

Influenza Surveillance Monthly Report

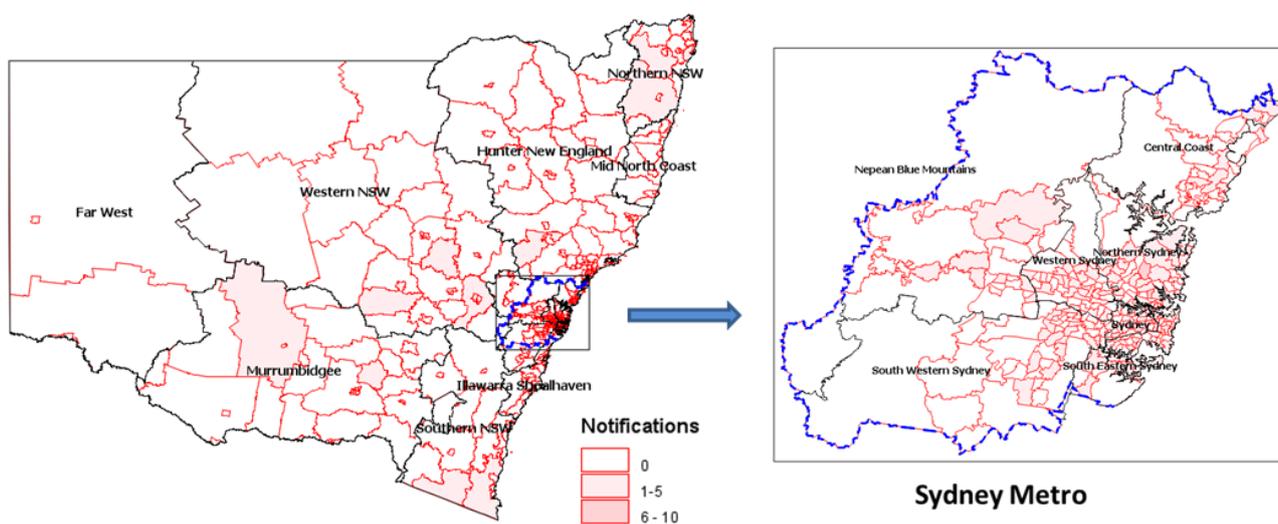
November 2019 (Weeks 45-48)

Key Points

- ▶ Influenza activity remains at low inter-seasonal levels with a stable trend.
- ▶ Respiratory presentations to NSW emergency departments continued to decrease but remained above the historical range in activity.

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

Notifications for week ending 1 December 2019



Summary

- Influenza activity remained at inter-seasonal levels throughout November.
- Influenza A strains, particularly influenza A (H1N1), remained predominant over influenza B strains, with an overall influenza percent positive rate of 3.4%.
- Influenza activity was highest in Northern NSW and Northern Sydney local health districts (LHD) but activity was low and stable in 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.
- Two influenza outbreaks were reported from residential aged care facilities; both were caused by influenza A.

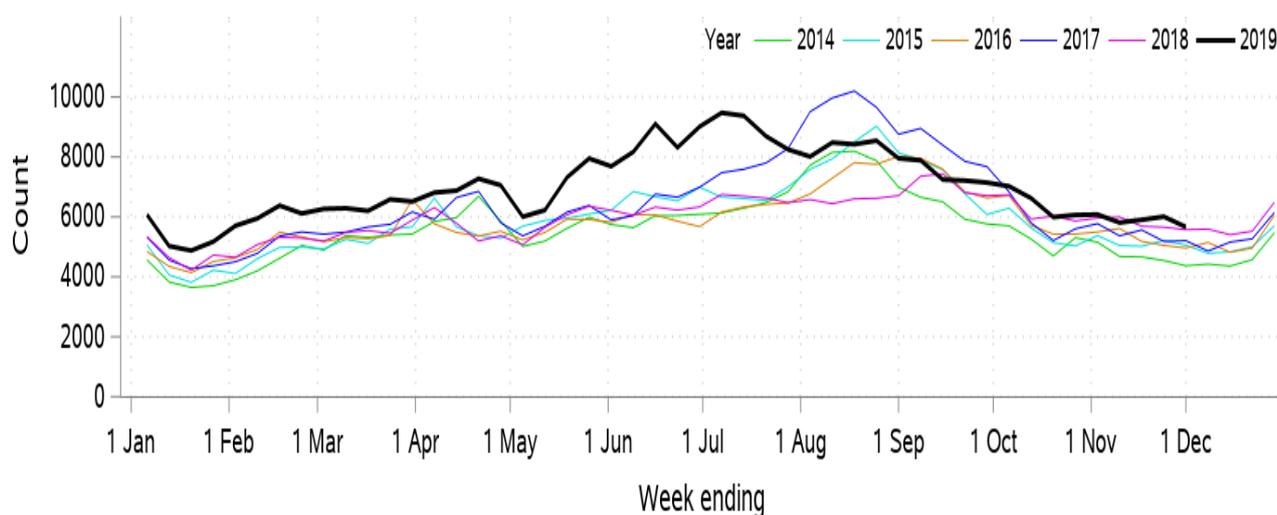
Hospital Surveillance

NSW emergency department (ED) surveillance for influenza-like illness (ILI) and other respiratory illnesses is conducted through PHREDSS¹.

In November 2019:

- Presentations in the *All respiratory illness, fever and unspecified infections* category decreased but remained above the historical range for this time of year (Figure 1).
- ED presentations for ILI decreased through the month but were above the historical range for this time of year (Figure 2).
- ED presentations for *pneumonia*² decreased and were within the historical range for this time of year (Figure 3).
- *ILI and pneumonia* presentations which resulted in admission decreased overall but ILI admissions were slightly above the historical range for this time of year.
- *Bronchiolitis*³ presentations increased and were also above 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 1 December, compared with the 5 previous years (coloured lines).



¹ 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.

² 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'

³ *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 1 December, compared with the 5 previous years (coloured lines).

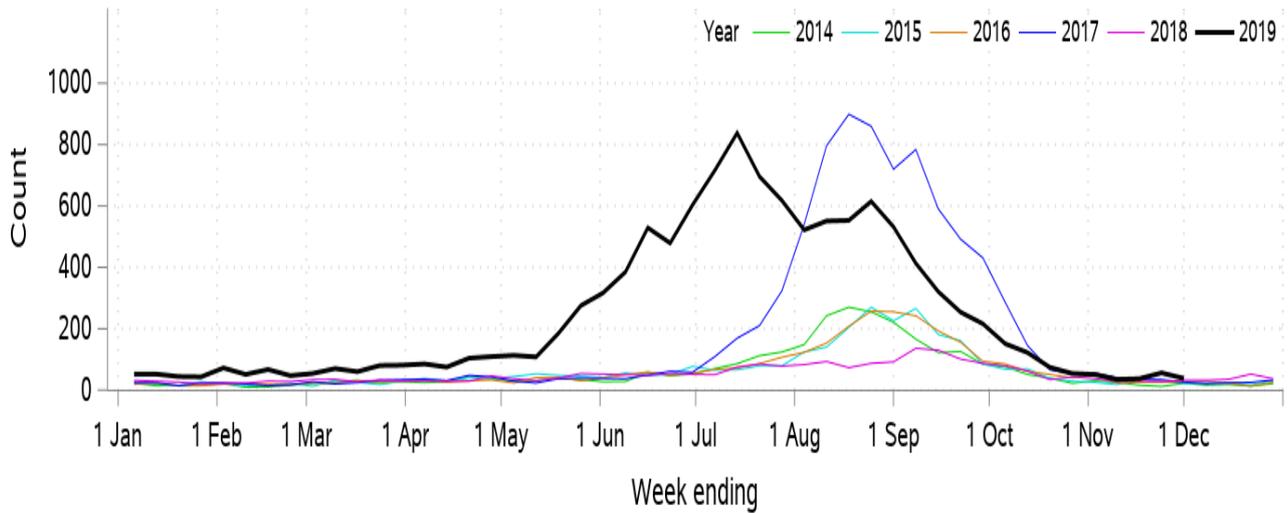


Figure 3: Total weekly counts of Emergency Department visits for pneumonia, all ages, 2019 (black line) to 1 December, compared with the 5 previous years (coloured lines).

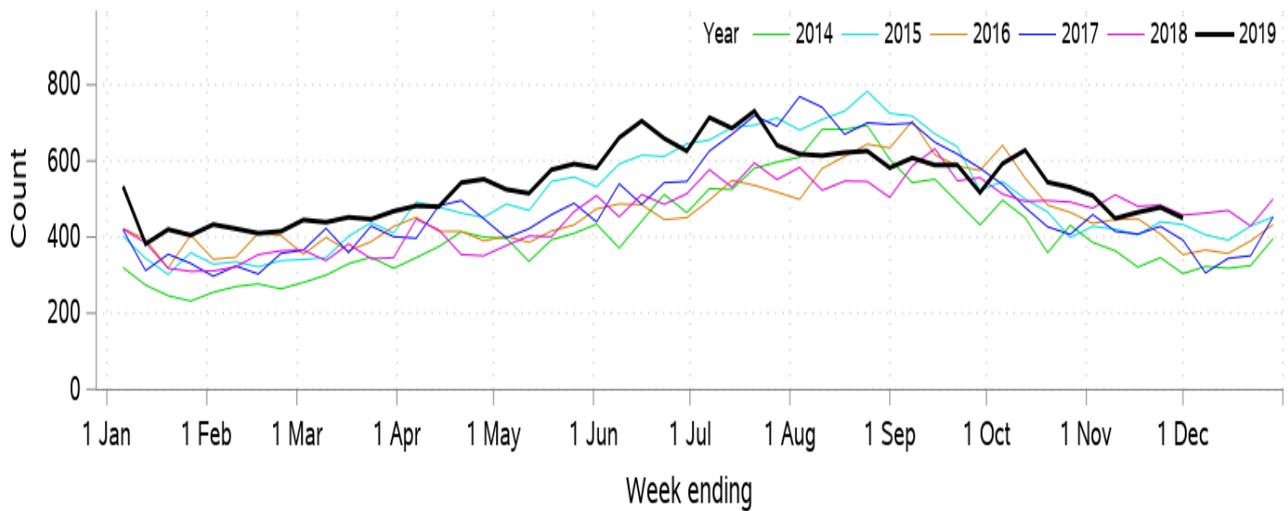
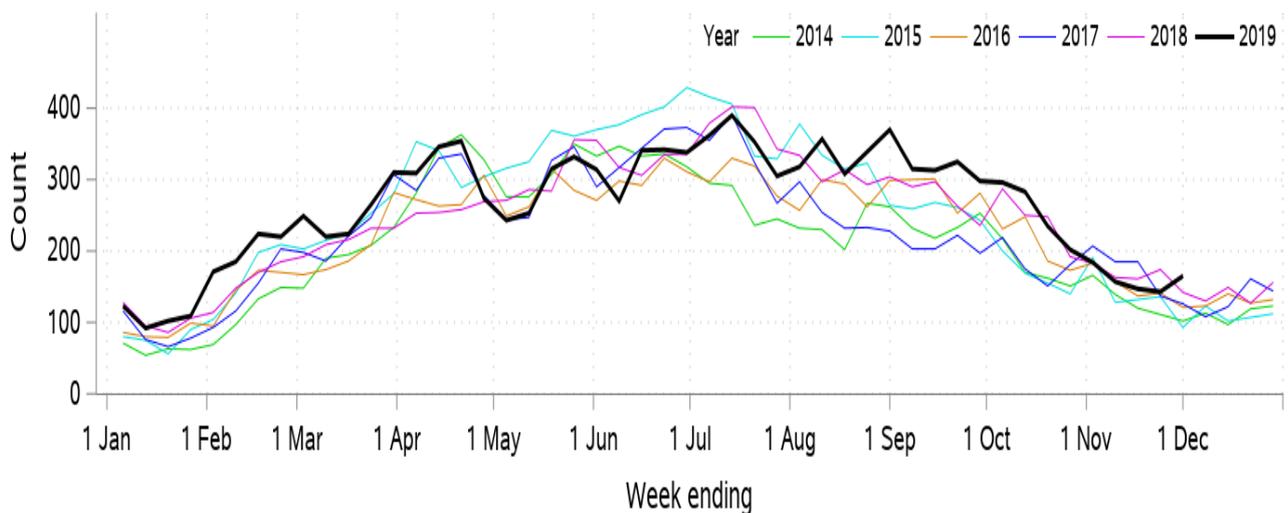


Figure 4: Total weekly counts of Emergency Department visits for bronchiolitis, all ages, 2019 (black line) to 1 December, compared with the 5 previous years (coloured lines).



Laboratory testing summary for influenza

Sentinel laboratory surveillance for influenza and other respiratory viruses is conducted throughout the year [4]. In the four week period to 1 December 2019:

- A total of 33,095 tests for respiratory viruses were performed at sentinel NSW laboratories (Table 1). The influenza percent positive rate overall was 3.4%, lower than the previous month (9.4%).
- Activity remained stable throughout the month and was at inter-seasonal levels during the month of November.
- 960 specimens tested positive for influenza A – 16 of these tested positive for A(H3N2), 71 tested positive for influenza A(H1N1) and 873 were not typed further (Table 1, Figures 5 & 6).
- 180 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 1 December 2019.

Month ending	Total Tests	TEST RESULTS															
		Influenza A								Influenza B		Adeno	Parainf 1, 2 & 3	RSV	Rhino	HMPV **	Entero
		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
Week ending																	
10/11/2019	8765	218	(2.5%)	5	(2.3%)	4	(1.8%)	209	(95.9%)	42	(0.5%)	328	466	123	1651	344	90
17/11/2019	8475	250	(2.9%)	7	(2.8%)	17	(6.8%)	226	(90.4%)	43	(0.5%)	307	402	155	1619	350	77
24/11/2019	8369	263	(3.1%)	2	(0.8%)	29	(11.0%)	232	(88.2%)	56	(0.7%)	295	444	124	1572	287	54
1/12/2019	7486	229	(3.1%)	2	(0.9%)	21	(9.2%)	206	(90.0%)	39	(0.5%)	259	429	105	1375	255	57

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.

[4]: 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 1 December 2019.

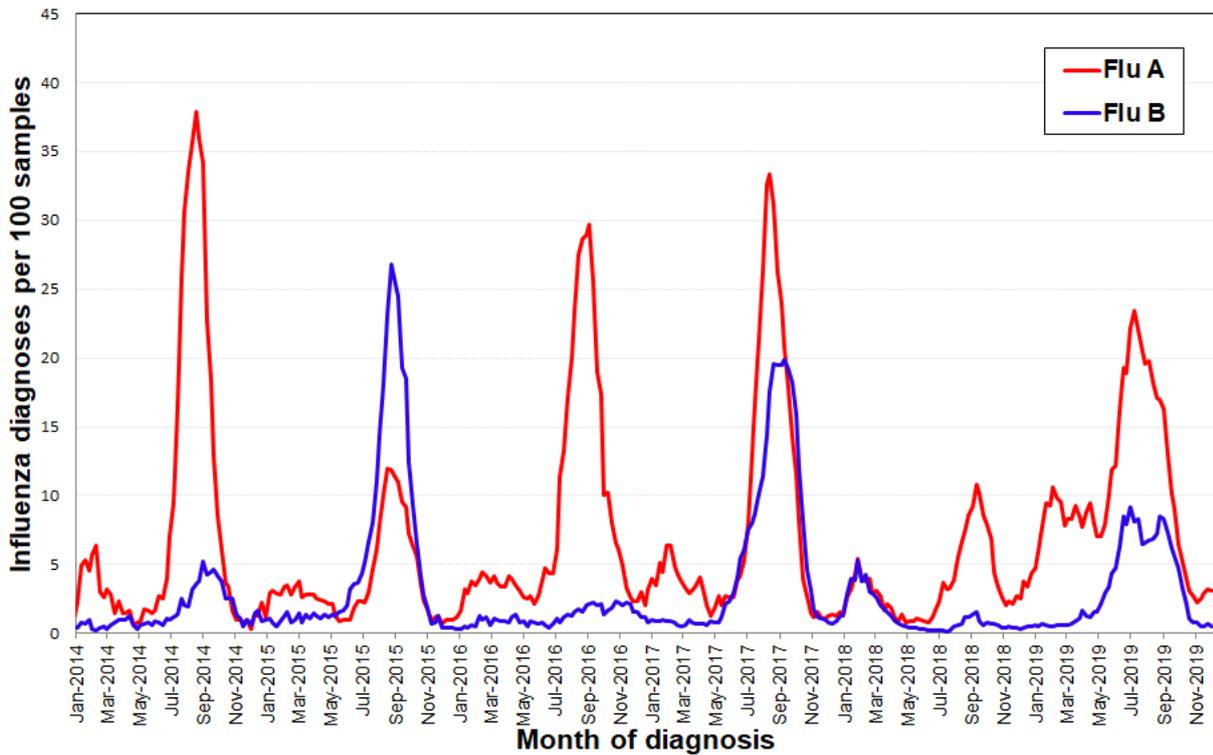
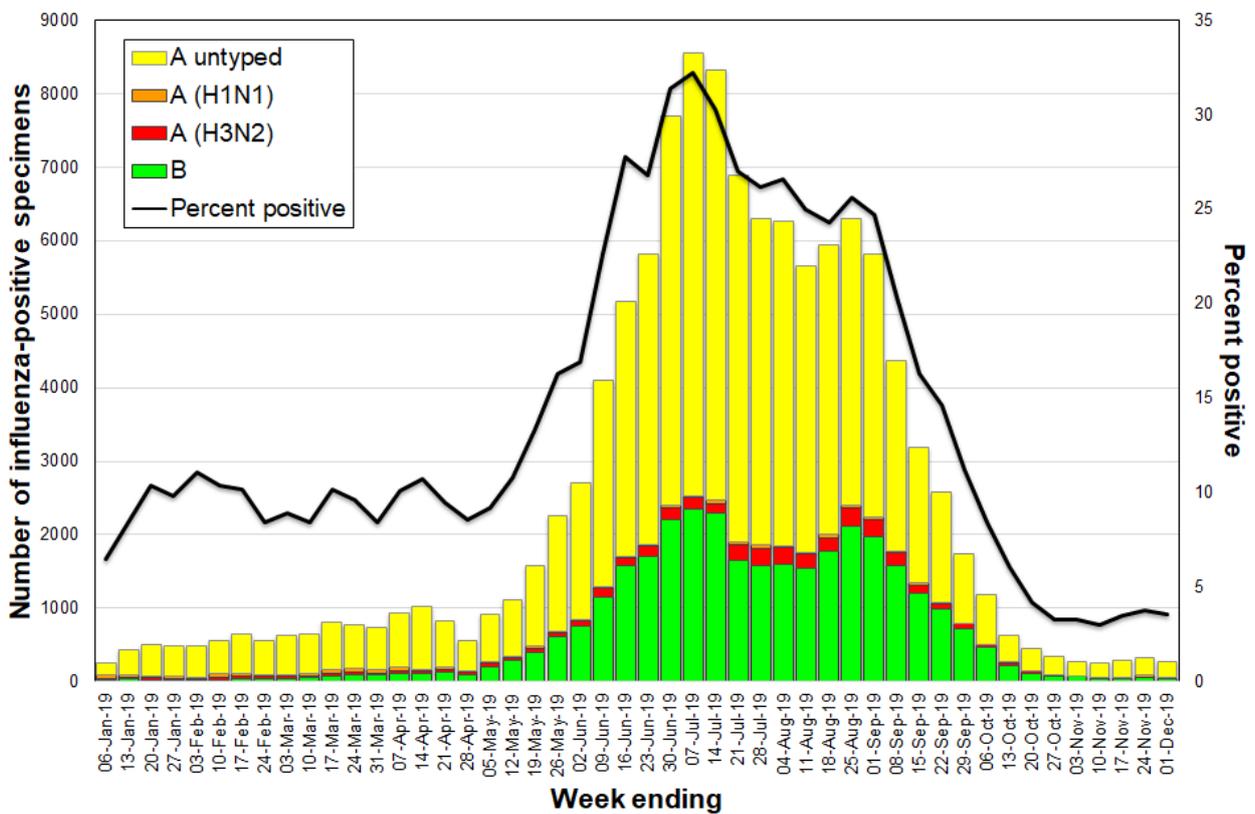


Figure 6: 2019 weekly influenza results by type, sub-type and percent positive reported by NSW sentinel laboratories, 1 January to 1 December 2019.



Influenza notifications by local health district (LHD)

In the five week period to 1 December 2019 there were 1022 notifications of influenza confirmed by polymerase chain reaction (PCR) testing, higher than the 899 influenza notifications reported for November 2018 (five week period), but lower than the number of notifications reported for October 2019 (1925 - five week period).

All notifications and rates remained stable across NSW LHDs. Influenza notification rates were highest in Northern NSW and Northern Sydney LHDs (Table 2).

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

Local Health District	Week ending 01 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	11	3.16	6	1.79
Far West	0	0	2	6.65
Hunter New England	9	0.96	23	2.44
Illawarra Shoalhaven	3	0.72	7	1.56
Mid North Coast	0	0	4	1.57
Murrumbidgee	4	1.64	11	4.32
Nepean Blue Mountains	16	4.15	12	3.05
Northern NSW	20	6.52	16	5.13
Northern Sydney	53	5.61	51	5.37
South Eastern Sydney	45	4.75	41	4.3
South Western Sydney	16	1.57	35	3.46
Southern NSW	1	0.47	3	1.56
Sydney	23	3.35	25	3.6
Western NSW	8	2.82	10	3.35
Western Sydney	30	2.92	35	3.36

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

Influenza outbreaks in institutions

There were three respiratory outbreaks reported in November, two were due to influenza A and one was due to parainfluenza. Of these, all were in residential aged care facilities.

In the year to date there have been 449 laboratory confirmed influenza outbreaks in institutions reported to NSW public health units, including 382 in residential care facilities (Table 3, Figure 7). There have been 421 outbreaks due to influenza A, 21 due to influenza B and seven involving both A and B strains.

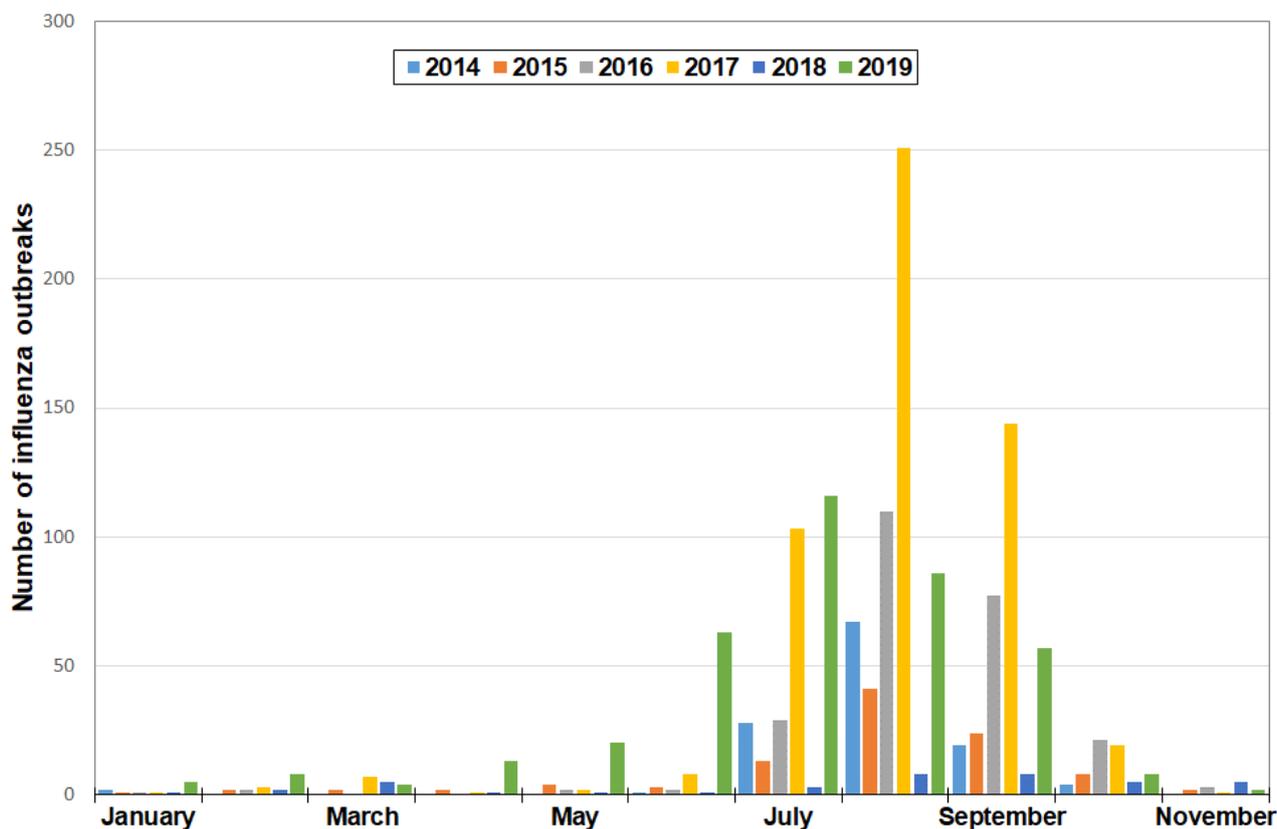
In the 382 influenza outbreaks affecting residential care facilities, at least 4180 residents were reported to have had ILI symptoms and 516 required hospitalisation. Overall, there have been 189 deaths⁵ in residents reported which were linked to these outbreaks, all of whom were noted to have other significant co-morbidities.

⁵ 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 November 2019.

Year	2014	2015	2016	2017	2018	2019
No. of outbreaks	122	103	252	543	42	382

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

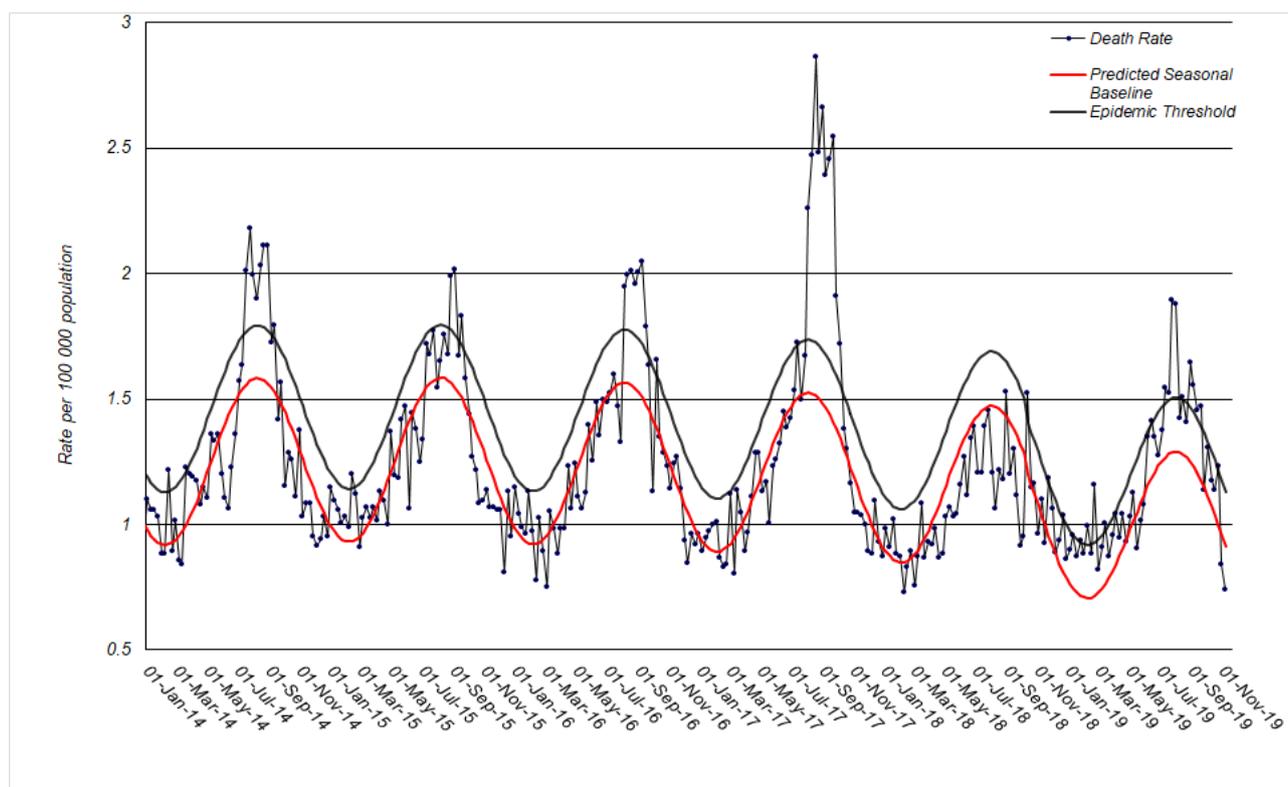
Pneumonia and influenza mortality

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 8 November 2019, the rate of deaths attributed to *pneumonia or influenza* was 0.74 per 100,000 NSW population below the epidemic threshold of 1.13 per 100,000 population (Figure 8).

Among the 46,948 death registrations in 2019, 387 (0.82%) mentioned influenza. An additional 4014 (8.55%) death registrations mentioned pneumonia.

Figure 8: Rate of death registrations classified as *pneumonia or influenza* per 100,000 NSW population, 2014 – 8 November, 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 1 December 2019, there have been 320 influenza deaths identified using Coroner's reports and death registrations with laboratory confirmation. (Table 4). This includes the deaths of four people reported in the last four week period all of whom were aged 60 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 1 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	32
65+ years	509	32	288
Total	559	40	330

Notes: *Year to date.

National and International Influenza Surveillance

National Influenza Surveillance

The fortnightly *Australian Surveillance Report No.12*, with data up to 6 October 2019, noted:

- **Activity** – Currently, influenza and influenza-like illness (ILI) activity is lower than average for this time of year compared to previous years, and is consistent with past activity following a peak in notifications and coming to the end of the influenza season. At the national level, notifications of laboratory-confirmed influenza have decreased in the past fortnight.
- **Impact** – Impact for the season to date, as measured through the number of sentinel hospital beds occupied by patients with influenza and the rate of FluTracking respondents absent from normal duties, is low to moderate.
- **Severity** – Clinical severity for the season to date, as measured through the proportion of patients admitted directly to ICU, and deaths attributed to influenza, is low.
- **Virology** – The majority of confirmed influenza cases reported nationally were influenza A in the year to date (76.9%) and past fortnight (61.9%). The proportion of cases attributed to influenza B has decreased slightly in the past fortnight.
- **Vaccine match and effectiveness** – Antigenic analysis of circulating influenza viruses in Australia in 2019 shows that the influenza A(H1N1)pdm09 and influenza B/Yamagata-lineage viruses are well matched to the 2019 influenza vaccine while some A(H3N2) and B/Victoria-lineage viruses are less well matched. Overall vaccine effectiveness appears good and as expected based on preliminary estimates from general practice (ASPREN) and sentinel hospitals (FluCAN-PAEDS), noting that effectiveness typically ranges from around 40-60% each year.

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

Global Influenza Update

The latest [WHO global update on 28 October 2019](#) provides data up to 13 October.

In the temperate zone of the northern hemisphere influenza activity continued to increase slowly.

- In North America influenza activity remained elevated overall with influenza A(H1N1)pdm09 predominating.
- In Europe, influenza activity continued to increase, with both A viruses circulating.

- In North Africa, influenza A(H3N2) detections continued to be reported in Egypt.
- In Western Asia, influenza activity continued to increase in some countries and appeared to decrease across countries of the Arabian Peninsula.
- In East Asia, influenza activity continued to increase, with influenza A(H1N1)pdm09 most frequently detected.
- In Southern Asia, influenza detections remained elevated overall. Influenza activity continued to increase in Iran (Islamic Republic of) with influenza A(H3N2) the predominant circulating virus.

In the temperate zones of the southern hemisphere, influenza activity returned to inter-seasonal levels with exception of some parts in Australia. Worldwide, seasonal influenza A viruses accounted for the majority of detections.

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

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 27 September 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, one new human infection with an influenza A(H5N6) variant virus was 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 was held in Beijing on 18-20 February 2019.

From this meeting it was 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).

It was also recommended that the influenza B virus component of trivalent vaccines for use in the 2019-2020 northern hemisphere influenza season should be the B/Victoria/2/87-lineage virus.

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

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

ⁱ 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.