

Influenza Monthly Epidemiology Report, NSW

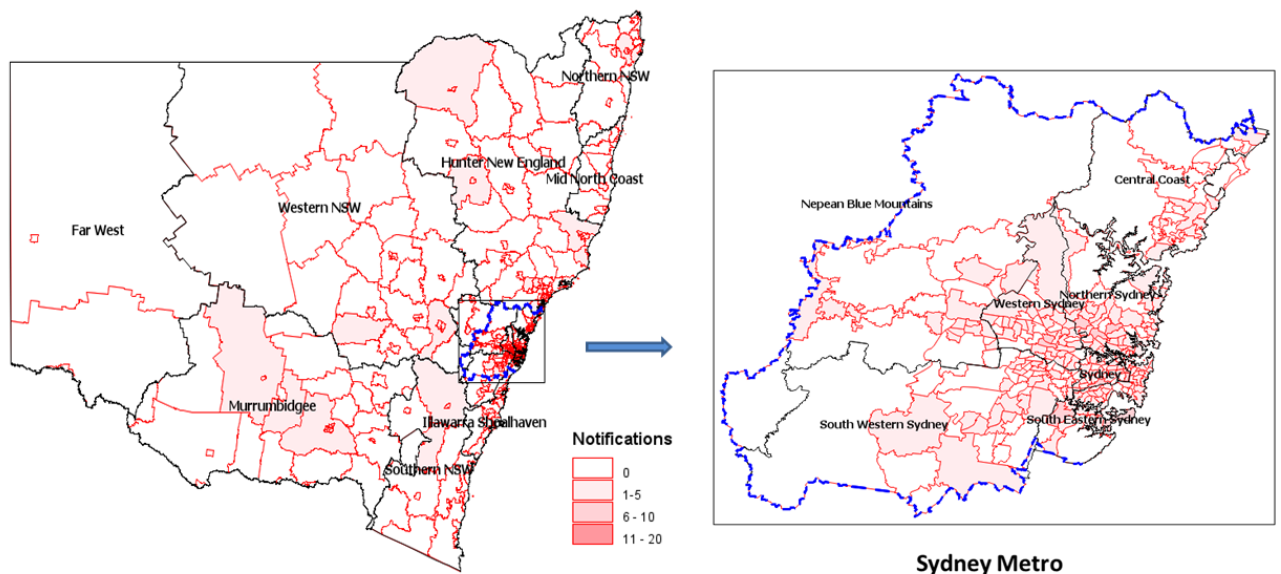
February 2019 (weeks 5 - 9)

Key Points

- ▶ Influenza activity in February continued to be elevated for this time of year.
- ▶ Influenza activity was elevated in the majority of NSW local health districts (LHD)
- ▶ Influenza A strains are predominant with two strains circulating at similar levels
- ▶ Respiratory presentations to NSW emergency departments were above the average for this time of year.

1. Confirmed influenza by NSW local health district and local area (SA2)¹

Notifications for week ending 3 March 2019



2. Summary

- Influenza activity in February was above the usual inter-seasonal levels overall and was higher than the previous month which was also above the usual inter-seasonal levels.
- Influenza A strains remain predominant over influenza B strains
- There is no evidence of new influenza strains emerging to explain current influenza activity.
- In the past few years NSW has had increasing influenza notifications in January and February thought to be from northern hemisphere travellers returning with influenza.

¹ NSW Local Health Districts and SA2: Influenza notification maps use NSW Local Health District Boundaries and Australian Bureau of Statistics (ABS) statistical area level 2 (SA2) of place of residence of cases are shown. Note that place of residence is used as a surrogate for place of acquisition for cases; the infection may have been acquired while the person was in another area.

- Influenza activity was highest in the South Eastern Sydney, Northern Sydney and Northern NSW LHDs.
- Presentations to emergency departments for respiratory illnesses and influenza-like illness continued to remain higher than usual for this time of year.
- Eight influenza outbreaks were reported from residential aged care facilities; all were caused by influenza A.

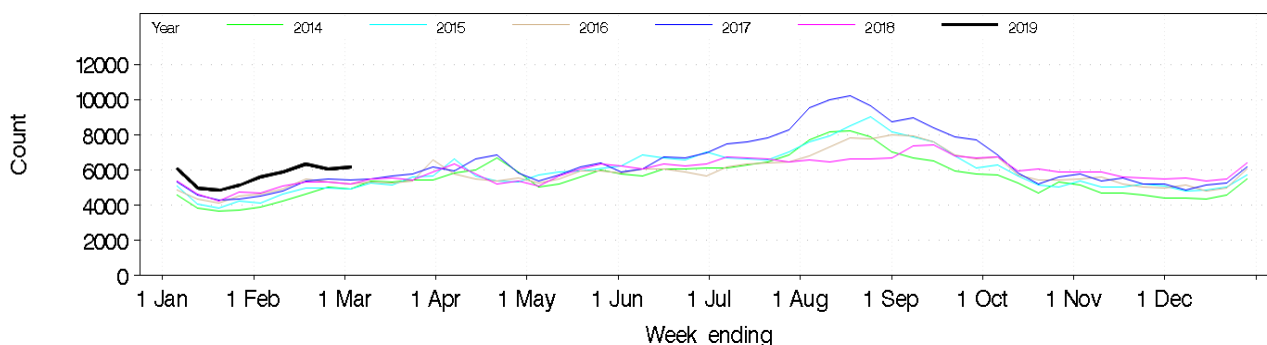
3. Hospital Surveillance

NSW emergency department (ED) surveillance for influenza-like illness (ILI) and other respiratory illnesses is conducted through PHREDSS².

In February 2019:

- Presentations in the *All respiratory illness, fever and unspecified infections* category increased further and were significantly above the historical range for this time of year (Figure 1).
- ED presentations for ILI remained steady through the month, but were also significantly above the historical range for this time of year (Figure 2).
- ED presentations for *pneumonia*³ increased and were above the historical range for this time of year (Figure 3).
- *ILI and pneumonia* presentations which resulted in admission increased and were also above the historical range for this time of year.
- *ILI and pneumonia* presentations which resulted in admission to a critical care unit were steady and within the usual range for this time of year.
- *Bronchiolitis*⁴ presentations increased and were above the usual range for this time of year (Figure 4).

Figure 1: Total weekly counts of ED visits for any respiratory illness, fever and unspecified infections, all ages, 2019 (black line) to 3 March, compared with the 5 previous years (coloured lines).



² 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. Includes unplanned presentations to 60 NSW emergency departments. The coverage is lower in rural EDs.

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'

⁴ *Bronchiolitis* is a disease of infants most commonly linked to Respiratory Syncytial virus (RSV) infection.

Figure 2: Total weekly counts of ED visits for influenza-like illness, all ages, 2019 (black line) to 3 March, compared with the 5 previous years (coloured lines).

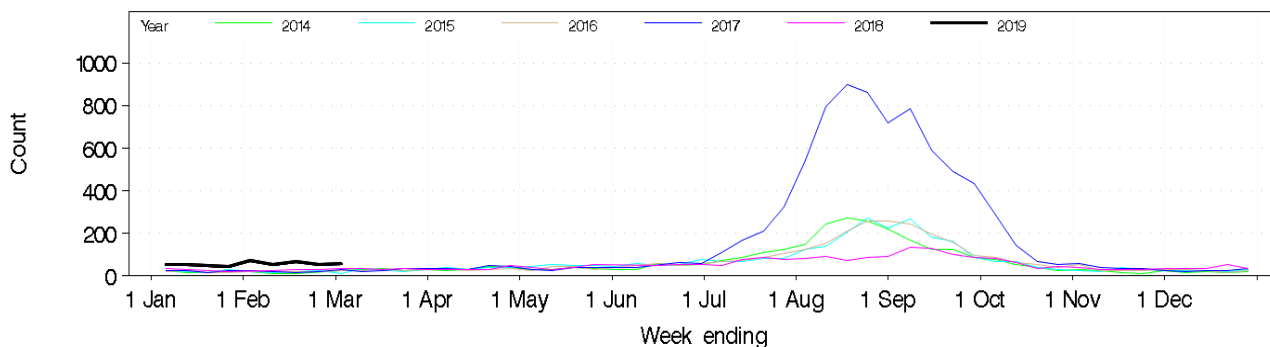


Figure 3: Total weekly counts of Emergency Department visits for pneumonia, all ages, 2019 (black line) to 3 March, compared with the 5 previous years (coloured lines).

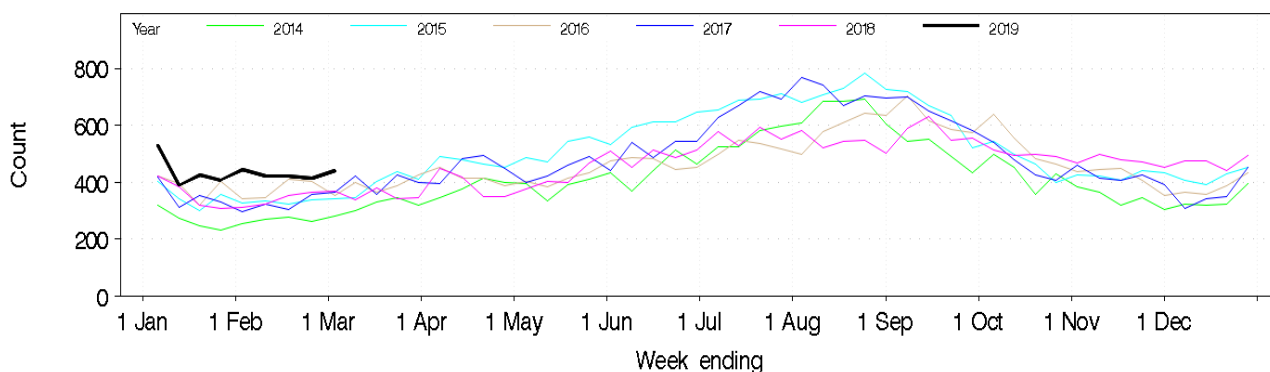
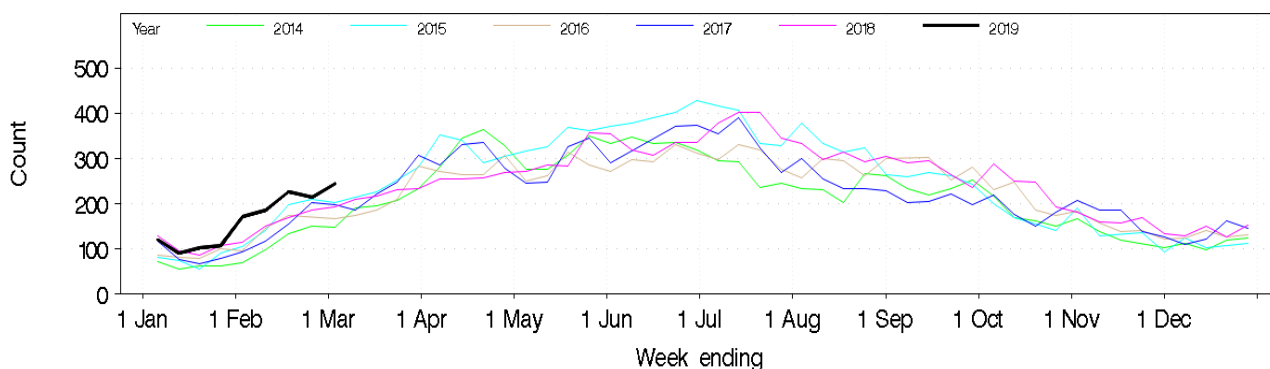


Figure 4: Total weekly counts of Emergency Department visits for bronchiolitis, all ages, 2019 (black line) to 3 March, compared with the 5 previous years (coloured lines).



4. Laboratory testing summary for influenza

Sentinel laboratory surveillance for influenza and other respiratory viruses is conducted throughout the year [5]. In the five week period to 3 March 2019:

- A total of 25,351 tests for respiratory viruses were performed at sentinel NSW laboratories (Table 1). The influenza percent positive rate overall was 9.4%, slightly higher than the previous month (9.3%).

[5]: Preliminary laboratory data is provided by participating sentinel laboratories on a weekly basis and are subject to change. Serological diagnoses are not included. Preliminary data are provided by participating sentinel laboratories on a weekly basis and are subject to change.

- Activity increased slightly and remains above the winter seasonal threshold [6]. Activity is higher than expected for this time of year.
- 2232 specimens tested positive for influenza A – 141 of these tested positive for A(H3N2), 131 tested positive for influenza A(H1N1) and 1960 were not typed further (Table 1, Figures 5 & 6).
- 145 specimens tested positive for influenza B (Table 1, Figures 5 & 6).
- Further characterisation of recent influenza samples from NSW at the WHO Collaborating Centre for Reference and Research on Influenza has found no evidence of new strains emerging.

Rhinovirus was the leading respiratory virus identified by laboratories. Detections of other respiratory viruses were within the usual seasonal range for this time of year.

Table 1: Summary of testing for influenza and other respiratory viruses at sentinel NSW laboratories, 1 January to 3 March 2019.

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	(%)	Total	Total	Total	Total	Total	Total
3/02/2019*	23496	2055	(8.7%)	111	(5.4%)	159	(7.7%)	1779	(86.6%)	129	(0.5%)	730	902	920	3171	270	485
3/03/2019*	25351	2232	(8.8%)	141	(6.3%)	131	(5.9%)	1960	(87.8%)	145	(0.6%)	710	926	1448	5053	162	693
Week ending																	
10/02/2019	5330	522	(9.8%)	34	(6.5%)	42	(8.0%)	446	(85.4%)	30	(0.6%)	162	152	275	848	34	137
17/02/2019	6319	609	(9.6%)	43	(33.0%)	30	(4.9%)	536	(88.0%)	36	(0.6%)	177	231	335	1209	34	184
24/02/2019	6667	517	(7.8%)	33	(6.4%)	26	(5.0%)	458	(88.6%)	40	(0.6%)	181	259	397	1450	48	164
3/03/2019	7035	584	(8.3%)	31	(5.3%)	33	(5.7%)	520	(89.0%)	39	(0.6%)	190	284	441	1546	46	208

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.

[6]: The winter seasonal threshold is based on the percent of laboratory tests positive for influenza. A percent positive rate of 5% is an indication that influenza activity has increased above pre-seasonal levels and may indicate that the influenza season has commenced.

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: Percent of laboratory tests positive for influenza A and influenza B reported by NSW sentinel laboratories, 1 January 2014 to 3 March 2019.

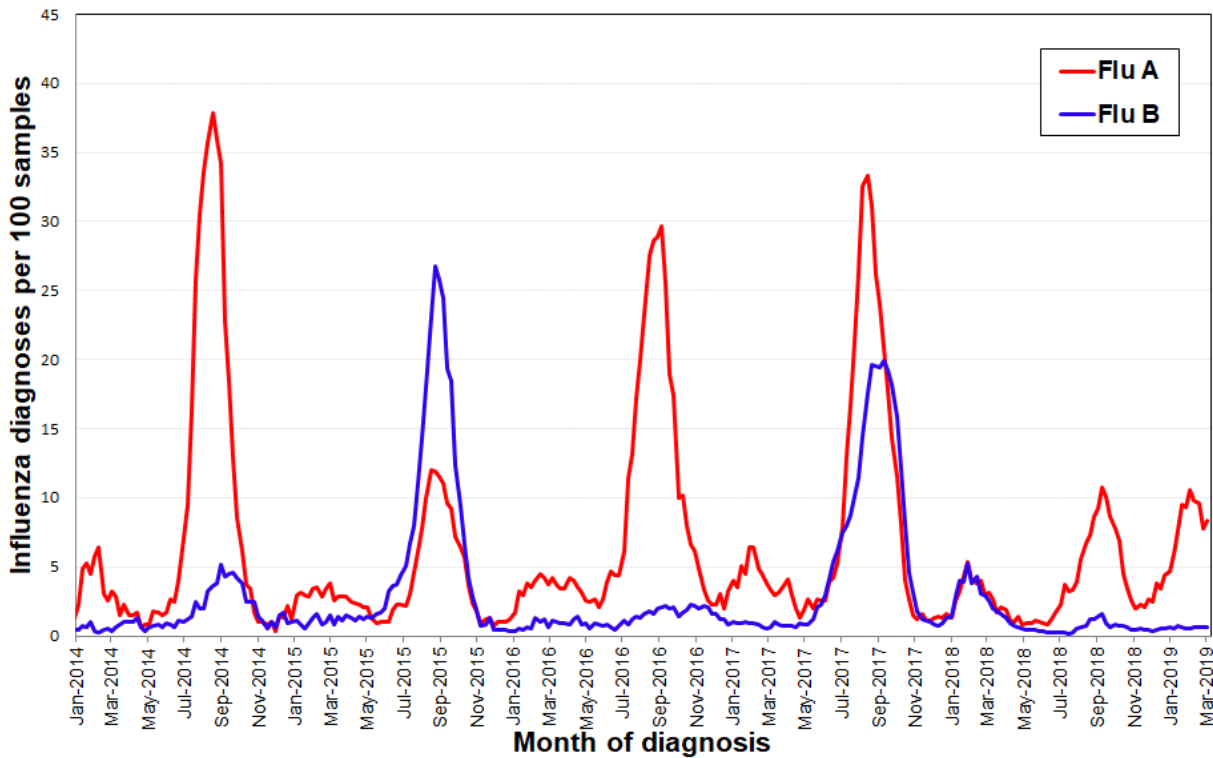
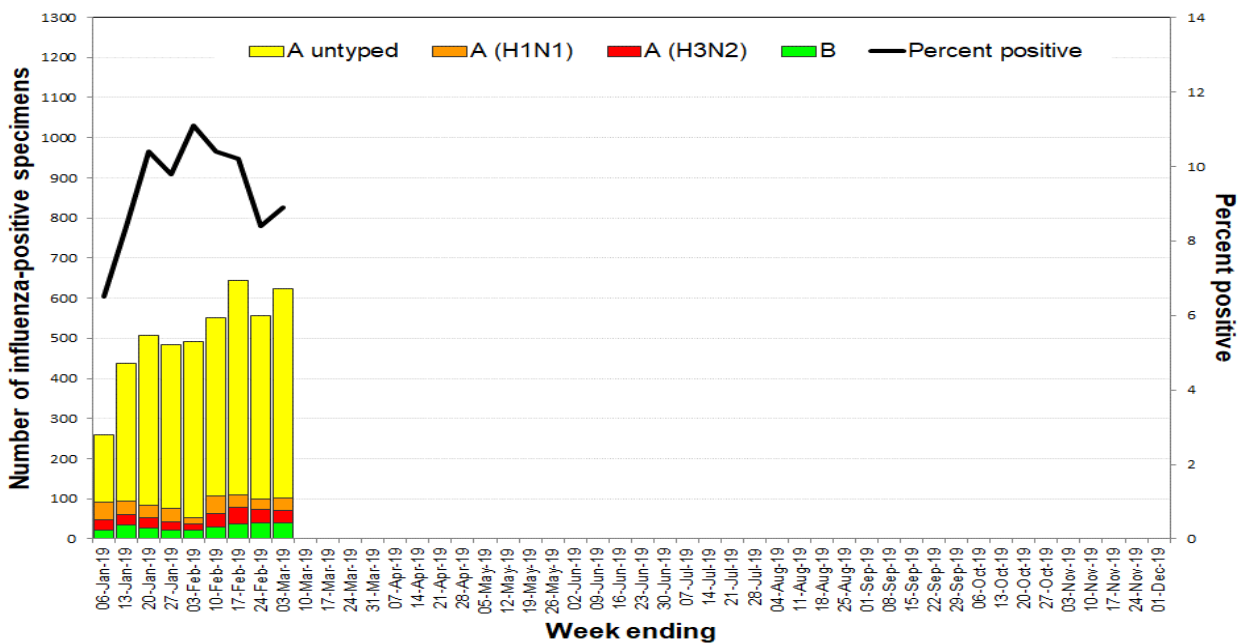


Figure 6: 2019 weekly influenza results by type, sub-type and percent positive reported by NSW sentinel laboratories, 1 January to 3 March 2019



5. Community Surveillance

Influenza notifications by local health district (LHD)

In the four week period to 3 March there were 2244 confirmed influenza notifications, markedly higher than the 1144 influenza notifications reported for February 2018, and higher than the number of notifications reported for January 2019 (2065 - five week period).

Influenza notifications were high for all metropolitan LHDs and some rural LHDs (Table 2). Notification rates were highest in the South Eastern and Northern Sydney and Northern NSW LHDs.

Table 2: Weekly notifications of laboratory-confirmed influenza by local health district

	Week ending 03 Mar 2019		Previous 4 weeks	
	Number of notifications	Rate per 100 000 population	Average weekly number of notifications	Rate per 100 000 population
Central Coast	14	4.02	10	2.87
Far West	0	0	1	3.33
Hunter New England	34	3.61	44	4.62
Illawarra Shoalhaven	23	5.53	17	4.15
Mid North Coast	7	3.13	5	2.01
Murrumbidgee	12	4.93	5	1.95
Nepean Blue Mountains	31	8.05	23	5.84
Northern NSW	33	10.75	28	9.2
Northern Sydney	115	12.16	100	10.52
South Eastern Sydney	118	12.45	99	10.42
South Western Sydney	33	3.24	48	4.71
Southern NSW	13	6.07	4	1.87
Sydney	42	6.12	51	7.43
Western NSW	6	2.12	5	1.76
Western Sydney	74	7.2	101	9.83

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

Influenza outbreaks in institutions

There were 13 influenza outbreaks reported in February. This is by far the highest number of influenza outbreaks reported for this time of year in the past eight years. All were due to influenza A, of these eight were reported in residential aged care facilities, four in hospital wards and one in a mental health facility.

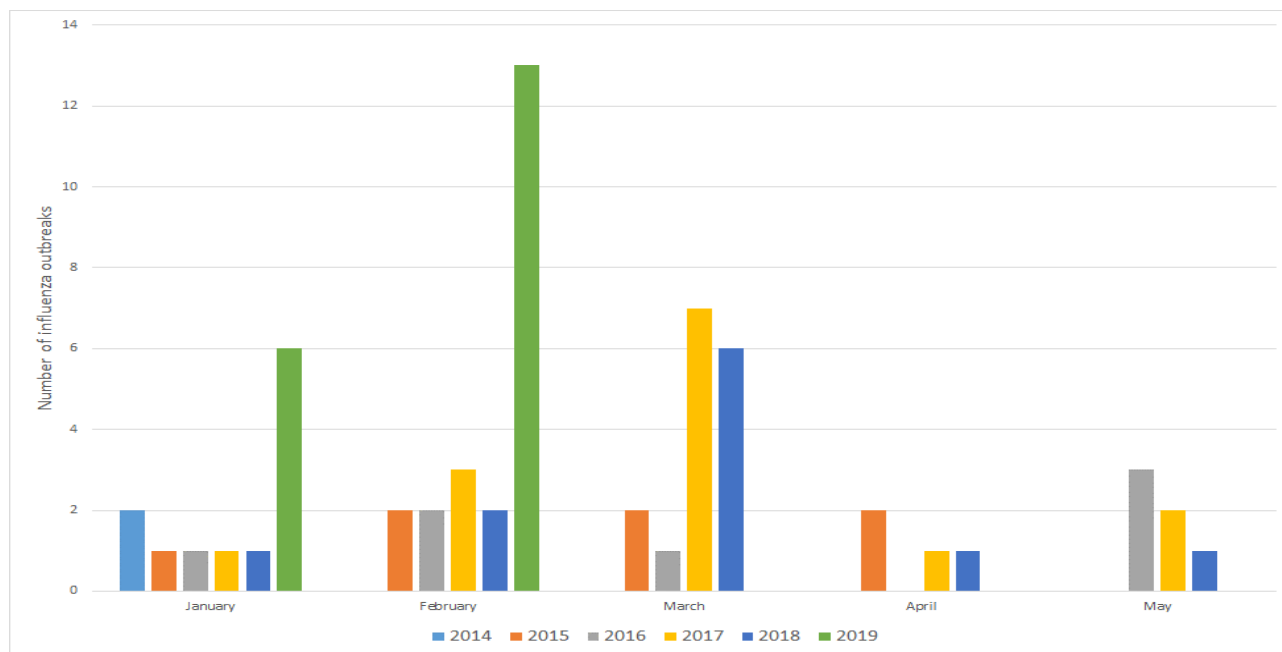
In the year to date there have been 19 laboratory confirmed influenza outbreaks in institutions reported to NSW public health units, including 13 in residential care facilities (Table 3, Figure 7). All were due to influenza A.

In the 13 influenza outbreaks affecting residential care facilities, at least 144 residents were reported to have had ILI symptoms and 14 required hospitalisation. There were also seven deaths in residents linked to these outbreaks, all of whom were noted to have significant co-morbidities.

Table 3: Reported influenza outbreaks in NSW institutions, January 2012 to February 2019.

Year	2012	2013	2014	2015	2016	2017	2018	2019
Number of outbreaks	39	12	120	103	279	588	46	19

Figure 7: Reported influenza outbreaks in NSW residential care facilities by month (January to May), 2014 to 2019.



6. National and International Influenza Surveillance

Although national influenza surveillance reports are not produced at this time of year, most jurisdictions are reporting elevated influenza activity, with national notifications in the past quarter (to 1 March) 2.9 times the quarterly rolling five year mean.

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>.

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

Global Influenza Update

The latest [WHO global update on 4 March 2019](#) provides data up to 17 February.

In the temperate zone of the northern hemisphere influenza activity continued to increase.

- In North America, influenza activity continued to increase in the USA, with influenza A(H1N1) as the dominant subtype, followed by influenza A(H3N2).
- In Europe, influenza activity remained elevated across the continent and was reported as widespread in most of the countries. Influenza A viruses co-circulated.
- In North Africa, influenza activity remained elevated.
- In Western Asia, influenza activity peaked in some countries and increased in other, with all seasonal influenza subtypes co-circulating.
- In East Asia, influenza activity appeared to decrease overall, with influenza A(H1N1) predominating.
- In Southern Asia, influenza activity remained elevated overall with influenza A viruses predominating.
- In the Caribbean, Central American countries, and the tropical countries of South America, influenza and RSV activity were low in general.

In the temperate zones of the southern hemisphere, influenza activity remained at inter-seasonal levels, with the exception of some parts of Australia where influenza activity remained above inter-seasonal levels.

Worldwide, seasonal influenza A viruses accounted for the majority of 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 12 February 2019.

These reports provide information on human cases of infection with non-seasonal influenza viruses, such as H5, H7, and H3N2 variant viruses, and outbreaks among animals.

Since the previous update, two human infections with avian influenza A(H9N2) viruses and one human infection with an influenza A(H3N2) variant were reported.

The overall public health risk from currently known influenza viruses at the human-animal interface has not changed, and the likelihood of sustained human-to-human transmission of these viruses remains low. Further human infections with viruses of animal origin are expected.

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 influenza vaccines in 2019

WHO influenza vaccine strain recommendations for the Southern Hemisphere in 2019

The WHO Consultation on the Composition of Influenza Vaccines for the 2019 Southern Hemisphere Influenza Season was held in Atlanta on 24-26 September 2018. The WHO recommendations for the composition of trivalent vaccines included changes in the influenza A(H3N2) component and the influenza B (Victoria lineage), as follows:

- an A/Michigan/45/2015 (H1N1)pdm09-like virus
- an A/Switzerland/8060/2017 (H3N2)-like virus ⁷
- a B/Colorado/06/2017-like virus (B/Victoria lineage) ⁸

It was recommended that quadrivalent vaccines also contain a second B component, a B/Phuket/3073/2013-like virus (B/Yamagata lineage)⁸.

More details about the most recent influenza vaccine recommendations can be found at: http://www.who.int/influenza/vaccines/virus/recommendations/2019_south/en/.

Australian influenza vaccine strain recommendations for the 2019 influenza season

While WHO makes recommendations for the influenza vaccine, it is up to national authorities to decide on the final composition for their individual countries.

⁷ This replaces A/Singapore/INFIMH-16-0019/2016 (H3N2)-like virus used in the 2018 seasonal influenza vaccines.

⁸ The B/Colorado/06/2017-like virus replaces the B/Brisbane/60/2008-like virus in the B/Victoria lineage. It is also now the preferred B strain component for 2019 Southern Hemisphere trivalent influenza vaccines, replacing the B/Yamagata lineage strain, B/Phuket. The B/Phuket strain remains the recommended B/Yamagata lineage strain for 2019 quadrivalent vaccines.

The Australian Influenza Vaccine Committee (AIVC) recommendation for the Australian trivalent vaccine includes a B/Yamagata lineage virus (a B/Phuket/3073/2013-like virus), rather than a B/Victoria lineage virus. This is because in Australia, the vast majority of recently circulating influenza B viruses have been of the B/Yamagata lineage and few B/Victoria lineage viruses have been detected.

The Therapeutic Goods Administration (TGA) has accepted the [AIVC recommendations](#) for 2019.

Information on NSW seasonal influenza vaccination activities in 2019, including free vaccine for all children aged 6 months to less than 5 years can be found at: <https://www.health.nsw.gov.au/immunisation/Pages/flu.aspx> .

WHO influenza vaccine strain recommendations for the Northern Hemisphere in 2018-19

The composition of quadrivalent vaccines currently in use for the 2018-19 Northern Hemisphere influenza season includes changes from the influenza A(H3N2) and influenza B (Victoria lineage) components used in the 2018 Southern Hemisphere influenza vaccines. The composition of the Northern Hemisphere vaccines are as follows:

- an A/Michigan/45/2015 (H1N1)pdm09-like virus⁹;
- an A/Singapore/INFIMH-16-0019/2016 (H3N2)-like virus;
- a B/Colorado/06/2017-like virus (B/Victoria/2/87 lineage)¹⁰; and
- a B/Phuket/3073/2013-like virus (B/Yamagata/16/88 lineage).

WHO influenza vaccine strain recommendations for the Northern Hemisphere in 2019-20

The WHO Consultation on the Composition of Influenza Vaccines for Use in the 2019-20 Northern Hemisphere Influenza Season was held in Beijing on 18-20 February 2019.

From this meeting it was recommended that egg based quadrivalent vaccines for use in the 2019-2020 northern hemisphere influenza season contain the following:

- an A/Brisbane/02/2018 (H1N1)pdm09-like virus;
- an A(H3N2) virus to be announced on 21 March 2019;
- a B/Colorado/06/2017-like virus (B/Victoria/2/87 lineage); and
- a B/Phuket/3073/2013-like virus (B/Yamagata/16/88 lineage).

It was also recommended that the influenza B virus component of trivalent vaccines for use in the 2019-2020 northern hemisphere influenza season should be a B/Colorado/06/2017-like virus of the B/Victoria/2/87-lineage.

In light of recent changes in the proportions of genetically and antigenically diverse A(H3N2) viruses, the recommendation for the A(H3N2) component was postponed until 21 March.

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

⁹ This replaces A/Hong Kong/4801/2014 (H3N2)-like virus used in the 2017-8 seasonal influenza vaccines.

¹⁰ 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.