Influenza Surveillance Weekly Report

Week 36: 3 to 9 September 2018

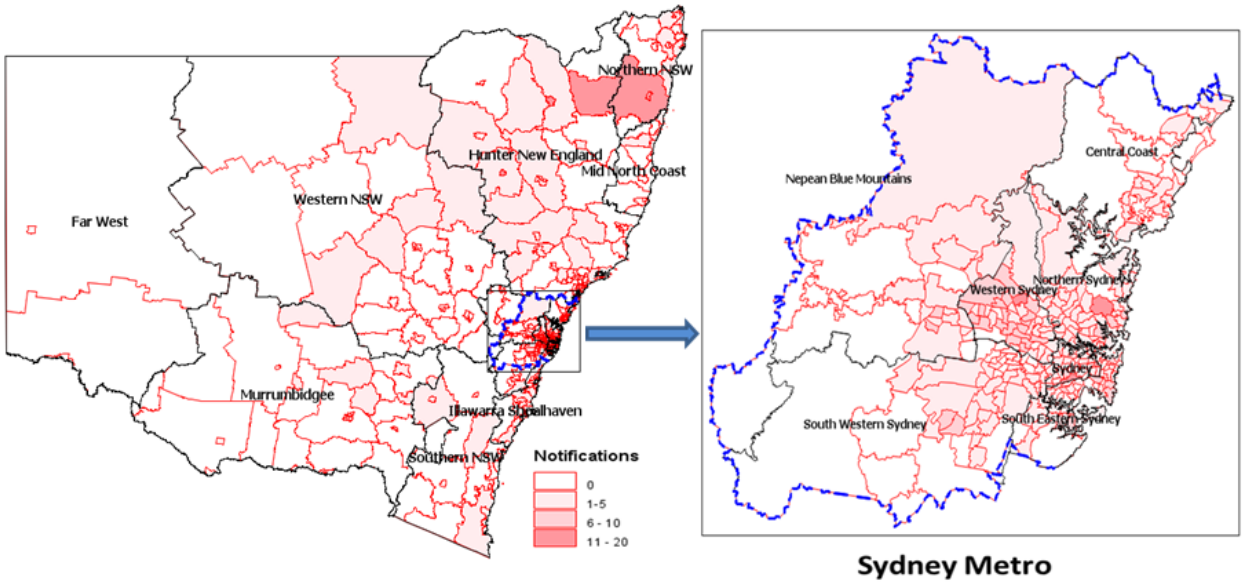
Key Points

- Influenza seasonal activity continues to increase slowly for the state overall.
- Overall, the influenza A(H1N1) strain continues to be the most common strain identified.
- Respiratory presentations to NSW emergency departments remain low for this time of year but there were increases across all respiratory presentations with the exception of bronchiolitis.

Activity compared to the previous week – NSW local health districts

Local Health District	Confirmed Influenza		NSW Emergency Departments (60) *All Respiratory/Fever/Unspecified infections*		
	Cases	Trend [1]	Presentations	Trend [1]	% of LHD ED presentations[2]
Central Coast	20	►	423	▲	15%
Far West	0	►	82	►	15%
Hunter New England	144	▼	965	▲	15%
Illawarra Shoalhaven	30	►	346	►	13%
Mid North Coast	9	►	285	►	15%
Murrumbidgee	6	►	323	►	16%
Nepean Blue Mountains	40	►	285	►	15%
Northern NSW	51	►	349	►	16%
Northern Sydney	101	▼	549	▲	13%
South Eastern Sydney	122	►	793	▲	13%
South Western Sydney	74	►	838	►	15%
Southern NSW	12	►	112	►	15%
Sydney	103	▲	464	▲	15%
Western NSW	8	►	256	►	15%
Western Sydney	194	▲	915	▲	18%
New South Wales	914	▼	6985	▲	15%

Confirmed influenza by NSW local health district and local area (SA2)[3]



Summary for this reporting week:

- Hospital surveillance – pneumonia presentations to ED increased as did pneumonia admissions and ILI presentations
- Laboratory surveillance – the influenza laboratory test positive rate was slightly higher at 12.1%; influenza A(H1N1) remains the most common strain
- Community surveillance – influenza activity decreased slightly in the majority LHDs; influenza activity in the New England area is trending down
- National surveillance – influenza activity remained low nationally

Hospital Surveillance

NSW emergency department (ED) presentations for respiratory illness

Source: PHREDSS[4]

For the week ending 9 September 2018:

- Presentations for *All respiratory illness, fever and unspecified infections* were increased but within the usual range for this time of year (Figure 1, Table 1). Presentations were significantly elevated in children under five years of age. The proportion of these presentations to all unplanned ED presentations was slightly increased at 14.9 per 100 presentations and was just within the seasonal range (Figure 2).
- ILI presentations resulting in admission increased but were within the usual range for this time of year (Figure 3, Table 1).
- ED presentations (Figure 4) and admissions for *pneumonia*[5] both increased. Both were within their usual ranges for this time of year (Table 1).
- *Pneumonia and ILI* presentations requiring admission to critical care also increased but were within the usual range for this time of year (Table 1).
- ED presentations for *asthma* increased whilst presentations for bronchiolitis decreased but both were within the usual range for this time of year (Table 1).

Figure 1: Total weekly counts of ED visits for *All respiratory illness, fever and unspecified infections*, all ages, from 1 January – 9 September, 2018 (black line), compared with the 5 previous years (coloured lines).

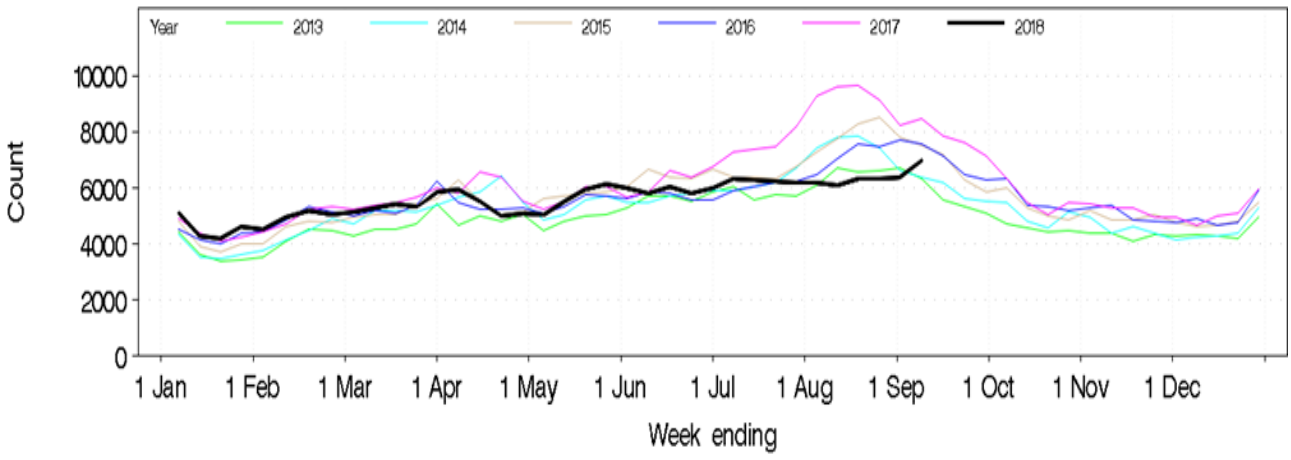


Figure 2: Total weekly counts of ED visits for *All respiratory illness, fever and unspecified infections*, all ages, as a rate per 100 ED visits, from 1 January – 9 September, 2018 (black line), compared with the range of season rate curves for the 5 previous years (white zone) aligned to the PHREDSS season start in 2018 (week 29).

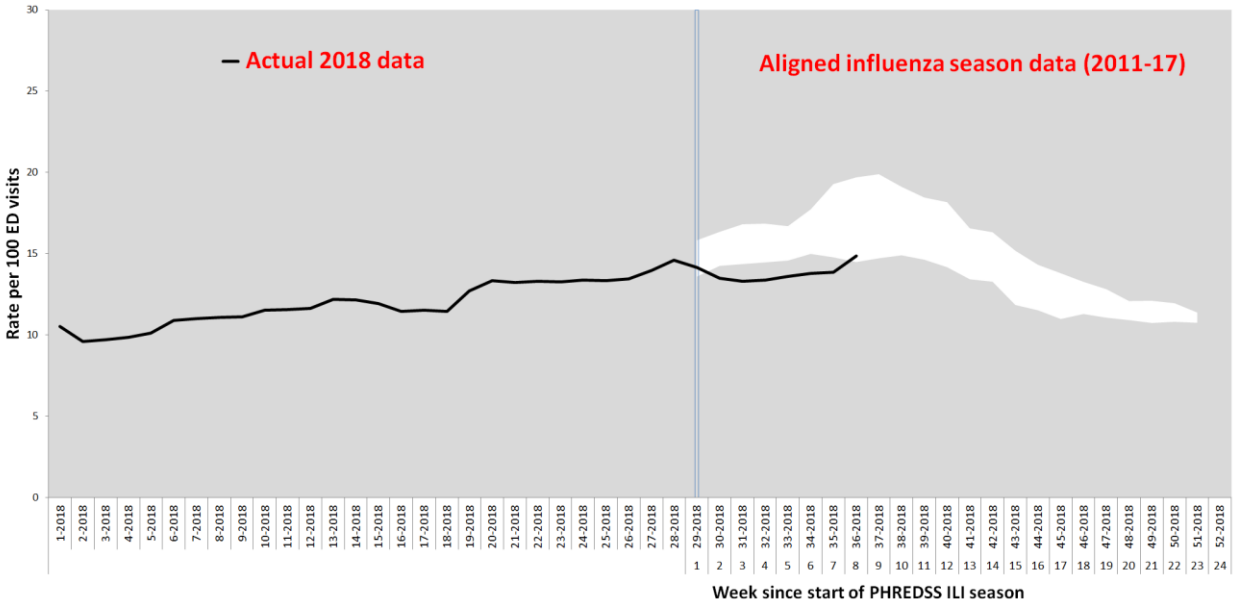


Figure 3: Total weekly counts of ED visits for *influenza-like-illness* that were admitted, all ages, from 1 January – 9 September, 2018 (black line), compared with the 5 previous years (coloured lines).

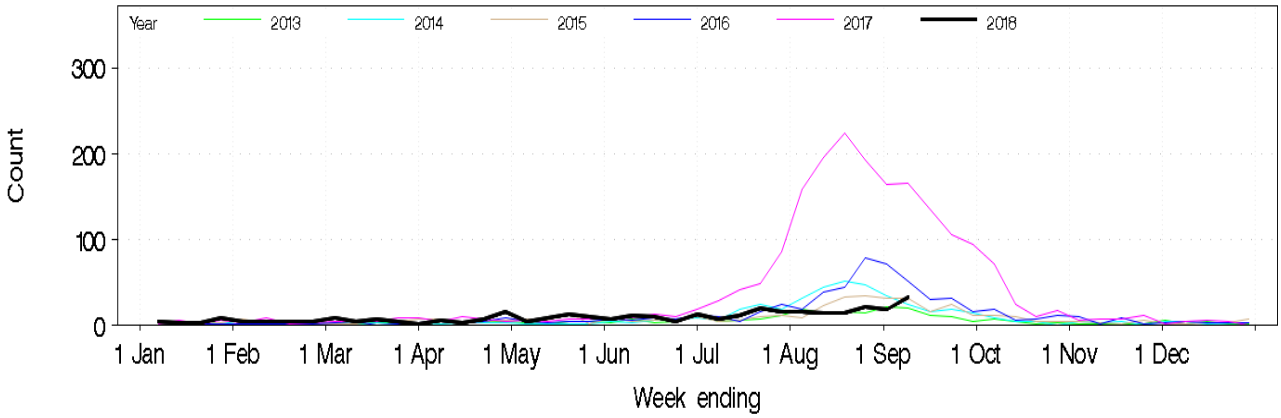


Figure 4: Total weekly counts of ED visits for *pneumonia*, all ages, from 1 January – 9 September, 2018 (black line), compared with the 5 previous years (coloured lines).

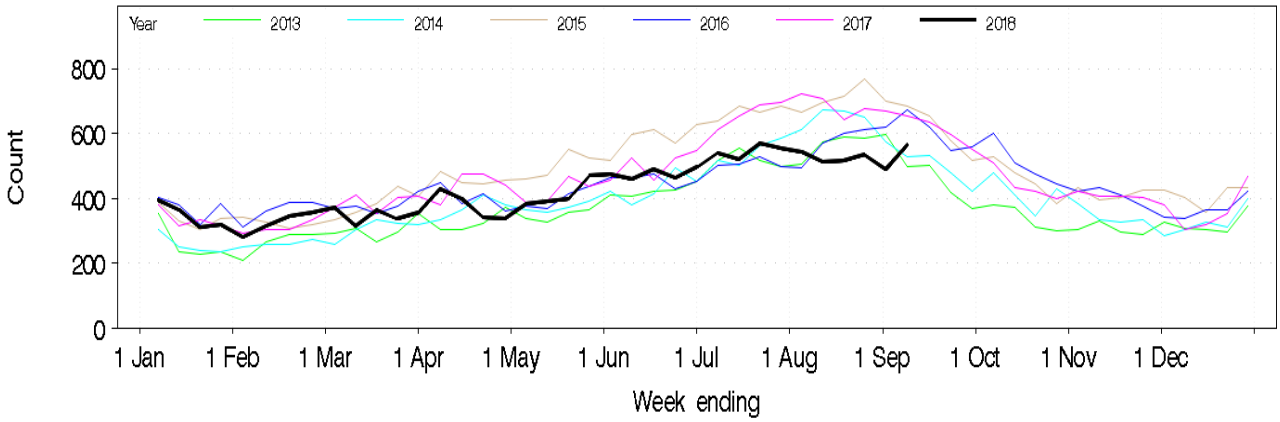


Table 1: Weekly emergency department respiratory illness summary, week ending 9 September 2018.

Data source	Diagnosis or problem category	Trend since last week	Comparison with usual range*	Significantly elevated age groups	Significant elevated severity indicators**	Comment
ED presentations 60 NSW hospitals	Influenza-like illness (ILI)	Increased (109)	Below (124-638)			The NSW daily index of increase for ILI presentations was 30.5 on 9 September.
	ILI admissions	Increased (33)	Within (20-165)			
	Pneumonia	Increased (566)	Within (500-685)			
	Pneumonia admissions	Increased (403)	Within (362-525)			
	Pneumonia and ILI critical care admissions	Increased (32)	Within (28-47)			
	Asthma	Increased (447)	Within (437-501)			
	Bronchiolitis	Decreased (276)	Within (196-282)			Bronchiolitis is a disease of infants.
	All respiratory illness, fever and unspecified infections	Increased (6,927)	Within (6,310-8,446)	**Under 5 years (2,537)**		
Ambulance	Breathing problems	Decreased (2,184)	Within (1,966-2,546)			

Notes:*The usual range is the range of weekly counts for the same week in the previous five years for ED presentations and for ambulance Triple (000) calls.
Key for trend since last week: Non-bold and green=decreased or steady; Non-bold and orange=increased
Key for comparison with usual range: Non-bold and green =usual range; Non-bold and orange=above usual range, but not significantly above five-year mean; **Bold and yellow**=within usual range, but significantly above five-year mean; **Bold and red** = above the usual range and significantly above five-year mean (ED).
Counts are statistically significant (shown in bold) if they are at least five standard deviations above the five-year mean. The 'daily index of increase' is statistically significant above a threshold of 15. LHD = Local Health District.
**Severity indicators include: Admission or admission to a critical care ward (CCW); Triage category 1; Ambulance arrival and Death in ED.

FluCAN (The Influenza Complications Alert Network)

In 2009, the FluCAN surveillance system was created to be a rapid alert system for severe respiratory illness requiring hospitalisation. Data is provided on patients admitted with influenza confirmed by polymerase chain reaction (PCR) testing.

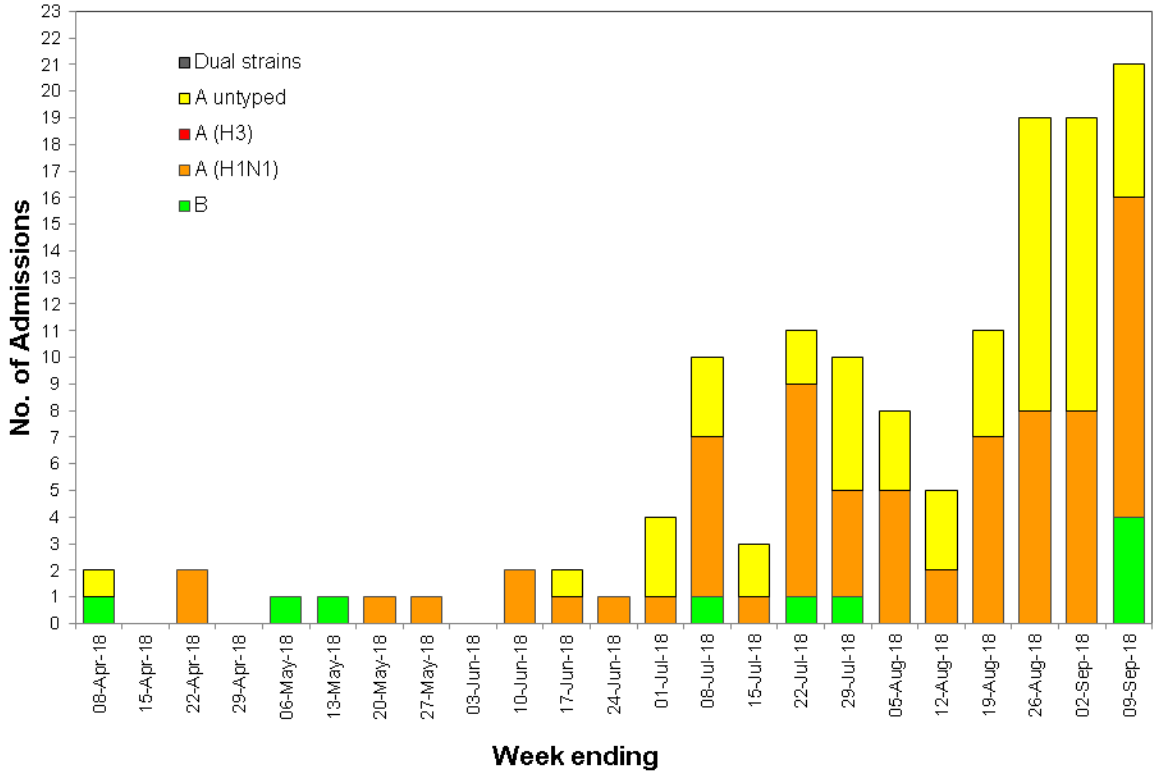
In NSW, three hospitals participate in providing weekly FluCAN data: Westmead Hospital, John Hunter Hospital and the Children's Hospital at Westmead.

In the week ending 9 September there were 21 new influenza admissions to NSW sentinel hospitals (Figure 5).

Since 1 April 2018, there have been 132 hospital admissions reported for influenza; 122 due to influenza A (including 70 A(H1N1)) and 10 due to influenza B (Figure 5). Of these admissions, 78 were paediatric cases (<16 years of age) and 54 were in adults. Nine cases (all children) were admitted to a critical care ward.

Sadly, one admitted child, aged under five years and unvaccinated, died from their influenza A infection in the week ending 8 July. This is the only child reported to have died from influenza in NSW this year.

Figure 5: FluCAN – Confirmed influenza hospital admissions in NSW, 1 April to 9 September 2018.



Laboratory Surveillance

In the week ending 9 September the number and proportion of respiratory specimens reported by NSW sentinel laboratories [6] which tested positive for influenza increased but remained low for this time of year (Table 2, Figure 6). Influenza A activity continues to trend upwards.

Overall, 12.1% of tests for respiratory viruses were positive for influenza (Figure 6), higher than the previous week (10.5%). Influenza A strains accounted for 89% of all influenza isolates, with A(H1N1) remaining the dominant circulating strain (Table 2, Figures 6-7).

Rhinovirus and influenza were the most common respiratory viruses identified (Table 2).

Table 2: Summary of testing for influenza and other respiratory viruses at NSW laboratories, 1 January to 9 September 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%)	36	(14.6%)	189	(76.5%)	147	(0.7%)	640	869	2669	3634	277	415
27/05/2018	24227	232	(1.0%)	20	(8.6%)	32	(13.8%)	180	(77.6%)	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%)	146	(13.0%)	971	(86.2%)	83	(0.3%)	1268	913	3633	5947	1101	587
02/09/2018*	45387	3260	(7.2%)	59	(1.8%)	226	(6.9%)	2976	(91.3%)	449	(1.0%)	1674	1139	3090	4984	1930	551
Week ending																	
09/09/2018	10252	1108	(10.8%)	10	(0.9%)	75	(6.8%)	1023	(92.3%)	137	(1.3%)	355	293	402	1270	447	89

Notes:
* Five-week reporting period. ** Human metapneumovirus

Figure 6: Weekly influenza positive test results by type and sub-type reported by NSW sentinel laboratories, 1 January to 9 September 2018.

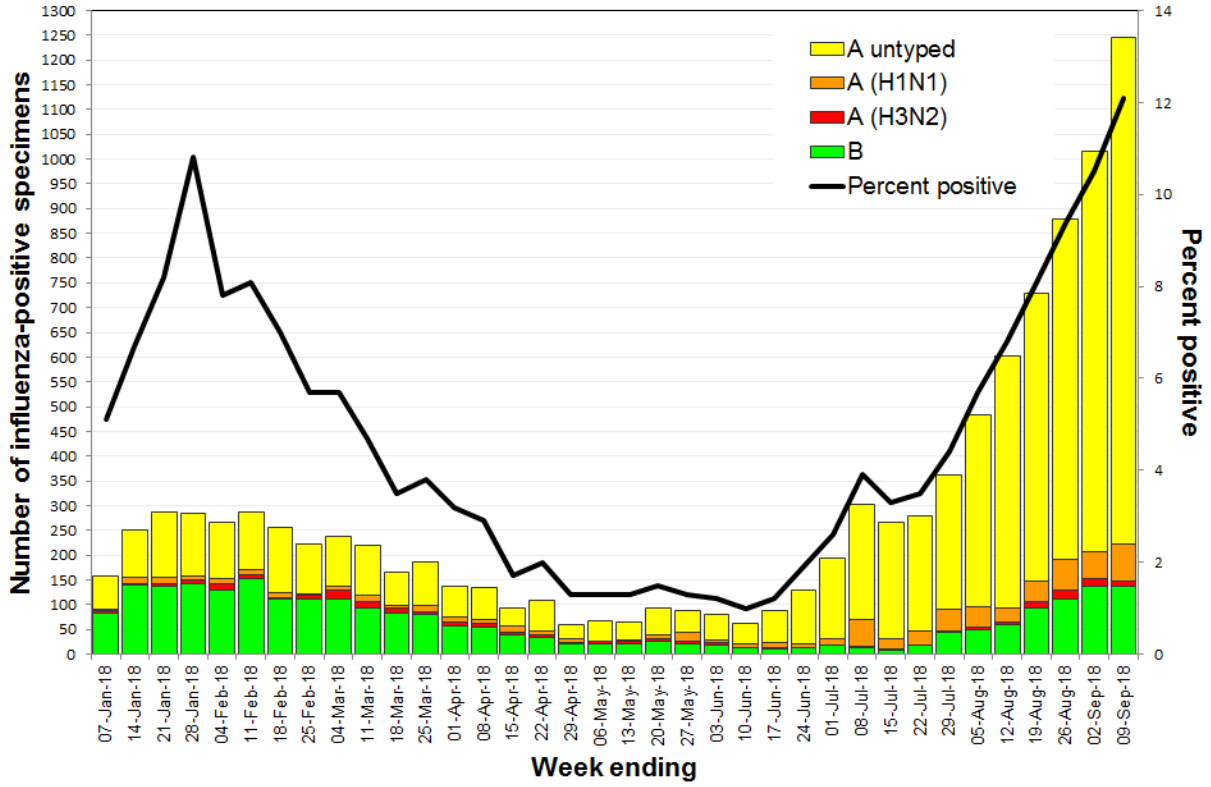
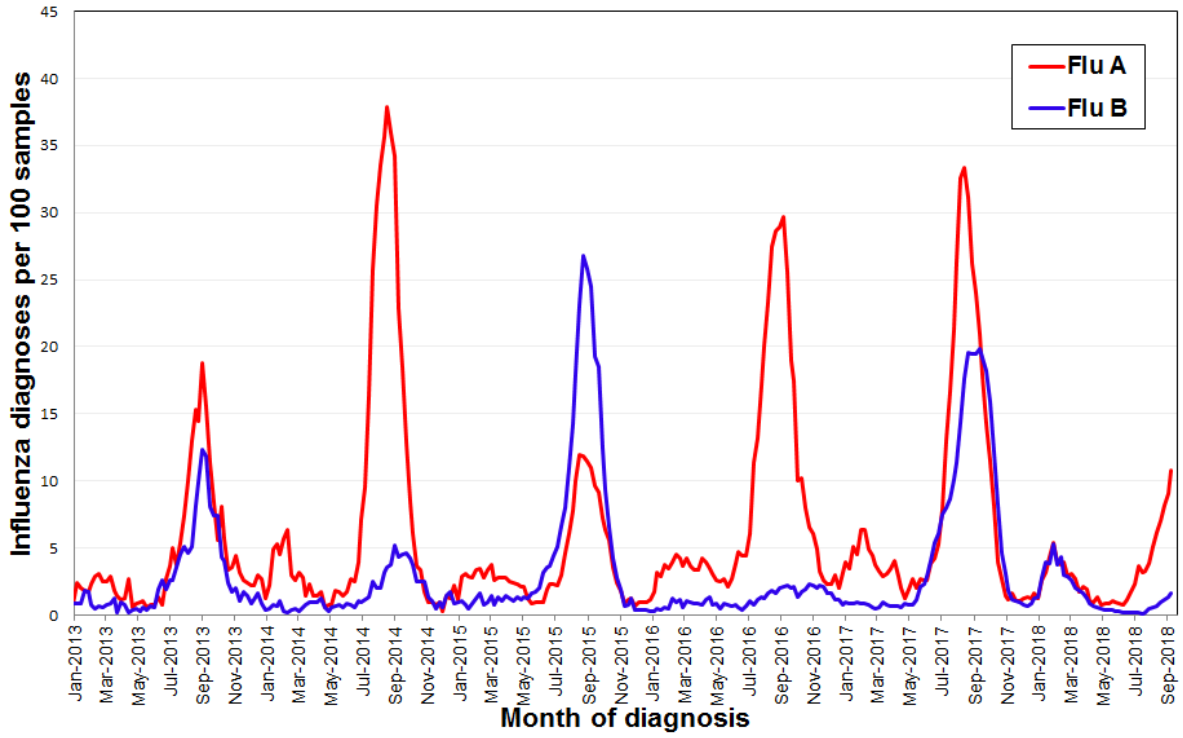


Figure 7: Percentage of laboratory tests positive for influenza A and influenza B by week, 1 January 2013 to 9 September 2018, New South Wales.



Influenza notifications by Local Health District (LHD)

In the week ending 9 September there were 914 notifications of influenza confirmed by polymerase chain reaction (PCR) testing, lower than the 1063 (revised) notifications reported in the previous week and much lower than the 9,039 notifications for the same period in 2017.

Influenza notification rates were lower across the majority of NSW LHDs including the Hunter. There was an increase in notifications in the Central Coast, Sydney and Western Sydney LHDs. Influenza notification rates were highest in Western Sydney, Northern NSW, Hunter New England, South Eastern Sydney and Sydney LHD's.

Table 3: Weekly notifications of laboratory-confirmed influenza by Local Health District.

Local Health District	Week ending 9 Sept 2018		Week ending 2 Sept 2018	
	Number of notifications	Rate per 100 000 population	Number of notifications	Rate per 100 000 population
Central Coast	20	5.81	10	2.91
Far West	0	0	1	3.33
Hunter New England	144	15.44	192	20.59
Illawarra Shoalhaven	30	7.27	27	6.54
Mid North Coast	9	4.07	16	7.24
Murrumbidgee	6	2.47	10	4.12
Nepean Blue Mountains	40	10.54	42	11.07
Northern NSW	51	16.81	62	20.43
Northern Sydney	101	10.8	135	14.44
South Eastern Sydney	122	13.03	136	14.52
South Western Sydney	74	7.39	154	15.38
Southern NSW	12	5.68	6	2.84
Sydney	103	15.22	73	10.79
Western NSW	8	2.83	15	5.32
Western Sydney	194	19.38	184	18.38

Notes: * All data are preliminary and may change as more notifications are received. Excludes notifications based on serology. For further information see the influenza notifications data page.

Influenza outbreaks in institutions

There were two influenza outbreaks in institutions reported this week, both were due to influenza A.

In the year to date there have been 25 laboratory-confirmed influenza outbreaks in institutions reported to NSW public health units, including 23 in residential care facilities (Table 4, Figure 8). Seventeen of the outbreaks have been due to influenza A and eight were due to influenza B.

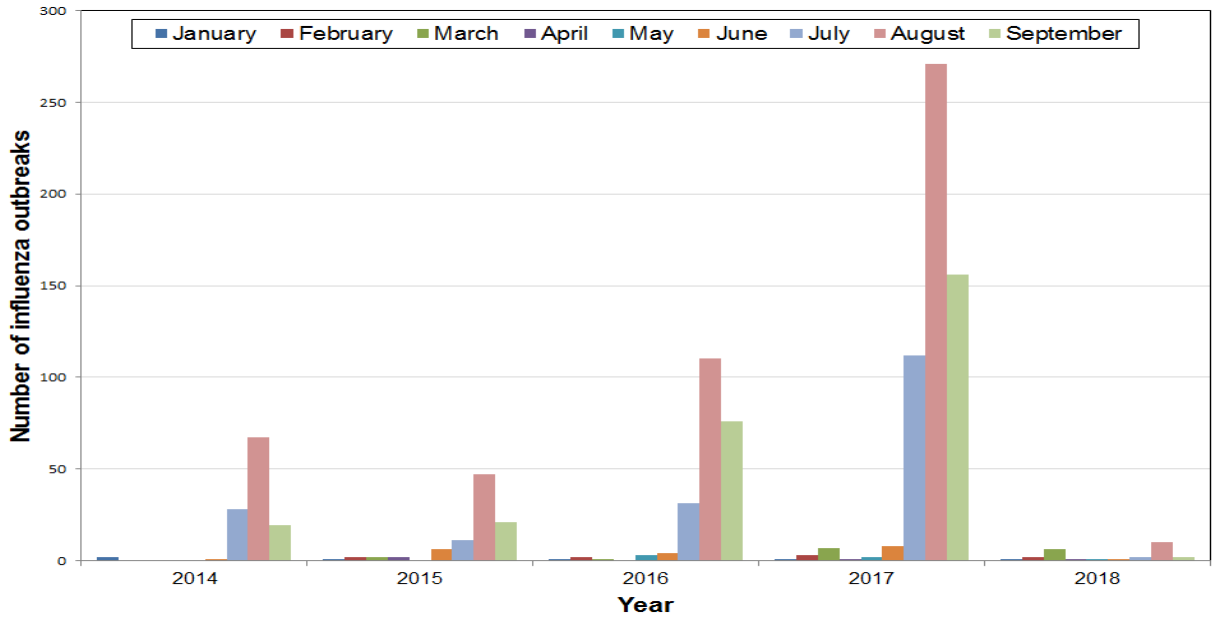
In the 23 influenza outbreaks affecting residential care facilities, at least 177 residents were reported to have had ILI symptoms and 20 required hospitalisation. Overall, there have been five deaths in residents reported which were linked to these outbreaks, all of whom were noted to have other significant co-morbidities.

Table 4: Reported influenza outbreaks in NSW institutions, January 2011 to September 2018.

Year	2011	2012	2013	2014	2015	2016	2017	2018*
No. of outbreaks	4	39	12	120	103	279	588	25

Notes: * Year to date.

Figure 8: Reported influenza outbreaks in NSW residential care facilities by month, 2014 to September 2018.



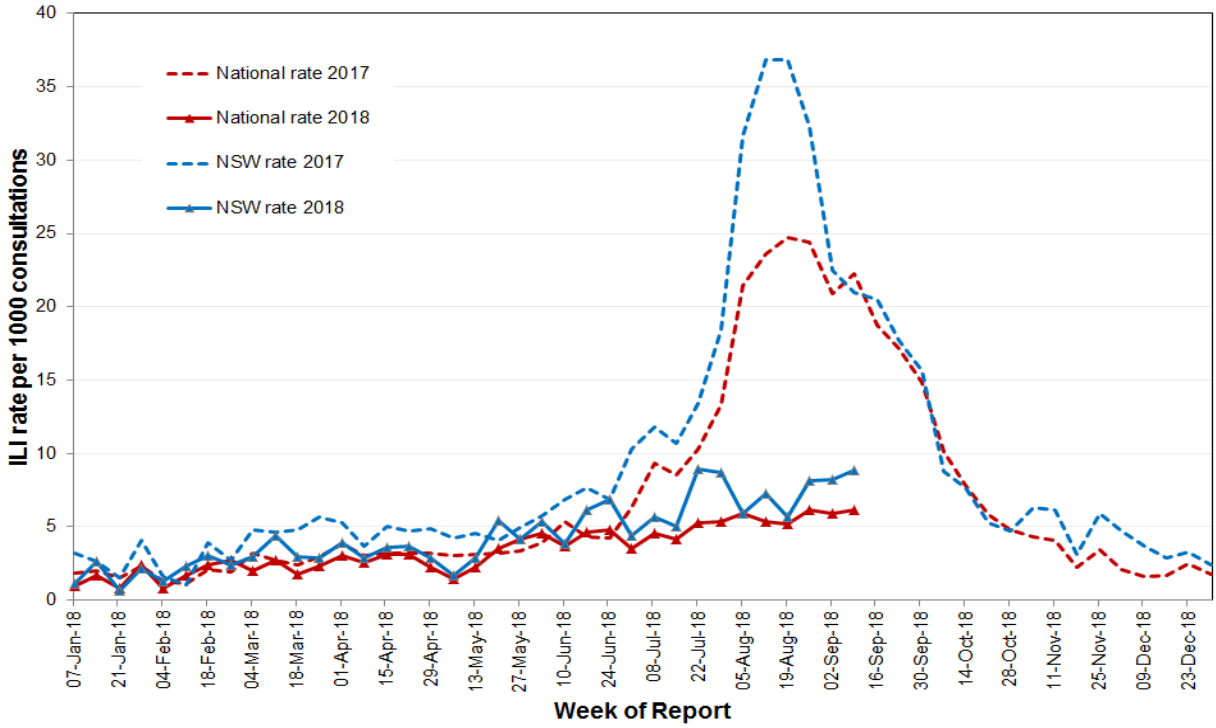
The Australian Sentinel Practices Research Network (ASPREN)

ASPREN is a network of sentinel general practitioners (GPs) run through the Royal Australian College of General Practitioners and the University of Adelaide which has collected de-identified information on influenza-like illness (ILI) and other conditions seen in general practice since 1991.

Participating GPs in the program report on the proportion of patients presenting with an ILI. The number of GPs participating each week varies.

In the week ending 9 September there were ASPREN reports received from 78 NSW GPs. The reported consultation rate for ILI per 1000 consultations was 8.83 (Figure 9), similar to the previous week (8.26, revised). For further information see the ASPREN website.

Figure 9: ASPREN – NSW and National GP weekly ILI rates per 1000 consultations – 2018 to the week ending 9 September, compared to 2017 weekly rates.



FluTracking.net

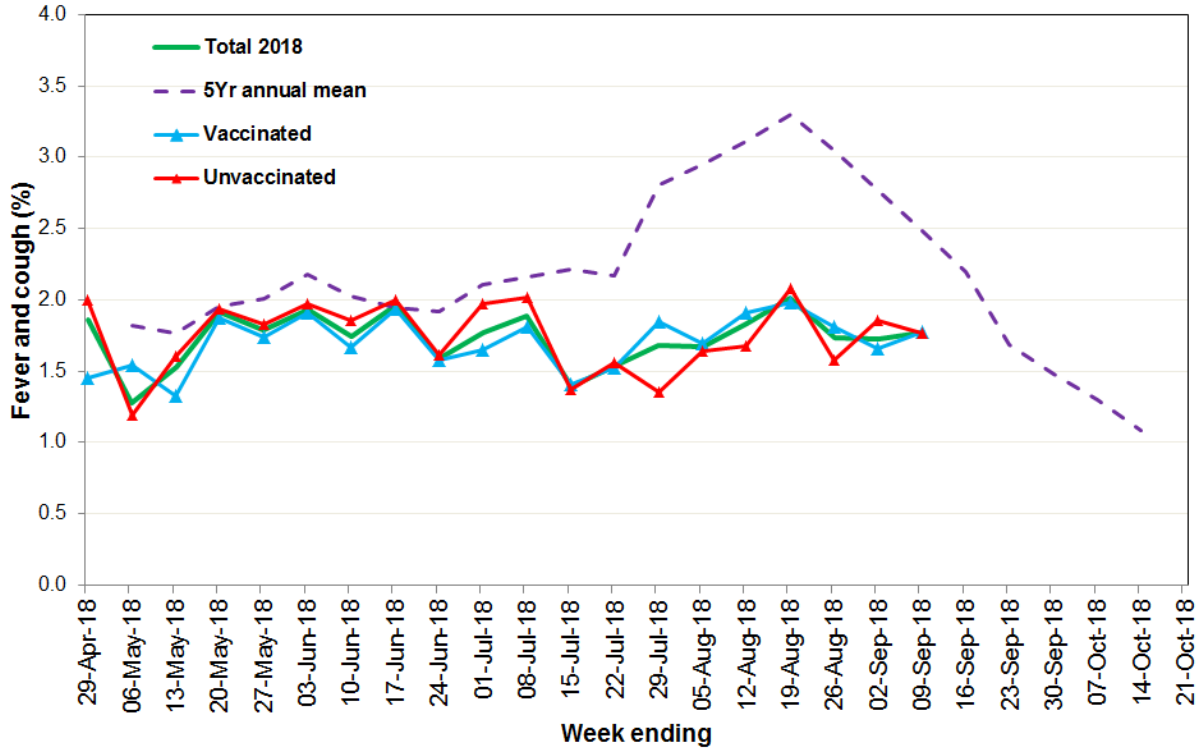
FluTracking.net is an online health surveillance system to detect epidemics of influenza. It is a project of the University of Newcastle, the Hunter New England Local Health District and the Hunter Medical Research Institute.

Participants complete a simple online weekly survey which is used to generate data on the rate of ILI symptoms in communities.

In the week ending 9 September FluTracking received reports for 11,066 people in NSW with the following results:

- 1.8% of respondents reported fever and cough, similar to the previous week (1.7%, revised) and well below the five year annual mean (2.5%) (Figure 10).
- Among respondents who reported having been vaccinated against influenza in 2018, 1.8% reported fever and cough, the same as the 1.8% rate among unvaccinated respondents (Figure 10).
- 1.0% of all respondents reported fever, cough and absence from normal duties, lower than the previous week (1.1%, revised).

Figure 10: FluTracking – Percent of NSW participants reporting fever and cough by vaccination status and week, 2018 to the week ending 9 September, compared to the 5 year mean.



Notes: Participants are not considered vaccinated until at least two weeks has elapsed since their recorded time of vaccination.

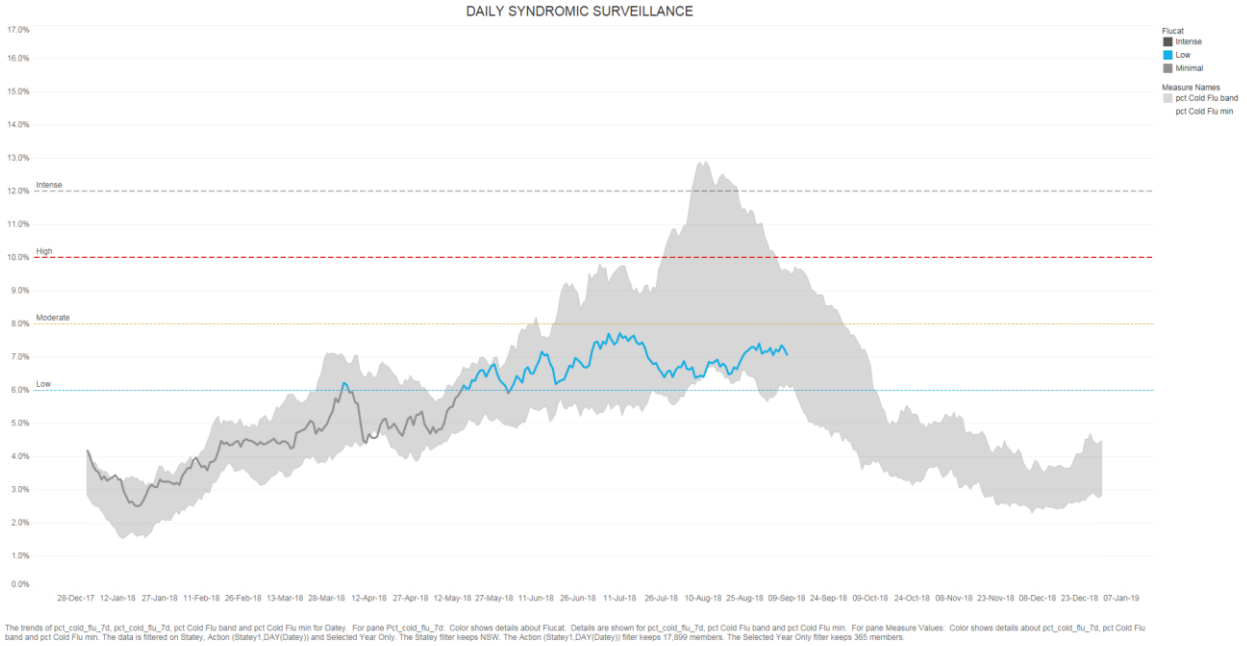
For further information on the project and how to participate please see the FluTracking website.

Healthdirect Australia

Healthdirect Australia was first introduced in 2007 and is a national, government-owned, not-for profit organisation that delivers a range of telehealth and digital health services 24 hours a day, 7 days a week across Australia. Healthdirect Australia collects data based on calls to the Healthdirect helpline (1800 022 222). This data includes the number of callers who report symptoms consistent with influenza-like illness (ILI).

In the week ending 9 September the number of ILI-related calls to Healthdirect Australia for NSW decreased slightly but remained in the low-moderate range of activity (Figure 11).

Figure 11: Healthdirect Australia – weekly ILI-related calls as a proportion of all calls for NSW, 2018 to the week ending 9 September compared to the weekly range between 2012 and 2017.



For further information see the Healthdirect Australia flu trends website.

National and International Influenza Surveillance

National Influenza Surveillance

The fortnightly *Australian Surveillance Report No.7,* with data up to 26 August 2018, noted the following:

- **Activity** – Person to person transmission of influenza and influenza-like illness (ILI) in the community is low and remains within or below the bounds of previous years. Rhinovirus was the most common respiratory virus detected in patients presenting with ILI to sentinel general practices this fortnight.
- **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.
- **Impact** – Currently, the impact of circulating influenza on society is low.
- **Virology** – This fortnight, the majority of confirmed influenza cases reported nationally were influenza A (85%).

Information provided by the WHO Collaborating Centre for Reference and Research on Influenza noted that of the 36 influenza B samples submitted from NSW for typing so far this year, only one was typed as in the B/Victoria lineage, with the remainder in the B/Yamagata lineage. Approximately two-thirds of the influenza A samples submitted 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 3 September 2018 provides data up to 19 August. In the temperate zones of the southern hemisphere, influenza activity remained elevated in South America and continued to decrease in Southern Africa. Influenza activity remained below seasonal

threshold in Australia and New Zealand and at inter-seasonal levels in most of temperate zone of the northern hemisphere. Worldwide, seasonal influenza subtype 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 20 July 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, one new human infection with an influenza A(H3N2) variant virus was reported from the United States. Sequence analysis confirmed that the virus was closely related to influenza viruses detected in swine in 2017 and 2018 and that are known to circulate in North America. Since 2011, 427 human infections with influenza A(H3N2)v viruses have been reported to the U.S. CDC, most of which have been related to swine exposure at agricultural fairs.

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.

Composition of 2018 Australian influenza vaccines

The WHO Consultation on the Composition of Influenza Vaccines for the 2018 Southern Hemisphere was held in Melbourne on 25-27 September 2017.

Following the Consultation, WHO announced its recommendations for the composition of trivalent vaccines for use in the 2018 Southern Hemisphere influenza season, which includes changes in the influenza A(H3N2) component, as follows:

- an A/Michigan/45/2015 (H1N1)pdm09-like virus
- an A/Singapore/INFIHM-16-0019/2016 (H3N2)-like virus [7]
- a B/Phuket/3073/2013-like virus (Yamagata lineage)

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/Brisbane/60/2008-like virus (Victoria lineage).[8]

WHO has 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.

More details about the most recent influenza vaccine recommendations can be found at: http://www.who.int/influenza/vaccines/virus/en/.

Information for immunisation providers on the influenza vaccines available for use in Australia in 2018, including vaccines used as part of the National Immunisation Program can be found at: https://beta.health.gov.au/resources/publications/atagi-advice-on-seasonal-influenza-vaccines-in-2018 .

Information on NSW seasonal influenza vaccination activities in 2018, 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 .

Report Notes:

[1] Notes for trend comparisons with the previous week:

		Trend in Cases	Trend in Presentations
►	Stable	<10% change or <20 cases change	<10% change or <40 presentations change
▼	Decrease	10% or greater decrease	10% or greater decrease
▲	Increase	10-20% increase	10-20% increase
▲	Higher increase	>20% increase	>20% increase

[2] *All Respiratory, fever and unspecified infections* presentations as a percentage of all unplanned emergency department presentations in participating hospitals in the local health district.

[3] 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.

[4] 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, which accounted for 83% of all NSW ED presentations in the 2016/2017 financial year. The coverage is lower in rural EDs. Data is continuously updated.

[5] 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'.

[6] Preliminary laboratory data is provided by participating sentinel laboratories on a weekly basis and are subject to change. Point-of-care test results have been included since August 2012 but serological diagnoses are not included. 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, VDRLab

[7] This replaces A/Hong Kong/4801/2014 (H3N2)-like virus used in the 2017 seasonal influenza vaccines.

[8] This B/Brisbane strain had been part of the WHO recommendations for 2017 southern hemisphere trivalent influenza vaccines but has been replaced by the B/Phuket strain for 2018 trivalent vaccines.