

NSW Health Influenza Surveillance Report

Week 37: 12 September to 18 September 2016

Summary:

- **Seasonal influenza activity continues to fall overall but remains high in some areas, particularly the Hunter New England Local Health District.**
- **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 and were below peak levels. The index of increase indicates that activity peaked on 28 August 2016.
- [Laboratory surveillance](#) – the total number of influenza isolations decreased further this week with the proportion of respiratory samples positive for influenza at 21.0%.
- [Community surveillance](#) – influenza notifications continued to be high across most local health districts (LHD), but decreasing. General Practice and community-based surveillance systems showed decreasing ILI activity. Influenza activity continues to impact heavily on the aged care sector with 22 new respiratory outbreaks reported this week in residential aged care facilities.
- [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

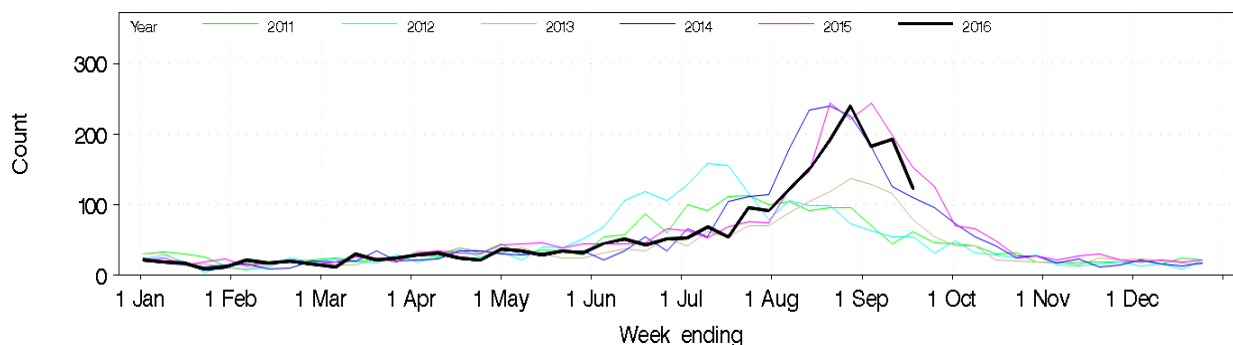
NSW emergency department (ED) presentations for influenza-like illness (ILI) and other respiratory illnesses

Source: PHREDSS [1]

For the week ending 18 September 2016:

- ILI presentations [2] decreased this week although and is expected to return to pre-seasonal levels over the next few weeks. However, presentations were significantly above the five-year mean in people over 65 year olds and at the Calvary Mater Newcastle Hospital (Figure 1 and Table 1).
- The index of increase for ILI presentations was 19.7 on 18 September, lower than the previous week (35.0). The index 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 moderate at 2.8 per 1000 presentations, lower than the previous week (4.2).
- 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 but remain above the usual range for this time of year (Figure 2 and Table 1). Admissions were significantly above the five-year mean in people aged 65 years and over, in the Hunter New England LHD and at Ryde Hospital.
- Admissions for pneumonia decreased and were within the usual range for this time of year. Admissions were significantly above the five-year mean in the Hunter New England LHD (Table 1). Pneumonia and ILI presentations which resulted in admission to critical care increased but 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 (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 in the 0-4 year olds and in Hunter New England, Northern Sydney and Western Sydney (Table 1).

Figure 1: Total weekly counts of ED visits for influenza-like illness, all ages, from 1 January – 18 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 – 18 September 2016 (black line), compared with each of the 5 previous years (coloured lines).

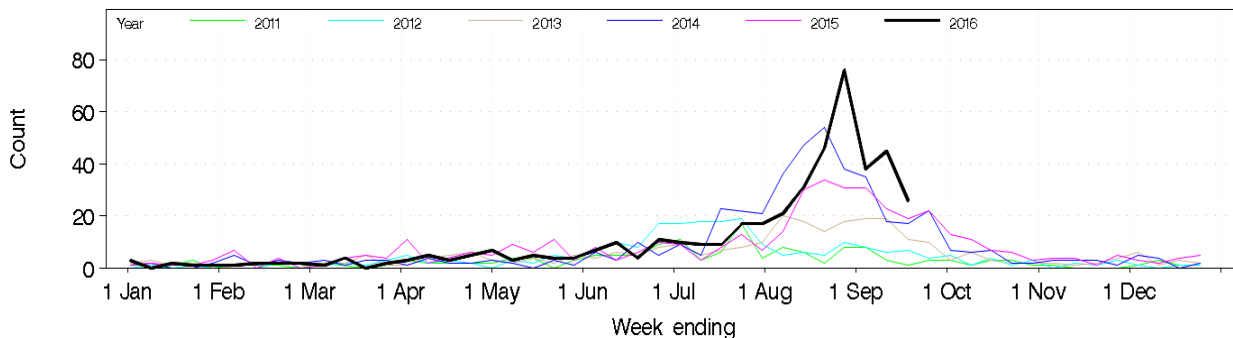


Figure 3 Total weekly counts of ED presentations for pneumonia or influenza-like illness and admitted to a critical care ward, all ages, from January – 18 September 2016 (black line), compared with each of the 5 previous years (coloured lines).

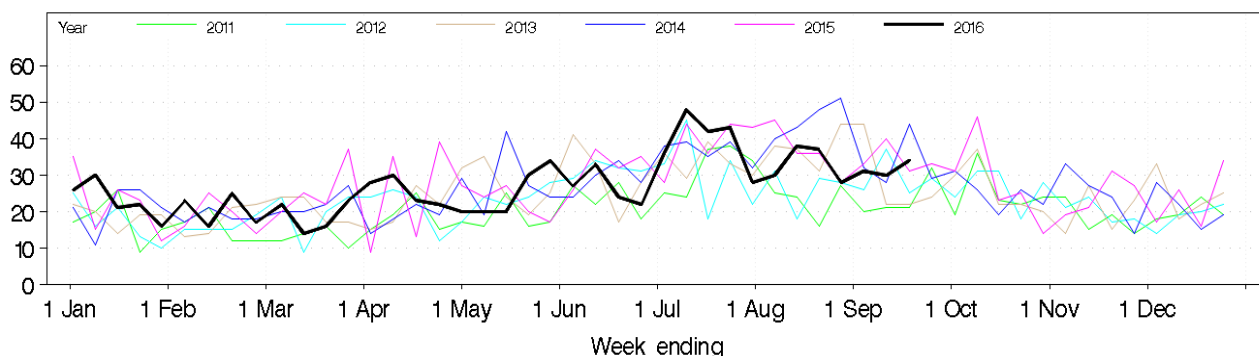


Table 1: Weekly ED and Ambulance Respiratory Activity Summary for the week ending 18 September 2016. Includes data from 60 NSW EDs and the NSW Ambulance Division [4].

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	65+ years	Calvary Mater Newcastle		Daily index of increase = 19.7 (presentations peaked 28/8 2016)
	ILI Admissions	Decreased	Above	65+ years	Hunter New England LHD Ryde Hospital		
	Pneumonia	Decreased	Usual				
	Pneumonia admissions	Decreased	Usual		Hunter New England LHD		
	Pneumonia and ILI critical care admissions	Increased	Usual				
	Asthma	Steady	Usual		Gunnedah Hospital		
	Bronchiolitis	Steady	Above		Mona Vale Hospital		Bronchiolitis is a disease of infants. Daily index of increase = 17.5
	Breathing problems	Decreased	Above	0-4 years			
	All respiratory illness, fever and unspecified infections	Decreased	Usual	0-4 years	Hunter New England LHD Northern Sydney LHD Western Sydney LHD		

[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.

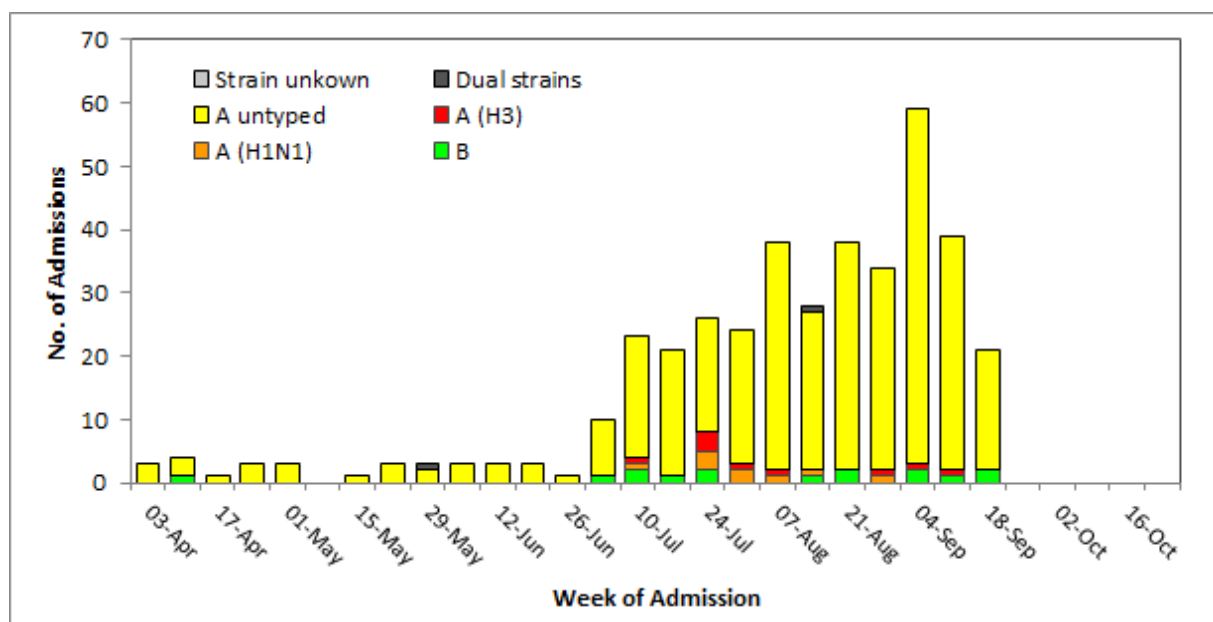
FluCAN (The Influenza Complications Alert Network)

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 37 there were 21 influenza admissions (14 adult and 7 children) in NSW sentinel hospitals (Figure 5).
- Since 1 April 2016, there have been 392 hospital admissions reported for influenza; 375 with influenza A, 15 with influenza B and two with co-infections (Figure 4).
- Of these admissions, 110 were paediatric (<16 years of age) cases and 282 were in adults. Twenty-five cases were admitted to ICU/HDU.

Figure 4: FluCAN – Number of confirmed influenza hospital admissions in NSW, 03 April – 18 September, 2016.



2. Laboratory Surveillance

For the week ending 18 September 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 11,457 tests for respiratory viruses were reported this week with 21.0% testing positive for influenza viruses, down from 12, 539 tests and a 27.6% influenza-positive rate in the previous week. Influenza A(H3N2) is the dominant circulating influenza strain while influenza B activity

[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.

remains at a low level (Figures 5 and 6). 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 18 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	(%)	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	
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	

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 18 September 2016.

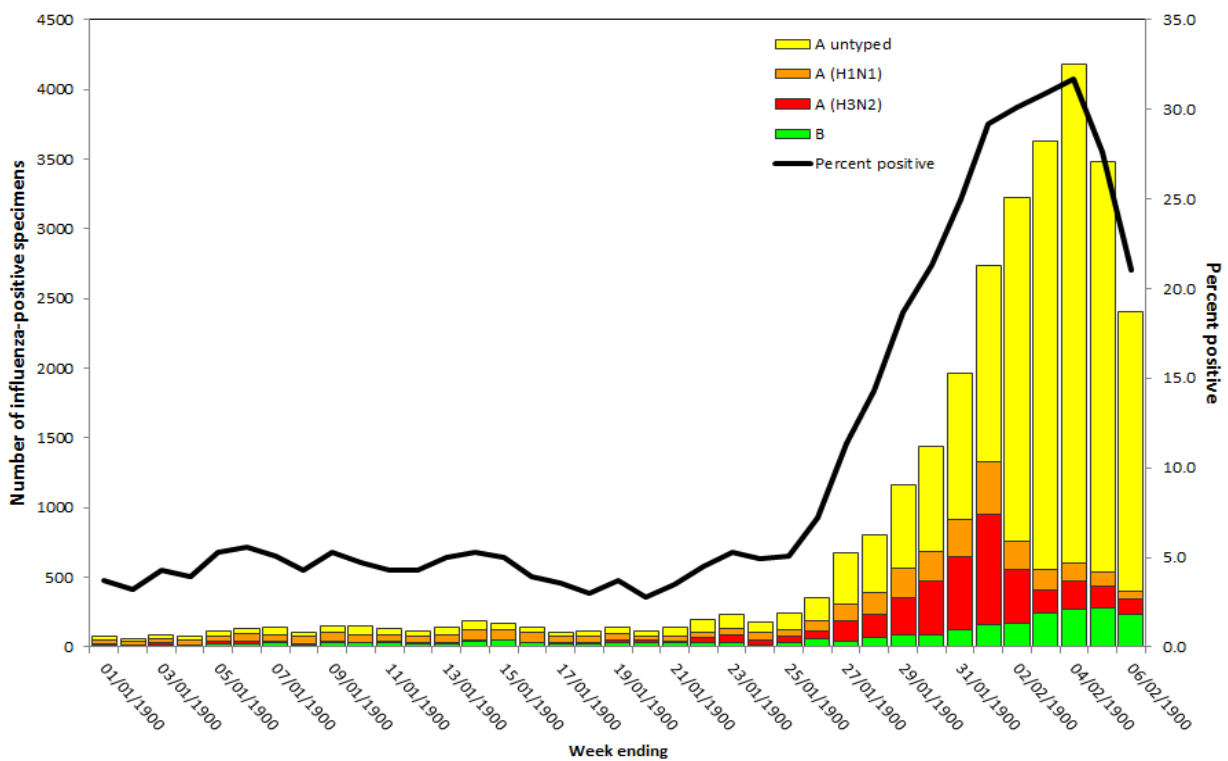
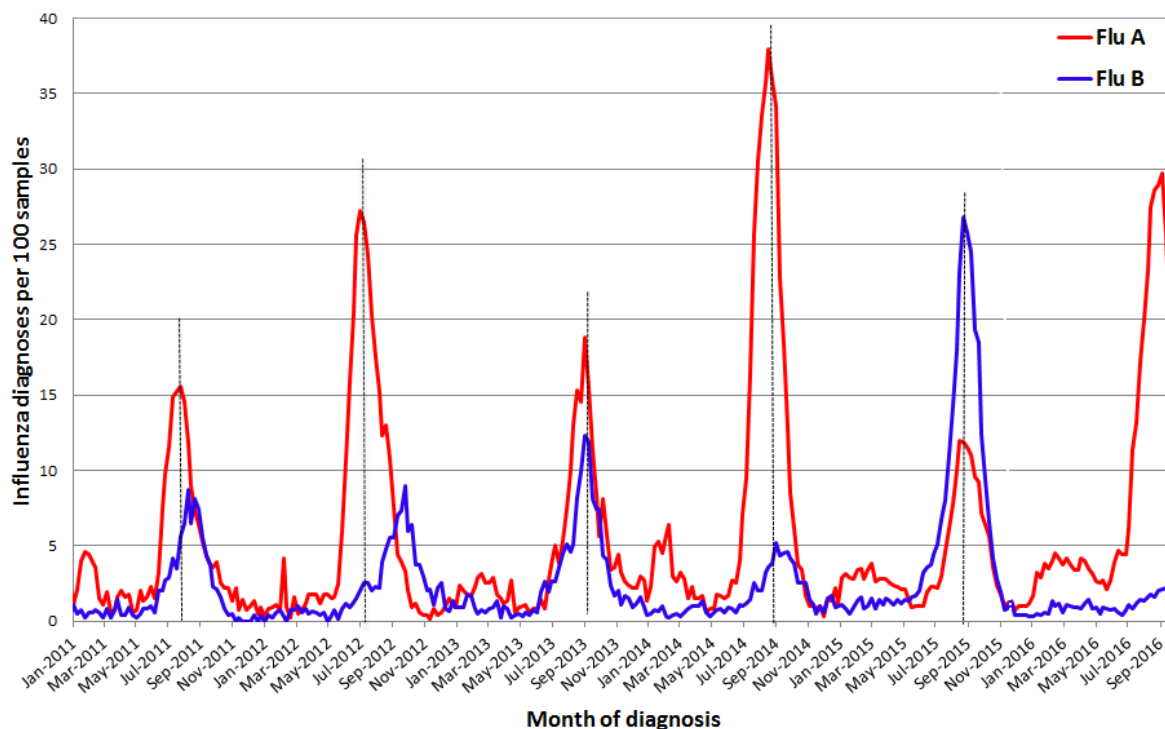


Figure 6: Percentage of laboratory tests positive for influenza A and influenza B by week, 1 January 2010 – 18 September 2016, New South Wales.



3. Community Surveillance

Influenza notifications by Local Health District (LHD)

In the week ending 18 September there were 2,382 notifications of influenza confirmed by polymerase chain reaction (PCR) testing, lower than the 3,211 notifications in the previous week.

Population rates were highest in the Murrumbidgee, Northern Sydney and Western Sydney LHDs (Table 3). Overall notifications decreased in all areas with the exception of Hunter and Mid North Coast LHDs which recorded increases in notifications compared to the previous week.

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

Local Health District	Week ending 18 Sep 2016		Average (previous 4 weeks)	
	Number of notifications	Rate per 100 000 population	Number of notifications	Rate per 100 000 population
Central Coast	121	35.79	122	36.08
Far West	0	0	1	4.1
Hunter New England	331	36.12	317	34.56
Illawarra Shoalhaven	79	19.61	126	31.16
Mid North Coast	51	23.45	47	21.38
Murrumbidgee	109	45.65	119	49.63
Nepean Blue Mountains	136	36.29	198	52.9
Northern NSW	48	15.98	100	33.13
Northern Sydney	411	45.32	627	69.14
South Eastern Sydney	218	24.12	377	41.74
South Western Sydney	161	16.66	350	36.2
Southern NSW	51	24.45	69	32.96
Sydney	185	29.43	248	39.38
Western NSW	57	20.55	64	23.17
Western Sydney	424	44.78	511	53.95

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

Influenza outbreaks in institutions

There were 22 new respiratory outbreaks reported this week; all were due to influenza A. All outbreaks this week were in residential aged care facilities.

In the year to date there have been 232 laboratory confirmed influenza outbreaks in institutions reported to NSW public health units (Table 4): 203 have been due to influenza A, five were influenza B, and two were combined influenza A and B outbreaks. At least 3,288 residents were reported to have had ILI symptoms and 386 required hospitalisation. One hundred and sixty-eight 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 18 September 2016.

Year	2010	2011	2012	2013	2014	2015	2016*
Number of outbreaks	2	4	39	12	120	103	232

Notes: * Year to date.

Electronic General Practice Surveillance (eGPS)

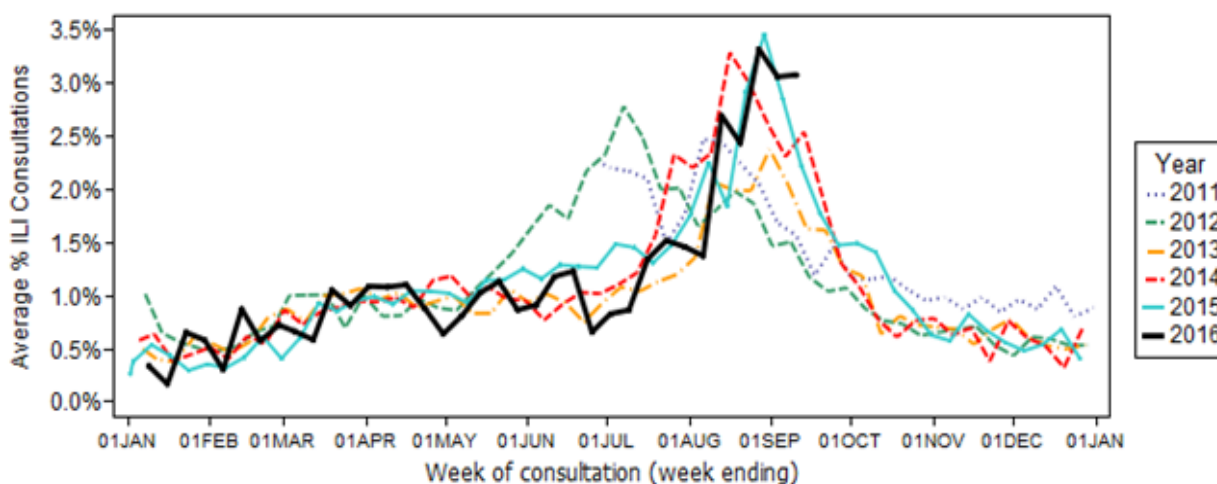
eGPS is a primary care influenza surveillance system involving sentinel general practices within three NSW Local Health Districts (LHD): Northern Sydney (NS), South Eastern Sydney (SES) and Illawarra Shoalhaven (IS). The system monitors patient consultations for influenza-like illness (ILI) as an indicator 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 37:

- there were 5 surveillance reports received from eGPS sentinel practices in NSW;
- the average rate of ILI patient consultations was 2.8% (range 0.6 – 4.2%), down from the previous week (3.1%) (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 37 there were 36 ASPREN reports received from NSW GPs. The overall consultation rate for ILI was moderate at 2.1%, lower than the previous week (2.9%).

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.

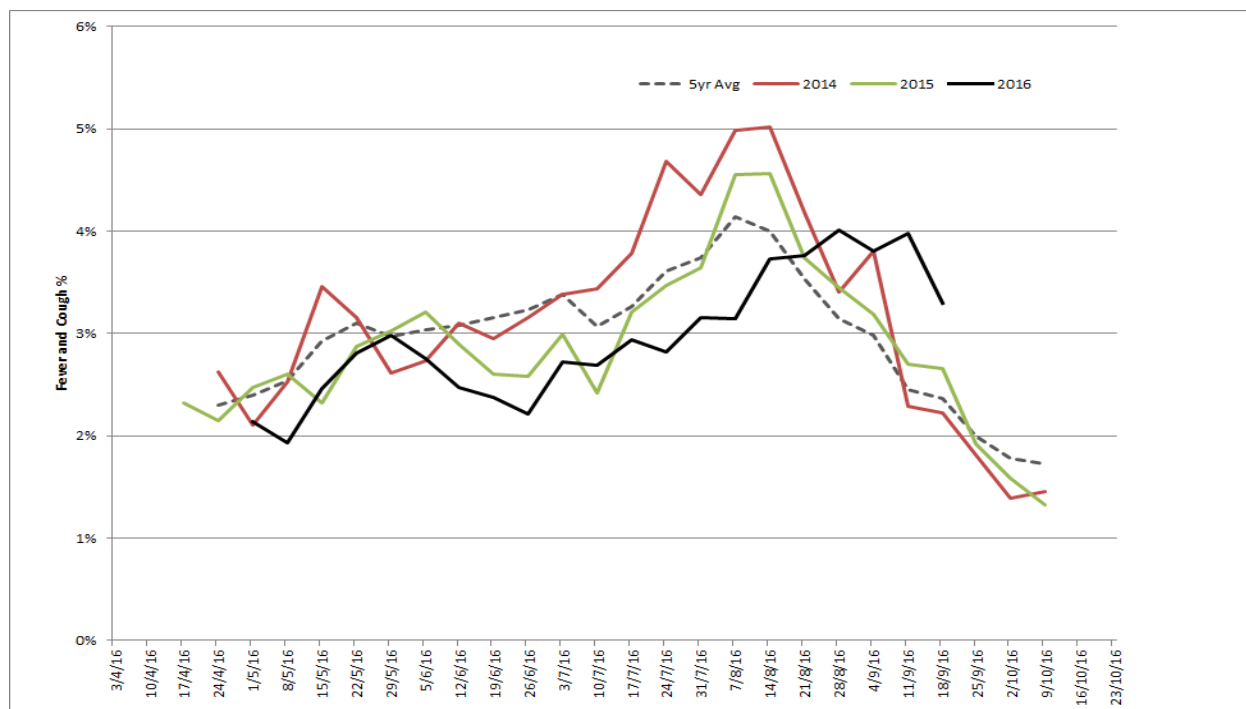
Participants complete a simple online weekly survey which is used to generate data on the rate of ILI symptoms in communities.

In week 37 FluTracking received reports for 7128 people in NSW with the following results:

- 3.3% of respondents reported fever and cough, lower than the previous week (4.0%) (Figure 8).
- 2.2% of respondents reported fever, cough and absence from normal duties, lower than the previous week (2.6%) (data not shown).

Across Australia, fever and cough was reported by 2.3% of vaccinated participants and 2.9% of unvaccinated participants. Fever, cough and absence from normal duties was reported by 1.6% of vaccinated participants and 2.2% of unvaccinated participants.

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.7*, with data up to 2 September 2016, influenza activity continued to increase at the national level, with most regions of Australia reporting widespread and increasing activity. Of note:

- National indicators of influenza-like illness (ILI) declined in the last fortnight, suggesting that the season may be close to peaking. The proportion of patients presenting to sentinel general practitioners with ILI and testing positive for influenza declined slightly this fortnight.
- Influenza A(H3N2) continued to be the dominant circulating influenza virus nationally in recent weeks, noting jurisdictional variation.
- Notification rates for the 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 influenza A(H3N2) being typically more prevalent in older age groups.
- 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 19 September 2016](#) provides data up to 4 September. Influenza activity varied in countries of temperate South America, is ongoing in South Africa and increased steadily in the last few weeks 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 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). Information about the Northern Hemisphere vaccine recommendations can be found at:

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