

NSW Health Influenza Surveillance Report

Week 39: 26 September to 2 October 2016

Summary:

- **Seasonal influenza activity continues to fall across all NSW local health districts, with some indicators indicating an end to the 2016 influenza season.**
- **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 to inter-seasonal levels. The index of increase indicates that seasonal activity peaked on 28 August and fell below the seasonal threshold on 27 September.
- [Laboratory surveillance](#) – the total number of influenza isolations decreased further this week with the proportion of respiratory samples positive for influenza at 13.7%.
- [Community surveillance](#) – influenza notifications have decreased across all NSW local health districts (LHD). General Practice and community-based surveillance systems showed decreasing ILI activity. Fewer aged care facilities have been affected with 6 new respiratory outbreaks reported this week.
- [National and international influenza surveillance](#) – the most recent national report suggests influenza activity declined nationally; however, widespread activity continued to be reported in a number of regions. Current influenza strains are well-matched to the 2016 influenza vaccines.
- [Recommended composition of 2017 influenza vaccines](#) – the World Health Organization (WHO) has provided recommendations for the 2017 southern hemisphere winter influenza season including one strain change.

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

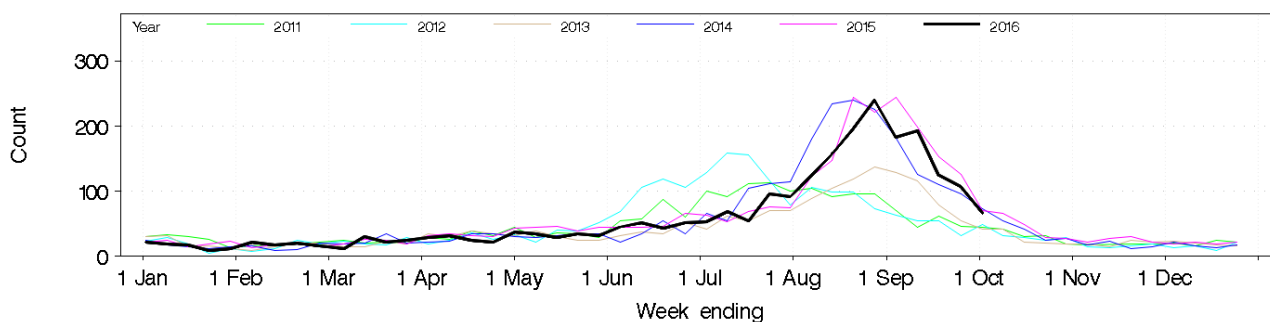
NSW emergency department (ED) presentations for influenza-like illness (ILI) and other respiratory illnesses

Source: PHREDSS [1]

For the week ending 2 October 2016:

- ILI presentations [2] decreased this week and have returned to inter-seasonal levels in most areas. However, ILI presentations were significantly above the five-year mean in Western Sydney Local Health District (LHD) and Lithgow Health Services (Figure 1 and Table 1).
- The index of increase for ILI presentations was 8.7 on 2 October, lower than the previous week (16.4). Based on the index threshold of 15, this year's influenza season commenced around 26 June 2016, peaked on Sunday 28 August 2016 at 61.0 (lower than the peak of 64.2 seen in 2015) and ended on 27 September 2016.
- The proportion of ILI presentations to all ED presentations was low at 1.7 per 1000 presentations, and lower than the previous week (2.8).
- ED presentations for pneumonia [3] decreased and were within the usual range for this time of year (Table 1.)
- ILI presentations which resulted in admission decreased and were within the usual range for this time of year (Figure 2 and Table 1). However, admissions were significantly above the five-year mean in the Western Sydney LHD.
- Admissions for pneumonia decreased and were within the usual range for this time of year (Table 1). Pneumonia and ILI presentations which resulted in admission to critical care decreased and were within the usual range for this time of year (Figure 3 and Table 1).
- Bronchiolitis presentations this week decreased and were within the usual range for this time of year (Table 1).
- Presentations in the category combining all respiratory, fever and unspecified infections decreased and were within the usual range for this time of year. Presentations were significantly above the five-year mean at Lithgow Health Services (Table 1).

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

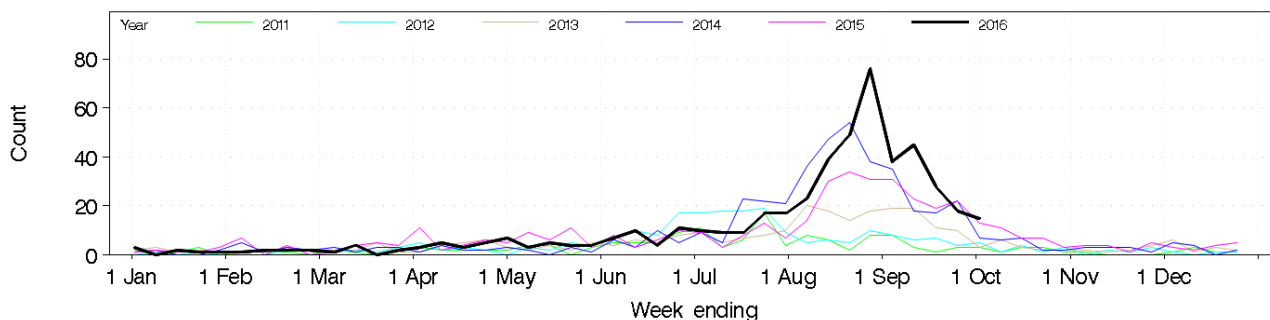


Figure 3 Total weekly counts of ED presentations for pneumonia or influenza-like illness and admitted to a critical care ward, all ages, from January – 2 October 2016 (black line), compared with each of the 5 previous years (coloured lines).

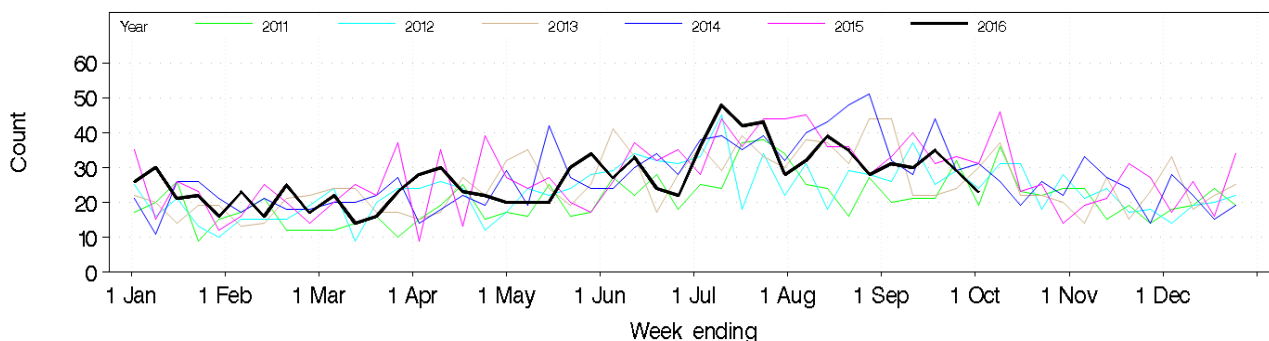


Table 1: Weekly ED and Ambulance Respiratory Activity Summary for the week ending 2 October 2016. Includes data from 60 NSW EDs and the NSW Ambulance Division [4].

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		Western Sydney LHD Lithgow Health Services		Daily index of increase = 8.7 (presentations peaked 28/8 2016)
	ILI Admissions	Decreased	Above		Western Sydney LHD		
	Pneumonia	Decreased	Usual				
	Pneumonia and ILI admissions	Decreased	Usual				
	Pneumonia and ILI critical care admissions	Decreased	Usual				
	Asthma	Decreased	Usual				
	Bronchiolitis	Decreased	Usual				Bronchiolitis is a disease of infants. Daily index of increase = 15.4
	Breathing problems	Decreased	Usual	0-4 years	Sydney Children's Hospital		
All respiratory illness, fever and unspecified infections	Decreased	Usual		Lithgow Health Services			

[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.

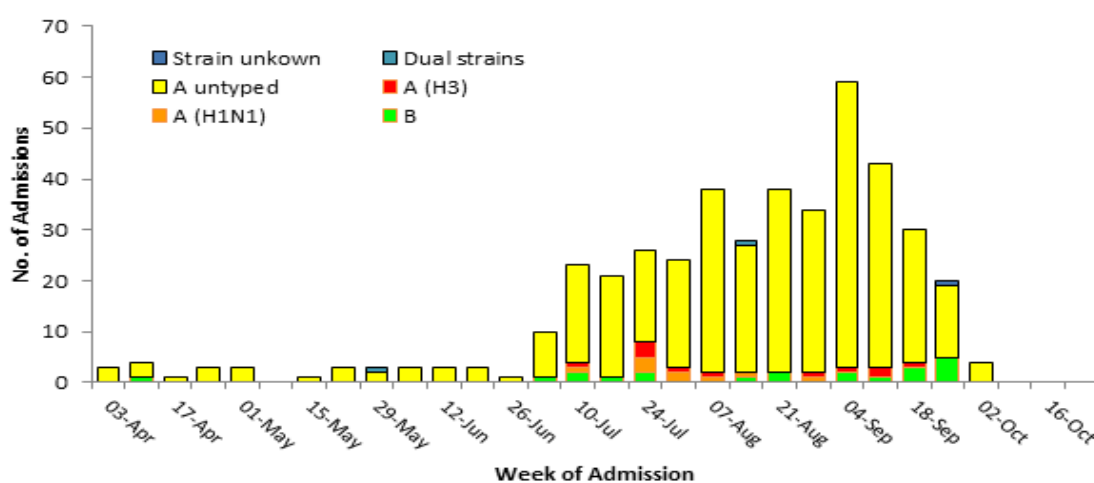
FluCAN (The Influenza Complications Alert Network)

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 39 there were 4 influenza admissions (3 adults and 1 child) in NSW sentinel hospitals (Figure 5).
- Since 1 April 2016, there have been 428 hospital admissions reported for influenza; 404 with influenza A, 21 with influenza B, two with co-infections and one strain unknown (Figure 4).
- Of these admissions, 118 were paediatric (<16 years of age) cases and 310 were in adults. Twenty-eight cases were admitted to ICU/HDU.

Figure 4: FluCAN – Number of confirmed influenza hospital admissions in NSW, 03 April – 2 October, 2016.



2. Laboratory Surveillance

For the week ending 2 October 2016 the number and proportion of respiratory specimens reported by NSW sentinel laboratories [5] which tested positive for influenza A or influenza B continued to decrease and is expected to reach pre-seasonal level over the next few weeks. The peak of activity for 2016 occurred during the week ending 4 September (Table 2).

A total of 8,155 tests for respiratory viruses were reported this week with 13.7% testing positive for influenza viruses, down from 9,788 tests and a 17.4% influenza-positive rate in the previous week. Influenza A(H3N2) is the dominant circulating influenza strain while influenza B activity remains at a low level (Figures 5 and 6).

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

[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.

Table 2: Summary of testing for influenza and other respiratory viruses at NSW laboratories, 1 January to 2 October 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	(%)	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
02/10/2016*	54948	11742	(21.4%)	575	(4.9%)	355	(3.0%)	10814	(92.1%)	1128	(2.1%)	1826	1587	2197	5022	2527	584

Week ending	Total Tests	Total	(%)	Total	(%A)	Total	(%A)	Total	(%A)	Total	(%)						
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
11/09/2016	12539	3197	(25.5%)	157	(4.9%)	104	(3.3%)	2938	(91.9%)	276	(2.2%)	373	293	505	934	511	119
18/09/2016	11299	2172	(19.2%)	111	(5.1%)	53	(2.4%)	2008	(92.4%)	233	(2.1%)	372	327	460	735	537	133
25/09/2016	9788	1487	(15.2%)	55	(3.7%)	42	(2.8%)	1390	(93.5%)	210	(2.1%)	340	339	374	1246	509	106
02/10/2016	8155	979	(12.0%)	50	(5.1%)	29	(3.0%)	900	(91.9%)	136	(1.7%)	331	360	306	1222	525	106

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 2 October 2016.

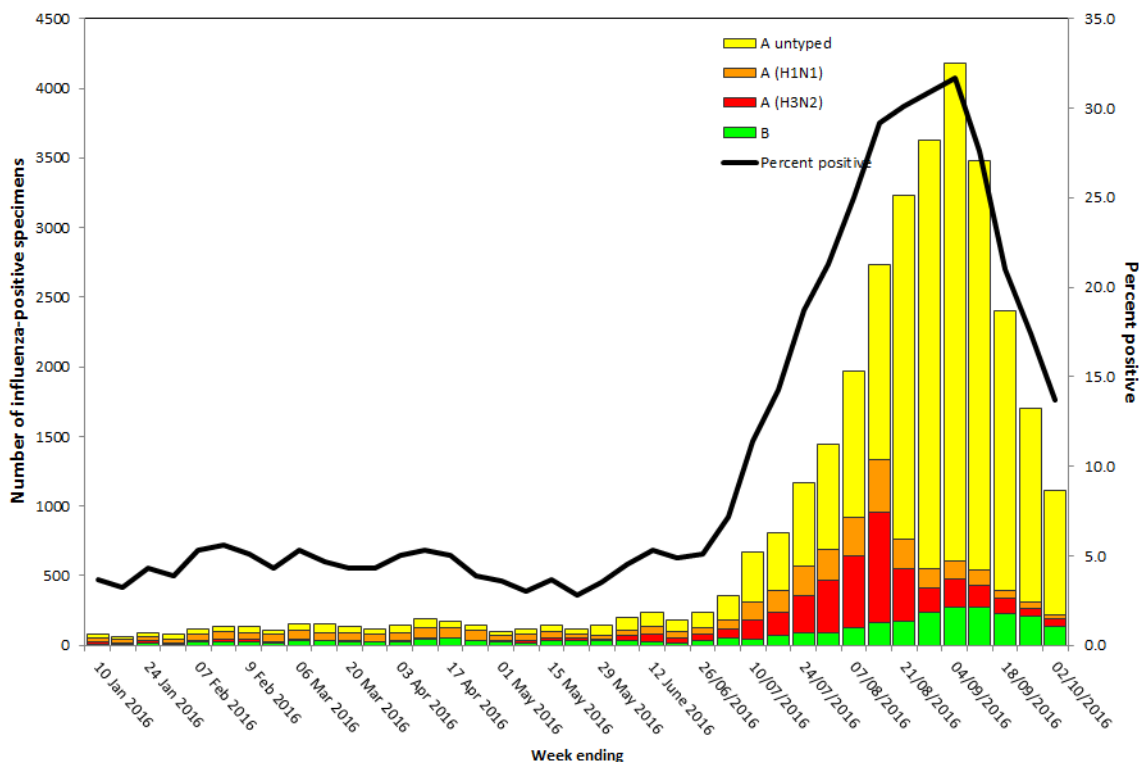
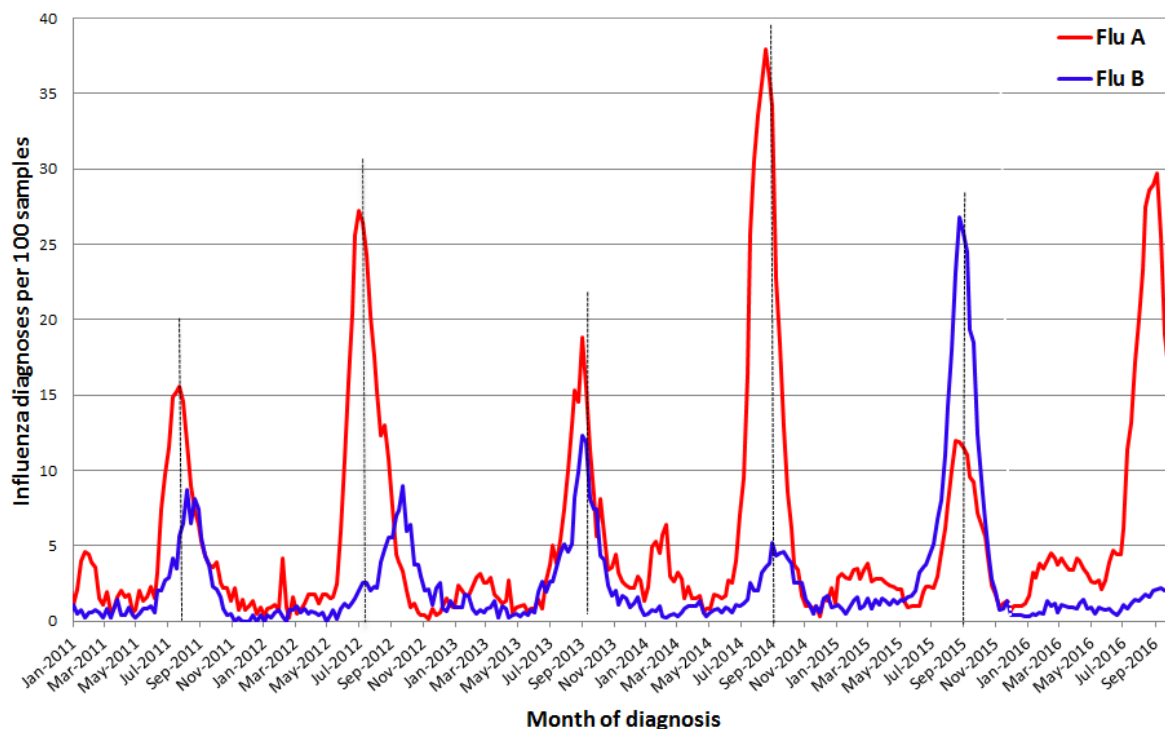


Figure 6: Percentage of laboratory tests positive for influenza A and influenza B by week, 1 January 2010 to 2 October 2016, New South Wales.



3. Community Surveillance

Influenza notifications by Local Health District (LHD)

In the week ending 2 October there were 958 notifications of influenza confirmed by polymerase chain reaction (PCR) testing, lower than the 1,753 notifications in the previous week.

Population rates were highest in the Murrumbidgee and Nepean Blue Mountains LHDs (Table 3). Notifications decreased in all areas compared to the previous week.

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

Local Health District	Week ending 02 Oct 2016		Average (previous 4 weeks)	
	Number of notifications	Rate per 100 000 population	Number of notifications	Rate per 100 000 population
Central Coast	32	9.46	131	38.67
Far West	2	6.56	2	5.47
Hunter New England	152	16.59	329	35.93
Illawarra Shoalhaven	45	11.17	113	27.99
Mid North Coast	20	9.2	41	18.62
Murrumbidgee	61	25.55	127	53.29
Nepean Blue Mountains	83	22.15	168	44.82
Northern NSW	13	4.33	76	25.22
Northern Sydney	154	16.98	508	56.05
South Eastern Sydney	107	11.84	267	29.57
South Western Sydney	83	8.59	278	28.77
Southern NSW	24	11.51	56	26.85
Sydney	73	11.61	204	32.42
Western NSW	27	9.74	74	26.59
Western Sydney	82	8.66	431	45.52

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

Influenza outbreaks in institutions

There were 6 new respiratory outbreaks reported this week, which was fewer than the previous week (12). All of the outbreaks were due to influenza A and were in residential aged care facilities.

In the year to date there have been 249 laboratory confirmed influenza outbreaks in institutions reported to NSW public health units (Table 4): 241 have been due to influenza A, five were influenza B, and three were combined influenza A and B outbreaks. At least 3,719 residents were reported to have had ILI symptoms and 428 required hospitalisation. One hundred and eighty-five 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 2 October 2016.

Year	2010	2011	2012	2013	2014	2015	2016*
Number of outbreaks	2	4	39	12	120	103	249

Notes: * Year to date.

Electronic General Practice Surveillance (eGPS)

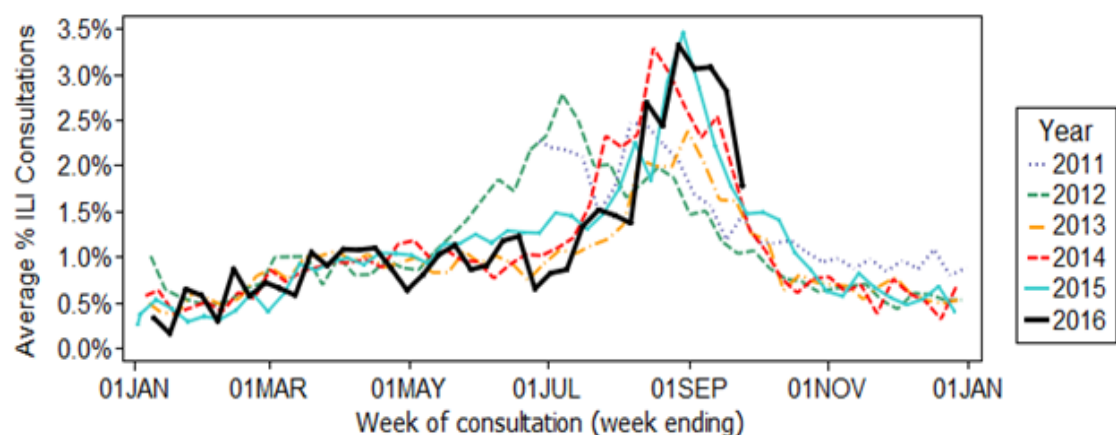
eGPS is a primary care influenza surveillance system involving sentinel general practices within three NSW Local Health Districts (LHD): Northern Sydney (NS), South Eastern Sydney (SES) and Illawarra Shoalhaven (IS). The system monitors patient consultations for influenza-like illness (ILI) as an indicator 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 39:

- there were 5 surveillance reports received from eGPS sentinel practices in NSW;
- the average rate of ILI patient consultations was 1.3% (range 0.3 – 2.7%), down from the previous week (1.8%) (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 39 there were 28 ASPREN reports received from NSW GPs. The overall consultation rate for ILI was low at 1.5%, lower than the previous week (2.2%).

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

FluTracking.net

FluTracking.net is an online health surveillance system to detect epidemics of influenza.

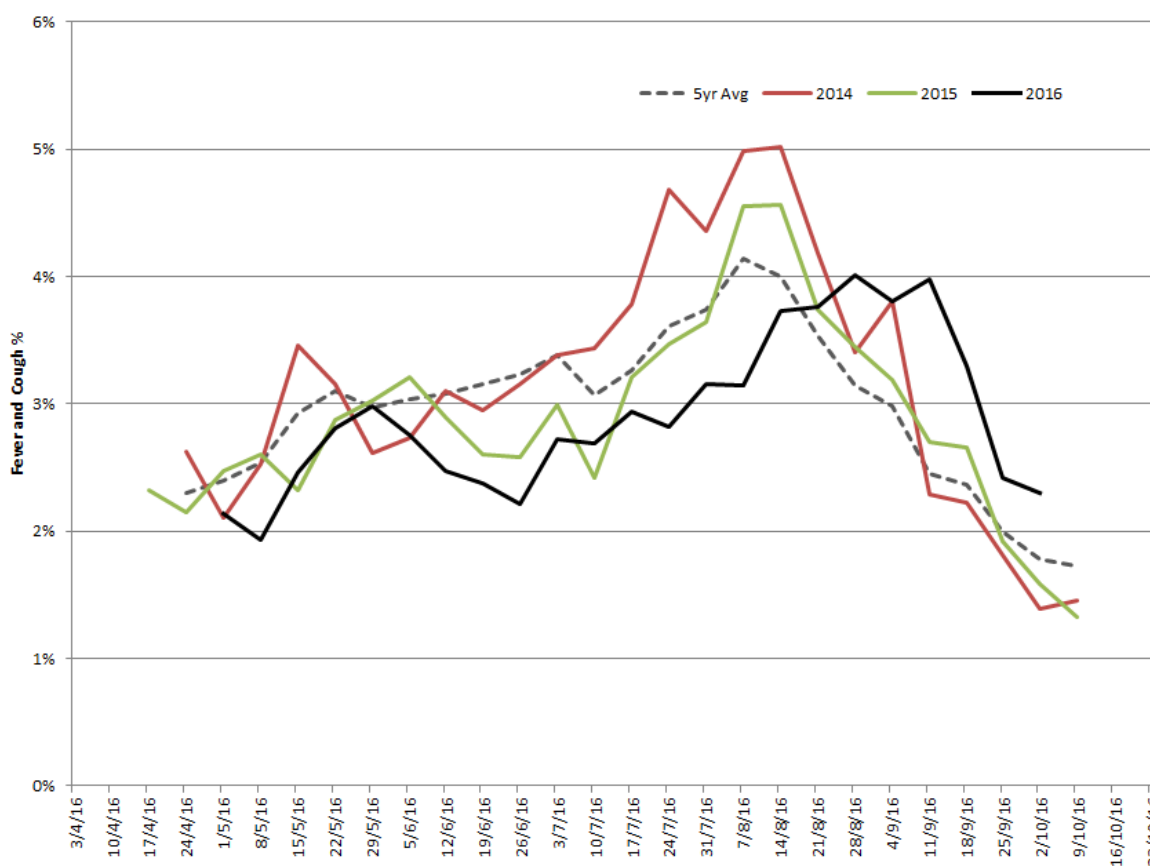
FluTracking is a project of the University of Newcastle, the Hunter New England Local Health District and the Hunter Medical Research Institute.

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

In week 39 FluTracking received reports for 6,726 people in NSW with the following results:

- 2.3% of respondents reported fever and cough, lower than the previous week (3.3%) (Figure 8).
- 1.3% of respondents reported fever, cough and absence from normal duties, lower than the previous week (1.6%) (data not shown).

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



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

4. National and International Influenza Surveillance

National Influenza Surveillance

In the *Australian Surveillance Report No.8*, with data up to 16 September 2016, influenza activity declined nationally; however, widespread activity continued to be reported in a number of regions.

Of note:

- National indicators of influenza-like illness (ILI) declined in the last fortnight, further supporting that the season has peaked nationally. The proportion of patients presenting to sentinel general practitioners with ILI and testing positive for influenza declined this fortnight.
- Influenza A(H3N2) continued to be the dominant circulating influenza virus nationally.
- Notification rates this year have been highest in adults aged 75 years or older, with a secondary peak in the very young, aged less than 5 years.
- Clinical severity for the season to date, as measured through the proportion of patients admitted directly to ICU and deaths attributable 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 3 October 2016](#) provides data up to 18 September. Influenza activity varied in countries of temperate South America, is ongoing in South Africa and decreased in 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](#).

5. Composition of 2017 Australian influenza vaccines

The WHO Consultation on the Composition of Influenza Vaccines for the 2017 Southern Hemisphere was held in Geneva on 26-28 September 2016.

Following the Consultation, WHO announced its recommendations for the composition of trivalent vaccine for use in the 2017 Southern Hemisphere influenza season as follows:

- an A/Michigan/45/2015 (H1N1)pdm09-like virus;
- an A/Hong Kong/4801/2014 (H3N2)-like virus;
- a B/Brisbane/60/2008-like virus (Victoria lineage)

WHO also recommended that quadrivalent vaccines containing two influenza B viruses should contain the above three viruses and a B/Phuket/3073/2013-like virus.

Of note, there has been replacement of the A/California/7/2009 (H1N1)pdm09-like virus component with an A/Michigan/45/2015 (H1N1)pdm09-like virus in the vaccine recommendations, the first time the recommended A(H1N1) strain has changed since 2010.

More details about the most recent influenza vaccine recommendations can be found at:
http://www.who.int/influenza/vaccines/virus/recommendations/2017_south/en/.

The WHO consultation on the composition of influenza vaccines for the Northern Hemisphere 2016-2017 influenza season was held in February 2016. The recommended composition was unchanged from the composition recommended for the 2016 Southern Hemisphere vaccines. Information about the Northern Hemisphere vaccine recommendations can be found at:
http://www.who.int/influenza/vaccines/virus/recommendations/2016_17_north/en/