Australian Government
Department of Health

AUSTRALIAN INFLUENZA SURVEILLANCE REPORT

No. 7, 2017

5 – 18 August 2017

The Department of Health acknowledges the providers of the many sources of data used in this report and greatly appreciates their contribution.

KEY MESSAGES

- Influenza activity at the national level continued to increase this reporting fortnight with many surveillance systems at levels comparable to or exceeding the peak of the 2016 season.
- High levels of influenza activity in the community are likely to continue for the next few weeks.
- There has been almost two and a half times the number of laboratory confirmed notifications of influenza reported to the National Notifiable Diseases Surveillance System this year when compared with the same period last year. An earlier season onset and introduction of rapid testing have contributed, in part, to this increase.
- Influenza-like illness (ILI) is increasing nationally. Influenza was the most common cause of ILI presentations to sentinel general practitioners this fortnight, with more than half of all patients presenting to sentinel general practitioners with ILI and tested were positive for influenza.
- Influenza A(H3N2) is currently the predominant circulating influenza A virus nationally, though the number of notifications has decreased this reporting period. Influenza B viruses also continue to circulate.
- Notification rates this year to date have been highest in adults aged 80 years or older, with a secondary peak in young children, aged 5 to 9 years.
- Hospitalisations with confirmed influenza have increased overall this reporting fortnight, but have declined in the most recent week.
- Clinical severity for the season to date, as measured through the proportion of patients admitted directly to ICU and deaths attributed to pneumonia or influenza, is low.
- To date, based on antigenic characterisation of circulating influenza viruses, the seasonal influenza vaccines appear to be a moderate to good match for circulating virus strains, depending on the strain. Vaccine effectiveness estimates, which provide an indication of how well the vaccine provides protection against influenza, are only available towards the end of the influenza season.

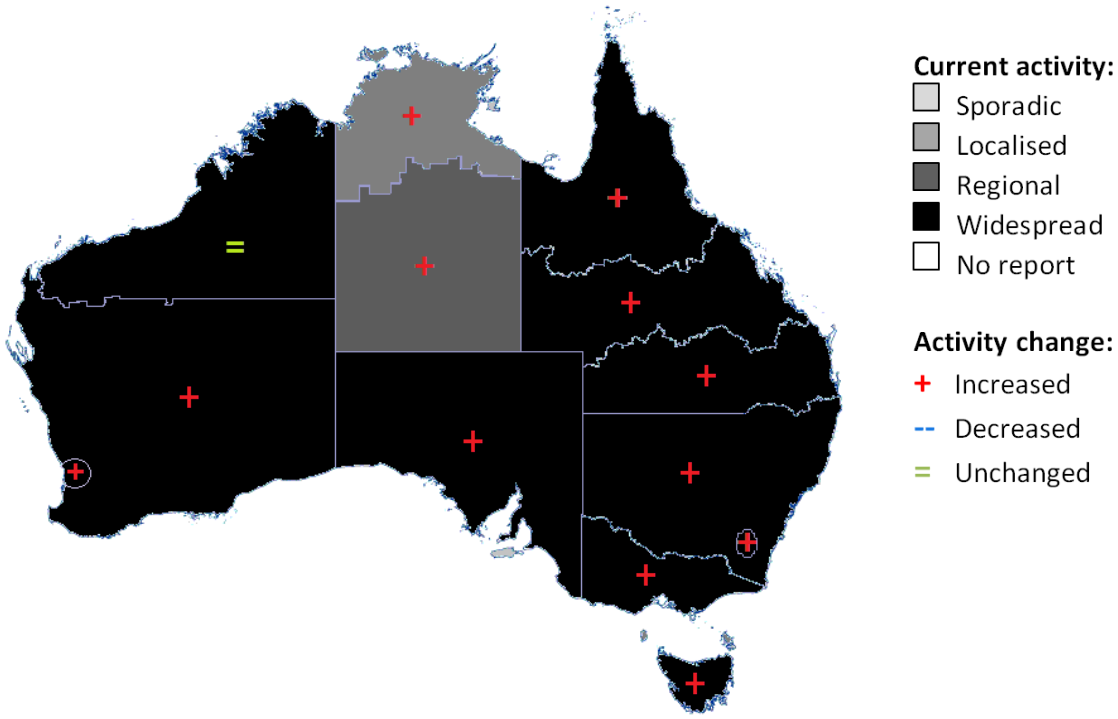
ANALYSIS

1. Geographic Spread of Influenza Activity in Australia

In the fortnight ending 18 August 2017 (week 33), influenza activity was reported by state and territory health departments as increased when compared to the previous fortnight in all regions of Australia, with the exception of the Northwest region Western Australia (WA) where activity was unchanged (Figure 1). The geographic spread of influenza activity was widespread across all jurisdictions, excepting the Northern Territory (NT), where activity was localised in the Top End, and regional in Central NT.

Influenza-like illness (ILI) activity reported from syndromic surveillance systems when compared with the previous fortnight was reported as increased in all jurisdictions.

Figure 1. Map of influenza activity by state and territory, Australia, 22 July – 18 August 2017.



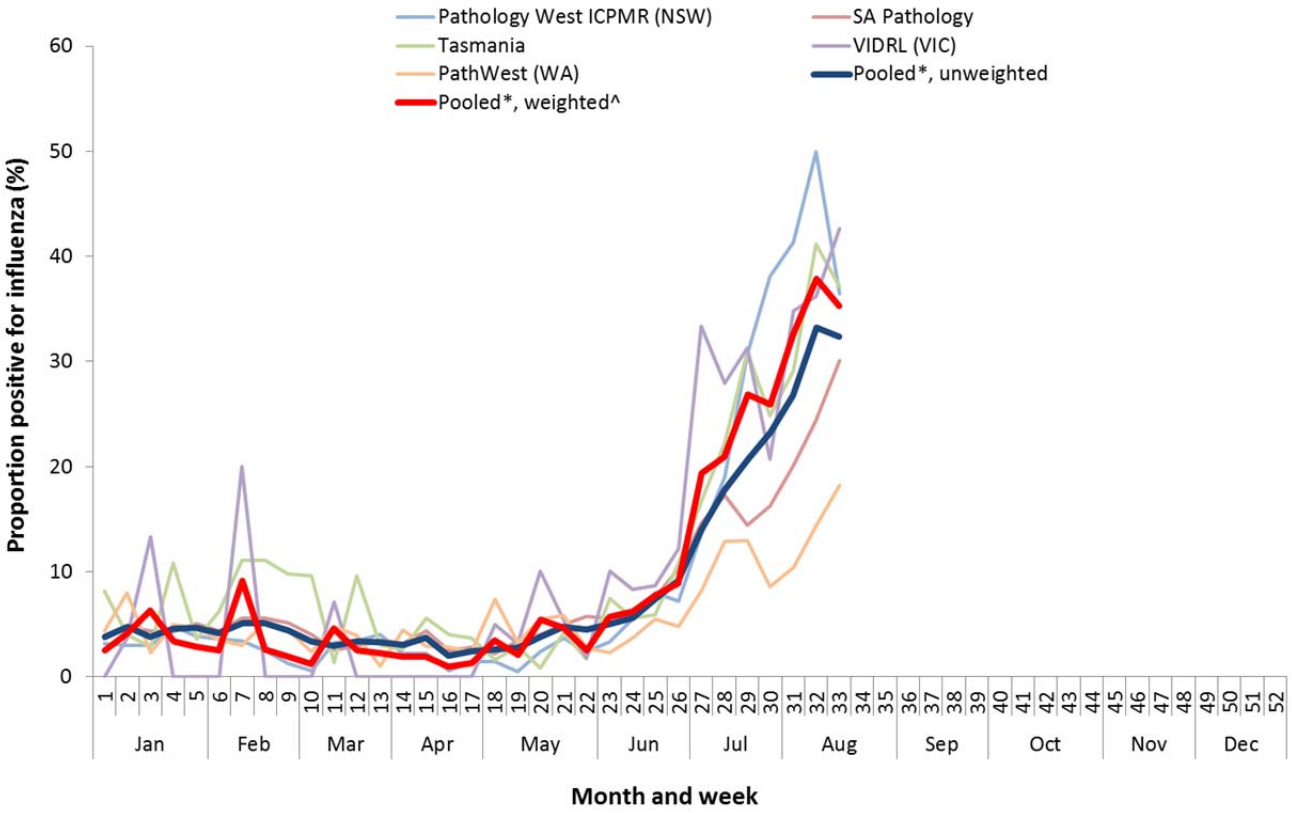
2. Laboratory Confirmed Influenza Activity

Sentinel Laboratory Surveillance

Influenza was detected at varying levels across the sentinel laboratories this reporting fortnight, with an increase detected by PathWest (WA), SA Pathology and the Victoria Infectious Disease Reference Laboratory (VIDRL), compared to a decrease detected in week 33 by Pathology West ICPMR (NSW) and Tasmania (Figure 2). The greatest increase was reported by PathWest, with the percentage of tests positive for influenza increasing from 14.4% in week 32 to 18.2% in week 33. There was a decrease in the percentage of tests positive for influenza reported by Pathology West ICPMR, from 50% in week 32 to 36.4% in week 33, despite a greater number of specimens tested in week 33.The pooled unweighted percentage of tests positive for influenza across all sentinel laboratories increased from 26.7% in week 31 to 33.2% in week 32 and remained fairly steady at 32.4% in week 33. From the sentinel laboratories where influenza subtyping was undertaken (Tasmania, VIDRL and PathWest), influenza A(H3N2) was detected more frequently than influenza A(H1N1)pdm09.

Testing for influenza increased this reporting fortnight (Figure 3). Influenza A was reported as the most commonly detected respiratory virus this fortnight by Pathology West ICPMR, SA Pathology, Tasmania and VIDRL. Influenza A replaced RSV in week 33 as the most commonly detected respiratory virus by PathWest.

Figure 2. Proportion of sentinel laboratory tests positive for influenza, 1 January to 18 August 2017, by contributing laboratory or jurisdiction and month and week.

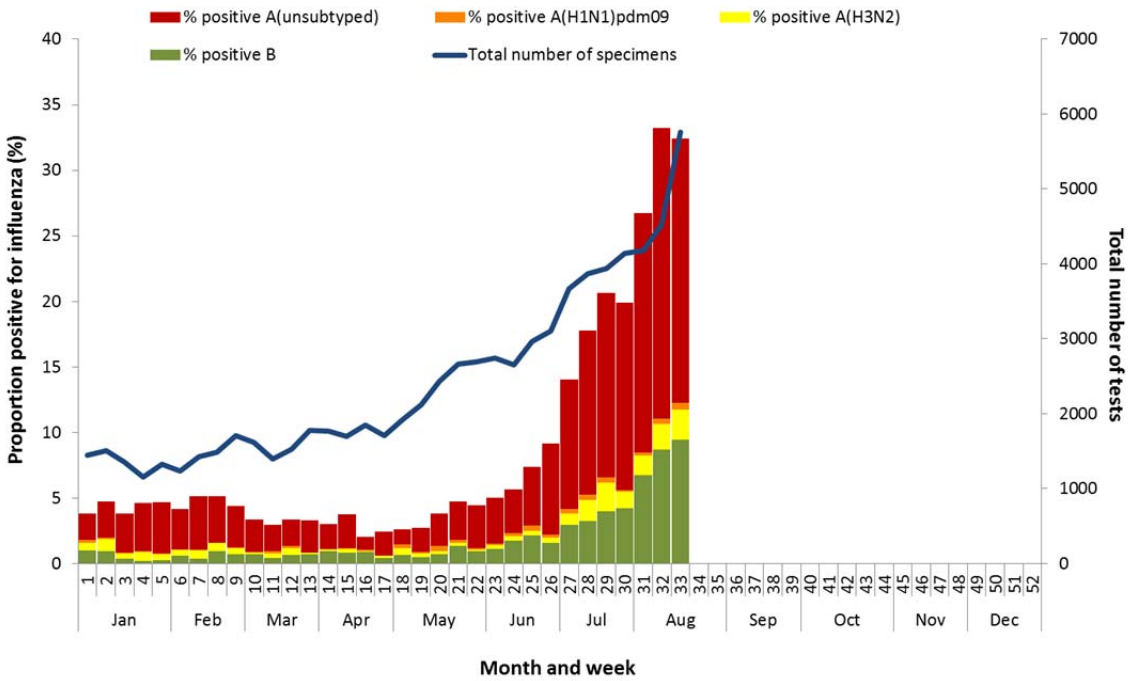


* Pooled percentage positive indicators should be interpreted with caution, noting that collectively pooled contributing laboratories are not representative of testing across Australia and individually contributing laboratories may not be representative of the jurisdiction in which they are located.

^ Weighted according to jurisdictional population in which laboratories are located.

* The percentage of tests positive for influenza in the interseasonal period should be interpreted with caution due to small numbers of tests being undertaken in this time, resulting in high variability in the indicators.

Figure 3. Proportion of sentinel laboratory tests positive for influenza and total number of specimens tested, 1 January to 18 August 2017, by subtype and month and week.



Notifications of Influenza to Health Departments

Notifications of laboratory confirmed influenza to the National Notifiable Diseases Surveillance System (NNDSS) have continued to increase this reporting fortnight (Figure 4). For the year to 18 August, a total of 93,711 notifications of laboratory confirmed influenza were reported to the NNDSS: 45,487 in NSW; 24,662 in QLD; 9,645 in VIC; 8,921 in SA; 2,004 in WA; 1,138 in the ACT; 1,108 in TAS and 746 in the NT. Notifications of laboratory confirmed influenza increased in all jurisdictions since the last reporting fortnight. While notifications from VIC appear to have decreased, this is likely due to a significant administrative backlog in data entry the state is current experiencing (Figure 5).

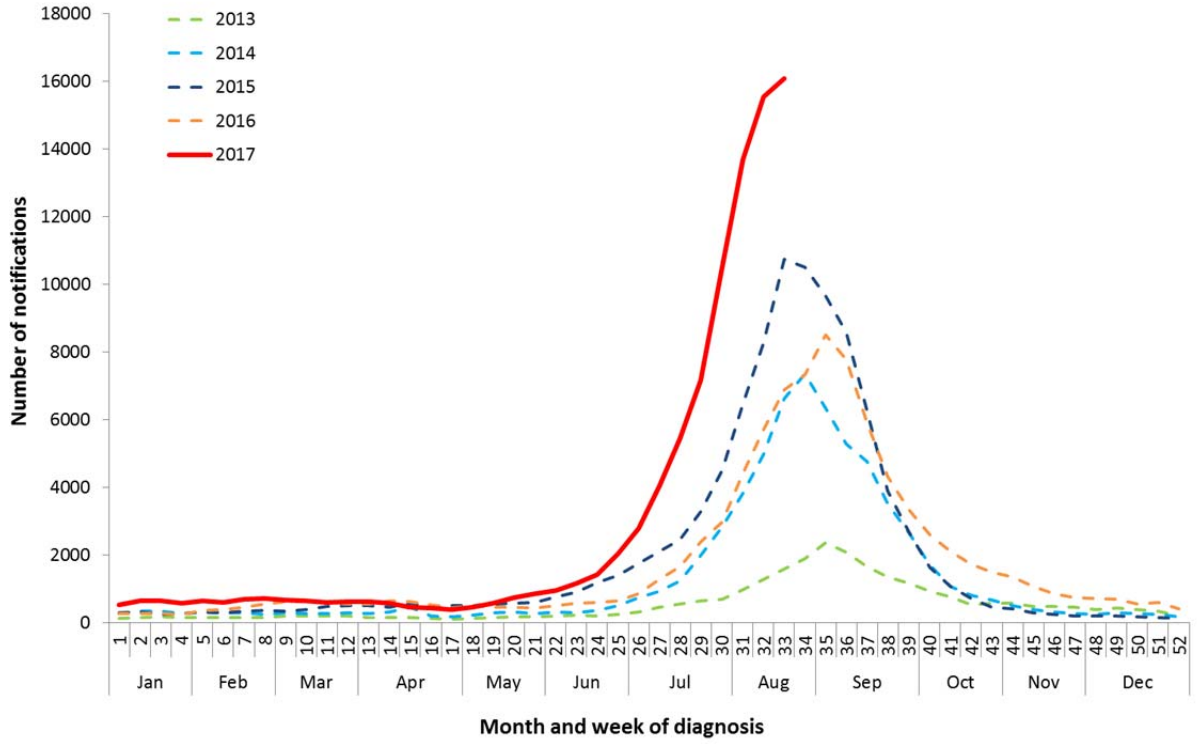
For the year to 18 August, 71% of notifications of laboratory confirmed influenza to the NNDSS were influenza A (65% influenza A(unsubtyped), 1% influenza A(H1N1)pdm09 and 5% influenza A(H3N2)), 28% were influenza B and less than 1% were influenza A&B co-infections or untyped (Figure 6). The proportion of all notifications year to date reported as influenza A has ranged across jurisdictions from 65% in NSW to 83% in WA. For the year to date, detections of influenza A subtypes have varied across jurisdictions also. Nationally, for every one notification of influenza A(H1N1)pdm09 reported to the NNDSS, 3.1 notifications of influenza A(H3N2) were received. This ratio has ranged from 1:0.1 in VIC to 1:16.6 in the ACT. VIC is the only jurisdiction where notifications received year to date for influenza A(H1N1)pdm09 are greater than for influenza A(H3N2).

In the most recent fortnight, 67% of notifications of laboratory confirmed influenza to the NNDSS were influenza A (64% influenza A(unsubtyped) and 3% influenza A (H3N2)), 33% were influenza B and less than 1% were influenza A&B co-infections or untyped (Figure 7). The proportion of all notifications this reporting fortnight reported as influenza B ranged across jurisdictions from 18% in VIC and WA to 37% in NSW. The number and proportion of influenza B notifications increased this fortnight (Figure 7 and Figure 8).

So far in 2017, notification rates have tended to increase with increasing age. Age-specific notification rates of influenza overall have been highest in adults aged 85 years or older (1173.1 notifications per 100,000) and adults aged 80 to 84 years (698.3 notifications per 100,000) with a secondary smaller peak in children aged 5 to 9 years (667 per 100,000) (Figure 9). Influenza A(H1N1)pdm09 was highest in children aged less than 5 years (17.9 per 100,000), influenza A(H3N2) was highest in the elderly aged 85 years and older (101.5 per 100,000) and influenza B was highest in children aged 5 to 9 years (286.3 notifications per 100,000 population).

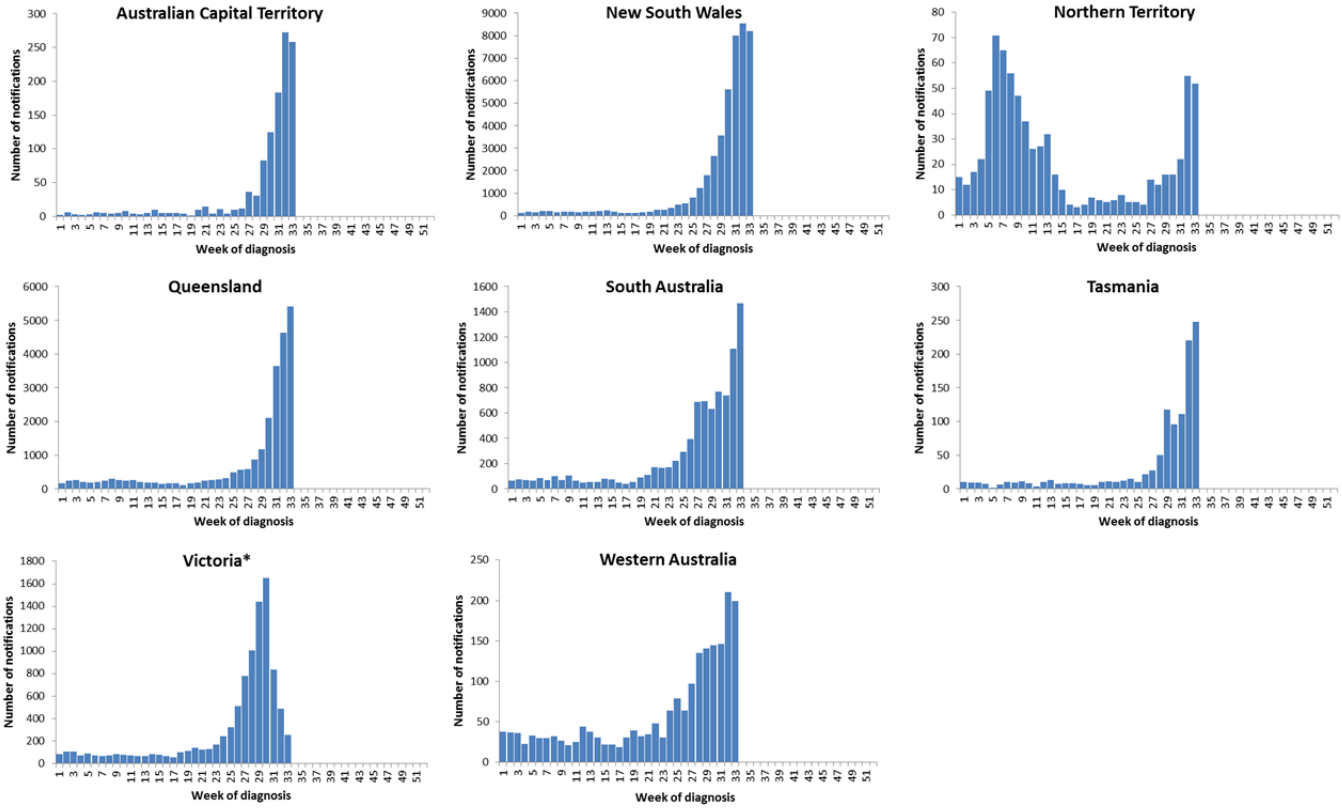
Increases in notifications occurred in all broad age groups since the last reporting fortnight (Figure 10). The distribution of influenza types and subtypes differed across age groups, with 43% of 5 to 17 year olds notified with influenza being detected with influenza B, while only 18% of adults aged 65 years and older detected with influenza B. While influenza A(H3N2) is detected across all age groups, it accounted for a greater proportion of influenza A, where subtyping is available, in adults aged 65 years or older, than in any other age group.

Figure 4. Notifications of laboratory confirmed influenza, Australia, 1 January 2013 to 18 August 2017, by month and week of diagnosis.



Source: NNDSS

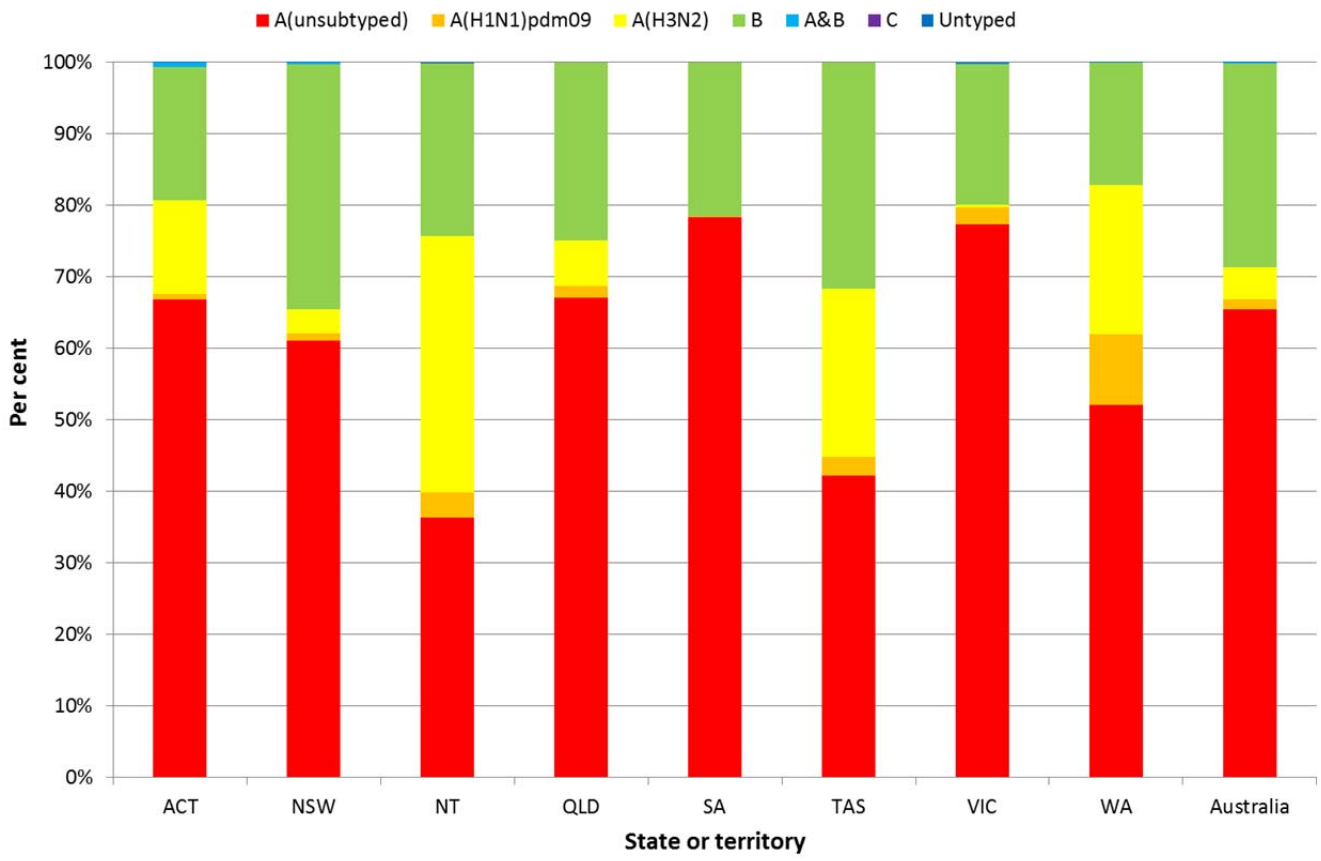
Figure 5. Notifications of laboratory confirmed influenza, 1 January to 18 August 2017, by state or territory and week.



Source: NNDSS

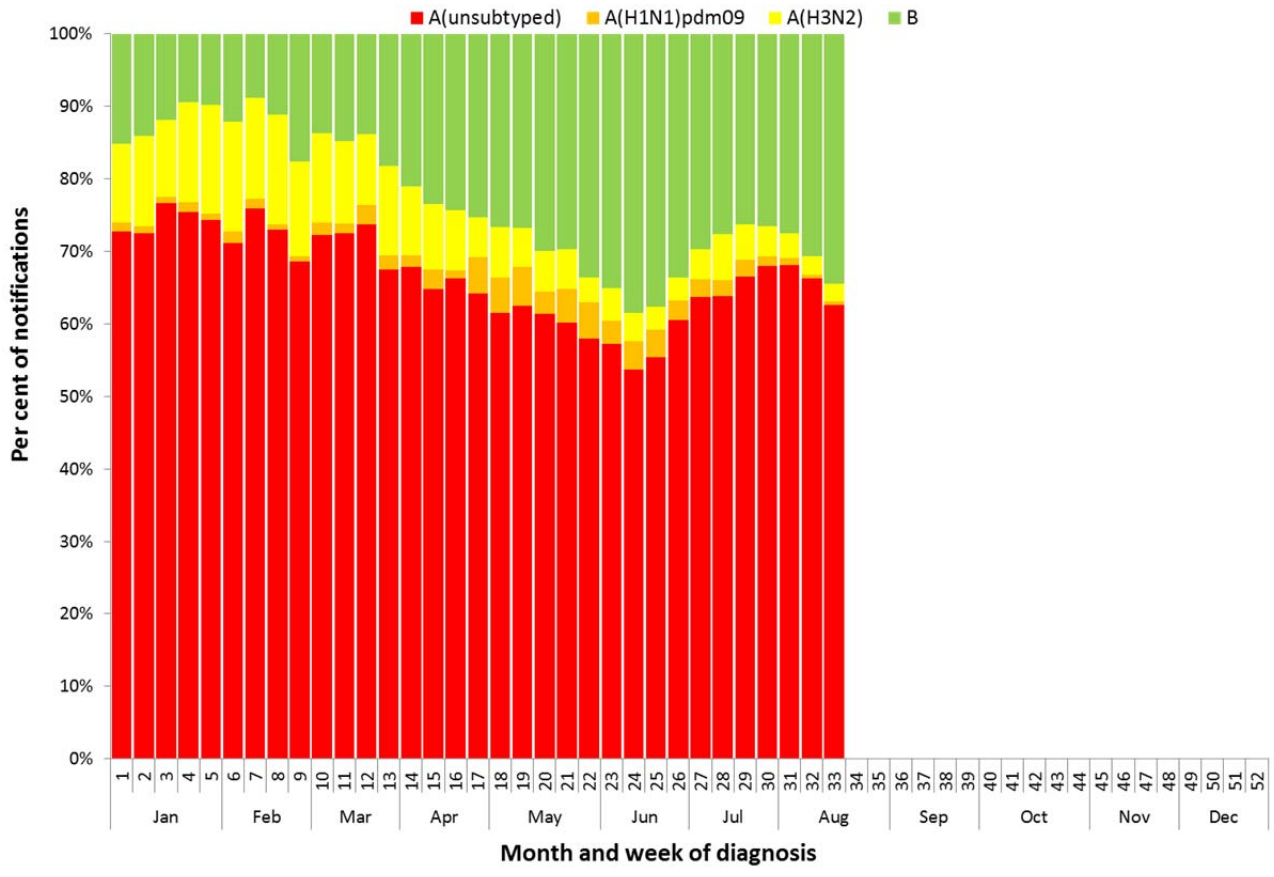
*Victoria is currently experiencing a backlog of influenza notifications to be entered into the NNDSS.

Figure 6. Per cent of notifications of laboratory confirmed influenza, Australia, 1 January to 18 August 2017, by subtype and state or territory.



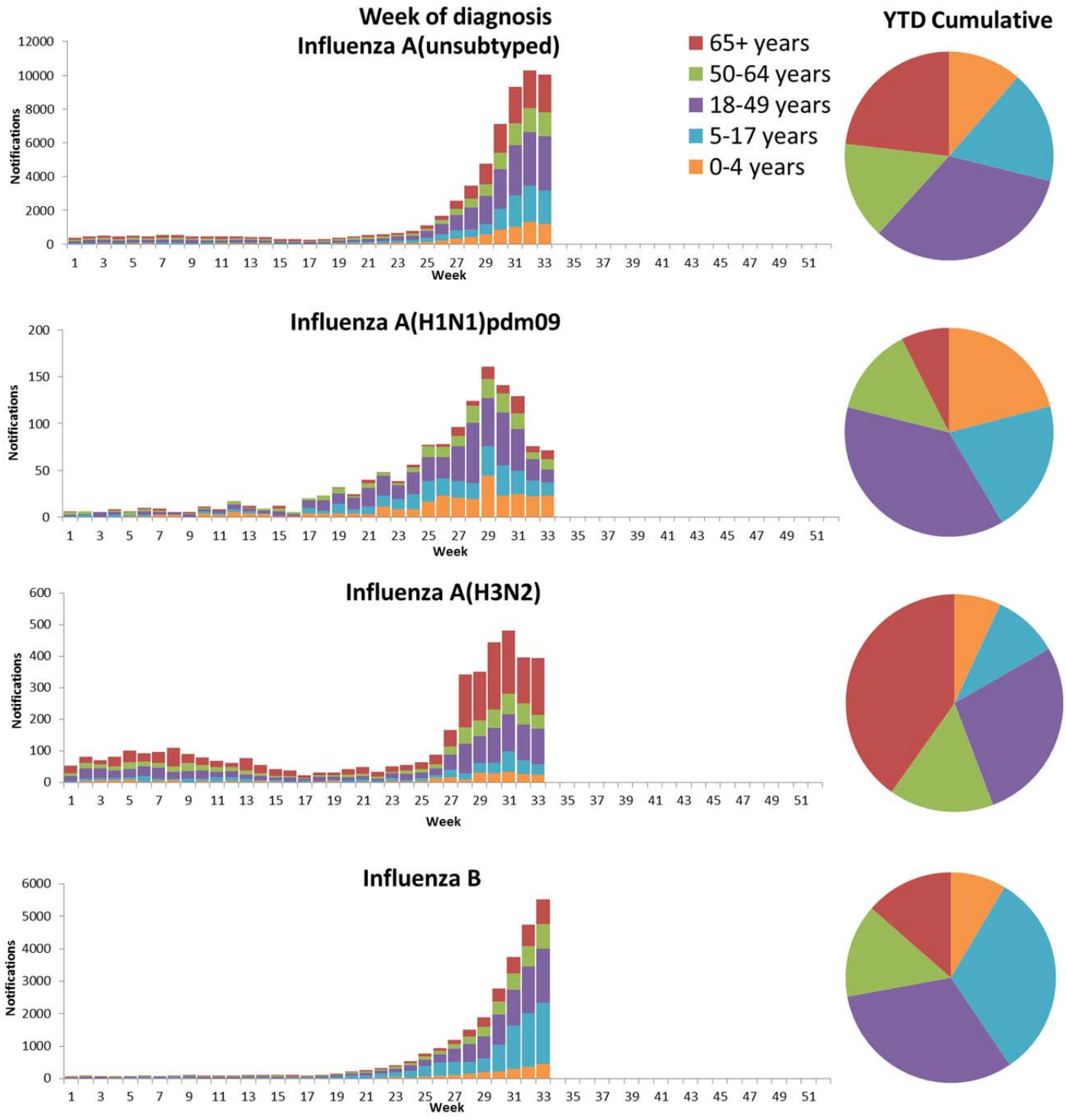
Source: NNDSS

Figure 7. Per cent of laboratory confirmed influenza, Australia, 1 January to 18 August 2017, by subtype and week.



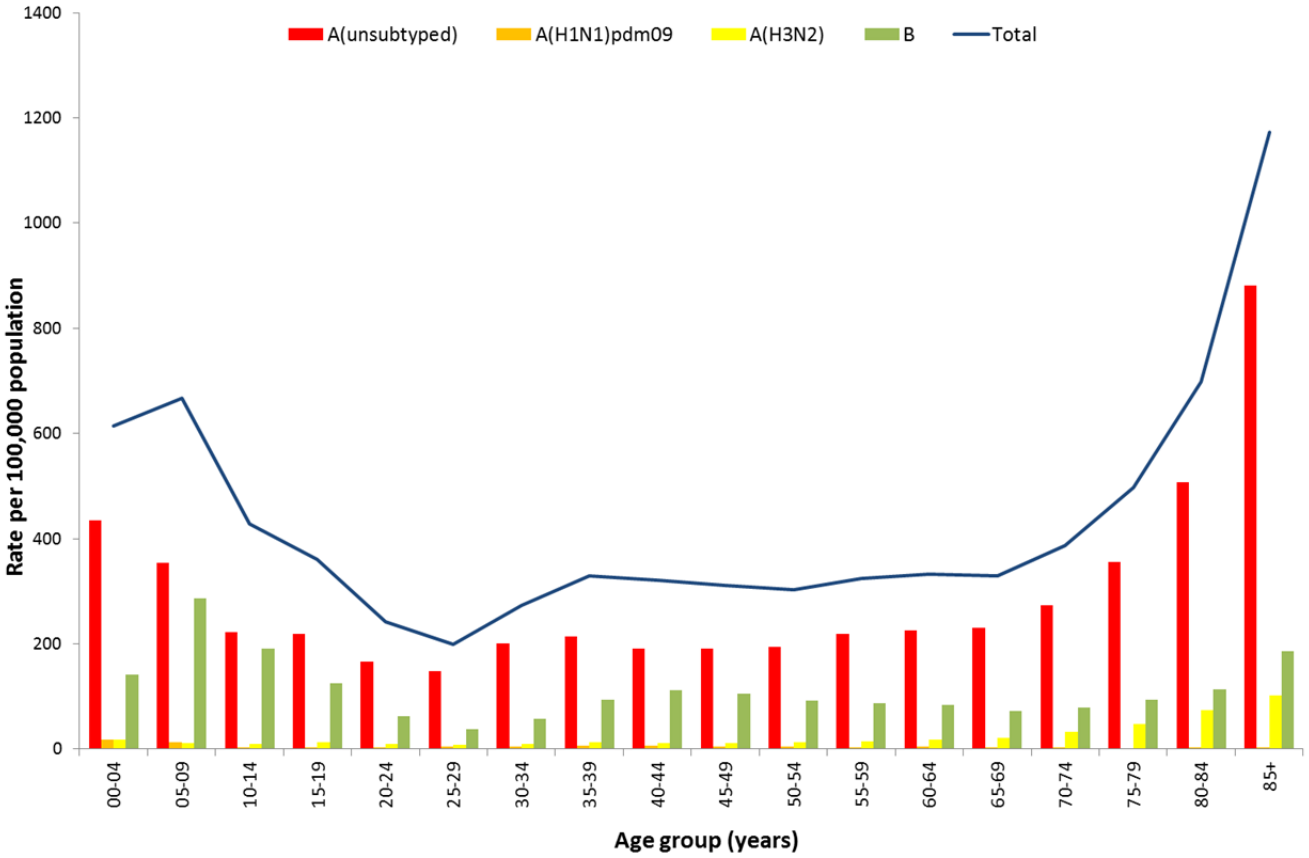
Source: NNDSS

Figure 8. Notifications of laboratory confirmed influenza by week of diagnosis and cumulative year-to-date, Australia, 1 January 18 August 2017, by subtype and age group.



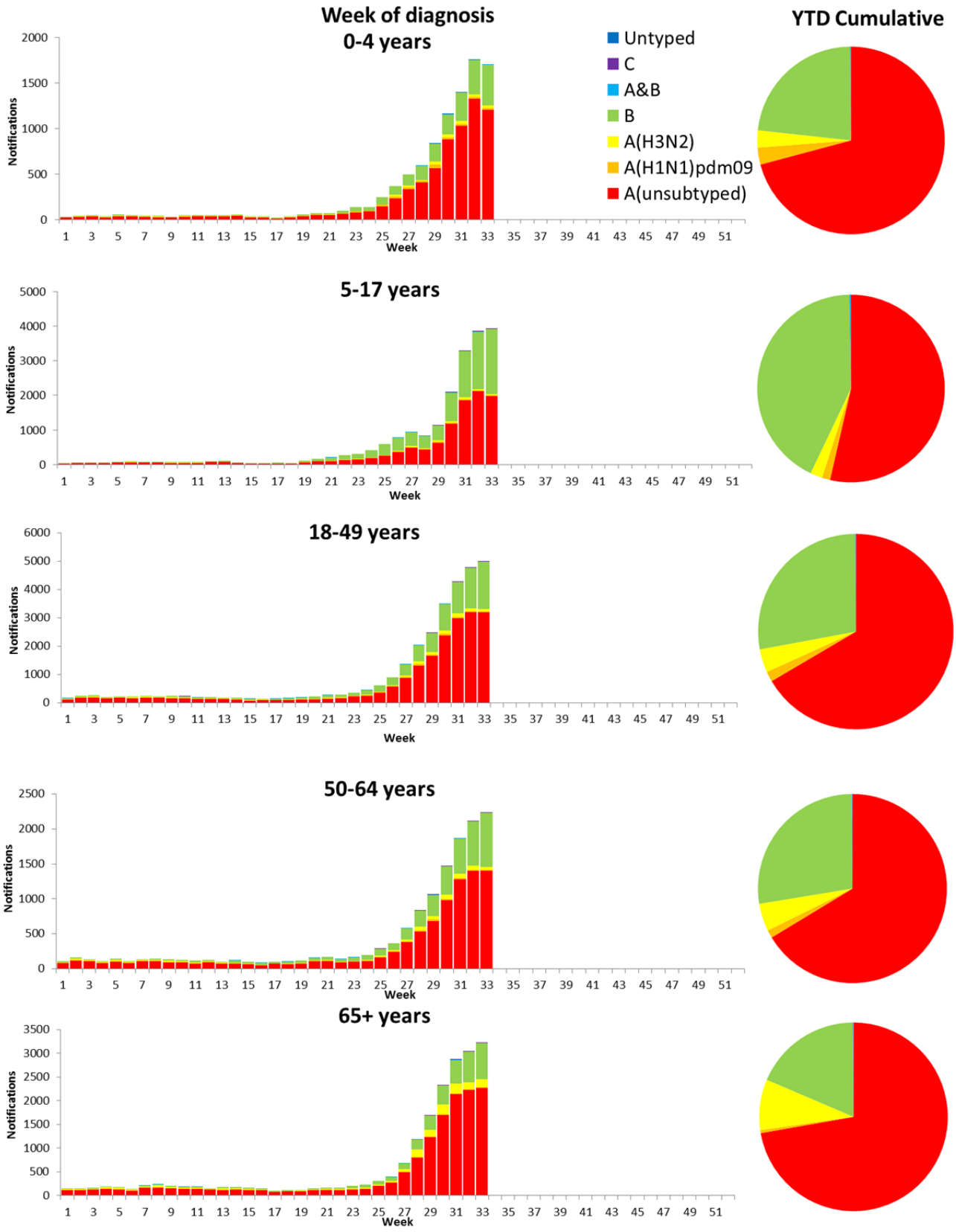
Source: NNDSS

Figure 9. Rate of notifications of laboratory confirmed influenza, Australia, 1 January to 18 August 2017, by age group and subtype.



Source: NNDSS

Figure 10. Notifications of laboratory confirmed influenza by week of diagnosis and cumulative year-to-date, Australia, 1 January to 18 August 2017, by age group and subtype.



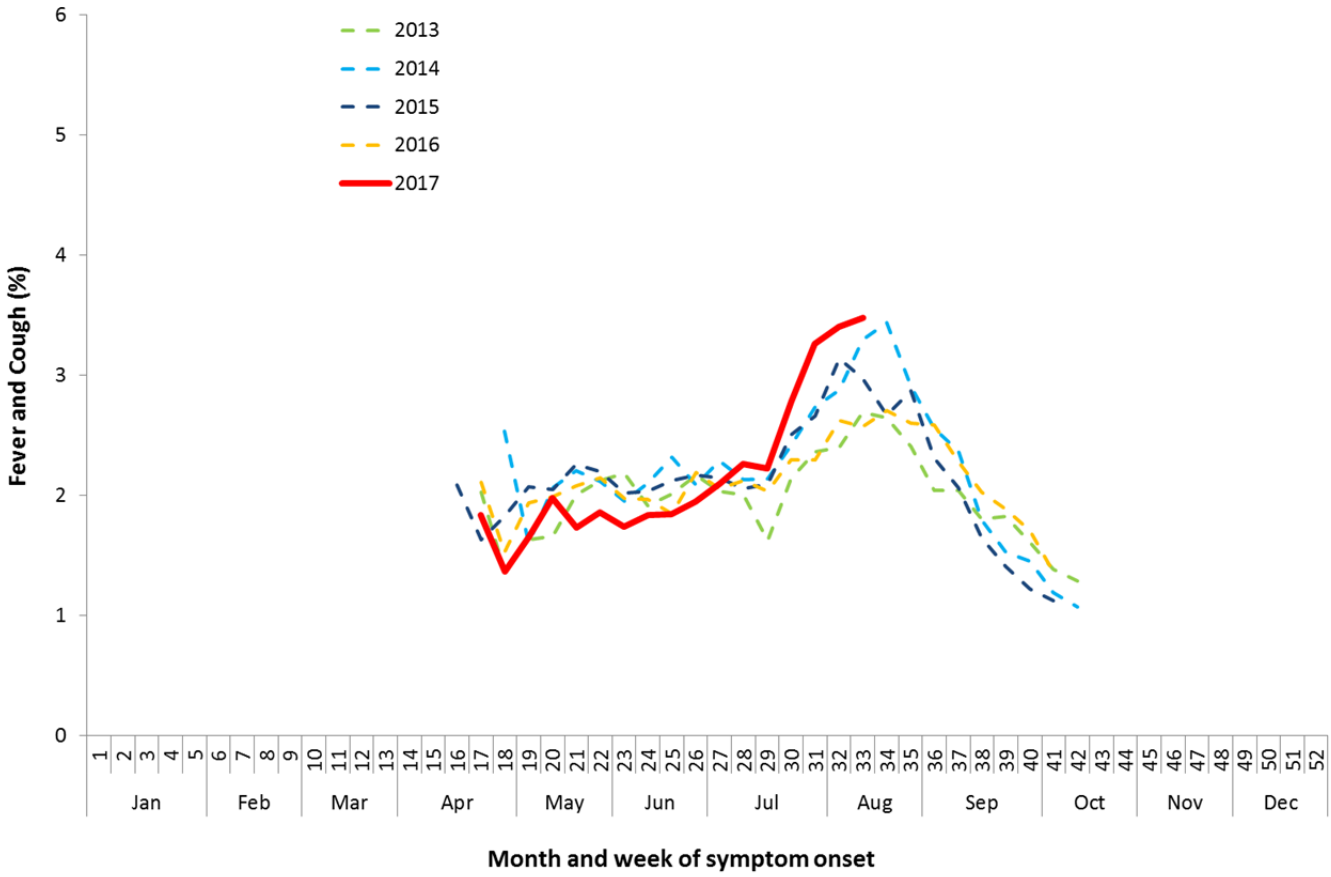
Source: NNDSS

2. Influenza-like Illness Activity

Community Level Surveillance

FluTracking, a national online system for collecting data on ILI in the community, indicated that rates of ILI among participants increased slightly this reporting fortnight (Figure 11). ILI activity among participants, reported as fever and cough, increased from 3.3% at the end of last fortnight (week 31) to 3.5% in week 33. So far this year 62.8% of all participants and 80.7% of participants who identify as working face-to-face with patients reported receiving the seasonal influenza vaccine.[1]

Figure 11. Proportion of fever and cough among FluTracking participants, Australia, between May and October, 2013 to 2017, by month and week.



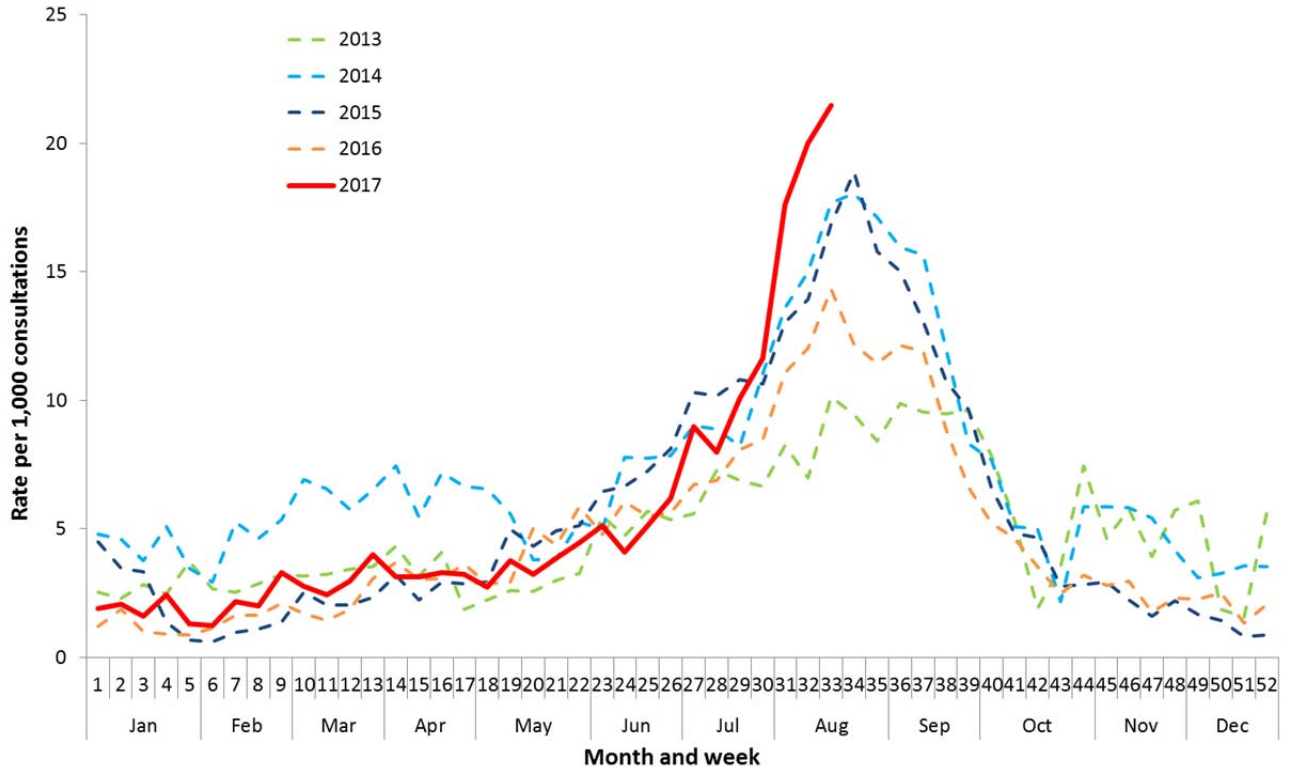
Source: FluTracking

Sentinel General Practice Surveillance

Sentinel general practitioner ILI consultations increased this reporting fortnight, with 20.0 per 1,000 consultations in week 32 and 21.5 per 1,000 consultations in week 33 (Figure 12). This is an increase from the 17.6 per 1,000 consultations reported in week 31. ILI consultations this reporting fortnight are high when compared to the range of recent seasons for this time of year.

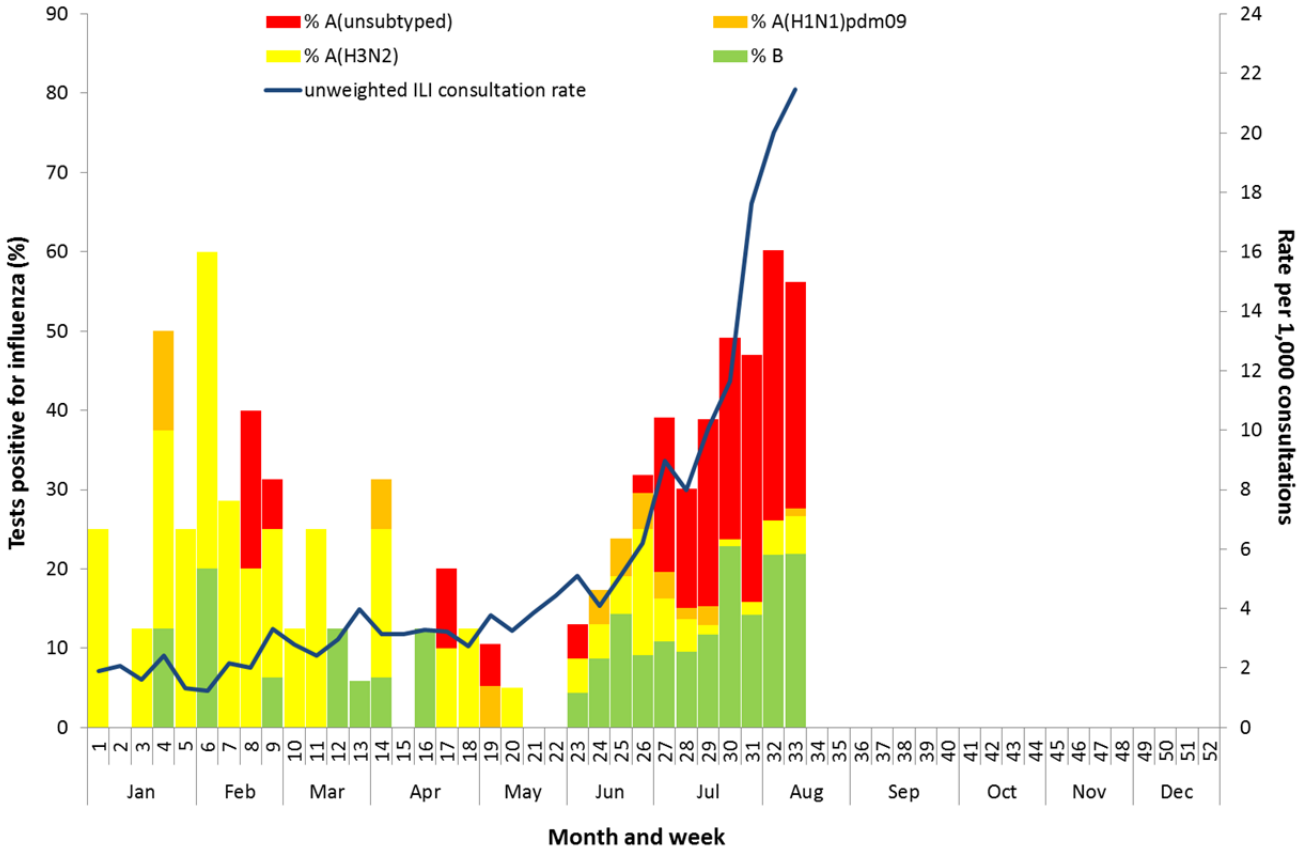
Of the 243 specimens taken from ILI patients seen by Australian Sentinel Practices Research Network (ASPREN) sentinel practitioners during the reporting fortnight, influenza was the most common respiratory virus detected (n=142, 58.4%), consisting of 77 samples positive for A(unsubtyped), 11 samples positive for A(H3N2), 1 sample positive for A(H1N1) and 53 positive for influenza B (Figure 13).

Figure 12. Unweighted rate of ILI reported from sentinel GP surveillance systems, Australia, 1 January 2013 to 20 August 2017, by month and week.



Source: ASPREN and VicSPIN

Figure 13. Proportion of respiratory viral tests positive for influenza in ASPREN ILI patients and ASPREN ILI consultation rate, Australia, 1 January to 20 August 2017, by month and week.



Source: ASPREN

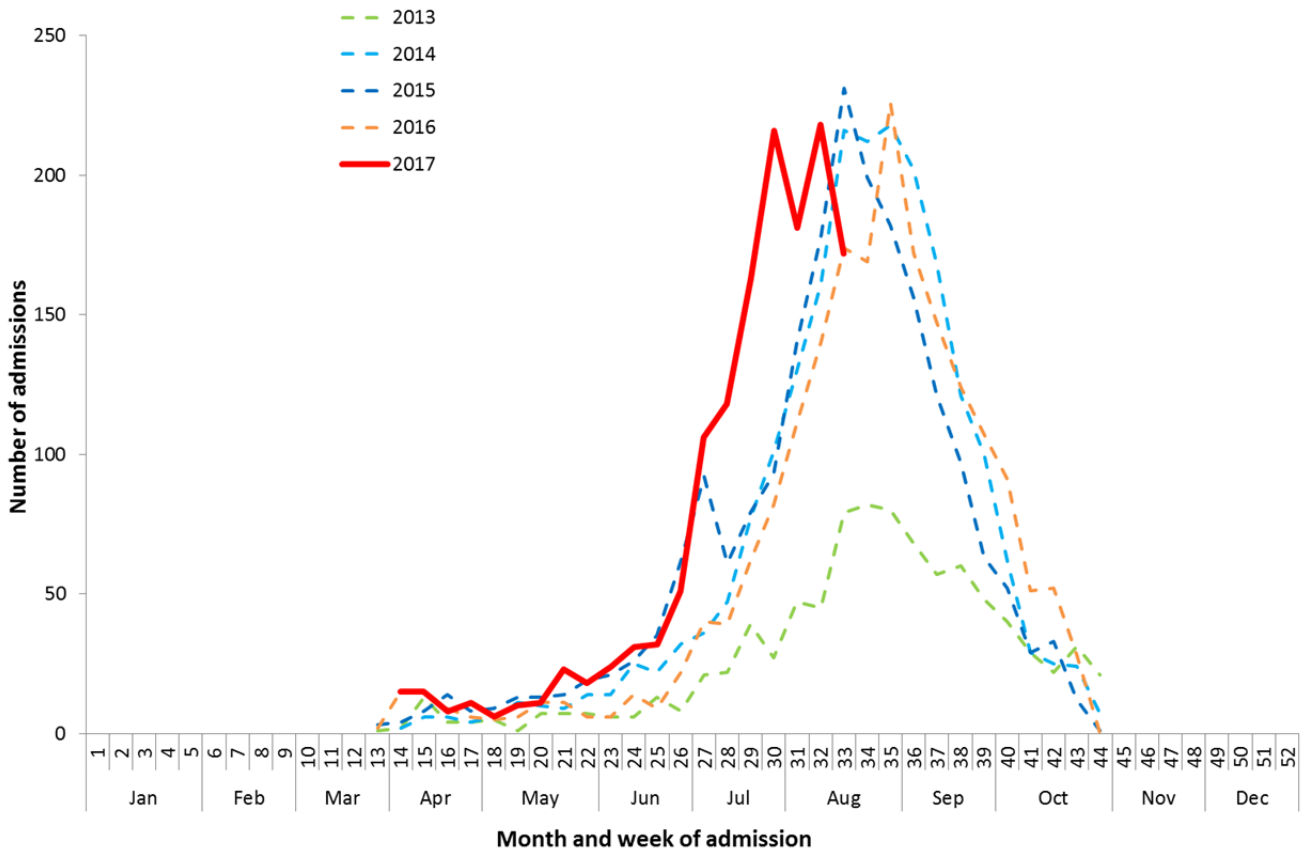
3. Hospitalisations

Sentinel Hospital Surveillance

Admissions with confirmed influenza to sentinel hospitals increased in week 32, declining again in week 33 (Figure 14), with 218 patients admitted in week 30, and 172 in week 31. This is a slight decrease on the total number of patients admitted in the previous reporting fortnight (n=397). Since seasonal surveillance commenced through the Influenza Complications Alert Network (FluCAN) sentinel hospital surveillance system on 3 April 2017, a total of 1,429 people have been admitted with confirmed influenza, of which 243 (17.0%) were children aged less than 15 years. Approximately 8.0% of influenza patients have been admitted directly to ICU (n=115); lower than the proportion reported in recent years (range 8.7% in 2015 to 14.2% in 2013).

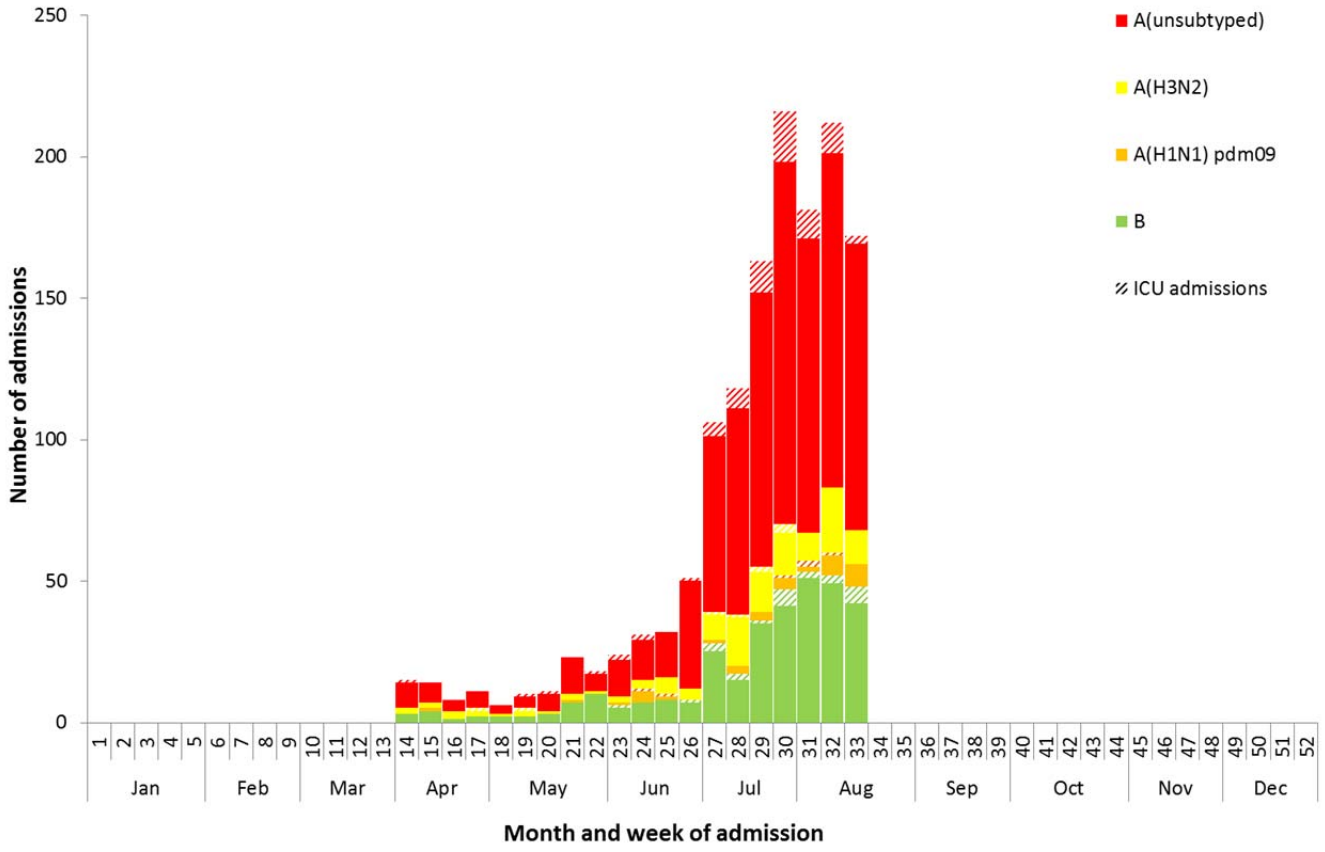
For the year to 18 August, 75% of admissions with confirmed influenza to sentinel hospitals were influenza A (63% A(unsubtyped), 3% influenza A(H1N1)pdm09 and 10% influenza A (H3N2)), 24% were influenza B and less than 1% were mixed influenza infections. Consistent with notification data, the proportion of admissions due to influenza B was higher in children.

Figure 14. Number of influenza hospitalisations at sentinel hospitals, between March and October, 2013 to 2017 by month and week.



Source: FluCAN

Figure 15. Number of influenza hospitalisations at sentinel hospitals by subtype and ICU admission, 3 April to 18 August 2017, by month and week.



Source: FluCAN

Paediatric Severe Complications of Influenza

The Australian Paediatric Surveillance Unit (APSU) conducts seasonal surveillance between June and September annually of children aged 15 years and under who are hospitalised with severe complications of influenza. Since seasonal surveillance commenced through APSU to 20 August 2017, there have been a total of 13 hospitalisations associated with severe complications of influenza reported. Nine cases were female and four male, with an age range of 0 to 13 years, and eight infected with influenza A and five with influenza B. Vaccination status was known for eight of the patients, with one being vaccinated against influenza. Nine patients were discharged with no ongoing problems, with two discharged and experiencing ongoing problems and two remaining in hospital at time of reporting.

4. Deaths Associated with Influenza and Pneumonia

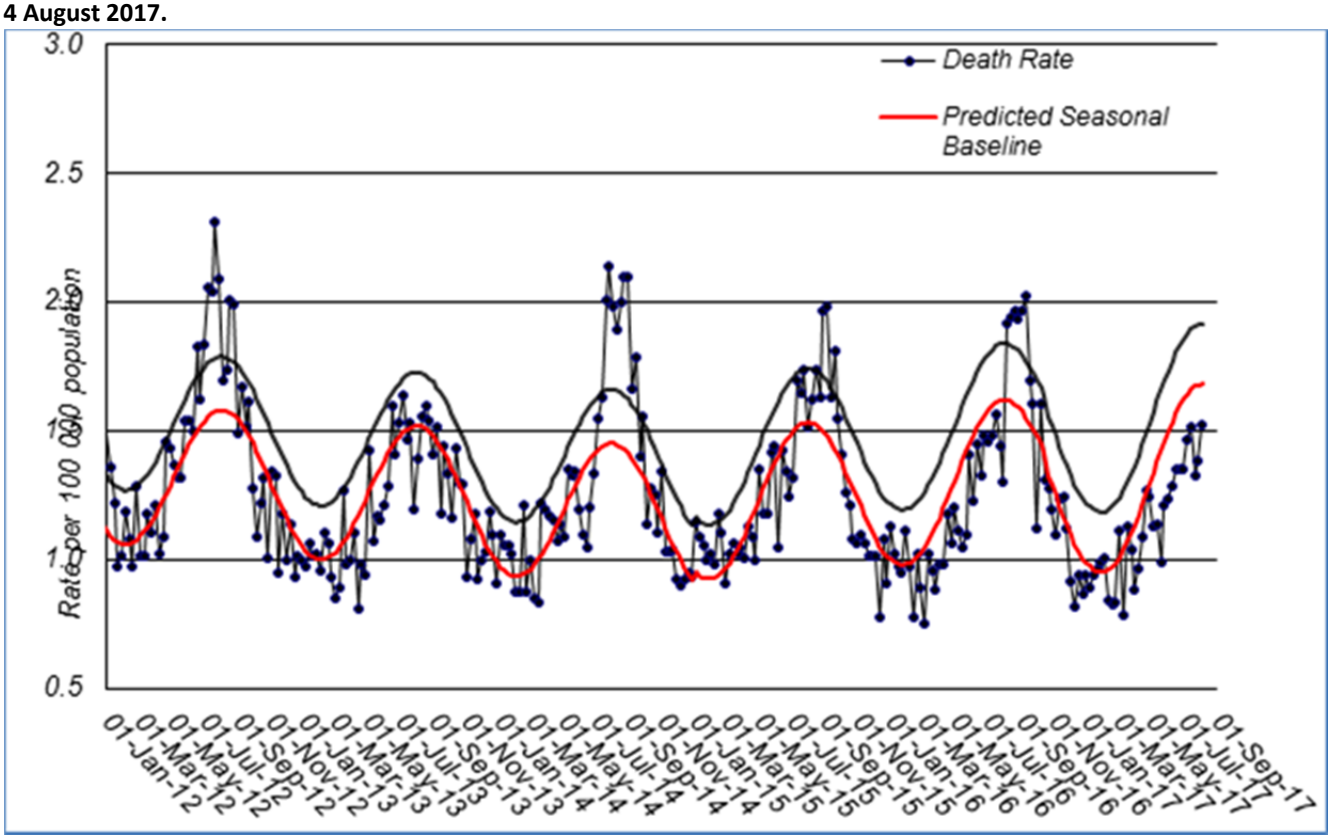
Nationally Notified Influenza Associated Deaths

So far in 2017, 52 influenza associated deaths have been notified to the NNDSS. The majority of deaths were due to influenza A (81%, n = 43). The median age of deaths notified was 81 years (range 13 to 97 years). The number of influenza associated deaths reported to the NNDSS is reliant on the follow up of cases to determine the outcome of their infection and most likely does not represent the true mortality associated with this disease.

New South Wales Influenza and Pneumonia Death Registrations

Death registration data from NSW for the week ending 14 July 2017 show that there were 1.52 “pneumonia and influenza” deaths per 100,000 NSW population, which was below the epidemic threshold of 1.92 per 100,000 NSW population (Figure 16).[2]

Figure 16. Rate of deaths classified as influenza and pneumonia from the NSW Registered Death Certificates, 2012 to 4 August 2017.



Source: NSW Registry of Births, Deaths and Marriages

5. Virological Surveillance

Australian Influenza Vaccines Composition 2017

The influenza virus strains included in the 2017 seasonal influenza vaccines in Australia are:

- A/Michigan/45/2015, (H1N1)pdm09-like virus;
- A/Hong Kong/4801/2014, (H3N2)-like virus;
- B/Brisbane/60/2008-like virus, Victoria lineage;
- B/Phuket/3073/2013-like virus, Yamagata lineage.

Typing and Antigenic Characterisation

From 1 January to 21 August, the World Health Organization Collaborating Centre for Reference and Research on Influenza (WHOCC) characterised 628 influenza viruses (Table 1). When further characterised for similarity to the corresponding vaccine components, influenza A(H1N1)pdm09 viruses and viruses from both influenza B lineages appeared to be mostly antigenically similar to the corresponding vaccine components. The influenza A(H3N2) isolates that were able to be assessed by haemagglutination inhibition assay appeared to be reasonably well matched, although there are ongoing technical issues that significantly limit the WHOCC's capacity to fully assess the similarity of circulating viruses to the vaccine strain.

The best way to determine how well the vaccine protects against circulating viruses during the season is by determining the vaccine effectiveness. These estimates provide an indication of how effective the vaccine was in providing protection against influenza infection, but can only be determined towards the end of the influenza season.

A small number of influenza A(H3N2) isolates (n=57) were characterised as low reactors. An additional 393 influenza A(H3) isolates were unable to be characterised in the HI assay due to insufficient haemagglutination titre.

Table 1. Australian influenza viruses typed by HI from the WHOCC, 1 January to 21 August 2017.

Type/Subtype	ACT	NSW	NT	QLD	SA	TAS	VIC	WA	TOTAL
A(H1N1) pdm09	3	35	1	52	15	1	36	11	154
A(H3N2)	16	109	16	35	71	12	52	11	322
B/Victoria lineage	0	5	0	4	3	1	3	0	14
B/Yamagata lineage	3	40	9	19	19	19	25	2	136
Total	22	189	26	110	108	33	116	24	628

SOURCE: WHO CC

Note: Viruses tested by the WHO CC are not necessarily a random sample of all those in the community. State indicates the residential location for the individual tested, not the submitting laboratory. There may be up to a month delay on reporting of samples.

Antiviral Resistance

The WHOCC reported that from 1 January to 21 August 2017, of the 955 influenza viruses tested for neuraminidase inhibitor resistance, one sample of influenza A(H1N1) demonstrated reduced inhibition to the antiviral drug Zanamivir.

6. International Surveillance

The World Health Organization reported that based on data up to 6 August, in the temperate zone of the southern hemisphere high levels of influenza activity continue to be reported, with some countries in Central America, the Caribbean and South East Asia reporting continued influenza activity.[3] Influenza activity in the temperate zone of the northern hemisphere remained at low levels. Worldwide, influenza A(H3N2) is the predominant circulating virus.

DATA CONSIDERATIONS

The NNDSS data provided were extracted on 23 August 2017. Due to the dynamic nature of the NNDSS, data in this report is subject to retrospective revision and may vary from data reported in published NNDSS reports and reports of notification data by states and territories. Detailed notes on interpreting the data presented in this report are available at the Department of Health's Australian Influenza Surveillance Report website (www.health.gov.au/flureport).

The Australian Influenza Surveillance Report and Activity Updates are compiled from a number of data sources, which are used to monitor influenza activity and severity in the community. These data sources include laboratory-confirmed notifications to the NNDSS; influenza associated hospitalisations; sentinel influenza-like illness (ILI) reporting from general practitioners and emergency departments; and community level surveys; and sentinel laboratory testing results. The information in this report is reliant on the surveillance sources available to the Department of Health at the time of production.

While every care has been taken in preparing this report, the Commonwealth does not accept liability for any injury or loss or damage arising from the use of, or reliance upon, the content of the report. Delays in the reporting of data may cause data to change retrospectively. For further details about information contained in this report please contact the Influenza Surveillance Team (flu@health.gov.au).

REFERENCES

1 FluTracking, FluTracking Weekly Interim Report, Week ending 20 August 2017. Available from FluTracking Reports (http://www.flutracking.net/Info/Reports) [Accessed 23 August 2017].

2 Robin Gilmour, NSW Health – Personal Communication. Received 25 August 2017.

3 WHO, Influenza Update No. 296, 21 August 2017. Available from the WHO website (http://www.who.int/influenza/surveillance_monitoring/updates/latest_update_GIP_surveillance/en/) [Accessed 23 August 2017].