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 is variable across Australia; increasing in some regions, while low and stable in others.
- Respiratory viruses other than influenza are more commonly causing influenza-like illness (ILI) in the community, with respiratory syncytial virus (RSV) and rhinovirus most commonly the cause of ILI presentations to sentinel general practitioners and various non-influenza viruses being detected by sentinel laboratories.
- Nationally, influenza A(H1N1)pdm09 has been the predominant influenza virus circulating so far this year. However in the last fortnight influenza A(H1N1)pdm09 and influenza A(H3N2) circulated at similar levels nationally, noting jurisdictional variation.
- To date, the seasonal influenza vaccines appear to be a good match for circulating virus strains.

**ANALYSIS**

**1. Geographic Spread of Influenza Activity in Australia**

In the fortnight ending 8 July 2016 (week 27), influenza activity was reported by state and territory health departments as increased when compared with the previous fortnight in most southern regions, with the exception of the Australian Capital Territory (ACT), Tasmania (TAS) and Victoria (VIC) where activity was stable (Figure 1). Influenza activity in the northern regions of Australia was also stable this fortnight.

The geographic spread of influenza activity was reported as regional in New South Wales (NSW) and the Metro region of Western Australia (WA); localised in the Southern region of Queensland (QLD), VIC and the Country region of WA. All other regions reported sporadic activity.

Influenza-like illness (ILI) activity reported from syndromic surveillance systems when compared with the previous fortnight was reported as increasing in NSW and WA, and unchanged in all other jurisdictions.

**Figure 1. Map of influenza activity by state and territory, Australia, 25 June to 8 July 2016.**
2. Laboratory Confirmed Influenza Activity

Sentinel Laboratory Surveillance

Influenza continued to circulate at low levels through weeks 26 and 27, with a mixture of rhinovirus, respiratory syncytial virus (RSV), picornavirus and coronavirus commonly detected by sentinel laboratories. The percentage of tests positive for influenza across all sentinel laboratories was 9.4% in week 27, an increase from 8.4% in week 26 (Figure 2).

As is previous weeks, the WA sentinel laboratory reported a higher percentage of tests positive for influenza than the national average in the last two weeks; while the NSW and VIC sentinel laboratories and Tasmanian public hospital laboratories reported lower percentages.

Influenza A was the most common influenza virus detected across all sentinel laboratories in the reporting fortnight, however this is largely driven by detections by the NSW sentinel laboratory where 98% of influenza detections were due to influenza A. Whereas influenza detections by the WA sentinel laboratory showed that influenza A H1N1pdm09, influenza A(H3N3) and influenza B were all co-circulating with no one subtype predominating.

Notifications of Influenza to Health Departments

Notifications of laboratory confirmed influenza to the National Notifiable Diseases Surveillance System (NNDSS) have increased for the sixth consecutive week (Figure 3). For the year to 8 July, a total of 14,223 notifications of laboratory confirmed influenza were reported to the NNDSS: 4,911 in NSW; 4,709 in Qld; 1,843 in VIC; 1,402 in WA; 968 in South Australia (SA); 138 in ACT; 128 in the Northern Territory (NT) and 124 in TAS. The national rise in notifications is driven by increase in notifications seen in recent weeks in NSW, QLD, VIC and WA (Figure 4).

For the year to 8 July, 82% of notifications of laboratory confirmed influenza to the NNDSS were influenza A (56% A(unsubtype)), 18% influenza A(H1N1)pdm09 and 7% influenza A (H3N2), 18% were influenza B and less than 1% were influenza C, influenza A&B co-infections or untyped (Figure 5). Influenza A(H1N1)pdm09 has been the predominant influenza A virus type across all jurisdictions so far this year. The proportion of influenza B reported by jurisdictions has largely been consistent with that seen at the national level this year, with the exceptions of SA and WA where a higher proportion of influenza B has been reported (26% and 29%, respectively)(Figure 6).

In the most recent fortnight, 87% of notifications of laboratory confirmed influenza to the NNDSS were influenza A (57% A(unsubtype), 15% influenza A(H1N1)pdm09 and 15% influenza A (H3N2)), 13% were influenza B and less than 1% were influenza C, influenza A&B co-infections or untyped. Notifications of influenza A(H3N2) have continued to increase this fortnight, most notably in NSW and QLD.
Figure 3. Notifications of laboratory confirmed influenza, Australia, 1 January 2012 to 8 July 2016, by month and week of diagnosis.

Source: NNDSS

Figure 4. Notifications of laboratory confirmed influenza, 2 January to 8 July 2016, by state or territory and week.

Source: NNDSS
3. 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 so far this year remain on the lower range of recent seasons (Figure 7). The proportion of participants reporting fever and cough was relatively stable across weeks 26 (2.2%) and 27 (2.1%). The proportion of participants reporting fever, cough and absence from normal duties was also stable over the fortnight (1.4% in both weeks). So far this year 60% of all participants and 80% of participants who identify as working face-to-face with patients reported receiving the seasonal influenza vaccine.¹
Sentinel General Practice Surveillance

Sentinel general practitioner ILI consultations increased this fortnight from 6.2 per 1,000 consultations in week 26 to 7.6 per 1,000 consultations in week 27 (Figure 8). This increase is consistent with the trends in previous years.

Of the 77 specimens taken from ILI patients seen by a sentinel practitioner during the current reporting fortnight, 9 (12%) were positive for influenza, with influenza B being the predominant influenza subtype identified (Figure 9). RSV and rhinovirus were the most common non-influenza viruses detected this fortnight.
4. Hospitalisations

Sentinel Hospital Surveillance

Admissions with confirmed influenza to sentinel hospitals have increased in the last fortnight; however remain below the seasonal threshold. Since seasonal surveillance commenced through the Influenza Complications Alert Network (FluCAN) sentinel hospital surveillance system on 1 April 2016, a total of 160 people have been admitted with confirmed influenza, of which 41 were children aged less than 15 years. Approximately 14% of influenza patients have been admitted directly to ICU and similar to other systems, the majority of influenza admissions have been due to influenza A (92%) (Figure 10). Overall, 67% of patients were reported with significant risk factors, with the presence of risk factors increasing with age.

Figure 10. Number of influenza hospitalisations at sentinel hospitals, 1 April to 8 July 2016, by month and week of and influenza subtype.

Source: FluCAN Sentinel Hospitals
Paediatric Severe Complications of Influenza
The Australian Paediatric Surveillance Unit (APSU) conducts seasonal surveillance between July and October annually of children aged 15 years and under who are hospitalised with severe complications of influenza. Between 1 July 2016 and 10 July 2016, there were no hospitalisations associated with severe complications of influenza reported to APSU.

5. Deaths Associated with Influenza and Pneumonia

Nationally Notified Influenza Associated Deaths
So far in 2016, 10 influenza associated deaths have been notified to the NNDSS. The median age of deaths notified was 55 years (range 1 to 88 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 2016 up to the week ending 24 June 2016 show deaths attributed to pneumonia or influenza are low and below the epidemic threshold.

Figure 11. Rate of deaths classified as influenza and pneumonia from the NSW Registered Death Certificates, 2011 to 13 May 2016.

6. Virological Surveillance

Australian Influenza Vaccines Composition 2016
The influenza virus strains included in the 2016 seasonal influenza vaccines in Australia are:

- A/California/7/2009, (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 (Quadrivalent influenza vaccine only).
Typing and Antigenic Characterisation

In 2016, up to 12 July the World Health Organization Collaborating Centre for Reference and Research on Influenza (WHOCC) characterised 327 influenza viruses (Table 1). When further characterised for similarity to the vaccine components, isolates appeared to be well matched. All the influenza A(H3N2) and influenza B isolates were characterised as similar to the vaccine components. A small number of influenza A(H1N1)pdm09 isolates (n=12) were characterised as low reactors.

Table 1. Australian influenza viruses typed by HI from the WHOCC, 1 January to 12 July 2016.

<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>3</td>
<td>84</td>
<td>14</td>
<td>114</td>
<td>19</td>
<td>6</td>
<td>7</td>
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<tr>
<td>A(H3N2)</td>
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<td>8</td>
<td>0</td>
<td>5</td>
<td>3</td>
<td>0</td>
<td>0</td>
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<td>16</td>
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<tr>
<td>B/Victoria lineage</td>
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<td>9</td>
<td>1</td>
<td>14</td>
<td>5</td>
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<td>0</td>
<td>3</td>
<td>35</td>
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<tr>
<td>B/Yamagata lineage</td>
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<td>0</td>
<td>13</td>
<td>0</td>
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</tr>
<tr>
<td>Total</td>
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<td>106</td>
<td>15</td>
<td>146</td>
<td>27</td>
<td>6</td>
<td>7</td>
<td>13</td>
<td>327</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.

Antiviral Resistance

The WHO CC reported that from 1 January to 12 July 2016, of the 351 influenza viruses tested one has shown highly reduced inhibition to the antiviral drug Oseltamivir.

7. International Surveillance

The World Health Organization reported that in temperate countries in the southern hemisphere, influenza activity increased steadily in the last few weeks in South America and South Africa, but remained low overall in most of Oceania. Influenza activity in the temperate zone of the northern hemisphere was at inter-seasonal levels.

DATA CONSIDERATIONS

The information in this report is reliant on the surveillance sources available to the Department of Health. As access to sources vary throughout the season, this report will draw on available information.

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).

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).

REFERENCES

