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

### KEY MESSAGES

- **Activity** – Person to person transmission of influenza and influenza-like illness (ILI) in the community is low and remains within or below the bounds of previous years. Rhinovirus was the most common respiratory virus detected in patients presenting with ILI to sentinel general practices this fortnight.
- **Severity** – Due to low numbers and the instability of data early in the season, there is no indication of the potential severity of the 2018 season at this time.
- **Impact** – Currently, the impact of circulating influenza on society is low.
- **Virology** – This fortnight, the majority of confirmed influenza cases reported nationally were influenza A (87%). Where subtyping information was available, influenza A(H1N1)pdm09 was most common.

### ANALYSIS

**Introduction**

Each year, the influenza virus changes and different strains can circulate in the population. Particular strains and subtypes of influenza can affect different groups of the population more than others. Depending on the susceptibility of the population, the strains that are circulating and the changes to the virus itself, the influenza season can be very different year to year. Our surveillance systems help us to understand influenza activity, severity of the infection in individuals and impact of the illness on society in Australia. We are also able to monitor which influenza strains are circulating, which populations might be more affected, the effectiveness of the vaccine, and any resistance to antiviral drugs that has developed.

1. **Activity**

   *Activity measures the capacity of circulating influenza to spread from person to person and may be measured indirectly through systems that monitor symptoms of influenza-like illness and more directly through systems that monitor laboratory confirmed influenza. In temperate climates, influenza most commonly circulates in the winter months and in tropical climates it can have multiple peaks of activity during the year. While Australia has diverse subnational climates, national surveillance represents a temperate pattern with one epidemic wave generally between April and October.*

   **Influenza-like illness (ILI)**

   Overall, ILI in the community is low and is within historical ranges.

   - **Flutracking**: 1.8% of Flutracking participants reported ILI (fever and cough) in the week ending 12 August 2018 (week 32; Figure 1). This is a slight increase from the proportion reported in week 31 (1.6%). Activity remains consistently low. This fortnight is below the range of the levels in August for the last five years.

   - **Healthdirect**: 6.8% of calls to the Healthdirect public health hotline were related to ILI in weeks 31 and 32 (Figure 2). When compared to trends in recent years, the level of ILI activity amongst callers is on the low end of the historical range. In the last fortnight, the number of ILI-related calls as a percentage of all calls remained the same as the week prior, with an overall downwards trend since mid-July.

   - **Sentinel General Practitioners (ASPREN)**: 6.1 per 1,000 consultations in sentinel general practices were attributed to ILI in week 32 (Figure 3). ILI consultations are below the historical range for this time of year and have an overall increasing trend in activity.
Confirmed influenza

Influenza is circulating at very low levels and is not a major cause of ILI this fortnight.

- **Proportion of ILI with confirmed influenza seen by sentinel GPs**: Of the 111 ILI cases presenting to sentinel ASPREN GPs this fortnight who were tested for influenza, 9 (8.1%) had a positive result. This is a decrease from the previous fortnight when 8.4% (13/154) of swabbed ILI patients tested positive for influenza. Rhinovirus was the most common respiratory virus detected in swabbed patients this fortnight (n=19, 17.1%).

- **Proportion of ILI with confirmed influenza in sentinel labs**: Detections of influenza across all sentinel laboratories this reporting fortnight remained low (Figure 4). The pooled unweighted percentage of tests positive for influenza across all sentinel laboratories was 5.3% in week 32, which was an increase from 3.2% reported in week 31. Respiratory syncytial virus (RSV) was the respiratory virus most commonly detected by PathWest and the Institute of Clinical Pathology and Medical Research (ICPMR) in this reporting fortnight. The most commonly detected respiratory viruses detected by the Victorian Infectious Disease Reference Laboratory (VIDRL) was RSV in week 31 and RSV and picornavirus in week 32. The respiratory virus most commonly detected by Tasmania was rhinovirus in both weeks.

- **NNDSS notifications**: This fortnight there were 2,248 notifications of laboratory confirmed influenza to the National Notifiable Diseases Surveillance System (NNDSS), which is an increase in reported cases compared to the previous fortnight (n=1,534). There have been 21,831 notifications year to date. While national notifications of laboratory confirmed influenza were higher than usual in January and February, consistent with high activity experienced in the Northern Hemisphere at that time, notifications returned to normal range by March (Figure 5).

- **FluCAN**: Since seasonal sentinel hospital surveillance began on 3 April 2018, a total of 203 people have been admitted with confirmed influenza (Figure 6). This is fewer hospitalisations than the 5 year average for the same period (n=810).

![Figure 1. Proportion of fever and cough among FluTracking participants, Australia, between May and October, 2013 to 2018, by month and week.](source: FluTracking)
Figure 2. Per cent of calls to Healthdirect related to ILI, Australia, 1 January 2013 to 12 August 2018, by month and week of call.

Source: Healthdirect

Figure 3. Unweighted rate of ILI reported from sentinel GP surveillance systems, Australia, 1 January 2013 to 12 August 2018, by month and week.

Source: ASPREN and VicSPIN (weeks 31 and 32 of 2018 do not include VicSPIN data)
Figure 4. Proportion of sentinel laboratory tests positive for influenza, 1 January to 12 August 2018, 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 5. Notifications of laboratory confirmed influenza, Australia, 1 January 2013 to 12 August 2018, by month and week of diagnosis.

Source: NNDSS
Geographical distribution of activity

- **Jurisdictional reports:** In the fortnight ending 12 August 2018, the geographic spread of influenza activity was reported by state and territory health departments as being sporadic in the Australian Capital Territory (ACT), both regions of Northern Territory (NT), the Tropical and Central regions of Queensland (QLD), Tasmania (TAS) and the Northwest region of Western Australia (WA). Activity was reported as being localised in the Southern region of QLD, South Australia (SA), Victoria (VIC) and the Rural south region of WA. New South Wales (NSW) reported regional activity levels and the Perth metro region of WA reported widespread levels of activity. There was no change in influenza activity compared to the previous fortnight in ACT, the Central Australia region of NT, SA and all regions of WA. An increase in activity was reported for NSW, the Top End region of NT, all regions of QLD, and Victoria. Tasmania reported a decrease in activity. (Figure 7).

- **NNDSS:** Of the 2,248 notifications of influenza reported to the NNDSS in the last fortnight, 981 were from NSW, 682 from QLD, 240 from WA, 226 from VIC, 79 from SA, 23 from ACT, 11 from TAS and 6 from NT (Figure 8). Of the 21,831 notifications of influenza reported to the NNDSS this year to 12 August 2018, 7,120 from NSW, 6,697 were from QLD, 3,225 from VIC, 2,593 from WA, 1,687 from SA, 217 from ACT, 158 from TAS and 134 from the NT.

For further information regarding influenza activity at the jurisdictional level, please refer to the following State and Territory health surveillance reports:

- ACT: [Influenza report](http://health.act.gov.au/node/41)
- TAS: [fluTAS Reports](http://www.dhhs.tas.gov.au/publichealth/communicable_diseases_prevention_unit)


Figure 7. Map of influenza activity by state and territory, Australia, 30 July to 12 August 2018.

Figure 8. Notifications of laboratory confirmed influenza, 1 January to 12 August 2018, by state or territory and week.

Source: NNDSS
2. Severity

Severity is a measure of adverse outcomes or complications as a result of influenza or influenza-like illness (ILI) such as hospital referrals, admissions, need for intensive care and deaths. Measuring and understanding the severity of circulating influenza is difficult to establish at the beginning of the influenza season. The proportion of confirmed influenza cases with serious outcomes might be skewed initially because there are only a small number of people with influenza at the beginning of the season. This means that the measure of severity will vary substantially fortnight to fortnight until after the peak of the season when there is enough data for measurements to stabilise. An assessment of severity will be provided once the signals become clearer.

Intensive care admissions
- FlucAN: This fortnight, five of the 41 people admitted to sentinel hospitals with confirmed influenza were admitted to ICU. Since seasonal sentinel hospital surveillance began on 3 April 2018, 9.4% (n=19) of the 203 people admitted to sentinel hospitals with confirmed influenza were admitted to ICU.

Deaths in confirmed influenza cases
- NNDSS: So far in 2018, 35 influenza associated deaths have been notified to the NNDSS. The majority of deaths were due to influenza A (77.1%, n=27). Of the notifications where influenza A subtyping information was available (n=7), A(H3N2) was most common (n=4). The median age of deaths notified was 79 years (range 2 to 100 years). The number of influenza-associated deaths reported to the NNDSS does not represent the true mortality associated with this disease. The number of deaths is reliant on the follow up of cases to determine the outcome of their infection. The follow up of cases is not a requirement of notification, and are only inclusive of laboratory-confirmed cases of influenza. Due to retrospective revision, the variation across jurisdictions in methodology, representativeness and timeliness of death data, and reporting of an outcome of infection not being a requirement of notification, year on year comparisons of deaths in notified cases of influenza may not be reliable.

3. Impact

Impact measures how the influenza epidemic affects society, including stress on health-care resources and societal and economic consequences.

Overall this fortnight, impact on society caused by circulating influenza is low.

Absenteeism
- Flutracking: 1.3% of Flutracking survey respondents reported having ILI and taking time off regular duties while unwell in the weeks 31 and 32. This is a low level of impact when compared to trends in recent years, the five year average for week 32 is 2.2%.

Use of hospital beds
- FlucAN: Since seasonal sentinel hospital surveillance began on 3 April 2018, 2.9% of hospital beds available in FlucAN hospitals were occupied by patients with confirmed influenza. This is a low level of impact when compared to temporal trends.

4. Virology

Influenza A and B are the two main types of influenza virus. Influenza A can be can be categorised into multiple subtypes and influenza B can be grouped into two lineages.

National notification data
- NNDSS: In the reporting fortnight, 87.0% of notifications of laboratory confirmed influenza to the NNDSS were influenza A (76.6% influenza A(unsubtyped), 8.2% influenza A(H1N1)pdm09 and 2.2% influenza A(H3N2)), and 12.6% were influenza B (Figure 9).
- NNDSS: For the year to 12 August 2018, 66.9% of notifications of laboratory confirmed influenza to the NNDSS were influenza A (57.0% influenza A(unsubtyped), 6.4% influenza A(H1N1)pdm09 and 3.4% influenza A(H3N2)), 32.6% were influenza B and less than 1.0% were influenza A&B co-infections or untyped. The proportion of all notifications year to date reported as influenza A has ranged across jurisdictions from 54.5% in the NT to 75.4% in WA (Figure 10).
Reference Laboratory data

- **World Health Organization Collaborating Centre for Reference and Research on Influenza (WHOCC):**
  From 1 January to 13 August 2018, the WHOCC characterised 399 influenza viruses. Of these, 45% were influenza A(H1N1)pdm09, 31% were influenza A(H3N2), 22% were influenza B Yamagata lineage and 1% were influenza B Victoria lineage.

Sentinel laboratory surveillance

- In the reporting fortnight, 96.3% of influenza positive samples detected in sentinel laboratories were influenza A (48.5% were influenza A(unsubtyped), 43.3% influenza A(H1N1)pdm09, and 4.5% were influenza A(H3N2)) and 3.7% were influenza B (Figure 11).

Sentinel GP surveillance

- **ASPREN:** Of the nine influenza positive samples detected this fortnight through swab testing patients presenting with ILI to ASPREN sentinel GPs, seven were influenza A (H1N1), one was Influenza A (H3N2) and one was influenza B (Figure 12).

Sentinel hospital surveillance

- **FluCAN:** Since seasonal sentinel hospital surveillance began on 3 April 2018, 77.3% of confirmed influenza to sentinel hospitals were influenza A (54.7% A(unsubtyped), 21.7% influenza A(H1N1)pdm09 and 1.0% influenza A (H3N2)) and 22.7% were influenza B. (Figure 13).

Figure 9. Per cent of laboratory confirmed influenza, Australia, 1 January to 12 August 2018, by subtype and week.

Source: NNDSS
Figure 10. Per cent of notifications of laboratory confirmed influenza, Australia, 1 January to 12 August 2018, by subtype and state or territory.

Source: NNDSS

Figure 11. Proportion of sentinel laboratory tests positive for influenza and total number of specimens tested, 1 January to 12 August 2018, by subtype and month and week.

Source: NNDSS
Figure 12. Proportion of respiratory viral tests positive for influenza in ASPREN ILI patients and ASPREN ILI consultation rate, Australia, 1 January to 12 August 2018, by month and week.

Source: ASPREN

Figure 13. Number of influenza hospitalisations at sentinel hospitals by subtype and ICU admission, 3 April to 12 August 2018, by month and week.

Source: FluCAN
5. At-risk Populations

National notification data

- **NNDSS**: So far in 2018, notification rates have been highest in children under 10 years (142.2 notifications per 100,000), with a secondary peak in adults aged 80 years or older (132.5 notifications per 100,000) (Figure 14). Where subtyping information is available, notifications of influenza A(H1N1)pdm09 were highest in children aged less than 4 years (17.3 per 100,000) and notifications of influenza A(H3N2) were highest in adults aged 80-84 years (11.6 per 100,000). The rate of influenza B was highest in those aged over 80 years (44.7 notifications per 100,000).

Sentinel hospital surveillance

- **FluCAN**: Since seasonal sentinel hospital surveillance began on 3 April 2018, 41.6% of people admitted with confirmed influenza were children aged 15 years and younger, 37.1% were adults aged between 16 and 64 years and 21.3% were adults aged 65 years and older.

![Figure 14. Rate of notifications of laboratory confirmed influenza, Australia, 1 January to 12 August 2018, by age group and subtype.](source: NNDSS)

6. Vaccine effectiveness

**Australian Influenza Vaccines Composition 2018**

The influenza virus strains included in the 2018 seasonal influenza vaccines in Australia are:

- A/Michigan/45/2015, (H1N1)pdm09-like virus;
- A/Singapore/INFIMH-16-0019/2016, (H3N2)-like virus; and
- B/Phuket/3073/2013-like virus, Yamagata lineage.
- B/Brisbane/60/2008-like virus, Victoria lineage.

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.
WHOCC

From 1 January to 13 August 2018, 270 isolates were characterised for similarity to the corresponding vaccine components by haemagglutination inhibition (HI) assay (Table 1). Influenza A(H1N1)pdm09 viruses and viruses from both influenza B lineages appeared to be antigenically similar to the corresponding vaccine components. One Influenza A(H1N1)pdm09, two influenza B(Yamagata) and no influenza B(Victoria) isolates were characterised as low reactors. The influenza A(H3N2) isolates that were able to be assessed by HI assay appeared to be reasonably 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. Three influenza A(H3N2) isolates were characterised as low reactors, and an additional 23 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 13 August 2018.

<table>
<thead>
<tr>
<th>Type/Subtype</th>
<th>ACT</th>
<th>NSW</th>
<th>NT</th>
<th>QLD</th>
<th>SA</th>
<th>TAS</th>
<th>VIC</th>
<th>WA</th>
<th>TOTAL</th>
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<tbody>
<tr>
<td>A(H1N1) pdm09</td>
<td>2</td>
<td>37</td>
<td>0</td>
<td>52</td>
<td>5</td>
<td>0</td>
<td>1</td>
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<td>114</td>
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<tr>
<td>A(H3N2)</td>
<td>3</td>
<td>27</td>
<td>3</td>
<td>39</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>78</td>
</tr>
<tr>
<td>B/Victoria lineage</td>
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<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>B/Yamagata lineage</td>
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<td>32</td>
<td>10</td>
<td>22</td>
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<td>0</td>
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<td>75</td>
</tr>
<tr>
<td>Total</td>
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<td>97</td>
<td>14</td>
<td>114</td>
<td>14</td>
<td>0</td>
<td>1</td>
<td>22</td>
<td>270</td>
</tr>
</tbody>
</table>

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.

7. Antiviral Resistance

The WHOCC reported that from 1 January to 13 August 2018, none of the 176 influenza viruses tested for neuraminidase inhibitor resistance, demonstrated reduced inhibition to the antiviral drugs Zanamivir or Oseltamivir.

8. Data considerations

No one single system, including notification data, provides the full picture on influenza, because influenza is a common disease and its presenting symptoms are non-specific. The epidemiology of influenza is informed by a number of different systems based in the community, laboratories, primary care and hospitals, as well as official deaths and notifiable diseases data. The information in this report is reliant on the surveillance sources available to the Department of Health at the time of production.

Data in this summary is reported by International Organization for Standardization (ISO) 8601 weeks, with the week ending on Sunday. Throughout the summary, where the year to date is presented, this includes data from 1 January to 12 August 2018. NNDS data were extracted on 17 August 2018. Due to the dynamic nature of the NNDS and other surveillance systems, data in this report are subject to retrospective revision and may vary from data reported in other national reports and reports 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).

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).