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Community and Hospital Surveillance

ILI, SARI, Influenza and Respiratory Pathogens

2016 Influenza Season, Week 18, ending 8 May 2016

SUMMARY

During week 18 (2–8 May 2016), influenza activity was very low among those consultation-seeking patients nationwide. Influenza activity was also very low among those hospitalised patients in Auckland and Counties Manukau District Health Boards.

- **Influenza-like illness (ILI) and severe acute respiratory illness (SARI) surveillance**

  ILI surveillance: There were 28 patients with influenza-like illness consulted sentinel general practices in 20 DHBs. The weekly ILI incidence was 6.9 per 100 000 patient population (Figure 1), below the seasonal threshold of ILI consultations. The ILI related influenza incidence was 0.0 per 100 000 patient population.

  SARI surveillance: There were 2706 acute admissions to ADHB and CMDHB hospitals this week. Of the 108 patients with suspected respiratory infections, 35 (32.4%) patients met the SARI case definition. Two SARI cases have been admitted to ICU and one SARI related death was reported. The weekly SARI incidence was 2.8 per 100 000 population. The SARI related influenza incidence was 0.0 per 100 000 population.

- **Respiratory pathogen surveillance**

  Influenza virus: During this week, 20 ILI specimens were tested, none were positive for influenza viruses. In addition, 20 SARI specimens were tested, none were positive for influenza viruses. For details, see Table 3.

  Non-influenza respiratory viruses: During this week, the results for the specimens tested for non-influenza respiratory viruses were not yet available.

The surveillance for community-based influenza-like illness (ILI) and hospital-based severe acute respiratory illness (SARI) provides evidence to inform public health and clinical practice to reduce the impact of influenza virus infection and other important respiratory pathogens. This weekly report summarises data obtained from the ILI and SARI surveillance platforms. The report includes incidence, demographic characteristics, clinical outcomes and aetiologies for community ILI cases as well as hospital SARI cases including ICU admissions and deaths for the past week as well as the cumulative period since 2 May 2016.

Note: Data in this report are provisional and may change as more cases are assessed and information is updated. Data were extracted on 12 May 2016.

INFLUENZA-LIKE ILLNESS and SEVERE ACUTE RESPIRATORY ILLNESS

Influenza-like illness (ILI)

During week 18, ending 8 May 2016, 28 patients with influenza-like illness consulted sentinel general practices in 20 DHBs. The weekly ILI incidence was 6.9 per 100 000 patient population. Of the 20 tested ILI cases, none were positive for influenza viruses. This gives an ILI related influenza incidence of 0.0 per 100 000 patient population (Table 1).

Figure 1. Weekly resident ILI and influenza incidence since 2 May 2016

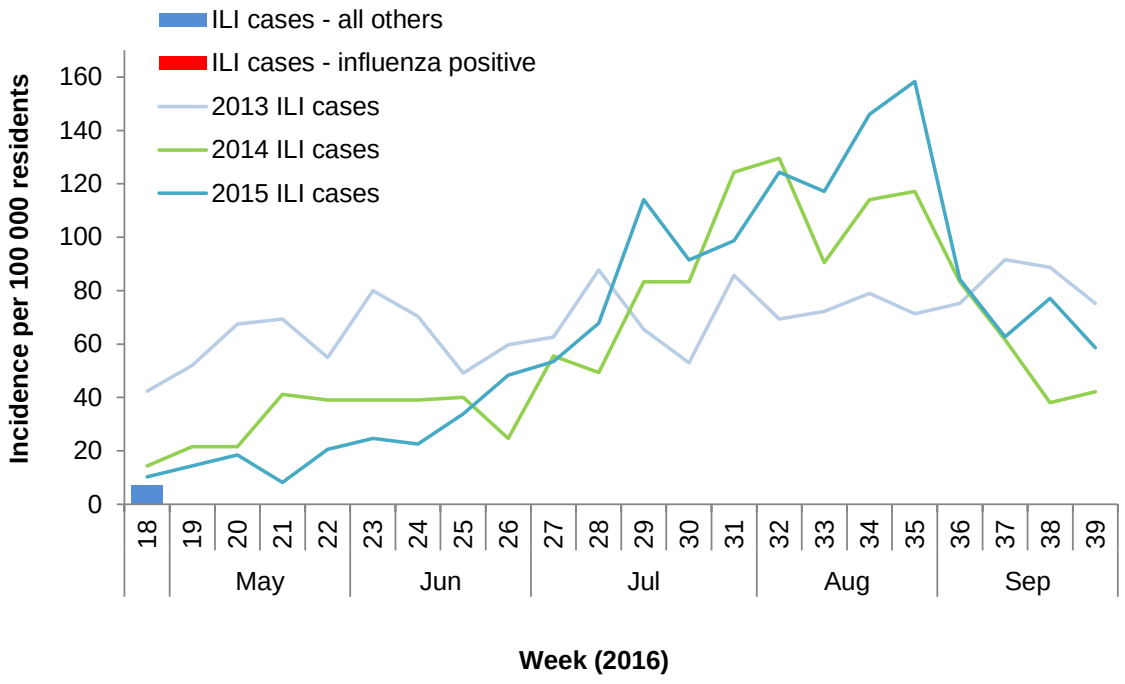

Figure 2. Comparison of 2016 rate with average seasonal rate, and historical thresholds

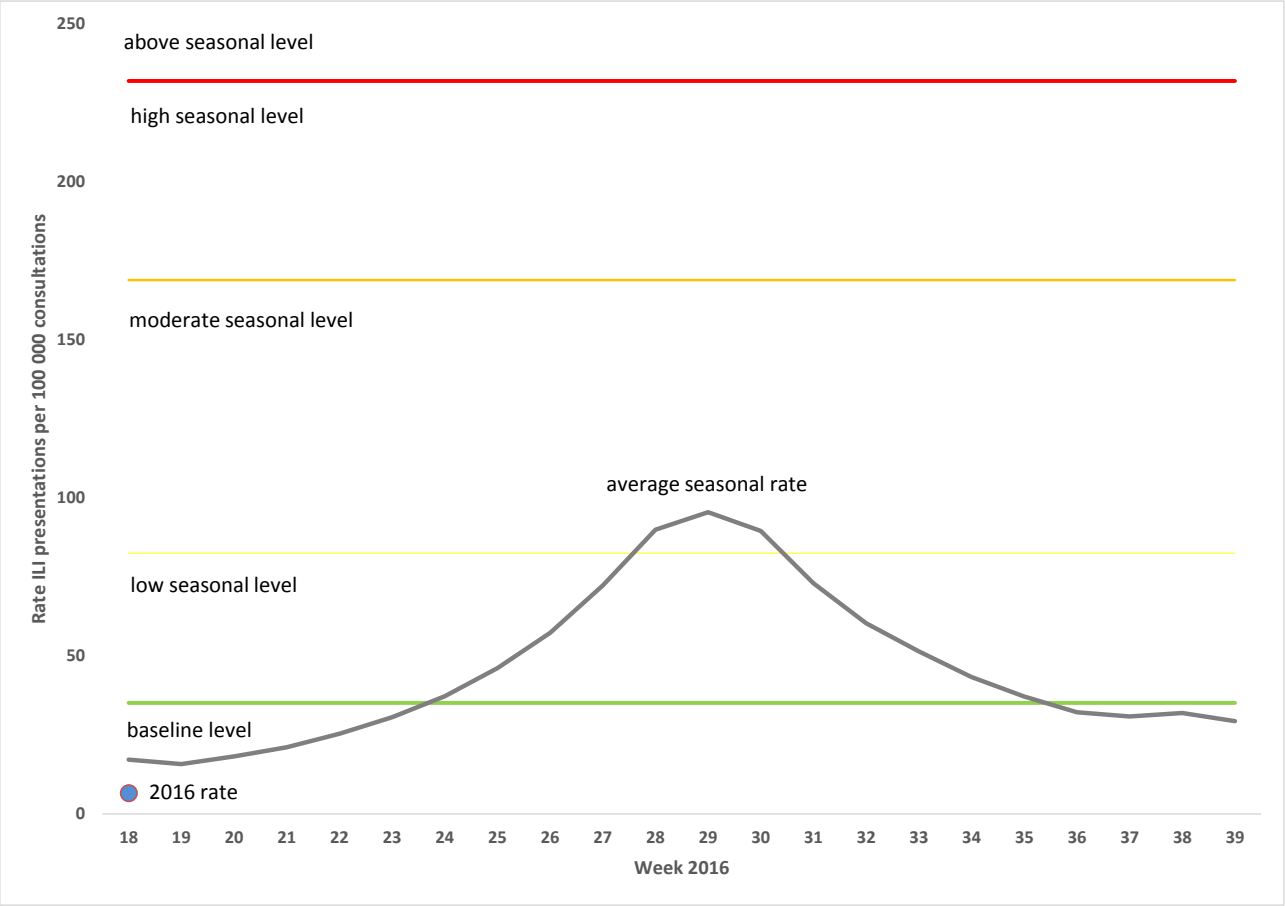

Figure 3 compares the consultation rates for influenza-like illness for each DHB over the past week. Tairawhiti (82.9 per 100 000, 5 cases), Bay of Plenty (33.7 per 100 000, 5 cases) and MidCentral (22.3 per 100 000, 1 case) DHBs had the highest consultation rates.

Figure 3. Rate of ILI consultations by DHB per week 2016 (week 18 only)

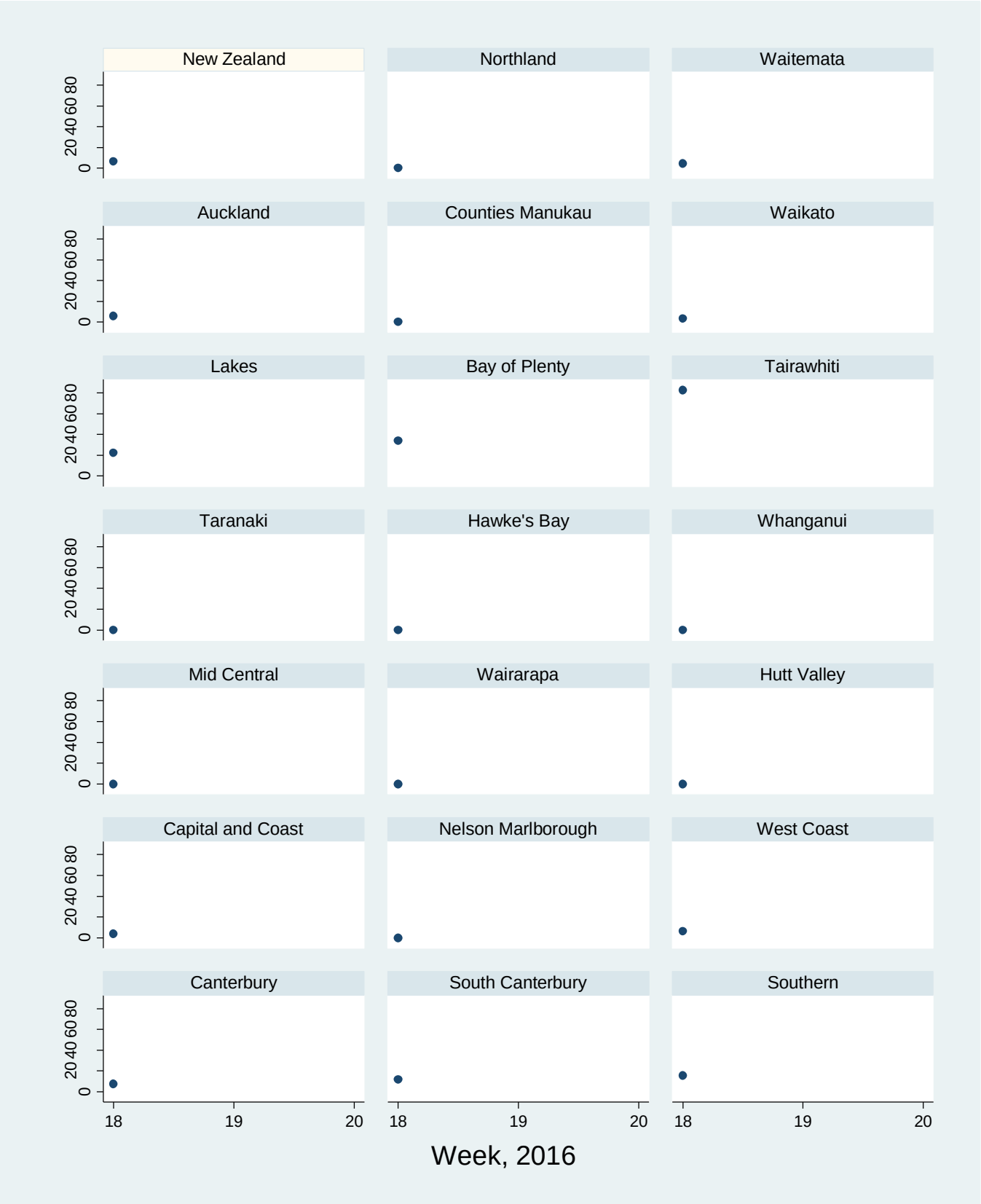

Table 1. Demographic characteristics of ILI and influenza cases, since 2 May 2016

Characteristics	ILI & influenza cases among sentinel practices				
	ILI cases	Influenza cases	Prop Influenza positive[1] (%)	ILI incidence (per 100 000)	Influenza incidence (per 100 000)
Overall	**28**	**0**	**0.0 (-)**	**6.9**	**0.0**
Age group (years)					
<1	0	0	0.0 (-)	0.0	0.0
1 to 4	0	0	0.0 (-)	0.0	0.0
5 to 19	4	0	0.0 (-)	4.9	0.0
20 to 34	13	0	0.0 (-)	15.1	0.0
35 to 49	5	0	0.0 (-)	6.3	0.0
50 to 64	2	0	0.0 (-)	2.7	0.0
65 to 79	2	0	0.0 (-)	4.7	0.0
80 and over	2	0	0.0 (-)	14.0	0.0
Unknown	0	0	0.0 (-)		
Ethnicity					
Maori	5	0	0.0 (-)	8.8	0.0
Pacific Peoples	1	0	0.0 (-)	3.3	0.0
Asians	0	0	0.0 (-)	0.0	0.0
European and others	22	0	0.0 (-)	7.7	0.0
Unknown	0	0	0.0 (-)		
Sex					
Female	17	0	0.0 (-)	8.1	0.0
Male	11	0	0.0 (-)	5.7	0.0
Unknown	0	0	0.0 (-)		

[1]Proportion of cases tested which were positive for influenza viruses

Severe acute respiratory illness (SARI)

There were 2706 acute admissions to ADHB and CMDHB hospitals during week 18, ending 8 May 2016. A total of 108 patients with suspected respiratory infections were assessed in these hospitals. Of these, 35 (32.4%) patients met the SARI case definition. Two SARI cases have been admitted to ICU and one SARI related death was reported this week.

Of the 35 SARI cases this week, 25 were residents of ADHB and CMDHB. This gives a weekly SARI incidence of 2.8 per 100 000 population (Figure 4). Seventeen SARI residents had specimens tested for influenza viruses, none were positive for influenza viruses. This gives a SARI related influenza incidence of 0.0 per 100 000 patient population (Table 2).

Figure 4. Weekly resident SARI and influenza incidence since 2 May 2016 and previous seasons SARI incidence

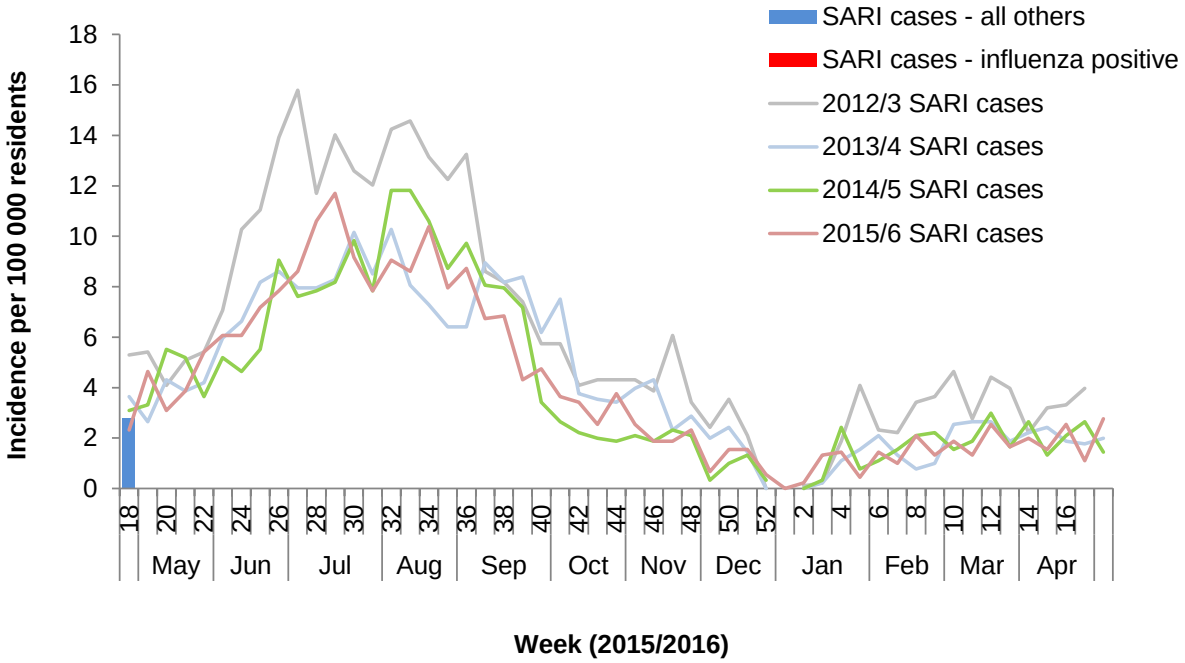

Table 2. Demographic characteristics of SARI cases and related influenza cases, since 2 May 2016

Characteristics	Admissions	Assessed	SARI & influenza cases among all hospital patients			SARI & influenza cases among ADHB & CMDHB residents			
			SARI Cases (%)	Cases per 1000 hospitalisations	Influenza positive[1] (%)	SARI cases	SARI incidence (per 100 000)	Influenza Cases	Influenza incidence (per 100 000)
Overall	**2706**	**108**	**35 (32.4)**	**12.9**	**0 (0.0)**	**25**	**2.8**	**0**	**0.0**
Age group (years)									
<1	92		6	65.2	0 (0.0)	5	37.0	0	0.0
1 to 4	159		7	44.0	0 (0.0)	7	13.2	0	0.0
5 to 19	281		4	14.2	0 (0.0)	3	1.6	0	0.0
20 to 34	570		1	1.8	0 (0.0)	1	0.5	0	0.0
35 to 49	434		3	6.9	0 (0.0)	3	1.6	0	0.0
50 to 64	495		3	6.1	0 (0.0)	2	1.3	0	0.0
65 to 79	432		2	4.6	0 (0.0)	2	2.7	0	0.0
80 and over	243		2	8.2	0 (0.0)	2	8.5	0	0.0
Unknown	0		7			0		0	
Ethnicity									
Maori	365		4	11.0	0 (0.0)	4	4.0	0	0.0
Pacific Peoples	559		14	25.0	0 (0.0)	12	8.7	0	0.0
Asians	451		5	11.1	0 (0.0)	4	1.9	0	0.0
European and others	1317		5	3.8	0 (0.0)	5	1.2	0	0.0
Unknown	13		7	538.5		0		0	
Hospitals									
ADHB	1595	51	15 (29.4)	9.4	0 (0.0)	8	1.8	0	0.0
CMDHB	1111	57	20 (35.1)	18.0	0 (0.0)	17	3.6	0	0.0
Sex									
Female	1422		14	9.8	0 (0.0)	13	2.8	0	0.0
Male	1284		14	10.9	0 (0.0)	12	2.7	0	0.0
Unknown	0		7			0		0	

[1]Proportion of cases tested which were positive for influenza viruses

RESPIRATORY PATHOGEN SURVEILLANCE

Influenza virus

During week 18, 20 ILI specimens were tested; none were positive for influenza viruses. In addition, 20 SARI specimens were tested; none were positive for influenza viruses.

Of the 20 SARI specimens tested, 0 (0.0%) were positive for influenza with the following viruses (see Table 3).

Table 3. Influenza viruses among ILI and SARI cases since 2 May 2016

Influenza viruses	ILI	SARI		
	Cases	Cases	ICU	Deaths
No. of specimens tested	20	20	2	0
No. of positive specimens (%)[1]	0 (0.0)	0 (0.0)	0 (0.0)	0 (-)
Influenza A	0	0	0	0
A (not subtyped)	0	0	0	0
A (H1N1)pdm09	0	0	0	0
A(H1N1)pdm09 by PCR	0	0	0	0
*A/California/7/2009 (H1N1) - like	0	0	0	0
A(H3N2)	0	0	0	0
A(H3N2) by PCR	0	0	0	0
‡A/Switzerland/9715293/2013 (H3N2) - like	0	0	0	0
Influenza B	0	0	0	0
B (lineage not determined)	0	0	0	0
B/Yamagata lineage	0	0	0	0
B/Yamagata lineage by PCR	0	0	0	0
¥B/Phuket/3073/2013 - like	0	0	0	0
B/Victoria lineage	0	0	0	0
B/Victoria lineage by PCR	0	0	0	0
B/Brisbane/60/2008 - like	0	0	0	0
Influenza and non-influenza co-detection (% +ve)	0 (-)	0 (-)	0 (-)	0 (-)

[1]Number of specimens positive for at least one of the listed viruses; note a specimen may be positive for more than one virus

The recommended influenza vaccine formulation for New Zealand in 2016 is:
A(H1N1) - an A/California/7/2009 (H1N1)pdm09-like strain*
A(H3N2) - an A/Hong Kong/4801/2014 (H3N2)-like strain
B - a B/Brisbane/60/2008-like strain (belonging to B/Victoria lineage)
Note: A/California/7/2009 (H1N1)-like strain is an influenza A(H1N1)pdm09 strain.
‡ This virus was the A(H3N2) vaccine component for NZ in 2015.
¥ This virus was the B vaccine component for NZ in 2015.

Non-influenza respiratory pathogens

Since 2 May 2016, the results for the specimens tested for non-influenza respiratory viruses were not yet available.

APPENDIX

Recent global experience with pandemic influenza A(H1N1)pdm09 highlights the importance of monitoring severe and mild respiratory disease to support pandemic preparedness as well as seasonal influenza prevention and control. Two active, prospective, population-based surveillance systems were used to monitor influenza and other respiratory pathogens: 1) among those registered patients seeking consultations with influenza-like illness (ILI) at sentinel general practices nation-wide; 2) among those hospitalized patients with severe acute respiratory illness (SARI) in Auckland and Counties Manukau District Health Boards (ADHB and CMDHB).

The aims of ILI and SARI surveillance are: 1) to measure the burden of severe and moderate disease caused by influenza and other respiratory pathogens; 2) to monitor trends in severe and moderate disease caused by influenza and other respiratory pathogens; 3) to identify high risk groups that should be prioritized for prevention and treatment; 4) to monitor antigenic, genetic and antiviral characteristics of influenza viruses associated with severe and mild disease. 5) to provide a study base to estimate the effectiveness of influenza vaccine.

ACKNOWLEDGEMENT

We acknowledge the support of the New Zealand Ministry of Health and the US Department of Health and Human Services, Centers for Disease Control and Prevention (CDC). SARI surveillance was established and funded by the US CDC under award number 5U01IP000480, a five year research cooperative agreement between the Institute of Environmental Science and Research and US CDC's National Center for Immunization and Respiratory Diseases Influenza Division, and continues to operate through funding from the New Zealand Ministry of Health.

DESCRIPTION OF ILI ACTIVITY THRESHOLDS

The values for the different intensity levels for 2016 are listed in the table below. This is based on New Zealand's consultation rates from 2000–2015 (excluding the pandemic year, 2009) and WHO's interim guidance severity assessment

Below seasonal level (baseline, per 100,000)	Seasonal level (per 100,000)			Above seasonal level (per 100,000)
	low	moderate	high	
<35.1	35.1-82.5	82.5-168.9	168.9-231.8	>231.8

- The baseline threshold indicates the level of influenza activity that signals the start and end of the annual influenza season and it is based on the Moving Epidemic Method (MEM) (*Vega et al. Influenza and other respiratory viruses 2013;7(4):546-558*).
- Seasonal levels (low, moderate and high) are estimated as the upper limits of the 40%, 90% and 97.5% one-sided confidence intervals of the geometric mean of 30 highest epidemic weekly rates using the MEM method. As many other countries use this method, it allows the NZ data to be interpreted not just at the country level but also comparable with other countries.
- The average seasonal curve indicates the usual seasonal activity that may occur during a typical year using the method described in *"Global epidemiological surveillance standards for influenza"* (*http://www.who.int/influenza/resources/documents/WHO_Epidemiological_Influenza_Surveillance_Standards_2014.pdf*).

NOTES ON INTERPRETATION

- SARI case definition: "An acute respiratory illness with a history of fever or measured fever of ≥38°C, AND cough, AND onset within the past 10 days, AND requiring inpatient hospitalisation (defined as a patient who is admitted under a medical team and to a hospital ward or assessment unit).
- ILI case definition: "An acute respiratory illness with a history of fever or measured fever of ≥38°C, AND cough, AND onset within the past 10 days, AND requiring GP consultation".
- ILI sentinel general practices: a total of 82 sentinel general practices have agreed to participate in community ILI surveillance. These practices have ~400 000 registered patients, covering roughly 9% of the NZ population.
- SARI sentinel hospitals serving a population of 906 000 people: Auckland City Hospital and the associated Starship Children's Hospital (ADHB), and Middlemore Hospital and the associated Kidz First Children's Hospital (CMDHB).
- The real-time PCR assay for influenza virus uses CDC's protocol (http://www.accessdata.fda.gov/cdrh_docs/pdf8/k080570.pdf.);
- The real-time PCR assay for non-influenza respiratory viruses (respiratory syncytial virus, parainfluenza virus types 1-3, human metapneumovirus, rhinovirus and adenovirus) uses CDC's protocol. Note: The rhinovirus PCR detects mostly rhinovirus with slight cross-reactivity against enterovirus.
- The surveillance week is Monday to Sunday inclusive, and data are extracted on the subsequent Tuesday. Results from previous weeks will be revised as data are updated (laboratory test results in particular may be delayed).

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