

NSW Health Influenza Surveillance Report

Week 39: 25 September to 1 October, 2017

Summary:

- Influenza activity continues to decline as we approach the end of the season.
- Influenza B strains were again the predominant influenza type.

In this reporting week:

- [Hospital surveillance](#) – emergency department presentations for respiratory illness, including influenza-like illness (ILI), decreased further. Overall activity remained high.
- [Laboratory surveillance](#) – the total number of influenza isolations decreased further, and the influenza-positive test rate was lower at 27.4%. Both the number of influenza A and B strains identified and the positive proportions continued to fall.
- [Community surveillance](#) – influenza notifications decreased overall. ASPREN and FluTracking surveillance indicated further declines in ILI activity. The frail elderly continue to be at increased risk with a further 28 outbreaks reported in residential aged care facilities.
- [National and international influenza surveillance](#) – influenza activity is past the peak in most Australian jurisdictions but activity remains high overall. High influenza activity is being reported in temperate regions of the southern hemisphere. Worldwide, influenza A(H3N2) viruses are predominating.
- [Recommended composition of 2018 influenza vaccines](#) – new recommendations for the 2018 seasonal influenza vaccines include a change in the A(H3N2) component.

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

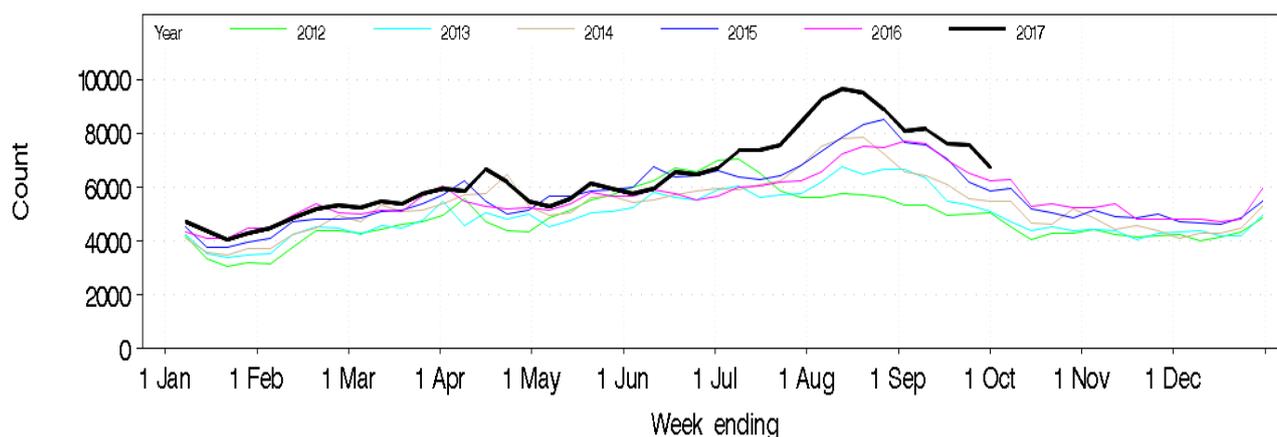
NSW emergency department (ED) presentations for influenza-like illness (ILI) and other respiratory illnesses

Source: PHREDSS [1]

For the week ending 1 October 2017:

- Presentations in the *All respiratory illness, fever and unspecified infections* category decreased further but remained above the usual seasonal range (Figure 1 and Table 1).
- ILI presentations [2] continued to decrease this week but were above the usual range for this time of year. Levels remained high for all ages above 5 years and many NSW local health districts (LHDs) (Figure 2 and Table 1).
- ILI presentations resulting in admission also decreased but remained above the usual range (Figure 3 and Table 1).
- As of 1 October 2017, the daily index of increase for ILI presentations across NSW was below the threshold at 12.5. The index peaked on 11 August (98.4) after first crossing the ED seasonal threshold of 15.0 on 23 June 2017.
- The proportion of ILI presentations to all ED presentations was 6.3 per 1000 presentations, lower than the previous week (9.1 per 1000).
- ED presentations and admissions [3] for pneumonia decreased and were within the usual range for this time of year (Table 1).
- Pneumonia and ILI presentations requiring admission to critical care decreased and were within the usual range for this time of year (Figure 4 and Table 1).
- Bronchiolitis presentations were steady and were within the usual range for this time of year (Table 1).

Figure 1: Total weekly counts of ED visits for any respiratory illness, fever and unspecified infections, all ages, from 1 January – 1 October, 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'.

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

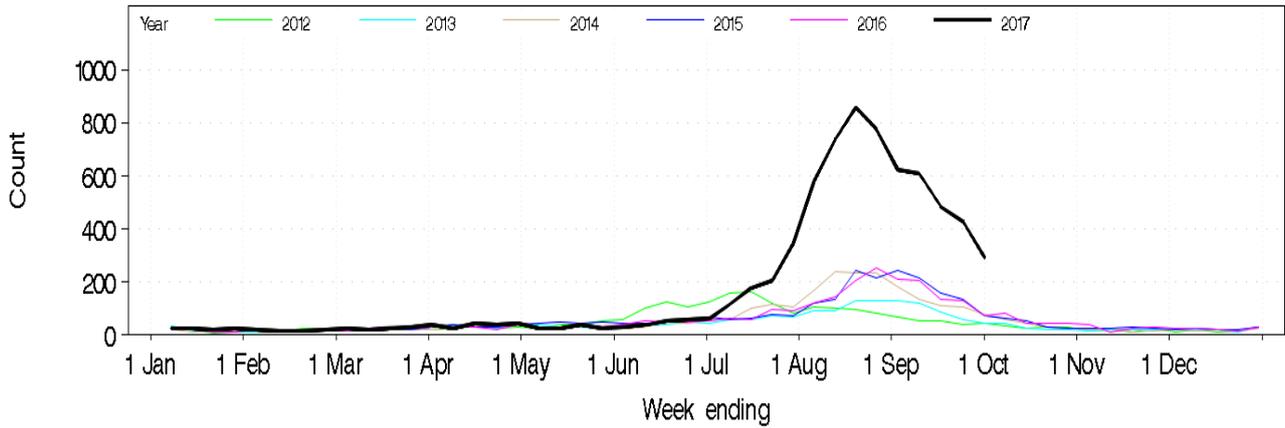


Figure 3: Total weekly counts of ED presentations for influenza-like-illness that were admitted, all ages, from 1 January – 1 October 2017 (black line), compared with each of the 5 previous years (coloured lines).

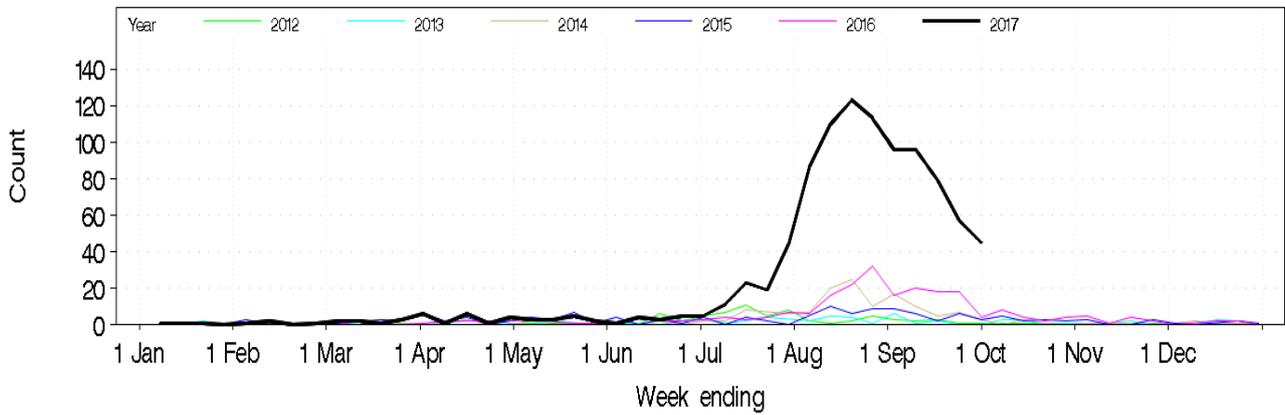


Figure 4: Total weekly counts of ED presentations for influenza-like illness and pneumonia, that were admitted to a critical care ward all ages, from 1 January – 1 October, 2017 (black line), compared with each of the 5 previous years (coloured lines).

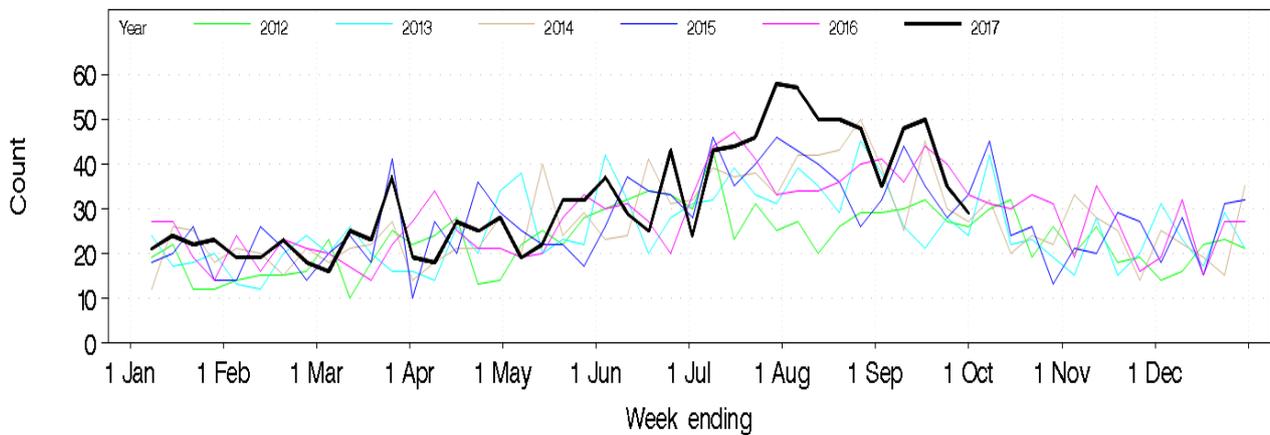


Table 1: Weekly ED and Ambulance Respiratory Activity Summary for the week ending 1 October 2017. Includes data from 60 NSW EDs and the NSW Ambulance Division. [4]

Data source	Diagnosis or problem category	Trend since last week	Comparison with usual range*	Significantly elevated age groups	Significantly elevated locations (LHDs)	Significant elevated severity indicators**	Comment
ED presentations 60 NSW hospitals	Influenza-like illness (ILI)	Decreased (291)	Above (43-74)	65+ years (90) 35-64 years (104) 5-16 years (22) 17-34 years (60)	Hunter New England (53), Southern NSW (8), South Eastern Sydney (45), Central Coast (16), Illawarra Shoalhaven (19), Western NSW (18), Mid North Coast (17), Far West (6), Nepean Blue Mountains (11), Murrumbidgee (18), Sydney (13), Northern NSW (12), Northern Sydney (19), South Western Sydney (20) LHDs and at Westmead Hospital (15)	65+ years (90) 35-64 years (104) 5-16 years (22) 17-34 years (60)	Daily index of increase = 12.5
	ILI admissions	Decreased (79)	Above (3-17)	65+ years (45) 35-64 years (24)	Hunter New England (21), Murrumbidgee (10), South Eastern Sydney (16), Central Coast (6) LHDs	65+ years (45) 35-64 years (24)	
	Pneumonia	Decreased (533)	Within (374-546)				
	Pneumonia admissions	Decreased (371)	Within (293-417)				
	Pneumonia and ILI critical care admissions	Decreased (29)	Within (24-33)				
	Asthma	Decreased (348)	Below (379-444)				
	Bronchiolitis	Steady (208)	Within (182-267)				
All respiratory illness, fever and unspecified infections	Decreased (6,752)	Above (5,038-6,224)	65+ years (1,683) 35-64 years (1,338) 17-34 years (889)	South Western Sydney (847), Western Sydney (831), Mid North Coast (316), Sydney (461), Murrumbidgee (314), Western NSW (295) LHDs and at South East Regional Hospital (64)	Admitted (2,309), ambulance arrival (1,548)		

FluCAN (The Influenza Complications Alert Network)

In 2009, the [FluCAN](#) surveillance system was created to be a rapid alert system for severe respiratory illness requiring hospitalisation. Data is provided on patients admitted with influenza confirmed by polymerase chain reaction (PCR) testing. In NSW, three hospitals participate in providing weekly FluCAN data: Westmead Hospital, John Hunter Hospital and the Children's Hospital at Westmead.

During week 39 there were 29 influenza admissions in NSW sentinel hospitals (Figure 5). Of these, 13 were due to influenza A and 16 were due to influenza B. A total of 9 of the influenza A cases had sub-typing information and all were believed to be A(H3N2) strains.

Since 1 April 2017, there have been 882 hospital admissions reported for influenza; 587 due to influenza A, 291 due to influenza B, three with dual infections and one where the type was not recorded (Figure 5).

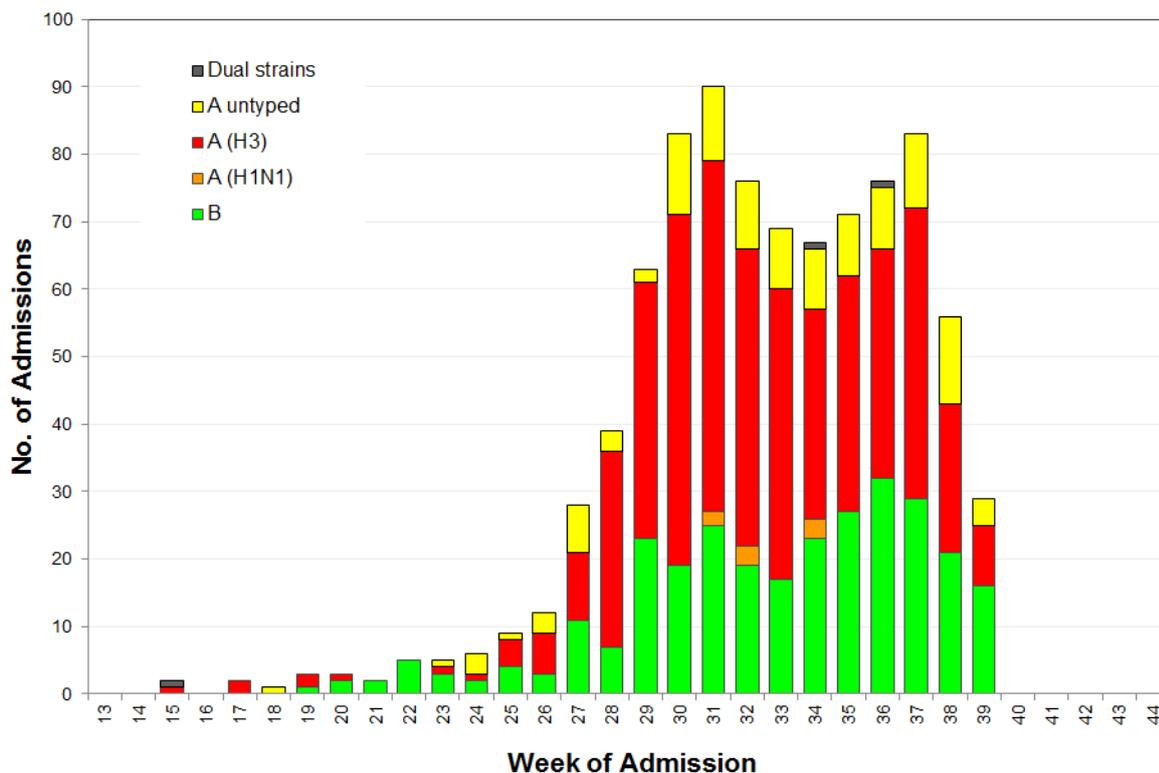
⁴ **Notes. Key for trend since last week:** Non-bold and green=decreased or steady; Non-bold and orange=increased
Key for comparison with usual range: Non-bold and green =usual range; Non-bold and orange=above usual range, but not significantly above five-year mean; **Bold** and yellow=within usual range, 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.

Of these admissions, 242 were paediatric cases (<16 years of age) and 640 were in adults. Of the 882 cases, 80 cases (9.1%) have been admitted to a critical care ward.

Figure 5: FluCAN – Number of confirmed influenza hospital admissions in NSW, 1 April 2017 to 1 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 where influenza A(H1N1) has been excluded.

2. Laboratory Surveillance

For the week ending 1 October 2017 the number and proportion of respiratory specimens reported by NSW sentinel laboratories [5] which tested positive for influenza A or influenza B decreased further (Table 2, Figure 6), with a continuation of the decreasing trend in testing for respiratory viruses overall.

Overall, 27.4% of tests for respiratory viruses were positive for influenza, lower than the previous week (32.5%, Figure 5). The positive percentage was lower for both influenza A and B strains, with influenza B strains continuing to predominate (Table 2, Figures 6 and 7).

Influenza remains the leading respiratory virus reported. All other respiratory viruses are circulating at usual levels for this time of year (Table 2).

⁵ Preliminary laboratory data is provided by participating sentinel laboratories on a weekly basis and are subject to change. Point-of-care test results have been included since August 2012 but serological diagnoses are not included. Participating sentinel laboratories: NSW Health Pathology (Hunter New England, North Sydney, Western Sydney, South Eastern Sydney, South West Sydney, The Children’s Hospital at Westmead, Australian Clinical Labs, Douglas Hanly Moir Pathology, Lavery Pathology, Medlab, SydPath.

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

Week ending	Total Tests	Influenza A Total	Influenza A (%)	Influenza B Total	Influenza B (%)	Adeno	Parainf 1, 2 & 3	RSV	Rhino	HMPV **	Entero						
10/09/2017	19613	3961	(20.2%)	231	(5.8%)	101	(2.5%)	3629	(91.6%)	3774	(19.2%)	444	264	443	1430	229	81
17/09/2017	19613	3961	(20.2%)	160	(4.0%)	40	(1.0%)	3221	(81.3%)	3774	(19.2%)	444	264	443	1430	229	81
24/09/2017	16579	2372	(14.3%)	112	(4.7%)	46	(1.9%)	2214	(93.3%)	3017	(18.2%)	349	315	322	1364	249	84
01/10/2017	14201	1632	(11.5%)	88	(5.4%)	50	(3.1%)	1494	(91.5%)	2262	(15.9%)	360	350	291	1224	219	59

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

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

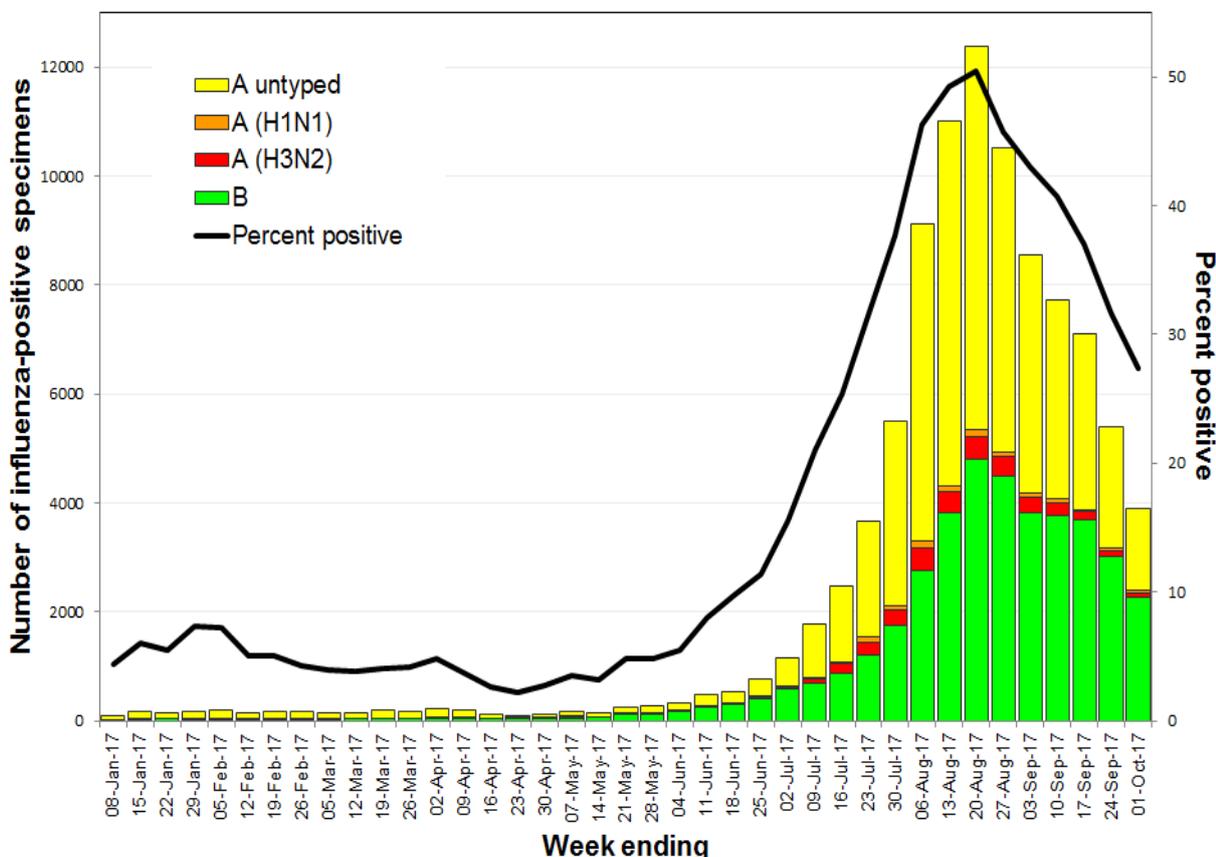
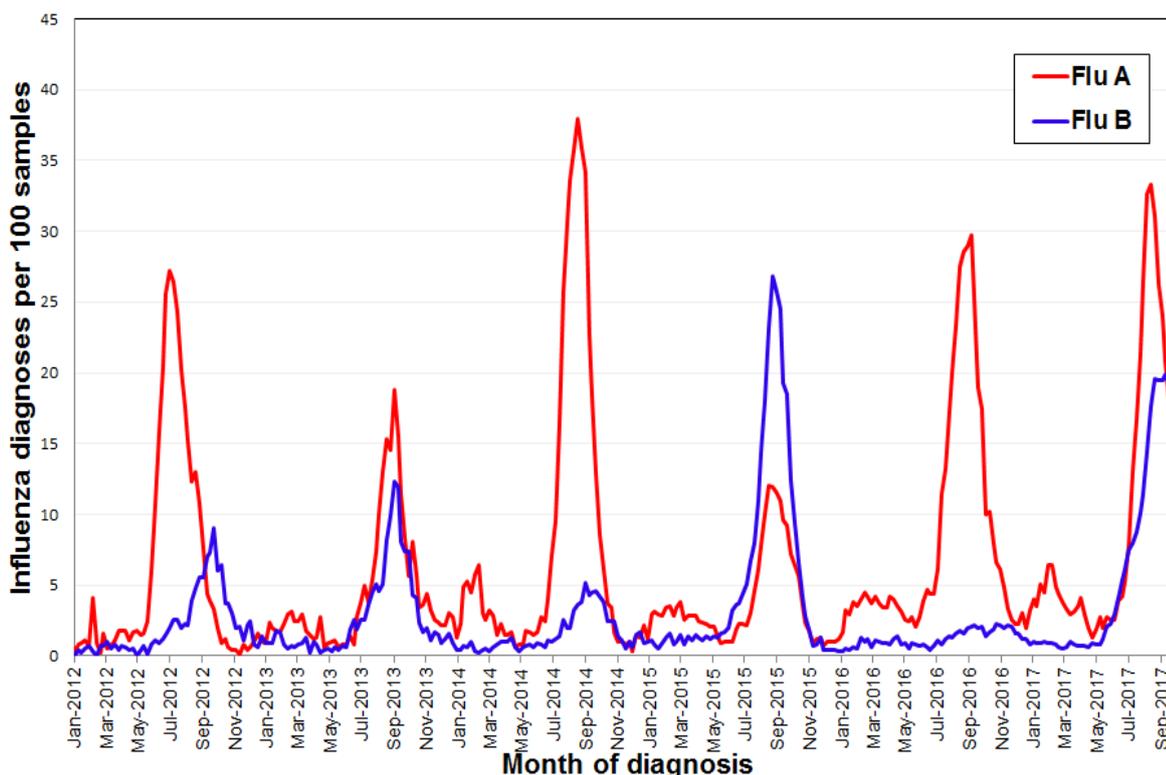


Figure 7: Percentage of laboratory tests positive for influenza A and influenza B by week, 1 January 2012 to 1 October 2017, New South Wales.



3. Community Surveillance

Influenza notifications by Local Health District (LHD)

For week 39 there were 4,794 notifications of influenza confirmed by polymerase chain reaction (PCR) testing, lower than for the previous week (6,201).

Notifications in most LHDs were lower than the previous week, although rates remained high in the Murrumbidgee and Western NSW LHDs (Table 3).

Table 3: Weekly notifications of laboratory-confirmed influenza by NSW Local Health District, by earliest report or create date for week 39, 2017.

Local Health District	Week ending 01 Oct 2017		Week ending 24 Sept 2017	
	Number of notifications	Rate per 100 000 population	Number of notifications	Rate per 100 000 population
Central Coast	247	71.52	336	97.28
Far West	7	22.86	23	75.11
Hunter New England	566	60.87	704	75.71
Illawarra Shoalhaven	216	52.85	310	75.85
Mid North Coast	58	26.09	132	59.37
Murrumbidgee	375	154.86	317	130.9
Nepean Blue Mountains	274	71.21	343	89.14
Northern NSW	109	35.56	171	55.79
Northern Sydney	387	42.28	758	82.81
South Eastern Sydney	372	40.09	544	58.63
South Western Sydney	705	71.2	677	68.37
Southern NSW	162	75.68	149	69.61
Sydney	316	48.26	460	70.25
Western NSW	388	138.84	282	100.91
Western Sydney	612	63.1	1001	103.2

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 30 influenza outbreaks in institutions reported this week, slightly less than the previous week (33). Of these, 28 were in residential aged care facilities, one was in a hospital and one was in a mental health facility (Figure 8). A total of 13 outbreaks were due to influenza A, 12 were due to influenza B, four involved both influenza A and B strains, and the strain type is pending for one of the outbreaks.

In the year to date there have been 565 laboratory confirmed influenza outbreaks in institutions reported to NSW public health units (Table 4): 417 have been due to influenza A, 102 were due to influenza B, and 39 involved both influenza A and B strains.

In outbreaks affecting aged care facilities, at least 6965 residents were reported to have had ILI symptoms and 723 required hospitalisation. Overall, there have been 266 deaths in residents reported linked to these outbreaks, all of whom were noted to have other significant co-morbidities.

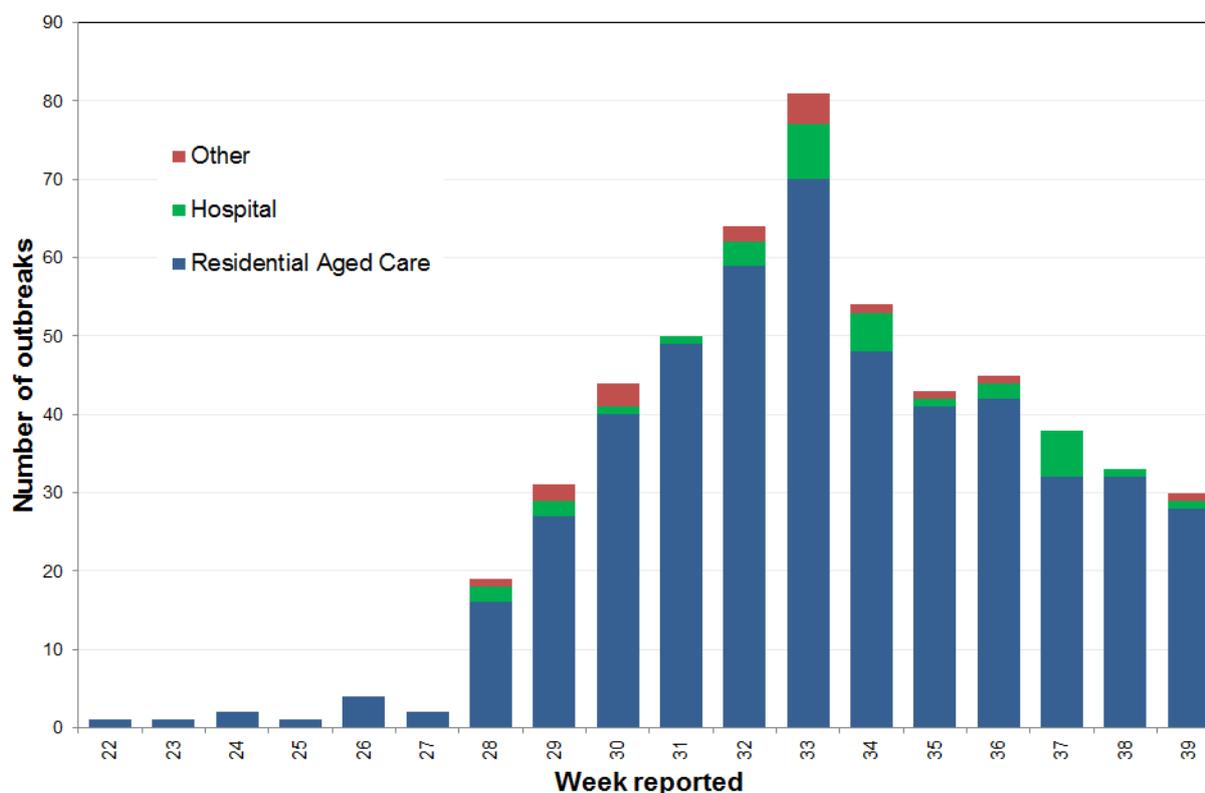
People in older age-groups are at higher risk of infection from the influenza A(H3N2) strain than the influenza A(H1N1) strain. The influenza A(H3N2) strain also predominated in 2012, 2014 and 2016. In 2015, influenza B was the predominant strain, and was also associated with an increase in influenza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

Table 4: Reported influenza outbreaks in NSW institutions, 2010 to 1 October 2017.

Year	2010	2011	2012	2013	2014	2015	2016	2017*
No. of outbreaks	2	4	39	12	120	103	279	565

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

Figure 8: Reported influenza outbreaks in NSW institutions by week and institution type, week 22 to week 39, 2017.



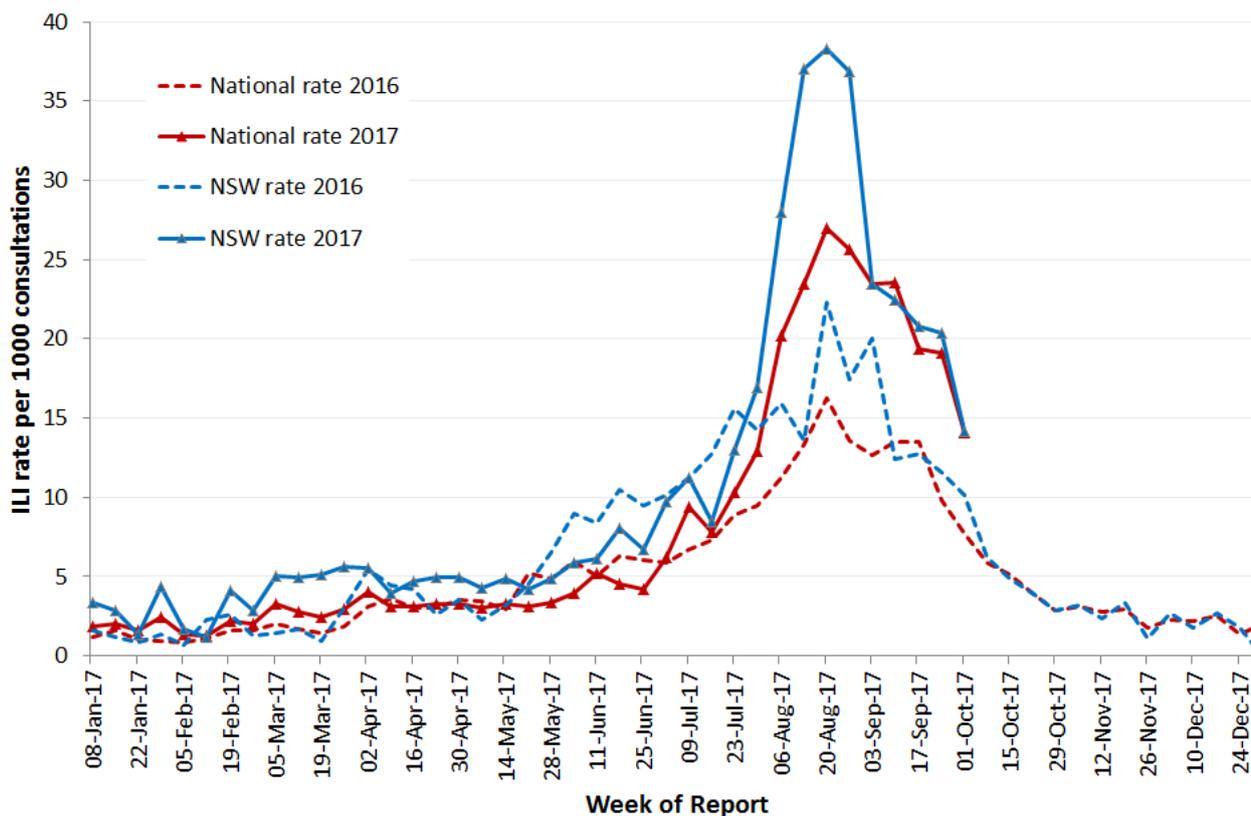
The Australian Sentinel Practices Research Network (ASPREN)

ASPREN is a network of sentinel general practitioners (GPs) run through the Royal Australian College of General Practitioners and the University of Adelaide which has collected de-identified information on influenza-like illness (ILI) and other conditions seen in general practice since 1991.

Participating GPs in the program report on the proportion of patients presenting with an ILI. The number of GPs participating on a weekly basis may vary.

In week 39 there were ASPREN reports received from 72 NSW GPs. The reported consultation rate for ILI per 1000 consultations was lower at 14.2 (Figure 9). For further information see the [ASPREN website](#).

Figure 9: ASPREN – NSW and National GP ILI rates per 1000 consultations – 2017 to week 39, compared to 2016.



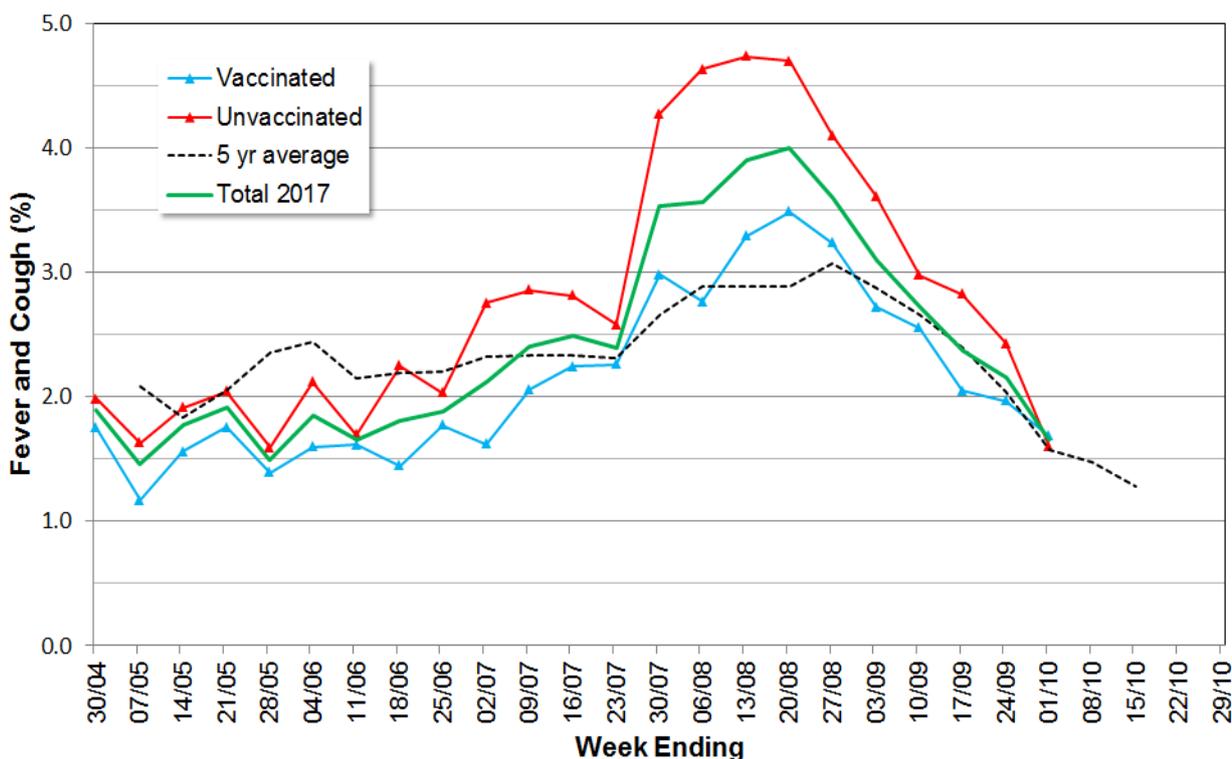
FluTracking.net

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.

In week 39 FluTracking received reports for 7,580 people in NSW with the following results:

- 1.6% of respondents reported fever and cough, down from the previous week (2.2%) and similar to the 5 year annual mean (Figure 10).
- Among respondents who reported being vaccinated for influenza in 2017, 1.7% reported fever and cough compared to 1.6% for unvaccinated respondents (Figure 10).
- Overall, 1.0% of respondents reported fever, cough and absence from normal duties, the same as the previous week.

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.

4. National and International Influenza Surveillance

National Influenza Surveillance

In the *Australian Surveillance Report No.9*, with data up to 15 September 2017, influenza activity at the national level decreased this reporting fortnight after reaching a peak in mid August. Despite the national decline, high levels of activity continued to be reported across the country. Of note:

- The peak week of national influenza activity this season has been at comparable or higher levels than in recent years, with high activity persisting for a number of weeks.
- Moderate to high levels of influenza activity in the community are likely to continue for the next few weeks.
- There has been more than two and a half times the number of laboratory confirmed notifications of influenza reported to the National Notifiable Diseases Surveillance System (NNDSS) 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. Administrative backlogs in data entry experienced in some jurisdictions are likely to alter the pattern of notifications once the backlog is resolved.
- National indicators of influenza-like illness (ILI) declined in the last fortnight, further supporting that the season has peaked nationally. The proportion of patients presenting to sentinel general practitioners with ILI and testing positive for influenza remained stable this fortnight, indicating that influenza remains a significant cause of ILI in the community.

- Influenza A(H3N2) is currently the predominant circulating influenza A virus nationally. Influenza B viruses also continue to circulate, with the proportion of total notifications attributed to influenza B increasing this reporting fortnight.
- Notification rates for the year to date have been highest in adults aged 80 years or older, with a secondary peak in young children, aged 5 to 9 years. This is consistent with previous seasons where influenza A(H3N2) and influenza B, respectively, have predominated.
- Admissions to sentinel hospitals with confirmed influenza decreased this reporting fortnight, following a peak in week 33. High levels of admissions have persisted for the last 6 weeks, consistent with the higher than average influenza activity in the community.
- 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 moderate. The proportion of patients admitted directly to ICU has been lower than in recent years.
- Antigenic characterisation of circulating influenza viruses suggests the seasonal influenza vaccines are a moderate to good match for circulating virus strains, depending on the strain.

For further information see the [Australian Influenza Surveillance Reports](#).

Global Influenza Update

The latest [WHO global update on 2 October 2017](#) provides data up to 17 September. WHO reports that influenza activity remained at low levels in the temperate zone of the northern hemisphere. High levels of influenza activity continued to be reported in the temperate zone of the southern hemisphere and in some countries of South and South East Asia. In Central America and the Caribbean low influenza activity continued to be reported in a few countries. Worldwide, influenza A(H3N2) viruses were predominating.

For further information see the [WHO influenza surveillance reports](#).

Influenza at the human-animal interface

WHO publishes regular updated risk assessments of human infections with avian and other non-seasonal influenza viruses at [Influenza at the human-animal interface](#), with the most recent report published on 25 July 2017. These reports provide information on human cases of infection with non-seasonal influenza viruses, such as H5 and H7 clade viruses, and outbreaks among animals.

A report entitled *Human cases of influenza at the human-animal interface, January 2015–April 2017* has also been recently published in the [WHO Weekly Epidemiological Record](#). Of note, there has been no sustained human-to-human transmission identified in any of the events; there has been a considerable surge in human cases of A(H7N9) virus infection; there has been a sharp decrease in reported human infections with A(H5N1) viruses; and approximately one quarter of cases of human infections with swine influenza variant viruses were severe and one case was fatal.

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.

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 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 virus ⁶
- a B/Phuket/3073/2013-like virus (Yamagata lineage)
- a B/Brisbane/60/2008-like virus (Victoria lineage).⁷

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

⁶ This replaces A/Hong Kong/4801/2014 (H3N2)-like virus used in the current 2017 seasonal influenza vaccines.

⁷ 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.