Influenza Monthly Epidemiology Report, NSW

January 2018

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

- Influenza A and B strains are circulating at higher levels than is usual for this time of year, all strains are circulating at similar levels.
- The rate of influenza like illness (ILI) presentations to selected emergency departments was low and consistent with inter-seasonal activity.
- The current increased local influenza activity corresponds to recent increased seasonal activity reported in the Northern Hemisphere.

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 indicator for the start of the influenza season in NSW as it suggests influenza is circulating widely in the community.

In January 2018:

- Presentations in the *All respiratory illness, fever and unspecified infections* category increased but were within the usual seasonal range, and likely represent presentations for respiratory conditions other than influenza, such as for asthma and bronchiolitis (Figure 1).
- The index of increase for ILI presentations was 0.4 at the end January, well below the seasonal threshold of 15.
- ED presentations for ILI were steady and within the historical range for this time of year overall (Figure 2).
- ED presentations for pneumonia [3] were within the historical 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 proceeding 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'.

- Pneumonia or ILI presentations which resulted in admissions to critical care units for ILI and pneumonia were within the historical range for this time of year (data not shown).
- Bronchiolitis presentations increased and were above the usual range for this time of year, overall (Figure 4).

Figure 1: Total weekly counts of ED visits for any respiratory illness, fever and unspecified infections, all ages, January, 2018 (black line), compared with the 5 previous years (coloured lines).

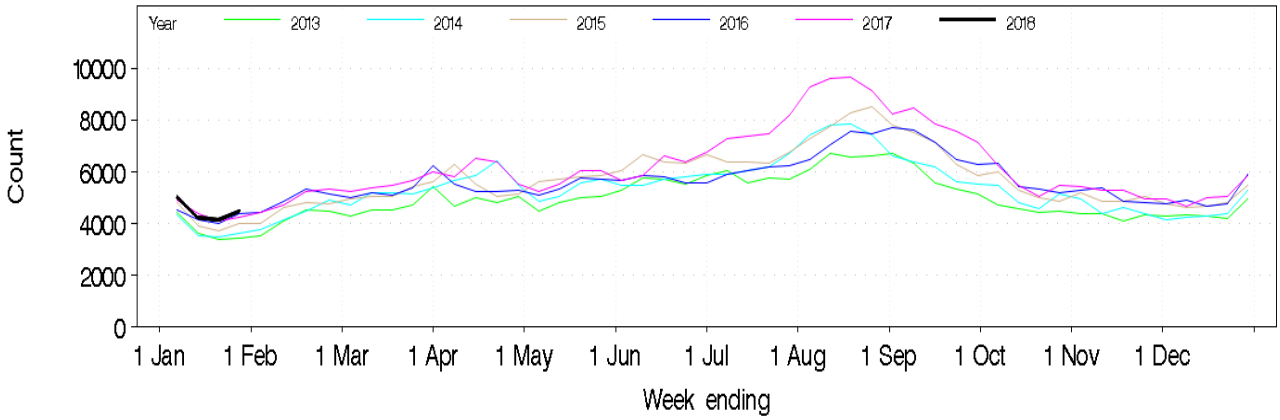


Figure 2: Total weekly counts of ED visits for influenza-like illness, all ages, January, 2018 (black line), compared with the 5 previous years (coloured lines).

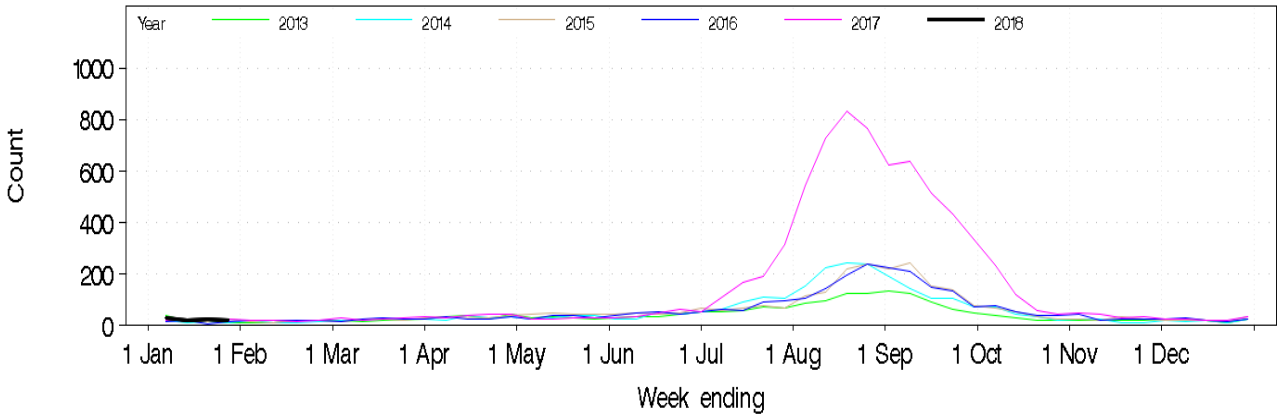


Figure 3: Total weekly counts of Emergency Department visits for pneumonia, January 2018 (black line), compared with the 5 previous years (coloured lines).

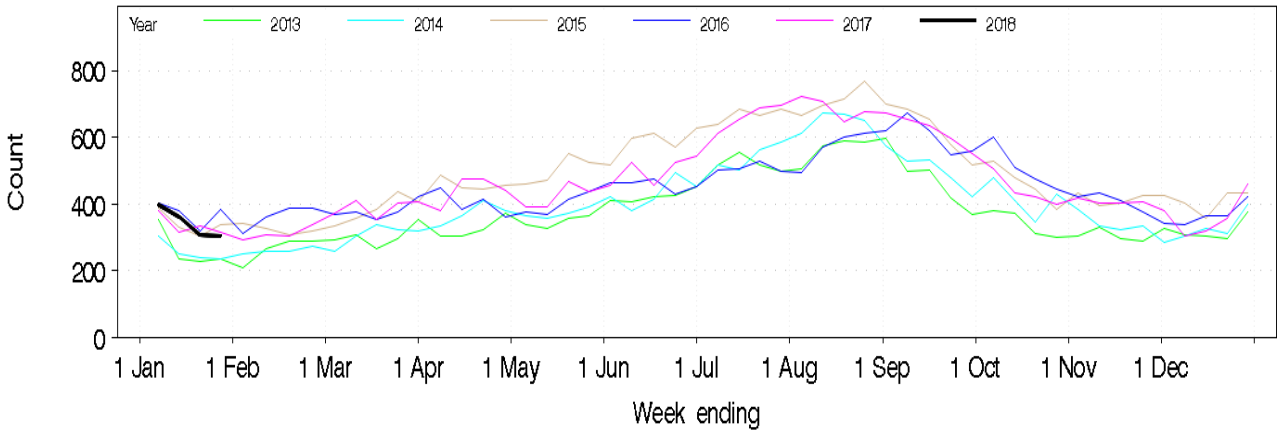
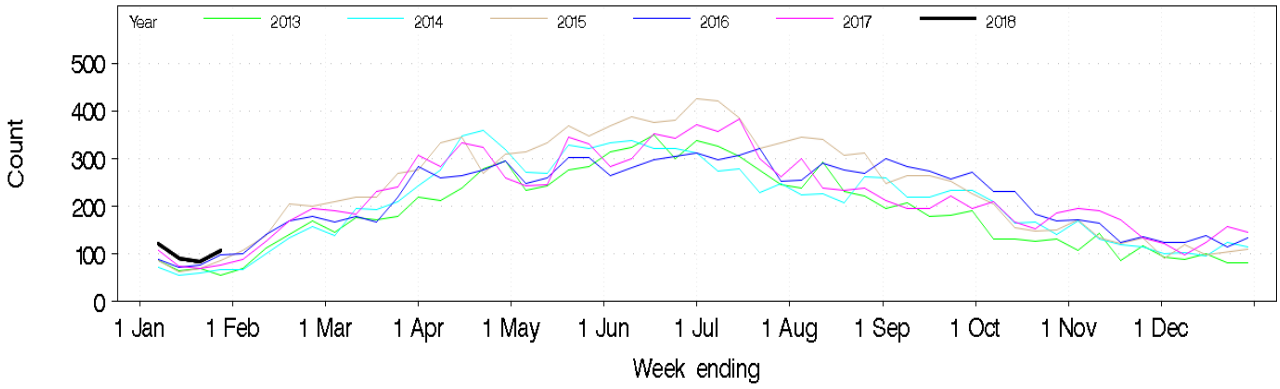


Figure 4: Total weekly counts of Emergency Department visits for bronchiolitis, January 2018 (black line), compared with the 5 previous years (coloured lines).



3. Laboratory testing summary for influenza

Sentinel laboratory surveillance for influenza and other respiratory viruses is conducted throughout the year [4]. In January 2018:

- A total of 12,576 tests for respiratory viruses were performed at sentinel NSW laboratories and 982 (7.8%) were positive for influenza (Table 1).
- 481 specimens tested positive for influenza A – 21 of these tested positive for A(H3N2), 38 tested positive for influenza A(H1N1) and 522 were not typed further (Table 1, Figure 5 & 6).
- 501 cases of influenza B were reported (Table 1, Figure 5 & 6).

Influenza activity has increased since the end of 2017 and is high for this time of year. The rate of influenza far exceeds previous rates for this time of year. This is most likely a result of travellers returning from the severe influenza season being experienced in the Northern Hemisphere.

Rhinovirus and influenza were the leading respiratory viruses identified by laboratories. All other viruses are circulating at levels usually seen 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. 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, Laverty Pathology, Medlab, SydPath, VDRLab to June 2016.

Table 1: Summary of testing for influenza and other respiratory viruses at sentinel NSW laboratories, 1 January to 28 January 2018.

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	(%)						
28/01/2018	12576	481	(3.8%)	21	(4.4%)	38	(7.9%)	422	(87.7%)	501	(4.0%)	404	599	492	1601	325	196
Week ending																	
07/01/2018	2939	76	(2.6%)	4	(5.3%)	4	(5.3%)	68	(89.5%)	83	(2.8%)	120	159	123	411	104	47
14/01/2018	3512	112	(3.2%)	4	(3.6%)	12	(10.7%)	96	(85.7%)	139	(4.0%)	106	180	122	444	109	52
21/01/2018	3493	150	(4.3%)	6	(4.0%)	12	(8.0%)	132	(88.0%)	137	(3.9%)	103	160	141	420	79	57
28/01/2018	2632	143	(5.4%)	7	(4.9%)	10	(7.0%)	126	(88.1%)	142	(5.4%)	75	100	106	326	33	40

Notes:
***** 5 week period
** HMPV - Human metapneumovirus.
All samples are tested for influenza viruses but not all samples are tested for all of the other viruses listed.

Figure 5: Weekly influenza positive test results by type and sub-type reported by NSW sentinel laboratories, 1 January to 28 January 2018.

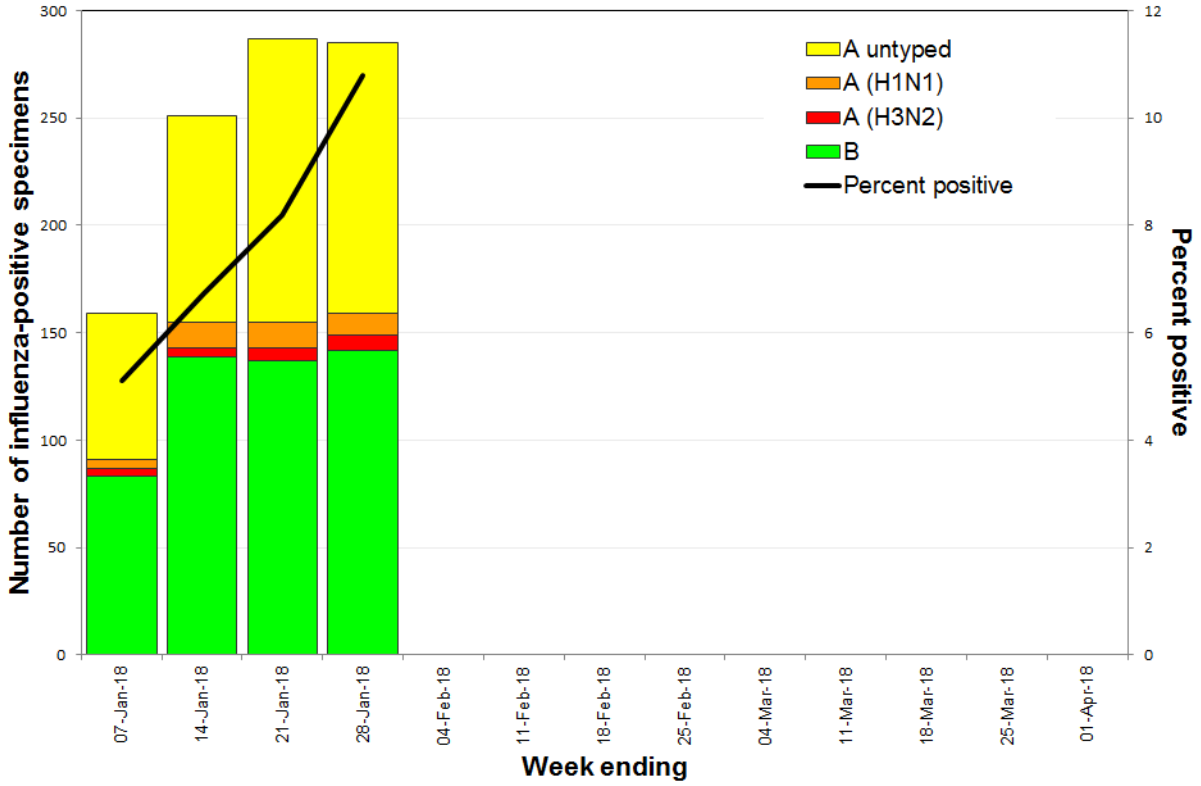
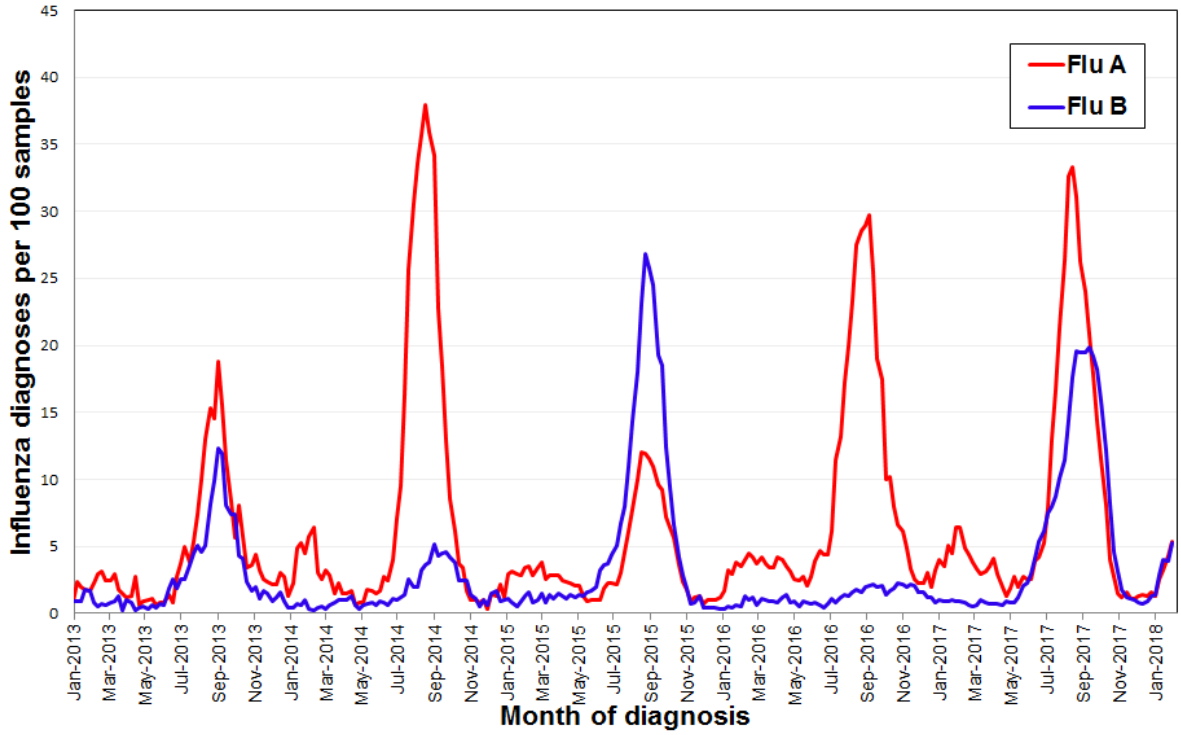


Figure 6: Percent of laboratory tests positive for influenza A and influenza B reported by NSW sentinel laboratories, 1 January 2013 to 28 January 2018.



4. Community Surveillance

Influenza notifications by Local Health District (LHD)

During January there were 1023 notifications of influenza confirmed by polymerase chain reaction (PCR) testing, notably higher than the 572 influenza notifications reported for January 2017 and well above the notifications reported for the previous month December 2017 (316).

Rates were low and similar across all LHDs with the exception of Northern Sydney which 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 28 Jan 2018		Average (previous 4 weeks)	
	Number of notifications	Rate per 100 000 population	Number of notifications	Rate per 100 000 population
Central Coast	7	2	4	1.22
Far West	0	0	1	3.28
Hunter New England	4	0.43	15	1.54
Illawarra Shoalhaven	10	2.42	5	1.15
Mid North Coast	4	1.78	3	1.33
Murrumbidgee	0	0	2	0.82
Nepean Blue Mountains	4	1.03	5	1.28
Northern NSW	15	4.85	7	2.18
Northern Sydney	93	10.05	42	4.49
South Eastern Sydney	47	4.99	42	4.49
South Western Sydney	10	0.99	16	1.56
Southern NSW	0	0	3	1.15
Sydney	20	2.99	24	3.55
Western NSW	0	0	3	1.07
Western Sydney	32	3.22	31	3.09
Total NSW	246	2.31	203	2.14

Note:

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

Influenza outbreaks in institutions

There were four respiratory outbreaks reported this month, all in residential care facilities. Only one was caused by influenza (B) the other three were caused by other respiratory pathogens (human metapneumovirus and rhinovirus) (Table 3).

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 predominated in 2012, 2014, 2016 and 2017. 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 3).

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

Year	2011	2012	2013	2014	2015	2016	2017	2018*
No. of outbreaks	4	39	12	120	103	279	588	1

Notes:
* Year to date.

5. 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 higher than 2017 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 22 January 2018 provides data up to 7 January. 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 accounted still for the majority of influenza detections (62%) but influenza B (mostly from the Yamagata lineage) has increased proportionally. Up to now, the majority of countries where the season has started, report influenza like illness reaching moderate levels in comparison with previous years, with few already reaching high levels. (Activity has increased since this report was posted). Some countries have reported levels of hospitalization and ICU admissions at levels reaching or exceeding peak levels of previous influenza seasons. Follow the link for 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 7 December 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.

Since the last update on 30 October 2017, one new laboratory-confirmed human case of influenza A(H5N6) virus infection was reported to WHO from China. The patient was a 33 year old male who passed away on 12 November. Prior to illness onset, he reportedly had exposure to poultry.

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.

6. 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/INFIHM-16-0019/2016 (H3N2)-like virus [5]
- 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 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.