

# Influenza Monthly Epidemiology Report, NSW

December 2018

This report describes the surveillance for influenza and other respiratory pathogens, undertaken by NSW Health to date. This includes data from a range of surveillance systems.

For weekly communicable disease surveillance updates refer to the Communicable Disease Weekly Reports at <http://www.health.nsw.gov.au/Infectious/reports/Pages/CDWR.aspx> .

## 1. Summary

- Influenza activity remained at inter-seasonal levels overall but was higher than the previous month and higher than usual for this time of year.
- Influenza A strains remain predominant over influenza B strains
- There is no evidence of new influenza strains emerging to explain current influenza activity.
- Influenza activity continues to be highest in northern NSW.
- Presentations to emergency departments for respiratory illnesses remained higher than usual for this time of year, as did admissions for influenza-like illness and pneumonia.
- Two influenza outbreaks were reported from residential aged care facilities, both caused by influenza A.

## 2. Hospital Surveillance

NSW emergency department (ED) surveillance for influenza-like illness (ILI) and other respiratory illnesses is conducted through PHREDSS<sup>1</sup>.

In December 2018:

- Presentations in the *All respiratory illness, fever and unspecified infections* category increased and were above the historical range for this time of year (Figure 1).
- ED presentations for ILI remained steady through the month, in contrast to the steady decline in ILI activity usually seen at this time of year overall (Figure 2).
- ED presentations for *pneumonia*<sup>2</sup> increased and were also above the historical range for this time of year (Figure 3).
- *ILI and pneumonia* presentations which resulted in admission increased and were also slightly above the historical range for this time of year (Figure 4).
- *Bronchiolitis*<sup>3</sup> presentations increased and were slightly above the usual range for this time of year.

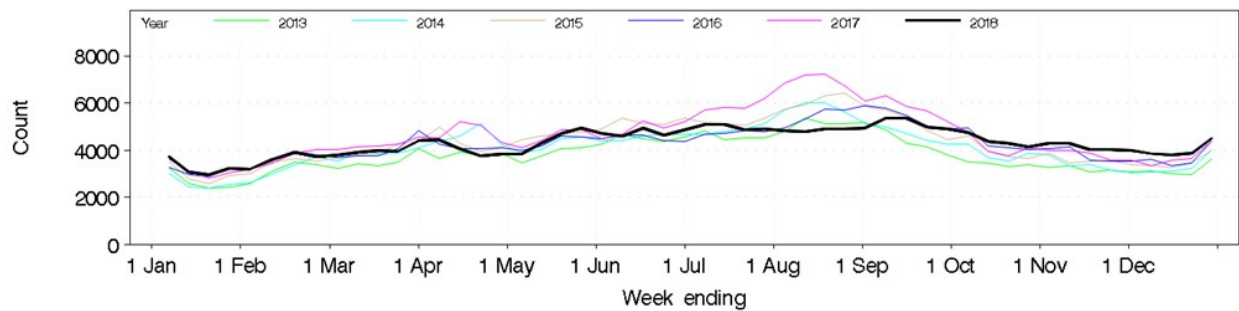
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<sup>1</sup> NSW Health Public Health Rapid, Emergency Disease and Syndromic Surveillance system, CEE, NSW Ministry of Health. Comparisons are made with data for the preceding 5 years. Includes unplanned presentations to 60 NSW emergency departments. The coverage is lower in rural EDs.

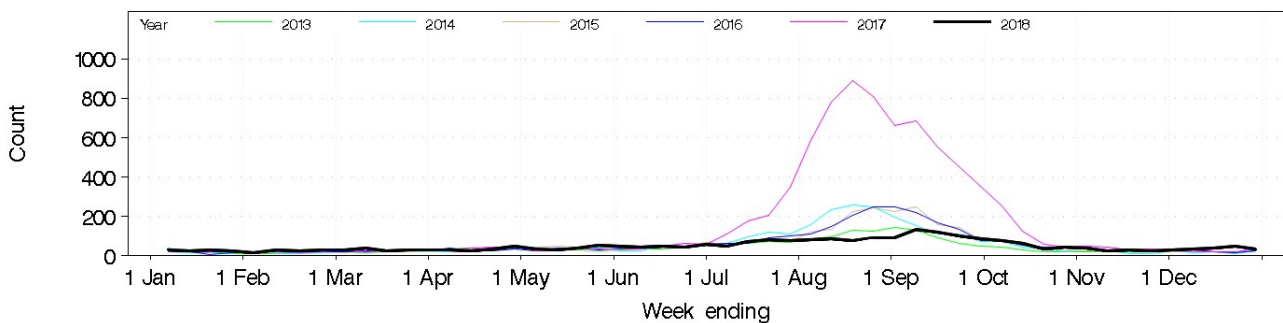
<sup>2</sup> The ED '*Pneumonia*' syndrome includes provisional diagnoses selected by a clinician of 'viral, bacterial atypical or unspecified pneumonia', 'SARS', or 'legionnaire's disease'. It excludes the diagnosis 'pneumonia with influenza'

<sup>3</sup> *Bronchiolitis* is a disease of infants most commonly linked to Respiratory Syncytial virus (RSV) infection.

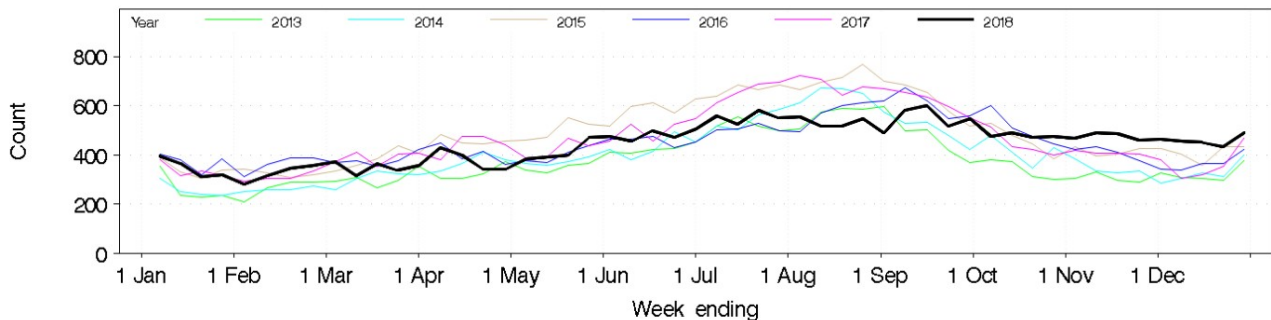
**Figure 1:** Total weekly counts of ED visits for any respiratory illness, fever and unspecified infections, all ages, 2018 (black line) to 30 December, compared with the 5 previous years (coloured lines).



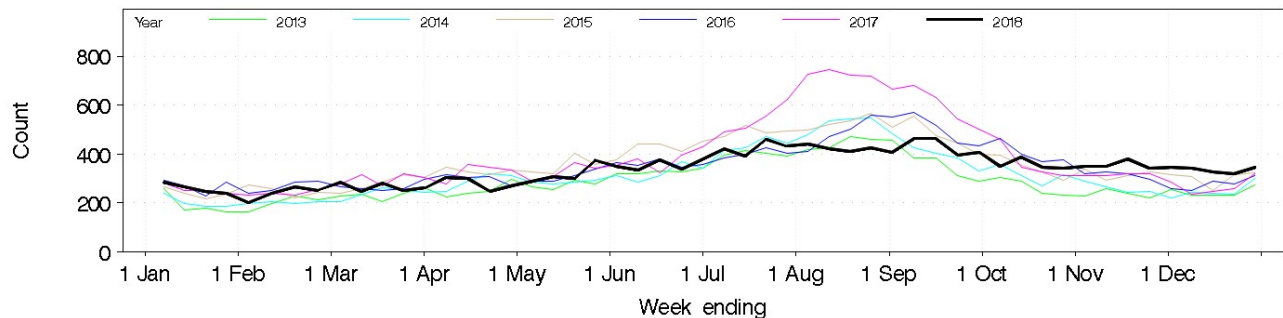
**Figure 2:** Total weekly counts of ED visits for influenza-like illness, all ages, 2018 (black line) to 30 December, compared with the 5 previous years (coloured lines).



**Figure 3:** Total weekly counts of Emergency Department visits for pneumonia, all ages, 2018 (black line) to 30 December, compared with the 5 previous years (coloured lines).



**Figure 4:** Total weekly counts of Emergency Department visits for influenza-like illness and pneumonia, that were admitted, all ages, 2018 (black line) to 30 December, compared with the 5 previous years (coloured lines).



### 3. 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 30 December 2018:

- A total of 20,323 tests for respiratory viruses were performed at sentinel NSW laboratories (Table 1). The influenza percent positive rate overall was 4.4%, higher than the previous month (3.3%).
- Activity steadily increased throughout December. While it was below the seasonal threshold overall, influenza activity is higher than expected for this time of year.
- 784 specimens tested positive for influenza A – 71 of these tested positive for A(H3N2), 63 tested positive for influenza A(H1N1) and 670 were not typed further (Table 1, Figures 5 & 6).
- 107 specimens tested positive for influenza B (Table 1, Figures 5 & 6).
- Further characterisation of recent influenza samples from NSW at the WHO Collaborating Centre for Reference and Research on Influenza has found no evidence of new strains emerging.

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

**Table 1:** Summary of testing for influenza and other respiratory viruses at sentinel NSW laboratories, 1 January to 30 December 2018.

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
28/01/2018	12819	483	(3.8%)	26	(5.4%)	38	(7.9%)	414	(85.7%)	507	(4.0%)	404	599	492	1601	325	196
25/02/2018	14540	531	(3.7%)	46	(8.7%)	36	(6.8%)	447	(84.2%)	503	(3.5%)	374	552	846	2498	221	284
01/04/2018*	22518	524	(2.3%)	53	(10.1%)	52	(9.9%)	419	(80.0%)	424	(1.9%)	703	1057	2022	4775	306	485
29/04/2018	19888	247	(1.2%)	22	(8.9%)	37	(15.0%)	188	(76.1%)	147	(0.7%)	640	869	2669	3634	277	415
27/05/2018	24227	232	(1.0%)	21	(9.1%)	36	(15.5%)	175	(75.4%)	89	(0.4%)	696	843	3030	5389	262	445
01/07/2018*	33785	482	(1.4%)	9	(1.9%)	43	(8.9%)	430	(89.2%)	72	(0.2%)	1157	971	3789	8809	574	647
29/07/2018	31992	1126	(3.5%)	9	(0.8%)	156	(13.9%)	961	(85.3%)	83	(0.3%)	1268	913	3633	5947	1101	587
02/09/2018*	46926	3499	(7.5%)	60	(1.7%)	230	(6.6%)	3209	(91.7%)	473	(1.0%)	1749	1305	3191	5287	2109	563
30/09/2018*	39322	3729	(9.5%)	53	(1.4%)	223	(6.0%)	3458	(92.7%)	359	(0.9%)	1580	1540	1557	5397	1945	537
28/10/2018	28658	1257	(4.4%)	40	(3.2%)	86	(6.8%)	1131	(90.0%)	168	(0.6%)	1303	1387	807	5007	1245	699
02/11/2018*	31761	731	(2.3%)	44	(6.0%)	28	(3.8%)	659	(90.2%)	119	(0.4%)	1304	1414	682	7633	758	1089
02/11/2018*	20323	784	(3.9%)	71	(9.1%)	63	(8.0%)	670	(85.5%)	107	(0.5%)	701	975	562	4282	293	578
<b>Week ending</b>																	
9/12/2018	6153	234	(3.8%)	19	(8.1%)	6	(2.6%)	209	(89.3%)	28	(0.5%)	215	269	148	1416	90	171
16/12/2018	5611	192	(3.4%)	19	(9.9%)	12	(6.3%)	161	(83.9%)	30	(0.5%)	190	278	136	1239	86	149
23/12/2018	5101	195	(3.8%)	20	(10.3%)	22	(11.3%)	173	(88.7%)	28	(0.5%)	190	246	150	1019	66	147
30/12/2018	3458	163	(4.7%)	13	(8.0%)	23	(14.1%)	127	(77.9%)	21	(0.6%)	106	182	128	608	51	111

**Notes:**

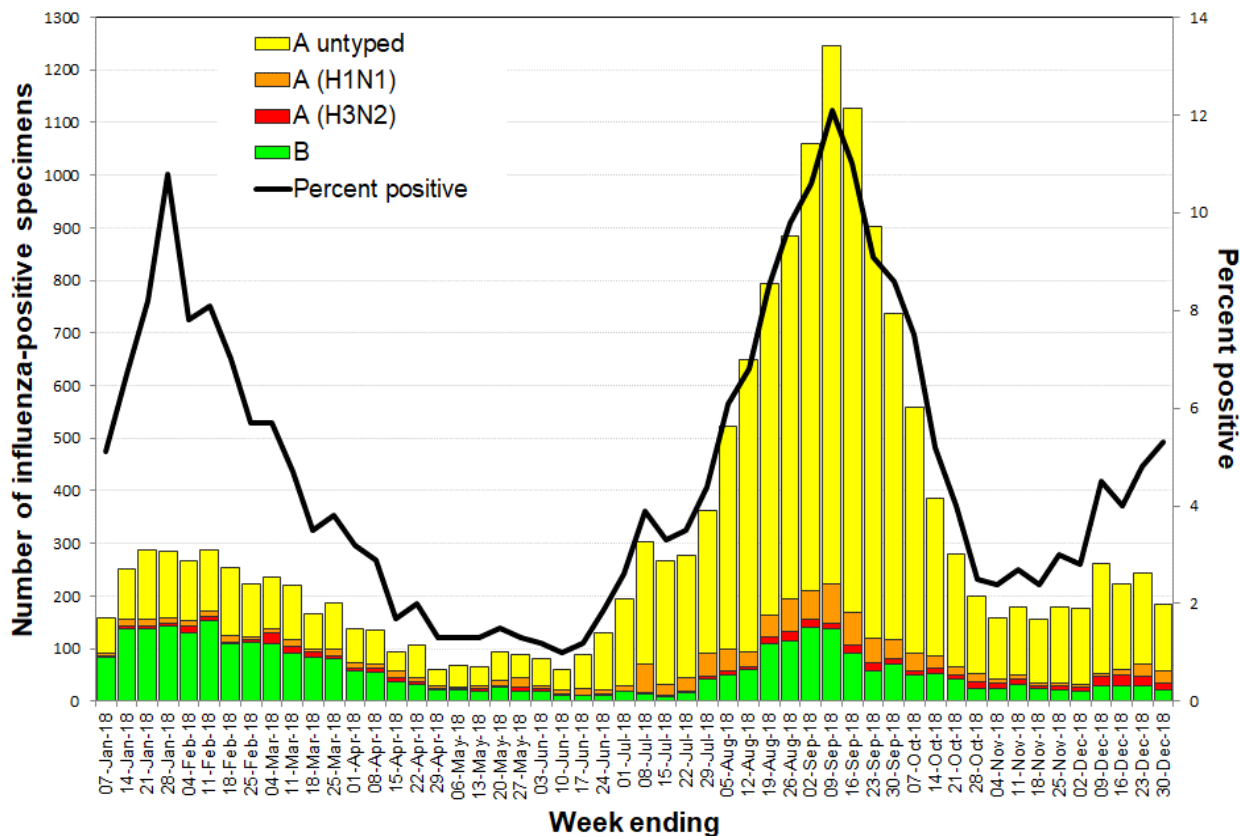
\* Five week period; \*\* HMPV - Human metapneumovirus.

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

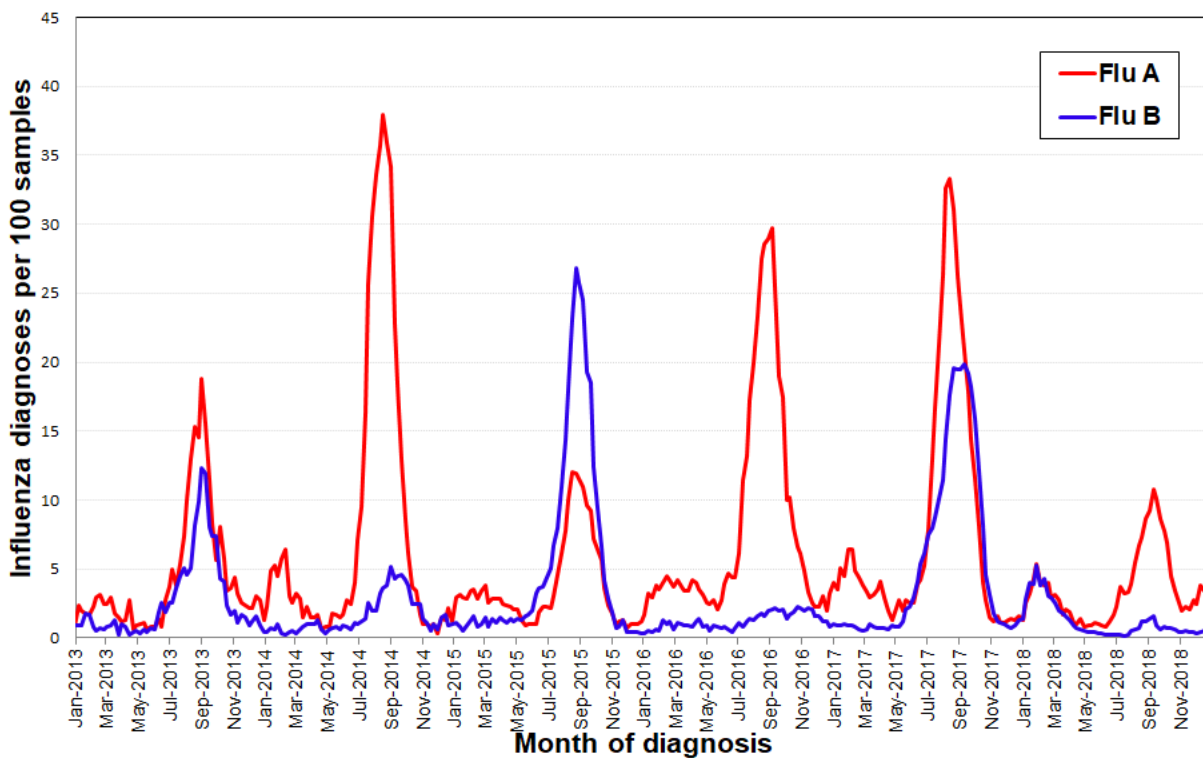
[4]: Preliminary laboratory data is provided by participating sentinel laboratories on a weekly basis and are subject to change. Serological diagnoses are not included. Preliminary data are provided by participating sentinel laboratories on a weekly basis and are subject to change.

**Participating sentinel laboratories:** Pathology North (Hunter, Royal North Shore Hospital), Pathology West (Nepean, Westmead), South Eastern Area Laboratory Services, Sydney South West Pathology Service (Liverpool, Royal Prince Alfred Hospital), The Children's Hospital at Westmead, Australian Clinical Labs, Douglas Hanly Moir Pathology, Laverty Pathology, Medlab, SydPath.

**Figure 5:** Weekly influenza positive test results by type and sub-type reported by NSW sentinel laboratories, 1 January to 30 December 2018.



**Figure 6:** Percent of laboratory tests positive for influenza A and influenza B reported by NSW sentinel laboratories, 1 January 2013 to 30 December 2018.



## 4. Community Surveillance

### Influenza notifications by Local Health District (LHD)

In the four week period to December 30 2018 there were 820 notifications of influenza confirmed by polymerase chain reaction (PCR) testing, higher than the 315 influenza notifications reported for December 2017, and higher than the average (four week period) number of notifications reported for November 2018 (720).

Influenza notification rates were low and stable across all NSW LHDs with the exception of Northern NSW where rates were significantly elevated (Table 2).

**Table 2:** Weekly notifications of laboratory-confirmed influenza by Local Health District.

Local Health District	Week ending 30 Dec 2018		Previous 4 weeks	
	Number of notifications	Rate per 100 000 population	Number of notifications	Rate per 100 000 population
Central Coast	1	0.29	7	1.89
Far West	0	0	2	5
Hunter New England	15	1.61	20	2.09
Illawarra Shoalhaven	6	1.45	5	1.09
Mid North Coast	2	0.9	2	0.9
Murrumbidgee	5	2.06	5	2.06
Nepean Blue	5	1.32	13	3.49
Northern NSW	38	12.52	38	12.36
Northern Sydney	21	2.25	32	3.4
South Eastern Sydney	20	2.14	26	2.8
South Western Sydney	6	0.6	14	1.37
Southern NSW	0	0	2	0.95
Sydney	12	1.77	21	3.07
Western NSW	5	1.77	4	1.3
Western Sydney	25	2.5	33	3.27

**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 influenza A outbreaks reported in residential aged care facilities in December, including one in Northern NSW.

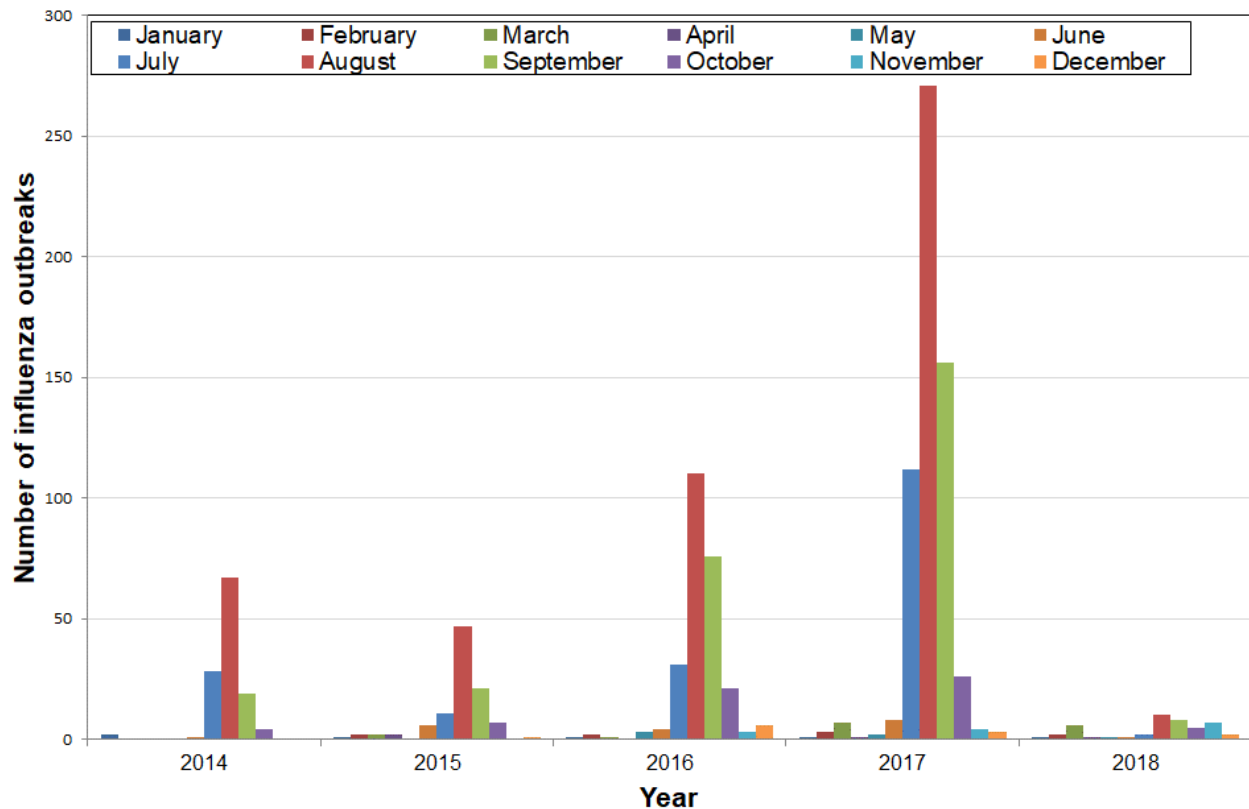
In the year to date there have been 46 laboratory confirmed influenza outbreaks in institutions reported to NSW public health units, including 43 in residential care facilities (Table 3, Figure 7). Of these 31 have been due to influenza A and 12 were due to influenza B.

In the 43 influenza outbreaks affecting residential care facilities, at least 390 residents were reported to have had ILI symptoms and 46 required hospitalisation. Overall, there have been 10 deaths in residents reported which were linked to these outbreaks, all of whom were noted to have other significant co-morbidities.

**Table 3:** Reported influenza outbreaks in NSW institutions, January 2011 to December 2018.

Year	2011	2012	2013	2014	2015	2016	2017	2018
No. of outbreaks	4	39	12	120	103	279	588	46

**Figure 7:** Reported influenza outbreaks in NSW residential care facilities by month, 2014 to 2018.



## 5. National and International Influenza Surveillance

### National Influenza Surveillance

The most recent available information is in the *Australian Surveillance Report No.11*, with data up to 21 October 2018.

Information provided by the WHO Collaborating Centre for Reference and Research on Influenza noted that of the 77 influenza B samples submitted from NSW for typing so far this year, only two were typed as in the B/Victoria lineage, with the remainder in the B/Yamagata lineage.

Approximately two-thirds of the influenza A samples from NSW have been the A(H1N1) strain.

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

### Global Influenza Update

The latest [WHO global update on 7 January 2019](#) provides data up to 23 December.

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

- In North America influenza activity continued to increase overall with influenza A(H1N1)pdm09 predominating.
- In Europe, influenza activity increased, with both A viruses circulating.
- In North Africa, increased influenza A(H3N2) detections were reported from mainly Egypt.
- In Western Asia, some countries reached medium levels of influenza intensity. Elevated but decreasing influenza activity continued to be reported across countries of the Arabian Peninsula.
- In East Asia, influenza season appeared to have started, with predominantly influenza A(H1N1)pdm09 detected.
- In Southern Asia, influenza detections rose sharply in recent weeks mainly due to increased influenza A(H3N2) detections in Iran and continued influenza A(H1N1)pdm09 detections in India.

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 13 December 2018. These reports provide information on human cases of infection with non-seasonal influenza viruses, such as H5, H7, and H3N2 variant viruses, and outbreaks among animals.

Since the previous update, new human infections with avian influenza A(H7N2) and A(H9N2) viruses were reported.

The overall public health risk from currently known influenza viruses at the human-animal interface has not changed, and the likelihood of sustained human-to-human transmission of these viruses remains low. Further human infections with viruses of animal origin are expected.

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](#).

## **6. Composition of influenza vaccines in 2019**

### **WHO influenza vaccine strain recommendations for the Southern Hemisphere in 2019**

The WHO Consultation on the Composition of Influenza Vaccines for the 2019 Southern Hemisphere was held in Atlanta on 24-26 September 2018.

Following the Consultation, WHO announced its recommendations for the composition of trivalent vaccines for use in the 2019 Southern Hemisphere influenza season, which includes changes in the influenza A(H3N2) component and the influenza B (Victoria lineage), as follows:

- an A/Michigan/45/2015 (H1N1)pdm09-like virus
- an A/Switzerland/8060/2017 (H3N2)-like virus <sup>5</sup>
- a B/Colorado/06/2017-like virus (B/Victoria lineage) <sup>6</sup>

It was recommended that quadrivalent vaccines containing two influenza B viruses contain the above three viruses and a second B component as follows:

- a B/Phuket/3073/2013-like virus (B/Yamagata lineage)<sup>6</sup>.

More details about the most recent influenza vaccine recommendations can be found at: [http://www.who.int/influenza/vaccines/virus/recommendations/2019\\_south/en/](http://www.who.int/influenza/vaccines/virus/recommendations/2019_south/en/).

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<sup>5</sup> This replaces A/Singapore/INFIMH-16-0019/2016 (H3N2)-like virus used in the 2018 seasonal influenza vaccines.

<sup>6</sup> The B/Colorado/06/2017-like virus replaces the B/Brisbane/60/2008-like virus in the B/Victoria lineage. It is also now the preferred B strain component for 2019 Southern Hemisphere trivalent influenza vaccines, replacing the B/Yamagata lineage strain, B/Phuket. The B/Phuket strain remains the recommended B/Yamagata lineage strain for 2019 quadrivalent vaccines.

### **Australian influenza vaccine strain recommendations for the 2019 influenza season**

While WHO makes recommendations for the influenza vaccine, it is up to national authorities to decide on the final composition for their individual countries. The Australian Influenza Vaccine Committee (AIVC) met in Canberra in October 2017 made the same recommendations as by WHO for the quadrivalent vaccine.

However, the recommendation for the Australian trivalent vaccine includes a B/Yamagata lineage virus (a B/Phuket/3073/2013-like virus), rather than the B/Victoria lineage virus. This is because in Australia, the vast majority of recently circulating influenza B viruses have been of the B/Yamagata lineage and few B/Victoria lineage viruses have been detected.

The Therapeutic Goods Administration (TGA) has accepted the [AIVC recommendations](#) for 2019.

Information on NSW seasonal influenza vaccination activities, including free vaccine for all children aged 6 months to less than 5 years can be found at:

[http://www.health.nsw.gov.au/immunisation/Pages/seasonal\\_flu\\_vaccination.aspx](http://www.health.nsw.gov.au/immunisation/Pages/seasonal_flu_vaccination.aspx) .

### **WHO influenza vaccine strain recommendations for the Northern Hemisphere in 2018-19**

The WHO consultation on the composition of influenza vaccines for the Northern Hemisphere 2018-19 influenza season was held in February 2018. WHO announced its recommendations for the composition of quadrivalent vaccines for use in the 2018-19 Northern Hemisphere influenza season, which includes changes in the influenza A(H3N2) and influenza B (Victoria lineage) components, as follows:

- an A/Michigan/45/2015 (H1N1)pdm09-like virus<sup>7</sup>;
- an A/Singapore/INFIMH-16-0019/2016 (H3N2)-like virus;
- a B/Colorado/06/2017-like virus (B/Victoria/2/87 lineage)<sup>8</sup>; and
- a B/Phuket/3073/2013-like virus (B/Yamagata/16/88 lineage).

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

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

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<sup>7</sup> This replaces A/Hong Kong/4801/2014 (H3N2)-like virus used in the 2017-8 seasonal influenza vaccines.

<sup>8</sup> This replaces B/Brisbane/60/2008-like virus used in the 2017-8 seasonal influenza vaccines. The B/Colorado will make up the B component of the trivalent vaccine.