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Community and Hospital Surveillance

ILI, SARI ICU, Influenza and Respiratory Pathogens

2017 Influenza Season, February 2017

SUMMARY

During February (30 January–27 February 2017), influenza activity was very low among consultation-seeking patients nationwide. Influenza activity was also low among those hospitalised ICU patients in Auckland and Counties Manukau District Health Boards.

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

  ILI surveillance: One patient with influenza-like illness consulted sentinel general practices in 20 DHBs. The monthly ILI incidence was 0.6 per 100 000 patient population (Figure 1).

  SARI ICU surveillance: During February, there were eleven cases admitted to ICU. Since the 2 May 2016, there have been a total of 144 SARI ICU cases.

  ILI counts and rates by DHB by week are available in the Appendix.

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 monthly report summarises data obtained from the ILI and SARI surveillance platforms. The report includes incidence and demographic characteristics for community ILI cases as well as hospital SARI ICU admissions for the past month 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 13 March 2017.

INFLUENZA-LIKE ILLNESS and SEVERE ACUTE RESPIRATORY ILLNESS

Influenza-like illness (ILI)

During February (30 January–27 February 2017), one patient with influenza-like illness consulted sentinel general practices in 20 DHBs. The monthly ILI incidence was 0.6 per 100 000 patient population.

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

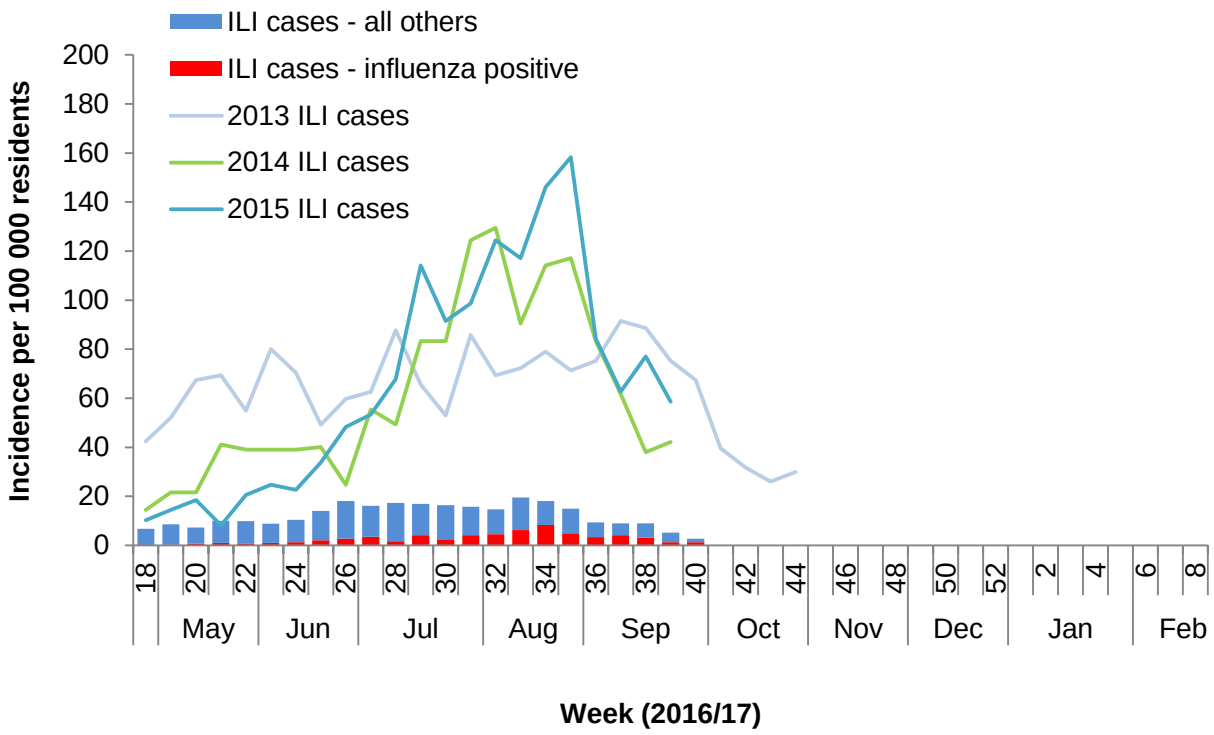


Figure 2. Weekly ILI incidence by age group since 2 May 2016

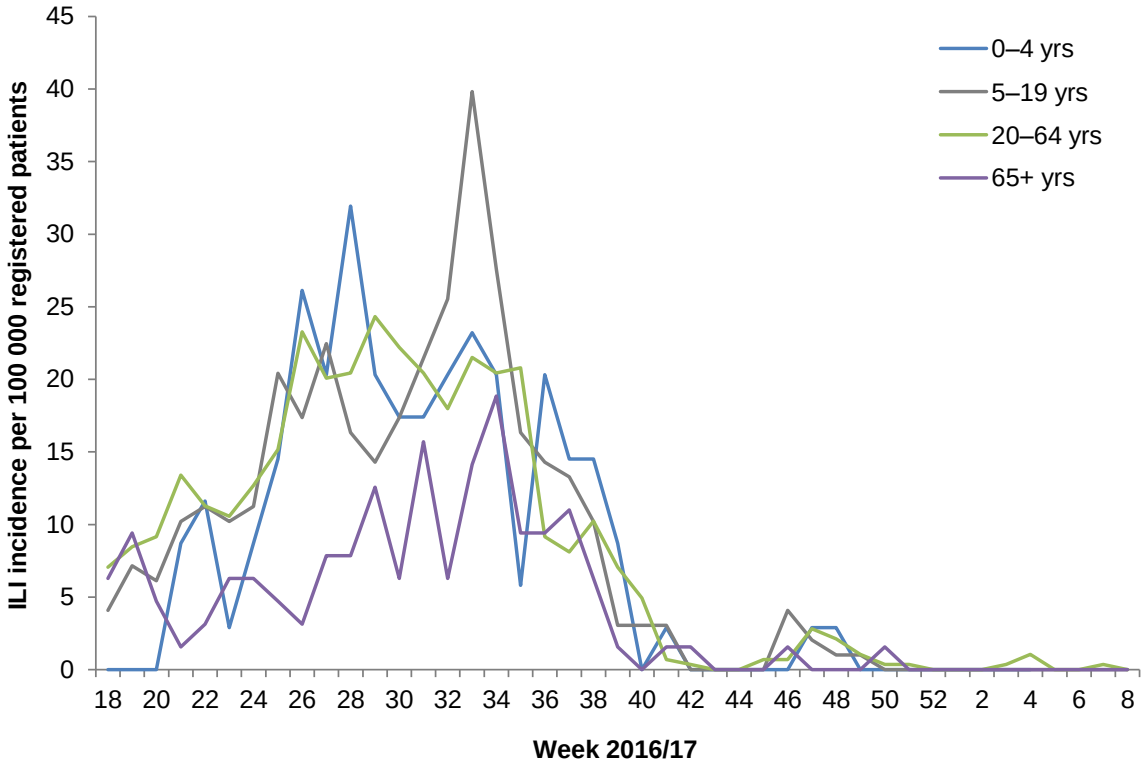


Figure 3. Weekly ILI incidence by ethnicity since 2 May 2016

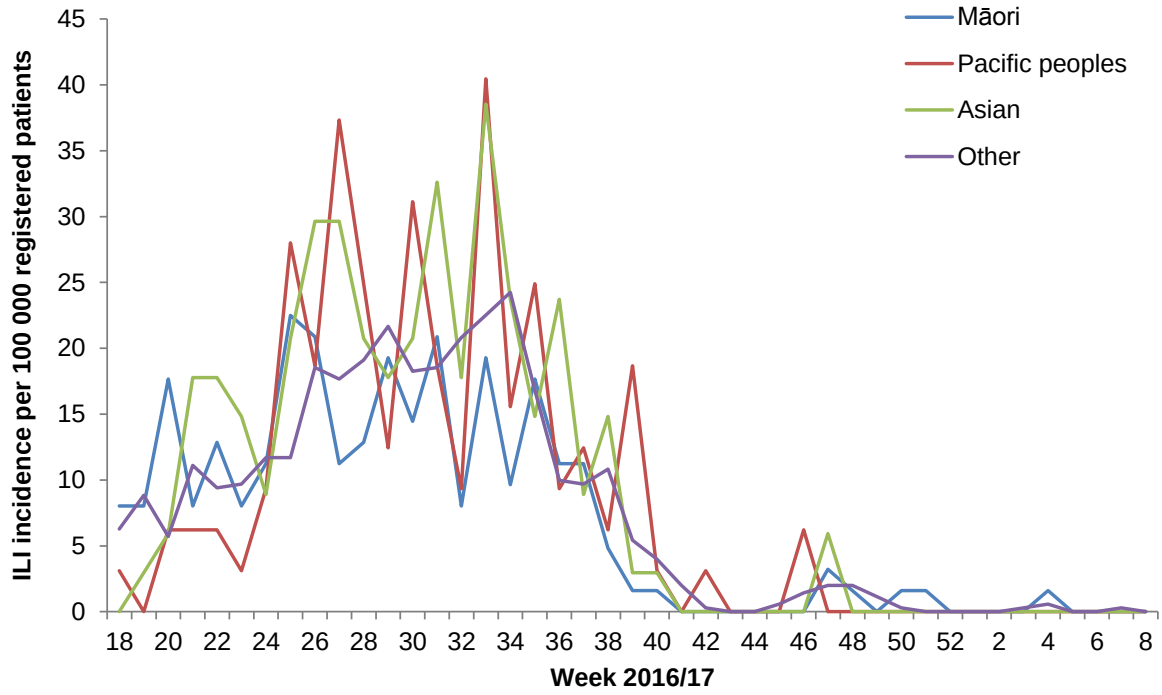
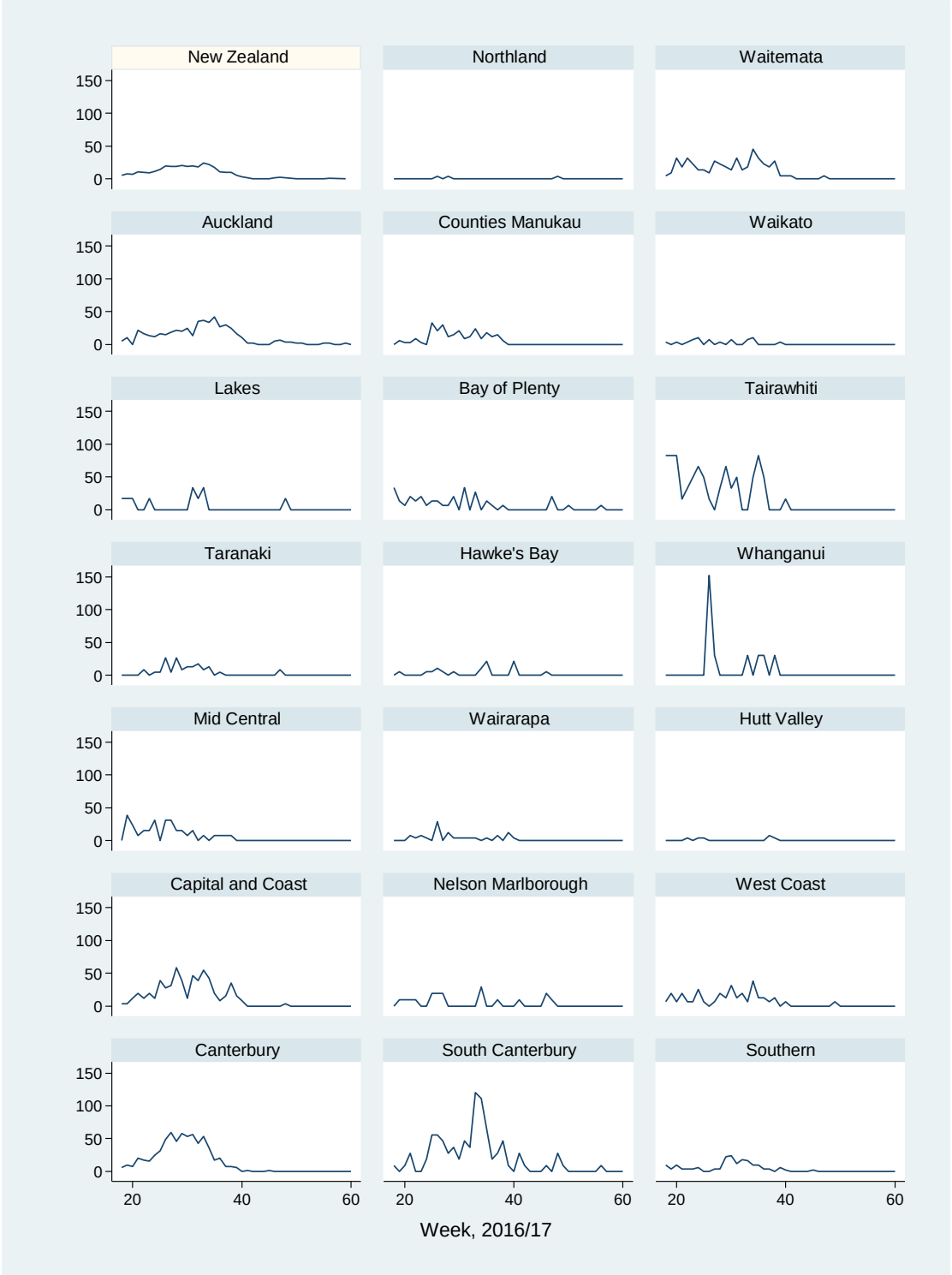


Figure 4 compares the consultation rates for influenza-like illness for each DHB since 2 May 2016.

Figure 4. Rate of ILI consultations per 100 000 registered by DHB per week since 2 May 2016



Since 2 May 2016, a total of 1562 ILI cases were identified (Table 1). This gives an ILI cumulative incidence of 325.6 per 100 000 patient population.

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

Characteristics	ILI & influenza cases among sentinel practices	
	ILI cases	ILI incidence (per 100 000)
Overall	**1562**	**325.6**
Age group (years)		
<1	12	163.3
1–4	97	357.9
5–19	347	354.4
20–34	450	425.6
35–49	305	327.6
50–64	237	279.2
65–79	93	193.9
>80	21	133.7
Unknown	0	
Ethnicity		
Māori	181	290.7
Pacific peoples	114	354.8
Asian	133	394.3
European and Other	1134	323.3
Unknown	0	0.0
Sex		
Female	880	351.8
Male	681	296.6
Unknown	1	

Intensive Care Unit admissions among SARI hospitalised patients

During February there were eleven cases admitted to ICU. Since 2 May 2016 there have been a total of 144 ICU cases. Fourteen of these ICU cases have tested positive for influenza viruses (Table 2).

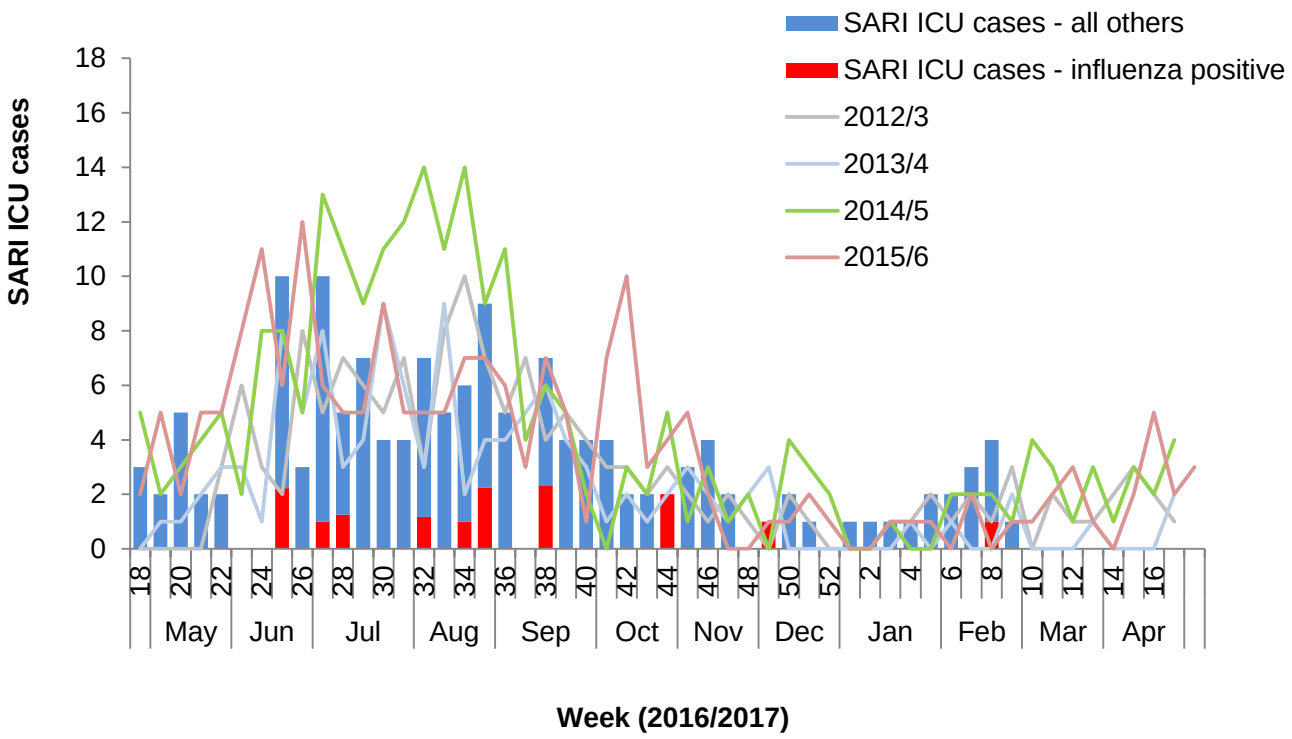
Table 2. SARI ICU influenza viruses since 2 May 2016

Influenza viruses	ICU	
	All weeks	February
No. of specimens tested	168	15
No. of positive specimens (%)[1]	19 (11.3)	2 (13.3)
Influenza A	16	2
A (not subtyped)	7	0
A(H1N1)pdm09	3	0
A(H1N1)pdm09 by PCR	2	0
A/California/7/2009 (H1N1)pdm09 - like	1	0
A(H3N2)	6	2
A(H3N2) by PCR	6	2
A/Hong Kong/4801/2014 (H3N2) - like	0	0
Influenza B	3	0
B (lineage not determined)	2	0
B/Yamagata lineage	1	0
B/Yamagata lineage by PCR	1	0
B/Phuket/3073/2013 - like	0	0
B/Victoria lineage	0	0
B/Victoria lineage by PCR	0	0
B/Brisbane/60/2008 - like	0	0
Influenza and non-influenza co-detection (% +ve)	3 (15.8)	0 (0.0)

Table 3. SARI ICU non-influenza viruses since 2 May 2016

Non-influenza respiratory viruses	ICU	
	All weeks	February
No. of specimens tested	94	5
No. of positive specimens (%)[1]	59 (62.8)	3 (60.0)
Respiratory syncytial virus (RSV)	20	0
Parainfluenza 1 (PIV1)	2	0
Parainfluenza 2 (PIV2)	0	0
Parainfluenza 3 (PIV3)	3	0
Rhinovirus (RV)	27	3
Adenovirus (AdV)	12	0
Human metapneumovirus (hMPV)	9	0
Enterovirus	3	0
Single virus detection (% of positives)	43 (72.9)	3 (100.0)
Multiple virus detection (% of positives)	15 (25.4)	0 (0.0)

Figure 5. SARI ICU cases per week since 2 May 2016



APPENDIX

Table 4. Influenza-like illness count by DHB by week 1–8, 2017

DHB	Week							
	1	2	3	4	5	6	7	8
Auckland	0	0	1	1	0	0	1	0
Bay of Plenty	0	0	0	1	0	0	0	0
Canterbury	0	0	0	0	0	0	0	0
Capital and Coast	0	0	0	0	0	0	0	0
Counties Manukau	0	0	0	0	0	0	0	0
Hawke's Bay	0	0	0	0	0	0	0	0
Hutt Valley	0	0	0	0	0	0	0	0
Lakes	0	0	0	0	0	0	0	0
MidCentral	0	0	0	0	0	0	0	0
Nelson Marlborough	0	0	0	0	0	0	0	0
Northland	0	0	0	0	0	0	0	0
South Canterbury	0	0	0	1	0	0	0	0
Southern	0	0	0	0	0	0	0	0
Tairawhiti	0	0	0	0	0	0	0	0
Taranaki	0	0	0	0	0	0	0	0
Waikato	0	0	0	0	0	0	0	0
Wairarapa	0	0	0	0	0	0	0	0
Waitemata	0	0	0	0	0	0	0	0
West Coast	0	0	0	0	0	0	0	0
Whanganui	0	0	0	0	0	0	0	0
New Zealand	**0**	**0**	**1**	**3**	**0**	**0**	**1**	**0**

Table 5. Influenza-like illness rate by DHB by week 1–8, 2017

DHB	Rate (per 100 000)							
	1	2	3	4	5	6	7	8
Auckland	0.0	0.0	1.7	1.7	0.0	0.0	1.7	0.0
Bay of Plenty	0.0	0.0	0.0	6.7	0.0	0.0	0.0	0.0
Canterbury	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Capital and Coast	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Counties Manukau	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hawke's Bay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hutt Valley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lakes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MidCentral	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nelson Marlborough	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Northland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
South Canterbury	0.0	0.0	0.0	9.3	0.0	0.0	0.0	0.0
Southern	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tairawhiti	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Taranaki	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Waikato	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wairarapa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Waitemata	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
West Coast	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Whanganui	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
New Zealand	**0.0**	**0.0**	**0.2**	**0.6**	**0.0**	**0.0**	**0.2**	**0.0**

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

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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 84 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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