

Influenza Monthly Epidemiology Report, NSW

April 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 activity was low throughout April. Influenza A was circulating at slightly higher levels than influenza B.
- 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 April 2018:

- Presentations in the *All respiratory illness, fever and unspecified infections* category increased but were below the historical range for this time of year (Figure 1). At this time of year these are more likely to represent respiratory conditions other than influenza, such as asthma and bronchiolitis.
- The index of increase for ILI presentations was 2.6 at the end April, well below the seasonal threshold of 15.
- ED presentations for ILI increased but were within the historical range for this time of year overall (Figure 2).
- ED presentations for pneumonia [3] decreased and were below 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 were steady and were below 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 29 April, compared with the 5 previous years (coloured lines).

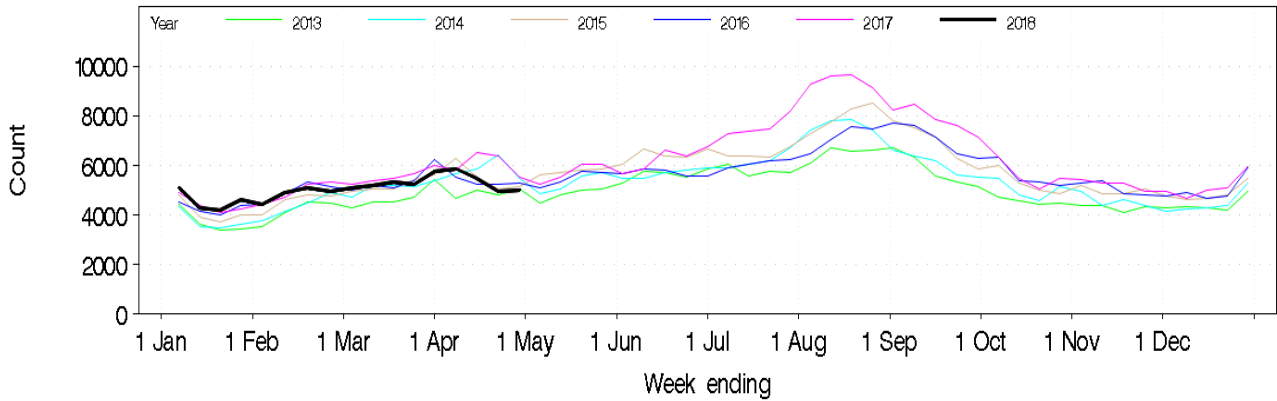


Figure 2: Total weekly counts of ED visits for influenza-like illness, all ages, 2018 (black line) to 29 April, compared with the 5 previous years (coloured lines).

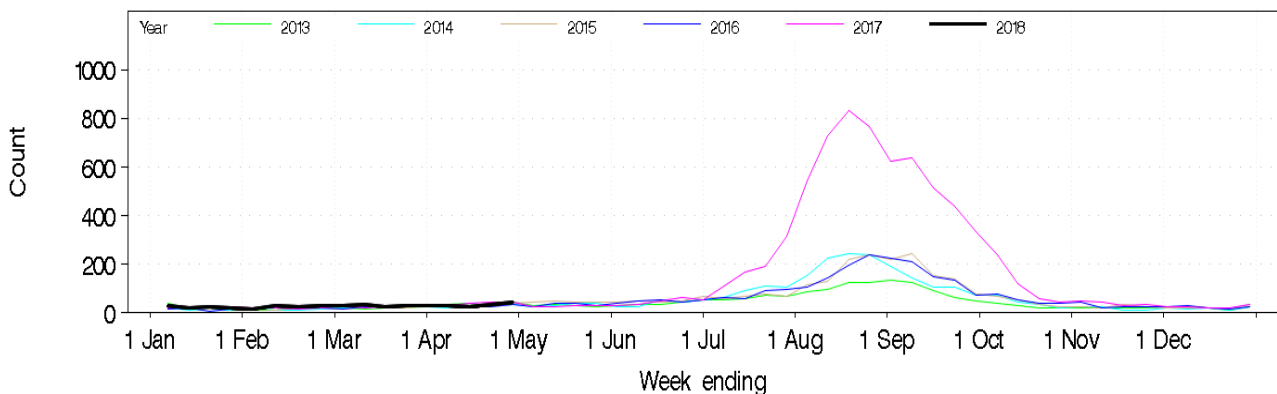


Figure 3: Total weekly counts of Emergency Department visits for pneumonia, 2018 (black line) to 29 April, compared with the 5 previous years (coloured lines).

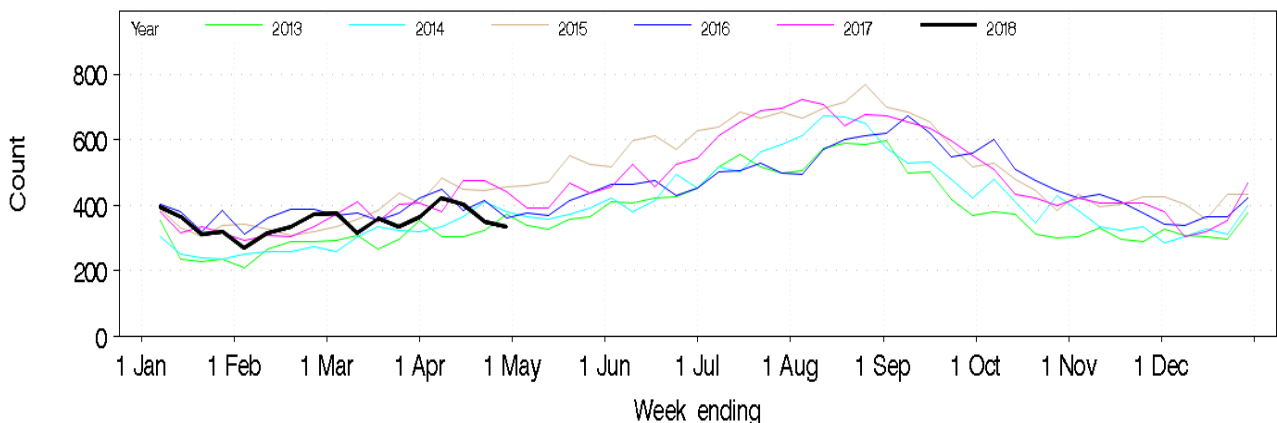
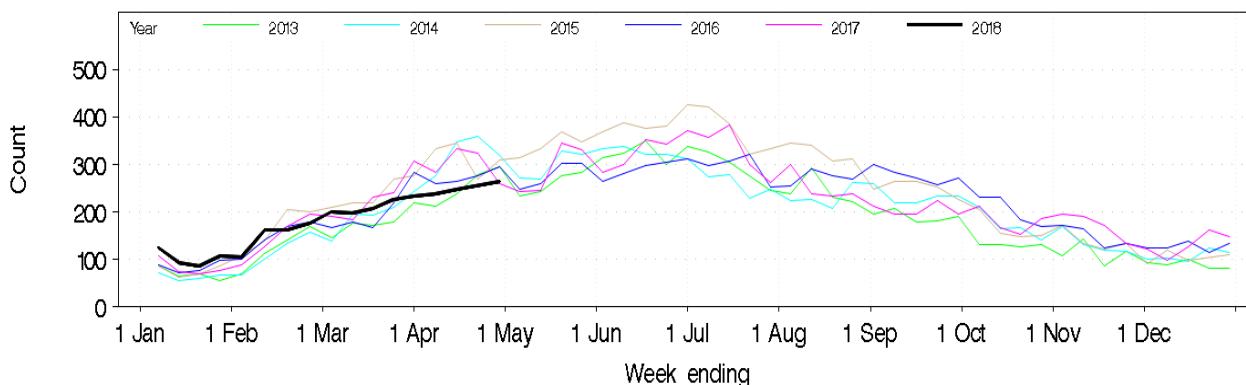


Figure 4: Total weekly counts of Emergency Department visits for bronchiolitis, 2018 (black line) to 29 April, compared with the 5 previous years (coloured lines).



3. Laboratory testing summary for influenza

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

- A total of 19,888 tests for respiratory viruses were performed at sentinel NSW laboratories (Table 1). The influenza percent positive rate was 2.0%, lower than the previous month (4.2%) and well below the seasonal threshold.
- 247 specimens tested positive for influenza A – 22 of these tested positive for A(H3N2), 35 tested positive for influenza A(H1N1) and 190 were not typed further (Table 1, Figures 5 & 6).
- 147 cases of influenza B were reported (Table 1, Figures 5 & 6).

Respiratory syncytial virus (RSV) activity continued to increase, consistent with the rise in ED presentations for bronchiolitis. Rhinovirus detections continued to decrease and along with RSV remained the leading respiratory viruses identified by laboratories.

Table 1: Summary of testing for influenza and other respiratory viruses at sentinel NSW laboratories, 1 January to 29 April 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%)	26	(5.4%)	38	(7.9%)	414	(85.7%)	507	(4.0%)	404	599	492	1601	325	196
25/02/2018	14540	531	(3.7%)	46	(8.7%)	35	(6.6%)	448	(84.4%)	503	(3.5%)	374	552	846	2498	221	284
01/04/2018*	22518	524	(2.3%)	52	(9.9%)	49	(9.4%)	423	(80.7%)	424	(1.9%)	703	1057	2022	4775	306	485
29/04/2018	19888	247	(1.2%)	22	(8.9%)	35	(14.2%)	190	(76.9%)	147	(0.7%)	642	869	2673	3633	276	416
Week ending																	
08/04/2018	4601	79	(1.7%)	8	(10.1%)	8	(10.1%)	63	(79.7%)	55	(1.2%)	148	218	594	904	57	104
15/04/2018	5334	55	(1.0%)	7	(12.7%)	12	(21.8%)	36	(65.5%)	38	(0.7%)	198	177	692	1032	65	113
22/04/2018	5295	75	(1.4%)	5	(6.7%)	8	(10.7%)	62	(82.7%)	33	(0.6%)	164	247	724	934	82	109
29/04/2018	4658	38	(0.8%)	2	(5.3%)	7	(18.4%)	29	(76.3%)	21	(0.5%)	132	227	663	763	72	90

Notes:

* Five 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.

[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 data are 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.

Figure 5: Weekly influenza positive test results by type and sub-type reported by NSW sentinel laboratories, 1 January to 29 April 2018.

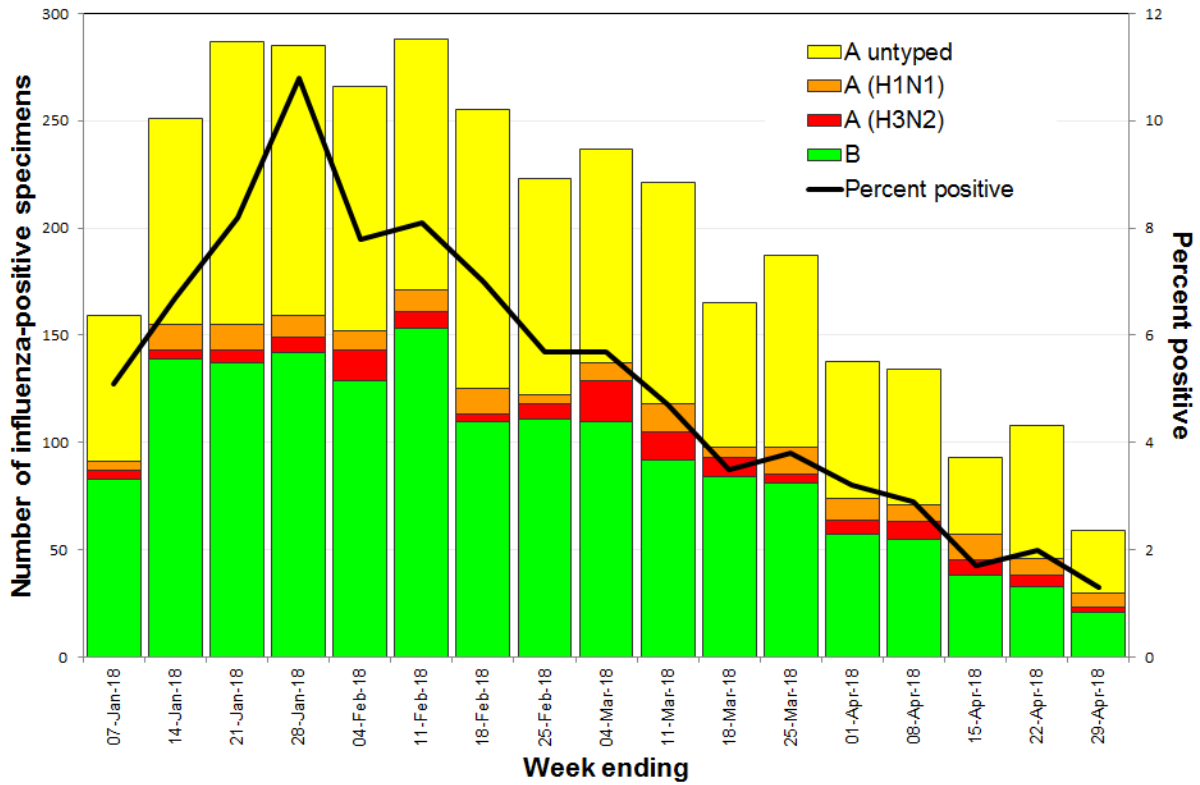
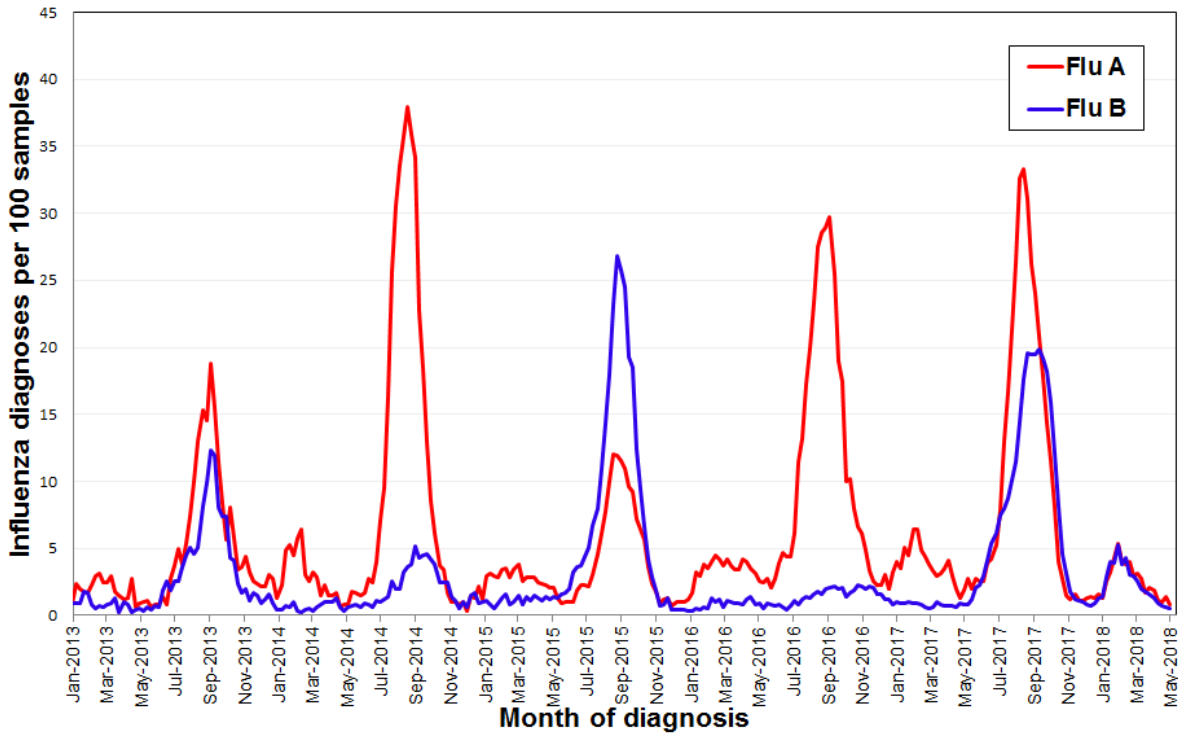


Figure 6: Percent of laboratory tests positive for influenza A and influenza B reported by NSW sentinel laboratories, 1 January 2013 to 29 April 2018.



4. Community Surveillance

Influenza notifications by Local Health District (LHD)

During April there were 418 notifications of influenza confirmed by polymerase chain reaction (PCR) testing, lower than the 514 influenza notifications reported for April 2017, and lower than the number of notifications reported for March 2018 (972, 5 week period).

Influenza notification rates were low and stable across all NSW LHDs (Table 2).

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

Local Health District	Week ending 08 Apr 2018		Average (previous 4 weeks)	
	Number of notifications	Rate per 100 000 population	Number of notifications	Rate per 100 000 population
Central Coast	8	2.29	5	1.36
Hunter New England	14	1.49	14	1.52
Illawarra Shoalhaven	1	0.24	4	1.03
Mid North Coast	0	0	4	1.78
Murrumbidgee	3	1.24	4	1.75
Nepean Blue Mountains	3	0.77	6	1.6
Northern NSW	8	2.58	11	3.47
Northern Sydney	22	2.38	40	4.35
South Eastern Sydney	20	2.13	33	3.53
South Western Sydney	24	2.38	16	1.61
Southern NSW	0	0	4	1.84
Sydney	10	1.49	18	2.65
Western NSW	2	0.71	2	0.71
Western Sydney	19	1.91	24	2.41

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 in April; three were in residential care facilities and one was in a military facility. Only one was caused by influenza (influenza B), with the remaining three caused by other respiratory pathogens.

In the year to date there have been 10 laboratory confirmed influenza outbreaks in institutions reported to NSW public health units, including nine in residential care facilities (Table 3, Figure 7). Six have been due to influenza A and four were due to influenza B.

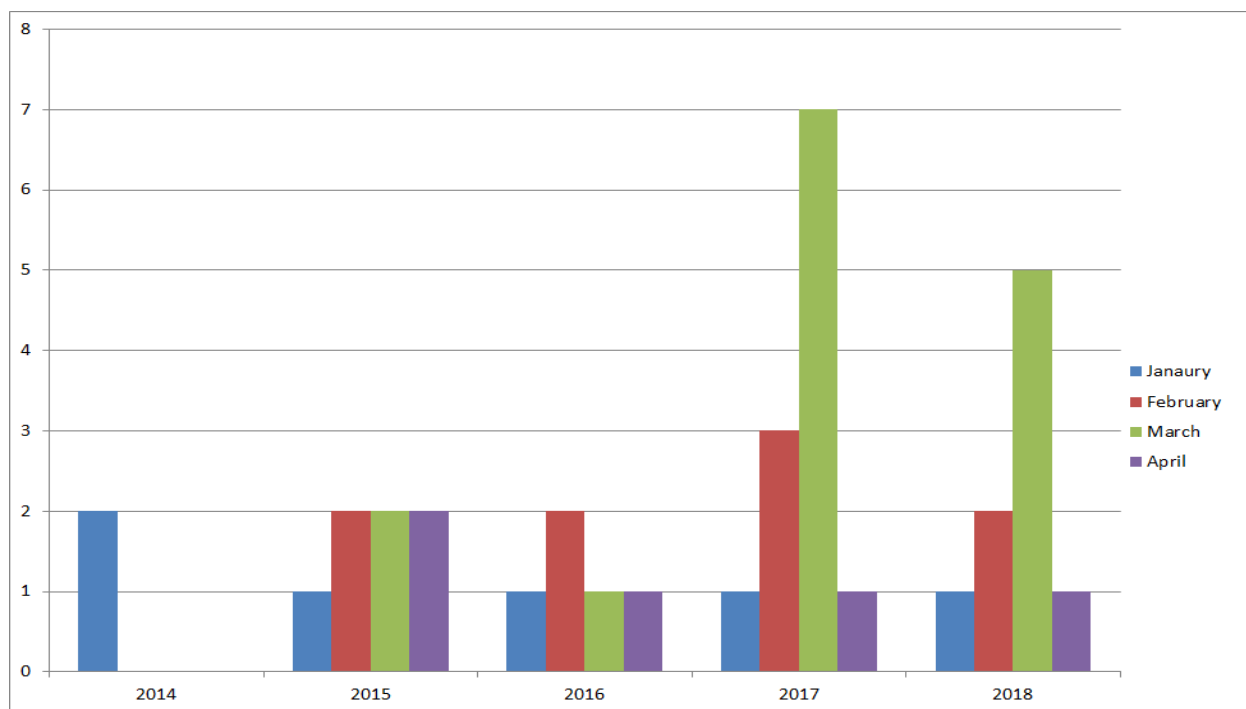
In the nine influenza outbreaks affecting residential care facilities, at least 70 residents were reported to have had ILI symptoms and 13 required hospitalisation. Overall, there have been two deaths in residents reported which were linked to these outbreaks, both of whom were noted to have other significant co-morbidities.

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

Year	2011	2012	2013	2014	2015	2016	2017	2018*
No. of outbreaks	4	39	12	120	103	279	588	10

Notes: * Year to date.

Figure 7: Reported influenza outbreaks in NSW residential care facilities by month, 2014 to 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 30 April 2018](#) provides data up to 15 April. Influenza activity returned to inter-seasonal levels in most of the countries in the temperate zone of the northern hemisphere except for Eastern Europe. In the temperate zone of the southern hemisphere, influenza activity remained below the seasonal thresholds. Worldwide, influenza A and influenza B accounted for a similar proportion of influenza detections.

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 2 March 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(H7N4), A(H7N9) and A(H9N2) 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/>.

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).

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.

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.