

Influenza Surveillance Monthly Report

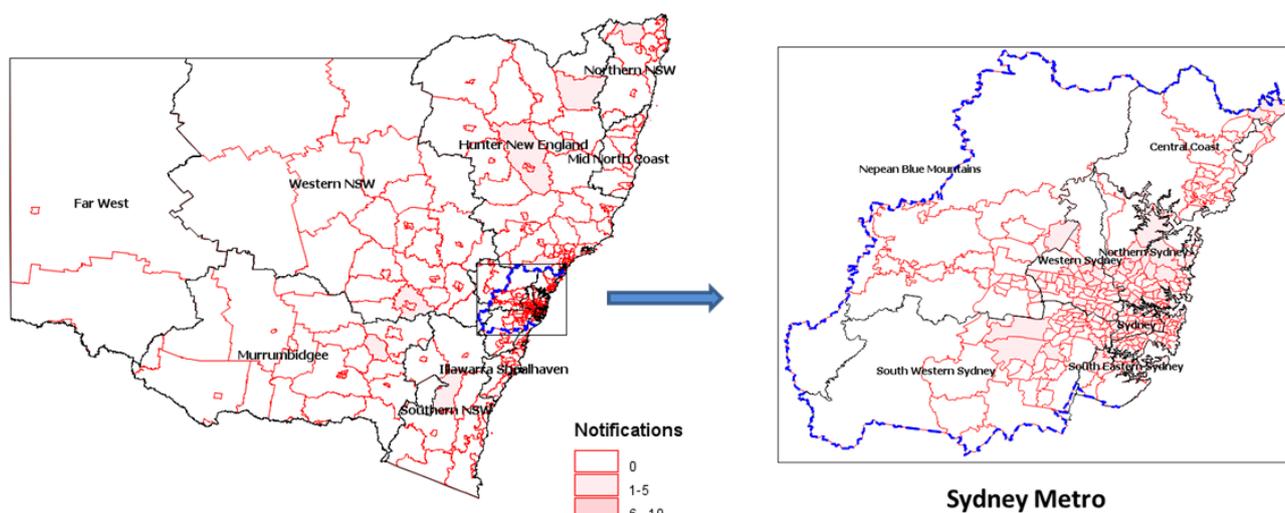
December 2019 (Weeks 49-52)

Key Points

- ▶ Influenza activity was low overall but it is trending higher, similar to the pattern seen at this time last year (i.e. December 2018).
- ▶ Influenza A(H1N1) remained the predominant circulating influenza strain.
- ▶ Respiratory presentations to NSW emergency departments increased slightly and were above the historical range for this time of year.

Confirmed influenza by NSW local health district and local area (SA2)¹

Notifications for week ending 29 December 2019



Summary

- Influenza activity increased throughout December but remained within inter-seasonal levels.
- Influenza A strains, particularly influenza A (H1N1), remained predominant over influenza B strains, with an overall influenza percent positive rate of 4.6%.
- Influenza activity was highest in the Illawarra Shoalhaven and Northern Sydney local health districts (LHD), but activity was generally low across all health districts.
- Presentations to emergency departments for respiratory illnesses and influenza-like illness were within the usual historical ranges for this time of year.
- One influenza outbreak was reported from a residential aged care facility and was caused by influenza A.

¹ NSW Local Health Districts and SA2: Influenza notification maps use NSW Local Health District Boundaries and Australian Bureau of Statistics (ABS) statistical area level 2 (SA2) of place of residence of cases are shown. Note that place of residence is used as a surrogate for place of acquisition for cases; the infection may have been acquired while the person was in another area.

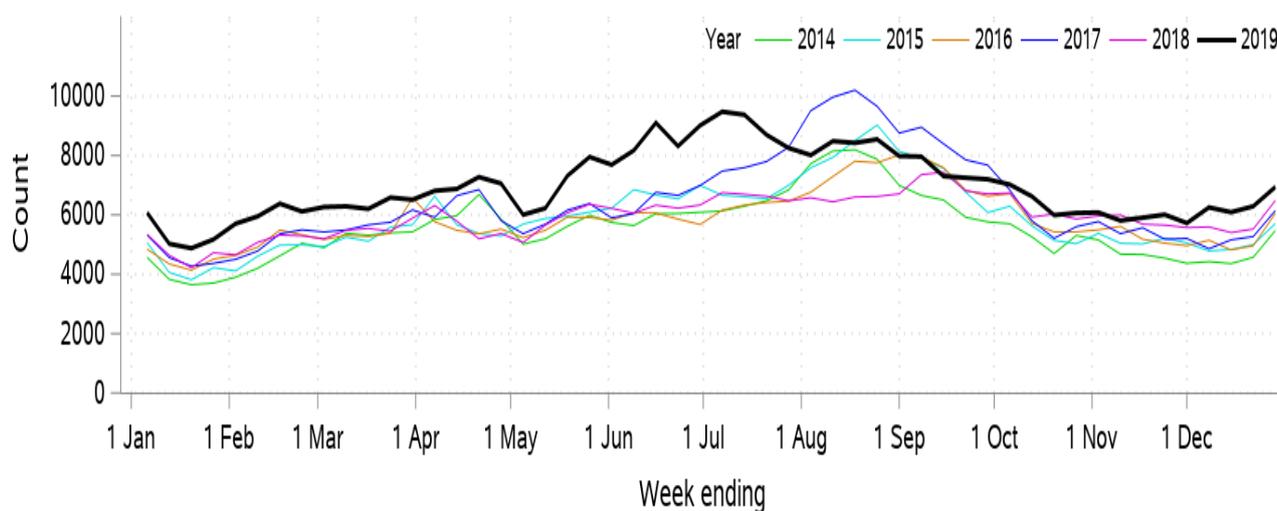
Hospital Surveillance

NSW emergency department (ED) surveillance for influenza-like illness (ILI) and other respiratory illnesses is conducted through PHREDSS².

In December 2019:

- Presentations in the *All respiratory illness, fever and unspecified infections* category increased through the month and remained above the historical range for this time of year (Figure 1).
- ED presentations for ILI remained stable through the month and were within the historical range for this time of year (Figure 2).
- ED presentations for *pneumonia*³ increased and were above the historical range for this time of year (Figure 3).
- *ILI and pneumonia* presentations which resulted in admission were steady overall and were slightly above the historical range for this time of year.
- *Bronchiolitis*⁴ presentations decreased and were within the usual range for this time of year (Figure 4).

Figure 1: Total weekly counts of ED visits for any respiratory illness, fever and unspecified infections, all ages, 2019 (black line) to 29 December, compared with the 5 previous years (coloured lines).



² NSW Health Public Health Rapid, Emergency Disease and Syndromic Surveillance system, CEE, NSW Ministry of Health. Comparisons are made with data for the preceding 5 years. Includes unplanned presentations to 60 NSW emergency departments. The coverage is lower in rural EDs.

³ The ED '*Pneumonia*' syndrome includes provisional diagnoses selected by a clinician of 'viral, bacterial atypical or unspecified pneumonia', 'SARS', or 'legionnaire's disease'. It excludes the diagnosis 'pneumonia with influenza'

⁴ *Bronchiolitis* is a disease of infants most commonly linked to Respiratory Syncytial virus (RSV) infection.

Figure 2: Total weekly counts of ED visits for influenza-like illness, all ages, 2019 (black line) to 29 December, compared with the 5 previous years (coloured lines).

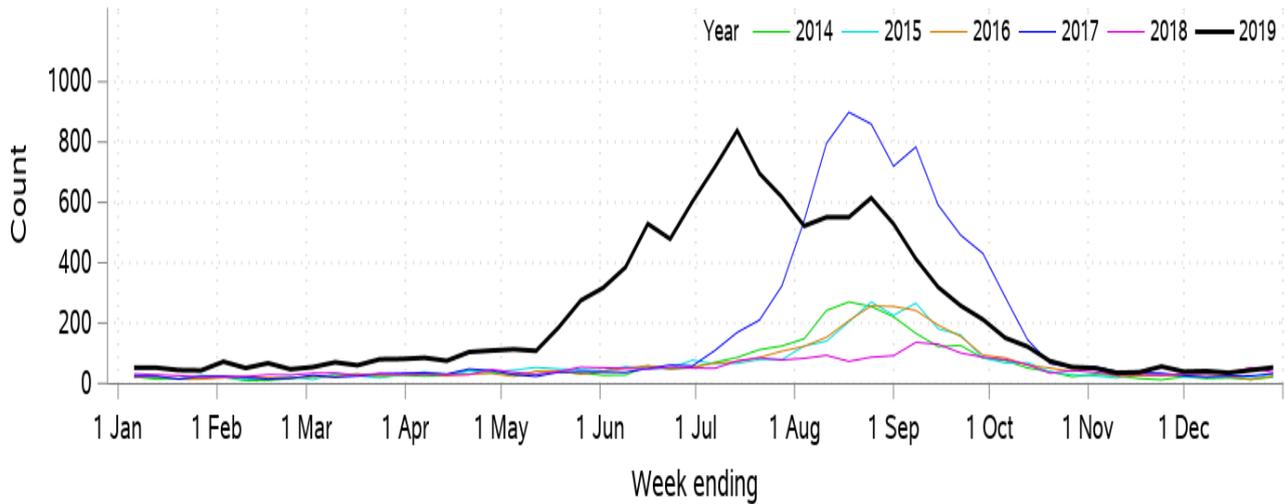


Figure 3: Total weekly counts of Emergency Department visits for pneumonia, all ages, 2019 (black line) to 29 December, compared with the 5 previous years (coloured lines).

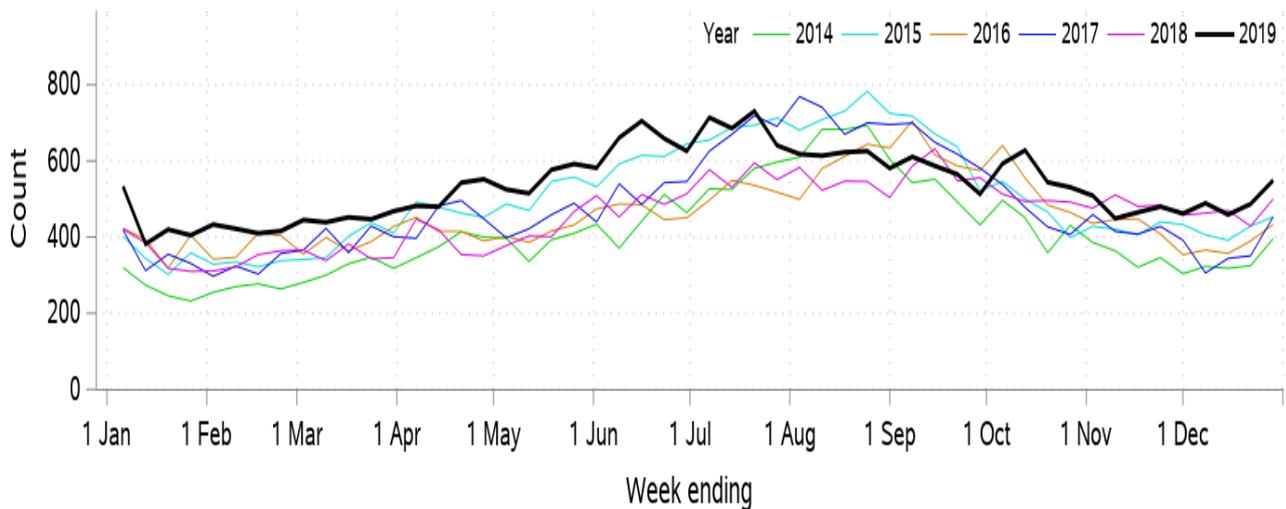
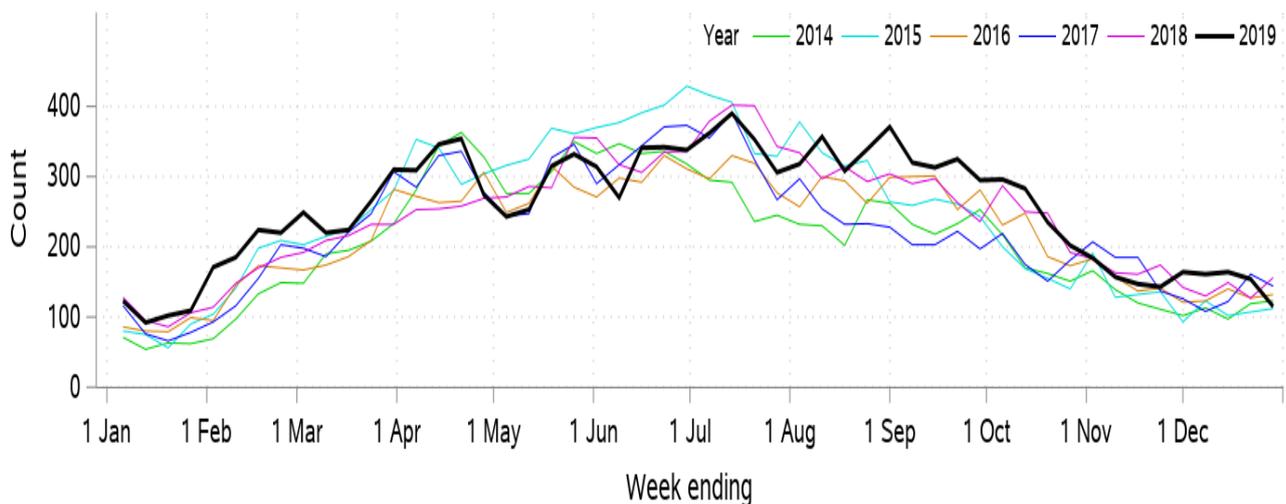


Figure 4: Total weekly counts of Emergency Department visits for bronchiolitis, all ages, 2019 (black line) to 29 December, compared with the 5 previous years (coloured lines).



Laboratory testing summary for influenza

Sentinel laboratory surveillance for influenza and other respiratory viruses is conducted throughout the year [5]. In the four week period to 29 December 2019:

- A total of 26,922 tests for respiratory viruses were performed at sentinel NSW laboratories (Table 1). The influenza percent positive rate overall was 4.6%, higher than the previous month (3.4%).
- Activity increased steadily throughout the month but remained within inter-seasonal levels.
- 1018 specimens tested positive for influenza A, and 87.7% of those that were further typed were found to be the influenza A(H1N1) strain (Table 1, Figures 5 & 6).
- 212 specimens tested positive for influenza B (Table 1, Figures 5 & 6).

Rhinovirus detections were the leading respiratory virus identified by laboratories. Detections of other respiratory viruses were within the usual seasonal range for this time of year.

Table 1: Summary of testing for influenza and other respiratory viruses at sentinel NSW laboratories, 1 January to 29 December 2019.

Month ending	Total Tests	TEST RESULTS															
		Influenza A								Influenza B		Adeno	Parainf 1, 2 & 3	RSV	Rhino	HMPV **	Enterov
		Total		H3N2		H1N1 pdm09		A (Not typed)		Total							
		Total	(%)	Total	(%A)	Total	(%A)	Total	(%A)	Total	(%)	Total	Total	Total	Total	Total	Total
3/02/2019*	23496	2055	(8.7%)	111	(5.4%)	162	(7.9%)	1778	(86.5%)	129	(0.5%)	730	902	920	3171	270	485
3/03/2019*	25351	2232	(8.8%)	144	(6.5%)	134	(6.0%)	1954	(87.5%)	145	(0.6%)	710	926	1448	5053	162	693
31/03/2019	31863	2664	(8.4%)	134	(5.0%)	202	(7.6%)	2328	(87.4%)	302	(0.9%)	967	1408	2583	5866	172	843
28/04/2019	34720	2957	(8.5%)	144	(4.9%)	158	(5.3%)	2652	(89.7%)	491	(1.4%)	1003	1422	3799	7148	208	1109
02/06/2019*	61942	6303	(10.2%)	271	(4.3%)	121	(1.9%)	5911	(93.8%)	2270	(3.7%)	1528	1337	4695	11729	312	1206
30/06/2019*	82219	15913	(19.4%)	532	(3.3%)	81	(0.5%)	15300	(0.0%)	6653	(8.1%)	1300	1023	4207	12526	214	662
04/08/2019*	127104	26862	(21.1%)	965	(3.6%)	198	(0.7%)	25699	(95.7%)	9460	(7.4%)	2080	1812	1818	13880	664	716
01/09/2019*	95125	16278	(17.1%)	877	(5.4%)	137	(0.8%)	15284	(93.9%)	7396	(7.8%)	2410	2411	3544	12485	1926	400
29/09/2019	74462	7401	(9.9%)	427	(5.8%)	74	(1.0%)	6956	(94.0%)	4513	(6.1%)	2317	4001	2688	10026	3291	429
03/11/2019*	54013	1956	(3.6%)	104	(5.3%)	44	(2.2%)	1808	(92.4%)	956	(1.8%)	1934	3360	1527	8015	3237	443
1/12/2019	33095	960	(2.9%)	16	(1.7%)	71	(7.4%)	873	(90.9%)	180	(0.5%)	1189	1741	507	6217	1236	278
29/12/2019	26922	1018	(3.8%)	13	(1.3%)	93	(9.1%)	912	(89.6%)	212	(0.8%)	887	1625	407	5075	532	265
Week ending																	
8/12/2019	7579	271	(3.6%)	1	(0.4%)	12	(4.4%)	258	(95.2%)	59	(0.8%)	275	428	106	1493	195	46
15/12/2019	7626	273	(3.6%)	2	(0.7%)	28	(10.3%)	243	(89.0%)	76	(1.0%)	267	450	103	1501	23	71
22/12/2019	7034	273	(3.9%)	6	(2.2%)	30	(11.0%)	237	(86.8%)	44	(0.6%)	228	448	123	1261	178	77
29/12/2019	4683	201	(4.3%)	4	(2.0%)	23	(11.4%)	174	(86.6%)	33	(0.7%)	117	299	75	820	136	71

Notes:

* Five week period; ** HMPV - Human metapneumovirus.

All samples are tested for influenza viruses but not all samples are tested for all of the other viruses listed.

[5]: Preliminary laboratory data is provided by participating sentinel laboratories on a weekly basis and are subject to change. Serological diagnoses are not included. Preliminary data are provided by participating sentinel laboratories on a weekly basis and are subject to change.

Figure 5: Percent of laboratory tests positive for influenza A and influenza B reported by NSW sentinel laboratories, 1 January 2014 to 29 December 2019.

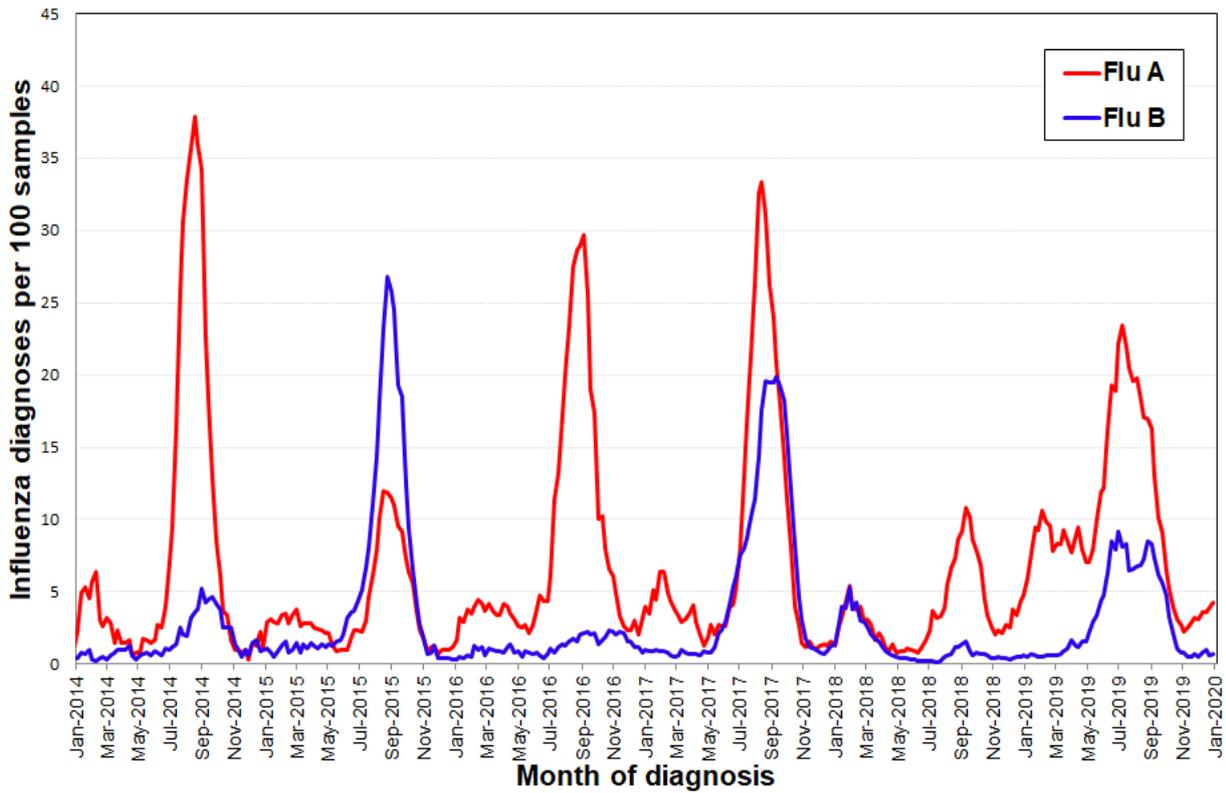
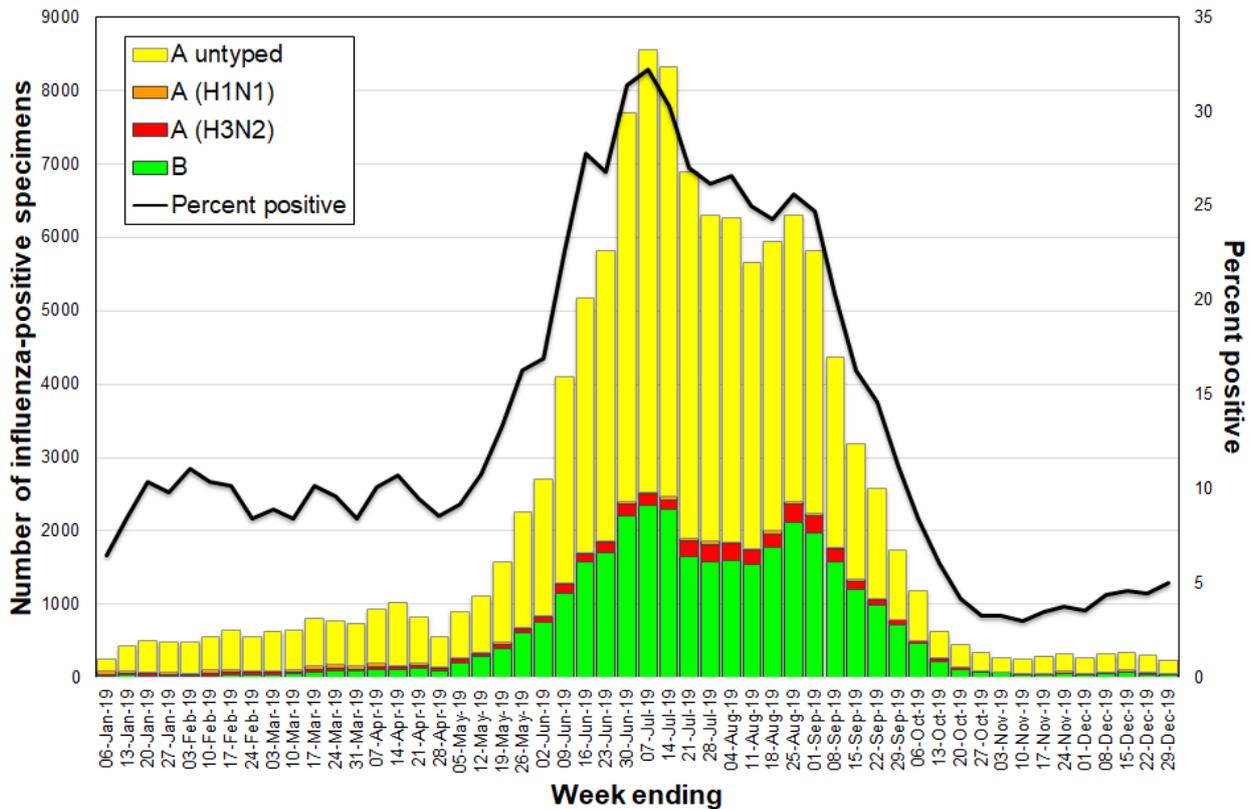


Figure 6: 2019 weekly influenza results by type, sub-type and percent positive reported by NSW sentinel laboratories, 1 January to 29 December 2019.



Community Surveillance

Influenza notifications by local health district (LHD)

In the four week period to 29 December 2019 there were 954 notifications of influenza confirmed by polymerase chain reaction (PCR) testing, higher than the 820 influenza notifications reported for December 2018, but lower than the number of notifications reported for November 2019 (1134 - four week period).

All notifications and rates remained stable across NSW LHDs with the exception of Illawarra Shoalhaven where rates and notifications increased. Influenza notification rates were highest in the Illawarra Shoalhaven and Northern Sydney LHDs (Table 2).

Table 2: Weekly notifications of laboratory-confirmed influenza by local health district.

Local Health District	Week ending 29 Dec 2019		Previous 4 weeks	
	Number of notifications	Rate per 100 000 population	Average weekly number of notifications	Rate per 100 000 population
Central Coast	12	3.44	12	3.44
Hunter New England	6	0.64	15	1.59
Illawarra Shoalhaven	24	5.77	6	1.44
Mid North Coast	5	2.24	6	2.46
Murrumbidgee	4	1.64	7	2.88
Nepean Blue Mountains	6	1.56	14	3.57
Northern NSW	7	2.28	10	3.26
Northern Sydney	40	4.23	51	5.42
South Eastern Sydney	23	2.43	47	4.93
South Western Sydney	9	0.88	30	2.89
Southern NSW	3	1.4	3	1.28
Sydney	12	1.75	24	3.5
Western NSW	4	1.41	8	2.64
Western Sydney	27	2.63	45	4.38

Note: All data are preliminary and may change as more notifications are received. Excludes notifications based on serology.

Influenza outbreaks in institutions

There were two respiratory outbreaks reported in December; one was due to influenza A and the other was due to parainfluenza. Both were in residential aged care facilities.

In the year to date there have been 450 laboratory confirmed influenza outbreaks in institutions reported to NSW public health units, including 383 in residential care facilities (Table 3, Figure 7). There have been 422 outbreaks due to influenza A, 21 due to influenza B and seven involving both A and B strains.

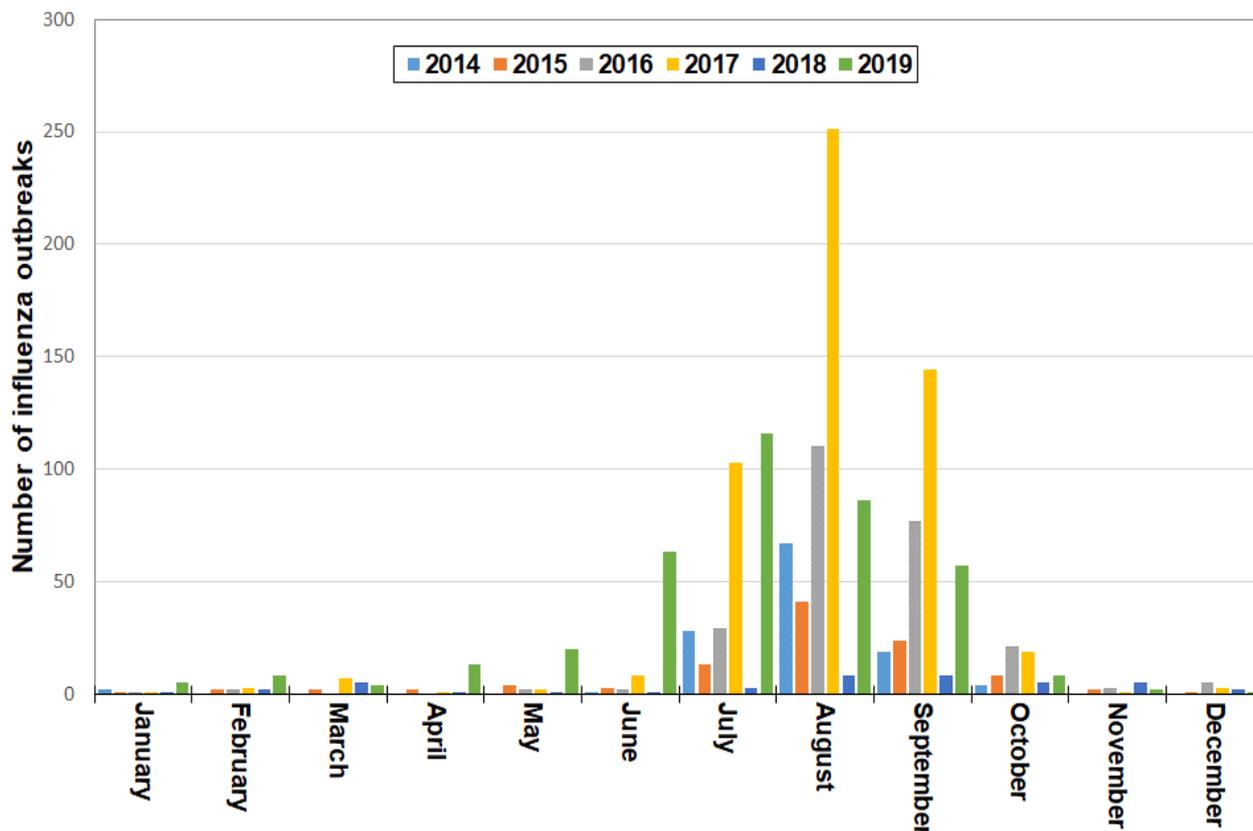
In the 383 influenza outbreaks affecting residential care facilities, at least 4188 residents were reported to have had ILI symptoms and 516 required hospitalisation. Overall, there have been 189 deaths⁶ in residents reported which were linked to these outbreaks, all of whom were noted to have other significant co-morbidities.

⁶ Deaths associated with institutional outbreaks are also included in the [Deaths surveillance](#) section if laboratory-confirmed.

Table 3: Reported influenza outbreaks in NSW institutions, January 2014 to December 2019.

Year	2014	2015	2016	2017	2018	2019
No. of outbreaks	122	103	252	543	42	383

Figure 7: Reported influenza outbreaks in NSW residential care facilities by month, 2014 to December 2019.



Deaths surveillance

Coded cause of death data is not timely enough for seasonal influenza surveillance. To provide rapid indicators of influenza and pneumonia mortality, death registrations from the NSW Registry of Births, Deaths and Marriages are used. A keyword search is applied, across any text field of the Medical Certificate Cause of Death (MCCD), to identify death registrations that mention influenza or pneumonia. The MCCD text includes conditions directly leading to the death, antecedent causes and other significant conditions contributing to the death. Two indicators are then reported:

1. Pneumonia and influenza mortality to provide a more complete picture of the impact of influenza, and
2. Influenza deaths with laboratory confirmation for a more specific measure.

NSW Health monitors the number of people whose deaths certificates report influenza and pneumonia, however the proportion of deaths accurately identified as being due to influenza likely varies over time as influenza testing has become more readily available, and so trends need to be interpreted with caution.

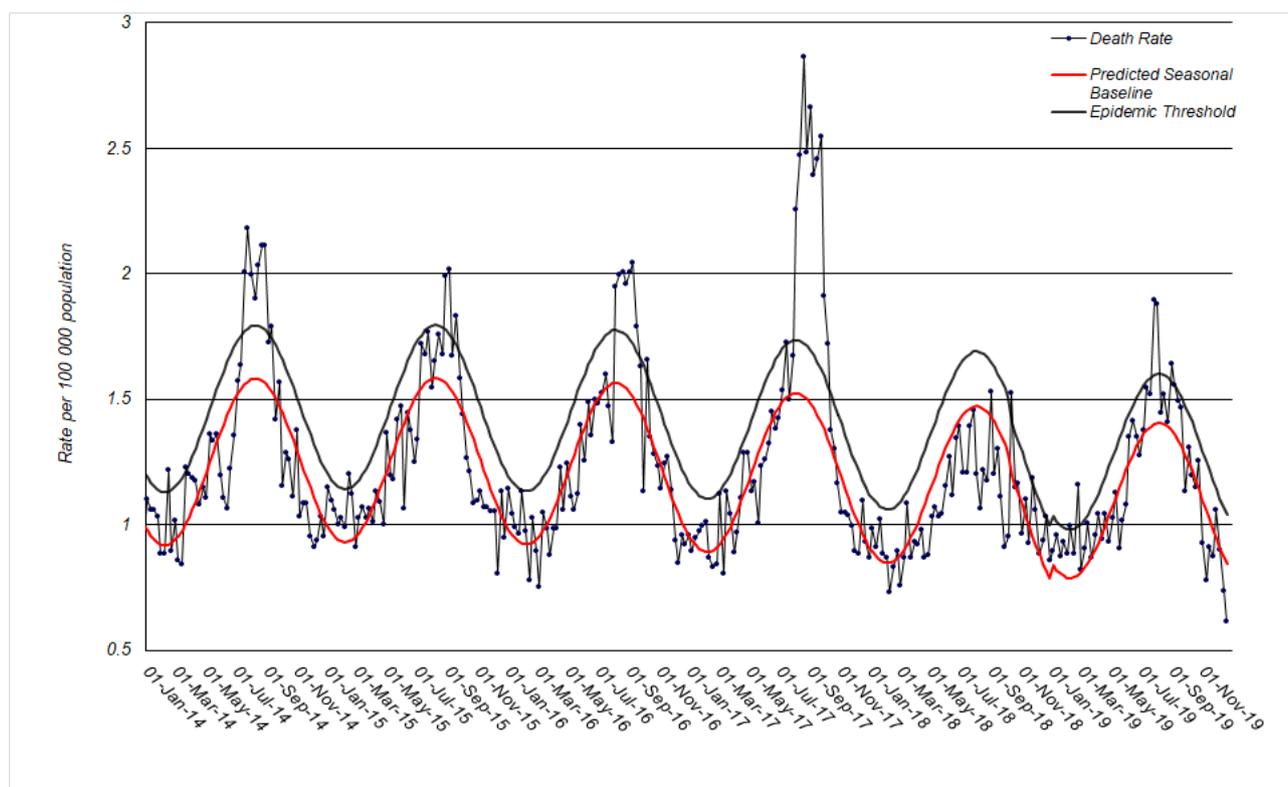
Pneumonia and influenza mortality

Due to delays in the death registration process, death data for recent weeks are underestimated. For this reason, *pneumonia or influenza* mortality data from the three most recent weeks are not included.

For the week ending 20 December 2019, the rate of deaths attributed to *pneumonia or influenza* was 0.62 per 100,000 NSW population below the epidemic threshold of 1.04 per 100,000 population (Figure 8).

Among the 52,347 death registrations in 2019, 399 (0.76%) mentioned influenza. An additional 4442 (8.49%) death registrations mentioned pneumonia.

Figure 8: Rate of death registrations classified as *pneumonia or influenza* per 100,000 NSW population, 2014 – 20 December, 2019



Source: NSW Registry of Births, Deaths and Marriages.

* Notes on interpreting death data:

- Deaths registration data is routinely reviewed for deaths mentioning pneumonia or influenza. While pneumonia has many causes, a well-known indicator of seasonal and pandemic influenza activity is an increase in the number of death certificates that mention pneumonia or influenza as a cause of death.
- The predicted seasonal baseline estimates the predicted rate of pneumonia or influenza deaths in the absence of influenza epidemics. If deaths exceed the epidemic threshold, then it may be an indication that influenza is beginning to circulate widely and may be more severe.
- The number of deaths mentioning "Pneumonia or influenza" is reported as a rate per 100,000 NSW population (rather than a rate per total deaths reported).
- Deaths referred to a coroner during the reporting period may not be available for analysis, particularly deaths in younger people which are more likely to require a coronial inquest. Influenza-related deaths in younger people may be under-represented in these data as a result.
- The interval between death and death data availability is usually at least 14 days, and so these data are at least two weeks behind reports from emergency departments and laboratories and subject to change.

Influenza deaths with laboratory confirmation

For the year to 29 December 2019, there have been 334 influenza deaths identified using Coroner's reports and death registrations with laboratory confirmation. (Table 4). This includes the deaths of three people reported in the last four week period all of whom were aged 65 years and over.

Deaths data are subject to change as new information is received.

Table 4: Laboratory-confirmed influenza deaths by age-group and year, NSW, 2017 to 29 December 2019 (by date of death).

Age-group	Year		
	2017	2018	2019*
0-4 years	2	2	0
5-19 years	4	0	0
20-64 years	44	6	33
65+ years	509	32	301
Total	559	40	334

Notes: *Year to date.

National and International Influenza Surveillance

National Influenza Surveillance

There have been no further national surveillance reports published since the *Australian Influenza Surveillance Report No.12*, with data up to 6 October 2019.

For further information see the [Australian Influenza Surveillance Reports](#).

Global Influenza Update

The latest [WHO global update on 20 December 2019](#) provides data up to 8 December.

- In the temperate zone of the northern hemisphere, respiratory illness indicators and influenza activity continued to increase in most countries.
- In the Caribbean and Central American countries, influenza activity was low overall, except for Cuba where increased detections of influenza B/Victoria lineage viruses were reported. In tropical South American countries, influenza activity remained low.
- In tropical Africa, influenza activity remained elevated in some countries of Middle and Western Africa.
- In Southern Asia, influenza activity was low across reporting countries, but was reported at high levels in the Islamic Republic of Iran in recent weeks.
- In South East Asia, influenza activity continued to be reported in Lao People's Democratic Republic and the Philippines.

In the temperate zones of the southern hemisphere, influenza activity remained at inter-seasonal levels. Worldwide, seasonal influenza A(H3N2) viruses accounted for the majority of detections.

Follow the link for the [WHO influenza surveillance reports](#).

In the United States, the CDC weekly influenza surveillance report ([FluView](#)) for Week 52/2019 noted that seasonal influenza activity was high and continues to increase. Activity has been elevated for eight weeks, with B/Victoria viruses predominating.

In Europe, the weekly influenza surveillance report ([Flu News Europe](#)) for Week 52/2019 noted seasonal influenza activity was still increasing, with influenza A strains predominating but with B/Victoria activity increasing.

Influenza at the human-animal interface

WHO publishes regular updated risk assessments of human infections with avian and other non-seasonal influenza viruses at [Influenza at the human-animal interface](#), with the most recent report published on 25 November 2019. These reports provide information on human cases of infection with non-seasonal influenza viruses, such as H5 and H7 clade viruses, and outbreaks among animals.

Since the previous update, three new human infections with an influenza A(H9N2) variant virus were reported. There were no new reports of human cases of avian influenza A(H5) or A(H7) reported. The overall risk assessment for these viruses remains unchanged.

Other sources of information on avian influenza and the risk of human infection include:

- US CDC [Avian influenza](#)
- European CDC (ECDC) [Avian influenza](#)
- Public Health Agency of Canada [Avian influenza H7N9](#).

Composition of 2020 Australian influenza vaccines

The WHO Consultation on the Composition of Influenza Vaccines for the 2020 Southern Hemisphere was held in Geneva on 23-26 September 2019.

Following the consultation, WHO announced its recommendations for the composition of the vaccines for use in the 2020 Southern Hemisphere influenza season, which includes three changes from the 2019 Southern Hemisphere influenza vaccines and two changes from the 2019-20 Northern Hemisphere influenza vaccines.

The recommended components of the 2020 Southern Hemisphere influenza vaccines are listed below:

- an A/Brisbane/02/2018 (H1N1)-like virus [Changed from 2019]
- an A/South Australia/34/2019 (H3N2)-like virus [Changed from 2019]
- a B/Washington/02/2019-like (B/Victoria lineage) virus [Changed from 2019]
- a B/Phuket/3073/2013-like virus (B/Yamagata lineage) virus. [Unchanged from 2019]

The B/Victoria lineage virus was recommended for trivalent vaccines with only one B component.

More details about the most recent influenza vaccine recommendations can be found at:

https://www.who.int/influenza/vaccines/virus/recommendations/2020_south/en/

WHO influenza vaccine strain recommendations – Northern Hemisphere, 2019-20

The WHO Consultation on the Composition of Influenza Vaccines for Use in the 2019-20 Northern Hemisphere Influenza Season recommended that egg based quadrivalent vaccines for use in the 2019-2020 northern hemisphere influenza season contain the following:

- an A/Brisbane/02/2018 (H1N1)pdm09-like virus
- an A/Kansas/14/2017 (H3N2)-like virus
- a B/Colorado/06/2017-like virus (B/Victoria lineage)
- a B/Phuket/3073/2013-like virus (B/Yamagata lineage).

The B/Victoria lineage virus was recommended for trivalent vaccines with only one B component.

More details about the most recent influenza vaccine recommendations can be found at:

<https://www.who.int/influenza/vaccines/virus/en/> .