

Influenza Monthly Epidemiology Report, NSW

December 2017 (including a summary for the year 2017)

This report describes the surveillance for influenza and other respiratory pathogens, undertaken by NSW Health to date. This includes data from a range of surveillance systems.

For weekly communicable disease surveillance updates refer to the Communicable Disease Weekly Reports at <http://www.health.nsw.gov.au/Infectious/reports/Pages/CDWR.aspx>.

1. Summary

In December 2017:

- The rate of influenza like illness (ILI) presentations to selected emergency departments (ED) was low and consistent with inter-seasonal activity.
- The proportion of deaths attributed to pneumonia and influenza was low.
- Of the 13,565 respiratory specimens tested, 331 (2.4%) were positive for influenza. This is consistent with inter-seasonal activity. Influenza A viruses predominated over B strains.

From 1 January to 31 December 2017:

- The 2017 influenza season in NSW was one of the most severe seasons on record, with high influenza activity extending for more than three months, and with a record high peak in mid-August due to concurrent peaks in influenza A and B strain activity.
- The influenza season commenced in early June, earlier than usual, and influenza activity in the community was elevated well into October.
- ED presentations in the *All respiratory illness, fever and unspecified infections* category showed high activity similar to the high levels seen during the 2009 influenza pandemic.
- There were 102,880 laboratory-confirmed influenza notifications for the year, the highest annual total on record, with a peak in reporting during the week ending 20 August.
- The introduction of rapid influenza testing in NSW public hospitals in 2017 is likely to have contributed significantly to the increased influenza case detections and notifications, in addition to increasing use of respiratory virus molecular tests by general practitioners.
- At the peak of influenza activity weekly sentinel laboratory surveillance reported 12,383 positive influenza tests and a 50.5% influenza test positivity rate, the highest rate on record.
- Influenza A strains accounted for 58% of influenza notifications, with A(H3N2) strains more common than A(H1N1) strains. Influenza B strains accounted for 42% of notifications, with B/Yamagata lineage strains predominant over B/Victoria lineage strains. There were 56 cases of influenza with severe complications in children less than 15 years of age in NSW reported to the Australian Paediatric Surveillance Unit (APSU).
- Influenza was associated with at least 654 deaths in 2017. Weekly rates of influenza and pneumonia deaths during the 2017 winter were well above rates in the previous 5 years.

- There were 591 influenza outbreaks reported in institutions, a marked increase over previous years. Outbreaks were predominantly in residential care facilities and due to influenza A.

Hospital Surveillance

Emergency department surveillance

NSW emergency department (ED) surveillance for influenza-like illness (ILI) and other respiratory illnesses is conducted through PHREDSS [1]. The PHREDSS surveillance system uses a statistic called the 'index of increase' to indicate when ILI presentations [2] are increasing at a statistically significant rate. It accumulates the difference between the previous day's count of presentations and the average for that weekday over the previous 12 months. An index of increase value of 15 is considered an important signal for the start of the influenza season in NSW as it suggests influenza is circulating widely in the community.

In December 2017:

- The index of increase for ILI presentations was 1.2 at the end of December, well below the seasonal threshold.
- Presentations in the All respiratory illness, fever and unspecified infections category decreased and were within the usual range, and likely represent conditions other than influenza (Figure 1).
- ED presentations for ILI were low and typical for this time of year (Figure 2), while presentations for *pneumonia* [3] were slightly above the usual range (Figure 3).
- Pneumonia or ILI presentations which resulted in admissions to critical care units were within the usual range for this time of year (Figure 4).
- Bronchiolitis presentations were slightly above the usual range for this time of year (Figure 5).

From 1 January to 31 December 2017:

- Based on the index of increase for ILI, the 2017 influenza season lasted for 14 weeks. It crossed the seasonal threshold level of 15 on 23 June, peaked on 21 August at 98.4 and returned to inter-seasonal activity on 30 September.
- Presentations in the *All respiratory illness, fever and unspecified infections* category, which is the best indicator of winter influenza impact on EDs, were higher than in any of the previous five years (Figure 1), with the peak of activity similar to that seen in during the 2009 pandemic.
- Overall, ILI presentations activity was notably higher than the previous five years (Figure 2). ILI presentations likely represent only a small proportion of all influenza presentations.

Figure 1: Total weekly counts of ED visits for any respiratory illness, fever and unspecified infections, all ages, January - December, 2017 (black line), compared with the 5 previous years

[1] NSW Health Public Health Rapid, Emergency Disease and Syndromic Surveillance system. Managed by the Centre for Epidemiology and Evidence, NSW Ministry of Health. Data from 60 NSW emergency departments are included. Comparisons are made with data for the preceding five years. Recent counts are subject to change. This includes data from 59 NSW emergency departments (EDs), representing approximately 85% of metropolitan ED presentations and approximately 60% of rural ED presentations.

[2] ILI is when the treating ED doctor makes a provisional clinical diagnosis of ILI Syndrome, which includes: 'influenza-like illness' or 'influenza' (including 'pneumonia with influenza').

[3] Pneumonia is when there is a provisional clinical diagnosis of Pneumonia Syndrome, which includes: 'viral, bacterial or unspecified pneumonia', 'SARS', or 'legionnaire's disease'. Excludes the diagnosis 'pneumonia with influenza'.

(coloured lines).

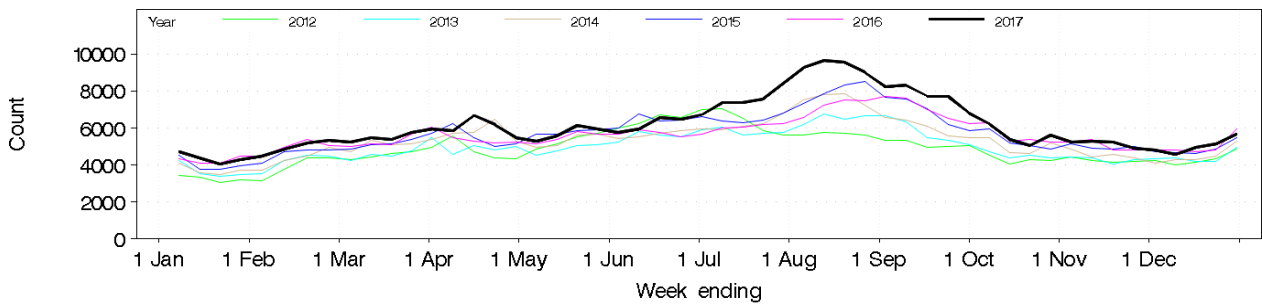


Figure 2: Total weekly counts of ED visits for influenza-like illness, all ages, January – December, 2017 (black line), compared with the 5 previous years (coloured lines).

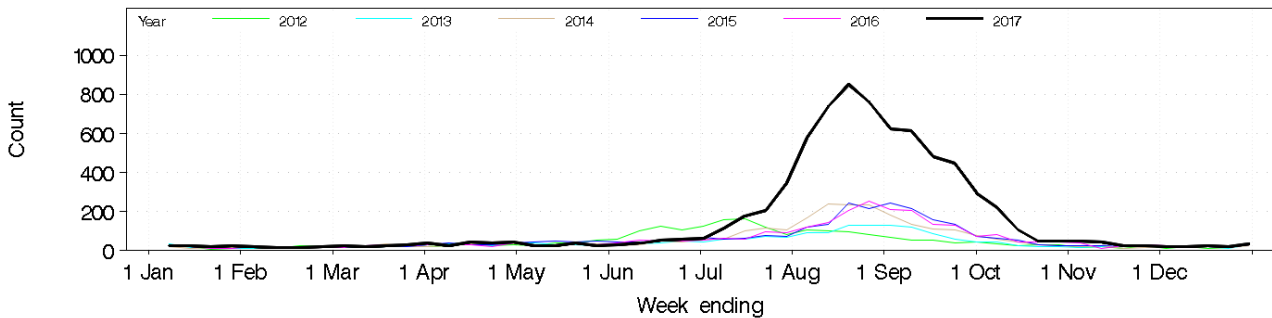


Figure 3 Total weekly counts of ED presentations for pneumonia, from January – December 2017 (black line), compared with each of the 5 previous years (coloured lines), for 59 NSW hospitals.

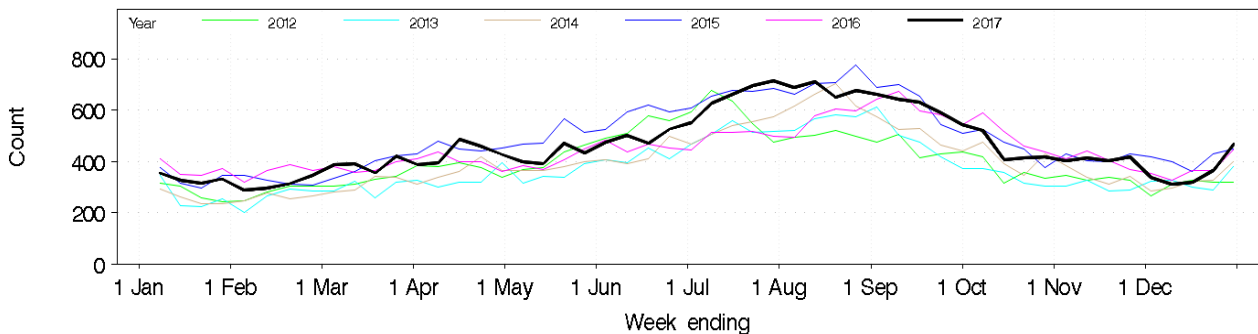


Figure 4: Total weekly counts of ED presentations for pneumonia or influenza-like illness and admitted to a critical care ward, from January – December 2017 (black line), compared with each of the 5 previous years (coloured lines), for 59 NSW hospitals.

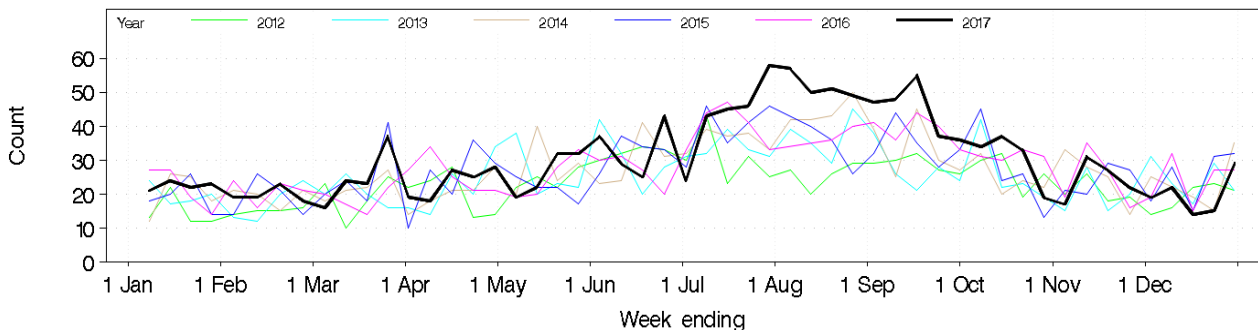
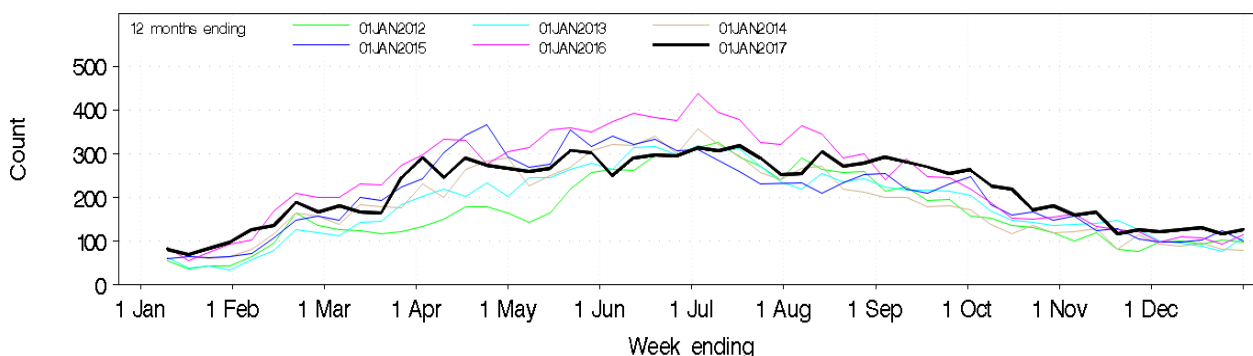


Figure 5: Total weekly counts of ED presentations for bronchiolitis, from January - December 2017 (black line), compared with each of the five previous years (coloured lines), persons of all ages, for 59 NSW hospitals.



APSU Paediatric Surveillance of influenza with severe complications

The Australian Paediatric Surveillance Unit (APSU), based at The Children’s Hospital at Westmead, is a national research resource established in 1993 to facilitate active surveillance of uncommon childhood diseases, rare serious complications of common diseases or rare adverse effects of treatment (please refer to the [case definition](#) for severe complications).

APSU contributors are clinicians working in paediatrics and child health who provide weekly reports on 17 different conditions under surveillance. All positive reports of cases generate a brief questionnaire requesting de-identified information about the child’s demographics, details of diagnosis, management and short-term outcome from the clinician. For more details on APSU methods see the APSU website: www.apsu.org.au.

Since 2009, surveillance for severe complications from influenza has been conducted by the APSU from July to September. For this reporting period in 2017 there were 56 cases of influenza with severe complications in children less than 15 years of age in NSW reported to the APSU with the following characteristics:

- Thirty-one of the cases involved infections with influenza A strains and 25 were due to influenza B infection. There were equal numbers of males and females. The median age of cases was 5.5 years (range 9 days to 14.6 years), with four cases (7%) under six months of age.
- Of the 52 cases aged 6 months or older (and so old enough to be vaccinated for influenza), three cases were vaccinated for influenza. However, the influenza vaccination status of 29 (56%) cases was not known.
- Twenty-two (39%) of the cases had an underlying chronic medical condition.
- Thirty-four (61%) of the cases required intensive care admission during their hospitalisation and there was one death recorded. Thirty-three (50%) cases required ongoing treatment post discharge from hospital. The median length of stay in hospital was 11 days (range 1-56 days).

Medical complications were recorded for all 56 cases including pneumonia (22 cases), bacterial co-infections, mechanical ventilation, encephalitis (five cases), and one child required cardio-pulmonary resuscitation.

Influenza Complications Alert Network (FluCAN)

In 2009, [a rapid alert system for severe respiratory illness: the FluCAN Surveillance System](#) was created with the involvement and support of the Thoracic Society of Australia and New Zealand and funding from the [NH&MRC](#).

The aim of FluCAN was to establish and maintain a real-time sentinel hospital surveillance system for acute respiratory disease requiring hospitalisation, which could provide a reliable and timely source of information that could be used to inform public health policy. Since 2010, FluCAN surveillance has been supported by the Commonwealth Department of Health, with data management provided by Monash University, Melbourne.

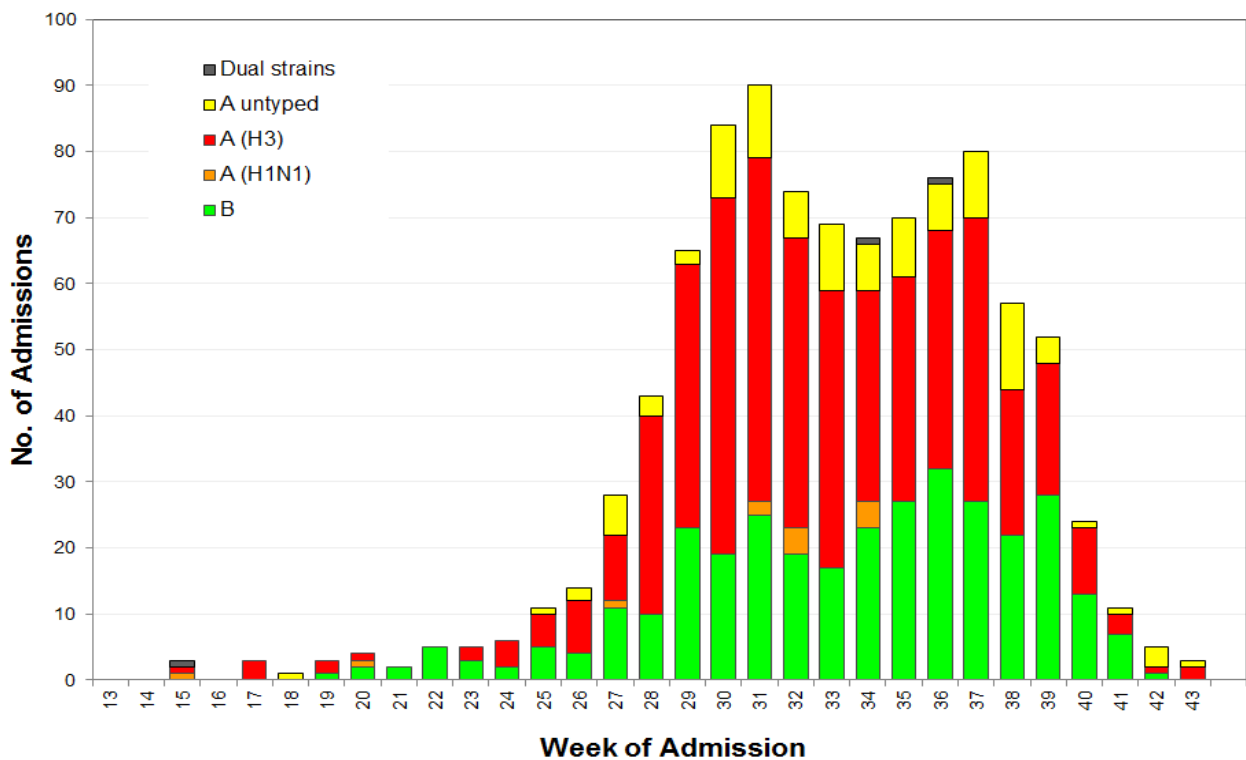
In NSW, FluCAN includes three sentinel monitoring sites for influenza hospitalisations: The Children's Hospital at Westmead (CHW), John Hunter Hospital and Westmead Hospital. FluCAN only includes cases confirmed by PCR (i.e. nucleic acid testing).

From 3 April to 31 October 2017, FluCAN reported 953 hospital admissions with confirmed influenza from the three NSW sites (Figure 5), with the following characteristics:

- 822 (86%) cases were admitted to either a general ward or a respiratory ward and 131 (14%) were admitted to an intensive care unit.
- 622 (65%) cases were influenza A positive: of these, 13 were typed as influenza A(H1N1) and 11 were influenza A(H3N2)
- 328 (34%) cases were influenza B positive and 3 cases tested positive for both influenza A and B.
- 96 of the 131 cases (73%) admitted to ICU were positive for influenza A.
- 254 (27%) cases were in children aged less than 15 years, 162 (17%) people were aged 18 to 49 years and 537 (56%) were in people aged 50 years and older
- 26 (3%) cases were in pregnant women: 1 influenza A(H1N1), 18 influenza A(untyped) and 5 influenza B.

The Children's Hospital at Westmead (CHW) contributes to the influenza surveillance activities of both The Paediatric Active Enhanced Disease Surveillance (PAEDS) (a hospital-based active surveillance system for selected serious childhood conditions, particularly vaccine preventable diseases and potential adverse events following immunization) and FluCAN. In addition to the 251 influenza cases admitted at CHW in children aged less than 15 years confirmed by PCR (and included in FluCAN), there were another 125 hospitalised admitted influenza cases diagnosed by a positive antigen test, giving a total of 376 cases for this reporting period (3 April to 31 October 2017). CHW have noted that this is approximately twice the number of admitted influenza cases than in the same period in 2016.

Figure 5: FluCAN – Number of confirmed influenza hospital admissions in NSW, 3 April – 31 October 2017



Notes:

All data are preliminary and may change as more information is received.
 The influenza A untyped category indicates no strain sub-typing has been performed.
 The Influenza A(H3) category includes some influenza A results so categorised on the basis that influenza A(H1N1) was excluded.

Laboratory testing summary for influenza

Sentinel laboratory surveillance for influenza and other respiratory viruses is conducted throughout the year [4].

In December 2017:

- A total of 13,565 tests for respiratory viruses were performed at sentinel NSW laboratories and 331 (2.4%) were positive for influenza (Table 1).
- 192 specimens tested positive for influenza A: 17 of these tested positive for A(H3N2), 18 tested positive for influenza A(H1N1) and 157 were not typed further (Table 1, Figures 6-7).
- 139 cases of influenza B were reported (Table 1, Figures 6-7).

Influenza activity continued to decline and is at low levels, within the historical average for this time of year.

Rhinoviruses were the leading respiratory viruses identified by laboratories this month; other respiratory viruses were circulating as expected for this time of year.

[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.
Participating sentinel laboratories: South Eastern Area Laboratory Services, The Children’s Hospital at Westmead, Sydney South West Pathology Service, Pacific Laboratory Medicine Service, Royal Prince Alfred Hospital, Hunter Area Pathology Service, Pathology West (Westmead & Nepean), Douglas Hanley Moir Pathology, VDRLab, Laverty Pathology, SydPath (St Vincent’s), Medlab, and Laverty. HAPS data not included for week 41 2015.

From 1 January to 31 December 2017:

- 409,196 tests for respiratory viruses were performed at sentinel NSW laboratories. Of these, 102,309 tests (25%) were positive for one or more influenza viruses
- 59,468 tests (58% of all influenza positive) were positive for influenza A.
 - 4,807 were H3N2 (8.1% of all influenza A positive), including 122 that were further characterised as A/Victoria/361/2011-like.
 - 1,274 were H1N1 (2.1% of all influenza A positive), including 162 that were further characterised as A/California/7/2009-like.
 - 53,387 influenza A samples were not further typed
- 42,841 tests (42% of all influenza tests) were positive for influenza B, including 69 further characterised as B/Phuket/3073/2013-like (Yamagata lineage) and 4 characterised as B/Brisbane/60/2008-like (Victoria lineage)
- Sentinel laboratories reported that at least 300 of the patients with confirmed influenza were known to have been admitted to an intensive care unit, 59 to a high dependency unit and 79 to a coronary care unit.

The peak of influenza testing activity was in the week ending 20 August when there were 12,383 tests positive for influenza and an influenza test positivity rate of 50.5 per cent, the highest percent positive since surveillance began in 1999 (Figures 6-7). The peaks in the influenza test positivity rate have closely matched the timing and intensity of the peaks in ED presentations for the *Any respiratory illness, fever and unspecified infections* category since the pandemic year in 2009 (Figure 8).

Both influenza A (predominantly H3N2) and influenza B circulated at very high levels throughout the influenza season. In 2017 new rapid PCR testing was made available to many NSW public hospital emergency departments. While this is likely to have increased influenza case detection compared to previous years, this testing still only represented a relatively small proportion of all influenza testing in NSW in 2017.

Table 1: Summary of testing for influenza and other respiratory viruses at sentinel NSW laboratories, 1 January to 31 December 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	10112	497	(4.9%)	53	(10.7%)	4	(0.8%)	440	(88.5%)	93	(0.9%)	375	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*	21262	725	(3.4%)	83	(11.4%)	16	(2.2%)	626	(86.3%)	158	(0.7%)	684	1000	1830	5427	290	530
30/04/2017	18089	373	(2.1%)	63	(16.9%)	15	(4.0%)	295	(79.1%)	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	25688	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%)	748	(8.0%)	250	(2.7%)	8330	(89.3%)	4516	(9.7%)	1712	926	4059	6011	709	625
03/09/2017*	108262	31677	(29.3%)	1869	(5.9%)	529	(1.7%)	29474	(93.0%)	19670	(18.2%)	2984	1180	4099	8255	1141	681
01/10/2017	70006	11926	(17.0%)	591	(5.0%)	237	(2.0%)	10558	(88.5%)	12827	(18.3%)	1597	1193	1499	5448	926	305
29/10/2017	31674	1444	(4.6%)	102	(7.1%)	51	(3.5%)	1291	(89.4%)	2459	(7.8%)	1003	1187	684	3873	748	242
03/12/2017*	25314	329	(1.3%)	28	(8.5%)	22	(6.7%)	279	(84.8%)	313	(1.2%)	942	1128	534	5730	628	439
31/12/2017	13565	192	(1.4%)	17	(8.9%)	18	(9.4%)	157	(81.8%)	139	(1.0%)	482	715	429	2562	437	305
Week ending																	
10/12/2017	3982	57	(1.4%)	5	(8.8%)	5	(8.8%)	47	(82.5%)	27	(0.7%)	137	195	102	824	105	106
17/12/2017	3709	49	(1.3%)	3	(6.1%)	3	(6.1%)	43	(87.8%)	33	(0.9%)	156	196	115	753	135	68
24/12/2017	3506	56	(1.6%)	6	(10.7%)	4	(7.1%)	46	(82.1%)	45	(1.3%)	121	207	108	643	107	91
31/12/2017	2368	30	(1.3%)	3	(10.0%)	6	(20.0%)	21	(70.0%)	34	(1.4%)	68	117	104	342	90	40

Notes: * Five week reporting period used; ** HMPV - Human metapneumovirus.
Note that while all samples are tested for influenza viruses, not all samples are tested for all of the other viruses listed.

Figure 6: Weekly influenza positive test results by type and sub-type reported by NSW sentinel laboratories, 1 January to 31 December 2017.

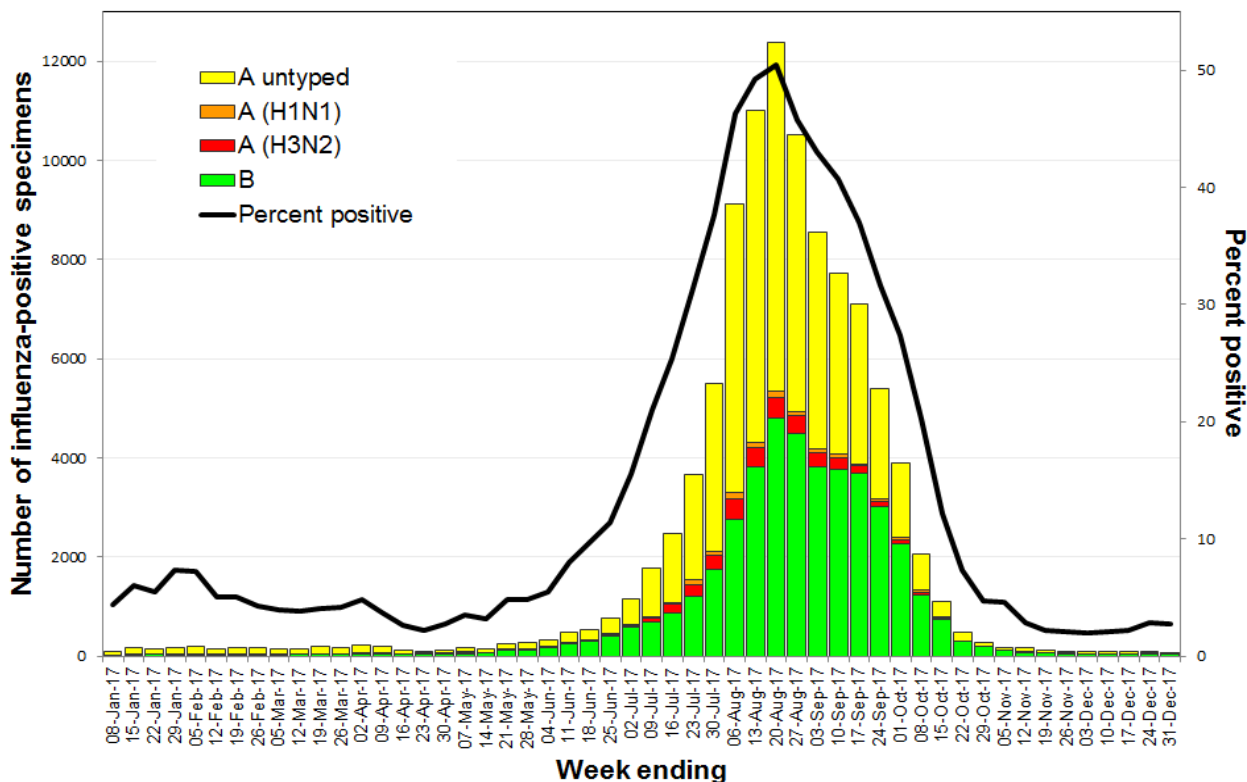


Figure 7: Percent of weekly laboratory tests positive for influenza A and influenza B reported by NSW sentinel laboratories, 1 January 2011 to 31 December 2017.

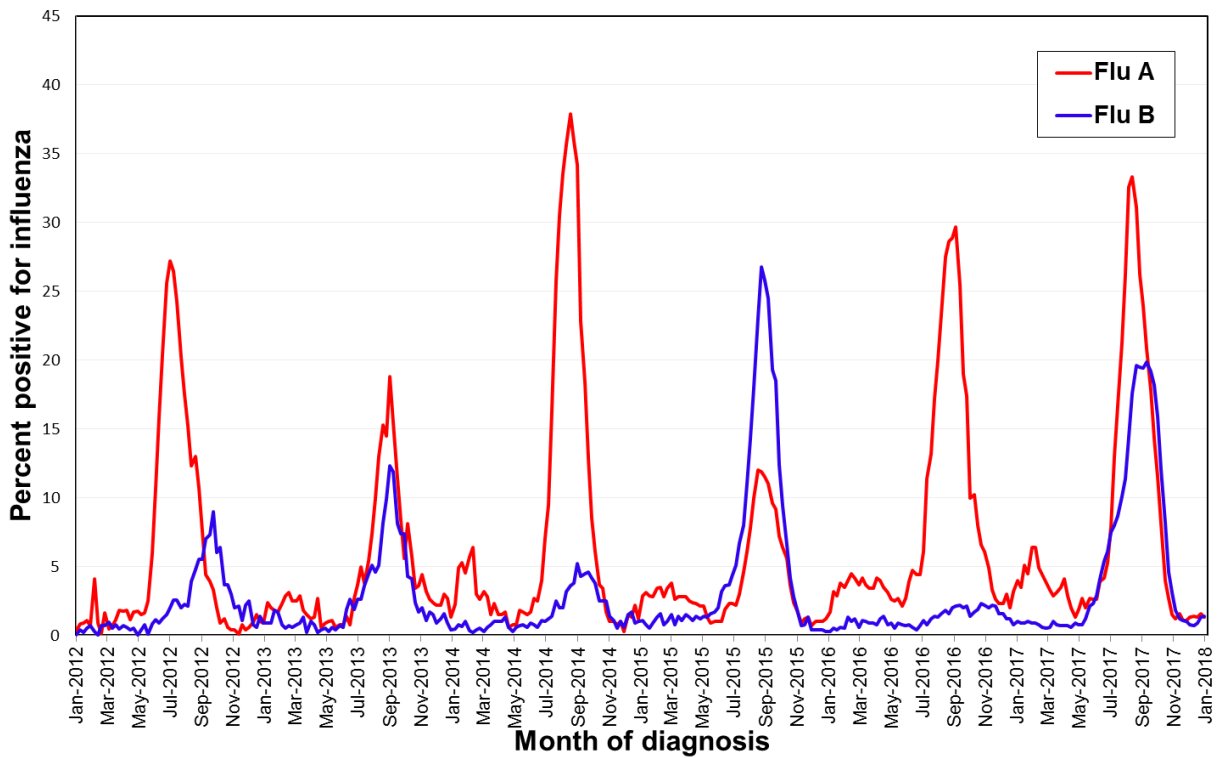
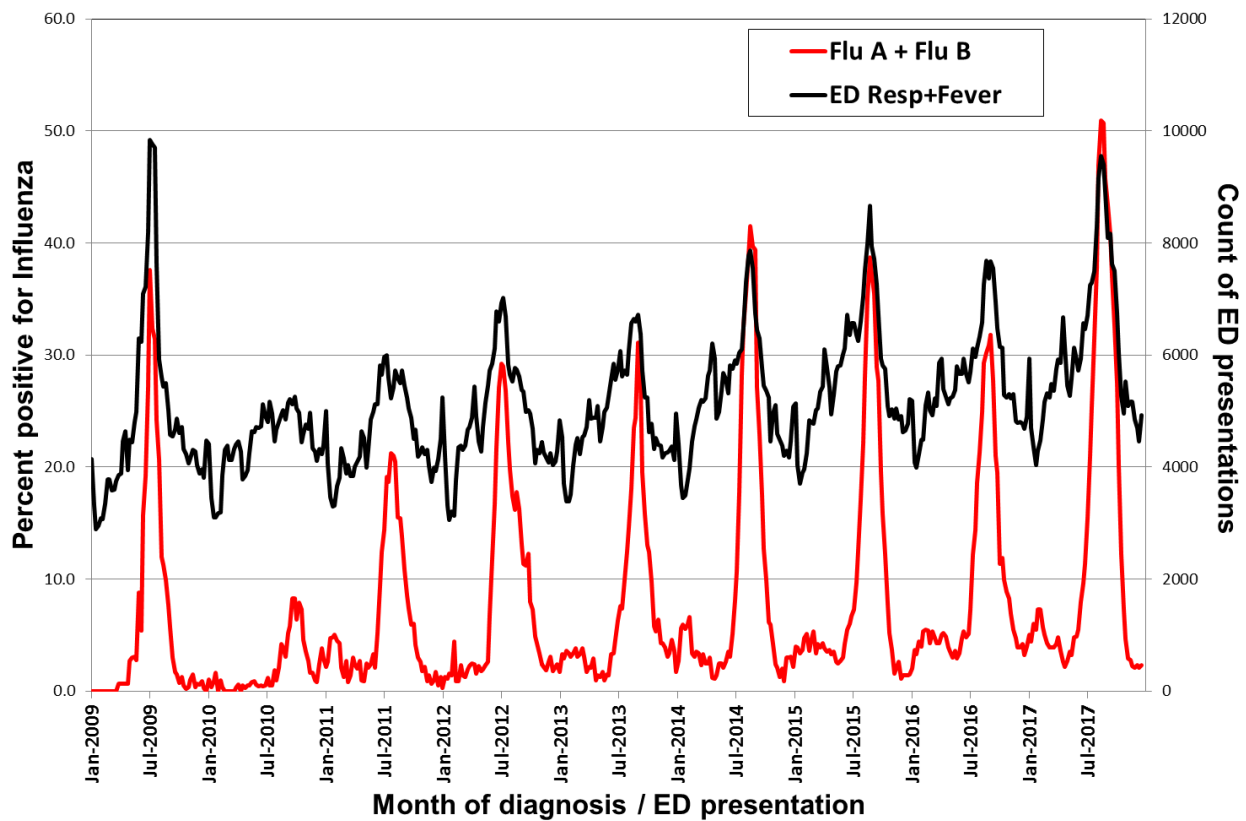


Figure 8: Percent of weekly laboratory tests positive for influenza (A and B) reported by NSW sentinel laboratories (red line), and total weekly counts of ED visits for *Any respiratory illness, fever and unspecified infections*, all ages (black line), 2009 to 2017.



Community Surveillance

Influenza notifications by Local Health District (LHD)

In December 2017:

During December there were 315 notifications of influenza confirmed by polymerase chain reaction (PCR) testing. Notifications have been trending down since September. Rates were similar across all LHDs (data not shown).

From 1 January to 31 December 2017:

There were a total of 103,306 influenza notifications with the highest weekly number of notifications (10907) reported in week 34 (week ending 27 August). Western Sydney LHD had the highest number of influenza notifications and the highest rate per 100,000 population in the state (Table 2). Influenza notifications and population rates were generally higher in metropolitan Sydney LHDs.

Table 2: Annual notifications of laboratory-confirmed influenza by Local Health District *

Local Health District	1 January - 31 December 2017	
	Number of notifications	Rate per 100 000 population
Central Coast	4121	1193.20
Far West	126	411.50
Hunter New England	11968	1287.20
Illawarra Shoalhaven	4898	1198.50
Mid North Coast	1615	726.40
Murrumbidgee	2866	1183.50
Nepean Blue Mountains	6269	1629.00
Northern NSW	2831	921.40
Northern Sydney	14617	1597.20
South Eastern Sydney	11237	1211.30
Southern NSW	1967	1260.00
South Western Sydney	12486	918.90
Sydney	8250	1260.00
Western NSW	2967	1061.30
Western Sydney	17102	1763.20
Total	103320	1312.10

Note: * All data are preliminary and may change if late notifications are received.

Influenza outbreaks in institutions

In December 2017, there were three influenza A outbreaks reported this month, all in residential aged care facilities. Overall in 2017 there was a significant increase in the number of influenza outbreaks in institutions reported (Table 3). Of the total of 591 outbreaks reported, 424 (72%) were due to influenza A, 114 (19%) were due to influenza B, both A and B strains were identified in 52 (9%) and for one outbreak the strain is not known. A total of 7,624 residents were reported to have had ILI symptoms and 784 were hospitalised. There were also 304 deaths in residents linked to these outbreaks, all of whom were noted to have other significant co-morbidities.

Table 3: Reported influenza outbreaks in NSW institutions per year, 2010-2017.

Year	2010	2011	2012	2013	2014	2015	2016	2017
Number of outbreaks	2	4	39	12	120	103	279	591

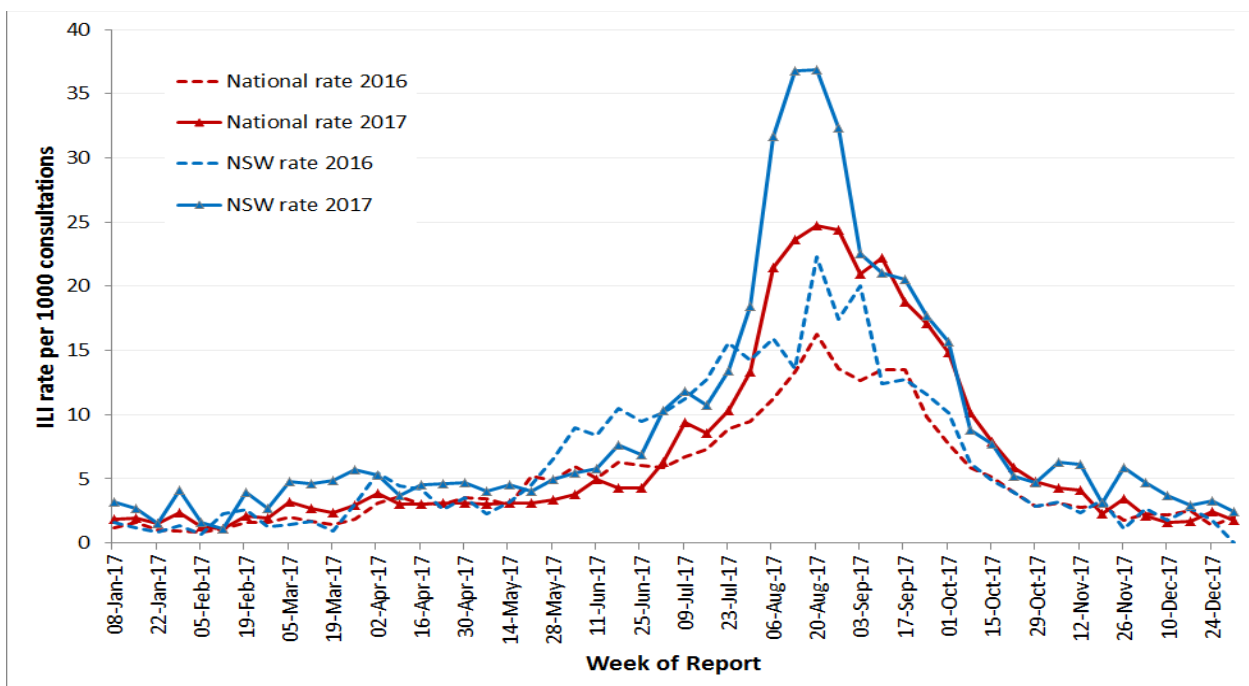
The Australian Sentinel Practices Research Network (ASPREN)

ASPREN is a network of sentinel general practitioners (GPs) run through the RACGP and University of Adelaide that has collected de-identified information on influenza like illness and other conditions seen in general practice since 1991.

GP's participating in the program report on the proportion of patients presenting with an ILI. The number of GP's participating on a weekly basis may vary. For 2017, an average of 55 NSW GP practices provided activity reports each week. During this time, the consultation rate peaked at 36.83 per cent during week 33 (week ending 20 August), the highest peak seen in recent years and well above the national average (Figure 9).

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

Figure 9: ASPREN – NSW and National GP ILI rates per 1000 consultations – 2017 compared to 2016.

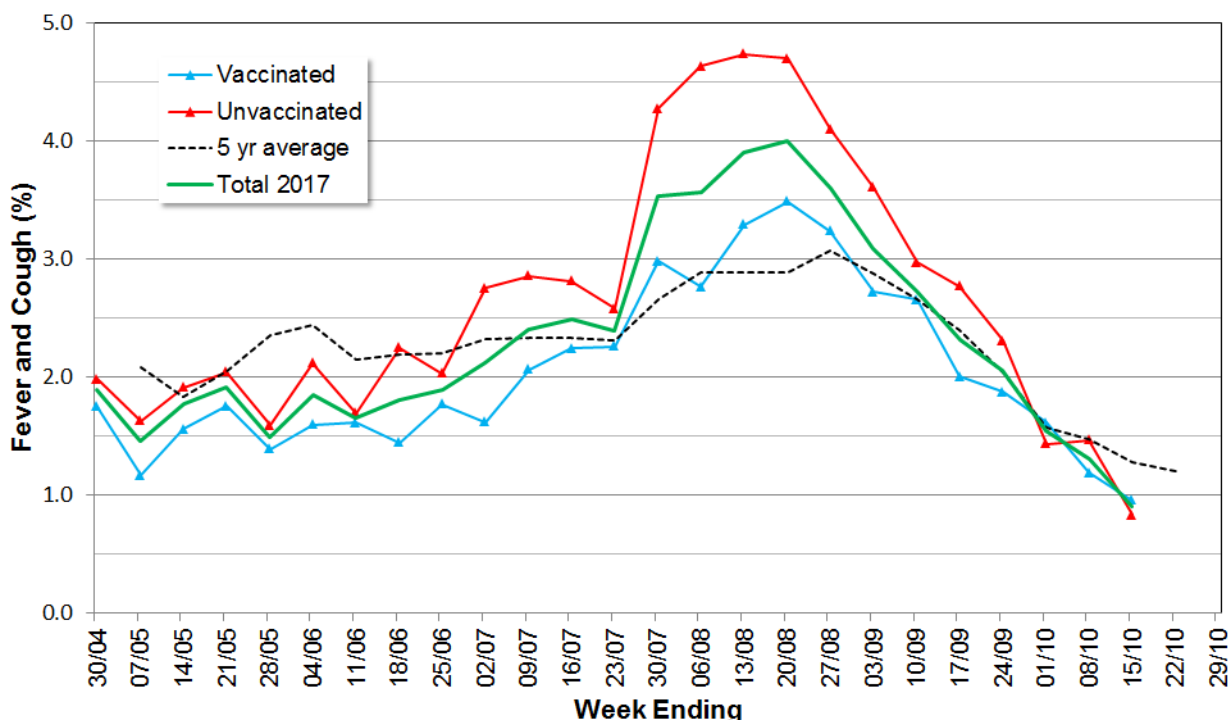


FluTracking.net

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.

- For 2017, the peak and magnitude of ILI symptom reporting in NSW was higher and earlier than that seen in previous years (Figure 10).
- The highest weekly ILI symptom activity reported from FluTracking participants in NSW was for the week ending 20 of August when reports were received for 8,370 individuals. The number of respondents reporting fever and cough for this week was 4.0% (Figure 10).
- The proportion of vaccinated FluTracking participants who reported fever and cough was consistently lower than for unvaccinated participants (Figure 10).
- Overall, 3.2% of respondents reported fever, cough and absence from normal duties.

Figure 10: FluTracking – Percent of NSW participants reporting fever and cough overall, compared to the 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.

Influenza associated deaths

In 2017 there were 654 reported influenza-associated deaths. This included:

- 613 influenza-associated deaths were reported from the Births Deaths and Marriages Registry and 529 of these events could be matched to a notified influenza case. Of the remainder, 52 deaths were classified as influenza-associated by other sources (mainly hospitals) and for 32 there was no known laboratory confirmation.
- 16 deaths reported by the Coroner’s office, including 3 deaths in children aged under 10 years
- 26 deaths in other notified influenza cases whose death certificate did not mention influenza, including 19 deaths in residents of aged care facilities.

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.

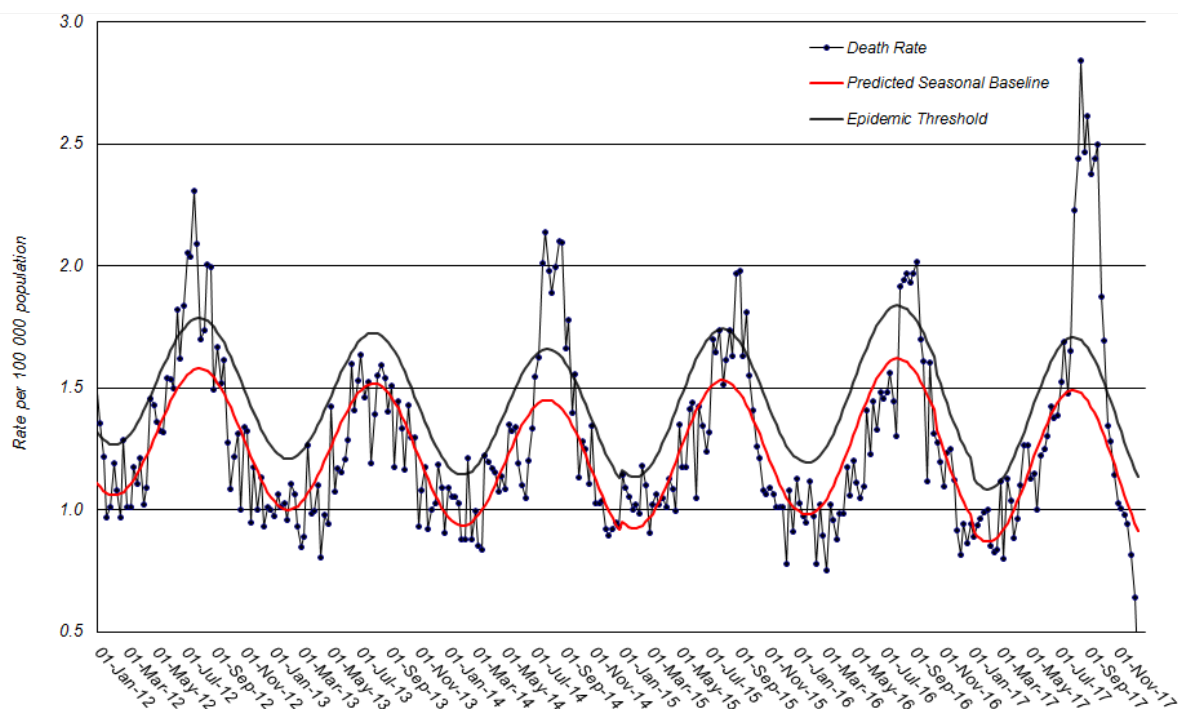
For the week ending 15 December 2017:

There were 0.36 pneumonia or influenza deaths per 100,000 NSW population, which is below the epidemic threshold of 1.13 per 100,000 population (Figure 11).

From 1 January to 15 December 2017:

- In 2017, among all 51,397 death certificates there were 613 which mentioned influenza: two deaths were in people aged 5 to 14 years, two deaths were in people aged 15 to 24 years, eight deaths were in people aged 35 to 54 years, 26 deaths were in people aged 55 to 64 years, and 575 deaths were in people aged 65 years and over.
- A total of 4932 (9.6%) of death certificates had pneumonia as a contributing cause of death.
- Death rates for both influenza and pneumonia as a proportion of the NSW population exceeded the forecast epidemic threshold in the week ending 4 August and remained elevated until the week ending 6 October. Overall, death rates were significantly higher in 2017 compared with previous years (Figure 10).

Figure11: Rate of deaths classified as influenza and pneumonia per 100 000 NSW population, 2012 - 2017.



Source: NSW Registry of Births, Deaths and Marriages.

Notes on interpreting death data:

- 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. 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.
- 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.
- The interval between death and death data availability is usually at least 7 days, and so these data are 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.

National and International Influenza Surveillance

National summary

While there was geographic variation across Australia, in general the 2017 influenza season saw the highest levels of activity since the 2009 pandemic year. In the most populous eastern states the season began approximately one month earlier and activity at the peak was more prolonged than during the previous 5 years. In contrast, activity in the western half of the continent was comparable to recent seasons, though the peak was later than usual.

- The impacts of the season included high levels of absenteeism and a substantial burden on primary care and hospitals.
- The severity of infection in people hospitalised with influenza was on the low end of the 5 year historic range.
- An increased number of deaths have been reported in 2017, with most of the deaths in the elderly, which is consistent with years when influenza A(H3N2) circulates.
- Influenza A(H3N2) predominated nationally, accounting for an estimated 55% of notified laboratory confirmed cases of influenza for the year to date. Influenza A(H3N2) also contributed to the high number of cases among the elderly. Influenza B co-circulated (37% of laboratory confirmed cases nationally year to date), and affected all ages groups, but particularly school aged children.
- The effectiveness of the 2017 seasonal influenza vaccine against presenting to a general practitioner (GP) was preliminarily estimated to be low overall (33%), and lower against hospitalisation overall (16%). The overall effectiveness was skewed due to the relatively poor effectiveness measured against influenza A(H3N2) – the predominant strain. The effectiveness against GP presentation with influenza A(H1N1)pdm09 and B were estimated to be higher at 50% and 57%, respectively.

Follow the link for the archive of [Australian Influenza Surveillance Reports](#).

Global human influenza update

The [WHO global update on 8 January 2018](#) provides data up to 24 December. Influenza activity continued to increase in the temperate zone of the northern hemisphere while in the temperate zone of the southern hemisphere activity was at inter-seasonal levels. Worldwide, influenza A(H3N2) and B viruses accounted for the majority of influenza detections although influenza A(H1N1)pdm09 viruses were predominant in some countries.

Follow the link for the [WHO influenza surveillance reports](#).

Global avian influenza update:

Human infections with avian influenza viruses

WHO has published its monthly updated risk assessment of human infections with avian influenza viruses [Influenza at the human-animal interface](#) as of 7 December 2017. This report provides 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](#).

Composition of 2018 Australian influenza vaccines

The WHO Consultation on the Composition of Influenza Vaccines for the 2018 Southern Hemisphere was held in Melbourne on 25-27 September 2017.

The consultation report noted that during the period February – September 2017, influenza A(H3N2) viruses were associated with outbreaks in many countries. The majority of recent viruses were antigenically related to 3C.2a clade A/Hong Kong/4801/2014-like viruses but reacted poorly with ferret antisera raised to the egg-propagated A/Hong Kong/4801/2014-like viruses used in current seasonal vaccines. Influenza A(H3N2) viruses within the 3C.2a clade and 3C.2a1 subclade have become genetically diverse.

Recent A(H3N2) viruses were better inhibited by a ferret antiserum raised against the egg-propagated reference virus, A/Singapore/INFIMH-16-0019/2016, compared to ferret antisera raised against other egg-propagated A(H3N2) viruses.

Influenza A(H1N1) and influenza B/Victoria lineage strains identified in the same period were antigenically and genetically closely related to the corresponding strains in the current vaccines.

Following the Consultation, WHO announced its recommendations for the composition of quadrivalent vaccines for use in the 2018 Southern Hemisphere influenza season, which includes changes in the influenza A(H3N2) components, as follows:

- an A/Michigan/45/2015 (H1N1)pdm09-like virus
- an A/Singapore/INFIMH-16-0019/2016 (H3N2)-like virus⁵
- a B/Phuket/3073/2013-like virus (Yamagata lineage)
- a B/Brisbane/60/2008-like virus (Victoria lineage).⁶

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

⁵ This replaces A/Hong Kong/4801/2014 (H3N2)-like virus used in the current 2017 seasonal influenza vaccines.

⁶ This B/Brisbane strain had been part of the WHO recommendations for 2017 southern hemisphere trivalent influenza vaccines but has been replaced by the B/Phuket strain for 2018 trivalent vaccines. All vaccines used in Australia in 2017 were quadrivalent and so contained both B vaccine strains.