

NSW Health Influenza Surveillance Report

Week 35: 29 August to 4 September 2016

Summary:

- **Seasonal influenza activity remains high but is at or just past its peak for 2016.**
- **Influenza A(H3N2) remains the dominant circulating influenza strain.**

In this reporting week:

- [Hospital Surveillance](#) – influenza like illness (ILI) presentations to selected emergency departments decreased but remains at high levels. The index of increase indicates that activity peaked on 28 August 2016.
- [Laboratory surveillance](#) – the total number of influenza isolations rose slightly this week with the proportion of respiratory samples positive for influenza at 31.7%.
- [Community surveillance](#) – influenza notifications continued to be high across most local health districts (LHD). General Practice and community-based surveillance systems suggests decreasing ILI activity. Influenza activity continues to impact heavily on the aged care sector with 30 new respiratory outbreaks reported this week in residential aged care facilities.
- [Deaths](#) - The NSW Registry of Births, Deaths, and Marriages have recorded 46 deaths in association with influenza in 2016. The rate of deaths classified as “pneumonia and influenza” remained low.
- [National and international influenza surveillance](#) – the most recent national reports suggest influenza activity at the national level continued to increase, with most regions of Australia reporting widespread and increasing activity. Current influenza strains are well matched to the 2016 influenza vaccines.

About this report:

Health Protection NSW collects and analyses surveillance data on influenza and other respiratory viruses. Surveillance reports are produced weekly commencing in May, and continuing until the end of the influenza season. Monthly reports are produced throughout the rest of the year.

The influenza surveillance reports include data from a range of surveillance systems and sources concerned with Emergency Department illness surveillance, laboratory (virological) surveillance, and community illness surveillance. Pneumonia and influenza mortality data are also monitored and reported upon periodically.

For further information on influenza see the [NSW Health Influenza website](#).

1. Hospital Surveillance

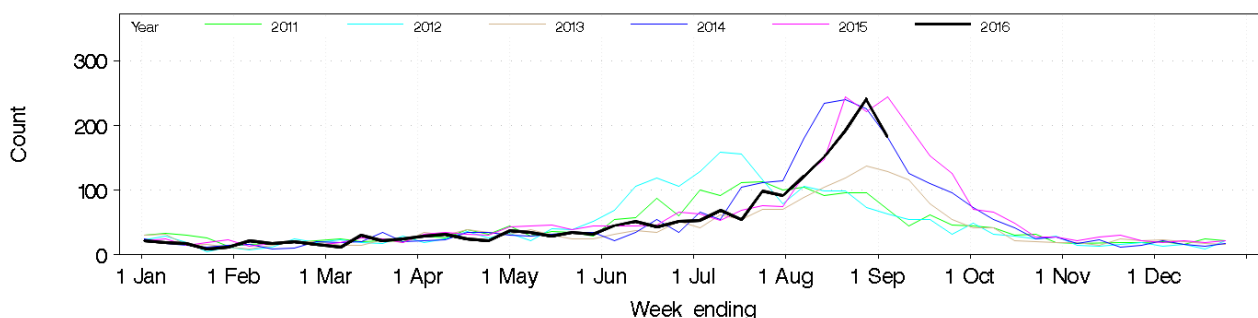
NSW emergency department (ED) presentations for influenza-like illness (ILI) and other respiratory illnesses

Source: PHREDSS [1]

For the week ending 4 September 2016:

- ILI presentations [2] decreased this week which suggests ED presentations for ILI have peaked (Figure 1 and Table 1).
- The index of increase for ILI presentations was 38.3 on 4 September, lower than the previous week (58.9). The index appears to have peaked on Sunday 28 August 2016 at 61.0 (lower than the peak of 64.2 seen in 2015).
- The proportion of ILI presentations to all ED presentations was high at 5.6 per 1000 presentations, higher than the previous week (4.3).
- ED presentations for pneumonia [3] increased but remained within the usual range for this time of year (Table 1.)
- ILI presentations which resulted in admission decreased but remained above the usual range for this time of year (Figure 2 Table 1). Admissions for pneumonia also increased and were within the usual range for this time of year (Table 1). Presentations which resulted in admissions to critical care also increased and were within the usual range for this time of year (Figure 3 and Table 1).
- Bronchiolitis presentations this week were steady but were above the usual range for this time of year. Presentations were significantly above the five-year mean at Manning Base Hospital (Table 1).
- Presentations in the category combining all respiratory, fever and unspecified infections increased and were above the usual range for this time of year. Presentations were significantly above the five-year mean in the Central Coast, Hunter New England and Sydney LHDs, and at The Childrens' Hospital at Westmead (Table 1).

Figure 1: Total weekly counts of ED visits for influenza-like illness, all ages, from 1 January – 4 September 2016 (black line), compared with each of the 5 previous years (coloured lines).



[1] NSW Health Public Health Rapid, Emergency Disease and Syndromic Surveillance system. Centre for Epidemiology and Evidence, NSW Ministry of Health. Comparisons are made with data for the preceding five years. Recent counts are subject to change. As of 31 March 2016, data from 60 NSW emergency departments are included representing approximately 82% of ED visits in the 2015-16 financial year. The coverage of rural EDs is lower than metropolitan EDs. Data shown represents unplanned presentations to hospital EDs.

[2] The ED 'ILI' syndrome includes provisional diagnoses selected by a clinician of 'influenza-like illness' or 'influenza' (including 'pneumonia with influenza'), avian and other new influenza viruses.

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

Figure 2: Total weekly counts of ED presentations for influenza-like-illness that were admitted, all ages, from 1 January – 4 September 2016 (black line), compared with each of the 5 previous years (coloured lines).

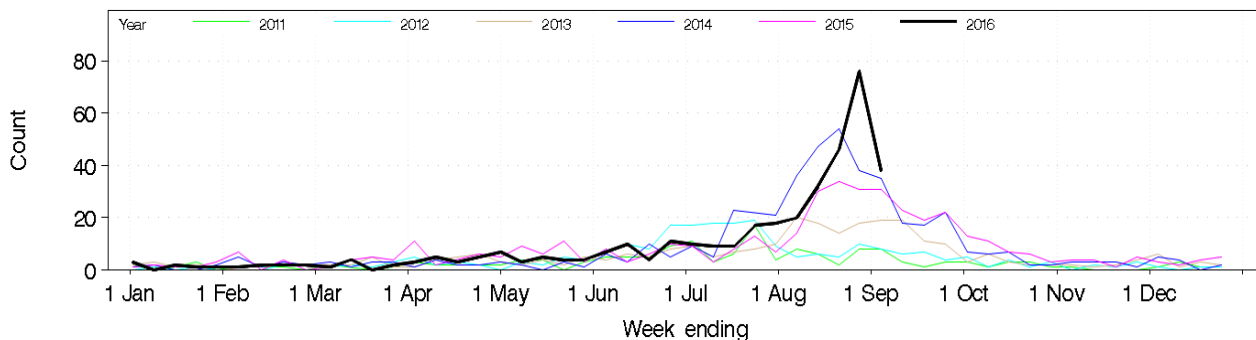


Figure 3 Total weekly counts of ED presentations for pneumonia or influenza-like illness and admitted to a critical care ward, all ages, from January – 4 September 2016 (black line), compared with each of the 5 previous years (coloured lines).

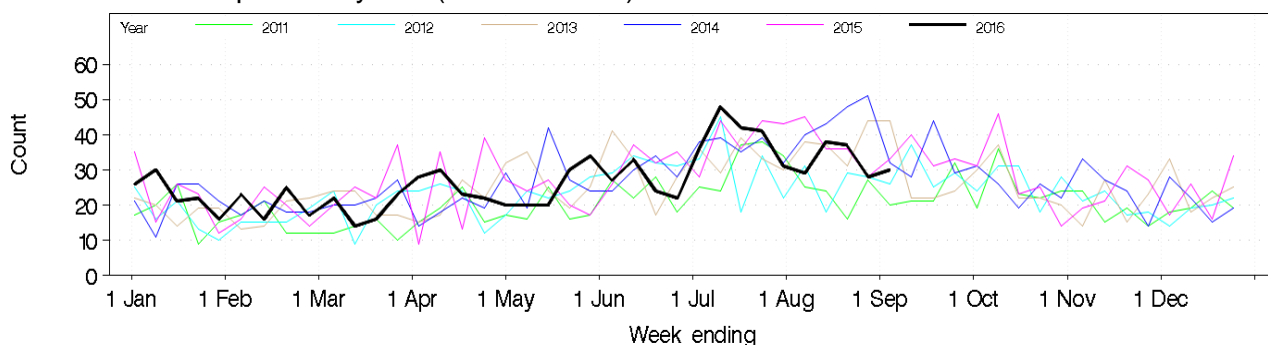


Table 1: Weekly ED and Ambulance Respiratory Activity Summary for the week ending 4 September 2016. Includes data from 60 NSW EDs and the NSW Ambulance Division [4].

Data source	Diagnosis or problem category	Trend since last week	Comparison with usual range for time of year*	Statistically significant age groups (if any)	Locations with weekly counts significantly above the 5 year mean	Severity indicators** with weekly counts significantly above the 5 year mean	Comment
ED presentations, 60 NSW hospitals	Influenza-like illness (ILI)	Decreased	Usual				Daily index of increase = 38.3 (seasonal threshold crossed on 26 June 2016)
	ILI Admissions	Decreased	Above				
	Pneumonia	Increased	Usual				
	Pneumonia and ILI admissions	Increased	Usual				
	Pneumonia and ILI critical care admissions	Increased	Usual				
	Asthma	Decreased	Usual				
	Bronchiolitis	Steady	Above		Manning Base Hospital		Bronchiolitis is a disease of infants. Daily index of increase = 19.7
	Breathing problems	Increased	Above	0-4 years	The Children's Hospital at Westmead		
	All respiratory illness, fever and unspecified infections	Increased	Above	65+ years	Central Coast LHD Hunter New England LHD The Children's Hospital at Westmead	Admitted to a ward (not a critical care ward)	

[4] Notes for Table 1: *The usual range for the time of year is the range of weekly counts for the same week in the previous five years for ED presentations. Key: Non-bold and green =usual range; Non-bold and orange= above usual range, but not significantly; Bold and red = statistically greater than usual range. Counts are statistically significant if they are at least five standard deviations above the five-year mean for ED presentations; the ILI 'daily index of increase' is statistically significant above a threshold of 15. **Severity indicators include: Admission to a ward or critical care service; Triage category 1; Ambulance arrival and Death in ED.

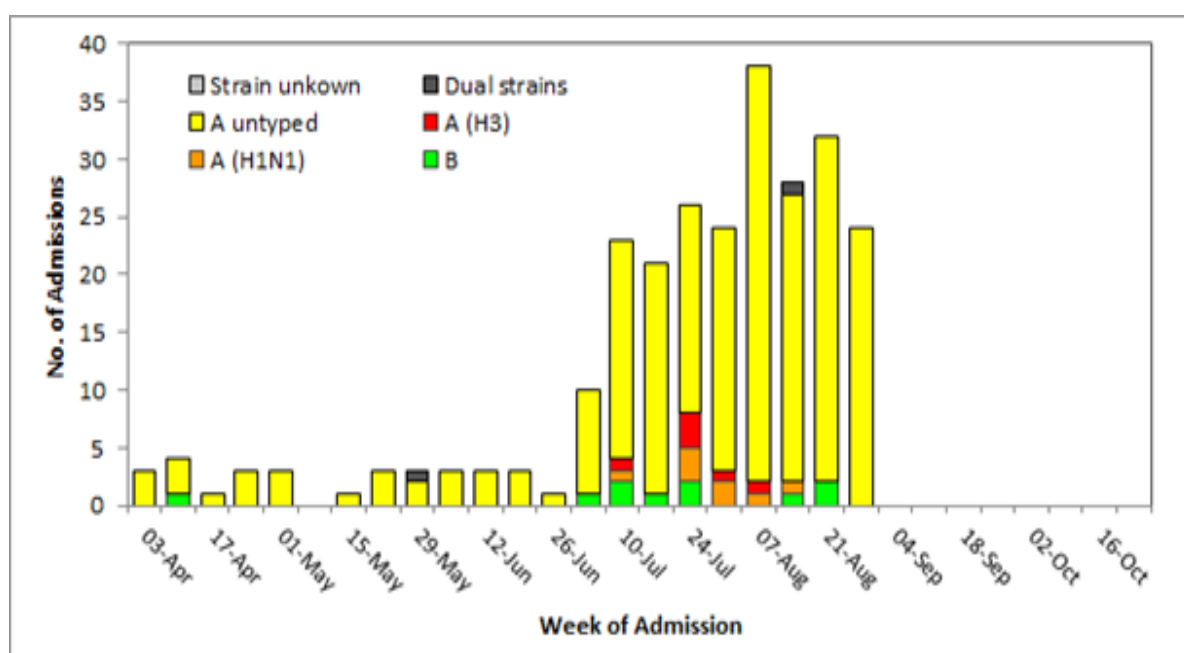
FluCAN (The Influenza Complications Alert Network)

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.

- During week 35 there were 57 influenza admissions (44 adult and 13 children) in NSW sentinel hospitals (Figure 5).
- Since 1 April 2016, there have been 329 hospital admissions reported for influenza; 315 with influenza A, 12 with influenza B and two with co-infections (Figure 4).
- Of these admissions, 95 were paediatric (<16 years of age) cases and 236 were in adults. Twenty-two cases were admitted to ICU/HDU.

Figure 4: FluCAN – Number of confirmed influenza hospital admissions in NSW, 03 April – 4 September, 2016.



2. Laboratory Surveillance

For the week ending 4 September 2016 the number and proportion of respiratory specimens reported by NSW sentinel laboratories [5] which tested positive for influenza A or influenza B increased slightly but is likely to have reached the peak of activity for this season (Table 2).

A total of 13,167 tests for respiratory viruses were reported this week with 31.7% testing positive for influenza viruses, marginally up from 11,728 tests and a 30.9% influenza-positive rate in the previous week. Influenza A(H3N2) is the dominant circulating influenza strain. Influenza B activity remains at a low level but has increased slightly which is usual towards the end of the influenza season (Figures 5 and 6).

[5]: 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.

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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 to June 2016.

Influenza was the leading respiratory virus reported, with other viruses circulating at usual but increasing levels for this time of year (Table 2).

Table 2: Summary of testing for influenza and other respiratory viruses at NSW laboratories, 1 January to 4 September 2016.

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	(%A)	Total	(%A)	Total	(%A)	Total	(%)						
31/01/2016	8079	270 (3.3%)	45 (16.7%)	114 (42.2%)	111 (41.1%)	38 (0.5%)	202	179	202	941	73	96			
28/02/2016	9810	397 (4.0%)	54 (13.6%)	199 (50.1%)	144 (36.3%)	96 (1.0%)	208	244	323	1484	80	150			
03/04/2016*	14699	555 (3.8%)	32 (5.8%)	271 (48.8%)	248 (44.7%)	138 (0.9%)	282	412	937	1862	68	188			
01/05/2016	13614	457 (3.4%)	16 (3.5%)	268 (58.6%)	173 (37.9%)	152 (1.1%)	271	371	1189	1470	71	128			
29/05/2016	15760	398 (2.5%)	57 (14.3%)	157 (39.4%)	184 (46.2%)	115 (0.7%)	350	358	1488	2211	111	138			
03/07/2016*	22487	1065 (4.7%)	227 (21.3%)	269 (25.3%)	569 (53.4%)	167 (0.7%)	707	636	2626	2866	300	420			
31/07/2016	24176	3796 (15.7%)	1021 (26.9%)	722 (19.0%)	2052 (54.1%)	291 (1.2%)	753	527	2339	2240	484	404			
28/08/2016	40031	10953 (27.4%)	1852 (16.9%)	1002 (9.1%)	7999 (73.0%)	705 (1.8%)	1114	721	2347	2739	1046	398			
Week ending															
04/09/2016	13167	3907 (29.7%)	202 (5.2%)	127 (3.3%)	3578 (91.6%)	273 (2.1%)	410	268	552	885	445	120			

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

Figure 5: Weekly influenza positive test results by type and sub-type reported by NSW sentinel laboratories, 1 January to 4 September 2016.

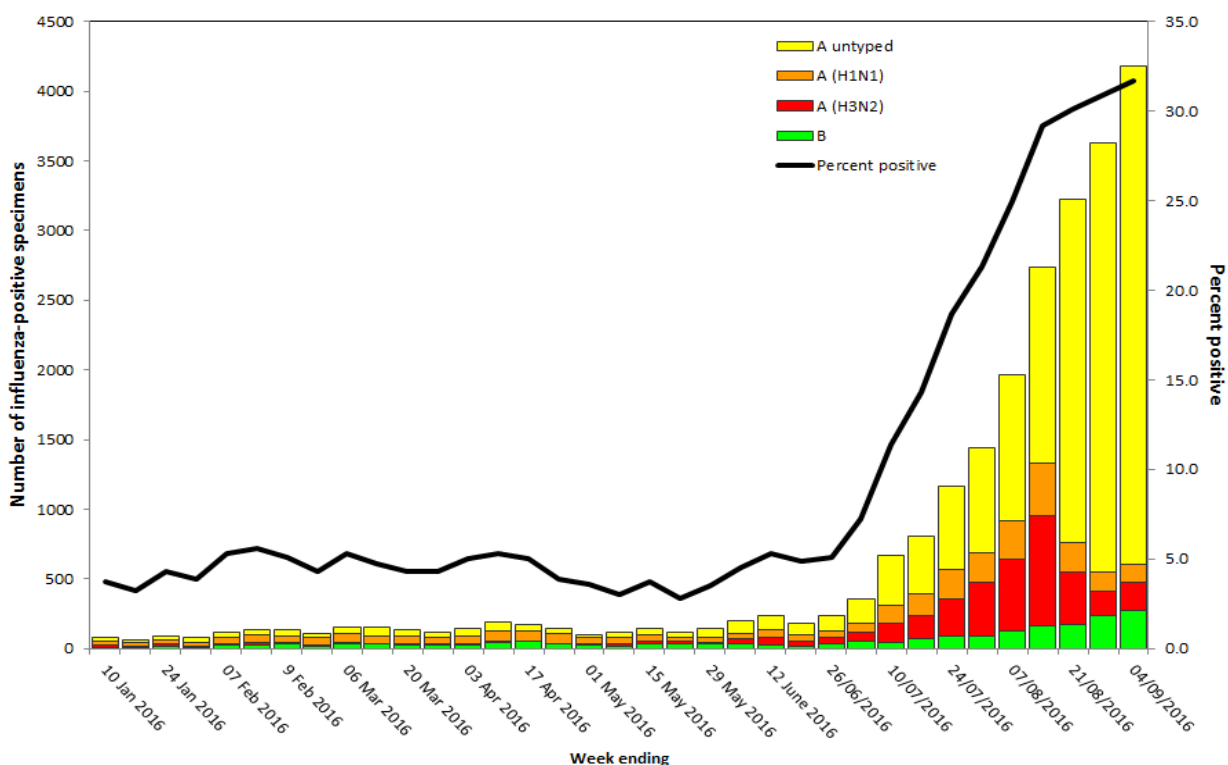
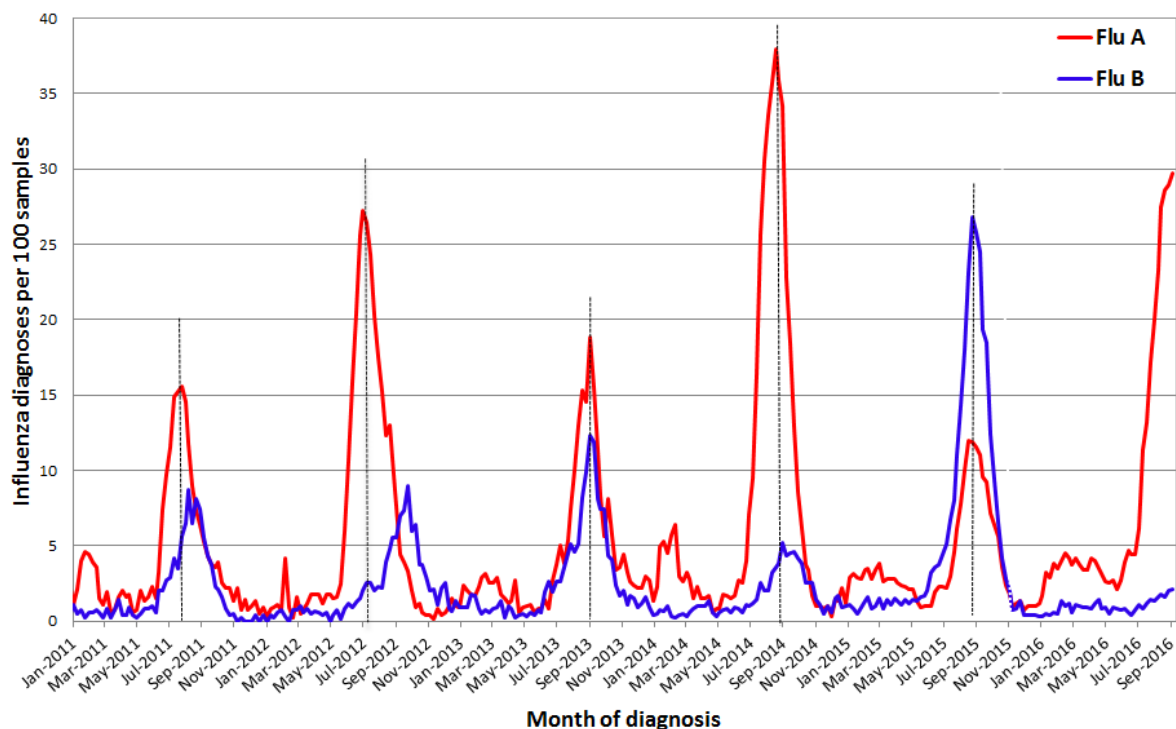


Figure 6: Percentage of laboratory tests positive for influenza A and influenza B by week, 1 January 2010 – 4 September 2016, New South Wales.



3. Community Surveillance

Influenza notifications by Local Health District (LHD)

In the week ending 4 September there were 3,628 notifications of influenza confirmed by polymerase chain reaction (PCR) testing, higher than the 3,098 notifications in the previous week.

Population rates were highest in the Northern Sydney and Western Sydney Local Health Districts (Table 3). Notifications continued to increase in most districts.

Table 3: Weekly notifications of laboratory-confirmed influenza by local health district.

Local Health District	Week ending 04 Sep 2016		Previous 4 weeks	
	Number of notifications	Rate per 100 000 population	Number of notifications	Rate per 100 000 population
Central Coast	157	46.43	71	21.07
Far West	1	3.28	1	3.28
Hunter New England	371	40.48	210	22.89
Illawarra Shoalhaven	131	32.52	98	24.33
Mid North Coast	42	19.31	38	17.24
Murrumbidgee	136	56.95	58	24.29
Nepean Blue Mountains	254	67.77	149	39.69
Northern NSW	113	37.63	79	26.31
Northern Sydney	685	75.54	505	55.66
South Eastern Sydney	391	43.26	331	36.57
South Western Sydney	334	34.57	297	30.69
Southern NSW	70	33.56	46	22.05
Sydney	260	41.37	194	30.87
Western NSW	83	29.93	29	10.28
Western Sydney	600	63.37	444	46.84

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

Influenza outbreaks in institutions

There were 32 new respiratory outbreaks reported this week; all were due to influenza A. All outbreaks this week were in residential aged care facilities except for one outbreak in a hospital ward and one in a residential facility for people with disabilities (Table 4).

In the year to date there have been 173 laboratory confirmed influenza outbreaks in institutions reported to NSW public health units (Table 4): 167 have been due to influenza A, four were influenza B, and two were combined influenza A and B outbreaks. At least 1,926 residents were reported to have had ILI symptoms and 203 required hospitalisation. Ninety-nine deaths in residents linked to these outbreaks have been reported, all of whom were noted to have other significant co-morbidities.

People in older age-groups are at higher risk of infection from influenza A(H3N2) strains than from the influenza A(H1N1) strain. The influenza A(H3N2) strain predominated in 2012 and 2014. In 2015, influenza B was the predominant strain, and was also the cause of some influenza outbreaks in institutions, particularly residential aged care facilities (Table 4).

Table 4: Reported influenza outbreaks in NSW institutions, January 2010 to 21 August 2016.

Year	2010	2011	2012	2013	2014	2015	2016*
Number of outbreaks	2	4	39	12	120	103	173

Notes: * Year to date.

Electronic General Practice Surveillance (eGPS)

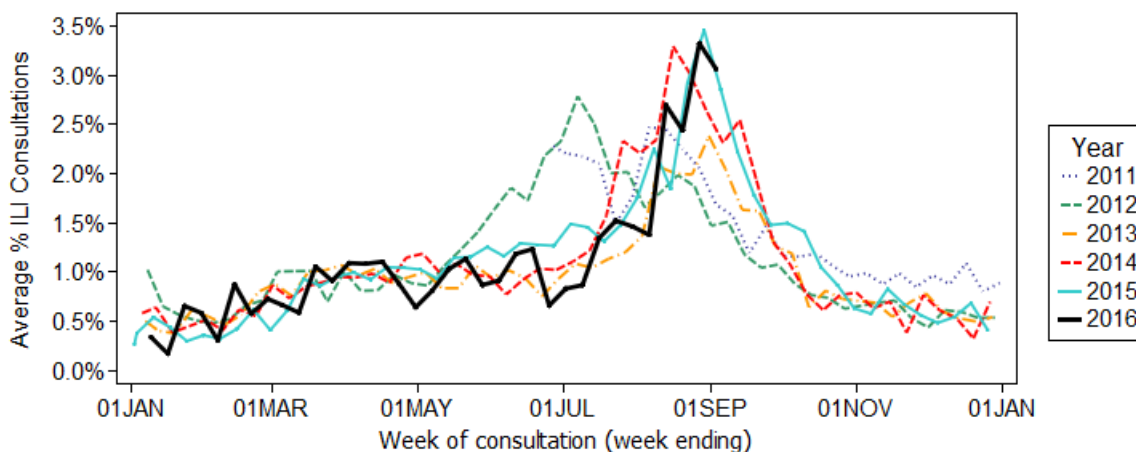
eGPS is a primary care influenza surveillance system involving sentinel general practices within three NSW Local Health Districts (LHD): Northern Sydney (NS), South Eastern Sydney (SES) and Illawarra Shoalhaven (IS). The system monitors patient consultations for influenza-like illness (ILI) as an indicator of influenza activity. Consultations for ILI are identified each week by an automatic search of electronic records for validated combinations of ILI terms rather than diagnosis codes.

Data generated from eGPS should be interpreted with caution as they are not representative of all practices within the participating LHDs or across NSW.

In Week 35:

- there were 5 surveillance reports received from eGPS sentinel practices in NSW;
- the average rate of ILI patient consultations decreased to 3.1% (range 1.1 – 4.2%), lower than 3.3% in the previous week (Figure 7).

Figure 7. Average rate of influenza-like presentations to sentinel general practices by week of consultation 2011-2016 (year to date).



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 on a weekly basis may vary.

In week 35 there were 42 ASPREN reports received from NSW GPs. The overall consultation rate for ILI was moderate at 2.6%, similar to the previous week (2.5%).

For further information please see the [ASPREN](#) website.

FluTracking.net

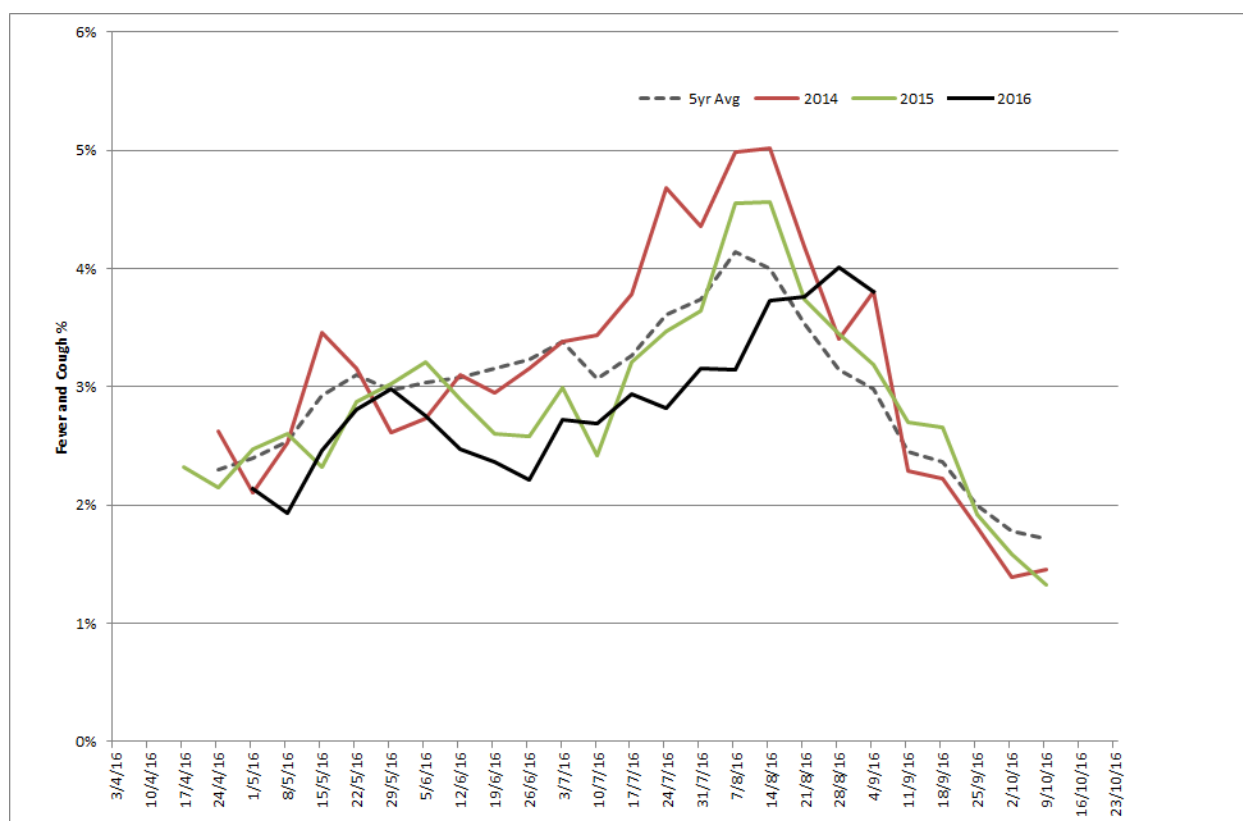
FluTracking.net is an online health surveillance system to detect epidemics of influenza. FluTracking is a project of the University of Newcastle, the Hunter New England Local Health District and the Hunter Medical Research Institute.

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

In week 35 FluTracking received reports for 7250 people in NSW with the following results:

- 3.8% of respondents reported fever and cough, lower than the previous week (4.0%) (Figure 8).
- 2.5% of respondents reported fever, cough and absence from normal duties, similar to the previous week (2.6%) (data not shown).

Figure 8: FluTracking – weekly influenza-like illness reporting rate, NSW, 2011 – 2016.



For further information please see the [FluTracking](#) website.

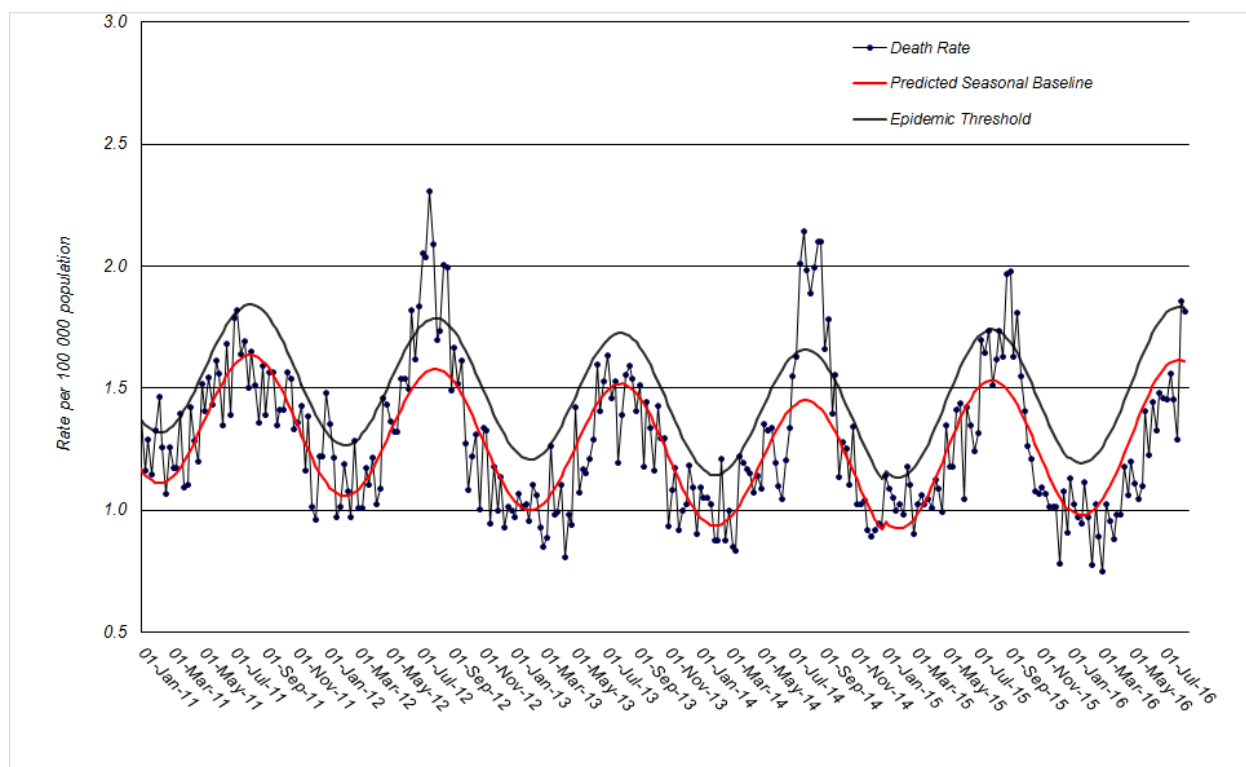
4. Deaths with pneumonia or influenza reported on the death certificate

Deaths registration data is routinely reviewed for deaths attributed to pneumonia or influenza. Pneumonia has many causes; however an increase in the number of death certificates that mention pneumonia or influenza as a cause of death is an indicator of seasonal and pandemic influenza activity. The predicted seasonal baseline estimates the predicted rate of influenza or pneumonia deaths in the absence of influenza epidemics. If deaths exceed the epidemic threshold it may be an indication that influenza is circulating at higher than expected levels and/or is affecting more of the people in the community at greater risk of severe influenza complications.

In 2016 up to the week ending 12 August:

- 46 of 31,533 death certificates (0.15%) recorded influenza: deaths were in people aged over 65 years apart from one death in each of the 25-34 and 55-64 years age groups.
- 2,894 of 31,533 death certificates (8.9%) mentioned pneumonia.
- There were 1.82 “pneumonia and influenza” deaths per 100,000 NSW population, which was on the cusp of the epidemic threshold of 1.83 per 100 000 population (Figure 9).

Figure 9: Rate of deaths classified as “pneumonia and influenza” per 100,000 NSW population, 2011 – 12 August 2016.



Source: NSW Registry of Births, Deaths and Marriages.

* Notes on interpreting death data:

- (1) The number of deaths mentioning “Pneumonia or influenza” is reported as a rate per 100,000 NSW populations. 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.
- (2) 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.
- (3) The interval between death and death data availability is usually at least 7 days, and so these data are several weeks behind reports from emergency departments and laboratories. In addition, previous weekly rates may also change due to longer delays in reporting some deaths.

5. National and International Influenza Surveillance

National Influenza Surveillance

In the *Australian Surveillance Report No.6*, with data up to 19 August 2016, influenza activity at the national level continued to increase, with most regions of Australia reporting widespread and increasing activity. Of note:

- Influenza-like illness (ILI) also continued to increase nationally. More than half of all patients presenting to sentinel general practitioners with ILI and tested were positive for influenza this fortnight.
- Influenza A(H3N2) continued to be the dominant circulating influenza virus nationally in recent weeks, noting jurisdictional variation. Notifications of influenza B increased slightly in recent weeks, but remained at low levels overall.
- Notification rates this year to date have been highest in adults aged 85 years or older, with a secondary peak in the very young, aged less than 5 years. This is consistent with older age groups being typically more susceptible to influenza A(H3N2) than the other circulating strains.
- Clinical severity for the season to date, as measured through the proportion of patients admitted directly to ICU and deaths attributed to pneumonia or influenza, is low to moderate.
- To date, the seasonal influenza vaccines appear to be a good match for circulating virus strains.

Follow the link for the [Australian Influenza Surveillance Reports](#) which provide the latest information on national influenza activity.

Global Influenza Update

The latest [WHO global update on 5 September 2016](#) provides data up to 21 August. Influenza activity varied in countries of temperate South America and increased steadily in the last few weeks in South Africa and Oceania. Influenza activity in the temperate zone of the northern hemisphere was at inter-seasonal levels. Follow the link for the [WHO influenza surveillance reports](#).

Avian Influenza Update:

Human infections with avian influenza viruses

The monthly WHO risk assessment of human infections with avian and swine influenza viruses (see [Influenza at the human-animal interface](#)) was published on 19 July 2016. This report provides updated information on human cases of infection with animal influenza viruses and outbreaks among animals caused by novel influenza strains.

Of note:

- Since the previous update, new human infections with A(H5N1), A(H7N9), A(H9N2) and A(H1N2)v viruses were reported.
- The overall public health risk from currently known influenza viruses at the human-animal interface has not changed. Further human infections with viruses of animal origin can be expected, but the likelihood of sustained human-to-human transmission remains low.

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 2016 Australian influenza vaccines

The National Immunisation Program (NIP) used quadrivalent influenza vaccines in 2016 for the first time. The four strains chosen are based on the recommendations of the WHO Consultation on the Composition of Influenza Vaccines for the 2016 Southern Hemisphere. Following the Consultation, WHO announced its recommendations for the composition of trivalent and quadrivalent vaccines for use in the 2016 influenza season (southern hemisphere winter).

For trivalent vaccines:

- an A/California/7/2009 (H1N1)pdm09-like virus;
- an A/Hong Kong/4801/2014 (H3N2)-like virus;
- a B/Brisbane/60/2008-like virus (Victoria lineage).

For quadrivalent vaccines it was recommended that a second influenza B virus be added:

- a B/Phuket/3073/2013-like virus (Yamagata lineage).

Of note, the trivalent vaccine recommendations included strain changes for both the A(H3N2) and B components. The recommended A(H1N1) strain has remained unchanged since 2010. More details about the most recent influenza vaccine recommendations can be found at:

http://www.who.int/influenza/vaccines/virus/recommendations/2016_south/en/.

The WHO consultation on the composition of influenza vaccines for the Northern Hemisphere 2016-2017 was held in February 2016. The recommended composition was unchanged from the composition recommended for the 216 Southern Hemisphere vaccines (above). For information about the Northern Hemisphere vaccine recommendations can be found at:

http://www.who.int/influenza/vaccines/virus/recommendations/2016_17_north/en/