiratory infection outbreaks by setting type: Ontario, September 1, 2016 to August 31, 2017

Setting type reported	Number of influenza outbreaks (% of total)	Number of other respiratory viruses (% of total)
Long-Term Care Home	378 (52.7%)	708 (61.4%)
Hospital	88 (12.3%)	51 (4.4%)
Retirement Home	196 (27.3%)	205 (17.8%)
Other[1]	1 (0.1%)	4 (0.3%)
Unknown	54 (7.5%)	186 (16.1%)
TOTAL	***717 (100.0%)***	***1154 (100.0%)***

Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted by Public Health Ontario [2017/10/17].

Notes:
[1] Other types of institutions include: correctional facilities, group homes, shelters, and facilities operating under the *Developmental Services Act*. Note that school-based and child care centre respiratory outbreaks are not captured in this table.

Figure 9. Respiratory infection outbreaks by organism reported and institution type: Ontario, September 1, 2016 to August 31, 2017



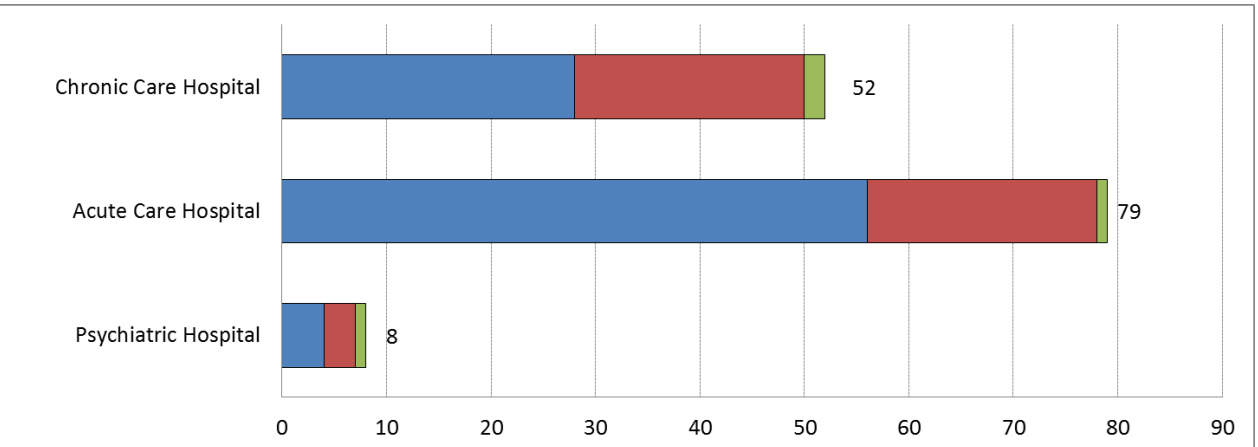
	Other*	Hospitals	Unknown**	Retirement Homes	Long-Term Care Homes
Influenza	1	88	54	196	378
Other Respiratory Viruses	3	47	136	162	609
No Organism Identified	1	4	50	43	99

Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted by Public Health Ontario [2017/10/17].

Notes:
*Includes those respiratory infection outbreaks for which 'Other' was reported in the Exposure Setting Type field in iPHIS.

** Unknown includes those respiratory infection outbreaks for which either no Exposure Setting Type was entered or was reported as 'Unknown' in iPHIS.

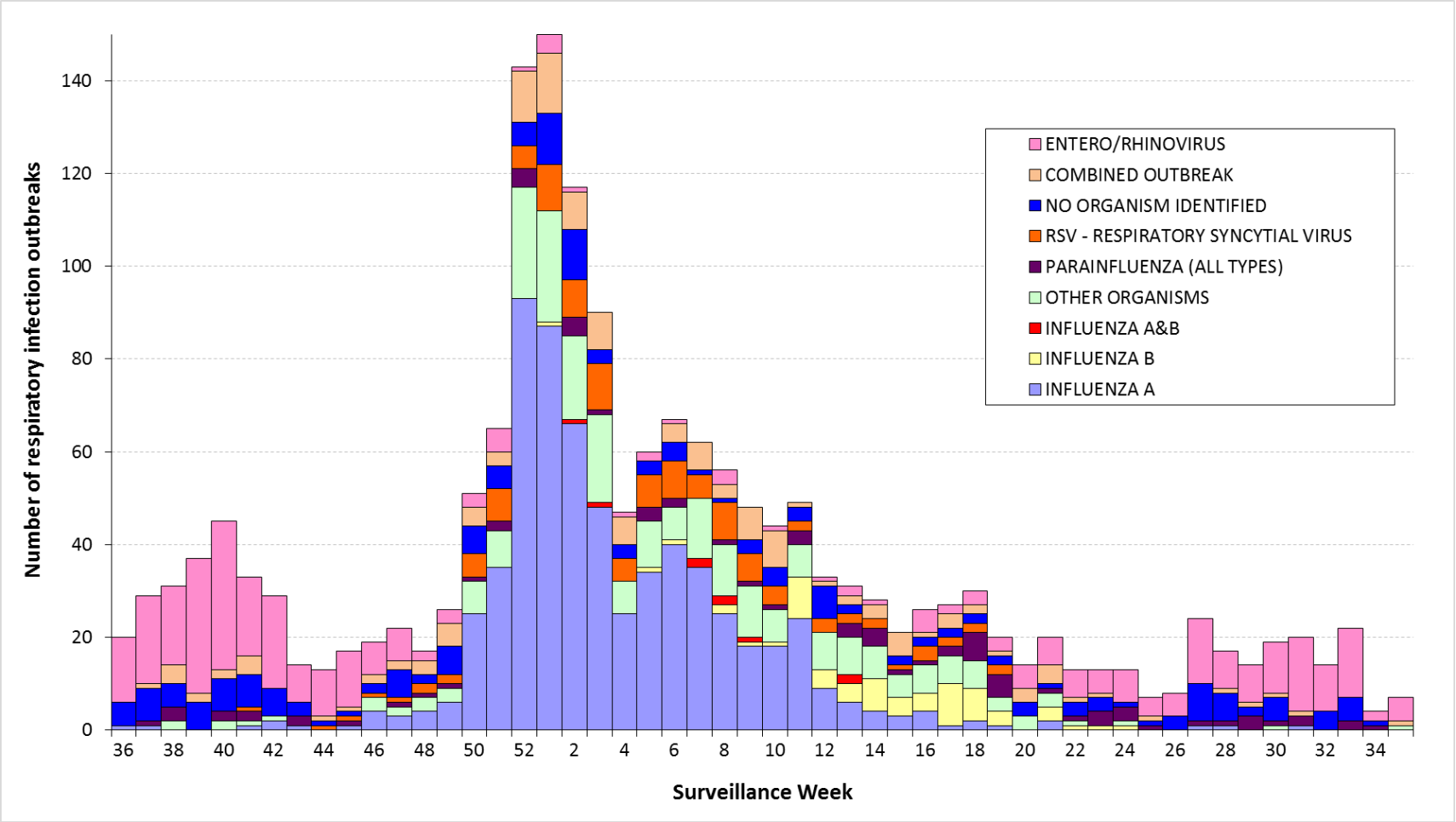
Figure 10. Respiratory infection outbreaks, by organism reported and type of hospital: Ontario, September 1, 2016 to August 31, 2017



	Psychiatric Hospital	Acute Care Hospital	Chronic Care Hospital
Influenza	4	56	28
Other Respiratory Viruses	3	22	22
No Organism Identified	1	1	2

Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted by Public Health Ontario [2017/10/17].

Figure 11. Institutional respiratory infection outbreaks by week of illness onset in the first case: Ontario, September 1, 2016 to August 31, 2017

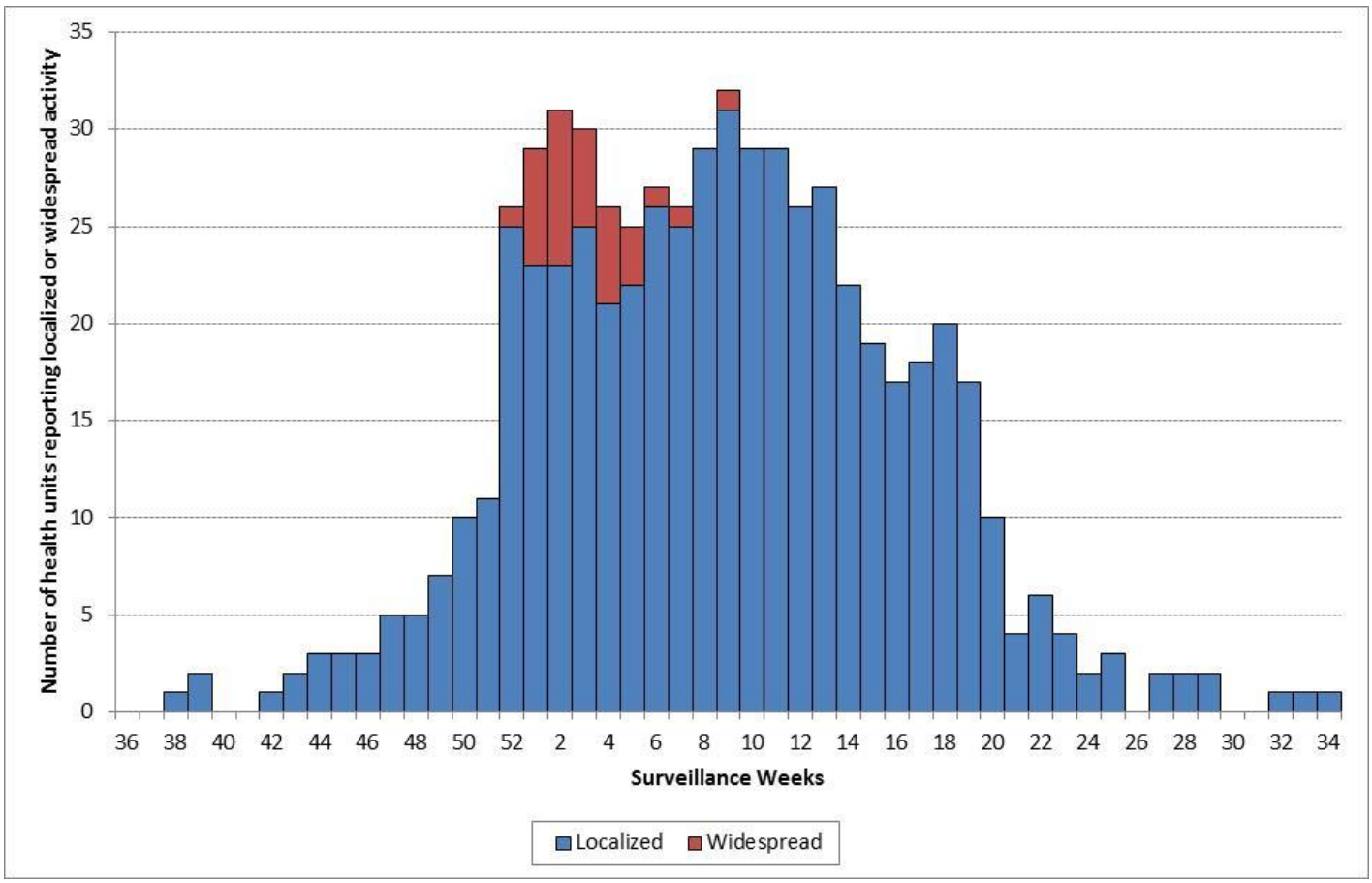


Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted by Public Health Ontario [2017/10/17].

Notes:

- Institutional respiratory infection outbreaks for which the date of onset of illness for the first case is missing are excluded in this figure. However, these outbreaks are counted in the cumulative outbreaks section of Table 4.
- Week 36 excludes outbreaks with an onset date prior to September 1, 2016, while week 35 excludes outbreaks with an onset date after August 31, 2017.
- Any outbreak where influenza was identified is reported under the appropriate influenza category ("Influenza A", "Influenza B", or "Both influenza A & B") regardless of what other virus is also identified in the outbreak

Figure 12. 'Localized' and 'Widespread' influenza activity levels reported by public health units, by reporting week: Ontario, September 1, 2016 (Week 36) to August 26, 2017 (Week 34)



Source: Public Health Ontario [Provincial Influenza Activity Report (Appendix C) Database]

Notes:

Influenza activity levels are assigned by local public health units and reported to Public Health Ontario by the Tuesday following the end of each surveillance week at 4:00 p.m. Activity levels are assigned based on laboratory confirmations, ILI reports from various sources, and laboratory-confirmed institutional respiratory infection outbreaks. Please click here for detailed definitions for the 2016-17 season.

Activity levels reported for a particular surveillance week may not necessarily correspond to the number of new outbreaks reported in the same week because ongoing outbreaks from previous weeks, as well as laboratory-confirmed outbreaks in schools, may be included in the assessment of the activity level.

APPENDIX I

Table I. Strain characterization completed on influenza positive isolates at the National Microbiology Laboratory: Ontario and Canada, September 1, 2016 to August 31, 2017

Influenza strains	Ontario	Canada
Influenza A (H3N2) A/Hong Kong/4801/2014-like	242	396
Influenza A (H1N1) A/California/07/09-like	48	62
Influenza B B/Brisbane/60/2008-like B/Phuket/3073/13-like	66 236	128 504

Source: Influenza and Respiratory Viruses Section, National Microbiology Laboratory (NML). Received: August 31, 2017

Notes:

Through genetic characterization performed at the National Microbiology Laboratory (NML), sequence analysis showed that the 396 influenza A(H3N2) viruses tested nationally were antigenically similar to A/Hong Kong/4801/2014, which is the influenza A(H3N2) component recommended by the World Health Organization for the 2016-17 Northern Hemisphere influenza vaccine.

62 H1N1 virus characterized were antigenically similar to A/California/07/2009, which is the influenza A(H1N1) component of the 2016-17 Northern Hemisphere influenza vaccine.

Of the 632 influenza B viruses characterized in Canada, NML reported that 128 (20.3%) were antigenically similar to the recommended influenza B component for the Northern Hemisphere 2016-17 vaccine, B/Brisbane/60/2008. 504 (79.7%) influenza B viruses were characterized as B/Phuket/3073/2013-like, which belongs to the Yamagata lineage and is included as an influenza B component of the 2016-17 Northern Hemisphere quadrivalent influenza vaccine.

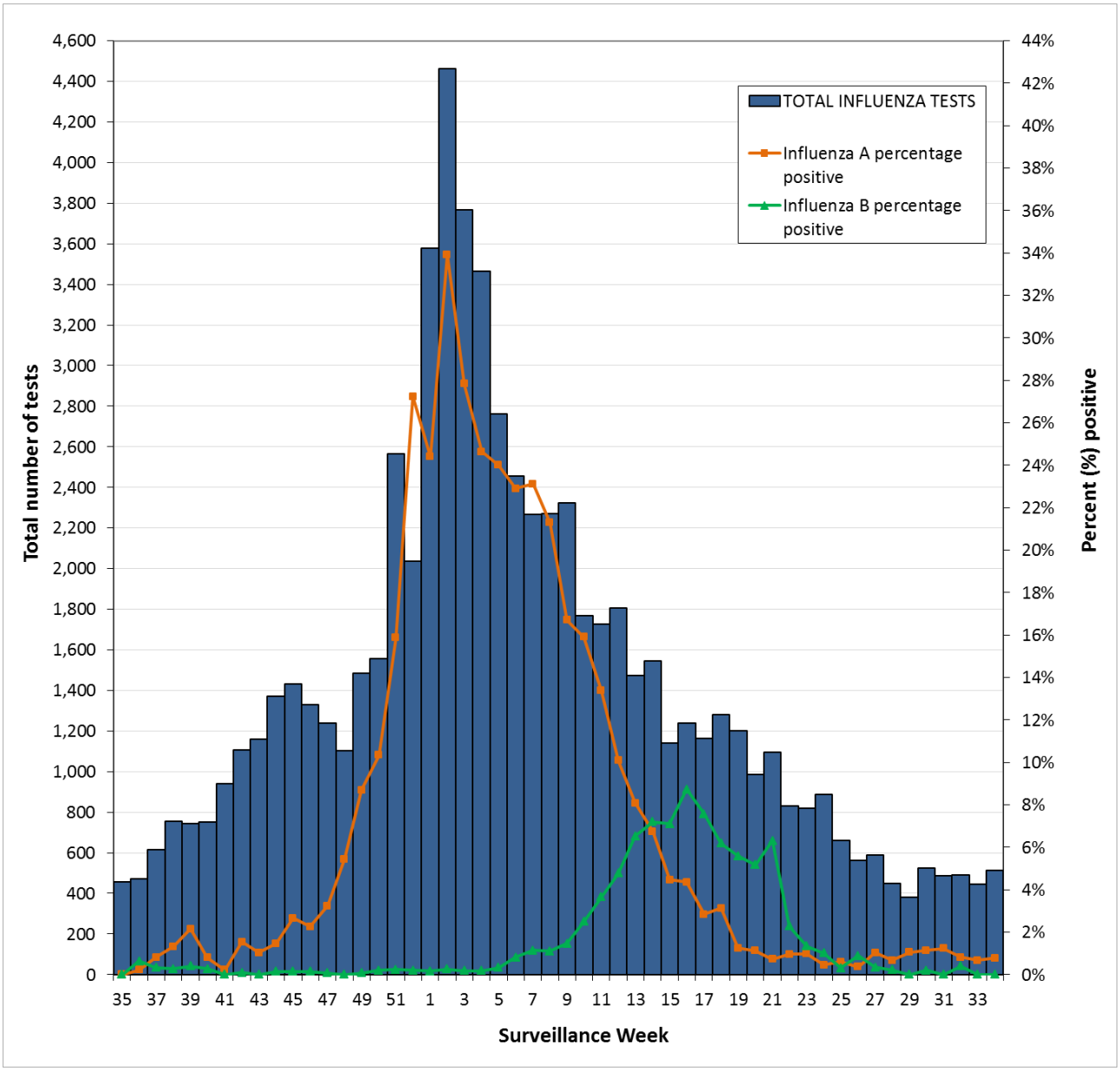
Table II. Amantadine, oseltamivir and zanamivir susceptibility assays completed on influenza isolates at the National Microbiology Laboratory: Ontario and Canada, September 1, 2016 to August 31, 2017

Influenza strains	Amantadine				Oseltamivir				Zanamivir			
	ONTARIO		CANADA		ONTARIO		CANADA		ONTARIO		CANADA	
	R	S	R	S	R	S	R	S	R	S	R	S
Influenza A (H3N2)	51	0	232	0	2	405	2	763	0	407	0	764
Influenza A (H1N1)pdm09	42	0	55	0	0	41	1	51	0	40	0	51
Influenza B	NA	NA	NA	NA	0	182	0	442	0	182	0	444

(R = Resistant, S = Susceptible, NA = Not Applicable)
Source: Influenza and Respiratory Viruses Section, National Microbiology Laboratory (NML). Received: August 31, 2017

Notes:
All influenza viruses in Canada tested by the National Microbiology Laboratory (NML) for antiviral resistance in the 2016-17 season were sensitive to zanamivir. Two influenza A (H3N2) and one (H1N1)pdm09 viruses tested nationally were resistant to oseltamivir; the two resistant influenza A(H3N2) were from Ontario. Nationally, no influenza A viruses tested were sensitive to amantadine, all were resistant. All influenza B viruses in Canada were sensitive to both oseltamivir and zanamivir.

Figure I. Total number of influenza tests performed and percent of positive tests by report week: Ontario, August 28, 2016 to August 26, 2017



Source: These data have been obtained from the Public Health Agency of Canada's (PHAC) Centre for Immunization and Respiratory Infectious Diseases (CIRID) respiratory virus detection tables as of August 30, 2017; they are based on data submitted to PHAC from 16 laboratories in Ontario.

Notes:

The numbers reported in this figure represent results submitted to the CIRID by 16 participating laboratories in Ontario, including 11 Public Health Ontario Laboratories and five hospital-based laboratories. Not all 16 Ontario laboratories report every week.

Results above are assigned to a particular surveillance week based on when test results are reported to PHAC; these data are not updated when results are submitted late for previous surveillance weeks.

These data represent the number of specimens tested, which may not necessarily correspond with the number of patients as more than one specimen may have been submitted per patient.

Cumulative numbers for the season to date are also available through FluWatch: http://www.phac-aspc.gc.ca/fluwatch/

APPENDIX II – Reporting Weeks for the 2016-17 Surveillance Season

WEEKS	START	END
WK35	28-Aug-16	3-Sep-16
WK36	04-Sep-16	10-Sep-16
WK37	11-Sep-16	17-Sep-16
WK38	18-Sep-16	24-Sep-16
WK39	25-Sep-16	01-Oct-16
WK40	02-Oct-16	08-Oct-16
WK41	09-Oct-16	15-Oct-16
WK42	16-Oct-16	22-Oct-16
WK43	23-Oct-16	29-Oct-16
WK44	30-Oct-16	05-Nov-16
WK45	06-Nov-16	12-Nov-16
WK46	13-Nov-16	19-Nov-16
WK47	20-Nov-16	26-Nov-16
WK48	27-Nov-16	03-Dec-16
WK49	04-Dec-16	10-Dec-16
WK50	11-Dec-16	17-Dec-16
WK51	18-Dec-16	24-Dec-16
WK52	25-Dec-16	31-Dec-16
WK1	01-Jan-17	07-Jan-17
WK2	08-Jan-17	14-Jan-17
WK3	15-Jan-17	21-Jan-17
WK4	22-Jan-17	28-Jan-17
WK5	29-Jan-17	04-Feb-17
WK6	05-Feb-17	11-Feb-17
WK7	12-Feb-17	18-Feb-17
WK8	19-Feb-17	25-Feb-17
WK9	26-Feb-17	04-Mar-17
WK10	05-Mar-17	11-Mar-17
WK11	12-Mar-17	18-Mar-17
WK12	19-Mar-17	25-Mar-17
WK13	26-Mar-17	01-Apr-17
WK14	02-Apr-17	08-Apr-17
WK15	09-Apr-17	15-Apr-17
WK16	16-Apr-17	22-Apr-17
WK17	23-Apr-17	29-Apr-17
WK18	30-Apr-17	06-May-17
WK19	07-May-17	13-May-17
WK20	14-May-17	20-May-17
WK21	21-May-17	27-May-17
WK22	28-May-17	03-Jun-17
WK23	04-Jun-17	10-Jun-17
WK24	11-Jun-17	17-Jun-17
WK25	18-Jun-17	24-Jun-17
WK26	25-Jun-17	01-Jul-17
WK27	02-Jul-17	08-Jul-17
WK28	09-Jul-17	15-Jul-17
WK29	16-Jul-17	22-Jul-17
WK30	23-Jul-17	29-Jul-17
WK31	30-Jul-17	05-Aug-17
WK32	06-Aug-17	12-Aug-17
WK33	13-Aug-17	19-Aug-17
WK34	20-Aug-17	26-Aug-17
WK35	27-Aug-17	02-Sept-17