SUMMARY

- There are indications that the 2015 influenza season is imminent. While influenza activity is currently variable across the country, most surveillance systems are showing an overall increase.

- As at 19 June 2015, there were 11,585 cases of laboratory confirmed influenza reported, with 1,795 notifications reported in the most recent fortnight.

- So far this year, influenza A has been the predominant influenza virus type. However influenza B has been circulating at increasing levels and is the predominant influenza virus type circulating in the most recent fortnight. This trend is common amongst all jurisdictions, except Tasmania and the Northern Territory where overall activity is low.

- Systems that monitor influenza-like illness (ILI) are reporting low levels of activity, with an increase in activity in recent weeks, as expected at this time of year.

- Respiratory viruses other than influenza are more commonly causing ILI in the community, with rhinovirus and RSV detected most frequently.

- Influenza B is the dominant type responsible for influenza associated hospitalisations.

- There is no indication of the potential severity of the season at this time.

- Of the limited number of isolates that have been further characterised for similarity with the vaccine components, influenza A viruses appear to be well matched. Over 80% of the influenza B viruses characterised are a match to the trivalent vaccine strain; the remaining influenza B viruses match the additional strain in the quadrivalent vaccine.

Figure 1. Notifications of laboratory confirmed influenza, Australia, 1 January 2011 to 19 June 2015, by week.

Source: NNDSS
KEY INDICATORS

Influenza activity and severity in the community are monitored using the following indicators and surveillance systems:

<table>
<thead>
<tr>
<th>Is the situation changing?</th>
<th>Indicated by trends in:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>laboratory confirmed cases reported to the National Notifiable Diseases Surveillance System (NNDSS);</td>
</tr>
<tr>
<td></td>
<td>influenza associated hospitalisations;</td>
</tr>
<tr>
<td></td>
<td>emergency department (ED) presentations for influenza-like illness (ILI);</td>
</tr>
<tr>
<td></td>
<td>general practitioner (GP) consultations for ILI;</td>
</tr>
<tr>
<td></td>
<td>ILI-related call centre calls and community level surveys of ILI; and</td>
</tr>
<tr>
<td></td>
<td>sentinel laboratory test results.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>How severe is the disease, and is severity changing?</th>
<th>Indicated by trends in:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>hospitalisations, intensive care unit (ICU) admissions and deaths; and</td>
</tr>
<tr>
<td></td>
<td>clinical severity in hospitalised cases and ICU admissions.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Is the virus changing?</th>
<th>Indicated by trends in:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>drug resistance; and</td>
</tr>
<tr>
<td></td>
<td>antigenic drift or shift of the circulating viruses.</td>
</tr>
</tbody>
</table>

1. Geographic Spread of Influenza Activity in Australia

In the fortnight ending 19 June 2015, influenza activity was reported as stable or increasing across all regions. The geographic spread of influenza activity reported by state and territory health departments was ‘sporadic’ in the Australian Capital Territory (ACT), Tasmania (Tas), the tropical region of Queensland (Qld) and the Top End region of the Northern Territory (NT); ‘localised’ in New South Wales (NSW), Victoria (Vic), the southern and central regions of Qld, the Centre region of the NT and the Pilbara/Kimberley regions of Western Australia (WA); ‘regional’ in the metropolitan Perth and country-south regions of WA, and ‘widespread’ in South Australia (SA) (Figure 2). ILI activity reported from syndromic surveillance systems was unchanged compared with the previous reporting period in all States and Territories except metropolitan Perth.

Figure 2. Map of influenza activity by state and territory, Australia, 6 June to 19 June 2015.
2. Influenza-like Illness Activity

Community Level Surveillance

FluTracking

FluTracking, a national online system for collecting data on ILI in the community, indicated that rates of ILI among participants so far this year have been low to moderate and within the range of recent seasons (Figure 3). In the week ending 21 June 2015, fever and cough decreased slightly and was reported by 2.7% of all participants (2.4% of vaccinated participants and 3.0% of unvaccinated participants). Fever, cough and absence from normal duties were reported by 1.6% of all participants (1.5% of vaccinated participants and 1.7% of unvaccinated participants). In the week ending 21 June 2015, 60.4% of participants reported having received the 2015 influenza vaccine. Of the 3,797 participants who identified as working face-to-face with patients, 3,022 (79.6%) have received the vaccine.

Figure 3. Proportion of fever and cough among FluTracking participants, Australia, between May and October, 2011 to 2015, by week.

National Health Call Centre Network

ILI related calls to the National Health Call Centre Network (NHCCN) have been steadily increasing since the beginning of the year and was stable in the reporting fortnight at 7.2%. ILI related calls as a proportion of all calls to the NHCCN are currently tracking similar to recent years (Figure 4).

Figure 4. Number of calls to the NHCCN related to ILI and percentage of total calls, Australia, 1 January 2011 to 21 June 2015, by week.

Note: NHCCN data do not include Queensland and Victoria

Source: NHCCN
Sentinel General Practice Surveillance

In the fortnight ending 21 June 2015, the sentinel general practitioner ILI consultation rate reduced slightly however the overall rising trend, which commenced in early May, continued. The rate of ILI consultations so far this year are at the lower end of the range observed in previous years (Figure 5).

Figure 5. Weekly rate of ILI reported from GP ILI surveillance systems, Australia, 1 January 2011 to 21 June 2015, by week.

In the fortnight ending 21 June 2015, specimens were collected from around 74% of Australian Sentinel Practices Research Network (ASPREN) general practitioner ILI patients. Of these patients, 18% were positive for influenza. Influenza B viruses were the predominant subtype (Figure 6 and Table 1). The proportion of ILI patients positive for other respiratory viruses decreased from 49% in the previous fortnight to 32%. Rhinovirus was the most common virus detected.

Table 1. ASPREN laboratory respiratory viral test results of ILI consultations, 1 January to 21 June 2015.

<table>
<thead>
<tr>
<th></th>
<th>Fortnight (8 June– 21 June 2015)</th>
<th>YTD (1 January – 21 June 2015)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total specimens tested</td>
<td>136</td>
<td>740</td>
</tr>
<tr>
<td>Total Influenza Positive (%)</td>
<td>17.6</td>
<td>13.8</td>
</tr>
<tr>
<td>Influenza A (%)</td>
<td>5.9</td>
<td>5.5</td>
</tr>
<tr>
<td>A (H1N1) pdm09 (%)</td>
<td>0.0</td>
<td>0.8</td>
</tr>
<tr>
<td>A (H3N2) (%)</td>
<td>0.0</td>
<td>3.0</td>
</tr>
<tr>
<td>A (unsubtyped) (%)</td>
<td>5.9</td>
<td>1.8</td>
</tr>
<tr>
<td>Influenza B (%)</td>
<td>11.8</td>
<td>8.2</td>
</tr>
<tr>
<td>Other Resp. Viruses (%)*</td>
<td>32.4</td>
<td>31.1</td>
</tr>
</tbody>
</table>

* Other respiratory viruses include human metapneumovirus, RSV, parainfluenza, adenovirus and rhinovirus.
Figure 6. Proportion of respiratory viral tests positive for influenza in ASPREN ILI patients and ASPREN ILI consultation rate, Australia, 1 January to 21 June 2015, by week.

SOURCE: ASPREN and WA SPN

Sentinel Emergency Department Surveillance

Western Australia Emergency Departments

Viral respiratory presentations to WA emergency departments were variable this fortnight. The current rates of presentations have fallen below the high rate reported in the previous fortnight (Figure 7).

Figure 7. Rate of respiratory viral presentations to Western Australia emergency departments, 1 January 2011 to 21 June 2015, by week.

Source: WA Department of Health
New South Wales Emergency Departments
In the week ending 21 June 2015, the proportion of ILI presentations to all NSW emergency departments was low at 1.0 per 1,000 presentations and was at the lower range for this time of year (Figure 8). ILI and pneumonia admissions to critical care wards decreased this week and returned to the usual range for this time of year.

The NSW emergency department surveillance system uses a statistic called the ‘index of increase’ to indicate when ILI presentations are increasing at a statistically significant rate. An index value greater than 15 suggests that influenza is circulating widely in the NSW community. The index of increase for ILI presentations increased to 9.9 on 21 June, higher than the previous week but below the influenza season threshold of 15.

Figure 8. Rate of influenza-like illness presentations to New South Wales emergency departments, between May and October, 2011 to 2015, by week.

Northern Territory Emergency Departments
During the current reporting period, the overall rate of ILI presentations to NT emergency departments was steady and remains low (Figure 9).

Figure 9. Rate of influenza-like illness presentations to Northern Territory emergency departments, 1 January 2011 to 13 June 2015, by week.

Source: Centre for Disease Control, Department of Health, Northern Territory Government
3. Laboratory Confirmed Influenza Activity

Notifications of Influenza to Health Departments

For the year to date to 19 June, there were 11,585 laboratory confirmed notifications of influenza: 3,344 in Qld; 2,380 in NSW; 2,202 in SA; 1,914 in Victoria; 1,359 in WA; 172 in the ACT; 135 in the Tas and 79 in NT (Figure 10). Notification counts are increasing in most regions but the rate of increase is not yet indicative of the season start.

In the fortnight ending 19 June 2015 there were 1,795 notifications reported to the NNDSS (Figure 10). Qld (486), NSW (353) and SA (378), together contributed 68% of notifications this fortnight, followed by Vic (309), WA (217), Tas (25), ACT (20) and NT (7). A weekly breakdown of notification trends by jurisdiction shows that in recent weeks, influenza notifications have been generally increasing across most jurisdictions (Figure 11).

Figure 10. Notifications of laboratory confirmed influenza, Australia, 1 January to 19 June 2015, by state or territory and week.
So far in 2015, notifications have been highest among those aged over 85 years with a secondary peak in those aged between 5 and 14 years (Figure 12). This age distribution trend is consistent with influenza B infections being prevalent in school aged children and influenza A affecting older age groups.

**Figure 12. Rate of notifications of laboratory confirmed influenza, 1 January to 19 June 2015, by subtype and age group.**
Of the 1,795 influenza notifications reported to the NNDSS this reporting period, 63% were influenza B, 37% were influenza A (30% A(unsubtyped), 6% A(H3N2) and 1% A(H1N1)pdm09) and less than 1% were influenza A&B co-infections (Figure 13).

The distribution of the influenza virus types and subtypes has been variable between jurisdictions. Influenza B was the dominating circulating strain in all jurisdictions this reporting fortnight, except Tas and the NT where overall activity is low.

For the calendar year to 19 June 2015, 60% of cases were reported as influenza A (46% A(unsubtyped), 11% A(H3N2) and 3% A(H1N1)pdm09) and 39% were influenza B. Less than 1% were reported as either influenza A&B co-infections, influenza type C or were untyped (Figure 13).

Figure 13. Notifications of laboratory confirmed influenza, Australia, 1 January to 19 June 2015, by subtype and week.

<table>
<thead>
<tr>
<th>Week ending (date)</th>
<th>1/06/2015</th>
<th>2/06/2015</th>
<th>3/06/2015</th>
<th>5/06/2015</th>
<th>6/06/2015</th>
<th>8/06/2015</th>
<th>9/06/2015</th>
<th>11/06/2015</th>
<th>12/06/2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of notifications</td>
<td>0</td>
<td>200</td>
<td>300</td>
<td>400</td>
<td>500</td>
<td>600</td>
<td>700</td>
<td>800</td>
<td>900</td>
</tr>
<tr>
<td>Source: NNDSS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Sentinel Laboratory Surveillance

Results from sentinel laboratory surveillance systems for this reporting period show that Respiratory Syncytial Virus was the predominant cause of influenza-like illness in this reporting period. Overall, 11% of the respiratory viral tests conducted over this period were positive for influenza (Table 2). Influenza B was the most common influenza type reported this fortnight. For the influenza A viruses for which subtyping data was available, the proportion of A(H3N2) greatly exceeded that of A(H1N1)pdm09 (Figure 14).

Table 2. Sentinel laboratory respiratory virus testing results, 6 June to 19 June 2015.

<table>
<thead>
<tr>
<th>Total specimens tested</th>
<th>NSW NIC</th>
<th>WA NIC</th>
<th>VIC NIC</th>
<th>TAS (PCR testing data)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total influenza positive</td>
<td>455</td>
<td>913</td>
<td>121</td>
<td>179</td>
</tr>
<tr>
<td>Positive influenza A</td>
<td>21</td>
<td>127</td>
<td>20</td>
<td>17</td>
</tr>
<tr>
<td>A(H1N1)pdm09</td>
<td>14</td>
<td>30</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>A(H3N2)</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>A(unsubtyped)</td>
<td>10</td>
<td>1</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Positive influenza B</td>
<td>10</td>
<td>97</td>
<td>10</td>
<td>2</td>
</tr>
<tr>
<td>Positive influenza A&amp;B</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Proportion Influenza Positive (%)</td>
<td>4.6%</td>
<td>13.9%</td>
<td>16.5%</td>
<td>9.5%</td>
</tr>
<tr>
<td>Most common respiratory virus detected</td>
<td>RSV</td>
<td>RSV</td>
<td>RSV</td>
<td>RSV</td>
</tr>
</tbody>
</table>

Source: National Influenza Centres (WA, NSW) and Tasmanian public hospital laboratory PCR testing
In the last fortnight, the Influenza Complications Alert Network (FluCAN) sentinel hospital surveillance system reported 36 admissions with confirmed influenza. Since 1 April 2015, 11% of influenza patients have been admitted directly to ICU and the majority of overall influenza admissions have been with influenza B (54%) (Figure 15). Around 43% of the cases are aged 65 years or older (median age 57 years) and 68% of all cases had significant risk factors present on admission.

**Hospitalisations**

**Influenza Complications Alert Network (FluCAN)**

In the last fortnight, the Influenza Complications Alert Network (FluCAN) sentinel hospital surveillance system reported 36 admissions with confirmed influenza. Since 1 April 2015, 11% of influenza patients have been admitted directly to ICU and the majority of overall influenza admissions have been with influenza B (54%) (Figure 15). Around 43% of the cases are aged 65 years or older (median age 57 years) and 68% of all cases had significant risk factors present on admission.

**Figure 15.** Number of influenza hospitalisations at sentinel hospitals, 1 April to 19 June 2015, by week and influenza subtype.
Queensland Public Hospital Admissions (EpiLog)
Admissions to public hospitals in Queensland with confirmed influenza are detected through the EpiLog system. Up to 21 June 2015, there were 212 admissions, including 25 to intensive care units (Figure 16). The majority of hospital admissions have been associated with influenza B infections (55%), and of those influenza A infections that have been subtyped, these have mostly been A(H3N2)\(^4\). In the year to date, the age distribution of influenza-associated hospitalisations shows a peak in the over 50 year age group. The median age of hospitalised cases is 56 years with a range of less than one to 94 years.

Figure 16. Number of influenza admissions to Queensland public hospitals, with onset from 1 January to 21 June 2015, by week and type of admission.

Deaths Associated with Influenza and Pneumonia

Nationally Notified Influenza Associated Deaths
So far in 2015, 34 influenza associated deaths have been notified to the NNDSS, with a median age of 87 years (range 49 to 102 years). Influenza type A infection was reported in all but three of the influenza associated deaths. Influenza A(H3N2) was associated with deaths in older age groups. 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 impact associated with this disease.

New South Wales Influenza and Pneumonia Death Registrations\(^5\)
Death registration data for the week ending 22 May 2015 show that there were 1.06 pneumonia or influenza associated deaths per 100,000 population in NSW, which is below the epidemic threshold of 1.44 per 100,000 NSW population (Figure 17). Up to 22 May 2015, out of 18,156 deaths in NSW, seven death certificates noted influenza and 1,574 noted pneumonia.
Figure 17. Rate of deaths classified as influenza and pneumonia from the NSW Registered Death Certificates, 1 January 2010 to 22 May 2015.

4. Virological Surveillance

Typing and Antigenic Characterisation

WHO Collaborating Centre for Reference & Research on Influenza (WHO CC), Melbourne

From 1 January to 22 June 2015 there were 270 Australian influenza viruses subtyped by the WHO CC, with 43% influenza A(H3N2), 17% A(H1N1)pdm09 and 40% influenza B. The majority of influenza B viruses were from the B/Yamagata lineage (Table 3).

Table 3. Australian influenza viruses typed by HI from the WHO Collaborating Centre, 1 January to 22 June 2015.

<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>
</tr>
</thead>
<tbody>
<tr>
<td>A(H1N1) pdm09</td>
<td>2</td>
<td>11</td>
<td>3</td>
<td>20</td>
<td>3</td>
<td>0</td>
<td>7</td>
<td>0</td>
<td>46</td>
</tr>
<tr>
<td>A(H3N2)</td>
<td>7</td>
<td>18</td>
<td>0</td>
<td>51</td>
<td>24</td>
<td>1</td>
<td>14</td>
<td>1</td>
<td>116</td>
</tr>
<tr>
<td>B/Victoria lineage</td>
<td>0</td>
<td>3</td>
<td>3</td>
<td>11</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>19</td>
</tr>
<tr>
<td>B/Yamagata lineage</td>
<td>3</td>
<td>9</td>
<td>0</td>
<td>47</td>
<td>24</td>
<td>0</td>
<td>6</td>
<td>0</td>
<td>89</td>
</tr>
<tr>
<td>Total</td>
<td>12</td>
<td>41</td>
<td>6</td>
<td>129</td>
<td>52</td>
<td>1</td>
<td>28</td>
<td>1</td>
<td>270</td>
</tr>
</tbody>
</table>

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

Antiviral Resistance

The WHO CC has reported that from 1 January to 22 June 2015, all influenza viruses (out of 289 tested) have shown sensitivity to the neuraminidase inhibitor oseltamivir and zanamivir by enzyme inhibition assay.

5. International Influenza Surveillance

The WHO has reported that as at 15 June 2015, global influenza activity influenza activity has decreased from its peak of influenza activity in early 2015 to low levels in the Northern Hemisphere. In the southern hemisphere, influenza activity was slightly higher in most countries but remained at low levels.

In Europe and North America, influenza activity was at or approaching inter-seasonal levels. Although influenza A(H3N2) virus dominated for the season, influenza B dominated in recent weeks. In tropical countries of the Americas and tropical Asia, influenza activity continued to decrease and remained low in most countries. In China, Hong Kong (SAR) and Singapore had slight increases in influenza activity while Sri Lanka and Viet Nam both reported a higher level of activity compared to recent weeks.
In New Zealand, through sentinel surveillance, the national ILI consultation rate was increased further to 21.9 per 100,000 patient population for the week ending 21 June 2015, which is below the seasonal threshold. Virological surveillance through both sentinel and non-sentinel laboratories shows that for the year to date, 75% of tested specimens have been influenza type A viruses. Of the influenza A viruses, 54% were A(H3N2), 7% were A(H1N1)pdm09 and the remainder were A(unsubtyped). Of the influenza B viruses, 26% were identified as B/Yamagata lineage, 4% were B/Victoria lineage, and the remainder were not antigenically typed.

National Influenza Centres and other national influenza laboratories from 75 countries, areas or territories reported that for the period 17 May 2015 to 30 May 2015, a total of 2,426 specimens were positive for influenza viruses with 48% being influenza A. Of the subtyped influenza A viruses, 77% were influenza A(H3N2) and 47% were influenza A(H1N1)pdm09. Of the characterised B viruses, 93% belong to the B/Yamagata lineage and 6.7% to the B/Victoria lineage.

**2014-15 northern hemisphere influenza season summary**

Influenza activity in North America peaked towards the end of December, which was early in the season when compared to previous years. In other regions influenza activity generally peaked in early 2015. Overall, influenza activity was higher this season compared to last season in North America and Europe but lower in eastern Asia, North Africa, and the Middle East. Influenza A(H3N2) virus predominated in most regions this season and an increasing proportion of influenza B viruses were detected after the peak of influenza activity.

The predominance of influenza A(H3N2) viruses and increased morbidity and mortality were similar to patterns observed in previous influenza seasons with a predominance of influenza A(H3N2) virus associated with more severe illness, especially in adults aged ≥65 years, compared to morbidity and mortality associated with influenza A(H1N1)pdm09 virus. During this season, most of the circulating influenza A(H3N2) viruses differed from the virus in vaccines used in the northern hemisphere, which may have contributed to the lower vaccine effectiveness estimates this season compared to those of previous seasons.

Regarding antiviral susceptibility, very few influenza viruses circulating this season demonstrated reduced sensitivity to neuraminidase inhibitors.

### 6. State and Territory Surveillance Reports

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

- **Tasmania**: [fluTAS](http://www.dhhs.tas.gov.au/peh/communicable_diseases_prevention_unit)
- **Victoria**: [VIDRL Influenza Surveillance Reports](http://www.vidrl.org.au/surveillance/influenza-surveillance)
- **Western Australia**: [Virus Watch](http://www.public.health.wa.gov.au/3/487/3/virus_watch.pm)

### 7. Data Considerations

The information in this report is reliant on the surveillance sources available to the Department of Health. As access to sources increase as the season progresses, this report will include additional information.

This report aims to increase awareness of influenza activity in Australia by providing an analysis of the various surveillance data sources throughout Australia. 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).
### Geographic Spread of Influenza Activity

<table>
<thead>
<tr>
<th>Activity level</th>
<th>Laboratory notifications</th>
<th>Influenza outbreaks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sporadic</td>
<td>Small numbers of lab confirmed influenza detections, not above expected background level*.</td>
<td>AND</td>
</tr>
<tr>
<td>Localised</td>
<td>Lab confirmed influenza detections above background level** in less than 50% of the influenza surveillance region.</td>
<td>OR</td>
</tr>
<tr>
<td>Regional</td>
<td>Significant*** numbers of lab confirmed influenza detections above background level in less than 50% of the influenza surveillance region*.</td>
<td>OR</td>
</tr>
<tr>
<td>Widespread</td>
<td>Significant*** numbers of lab confirmed influenza detections above background level in equal to or greater than 50% of the influenza surveillance region*.</td>
<td>OR</td>
</tr>
</tbody>
</table>

+ Expected background level - defined by jurisdictional epidemiologists; represents the expected low level influenza activity that occurs outside of jurisdictional seasonal activity and is the baseline against which comparisons of change can be based.

++ Above background level - above the expected background level* threshold as defined by jurisdictional epidemiologists.

* Influenza surveillance region within the jurisdiction/area as defined by jurisdictional epidemiologists.

+++ Significant numbers - a second threshold to be determined by the jurisdictional epidemiologists to indicate the level is significantly above the expected background level*.

** Areas to be subdivisions of the NT (2 regions), WA (3 regions) and QLD (3 regions) that reflect significant climatic differences within those jurisdictions that result in differences in the timing of seasonal flu activity on a regular basis.

### Change in activity level

The change in influenza activity level is based on a comparison of the activity level identified in the current reporting period with the previous period.

### Syndromic Surveillance Activity

<table>
<thead>
<tr>
<th>Syndromic surveillance systems*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evidence of increase in ILI via syndromic surveillance systems</td>
</tr>
<tr>
<td>Evidence of unchanged activity in ILI via syndromic surveillance systems</td>
</tr>
<tr>
<td>Evidence of a decrease in ILI via syndromic surveillance systems</td>
</tr>
</tbody>
</table>

* Syndromic surveillance systems include GP ILI sentinel surveillance, ED ILI surveillance and Flu tracking. The activity indicated by ILI based syndromic surveillance systems may be due to a variety of respiratory viruses. Therefore the report should indicate if other evidence suggests that the increase is suspected to be influenza activity or due to another respiratory pathogen. Syndromic surveillance is reported on a jurisdiction wide basis only.

### FluTracking

FluTracking is a project of the University of Newcastle, the Hunter New England Area Health Service and the Hunter Medical Research Institute. FluTracking is an online health surveillance system to detect epidemics of influenza. It involves participants from around Australia completing a simple online weekly survey, which collects data on the rate of ILI-related symptoms and health seeking behaviour in communities. For further information refer to the [FluTracking website](http://www.flutracking.net).

### National Health Call Centre Network

The National Health Call Centre Network (NHCCN) provides a nationally consistent approach for telephone based health advice to the community through registered nurses and is supported by electronic decision support algorithms. Data collected through the NHCCN is provided to the Department to enable monitoring of the number and proportion of calls relating to predefined patient guidelines. These guidelines have been grouped to create an influenza-like illness syndrome to enable monitoring of community disease activity. These data currently do not include Queensland or Victoria. For further information refer to the [Health Direct website](http://www.healthdirect.org.au).

### Sentinel General Practice Surveillance

The sentinel general practice ILI surveillance data between 2010 and 2015 consists of two main general practitioner schemes, the Australian Sentinel Practices Research Network (ASPREN) (incorporating the Sentinel Practitioners Network of Western Australia) and a Victorian Infectious Disease Reference Laboratory (VIDRL) coordinated sentinel GP ILI surveillance program. Additionally, between 2008 and 2009 a Northern Territory surveillance scheme also operated,
however this scheme has since been incorporated in to the ASPREN scheme. The national case definition for ILI is presentation with fever, cough and fatigue.

The ASPREN currently has sentinel GPs who report ILI presentation rates in NSW, NT, SA, ACT, VIC, QLD, TAS and WA. The VIDRL scheme operates in metropolitan and rural general practice sentinel sites throughout Victoria and also incorporates ILI presentation data from the Melbourne Medical Deputising Service. As jurisdictions joined ASPREN at different times and the number of GPs reporting has changed over time, the representativeness of sentinel general practice ILI surveillance data in 2015 may be different from that of previous years.

ASPREN ILI surveillance data are provided to the Department on a weekly basis throughout the year, whereas data from the VIDRL coordinated sentinel GP ILI surveillance program is provided between May and October each year.

Approximately 20% of all ILI patients presenting to ASPREN sentinel GPs are swabbed for laboratory testing. Samples are tested for a range of respiratory viruses including influenza A, influenza B, rhinovirus, respiratory syncytial virus, parainfluenza, adenovirus, human metapneumovirus, *Mycoplasma pneumoniae* and *Bordetella pertussis*. Please note the results of ASPREN ILI laboratory viral tests now include Western Australia.

Further information on ASPREN is available at the ASPREN website (www.dmac.adelaide.edu.au/aspren) and information regarding the VIDRL coordinated sentinel GP ILI surveillance program is available at from the VIDRL website (www.victorianflusurveillance.com.au).

**Sentinel Emergency Department Data**

(i) **Western Australia** – Emergency Department ILI cases are determined from presentations coded as upper respiratory tract infection [J06.9] or viraemia [B34.9]), and are extracted from the Western Australian Emergency Department Information System (EDIS). These EDIS diagnostic codes were chosen as they best correlated with notification and laboratory detection data for influenza virus. The EDIS system incorporates ICD-10 clinical-coded presentation and admission data from the most significant public or public/private hospitals with emergency department services in the greater Perth metropolitan area (Royal Perth Hospital, Sir Charles Gairdner Hospital, Fiona Stanley Hospital, Princess Margaret Hospital, King Edward Memorial Hospital, Armadale-Kelmscott Memorial Hospital, Joondalup Health Campus, Swan District Hospital and Rockingham General Hospital), plus Bunbury Regional Hospital from the Southwest city of Bunbury. For further information, please refer to the [Western Australian Department of Health Virus WAtch website](www.public.health.wa.gov.au/3/487/3/virus_watch.pm).

(ii) **New South Wales** – Emergency Department ILI surveillance data are extracted from the ‘NSW Health Influenza Surveillance Report’. NSW Health Public Health Real-time Emergency Department Surveillance System (PHREDSS) managed by the Centre for Epidemiology and Evidence, NSW Ministry of Health. Data from 59 NSW emergency departments (ED) are included. Comparisons are made with data for the preceding five years. Recent counts are subject to change. For further information, please refer to the [NSW Health Influenza Surveillance website](www.health.nsw.gov.au/Infectious/Influenza/Pages/reports.aspx).

(iii) **Northern Territory** – This syndromic surveillance system collects data from all the public hospitals in the Northern Territory: Royal Darwin, Gove District, Katherine District, Tennant Creek and Alice Springs. The definition of ILI is presentation to ED in the NT with one of the following presentations: febrile illness, cough, respiratory infection, or viral illness. The denominator for rate calculations is not the total ED consultations for that day but a proportion of those which are uploaded into the data warehouse for surveillance purposes. This may change in the future.

**National Notifiable Diseases Surveillance System (NNDSS)**

Laboratory confirmed influenza (all types) is notifiable under public health legislation in all jurisdictions in Australia. Confirmed cases of influenza are notified through the NNDSS by all jurisdictions. The national case definition is available from the [Department of Health's website](www.health.gov.au/internet/main/publishing.nsf/Content/cda-surveil-ndcss-casedef-cd_flu.htm). Analyses of Australian notifications are based on the diagnosis date, which is the earliest of the onset date, specimen date or notification date.

**Sentinel Laboratory Surveillance data**

Laboratory testing data are provided weekly directly from PathWest (WA), VIDRL (VIC), ICPMR (NSW), and Tasmanian public hospital laboratory PCR testing results. For Tasmania, the PCR results represent testing at a major Tasmanian public hospital laboratory, which also accepts referred specimens from all departments of emergency medicine and hospital inpatients from across the state.

**Influenza Complications Alert Network (FluCAN)**

The Influenza Complications Alert Network (FluCAN) sentinel hospital system monitors influenza hospitalisations at the following sites:

- Australian Capital Territory – the Canberra Hospital and Calvary Hospital;
• New South Wales – John Hunter Hospital, Westmead Hospital and Children’s Hospital at Westmead*;
• Northern Territory – Alice Springs Hospital;
• Queensland – the Mater Hospital, Princess Alexandra Hospital and Cairns Base Hospital;
• South Australia – Royal Adelaide Hospital;
• Tasmania – Royal Hobart Hospital;
• Victoria – Geelong University Hospital, Royal Melbourne Hospital, Monash Medical Centre and Alfred Hospital;
• Western Australia – Royal Perth Hospital and Princess Margaret Hospital*.

*=Paediatric hospital site

Influenza counts are based on active surveillance at each site for admissions with PCR-confirmed influenza in adults. Some adjustments may be made in previous periods as test results become available. ICU status is as determined at the time of admission and does not include patients subsequently transferred to ICU. Dates listed as date of admission except for patients where date of test is more than 7 days after admission. Admissions listed as influenza A includes untyped and seasonal strains and may include H1N1/09 strains if not typed.

Queensland Public Hospital Admissions (EpiLog)

EpiLog is a web based application developed by Queensland Health. This surveillance system generates admission records for confirmed influenza cases through interfaces with the inpatient information and public laboratory databases. Records are also able to be generated manually. Admissions data reported are based on date of reported onset. For further information refer to Old Health’s Influenza Surveillance website (www.health.qld.gov.au/ph/cdb/sru_influenza.asp).

Deaths associated with influenza and pneumonia

Nationally reported influenza associated deaths are notified by jurisdictions to the NNDSS, which is maintained by the Department of Health. Notifications of influenza associated deaths are likely to underestimate the true number of influenza associated deaths occurring in the community.

Deaths registration data is routinely reviewed for deaths attributed to pneumonia or influenza. While pneumonia has many causes, a well-known indicator of seasonal and pandemic influenza activity is an increase in the number of death certificates that mention pneumonia or influenza as a cause of death. The predicted seasonal baseline estimates the predicted rate of influenza or pneumonia deaths in the absence of influenza epidemics. If deaths exceed the epidemic threshold, then it may be an indication that influenza is beginning to circulate widely. NSW influenza and pneumonia deaths data are collected from the NSW Registry of Births, Deaths and Marriages. The figure is extracted from the current ‘NSW Health Influenza Surveillance Report’. Please note the following points on interpreting death data:

- The number of deaths mentioning “Pneumonia or influenza” is reported as a rate per 100,000 NSW population. Using the NSW population provides a more stable and reliable denominator than deaths from all causes. This is because pneumonia and influenza are known to contribute to increases in deaths from non-respiratory illnesses, such as deaths due to ischaemic heart disease. As the number of these deaths will increase with rises in influenza activity, the actual effect of influenza on mortality rates will be obscured if all-cause mortality is used as the denominator. This limitation is avoided by using the NSW population, which is relatively constant throughout the year, as the denominator.
- Deaths referred to a coroner during the reporting period may not be available for analysis. Deaths in younger people may be more likely to require a coronial inquest. Therefore influenza-related deaths in younger people may be under-represented in these data.
- The interval between death and death data availability is usually at least 7 days, and so these data are one week behind reports from emergency departments and laboratories. In addition, previous weekly rates may also change due to longer delays in reporting some deaths.


WHO Collaborating Centre for Reference & Research on Influenza

Data on Australian influenza viruses are provided weekly to the Department from the WHO Collaborating Centre for Reference & Research on Influenza based in Melbourne, Australia.

8. References


