

Influenza Monthly Epidemiology Report, NSW

February 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 but appear to be declining. Both 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.

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 February 2018:

- Presentations in the *All respiratory illness, fever and unspecified infections* category decreased. At this time of year these are more likely to represent respiratory conditions other than influenza, such as asthma and bronchiolitis (Figure 1).
- The index of increase for ILI presentations was 0.9 at the end February, well below the seasonal threshold of 15.
- ED presentations for ILI were steady but were above the historical range for this time of year overall (Figure 2).
- ED presentations for pneumonia [3] increased but 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 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'.

- Pneumonia or ILI presentations which resulted in admissions to critical care units also increased and were above the historical range for this time of year (data not shown).
- Bronchiolitis presentations increased but were within 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, 2018 (black line) to 25 February, compared with the 5 previous years (coloured lines).

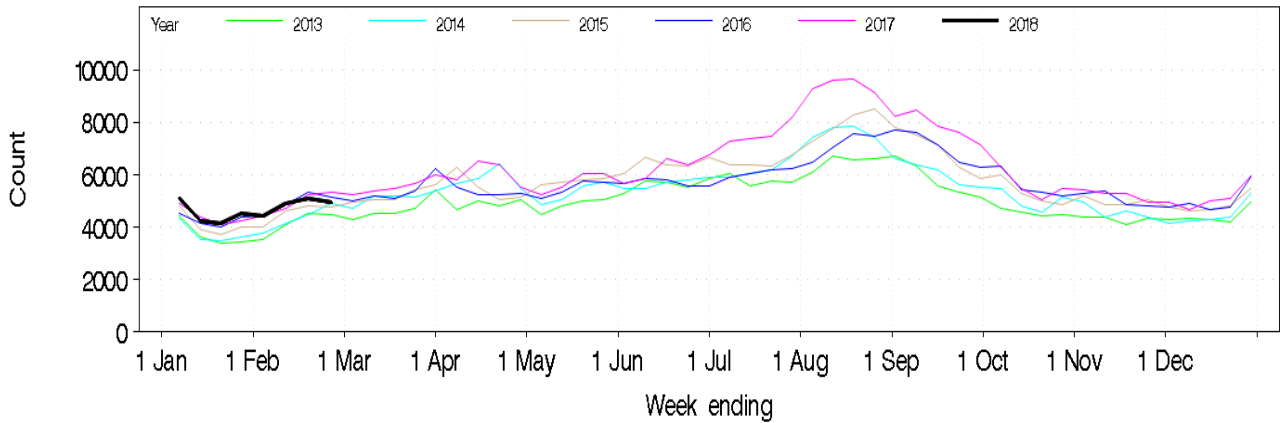


Figure 2: Total weekly counts of ED visits for influenza-like illness, all ages, 2018 (black line) to 25 February, compared with the 5 previous years (coloured lines).

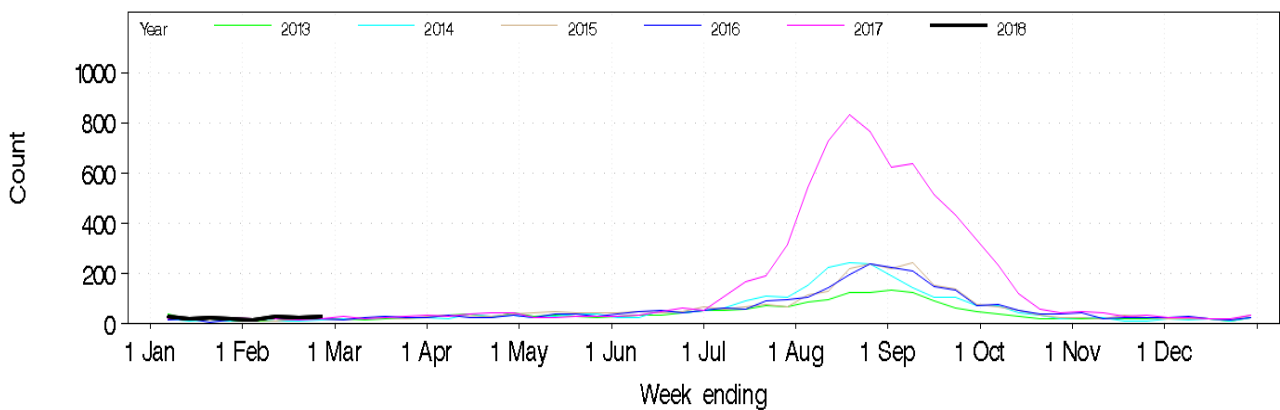


Figure 3: Total weekly counts of Emergency Department visits for pneumonia, 2018 (black line) to 25 February, compared with the 5 previous years (coloured lines).

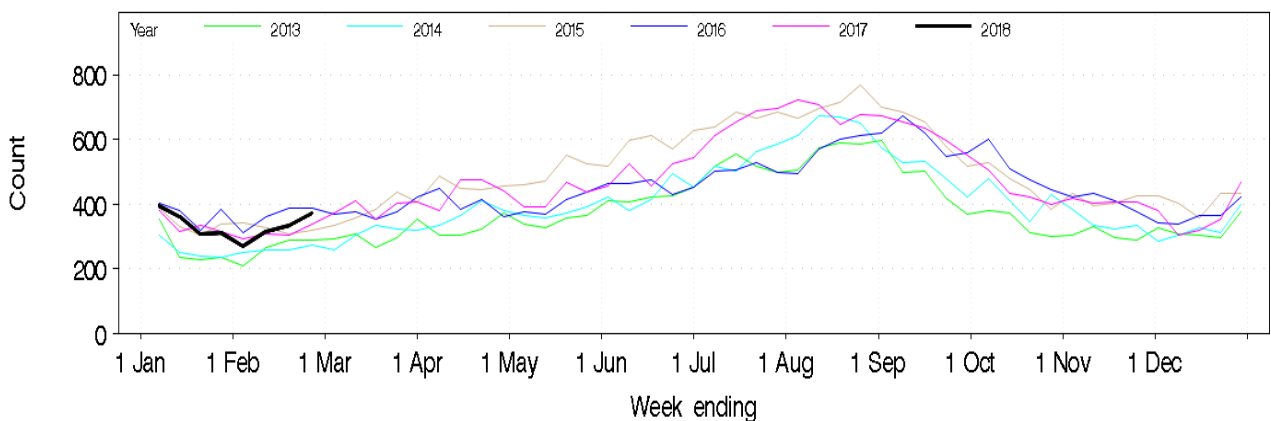
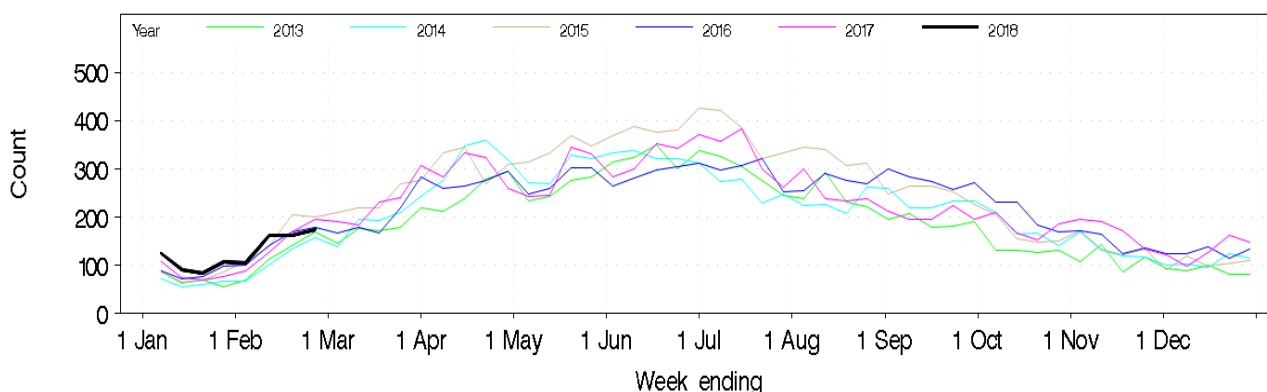


Figure 4: Total weekly counts of Emergency Department visits for bronchiolitis, 2018 (black line) to 25 February, compared with the 5 previous years (coloured lines).



3. Laboratory testing summary for influenza

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

- A total of 14540 tests for respiratory viruses were performed at sentinel NSW laboratories and 1,034 (7.1%) were positive for influenza (Table 1), slightly lower than the previous month (7.8%).
- 531 specimens tested positive for influenza A – 32 of these tested positive for A(H3N2), 35 tested positive for influenza A(H1N1) and 462 were not typed further (Table 1, Figure 5 & 6).
- 503 cases of influenza B were reported (Table 1, Figure 5 & 6).

The influenza test positive rate remains higher than usual for this time of year but is declining. The high inter-seasonal activity most likely reflects the high seasonal activity 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.

Table 1: Summary of testing for influenza and other respiratory viruses at sentinel NSW laboratories, 1 January to 25 February 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	12819	483	(3.8%)	21	(4.3%)	38	(7.9%)	424	(87.8%)	507	(4.0%)	404	599	492	1601	325	196
25/02/2018	14540	531	(3.7%)	32	(6.0%)	35	(6.6%)	462	(87.0%)	503	(3.5%)	374	552	846	2498	221	284
Week ending																	
04/02/2018	3431	137	(4.0%)	14	(10.2%)	9	(6.6%)	114	(83.2%)	129	(3.8%)	101	132	167	475	66	54
11/02/2018	3525	135	(3.8%)	8	(5.9%)	10	(7.4%)	117	(86.7%)	153	(4.3%)	94	123	222	564	49	84
18/02/2018	3690	147	(4.0%)	3	(2.0%)	12	(8.2%)	130	(88.4%)	110	(3.0%)	95	128	227	677	57	79
25/02/2018	3894	112	(2.9%)	7	(6.3%)	4	(3.6%)	101	(90.2%)	111	(2.9%)	84	169	230	782	49	67

Notes:

[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.

** 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 25 February 2018.

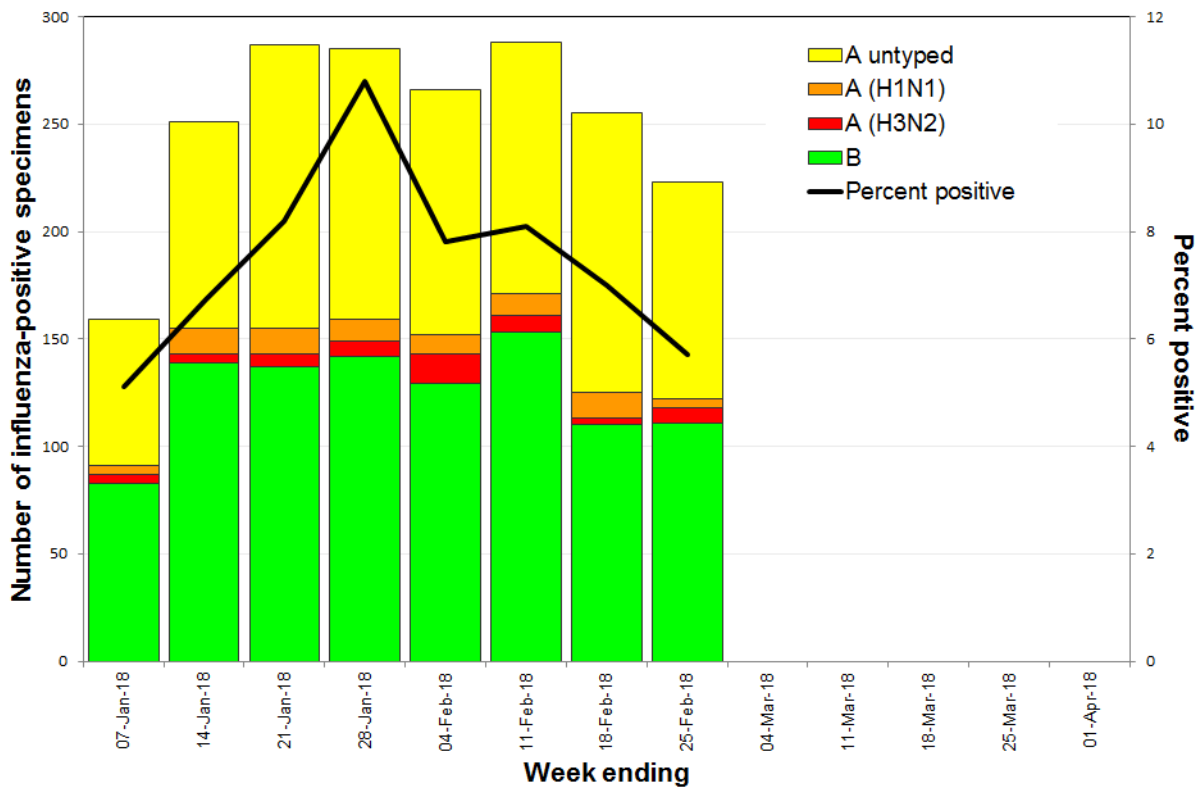
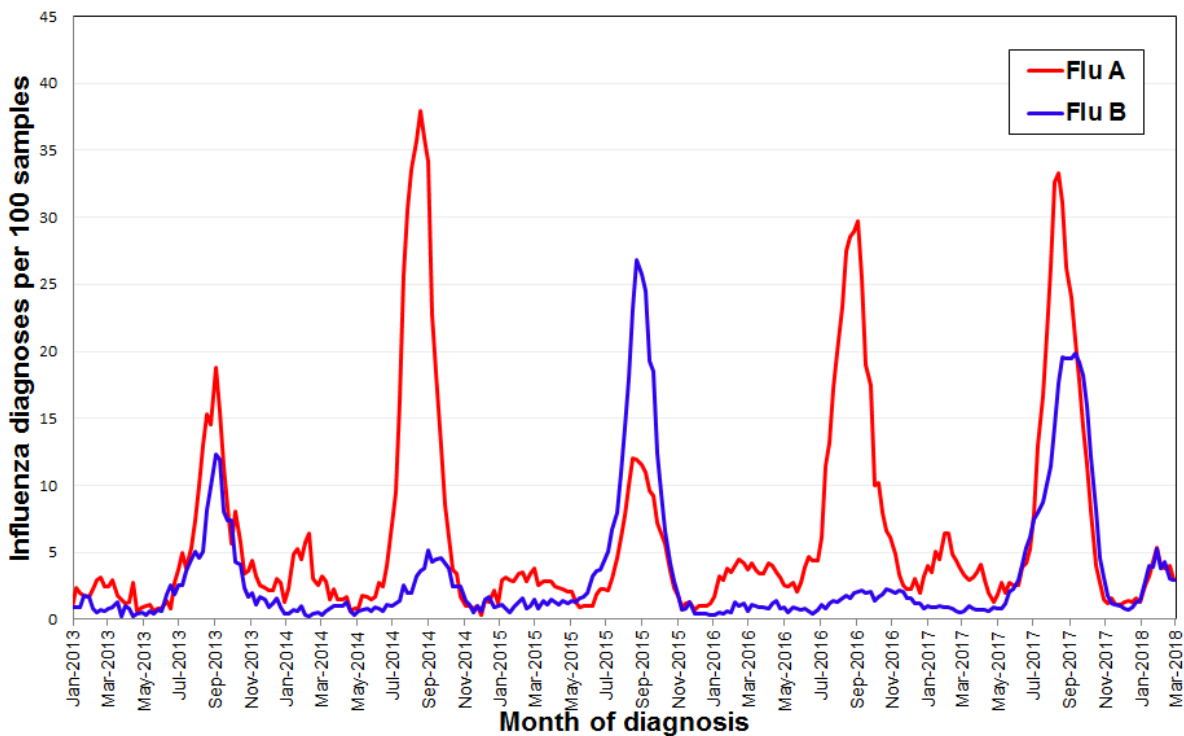


Figure 6: Percent of laboratory tests positive for influenza A and influenza B reported by NSW sentinel laboratories, 1 January 2013 to 25 February 2018.



4. Community Surveillance

Influenza notifications by Local Health District (LHD)

During February there were 1144 notifications of influenza confirmed by polymerase chain reaction (PCR) testing, notably higher than the 589 influenza notifications reported for February 2017 and higher than the notifications reported for January 2018 (1023).

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 25 Feb 2018		Average (previous 4 weeks)	
	Number of notifications	Rate per 100 000 population	Number of notifications	Rate per 100 000 population
Central Coast	9	2.58	7	1.93
Hunter New England	17	1.81	12	1.23
Illawarra Shoalhaven	11	2.67	10	2.3
Mid North Coast	2	0.89	6	2.67
Murrumbidgee	2	0.82	3	1.24
Nepean Blue Mountains	13	3.33	5	1.22
Northern NSW	5	1.62	11	3.55
Northern Sydney	63	6.81	91	9.84
South Eastern Sydney	41	4.36	50	5.31
South Western Sydney	25	2.48	19	1.83
Southern NSW	3	1.38	4	1.69
Sydney	14	2.09	31	4.63
Western NSW	10	3.56	2	0.83
Western Sydney	45	4.52	39	3.92

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, all in residential care facilities, including two caused by influenza (one influenza A(H3) and one influenza B) (Table 3, Figure 7). The other three outbreaks were linked to either human metapneumovirus or rhinovirus.

In the year to date there have been 3 laboratory confirmed influenza outbreaks in institutions reported to NSW public health units (Table 4): 2 have been due to influenza A, 1 was due to influenza B.

In outbreaks affecting aged care facilities, at least 36 residents were reported to have had ILI symptoms and 12 required hospitalisation. Overall, there have been 2 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 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).

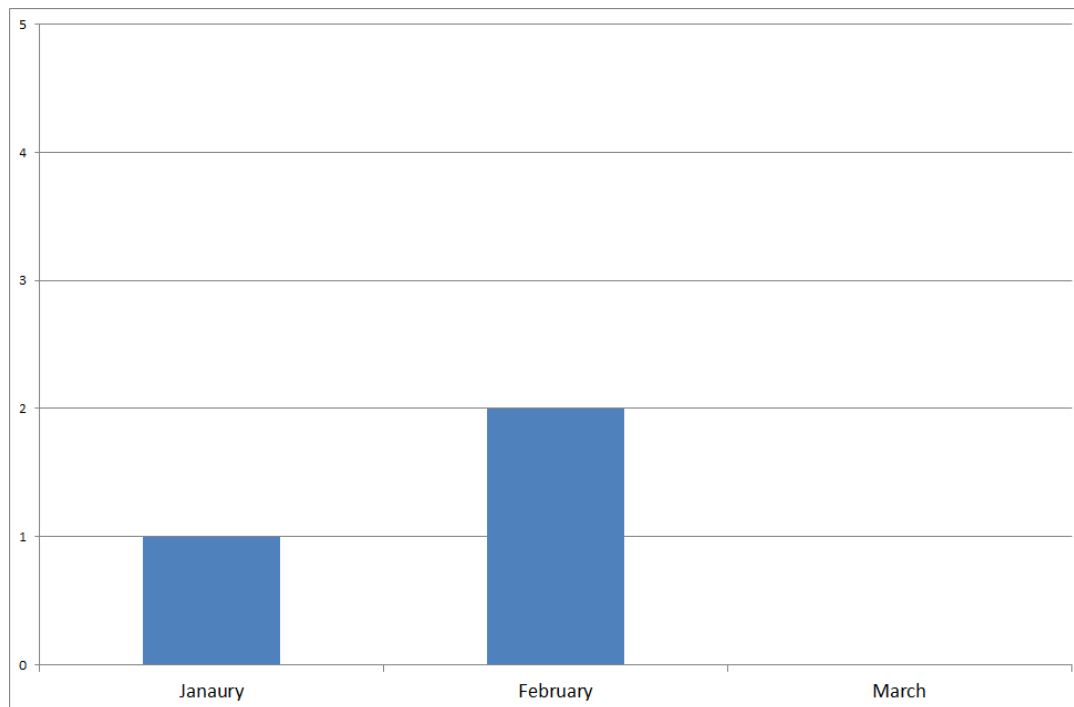
Table 3: Reported influenza outbreaks in NSW institutions, January 2011 to February 2018.

Year	2011	2012	2013	2014	2015	2016	2017	2018*
No. of outbreaks	4	39	12	120	103	279	588	3

Notes:

* Year to date.

Figure 7: Reported influenza outbreaks in NSW residential care facilities by month, 2018.



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 February 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 05 March 2018](#) provides data up to 18 February. Influenza activity remained high 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 and influenza B accounted for a similar proportion of influenza detections. The majority of countries experiencing influenza season, reported influenza-like illness reaching moderate levels in comparison with previous years, with a few reaching levels exceeding those of previous years. Some countries, however, have reported levels of hospitalization and ICU admissions reaching or exceeding peak levels of previous influenza seasons. WHO recommends countries with current influenza activity or entering their season to adopt necessary measures for ensuring appropriate case management, compliance with infection control measures and seasonal influenza vaccination for high risk groups. 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 25 January 2018. 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 previous update, new human infections with avian influenza A(H5N6) and A(H7N9) viruses, and influenza A(H1N1) and A(H3N2) viruses were reported. 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/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 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.

The WHO consultation on the composition of influenza vaccines for the Northern Hemisphere 2018-19 influenza season was held in February 2018. WHO announced its recommendations for the composition of quadrivalent vaccines for use in the 2018-19 Northern Hemisphere influenza season, which includes changes in the influenza A(H3N2) and influenza B (Victoria lineage) components, as follows:

- an A/Michigan/45/2015 (H1N1)pdm09-like virus⁷;
- an A/Singapore/INFIMH-16-0019/2016 (H3N2)-like virus;
- a B/Colorado/06/2017-like virus (B/Victoria/2/87 lineage)⁸; and
- a B/Phuket/3073/2013-like virus (B/Yamagata/16/88 lineage).

⁷ This replaces A/Hong Kong/4801/2014 (H3N2)-like virus used in the 2017-8 seasonal influenza vaccines.

⁸ This replaces B/Brisbane/60/2008-like virus used in the 2017-8 seasonal influenza vaccines. The B/Colorado will make up the B component of the trivalent vaccine.