

Influenza Surveillance Weekly Report

Week 39: 24 to 30 September 2018

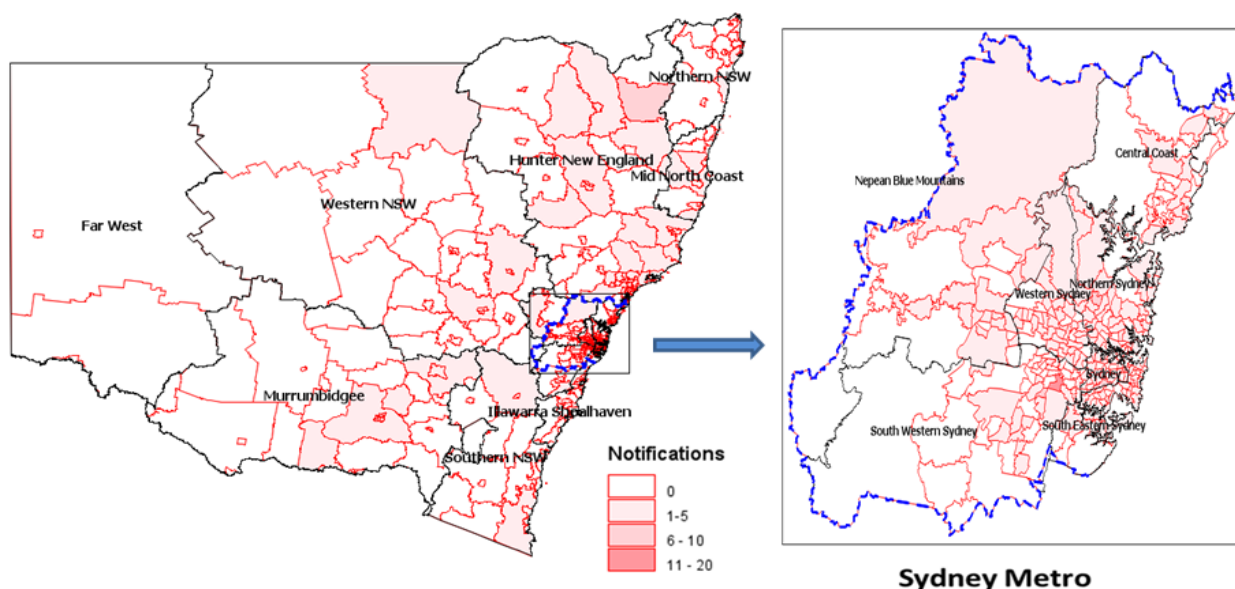
Key Points

- ▶ Influenza seasonal activity is decreasing and should soon reach inter-seasonal levels
- ▶ The influenza A(H1N1) strain continues to be the most common strain identified
- ▶ Respiratory presentations to NSW emergency departments are stable but trending down
- ▶ Two changes in the composition of Southern Hemisphere vaccines for 2019 announced

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	32	▶	376	▶	14%
Far West	1	▶	61	▶	14%
Hunter New England	98	▼	854	▶	14%
Illawarra Shoalhaven	44	▶	360	▶	13%
Mid North Coast	18	▶	292	▶	16%
Murrumbidgee	14	▶	284	▶	14%
Nepean Blue Mountains	49	▶	271	▶	13%
Northern NSW	21	▶	316	▶	15%
Northern Sydney	105	▼	517	▶	13%
South Eastern Sydney	64	▶	736	▼	13%
South Western Sydney	49	▶	757	▶	14%
Southern NSW	5	▶	81	▶	11%
Sydney	46	▼	421	▶	13%
Western NSW	9	▶	258	▶	15%
Western Sydney	127	▼	782	▶	15%
New South Wales	675	▼	6366	▶	14%

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



Summary for this reporting week:

- ▶ [Hospital surveillance](#) – respiratory presentations to EDs were all within the usual range for this time of year; ED presentations for *pneumonia* and admissions to critical care for *pneumonia and ILI* were slightly increased
- ▶ [Laboratory surveillance](#) – the influenza laboratory test positive rate was lower again at 8.6%; influenza A(H1N1) remains the most common strain
- ▶ [Community surveillance](#) – influenza activity continues to decline for NSW overall; influenza outbreaks in residential care facilities continue to be reported
- ▶ [National surveillance](#) – influenza activity remained low nationally
- ▶ [Death surveillance](#) – the *pneumonia or influenza* death rate has remained below the predicted seasonal baseline

Hospital Surveillance

NSW emergency department (ED) presentations for respiratory illness

Source: PHREDSS⁴

For the week ending 30 September 2018:

- Presentations for *All respiratory illness, fever and unspecified infections* decreased further and were within the usual range for this time of year (Figure 1, Table 1). The proportion of these presentations to all unplanned ED presentations was similar to the previous week at 13.9 per 100 presentations and was below the seasonal range (Figure 2).
- ED presentations for *ILI* decreased but admissions increased slightly; both remained within the usual range for this time of year (Figure 3, Table 1).
- ED presentations for *pneumonia*⁵ increased while admissions decreased; both were within their usual ranges for this time of year (Table 1).
- *Pneumonia and ILI* presentations (ED) requiring admission to critical care increased but were within the usual range for this time of year (Table 1).
- ED presentations for *asthma* increased whilst presentations for *bronchiolitis* decreased. Both were within the usual range (Figure 4, Table 1).

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

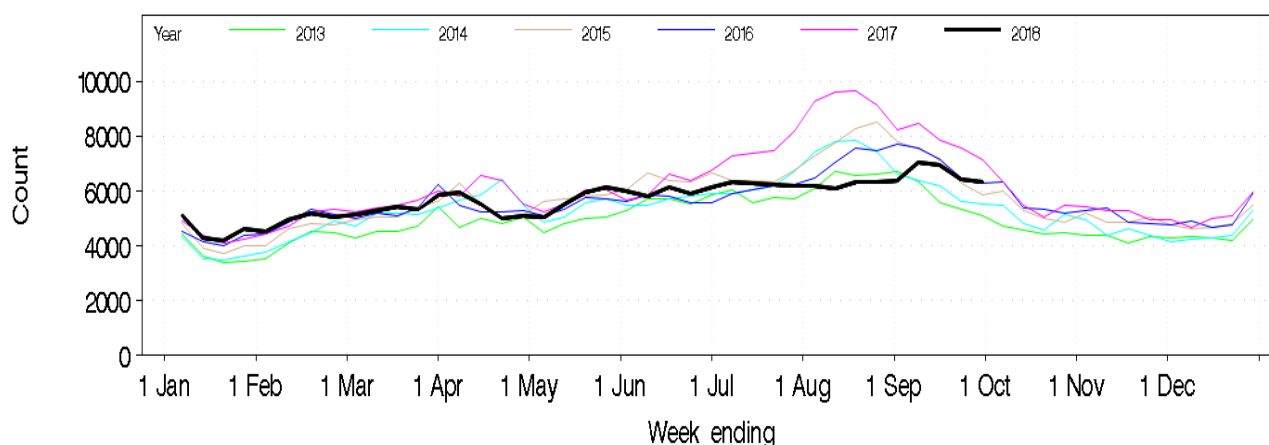


Figure 2: Total weekly counts of ED visits for *All respiratory illness, fever and unspecified infections*, all ages, as a rate per 100 ED visits, from 1 January – 30 September, 2018 (black line), compared with the range of season rate curves for the 5 previous years (white zone) aligned to the PHREDSS season start in 2018 (week 29).

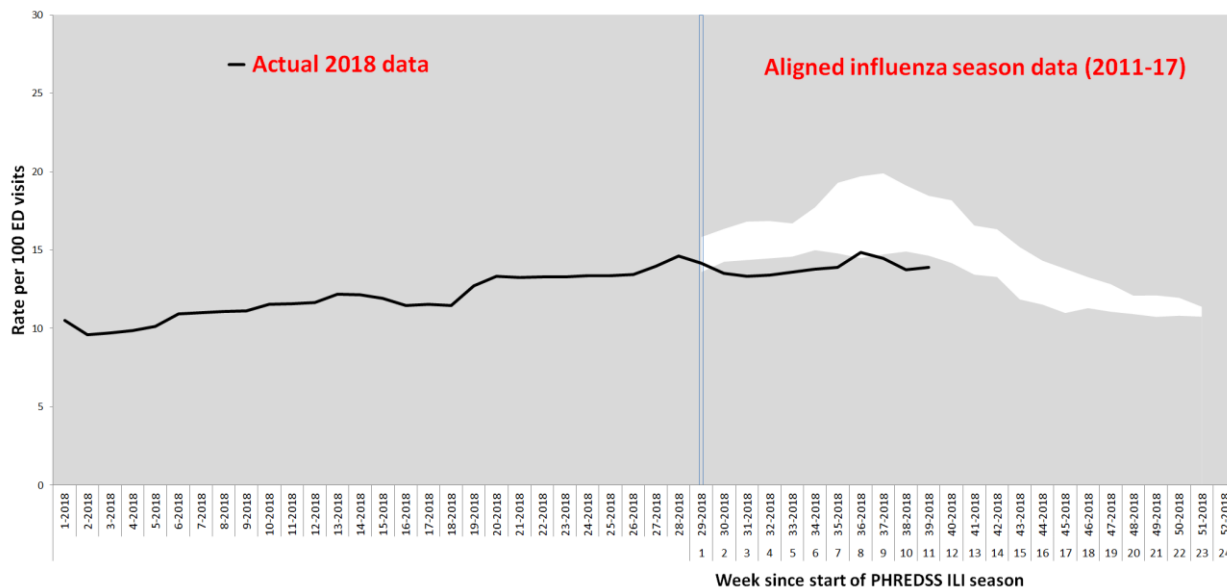


Figure 3: Total weekly counts of ED visits for *influenza-like-illness* that were admitted, all ages, from 1 January – 30 September, 2018 (black line), compared with the 5 previous years (coloured lines).

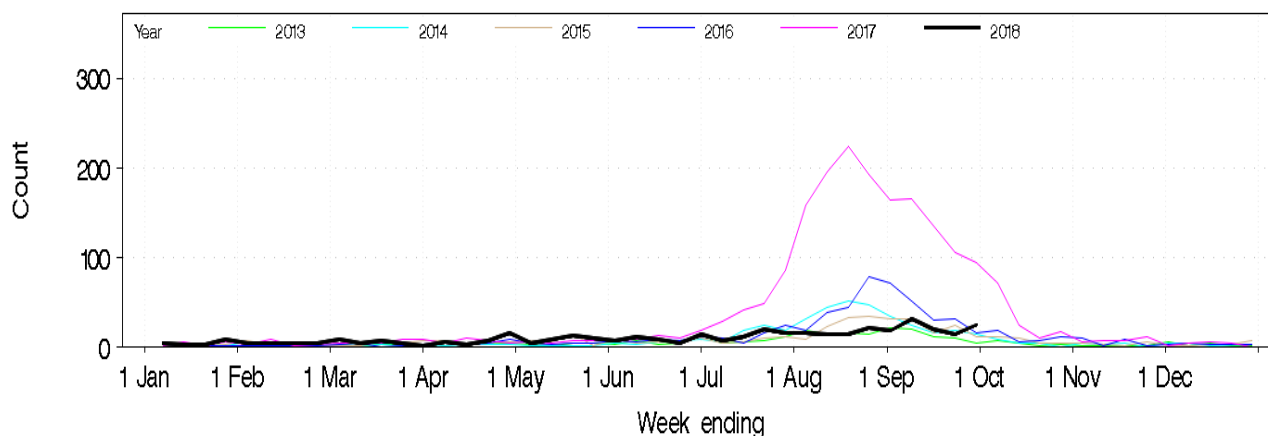


Figure 4: Total weekly counts of ED visits for *bronchiolitis*, all ages, from 1 January – 30 September, 2018 (black line), compared with the 5 previous years (coloured lines).

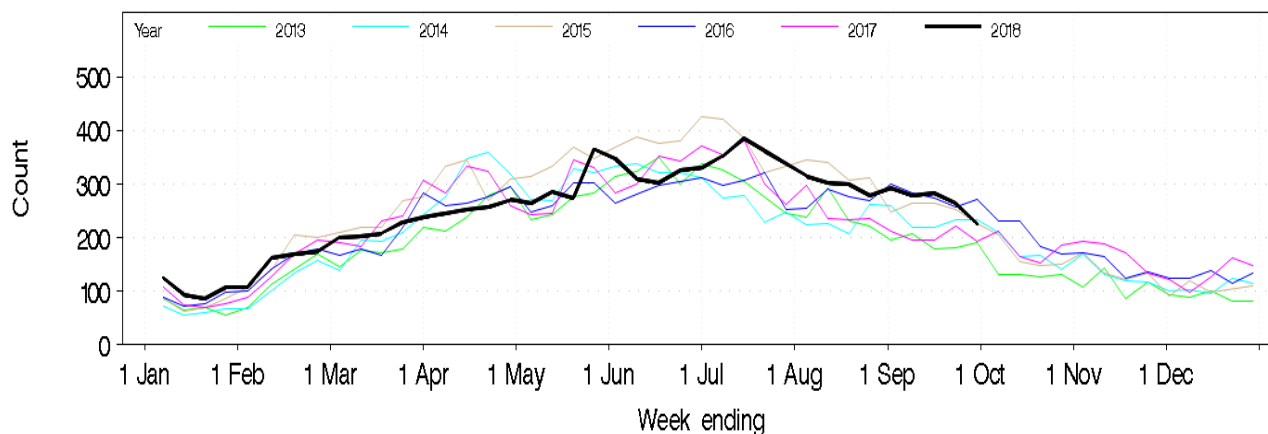


Table 1: Weekly emergency department respiratory illness summary, week ending 30 September 2018.

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)	Decreased (79)	Within (46-332)			The NSW daily index of increase for ILI presentations was 16.0 on 30 September.
	ILI admissions	Increased (25)	Within (5-94)			
	Pneumonia	Increased (533)	Within (369-560)			
	Pneumonia admissions	Decreased (369)	Within (285-412)			
	Pneumonia and ILI critical care admissions	Increased (30)	Within (18-39)			
	Asthma	Increased (385)	Within (374-469)			
	Bronchiolitis	Decreased (225)	Within (191-270)			Bronchiolitis is a disease of infants.
	All respiratory illness, fever and unspecified infections	Decreased (6,326)	Within (5,113-7,112)			
Ambulance	Breathing problems	Increased (2,100)	Within (1,677-2,424)			

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.

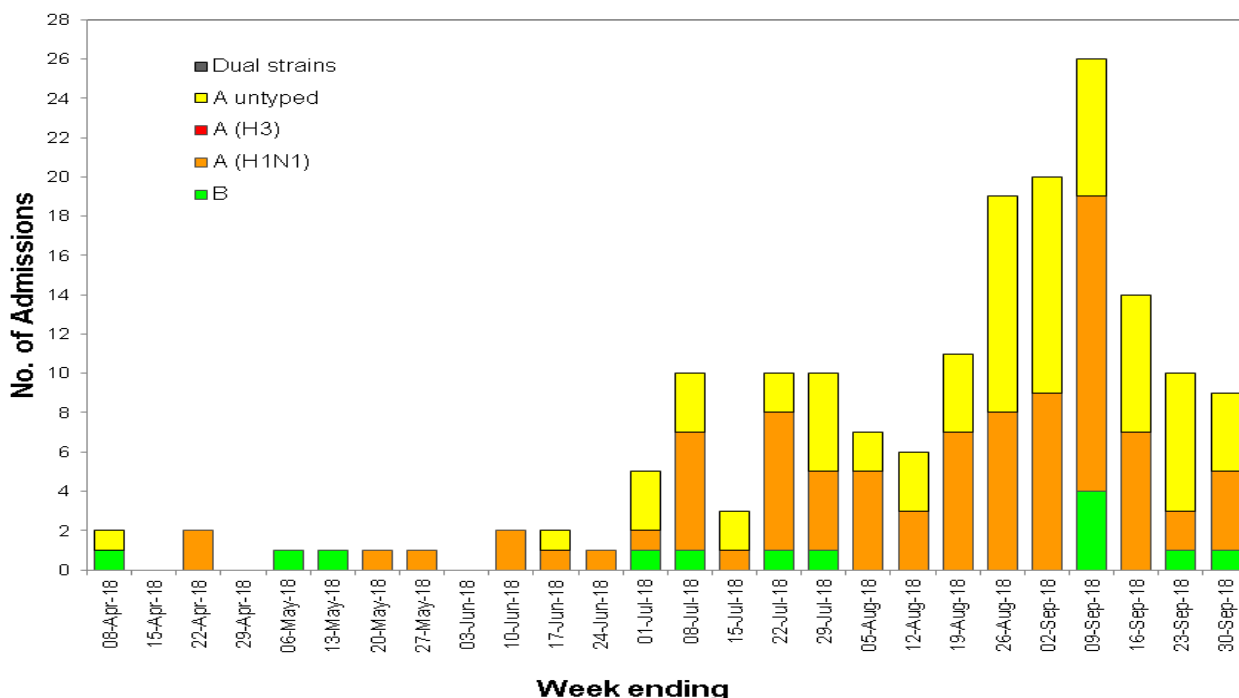
In NSW, three hospitals participate in providing weekly FluCAN data: Westmead Hospital, John Hunter Hospital and the Children's Hospital at Westmead.

In the week ending 30 September there were nine new influenza admissions to NSW sentinel hospitals (Figure 5).

Since 1 April 2018, there have been 173 hospital admissions reported for influenza; 160 due to influenza A (including 83 A(H1N1)) and 13 due to influenza B (Figure 5). Of these admissions, 101 were paediatric cases (<16 years of age) and 72 were in adults. Twelve cases (83% 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.

Figure 5: FluCAN – Confirmed influenza hospital admissions in NSW, 1 April to 30 September 2018.



Laboratory Surveillance

In the week ending 30 September the number and proportion of respiratory specimens reported by NSW sentinel laboratories⁶ which tested positive for influenza continued to trend down and should reach inter-seasonal levels in the next few weeks (Table 2, Figure 6).

Overall, 8.6% of tests for respiratory viruses were positive for influenza (Figure 6), lower than the previous week (9.1%). Influenza A strains accounted for 90% 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 30 September 2018.

Notes:

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
Week ending																	
09/09/2018	10704	1185	(11.1%)	11	(0.9%)	79	(6.7%)	1100	(92.8%)	140	(1.3%)	375	343	419	1347	496	97
16/09/2018	10226	1035	(10.1%)	15	(1.4%)	63	(6.1%)	957	(92.5%)	91	(0.9%)	412	352	432	1315	531	124
23/09/2018	9853	843	(8.6%)	16	(1.9%)	45	(5.3%)	782	(92.8%)	58	(0.6%)	396	436	392	1359	512	176
30/09/2018	8539	666	(7.8%)	11	(1.7%)	36	(5.4%)	619	(92.9%)	70	(0.8%)	397	409	314	1376	406	140

* 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 30 September 2018.

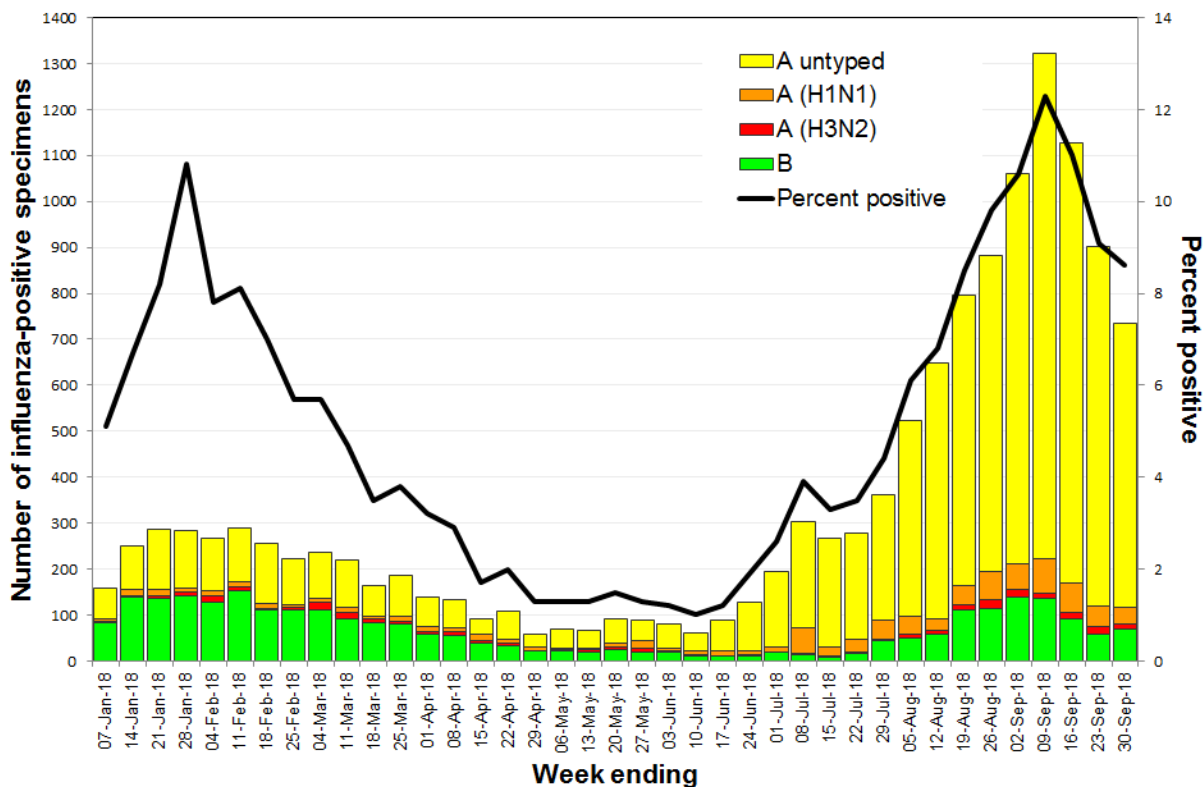
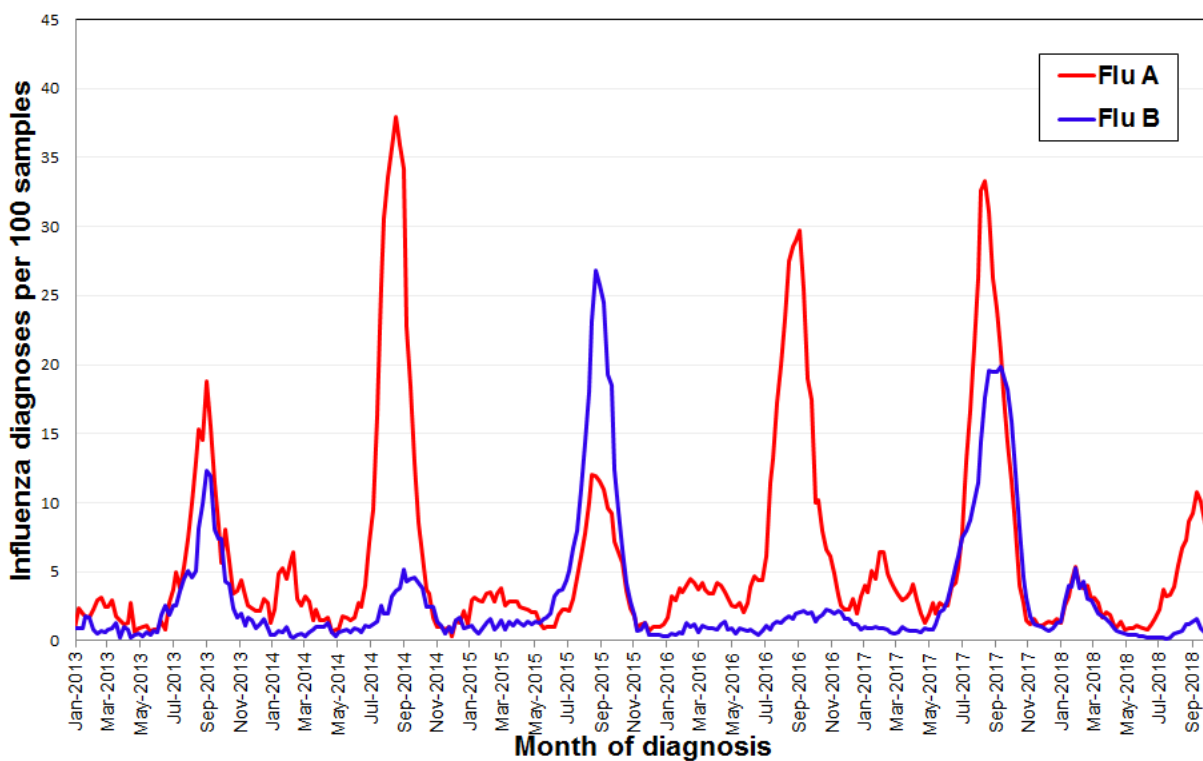


Figure 7: Percentage of laboratory tests positive for influenza A and influenza B by week, 1 January 2013 to 30 September 2018, New South Wales.



Influenza notifications by Local Health District (LHD)

In the week ending 30 September there were 675 notifications of influenza confirmed by polymerase chain reaction (PCR) testing, lower than the 910 (revised) notifications reported in the previous week and much lower than the 4,794 notifications for the same period in 2017.

Influenza notification rates were either stable or declining across the majority of NSW LHDs this week. Influenza notification rates were highest in the Nepean Blue Mountains, Western Sydney, Northern Sydney, Illawarra Shoalhaven and Hunter New England LHD's.

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

Local Health District	Week ending 30 Sept 2018		Week ending 23 Sept 2018	
	Number of notifications	Rate per 100 000 population	Number of notifications	Rate per 100 000 population
Central Coast	32	9.3	40	11.62
Far West	1	3.33	0	0
Hunter New England	98	10.51	121	12.98
Illawarra Shoalhaven	44	10.66	33	8
Mid North Coast	18	8.14	15	6.79
Murrumbidgee	14	5.77	11	4.54
Nepean Blue Mountains	49	12.92	30	7.91
Northern NSW	21	6.92	28	9.23
Northern Sydney	105	11.23	144	15.4
South Eastern Sydney	64	6.83	84	8.97
South Western Sydney	49	4.89	113	11.28
Southern NSW	5	2.37	13	6.16
Sydney	46	6.8	78	11.53
Western NSW	9	3.19	8	2.83
Western Sydney	120	11.99	192	19.18

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 four influenza A outbreaks in institutions reported this week, three in residential care facilities and one in a child care centre.

In the year to date there have been 32 laboratory-confirmed influenza outbreaks in institutions reported to NSW public health units, including 29 in residential care facilities (Table 4, Figure 8). Twenty-three of the outbreaks have been due to influenza A and nine were due to influenza B.

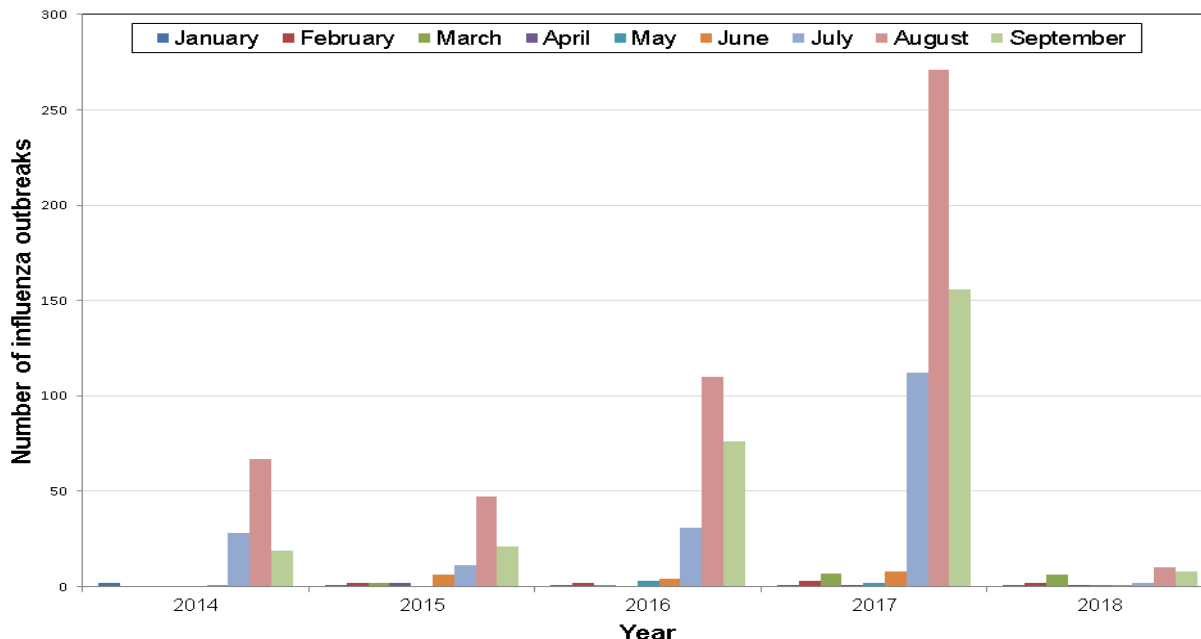
In the 29 influenza outbreaks affecting residential care facilities, at least 227 residents were reported to have had ILI symptoms and 25 residents required hospitalisation. Overall, there have been six deaths in residents reported which were linked to these outbreaks, all of whom were noted to have 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	32

Notes: * Year to date.

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



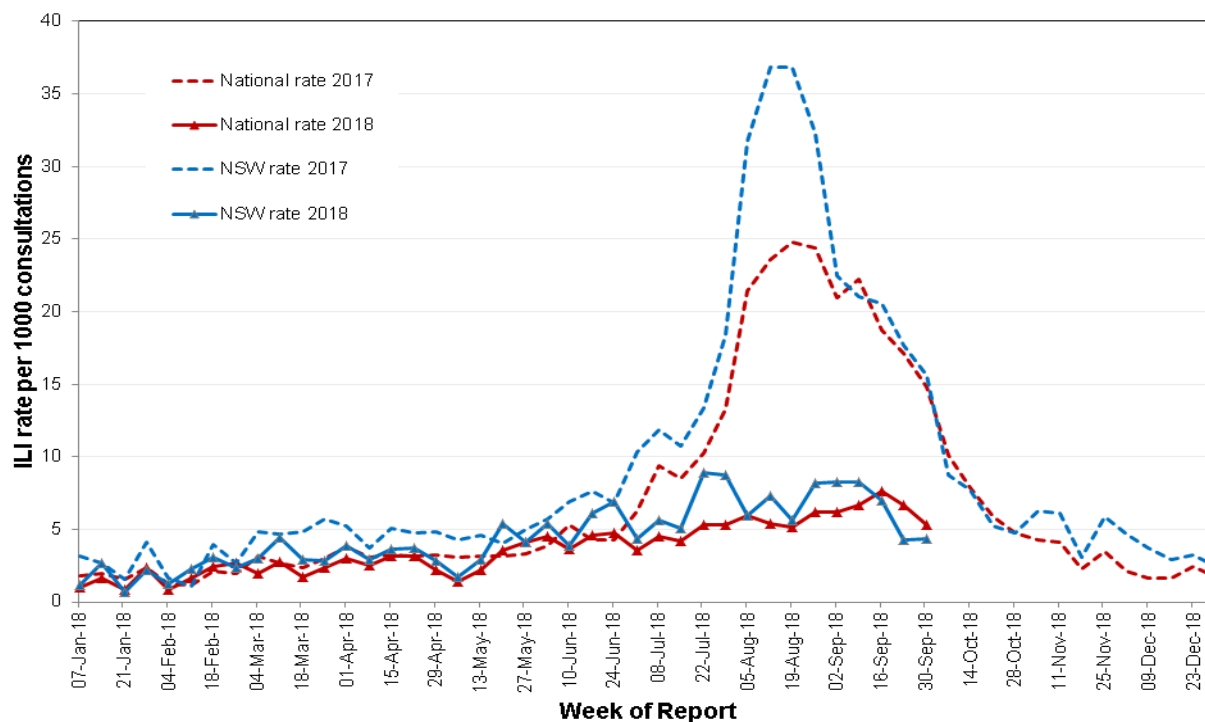
The Australian Sentinel Practices Research Network (ASPREN)

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 30 September there were ASPREN reports received from 79 NSW GPs. The reported consultation rate for ILI per 1000 consultations was 4.37 (Figure 9), similar to the previous week (4.24, 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 30 September, compared to 2017 weekly rates.



FluTracking.net

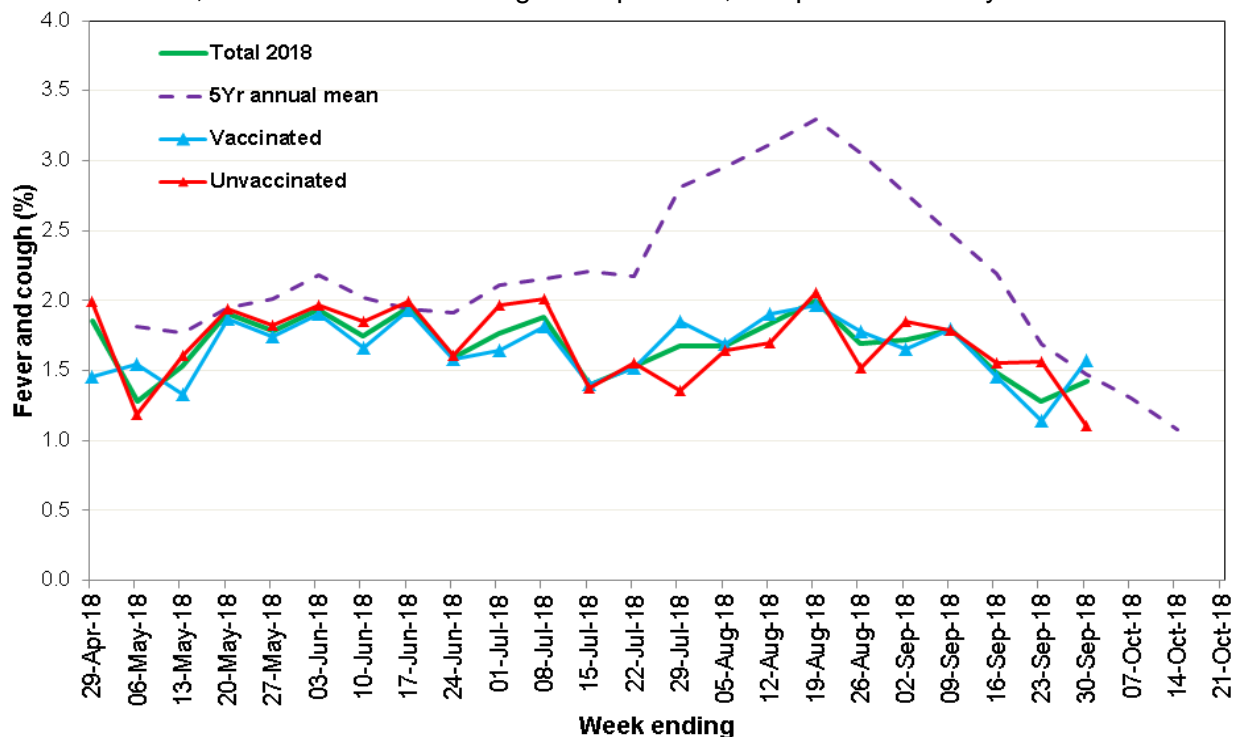
FluTracking.net is an online health surveillance system to detect epidemics of influenza. It is a project of the University of Newcastle, the Hunter New England Local Health District and the Hunter Medical Research Institute.

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 30 September FluTracking received reports for 10,151 people in NSW with the following results:

- 1.4% of respondents reported fever and cough, similar to the previous week (1.3%) and just below the five year annual mean (1.5%) (Figure 10).
- Among respondents who reported having been vaccinated against influenza in 2018, 1.6% reported fever and cough, higher than the 1.1% rate among unvaccinated respondents (Figure 10).
- 0.9% of all respondents reported fever, cough and absence from normal duties, the same as the previous week.

Figure 10: FluTracking – Percent of NSW participants reporting fever and cough by vaccination status and week, 2018 to the week ending 30 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.

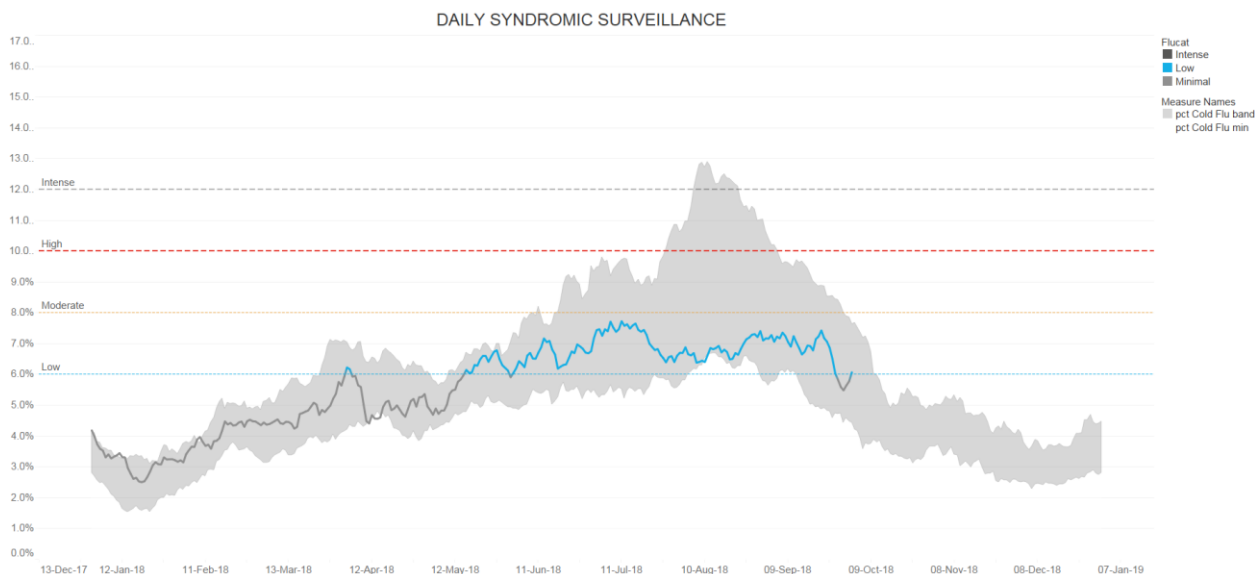
For further information on the project and how to participate please see the [FluTracking](#) website.

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 30 September the number of ILI-related calls to Healthdirect Australia for NSW decreased and 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 30 September compared to the weekly range between 2012 and 2017.



The trends of pct_cold_flu_7d, pct_cold_flu_7d, pct Cold Flu band and pct Cold Flu min for Datey. For pane Pct_cold_flu_7d Color shows details about Fluicat. Details are shown for pct_cold_flu_7d, pct Cold Flu band and pct Cold Flu min. For pane Measure Values. Color shows details about pct_cold_flu_7d, pct Cold Flu band and pct Cold Flu min. The data is filtered on Statey, Action (Statey1, DAY(Datey)) and Selected Year Only. The Statey filter keeps NSW. The Action (Statey1, DAY(Datey)) filter keeps 17,899 members. The Selected Year Only filter keeps 365 members.

For further information see the [Healthdirect Australia](#) flu trends website.

Deaths with *pneumonia or influenza* reported on the death certificate

Deaths registration data is routinely reviewed for deaths attributed to 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.

Due to delays in the death registration process, death data for recent weeks are highly variable. For this reason, death data from the three most recent weeks are not included in the report.

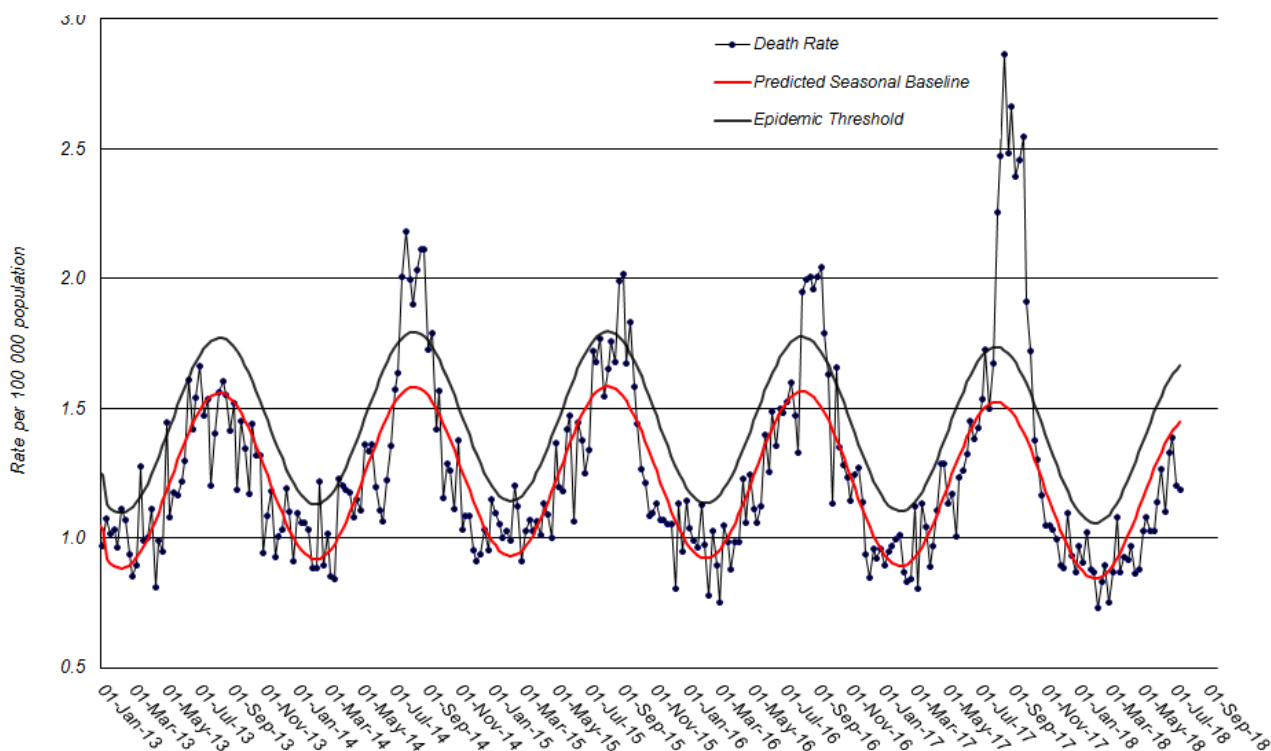
For the week ending 14 September 2018:

- The rate of deaths attributed to *pneumonia or influenza* was 0.20 per 100 000 NSW population, well below the epidemic threshold of 1.60 per 100 000 population (Figure 12).

For the year up to 14 September 2018, *pneumonia or influenza* deaths have remained below the epidemic threshold. The death rate has also remained below the predicted seasonal baseline during the winter months, in stark contrast to the previous year where the death rate exceeded the epidemic threshold for many weeks (Figure 12).

Only 27 of the 35,152 death certificates mentioned influenza; all deaths have been in people aged over 55 years with the exception of one death in a child. A total of 2,958 (8.4%) of the death certificates mentioned pneumonia.

Figure 12: Rate of deaths classified as *influenza or pneumonia* per 100 000 NSW population, 2013 – 14 September 2018.



Source: NSW Registry of Births, Deaths and Marriages.

*** Notes on interpreting death data:**

- (a) The number of deaths mentioning “Pneumonia or influenza” is reported as a rate per 100,000 NSW population. Using the NSW population provides a more stable and reliable denominator than deaths from all causes. This is because pneumonia and influenza are known to contribute to increases in deaths from non-respiratory illnesses, such as deaths due to ischaemic heart disease. As the number of these deaths will increase with rises in influenza activity, the actual effect of influenza on mortality rates will be obscured if all-cause mortality is used as the denominator. This limitation is avoided by using the NSW population, which is relatively constant throughout the year, as the denominator.
- (b) Deaths referred to a coroner during the reporting period may not be available for analysis. Deaths in younger people may be more likely to require a coronial inquest. Therefore influenza-related deaths in younger people may be under-represented in these data.
- (c) 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. Previous weekly rates may also change due to longer delays in reporting some deaths.

National and International Influenza Surveillance

National Influenza Surveillance

The fortnightly *Australian Surveillance Report No.9*, with data up to 23 September 2018, noted the following:

- **Activity** – In the last fortnight there were declines in the majority of indicators for person to person transmission of influenza and influenza-like illness (ILI), signalling that nationally the season peaked in recent weeks or is nearing its peak. This is the first fortnight this season where influenza was the dominant cause of ILI among patients attending sentinel GPs and samples tested through sentinel laboratories.
- **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, as measured through the proportion of people with ILI taking time off work, and the burden on hospitals, is low.

- **Virology** – In this fortnight the majority of confirmed influenza cases reported nationally were influenza A (88%), and where subtyping data were available, influenza A(H1N1) was the dominant subtype.
- **At-risk populations** – Children aged less than 10 years appear to be more commonly infected with influenza; however, the severity of illness in this population is on par with other age-groups.

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 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 1 October 2018](#) provides data up to 16 September. In the temperate zones of the southern hemisphere, influenza activity appeared to decrease in South America and Southern Africa. Influenza activity remained at low seasonal levels in Australia and New Zealand and at inter-seasonal levels in most of temperate zone of the northern hemisphere. Increased influenza detections were reported in some countries of Southern and South-East Asia. 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 2019 Australian influenza vaccines

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 virus⁷
- a B/Colorado/06/2017-like virus (B/Victoria lineage)⁸

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)⁸.

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

http://www.who.int/influenza/vaccines/virus/recommendations/2019_south/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, Lavery Pathology, Medlab, SydPath, VDRLab

⁷ This replaces A/Singapore/INFIMH-16-0019/2016 (H3N2)-like virus used in the 2018 seasonal influenza vaccines.

⁸ 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.