NSW Health Influenza Surveillance Report

Week 34: 21 to 27 August, 2017

Summary:

- **The influenza season has passed its peak but activity remains high. Activity is expected to continue to decline throughout September.**
- **Influenza A strains remain predominant but are declining. Influenza B activity is steady.**

In this reporting week:

- Hospital surveillance – influenza-like illness (ILI) presentations to selected emergency departments decreased for the first time this season. Overall activity remained high.
- Laboratory surveillance – the total number of influenza isolations decreased for the first time this season, and the influenza-positive test rate was lower at 45.7%. There was a decrease in the proportion of influenza A fell while influenza B was steady.
- Community surveillance – influenza notifications increased slightly overall but GP and FluTracking surveillance both indicated declines in ILI activity. Influenza outbreaks in institutions declined but there were still 48 outbreaks in residential aged care facilities.
- Deaths with pneumonia or influenza reported on the death certificate – the NSW Registry of Births, Deaths, and Marriages has recorded 69 deaths in association with influenza in 2017. The rate of deaths classified as "pneumonia and influenza" was increased overall.
- National and international influenza surveillance – influenza activity at the national level continued to increase this reporting fortnight with most jurisdictions reporting peak seasonal activity levels, with notifications above the usual range.
- Recommended composition of 2017 influenza vaccines – the 2017 Australian influenza vaccines cover two A and two B strains, including one A strain change from 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 27 August 2017:

- ILI presentations [2] decreased this week for the first time this season but levels remain high for most age groups and across the majority of NSW local health districts (LHDs) (Figure 1 and Table 1).
- ILI presentations resulting in admission also decreased but remained above the usual range in most age groups and in many LHDs (Figure 2 and Table 1).
- As of 27 August 2017, the daily index of increase for ILI presentations across NSW was high at 64.7 but notably lower than the previous week (90.3). The index peaked on 11 August after first crossing the ED seasonal threshold of 15.0 on 23 June 2017.
- The proportion of ILI presentations to all ED presentations was high at 16.3 per 1000 presentations, similar to the previous week (17.0 per 1000).
- ED presentations for pneumonia [3] decreased and were within the usual range for this time of year (Table 1.) Pneumonia admissions from ED also decreased and were within the usual range for this time of year (Table 1).
- Pneumonia and ILI presentations requiring admission to critical care decreased further and were within the usual range for this time of year (Figure 3 and Table 1).

Figure 1: Total weekly counts of ED visits for influenza-like illness, all ages, from 1 January – 27 August, 2017 (black line), compared with each of the 5 previous years (coloured lines).

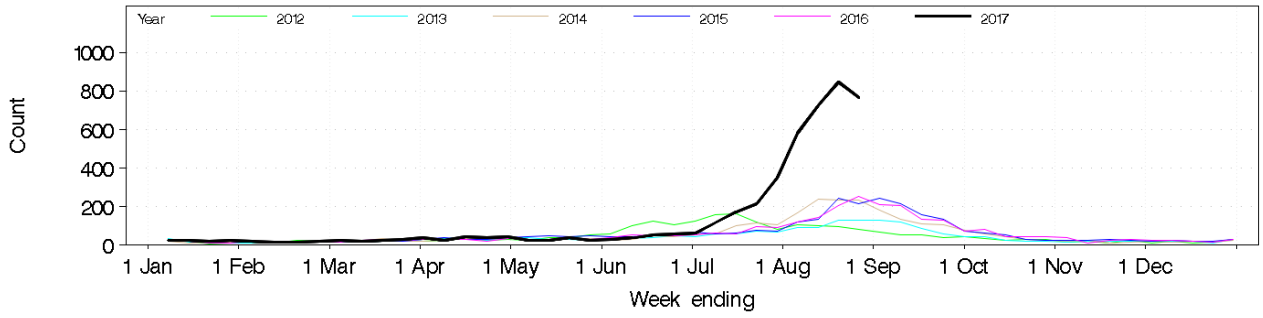
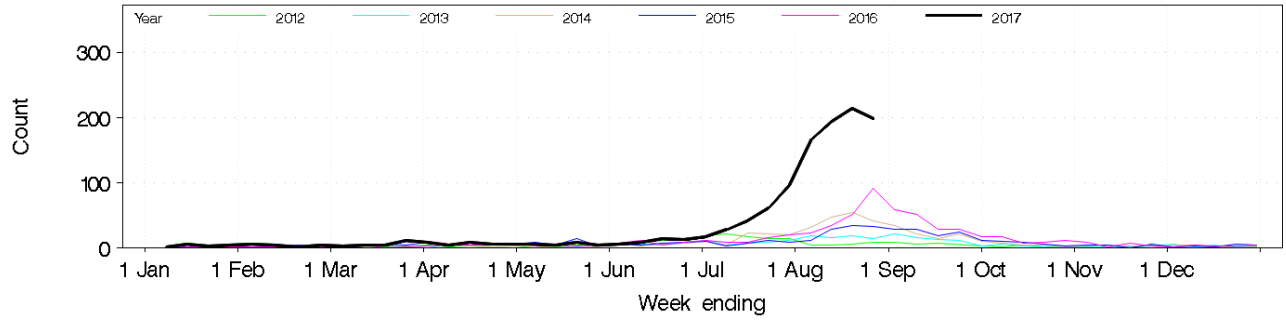


Figure 2: Total weekly counts of ED presentations for influenza-like-illness that were admitted, all ages, from 1 January – 27 August 2017 (black line), compared with each of the 5 previous years (coloured lines).



[1] NSW Health Public Health Rapid, Emergency Disease and Syndromic Surveillance system, CEE, NSW Ministry of Health. Comparisons are made with data for the preceding 5 years. Recent counts are subject to change. Data from 60 NSW emergency departments are included. The coverage of rural EDs is lower than metropolitan EDs. Data shown represent 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'.

Back to top

Figure 3 Total weekly counts of ED presentations for influenza-like illness and pneumonia, that were admitted to a critical care ward all ages, from 1 January – 27 August, 2017 (black line), compared with each of the 5 previous years (coloured lines).

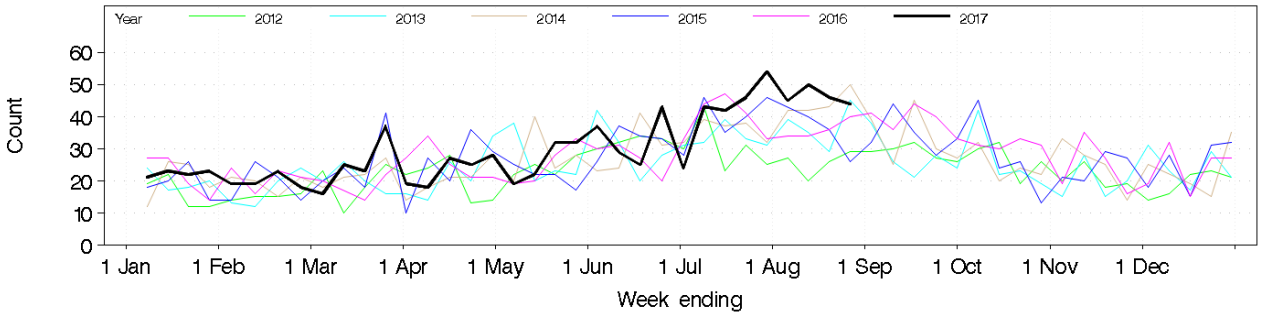


Table 1: Weekly ED and Ambulance Respiratory Activity Summary for the week ending 27 August 2017. Includes data from 60 NSW EDs and the NSW Ambulance Division. [4]

Data source	Diagnosis or problem category	Trend since last week	Comparison with usual range*	Statistically elevated age groups	Statistically significant locations (LHDs)	Significant elevated severity indicators**	Comment
ED presentations, 60 NSW hospitals	Influenza-like illness (ILI)	Decreased (765)	**Above** (82-250)	**65+ years (196) 35-64 years (232) 5-16 years (101) 0-4 years (84) 17-34 years (152)**	**Hunter New England (121), South Eastern Sydney (110), Northern Sydney (75), Central Coast (39), Western Sydney (118), Illawarra Shoalhaven (51), Mid North Coast (36), Southern NSW (21), Northern NSW (39), Western NSW (28), Nepean Blue Mountains (28), South Western Sydney (48) LHDs**	**Ambulance arrival (172)**	Daily index of increase = 64.7
	ILI admissions	Decreased (198)	**Above** (9-91)	**65+ years (111) 35-64 years (51) 5-16 years (11)**	**Illawarra Shoalhaven (16), Hunter New England (41), Northern Sydney (17), South Eastern Sydney (23), Northern NSW (11), Mid North Coast (9), South Western Sydney (15), Central Coast (10), Western Sydney (29) Nepean Blue Mountains (7) LHDs**	**Admission to critical care (11), ambulance arrival (100)**	
	Pneumonia	Decreased (638)	Within (498-766)				
	Pneumonia admissions	Decreased (448)	Within (367-543)				
	Pneumonia and ILI critical care admissions	Decreased (44)	Within (26-50)				
	Asthma	Decreased (389)	Within (409-522)				
	Bronchiolitis	Increased (241)	Within (213-309)				
	All respiratory illness, fever and unspecified infections	Decreased (8,806)	**Above (5,625-8,492)**	**65+ years (2,240) 35-64 years (1,706) 5-16 years (1,280) 0-4 years (2,469) 17-34 years (1,111)**	**South Western Sydney (1,102), Western NSW (405), Western Sydney (1,086), Hunter New England (1,267), Mid North Coast (403), South Eastern Sydney (1,046), Illawarra Shoalhaven (473), Northern NSW (396) LHDs**	**Admitted (2,839), ambulance arrival (2,059)**	

[4] **Notes. Key for trend since last week:** Non-bold and green=decreased or steady; Non-bold and orange=increased **Key for comparison with usual range:** Non-bold and green =usual range; Non-bold and orange=above usual range, but not significantly above five-year mean; **Bold** and yellow=within usual range, but significantly above five-year mean; **Bold** and red = above the usual range and significantly above five-year mean (ED). Counts are statistically significant (shown in **bold**) if they are at least five standard deviations above the five-year mean for ED presentations. The 'daily index of increase' is statistically significant above a threshold of 15. LHD = Local Health District.
* The usual range is the range of weekly counts for the same week in the previous five years for ED presentations. Note that comparisons are not adjusted for the start of the season. Cells with small counts are not reported.
** Severity indicators include: Admission to a ward or critical care service; Triage category 1; Ambulance arrival and Death in ED.

Back to top

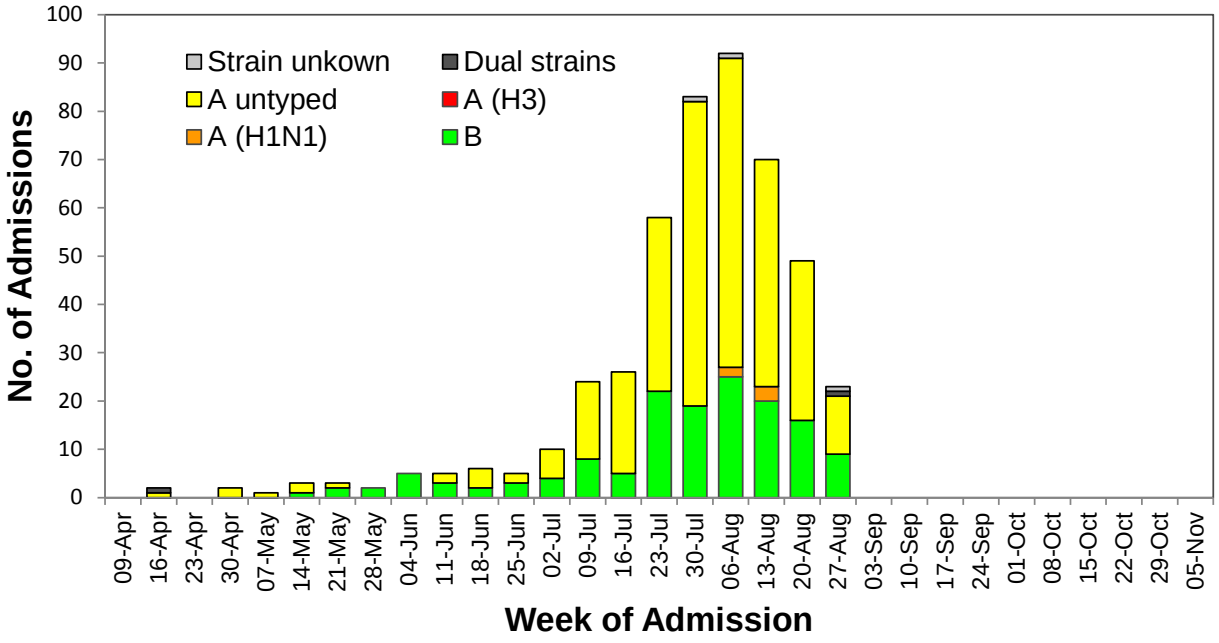
FluCAN (The Influenza Complications Alert Network)

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 34 there were 23 influenza admissions in NSW sentinel hospitals, continuing the decline since early August (Figure 4). Of these, 12 were due to influenza A, 9 were due to influenza B, one patient had a dual infection and one strain was unknown.

Since 1 April 2017, there have been 468 hospital admissions reported for influenza; 317 due to influenza A, 146 due to influenza B, 2 with a co-infection, and 3 unknown (Figure 4). Of these admissions, 148 were paediatric cases (<16 years of age) and 320 were in adults. Of the 468 cases, 41 cases (8.8%) have been admitted to a critical care ward.

Figure 4: FluCAN – Number of confirmed influenza hospital admissions in NSW, 9 April 2017 to 27 August 2017.



2. Laboratory Surveillance

For the week ending 27 August 2017 the number and proportion of respiratory specimens reported by NSW sentinel laboratories [5] which tested positive for influenza A or influenza B decreased for the first time this season (Table 2, Figure 5),and there was a decrease in testing for respiratory viruses.

Overall, 45.7% of tests for respiratory viruses were positive for influenza, lower than the 50.5% rate of the previous week (Figure 5).

Influenza A strains remain predominant, particularly A(H3N2), although the percentage of positive tests for influenza A strains declined further. The influenza B strain positive percentage was steady at just under 20% (Table 2, Figures 5 and 6).

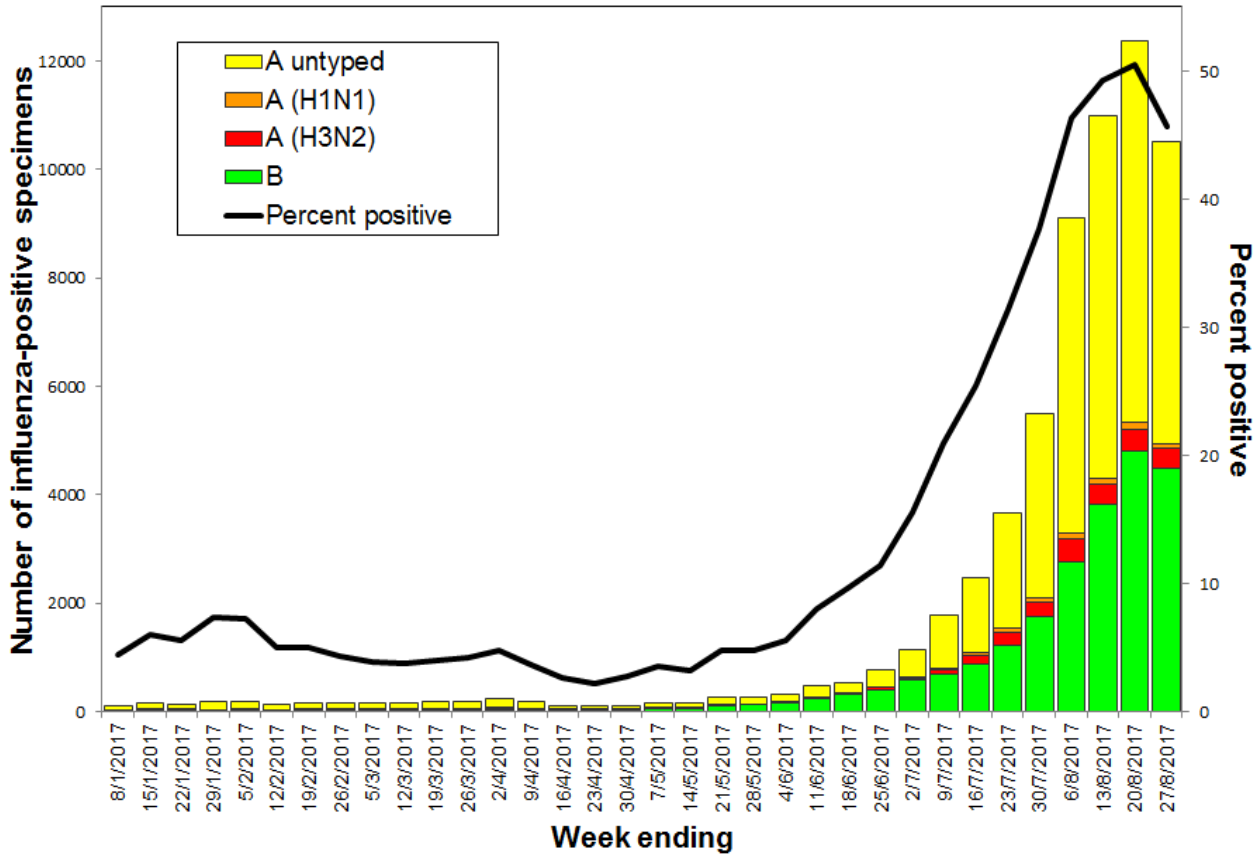
[5] Preliminary laboratory data is provided by participating sentinel laboratories on a weekly basis and are subject to change. Point-of-care test results have been included since August 2012 but serological diagnoses are not included. Participating sentinel laboratories: Pathology North (Hunter, Royal 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

Table 2: Summary of testing for influenza and other respiratory viruses at NSW laboratories by test date, 1 January to 27 August 2017.

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	(%)						
29/01/2017	9981	489	(4.9%)	53	(10.8%)	4	(0.8%)	432	(88.3%)	92	(0.9%)	374	433	323	1462	236	131
26/02/2017	12273	564	(4.6%)	78	(13.8%)	7	(1.2%)	479	(84.9%)	83	(0.7%)	430	458	719	2772	170	248
02/04/2017*	21161	724	(3.4%)	83	(11.5%)	16	(2.2%)	625	(86.3%)	158	(0.7%)	684	1000	1830	5427	290	530
30/04/2017	18089	377	(2.1%)	63	(16.7%)	15	(4.0%)	299	(79.3%)	135	(0.7%)	588	901	2600	4202	231	468
04/06/2017*	26372	657	(2.5%)	67	(10.2%)	52	(7.9%)	538	(81.9%)	506	(1.9%)	1037	852	3275	6859	299	503
02/07/2017	25565	1407	(5.5%)	104	(7.4%)	73	(5.2%)	1230	(87.4%)	1530	(6.0%)	1058	734	3291	5794	441	490
30/07/2017	46579	9328	(20.0%)	745	(8.0%)	249	(2.7%)	8334	(89.3%)	4516	(9.7%)	1712	926	4059	6011	709	625
Week ending																	
06/08/2017	19212	6257	(32.6%)	421	(6.7%)	117	(1.9%)	5819	(93.0%)	2757	(14.4%)	575	245	990	1654	216	157
13/08/2017	21614	7190	(33.3%)	391	(5.4%)	107	(1.5%)	6692	(93.1%)	3809	(17.6%)	600	209	962	1698	226	183
20/08/2017	24506	7587	(31.0%)	416	(5.5%)	126	(1.7%)	7045	(92.9%)	4796	(19.6%)	629	231	816	1652	251	153
27/08/2017	22990	6020	(26.2%)	358	(5.9%)	88	(1.5%)	5574	(92.6%)	4487	(19.5%)	652	260	735	1722	223	115

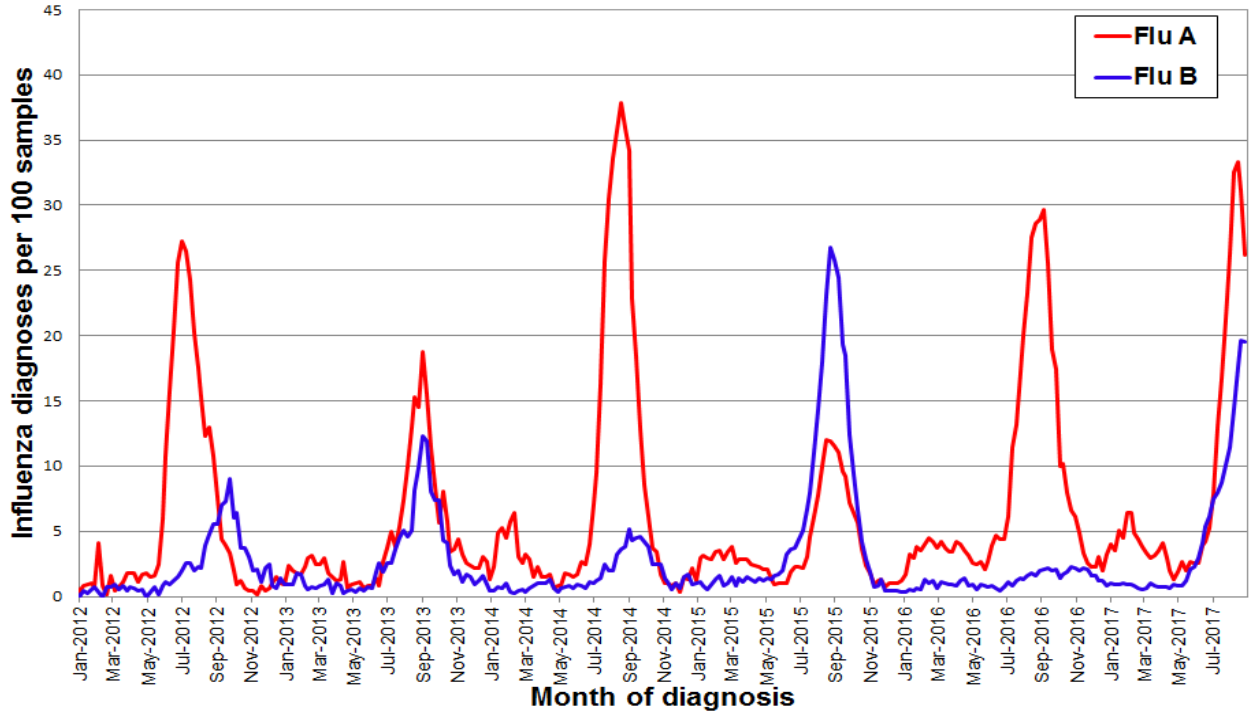
Notes: * Five-week reporting period. ** Human metapneumovirus

Figure 5: Weekly influenza positive test results by type and sub-type reported by NSW sentinel laboratories, 1 January to 27 August 2017.



Back to top

Figure 6: Percentage of laboratory tests positive for influenza A and influenza B by week, 1 January 2012 to 27 August 2017, New South Wales.



3. Community Surveillance

Influenza notifications by Local Health District (LHD)

In the week ending 27 August there were 10907 notifications of influenza confirmed by polymerase chain reaction (PCR) testing, slightly higher than in the previous week (9776).

Notifications remained highest in Sydney metropolitan LHDs. Rates were significantly higher in urban LHDs, particularly in the Western Sydney and Hunter New England LHDs. Notifications were decreased in the Nepean Blue Mountains, Southern NSW and Murrumbidgee LHDs.

Table 3: Weekly notifications of laboratory-confirmed influenza by NSW Local Health District, by earliest report or create date.

Local Health District	Week ending 27 Aug 2017		Week ending 20 Aug 2017	
	Number of notifications	Rate per 100 000 population	Number of notifications	Rate per 100 000 population
Central Coast	461	133.48	458	132.61
Far West	18	58.78	9	29.39
Hunter New England	1357	145.94	951	102.28
Illawarra Shoalhaven	534	130.66	603	147.54
Mid North Coast	198	89.06	189	85.01
Murrumbidgee	175	72.27	284	117.28
Nepean Blue Mountains	575	149.43	812	211.03
Northern NSW	283	92.33	227	74.06
Northern Sydney	1669	182.34	1435	156.78
South Eastern Sydney	1289	138.92	1046	112.73
South Western Sydney	1262	127.45	1000	100.99
Southern NSW	130	60.73	256	119.6
Sydney	729	111.34	675	103.09
Western NSW	218	78.01	229	81.94
Western Sydney	2009	207.13	1602	165.17

Notes: * All data are preliminary and may change as more notifications are received. Excludes notifications based on serology. For further information follow the influenza link from the diseases data page.

Influenza outbreaks in institutions

There were 54 influenza outbreaks in institutions reported this week, a marked decline compared to the previous week (82, Figure 7). Of these, 48 were in residential aged care facilities, five were in hospital wards, and there was one outbreak in a residential facility for people with a disability. A total of 39 outbreaks were due to influenza A, 12 were due to influenza B, two involved both influenza A and B strains and the strain for one is pending.

In the year to date there have been 371 laboratory confirmed influenza outbreaks in institutions reported to NSW public health units (Table 4): 291 have been due to influenza A, 52 were due to influenza B, 26 involved both influenza A and B strains, and the strains for two outbreaks are pending.

In outbreaks affecting aged care facilities, at least 4212 residents were reported to have had ILI symptoms and 371 required hospitalisation. Overall, there have been 136 deaths in residents reported linked to these outbreaks, all of whom were noted to have other significant co-morbidities.

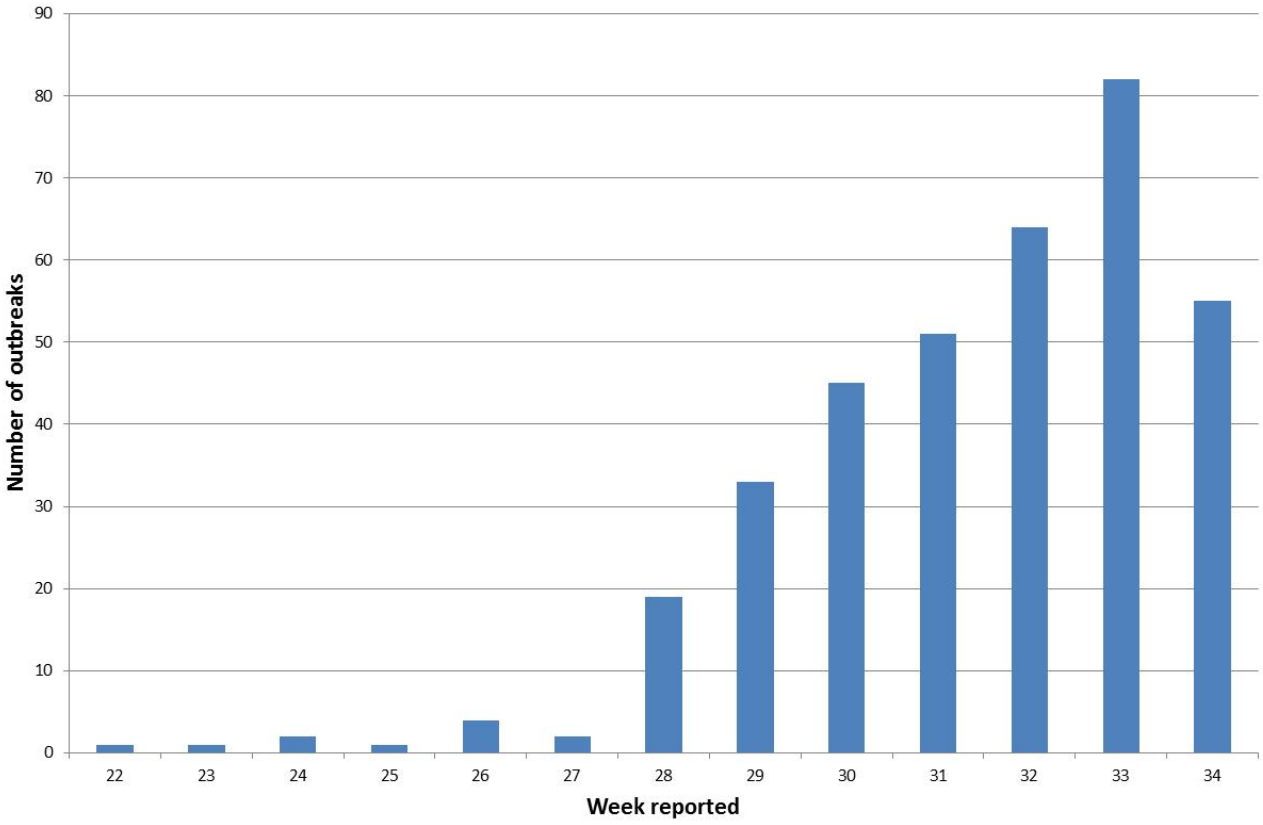
People in older age-groups are at higher risk of infection from the influenza A(H3N2) strain than the influenza A(H1N1) strain. The influenza A(H3N2) strain also predominated in 2012, 2014 and 2016. In 2015, influenza B was the predominant strain, and was also associated with an increase in influenza outbreaks in institutions, particularly residential aged care facilities (Table 4).

Table 4: Reported influenza outbreaks in NSW institutions, 2010 to 27 August 2017.

Year	2010	2011	2012	2013	2014	2015	2016	2017*
No. of outbreaks	2	4	39	12	120	103	279	371

Notes: * Year to date. All data are preliminary and subject to change.

Figure 7: Reported influenza outbreaks in NSW institutions by week, week 22 to week 34, 2017.



Back to top

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 34 there were 44 ASPREN reports received from NSW GPs. The overall consultation rate for ILI was high at 4.5%, although slightly lower than previous week (4.8%). For further information see the ASPREN website.

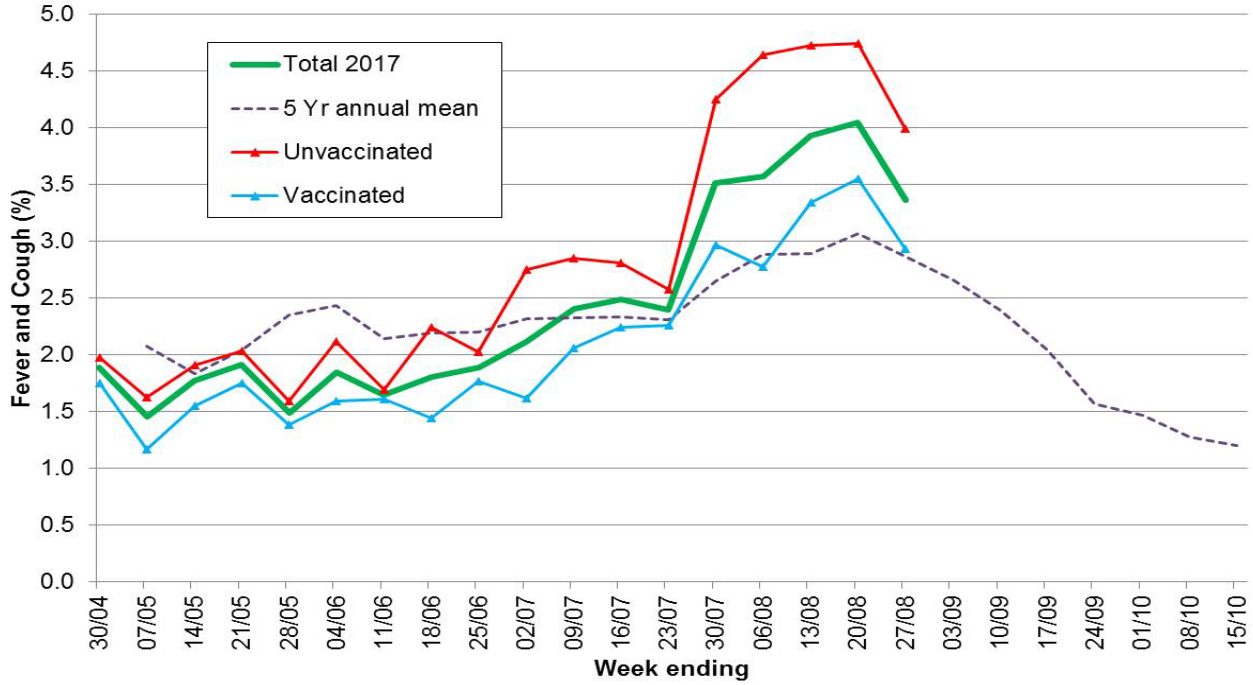
FluTracking.net

FluTracking.net is an online health surveillance system to detect epidemics of influenza. It is a project of the University of Newcastle, the Hunter New England Local Health District and the Hunter Medical Research Institute. Participants complete a simple online weekly survey which is used to generate data on the rate of ILI symptoms in communities.

In week 34 FluTracking received reports for 8,348 people in NSW with the following results:

- 3.4% of respondents reported fever and cough, down from the previous week (4.1%) but still above the 5 year annual mean (Figure 8).
- Among respondents who reported being vaccinated for influenza in 2017, 2.9% reported fever and cough compared to the 4.0% rate reported among unvaccinated respondents (Figure 8).
- Overall, 2.5% of respondents reported fever, cough and absence from normal duties, lower than the previous week (3.2%).

Figure 8: FluTracking – Percent of NSW participants reporting fever and cough overall, compared to 5 year average and by reported influenza vaccination status, 2017.*



Notes: From 2016, if a participant reported influenza-like illness symptoms for more than one consecutive week, only the first reported week of symptoms is included. Participants are not considered vaccinated until two or more weeks have elapsed since their recorded time of vaccination. Vaccinated and Unvaccinated rates are calculated using the total number of vaccinated respondents and the total number of unvaccinated respondents as denominators, respectively. The 5-year annual mean is calculated from years 2012 to 2016.

For further information on the project and how to participate 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. While pneumonia has many causes, a well-known indicator of seasonal and pandemic influenza activity is an increase in the number of death certificates that mention pneumonia or influenza as a cause of death.

The predicted seasonal baseline estimates the predicted rate of influenza or pneumonia deaths in the absence of influenza epidemics. If deaths exceed the epidemic threshold, then it may be an indication that influenza is beginning to circulate widely.

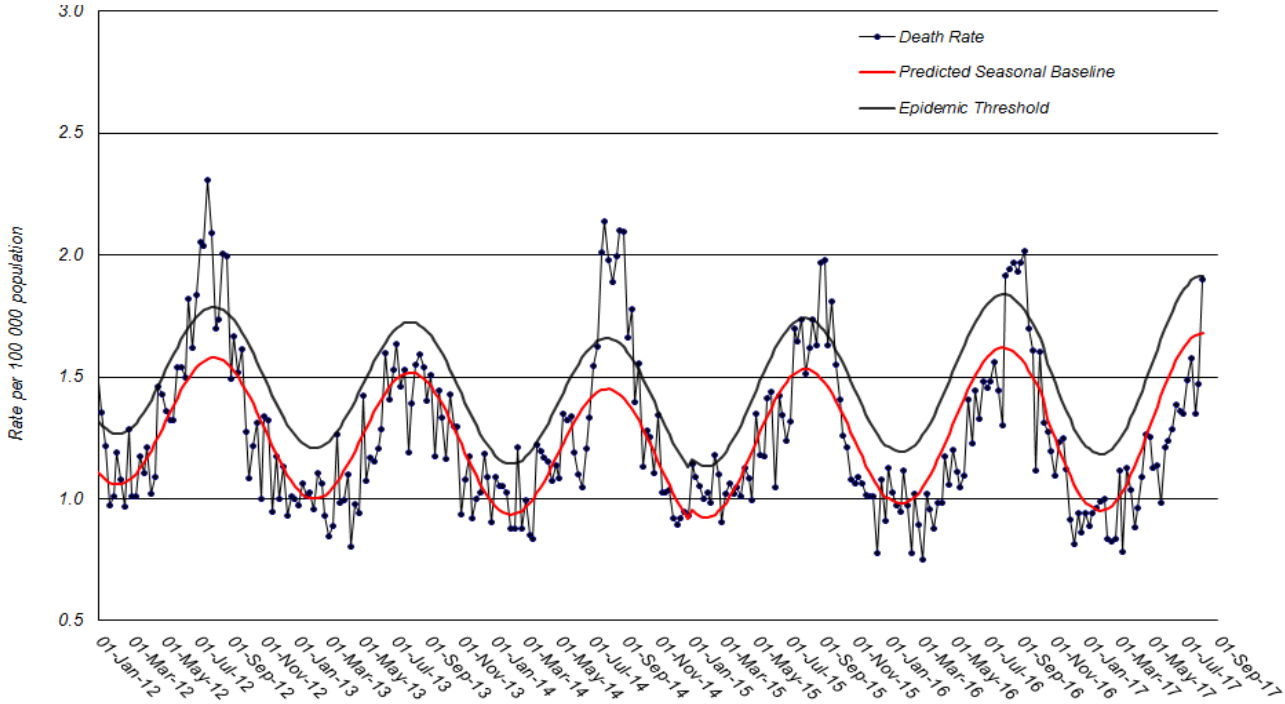
Due to delays in the death registration process, death data for recent weeks are highly variable. For this reason, death data from the three most recent weeks are not included in the report.

For the week ending 4 August 2017:

- There were 1.90 *influenza and pneumonia* deaths per 100 000 NSW population, which was just below the epidemic threshold of 1.92 per 100 000 population (Figure 8). This was a notable increase on the previous reported rate of 1.36 for the week ending 14 July.

For the year up to 4 August 2017, only 69 of the 31,277 death certificates mentioned influenza; all deaths have been in people aged over 50 years. A total of 2,774 (8.9%) of the 31,277 death certificates mentioned pneumonia.

Figure 9: Rate of deaths classified as *influenza and pneumonia* per 100 000 NSW population, 2012 – 4 August 2017.



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 population. Using the NSW population provides a more stable and reliable denominator than deaths from all causes.
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 at least one week 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.7,* with data up to 18 August 2017, influenza activity at the national level continued to increase this reporting fortnight with many surveillance systems at levels comparable to the peak of the 2016 season. Of note:

- There has been almost two and a half times the number of laboratory confirmed notifications of influenza reported to the National Notifiable Diseases Surveillance System this year when compared with the same period last year. An earlier season onset and introduction of rapid testing have contributed, in part, to this increase.
- Influenza-like illness (ILI) is increasing nationally. Influenza was the most common cause of ILI presentations to sentinel general practitioners this fortnight, with more than half of all patients presenting to sentinel general practitioners with ILI and tested positive for influenza.
- Influenza A(H3N2) is currently the predominant circulating influenza A virus nationally, though the number of notifications has decreased this reporting period. Influenza B viruses also continue to circulate.
- Notification rates to date this year have been highest in adults aged 80 years or older, with a secondary peak in young children, aged 5 to 9 years.
- Hospitalisations with confirmed influenza have increased overall this reporting fortnight, but have declined in the most recent week.
- 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 date, based on antigenic characterisation of circulating influenza viruses, the seasonal influenza vaccines appear to be a moderate to good match for circulating virus strains, depending on the strain. Vaccine effectiveness estimates, which provide an indication of how well the vaccine provides protection against influenza, are only available towards the end of the influenza season.

For further information see the Australian Influenza Surveillance Reports.

Global Influenza Update

The latest WHO global update on 21 August 2017 provides data up to 4 August. WHO reports that in the temperate zone of the southern hemisphere and in some countries of South and South East Asia, high levels of influenza activity continued to be reported. In Central America and the Caribbean influenza activity continued to be reported in a few countries. Worldwide, influenza A(H3N2) viruses are predominating.

For further information see the WHO influenza surveillance reports.

Avian Influenza Update

WHO publishes monthly updated risk assessments of human infections with avian influenza viruses at Influenza at the human-animal interface. These reports provide updated information on human cases of infection with H5 and H7 clade viruses and outbreaks among animals.

The overall risk assessment for these viruses remains unchanged. Whenever avian influenza viruses are circulating in poultry, sporadic infections and small clusters of human cases are possible in people exposed to infected poultry or contaminated environments, therefore sporadic human cases would not be unexpected.

For H7N9, WHO has noted current evidence suggests that this virus has not acquired the ability of sustained transmission among humans but it is possible that limited human-to-human transmission may have occurred where there was unprotected close contact with symptomatic human cases.

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 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, and made recommendations for the composition of influenza vaccines for use in the 2017 Southern Hemisphere influenza.

In Australia, all influenza vaccines included in the National Immunisation Program are quadrivalent influenza vaccines and have the following composition:

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

Of note, there has been replacement of the influenza A(H1N1) component of the vaccine. The A/California/7/2009 (H1N1)pdm09-like virus component has been replaced 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/en/.