NSW Health Influenza Surveillance Report

Week 32: 8 August to 14 August 2016

Summary:

- **Seasonal influenza activity continues to rise steadily and is currently following a similar course to last year (2015).**
- **Influenza A(H3N2) is the dominant circulating influenza strain.**

In this reporting week:

- Hospital Surveillance – the rate of influenza like illness (ILI) presentations to selected emergency departments increased and remains well above the seasonal threshold.
- Laboratory surveillance – the total number of influenza isolations continues to rise along with the proportion of respiratory samples positive for influenza (29.2%).
- Community surveillance – influenza notifications were increased across most local health districts (LHD). General Practice and community-based surveillance systems suggest increased ILI activity. Influenza activity continues to impact heavily on the aged care sector with 20 new respiratory outbreaks reported this week in residential aged care facilities.
- Deaths - The NSW Registry of Births, Deaths, and Marriages have recorded 22 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 indicating that the season is underway. Current influenza strains are well matched to the 2016 influenza vaccines. Influenza activity is increasing in some other regions in the Southern Hemisphere.

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

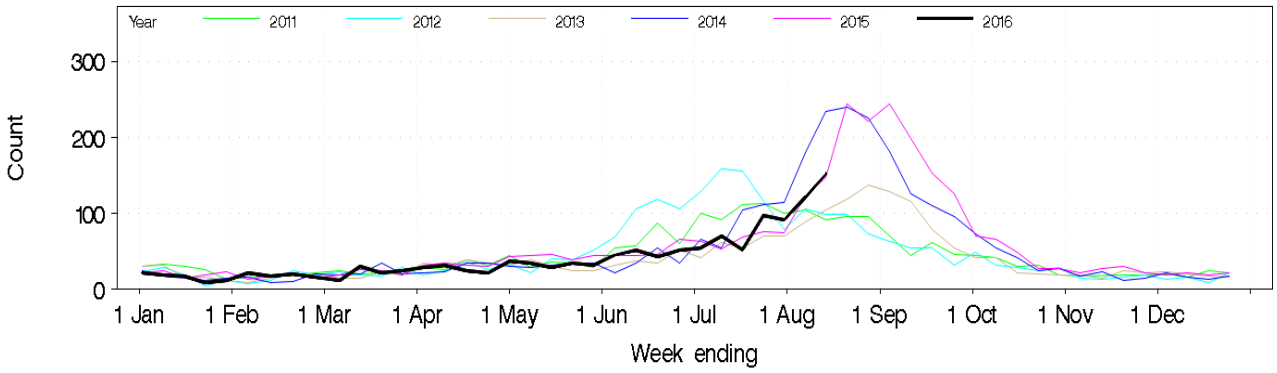
NSW emergency department (ED) presentations for influenza-like illness (ILI) and other respiratory illnesses

Source: PHREDSS [1]

For the week ending 14 August 2016:

- ILI presentations [2] increased this week and are expected to continue to increase further over the coming weeks. Presentations were significantly above the five-year mean for this week at Bega Hospital. (Figure 1 and Table 1).
- The index of increase for ILI presentations was 50.0 on 14 August, an increase on the previous week (38.7).
- The proportion of ILI presentations to all ED presentations was moderate at 3.5 per 1000 presentations, higher than the previous week (2.9).
- ED presentations for pneumonia [3] increased slightly and remained within the usual range for this time of year (Figure 2 and Table 1.)
- Pneumonia or ILI presentations which resulted in admission increased and were within the usual range for this time of year. Presentations were significantly above the five-year mean at Fairfield Hospital. Presentations which resulted in admissions to critical care wards increased but were also within the usual range for this time of year (Figure 3 and Table 1).
- Bronchiolitis presentations increased this week but were within the usual range for this time of year (Table 1).
- The category combining all respiratory, fever and unspecified infection presentations increased but was within the usual range for this time of year (Table 1).

Figure 1: Total weekly counts of ED visits for influenza-like illness, all ages, from 1 January – 14 August 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.
[2] Data shown represents unplanned presentations to hospital EDs.
[3] 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.
[4] 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 pneumonia, all ages, from 1 January – 14 August 2016 (black line), compared with each of the 5 previous years (coloured lines).

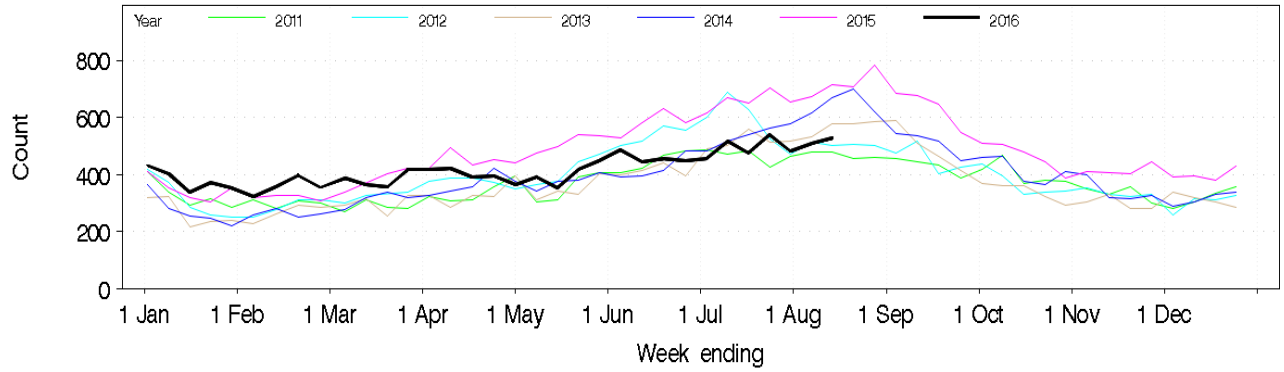


Figure 3 Total weekly counts of ED presentations for pneumonia or influenza-like illness and admitted to a critical care ward, all ages, from January – 14 August 2016 (black line), compared with each of the 5 previous years (coloured lines).

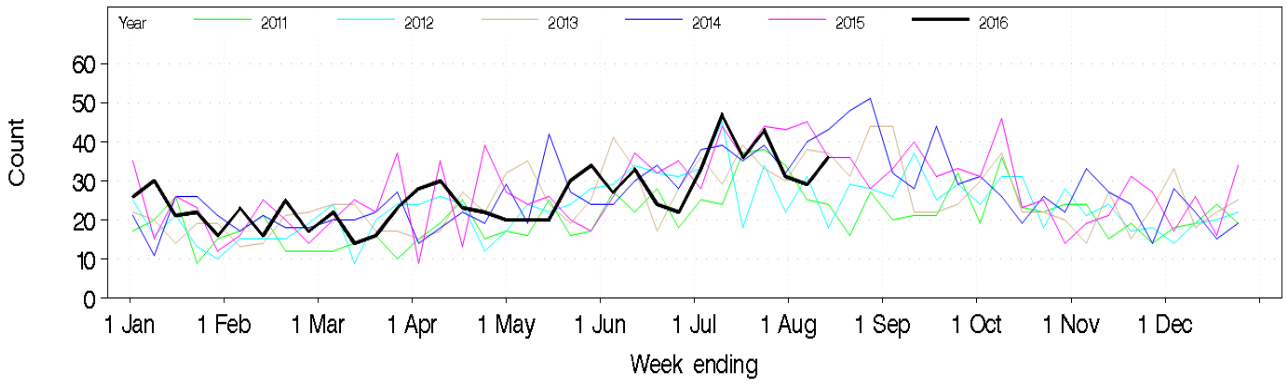


Table 1: Weekly ED and Ambulance Respiratory Activity Summary for the week ending 14 August 2016. Includes data from 60 NSW EDs and the NSW Ambulance Division. *

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)	Increased	Usual		**Bega Hospital**		**Daily index of increase = 50.0 (seasonal threshold crossed on 26 June 2016)**
	Pneumonia	Increased	Usual				
	Pneumonia and ILI admissions	Steady	Usual				
	Pneumonia and ILI critical care admissions	Increased	Usual		**Fairfield Hospital**		
	Asthma	Decreased	Usual				
	Bronchiolitis	Increased	Usual				Bronchiolitis is a disease of infants. **Daily index of increase = 23.9**
	Breathing problems	Increased	Above				
	All respiratory illness, fever and unspecified infections	Increased	Usual				

*** Notes on 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.

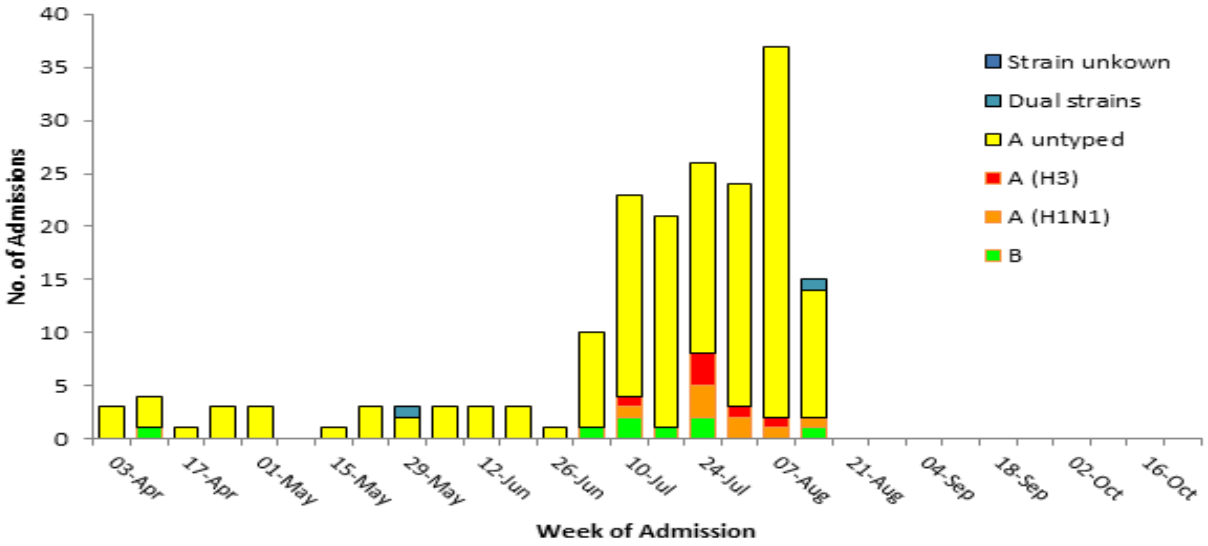
FluCAN (The Influenza Complications Alert Network)

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 32 there were 15 influenza admissions (7 adult and 18 children) in NSW sentinel hospitals (Figure 5).
- Since 1 April 2015, there have been 187 hospital admissions reported for influenza; 177 with influenza A and 8 with influenza B and two with co-infections (Figure 4).
- Of these admissions, 50 were paediatric (<16 years of age) cases and 112 were in adults. Nine cases were admitted to ICU/HDU.

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



2. Laboratory Surveillance

For the week ending 14 August 2016 the number and proportion of respiratory specimens reported by NSW sentinel laboratories [4] which tested positive for influenza A or influenza B increased and is expected to continue to rise (Table 2).

A total of 9,361 tests for respiratory viruses were reported this week with 29.2% testing positive for influenza viruses, up from 7,882 tests and a 25.0% influenza-positive rate in the previous week. Influenza A(H3N2) is the dominant circulating influenza strain. Influenza B activity remains at a low level (Figure 5 and 6), in contrast to the 2015 season when B strains predominated.

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

[4]: 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. **Week 28, data were not provided by Seals and Laverty.**

Table 2: Summary of testing for influenza and other respiratory viruses at NSW laboratories, 1 January to 14 August 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
Week ending																	
07/08/2016	7882	1840	(23.3%)	516	(28.0%)	275	(14.9%)	1049	(57.0%)	128	(1.6%)	215	113	541	547	149	73
14/08/2016	9361	2568	(27.4%)	789	(30.7%)	375	(14.6%)	1404	(54.7%)	165	(1.8%)	233	170	624	673	239	100

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 14 August 2016.

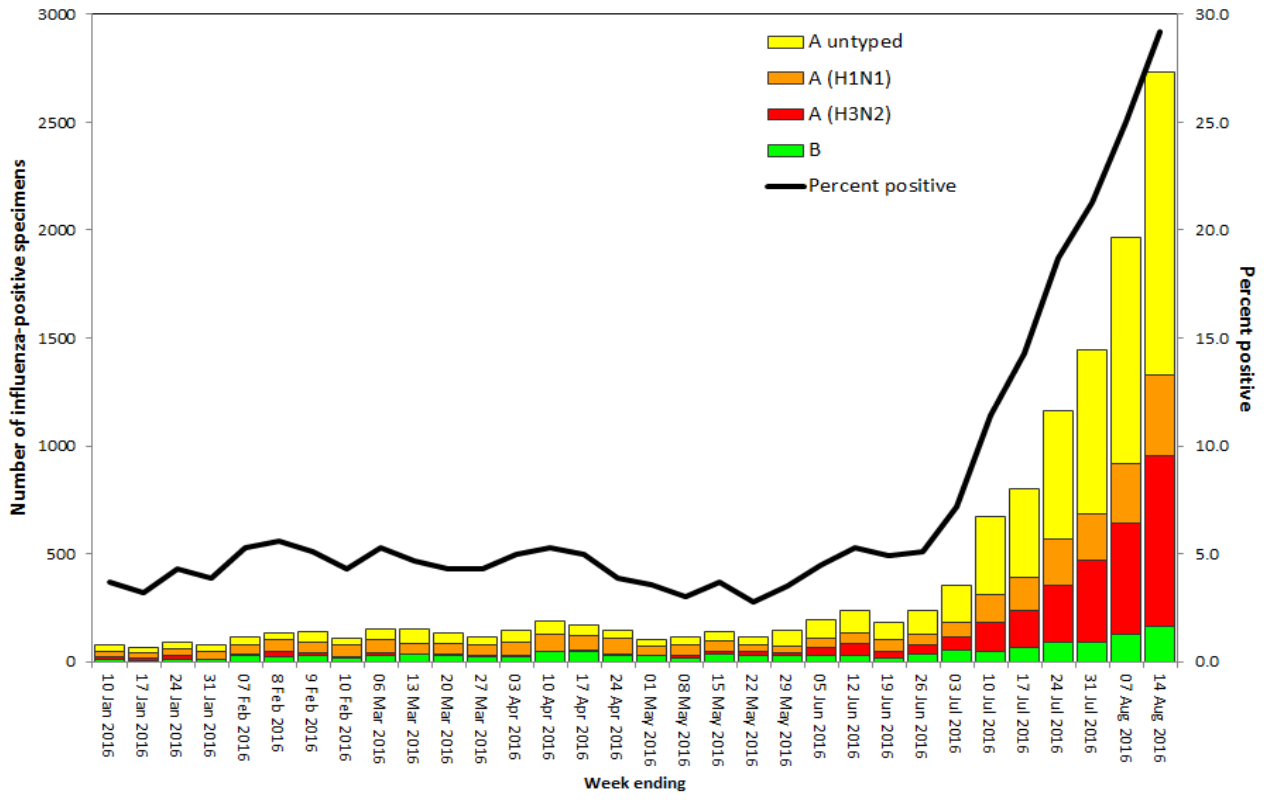

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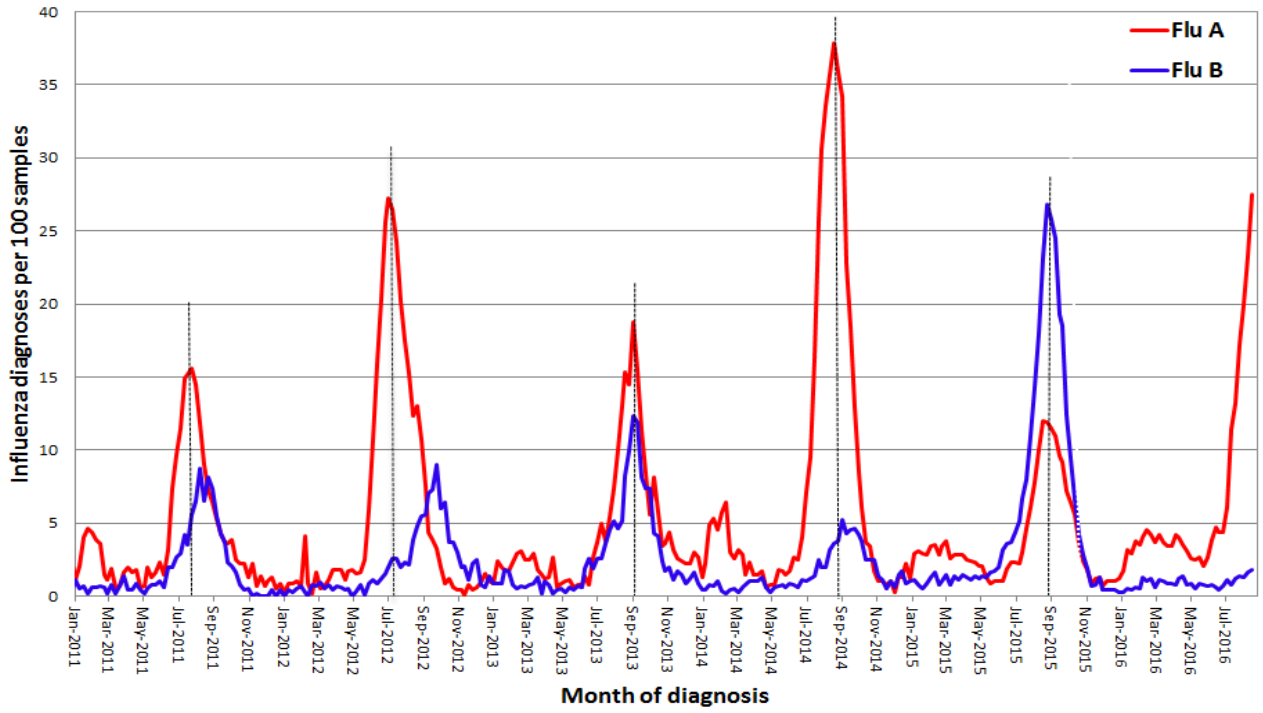
Figure 6: Percentage of laboratory tests positive for influenza A and influenza B by week, 1 January 2010 – 14 August 2016, New South Wales.



3. Community Surveillance

Influenza notifications by Local Health District (LHD)

In the week ending 14 August there were 2,357 notifications of influenza confirmed by polymerase chain reaction (PCR) testing, higher than the 1,753 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 14 Aug 2016		Weekly average (previous 4 weeks)	
	Number of notifications	Rate per 100 000 population	Number of notifications	Rate per 100 000 population
Central Coast	54	15.97	22	6.58
Far West	0	0	3	7.12
Hunter New England	199	21.71	72	7.86
Illawarra Shoalhaven	80	19.86	40	9.93
Mid North Coast	30	13.79	10	4.6
Murrumbidgee	42	17.59	14	5.97
Nepean Blue Mountains	127	33.89	82	21.95
Northern NSW	66	21.98	28	9.32
Northern Sydney	509	56.13	218	24.01
South Eastern Sydney	306	33.86	160	17.7
South Western Sydney	269	27.84	151	15.58
Southern NSW	29	13.9	13	6.11
Sydney	184	29.27	101	16.07
Western NSW	10	3.61	14	4.96
Western Sydney	452	47.74	220	23.24

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 with the majority due to influenza A (H3N2). All were in residential aged care facilities except for two outbreaks on hospital wards (Table 4).

In the year to date there have been 85 laboratory confirmed influenza outbreaks in institutions reported to NSW public health units (Table 4): 80 have been due to influenza A, three were influenza B, and two were combined influenza A and B outbreaks. At least 819 residents were reported to have had ILI symptoms and 68 required hospitalisation. Fifty-three 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 associated with an increase in influenza outbreaks in institutions, particularly residential aged care facilities (Table 4).

Table 4: Reported influenza outbreaks in NSW institutions, January 2010 to 14 August 2016.

Year	2010	2011	2012	2013	2014	2015	2016*
Number of outbreaks	2	4	39	12	120	103	85

Notes: * Year to date.

Electronic General Practice Surveillance (eGPS)

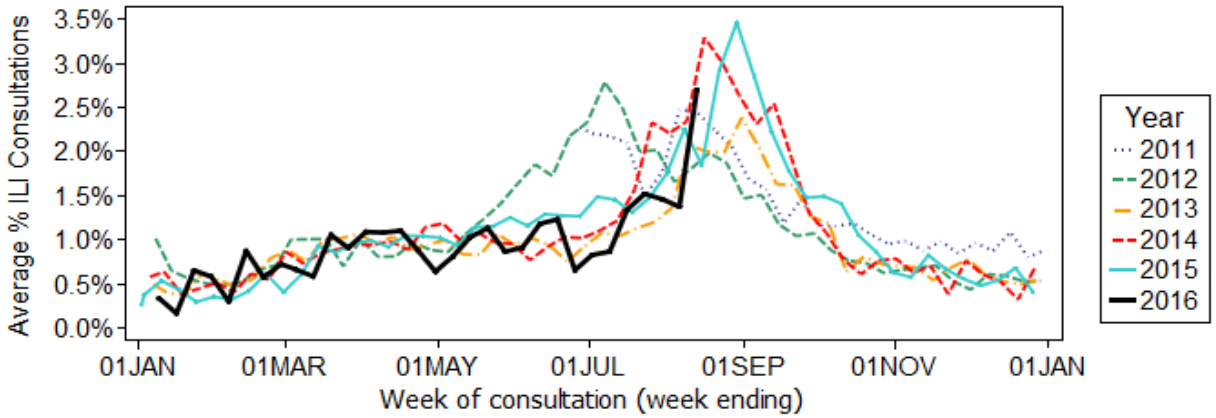
eGPS is a primary care influenza surveillance system involving sentinel general practices within three NSW Local Health Districts (LHD): Northern Sydney (NS), South Eastern Sydney (SES) and Illawarra Shoalhaven (IS). The system monitors patient consultations for influenza-like illness (ILI) as an indicator 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 32:

- there were 5 surveillance reports received from eGPS sentinel practices in NSW;
- the average rate of ILI patient consultations increased to 2.7% (range 0.3 – 5.4%), significantly higher than 1.4% 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).



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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 32 there were 47 ASPREN reports received from NSW GPs. The overall consultation rate for ILI was moderate at 2.8%, down from the previous week (3.6%).

For further information please see the ASPREN website.

FluTracking.net

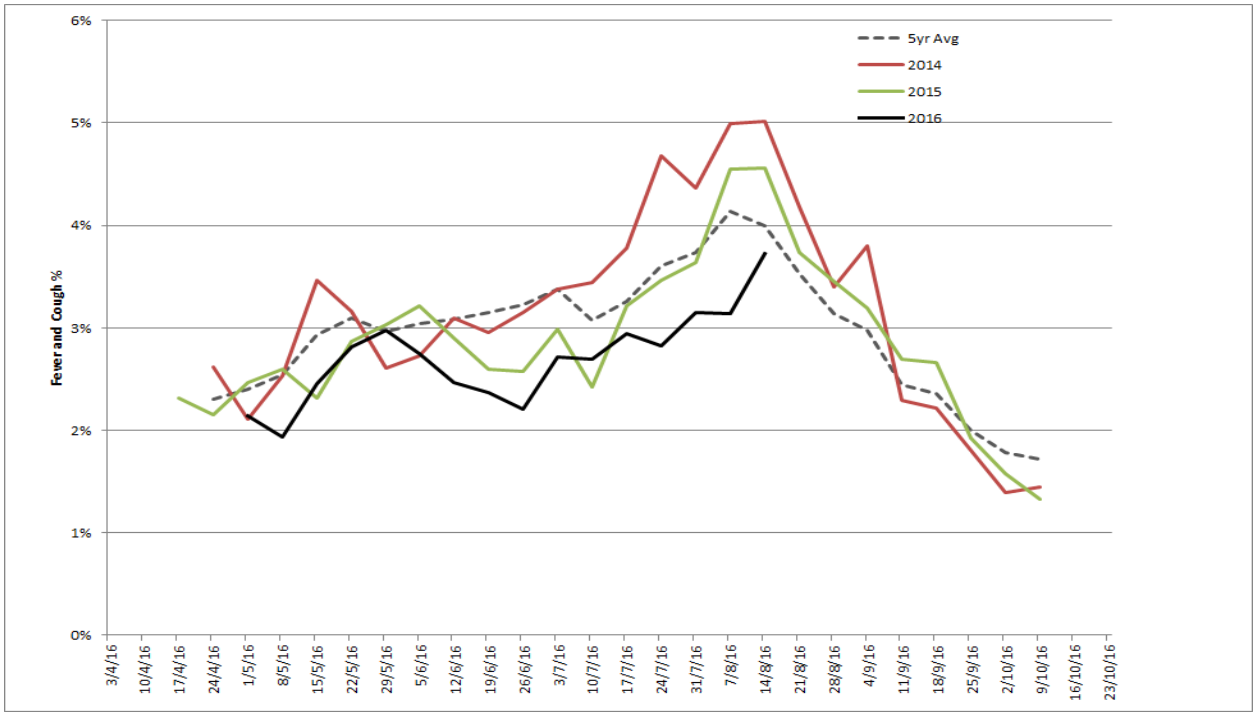
FluTracking.net is an online health surveillance system to detect epidemics of influenza. FluTracking is a project of the University of Newcastle, the Hunter New England Local Health District and the Hunter Medical Research Institute.

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

In week 32 FluTracking received reports for 7538 people in NSW with the following results:

- 3.7% of respondents reported fever and cough, higher than the previous week (3.1%) (Figure 8).
- 2.3% of respondents reported fever, cough and absence from normal duties, higher than the previous week (2.0%)(data not shown).

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



For further information please see the FluTracking website.

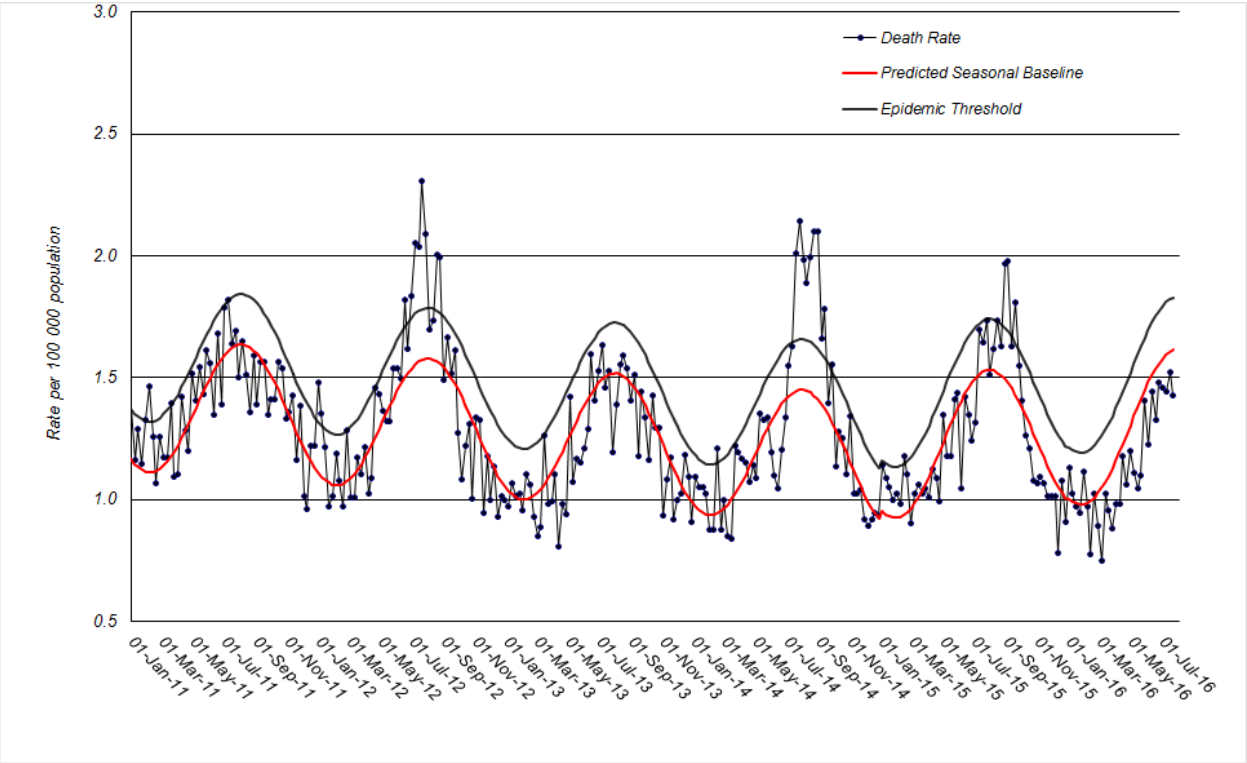
4. Deaths with pneumonia or influenza reported on the death certificate

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 22 July:

- 22 of 28,224 death certificates (0.08%) 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
- 2,519 of 28,224 death certificates (8.9%) mentioned pneumonia.
- There were 1.43 “pneumonia and influenza” deaths per 100,000 NSW population, which was below 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 – 22 July 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.5,* with data up to 5 August 2016, influenza activity at the national level continued to increase indicating that the season is underway. Of note:

- Influenza-like illness (ILI) is increasing nationally. Influenza was the most common cause of ILI presentations to sentinel general practitioners.
- Influenza A(H3N2) was 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 influenza A(H3N2) being typically more prevalent in older age groups.
- Hospitalisations with confirmed influenza have increased in recent weeks in line with the seasonal increase in community level activity.
- 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 8 August 2016 provides data up to 24 July. Influenza activity varied in countries of temperate South America and increased steadily in the last few weeks in South Africa, but remained low overall in most of Oceania. Influenza activity in the temperate zone of the northern hemisphere was at inter-seasonal levels. 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) uses 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/