

Influenza Monthly Epidemiology Report, NSW

January 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 Report at <http://www.health.nsw.gov.au/publichealth/infectious/index.asp>.

1. Summary

- Influenza A and B strains are circulating at higher levels than is usual for this time of year, with influenza A(H3) the most common strain identified.
- The rate of influenza like illness (ILI) presentations to selected emergency departments was low and consistent with inter-seasonal activity.
- The proportion of deaths attributed to pneumonia and influenza remained low.
- The current increased local influenza activity corresponds to recent increased seasonal influenza activity reported in the Northern Hemisphere where influenza A(H3) strains are also predominating.

2. Hospital 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 January 2017:

- The index of increase for ILI presentations was 1.6 at the end January, well below the seasonal threshold.
- ED presentations for ILI were within the historical average for this time of year (Figure 1).
- ED presentations for pneumonia [3] were within the historical average (Figure 2).
- Pneumonia or ILI presentations which resulted in admissions to critical care units for ILI and pneumonia were within the usual range for this time of year (data not shown).
- Bronchiolitis presentations were within the usual range for this time of year (Figure 3).

[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 (EDs), representing approximately 82% of ED visits in the 2015-16 financial year. The coverage of rural EDs is lower than the metropolitan EDs. Data shown represents unplanned presentations to hospital EDs.

[2] The ED 'ILI' syndrome includes provisional diagnosis 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'.

- The category combining all respiratory, fever and unspecified infection presentations was within the usual range for this time of year however during the last week of January, presentations were elevated: in adults aged 65 years and over (data not shown).

Figure 1: Total weekly counts of ED visits for influenza-like illness, January 2017 (black line), compared with each of the 5 previous years (coloured lines), for 60 NSW hospitals.*

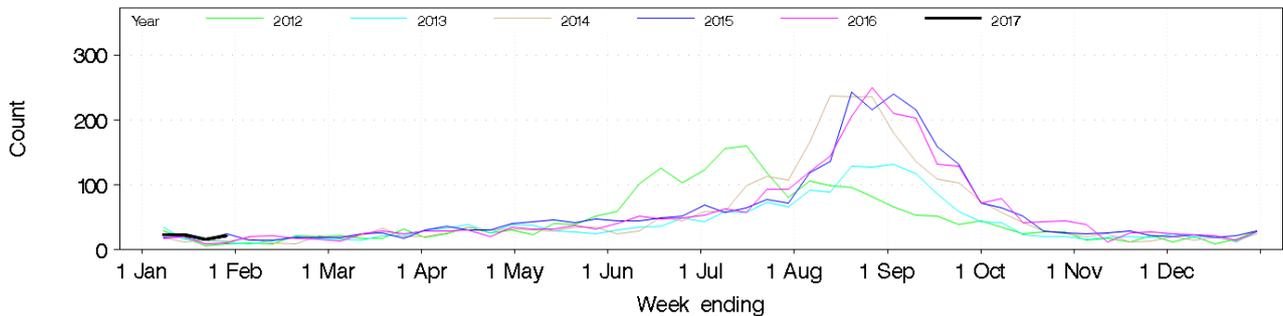


Figure 2: Total weekly counts of ED presentations for pneumonia, January 2017 (black line), compared with each of the 5 previous years (coloured lines), for 60 NSW hospitals.

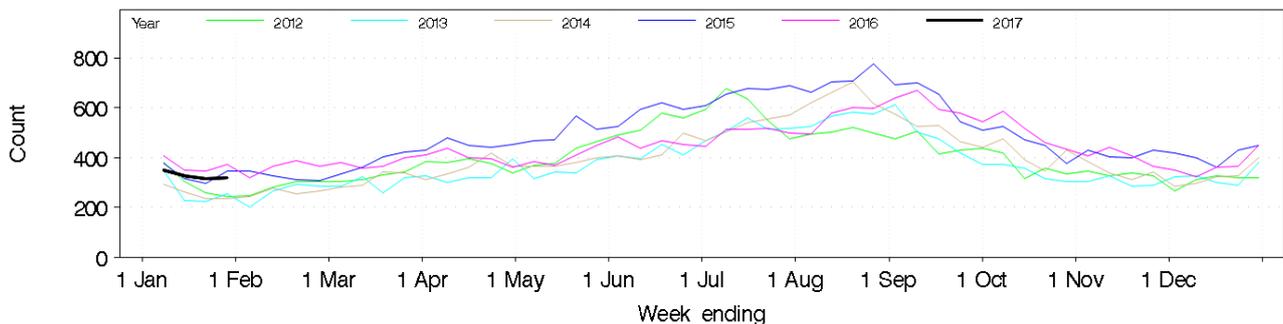
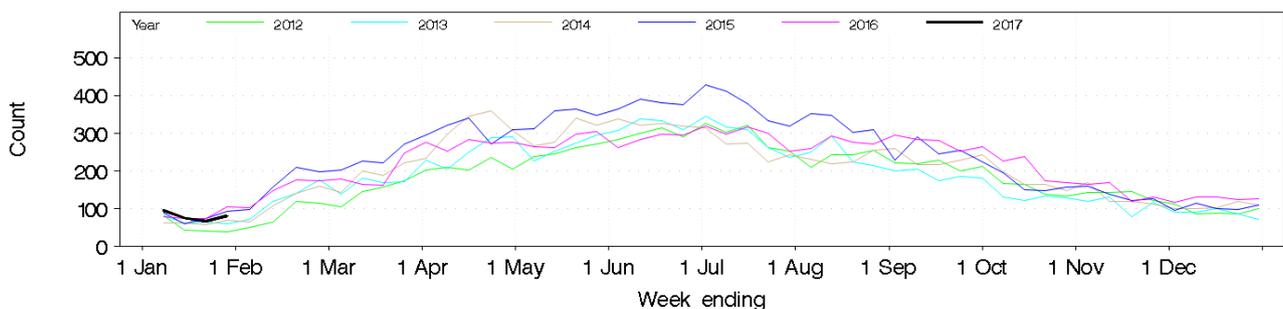


Figure 3: Total weekly counts of Emergency Department visits for bronchiolitis, January 2017 (black line), compared with the 5 previous years (coloured lines).



3. Laboratory testing summary for influenza

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

[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. Preliminary laboratory data is provided by participating sentinel laboratories on a weekly basis and are subject to change. **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, Lavery Pathology, Medlab, SydPath, VDRLab to June 2016

In January 2017:

- A total of 9,981 tests for respiratory viruses were performed at sentinel NSW laboratories and 581 (5.8%) were positive for influenza (Table 1).
- 489 specimens tested positive for influenza A – 53 of these tested positive for A(H3N2), 4 tested positive for influenza A(H1N1) and 432 were not typed further (Table 1, Figure 4 & 5).
- 92 cases of influenza B were reported (Table 1, Figure 4 & 5).

Influenza activity has increased since the end of 2016 and is high for this time of year, the rate of influenza far exceeds previous rates for this time of year. A possible explanation for this is increased testing whereby the number of respiratory tests in January has increased from 3541 in 2014 to 5920 in 2015 to 8079 in 2016 and 9981 in 2017.

Rhinoviruses were the leading respiratory viruses identified by laboratories.

Table 1: Summary of testing for influenza and other respiratory viruses at sentinel NSW laboratories, 2 January to 29 January 2017.

Month ending	Total Tests	TEST RESULTS													
		Influenza A						Influenza B		Adeno	Parainf 1, 2 & 3	RSV	Rhino	HMPV **	Enterov
		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			
Week ending															
08/01/2017	2220	78 (3.5%)	6 (7.7%)	0 (0.0%)	72 (92.3%)	19 (0.9%)	100	122	71	389	68	32			
15/01/2017	2777	142 (5.1%)	16 (11.3%)	2 (1.4%)	124 (87.3%)	24 (0.9%)	107	115	93	417	59	29			
22/01/2017	2592	116 (4.5%)	16 (13.8%)	1 (0.9%)	99 (85.3%)	27 (1.0%)	94	101	76	313	66	34			
29/01/2017	2392	153 (6.4%)	15 (9.8%)	1 (0.7%)	137 (89.5%)	22 (0.9%)	73	95	83	343	43	36			

Notes: ** HMPV - Human metapneumovirus.

All samples are tested for influenza viruses but not all samples are tested for all of the other viruses listed.

Figure 4: Weekly influenza positive test results by type and sub-type reported by NSW sentinel laboratories, 2 January to 29 January 2017.

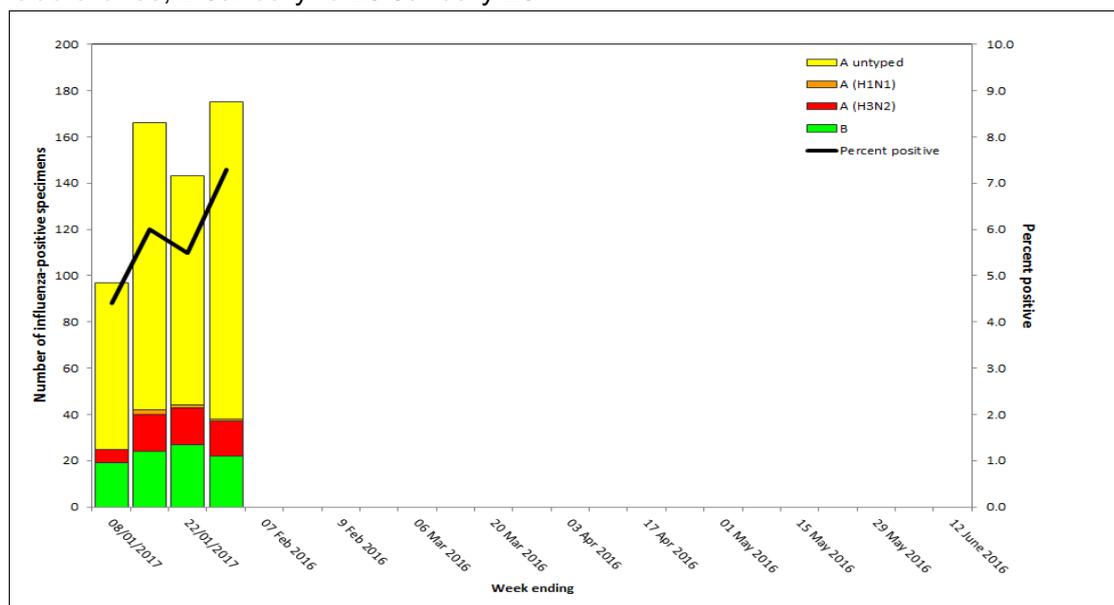
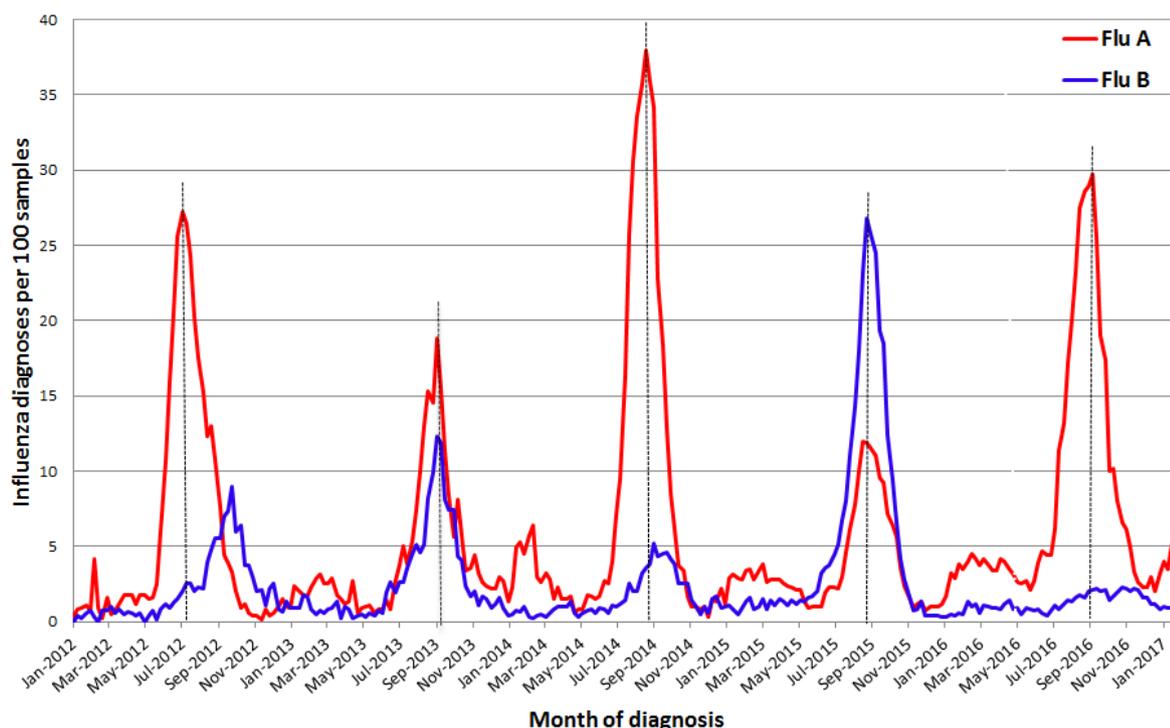


Figure 5: Percent of laboratory tests positive for influenza A and influenza B reported by NSW sentinel laboratories, 2 January 2012 to 29 January 2017.



4. Community Surveillance

Influenza notifications by Local Health District (LHD)

During January there were 572 notifications of influenza confirmed by polymerase chain reaction (PCR) testing, notably higher than the 282 influenza notifications reported for January 2016.

Rates were low and similar across all LHDs with the exception of South Eastern Sydney who reported the highest notification rate well above other LHDs (Table 2).

Table 2: Weekly notifications of laboratory-confirmed influenza by Local Health District.

Local Health District	Week ending 29 Jan 2017		Previous 4 weeks	
	Number of notifications	Rate per 100 000 population	Number of notifications	Rate per 100 000 population
Central Coast	2	0.59	2	0.49
Hunter New England	16	1.73	5	0.49
Illawarra Shoalhaven	5	1.23	6	1.48
Mid North Coast	0	0	3	1.14
Murrumbidgee	2	0.84	3	1.12
Nepean Blue Mountains	9	2.36	6	1.57
Northern NSW	6	1.98	5	1.73
Northern Sydney	20	2.19	22	2.43
South Eastern Sydney	37	4.04	26	2.84
South Western Sydney	12	1.21	15	1.52
Southern NSW	1	0.47	2	0.71
Sydney	6	0.94	11	1.73
Western NSW	2	0.72	4	1.32
Western Sydney	15	1.55	19	1.99

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

Influenza outbreaks in institutions

There were five respiratory outbreaks reported this month in residential care facilities, only one was caused by influenza (A), the others were caused by other respiratory pathogens (Table 3).

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, 2014 and 2016 and was associated with an increase in influenza outbreaks in institutions, particularly residential aged care facilities (Table 3).

Table 3: Reported influenza outbreaks in NSW institutions, January 2010 to January 2017.

Year	2010	2011	2012	2013	2014	2015	2016	2017*
No. of outbreaks	2	4	39	12	120	103	279	1

Notes: * Year to date.

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

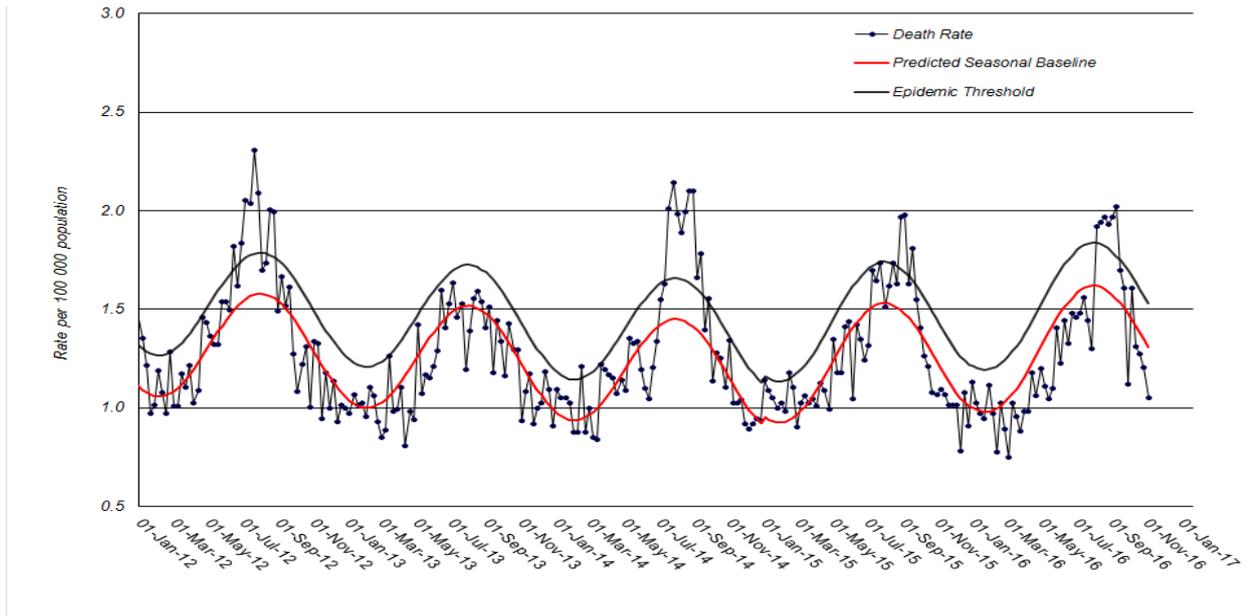
Deaths registration data is routinely reviewed for deaths attributed to pneumonia or influenza. While pneumonia has many causes, a well-known indicator of seasonal and pandemic influenza activity is an increase in the number of death certificates that mention pneumonia or influenza as a cause of death.

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 20 January 2017:

- In 2017 none of 2,450 death certificates mentioned influenza
- A total of 201 of 2,450 death certificates mentioned pneumonia.
- There were 0.83 influenza and pneumonia deaths per 100 000 NSW population, which was below the epidemic threshold of 1.18 per 100 000 population (Figure 7).

Figure 7: 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:**

- 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. 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 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.

6. National and International Influenza Surveillance

National Influenza Surveillance

Although national influenza surveillance reports are not produced at this time of year, many jurisdictions are reporting increased influenza activity. Total national reports of laboratory-confirmed influenza in January were high, higher than 2016 and also higher than in earlier years.

For further information on the National Notifiable Disease Surveillance System, which includes laboratory-confirmed influenza reports, see: <http://www9.health.gov.au/cda/source/cda-index.cfm>.

Global Influenza Update

The latest [WHO global update on 23 January 2017](#) provides data up to 08 January. Influenza activity in the temperate zone of the northern hemisphere continued to increase, with many countries especially in East Asia and Europe having passed their seasonal threshold early in comparison with previous years. Worldwide, influenza A(H3N2) virus was predominant.

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

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 16 January 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](#).

7. 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.

Following the Consultation, WHO announced its recommendations for the composition of trivalent vaccine for use in the 2017 Southern Hemisphere influenza season as follows:

- 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)

WHO also recommended that quadrivalent vaccines containing two influenza B viruses and should contain the above three viruses and a B/Phuket/3073/2013-like virus.

Of note, there has been replacement of the A/California/7/2009 (H1N1)pdm09-like virus component 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/recommendations/2017_south/en/.

The WHO consultation on the composition of influenza vaccines for the Northern Hemisphere 2016-2017 influenza season was held in February 2016. The recommended composition was unchanged from the composition recommended for the 2016 Southern Hemisphere vaccines. Information about the Northern Hemisphere vaccine recommendations can be found at:

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