6SSN 2324-4097

Community and Hospital Surveillance

ILI, SARI, Influenza and Respiratory Pathogens

2017 Influenza Season, Week 31, ending 6 August 2017

SUMMARY

- Influenza-like illness (ILI) consultation rates decreased compared to the previous week, while remaining above the seasonal threshold level. The overall influenza positivity rate of tested samples has remained at a high level (~45%). Influenza rates were highest in those of Asian ethnicity. There was an increase in ILI consultations in the 65+ years age group.
- Severe acute respiratory illness (SARI) hospitalisation rates increased slightly, with a lower influenza positive rate, but a higher proportion of RSV compared to previous weeks.
- Influenza A(H3N2) are the predominant viruses in New Zealand this year.
- B/Yamagata viruses are the predominant influenza B lineage, co-circulating with a smaller number of B/Victoria lineage viruses.
- Respiratory syncytial virus (RSV), rhinovirus, and Parainfluenza 3 are the most commonly detected non-influenza viruses this week.

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 January 2017.

Note: Data in this report are provisional and may change as more cases are assessed and information is updated. Data were extracted on 9 August 2017.

INFLUENZA-LIKE ILLNESS and SEVERE ACUTE RESPIRATORY ILLNESS

Influenza-like illness (ILI)

During week 31, ending 6 August 2017, 194 patients with influenza-like illness consulted sentinel general practices in 20 DHBs. The weekly ILI incidence was 47.2 per 100 000 patient population (Figures 1 and 2). Of the 141 tested ILI cases, 63 were positive for influenza viruses. This gives an ILI related influenza incidence (adjusted) of 21.1 per 100 000 patient population.

Figure 1. Weekly resident ILI and influenza incidence since 2 January 2017

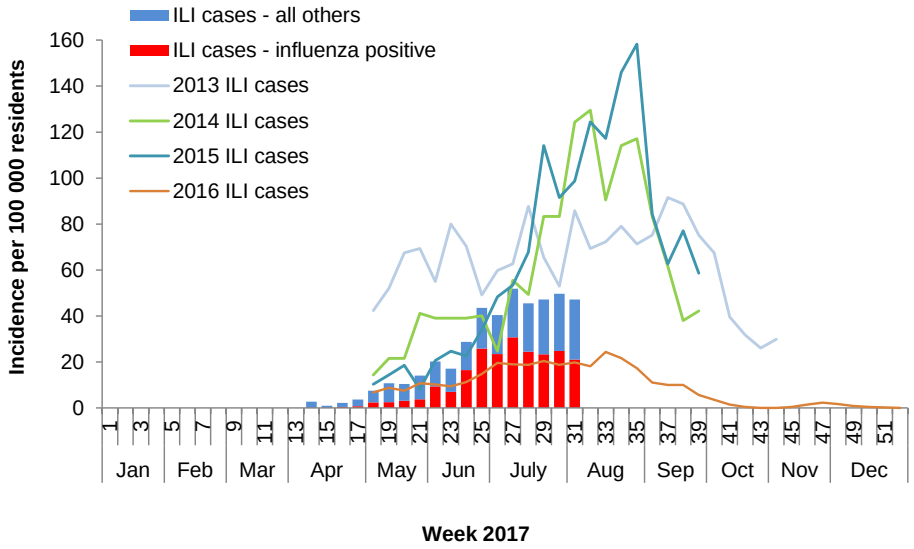
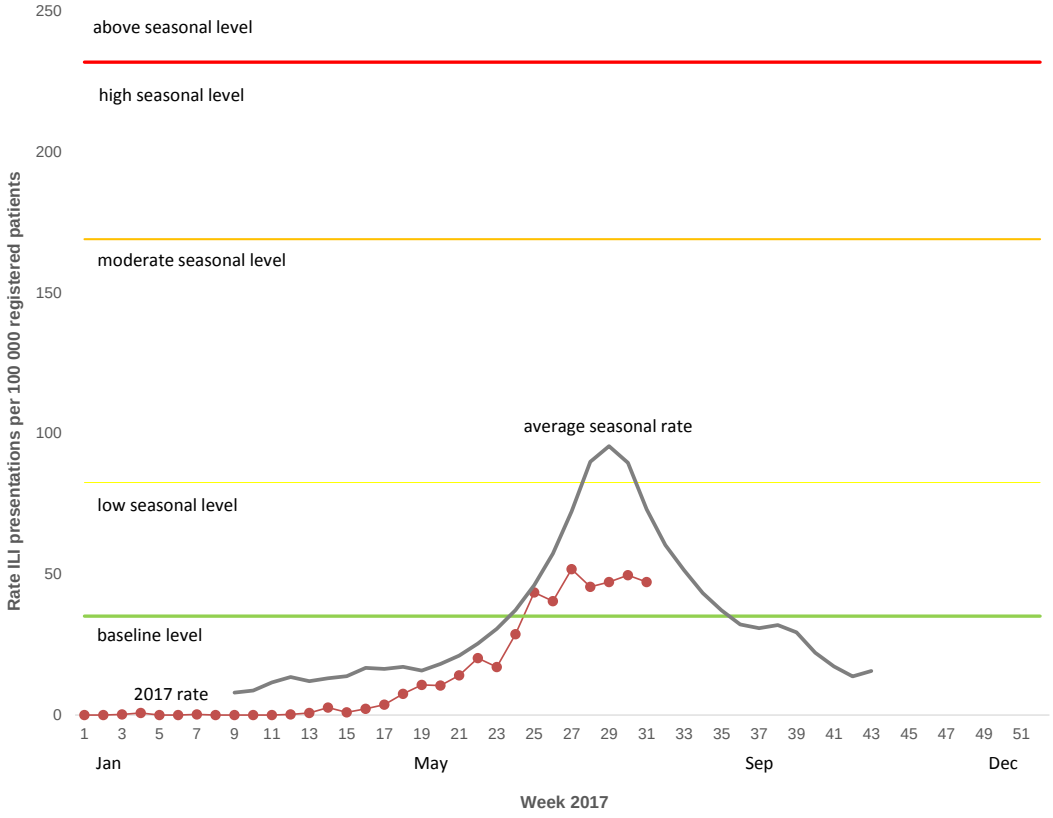


Figure 2. Comparison of 2017 rate with average seasonal rate, and historical thresholds



The weekly consultation rates for influenza-like illness by different age groups and ethnicities are shown in Figures 3 and 4.

Figure 3. Weekly ILI incidence by age group since 2 January 2017

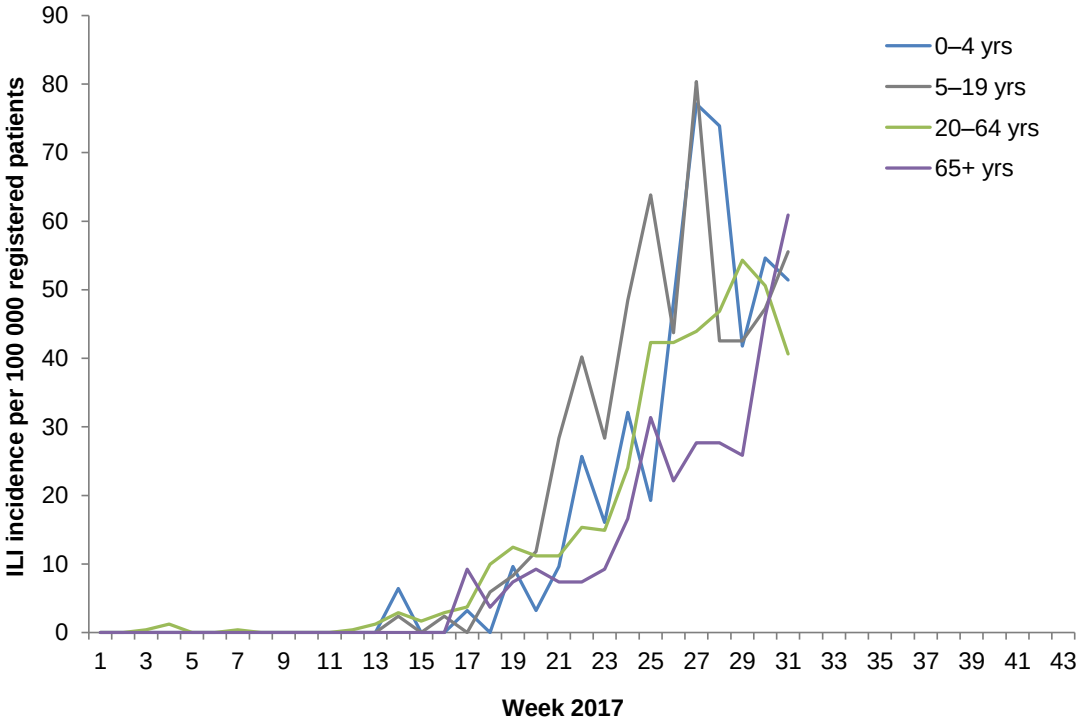


Figure 4. Weekly ILI incidence by ethnicity since 2 January 2017

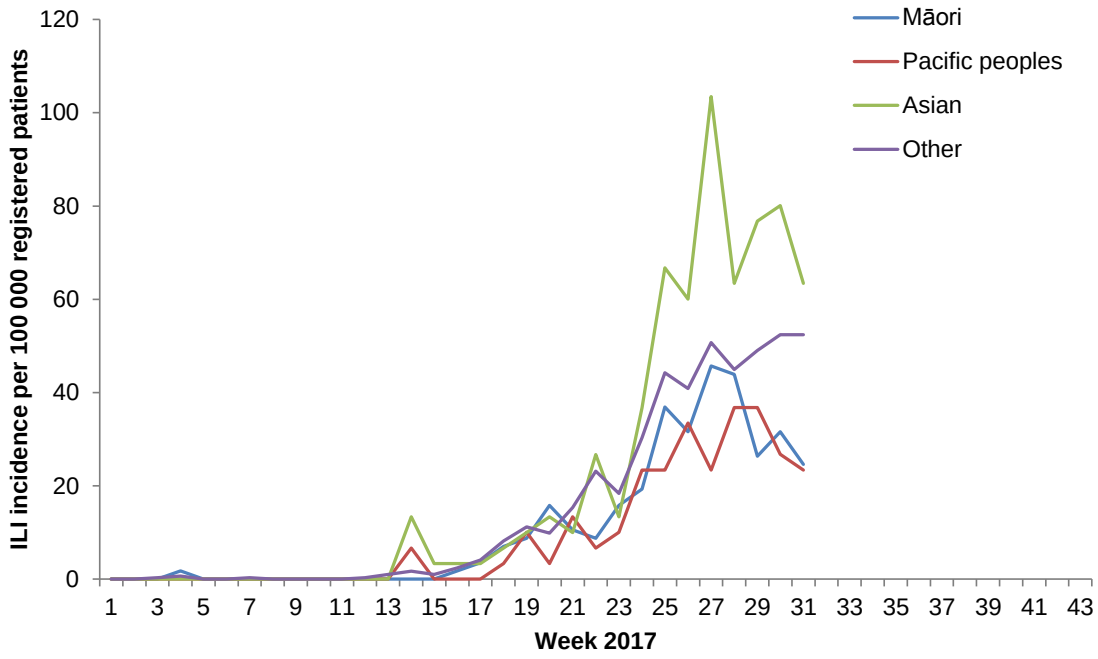
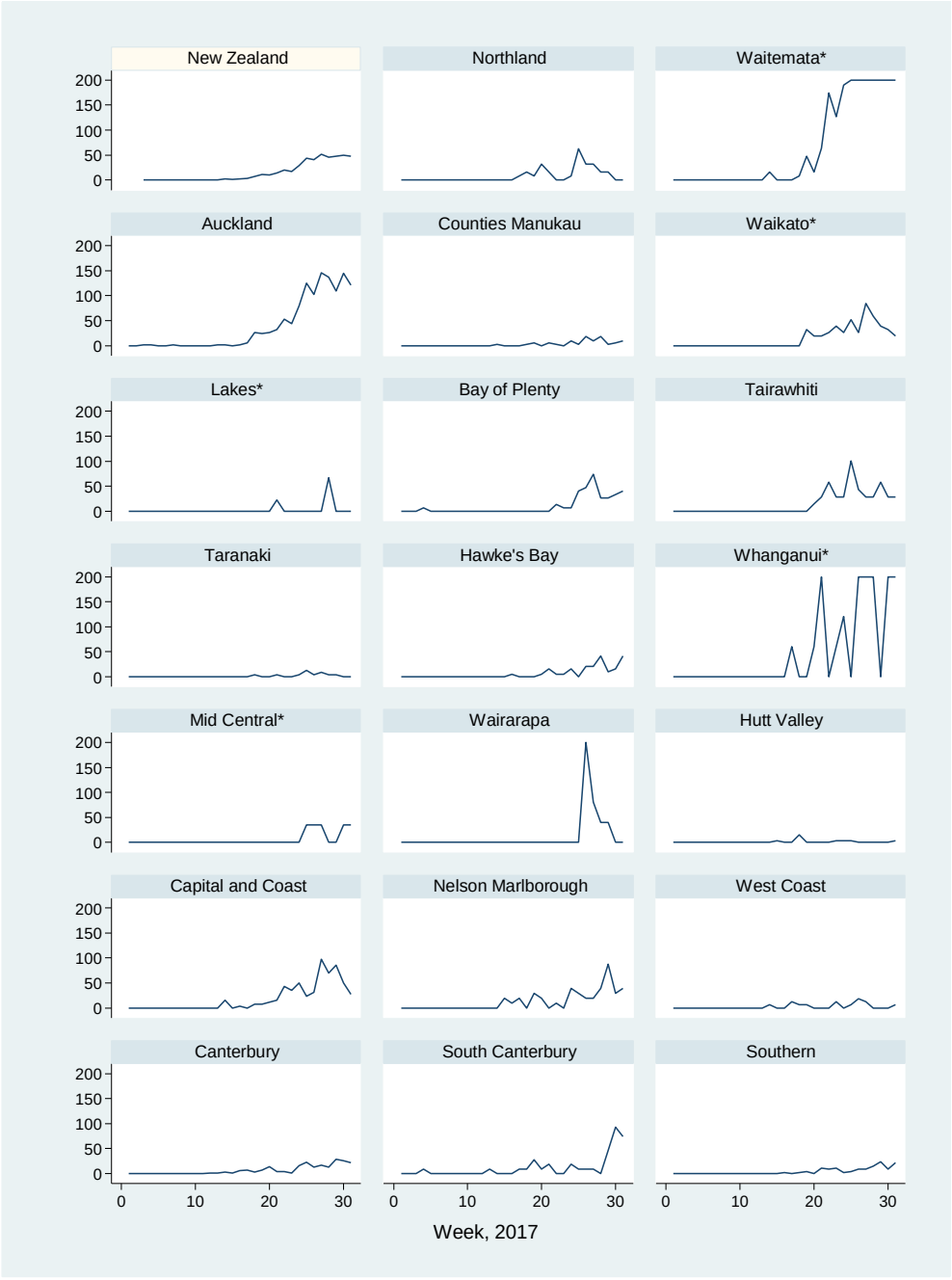


Figure 5 compares the consultation rates for influenza-like illness for each DHB over the past week. Waitemata (411.3 per 100 000, 52 cases), Whanganui (241.0 per 100 000, 4 cases), and Auckland (121.5 per 100 000, 69 cases) DHBs had the highest consultation rates.

Figure 5. Rate of ILI consultations per 100 000 registered by DHB per week since 2 January 2017



*Results that have some uncertainty, with less than 5% of the DHB population covered (see Notes on Interpretation).
Note: Outliers have been omitted from this graph.

ILI consultation rates for any particular DHB should be treated with caution as they may not be representative of the real situation for a particular community or setting, especially if the surveillance system has a small number of participating General Practices in the DHB, or the GP enrolled patient population is small, the calculated ILI rates are subject to greater fluctuation.

Since 2 January 2017, a total of 1832 ILI cases were identified. This gives a cumulative ILI incidence of 445.6 per 100 000 patient population (Table 1). Among the 1461 tested ILI cases, 732 (50.1%) were positive for influenza viruses. This gives an ILI related (adjusted) influenza incidence of 223.3 per 100 000 patient population.

Table 1. Demographic characteristics of ILI and influenza cases, since 2 January 2017

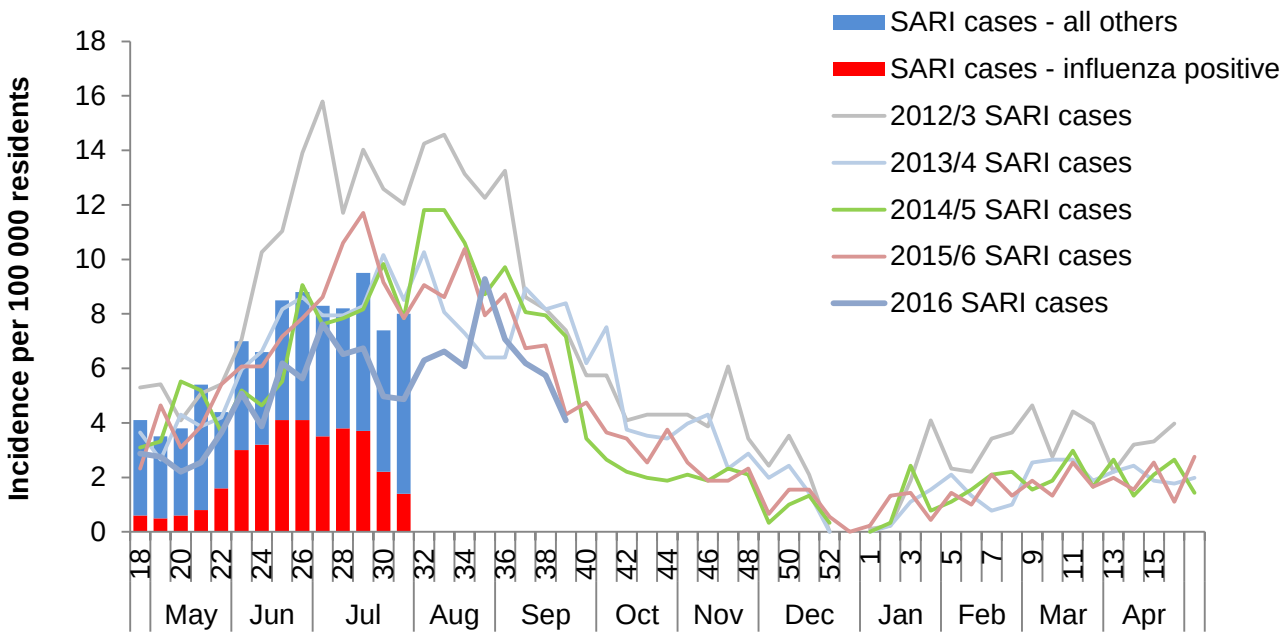
Characteristics	ILI & influenza cases among sentinel practices				
	ILI cases	Influenza cases	Prop Influenza positive[1] (%)	ILI incidence (per 100 000)	Influenza incidence[2] (per 100 000)
Overall	**1832**	**732**	**50.1 (100.0)**	**445.6**	**223.3**
Age group (years)					
<1	18	2	14.3 (0.3)	272.3	38.9
1–4	129	31	29.8 (4.2)	526.3	156.9
5–19	467	236	62.4 (32.2)	552.0	344.6
20–34	294	107	44.4 (14.6)	342.2	151.9
35–49	444	173	49.9 (23.6)	541.6	270.0
50–64	311	122	49.6 (16.7)	424.1	210.3
65–79	147	49	44.1 (6.7)	360.0	158.9
>80	22	12	60.0 (1.6)	164.7	98.8
Unknown	0	0	0.0		
Ethnicity					
Māori	190	72	47.1 (9.8)	333.9	157.1
Pacific peoples	84	37	53.6 (5.1)	280.9	150.7
Asian	196	103	57.5 (14.1)	654.2	376.4
European and Other	1360	520	49.1 (71.0)	463.1	227.4
Unknown	2	0	0.0	0.0	
Sex					
Female	1024	399	49.8 (54.5)	479.8	238.7
Male	807	333	50.5 (45.5)	408.2	206.3
Unknown	1	0	0.0		

[1]Proportion of cases tested which were positive for influenza viruses
[2]Adjusted to positivity of tested cases

Severe acute respiratory illness (SARI)

There were 2861 acute admissions to ADHB and CMDHB hospitals during week 31, ending 6 August 2017. A total of 137 patients with acute respiratory illness were assessed in these hospitals. Of these, 88 (64.2%) patients met the SARI case definition. Three cases were admitted to ICU and no SARI related deaths were reported this week. Of the 53 tested residents with SARI, nine were positive for influenza viruses, giving a SARI related influenza incidence of 1.4 per 100 000 population this week.

Figure 6. Weekly resident SARI and influenza incidence since 2 May 2016 and previous seasons SARI incidence



Since 1 May 2017, a total of 1096 SARI cases were identified. This gives a SARI proportion of 27.6 per 1000 acute hospitalisations (Table 2). Seventy-one SARI cases have been admitted to ICU and 12 SARI related deaths were reported during this period.

Of the 1096 SARI cases, 846 were ADHB and CMDHB residents, giving a SARI incidence of 93.4 per 100 000 population (Table 2). Among the 772 tested SARI cases who were ADHB and CMDHB residents, 276 (35.8%) had positive influenza virus results. This gives a SARI (adjusted) related influenza incidence of 33.4 per 100 000 population.

Table 2. Demographic characteristics of SARI cases and related influenza cases, since 1 May 2017

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	**39647**	**2134**	**1096 (51.4)**	**27.6**	**295 (35.9)**	**846**	**93.4**	**276**	**33.4**
Age group (years)									
<1	1480		170	114.9	16 (10.7)	157	1162.4	15	126.4
1–4	2789		123	44.1	24 (24.2)	115	217.5	23	54.4
5–19	4736		62	13.1	14 (27.5)	51	26.5	10	6.2
20–34	7389		57	7.7	26 (47.3)	55	26.4	25	12.4
35–49	5807		66	11.4	25 (40.3)	63	33.0	24	13.4
50–64	6773		131	19.3	65 (52.0)	128	85.0	63	43.9
65–79	6445		165	25.6	65 (41.1)	157	214.8	60	85.9
>80	4228		123	29.1	58 (49.2)	119	507.9	56	249.5
Unknown	0		198			0		0	
Ethnicity									
Māori	5460		174	31.9	35 (22.4)	154	154.8	32	36.2
Pacific peoples	8458		311	36.8	98 (34.4)	304	220.3	93	73.7
Asian	6567		78	11.9	30 (43.5)	75	35.7	29	15.2
European and Other	18905		334	17.7	130 (42.2)	312	77.7	122	32.8
Unknown	257		199	774.3		1		0	
Hospitals									
ADHB	23199	825	547 (66.3)	23.6	147 (42.1)	347	79.5	132	33.9
CMDHB	16448	1309	549 (41.9)	33.4	148 (31.4)	499	106.3	144	33.1
Sex									
Female	20966		482	23.0	158 (35.9)	449	96.5	150	35.1
Male	18678		414	22.2	134 (35.6)	395	89.7	125	31.3
Unknown	3		200			2		1	

[1]Proportion of cases tested which were positive for influenza viruses
Note. A specimen may be positive for more than one virus; a patient may have more than one specimen tested.

RESPIRATORY PATHOGEN SURVEILLANCE

Influenza virus

During week 31, 141 ILI specimens were tested; 63 were positive for influenza viruses. In addition, 58 SARI specimens were tested; 12 were positive for influenza viruses.

Since 1 May 2017, 1446 ILI specimens were tested, 731 (50.6%) were positive for influenza with the following viruses. In addition, 929 SARI specimens were tested, 329 (35.4%) were positive for influenza viruses (see Table 3).

Table 3. Influenza viruses among ILI and SARI cases since 1 May 2017

Influenza viruses	ILI	SARI	SARI and non-SARI	
	Cases (%)	Cases (%)	ICU (%)	Deaths (%)
No. of specimens tested	1446	929	162	16
No. of positive specimens (%)[1]	731 (50.6)	329 (35.4)	19 (11.7)	6 (37.5)
Influenza A	438	251	11	3
A (not subtyped)	30	97	4	1
A(H1N1)pdm09	40	24	1	0
A(H1N1)pdm09 by PCR	26	22	1	0
A/California/7/2009 (H1N1)pdm09 - like	14	2	0	0
A(H3N2)	368	130	6	2
A(H3N2) by PCR	331	129	6	2
A/Hong Kong/4801/2014 (H3N2) - like	37	1	0	0
Influenza B	293	78	8	3
B (lineage not determined)	19	42	6	2
B/Yamagata lineage	262	36	2	1
B/Yamagata lineage by PCR	131	22	2	1
B/Phuket/3073/2013 - like	131	14	0	0
B/Victoria lineage	12	0	0	0
B/Victoria lineage by PCR	12	0	0	0
B/Brisbane/60/2008 - like	0	0	0	0
Influenza and non-influenza co-detection (% +ve)	34 (4.7)	18 (5.5)	2 (10.5)	1 (16.7)

[1]Number of specimens positive for at least one of the listed viruses
Note. A specimen may be positive for more than one virus; a patient may have more than one specimen tested.

The recommended influenza vaccine formulation for trivalent vaccine for New Zealand in 2017 is:

- A(H1N1) an A/Michigan/45/2015 (H1N1)pdm09-like virus
- A(H3N2) an A/Hong Kong/4801/2014 (H3N2)-like virus
- B a B/Brisbane/60/2008-like virus (belonging to B/Victoria lineage)

Quadrivalent vaccines contain the above three viruses plus one more vaccine component: B/Phuket/3073/2013-like virus (belonging to B/Yamagata lineage)

Note: Antigenic characterization of the current A(H3N2) viruses have been technically challenging because many viruses had low or undetectable haemagglutination activity. This phenomenon has been well recognized globally and documented in WHO's Weekly Epidemiological Record: http://apps.who.int/iris/bitstream/10665/254756/1/WER9211.pdf?ua=1

Non-influenza respiratory pathogens

Since 1 May 2017, 1333 ILI specimens were tested for non-influenza viruses, 239 (17.9%) were positive with the following viruses. Seven hundred and seventy-three SARI specimens were tested for non-influenza viruses, 239 (30.9%) were positive with the following viruses (see Table 4).

Table 4. Non-influenza viruses among ILI and SARI cases since 1 May 2017[1]

Non-influenza respiratory viruses	ILI	SARI	SARI and non-SARI	
	Cases (%)	Cases (%)	ICU (%)	Deaths (%)
No. of specimens tested	1333	773	119	17
No. of positive specimens (%)[1]	239 (17.9)	239 (30.9)	74 (62.2)	1 (5.9)
Respiratory syncytial virus (RSV)	68	132	34	1
Parainfluenza 1 (PIV1)	2	1	0	0
Parainfluenza 2 (PIV2)	22	9	2	0
Parainfluenza 3 (PIV3)	32	13	5	0
Rhinovirus (RV)	86	79	36	0
Adenovirus (AdV)	26	22	6	0
Human metapneumovirus (hMPV)	7	10	2	0
Enterovirus	14	10	6	0
Single virus detection (% of positives)	224 (93.7)	204 (85.4)	59 (79.7)	0 (-)
Multiple virus detection (% of positives)	15 (6.3)	35 (14.6)	15 (20.3)	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

Figure 7. Temporal distribution of the number and proportion of influenza viruses from ILI specimens by type and week[1]

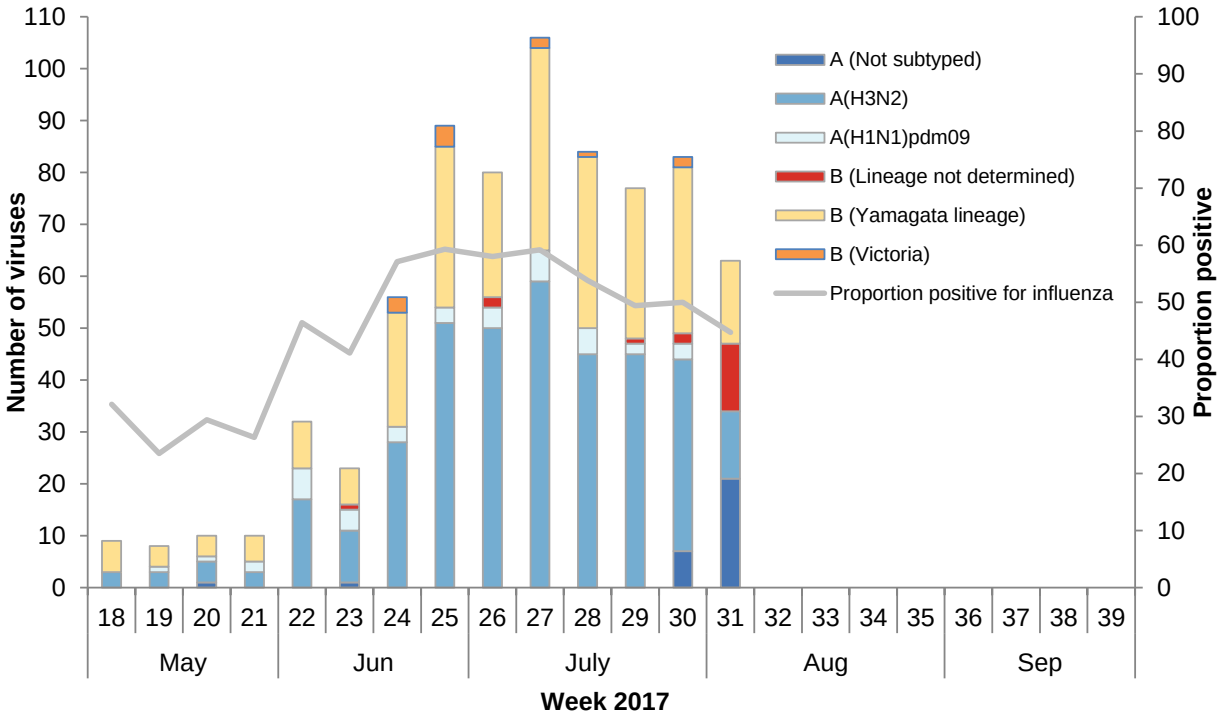


Figure 8. Temporal distribution of the number and proportion of influenza viruses from SARI specimens by type and week[1]

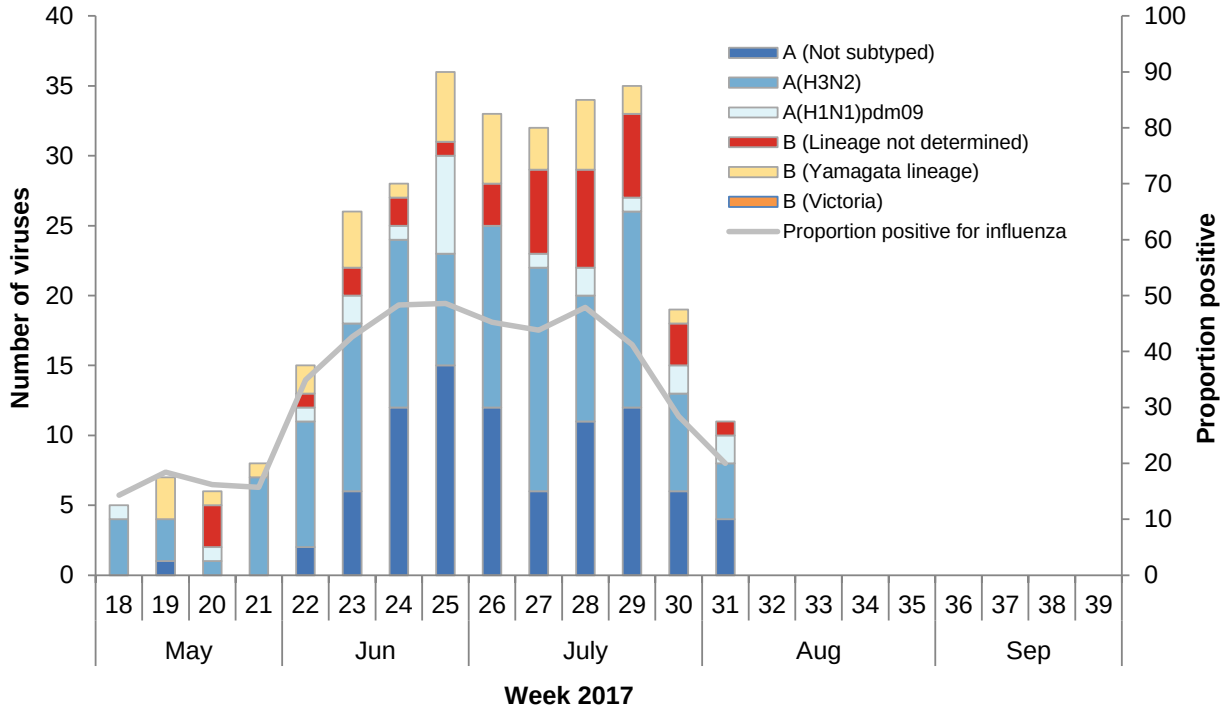


Figure 9. Temporal distribution of the number and proportion of non-influenza viruses from ILI specimens by type and week[1]

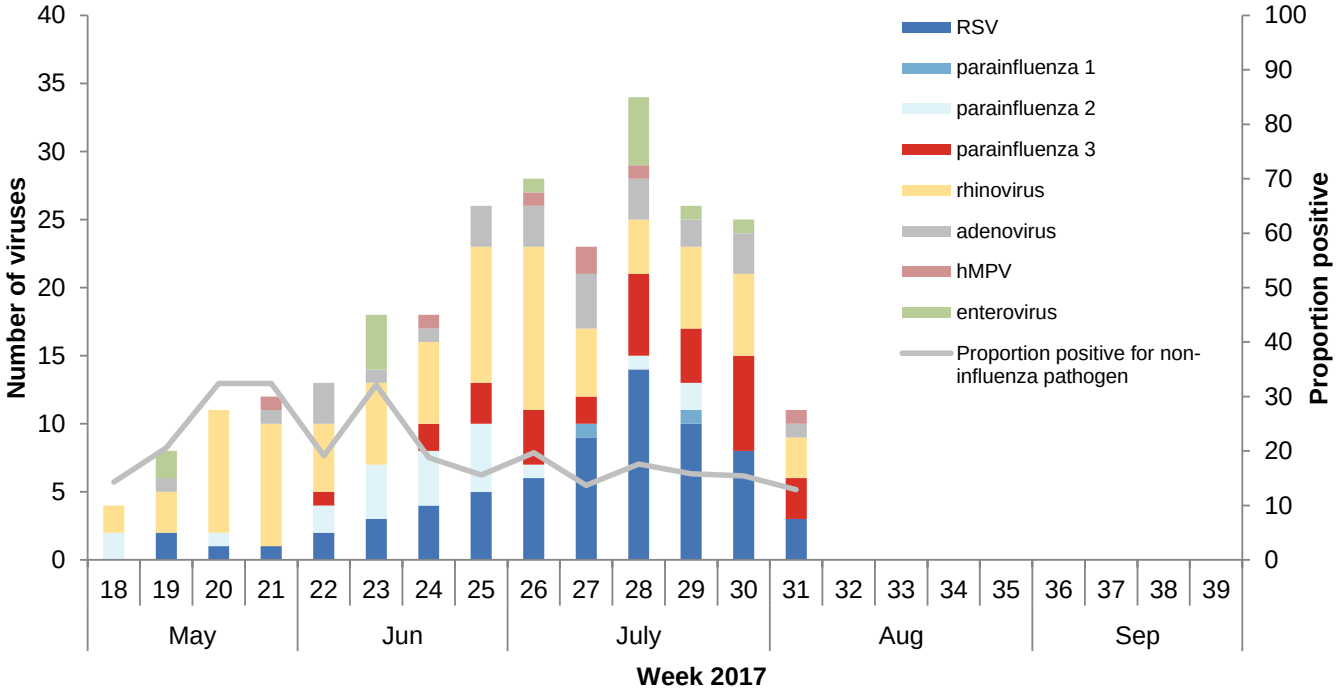
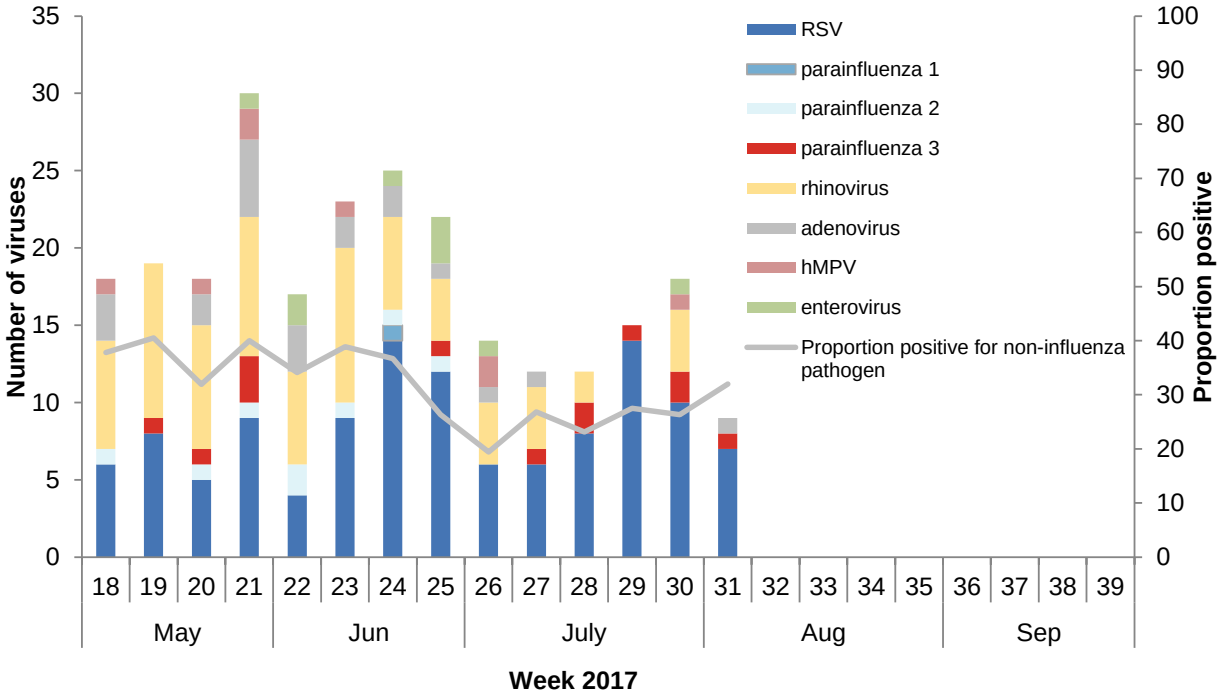


Figure 10. Temporal distribution of the number and proportion of non-influenza viruses from SARI specimens by type and week[1]



[1]Figures for recent weeks will be underestimates due to time lag in receiving laboratory test results.

APPENDIX

Table 5. Influenza-like illness count by DHB by week 1–31, 2017

DHB	Week																														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Auckland	0	0	1	1	0	0	1	0	0	0	0	0	1	1	0	1	3	15	14	15	18	30	25	45	71	58	83	78	62	82	69
Bay of Plenty	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	1	6	7	11	4	4	5	6
Canterbury	0	0	0	0	0	0	0	0	0	0	0	1	1	2	1	4	5	2	5	10	3	3	1	11	16	9	12	9	20	18	15
Capital and Coast	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	1	0	2	2	3	4	11	9	13	6	8	25	18	22	13	7
Counties Manukau	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	2	0	2	1	0	3	1	6	3	6	1	2	3
Hawke's Bay	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	3	1	1	3	0	4	4	8	2	3	8
Hutt Valley	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	4	0	0	0	0	1	1	1	0	0	0	0	0	1
Lakes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	3	0	0	0
MidCentral	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	1	1
Nelson Marlborough	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	2	0	3	2	0	1	0	4	3	2	2	4	9	3	4
Northland	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	1	4	2	0	0	1	8	4	4	2	2	0	0
South Canterbury	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	1	1	3	1	2	0	0	2	1	1	1	0	5	10	8
Southern	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2	0	5	4	5	1	2	4	4	7	11	4	10
Tairawhiti	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	4	2	2	7	3	2	2	4	2	2
Taranaki	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	3	1	2	1	1	0	0
Waikato	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	3	3	4	6	4	8	4	13	9	6	5	3
Wairarapa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	2	1	1	0	0
Waitemata	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	6	2	8	22	16	24	44	41	37	30	44	50	52
West Coast	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2	1	1	0	0	0	2	0	1	3	2	0	0	0	1
Whanganui	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	4	0	1	2	0	5	5	5	0	6	4
New Zealand	**0**	**0**	**1**	**3**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**3**	**11**	**4**	**9**	**15**	**31**	**44**	**43**	**58**	**83**	**70**	**118**	**179**	**166**	**213**	**187**	**194**	**204**	**194**

Table 6. Influenza-like illness rate by DHB by week 1–31, 2017

DHB	Rate per 100 000																														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Auckland	0.0	0.0	1.8	1.8	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0	1.8	1.8	0.0	1.8	5.3	26.4	24.7	26.4	31.7	52.8	44.0	79.2	125.0	102.1	146.2	137.4	109.2	144.4	121.5
Bay of Plenty	0.0	0.0	0.0	6.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.5	6.7	6.7	40.4	47.1	74.1	26.9	26.9	33.7	40.4
Canterbury	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	1.4	2.8	1.4	5.7	7.1	2.8	7.1	14.2	4.3	4.3	1.4	15.6	22.8	12.8	17.1	12.8	28.4	25.6	21.3
Capital and Coast	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.6	0.0	3.9	0.0	7.8	7.8	11.7	15.6	42.8	35.0	50.6	23.4	31.2	97.3	70.1	85.7	50.6	27.3
Counties Manukau	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	6.0	0.0	6.0	3.0	0.0	9.0	3.0	18.0	9.0	18.0	3.0	6.0	9.0
Hawke's Bay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.2	0.0	0.0	0.0	5.2	15.7	5.2	5.2	15.7	0.0	20.9	20.9	41.7	10.4	15.7	41.7
Hutt Valley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.8	0.0	0.0	15.2	0.0	0.0	0.0	0.0	3.8	3.8	3.8	0.0	0.0	0.0	0.0	0.0	3.8
Lakes*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	22.3	0.0	0.0	0.0	0.0	0.0	0.0	66.8	0.0	0.0	0.0
MidCentral*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	35.5	35.5	35.5	0.0	0.0	35.5	35.5
Nelson Marlborough	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.5	9.7	19.5	0.0	29.2	19.5	0.0	9.7	0.0	39.0	29.2	19.5	19.5	39.0	87.7	29.2	39.0
Northland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.9	15.7	7.9	31.5	15.7	0.0	0.0	7.9	62.9	31.5	31.5	15.7	15.7	0.0	0.0
South Canterbury	0.0	0.0	0.0	9.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.3	0.0	0.0	0.0	9.3	9.3	27.8	9.3	18.6	0.0	0.0	18.6	9.3	9.3	9.3	0.0	46.4	92.8	74.2
Southern	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	0.0	2.2	4.4	0.0	10.9	8.7	10.9	2.2	4.4	8.7	8.7	15.3	24.0	8.7	21.8
Tairawhiti	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.4	28.9	57.7	28.9	28.9	101.0	43.3	28.9	28.9	57.7	28.9	28.9
Taranaki	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.4	0.0	0.0	4.4	0.0	0.0	4.4	13.1	4.4	8.7	4.4	4.4	0.0	0.0
Waikato*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	32.5	19.5	19.5	26.0	39.0	26.0	52.1	26.0	84.6	58.6	39.0	32.5	19.5
Wairarapa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	200.0	80.0	40.0	40.0	0.0	0.0
Waitemata*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.8	0.0	0.0	0.0	7.9	47.5	15.8	63.3	174.0	126.6	189.8	348.0	324.3	292.7	237.3	348.0	395.5	411.3
West Coast	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.3	0.0	0.0	12.7	6.3	6.3	0.0	0.0	0.0	12.7	0.0	6.3	19.0	12.7	0.0	0.0	0.0	6.3
Whanganui*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	60.2	0.0	0.0	60.2	241.0	0.0	60.2	120.5	0.0	301.2	301.2	301.2	0.0	361.4	241.0
New Zealand	**0.0**	**0.0**	**0.2**	**0.7**	**0.0**	**0.0**	**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.2**	**0.7**	**2.7**	**1.0**	**2.2**	**3.6**	**7.5**	**10.7**	**10.5**	**14.1**	**20.2**	**17.0**	**28.7**	**43.5**	**40.4**	**51.8**	**45.5**	**47.2**	**49.6**	**47.2**

*Results that have some uncertainty, with less than 5% of the DHB population covered (see Notes on Interpretation).

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. SARI surveillance was established and funded by the US CDC, 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 2017 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)”. A non-SARI case is a hospitalised respiratory patient who does not meet the SARI case definition.
- 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 74 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).
- ILI consultation rates for any particular DHB should be treated with caution. If the surveillance system has a small number of participating General Practices in the DHB, or the GP enrolled patient population is small, the calculated ILI rates are subject to greater fluctuation.

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