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

**KEY INDICATORS**

Influenza activity and severity in the community is 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>general practitioner (GP) consultations for influenza-like illness (ILI);</td>
</tr>
<tr>
<td></td>
<td>emergency department (ED) presentations 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>

**SUMMARY**

- Nationally influenza activity continued to decrease this fortnight.
- Although some jurisdictions have continued to report widespread activity above baseline levels, the majority of jurisdictions have reported regional and localised activity. Influenza activity was reported as decreasing or stable across all jurisdictions.
- Influenza-like illness (ILI) activity has, for the most part, continued to decrease across all ILI surveillance systems.
- During this fortnight there were 2,730 laboratory confirmed notifications of influenza. Nationally, notifications have continued to decrease. Half of notifications this fortnight were from Queensland, where there continues to be a decreasing trend.
- Influenza A(H3N2) is the predominant circulating virus, while the proportion of influenza B is continuing to increase towards the end of the season comprising over 40% of notifications over the reporting period. So far this year there have been very few notifications of pandemic (H1N1) 2009.
- In 2010 and 2011 with the predominance of the pandemic (H1N1) 2009 virus, the age distribution of notifications showed a downward trend with increasing age. With the predominance of influenza A(H3N2) in 2012, the age distribution of notifications are currently reflective of traditional pre-pandemic seasons with peaks among those aged 0-4 and over 70 years.
- As at 14 September 2012, there have been 39,465 laboratory confirmed cases of influenza reported. Excluding 2009, notifications of influenza in 2012 started their seasonal increase earlier and rose sharply in comparison to previous years. The intensity of the rise in cases for 2012 has resulted in a higher and prolonged peak in notifications.
- Influenza associated hospitalisations have continued to decrease following a peak in mid-July. Known medical co-morbidities have been reported in 76% of hospitalised cases and hospitalisations peak among those aged over 70 years, with a secondary peak for those aged 0-9.
- The WHO has reported that influenza activity has decreased in the majority of the temperate countries of the southern hemisphere. Influenza A(H3N2) viruses have been the most commonly reported across the southern hemisphere region, however the previous predominance of pandemic (H1N1) 2009 reported in Central America has transitioned to a predominance of influenza B.
- On 19 September 2012, the WHO recommended that vaccines for the 2013 southern hemisphere influenza season contain the following: an A/California/7/2009 (H1N1)pdm09-like virus; an A/Victoria/361/2011 (H3N2)-like virus; and a B/Wisconsin/1/2010-like virus. This composition is consistent with the 2012-13 northern hemisphere vaccine recommendations, in which the A(H3N2) and influenza B viruses were changed. In addition, the WHO has recommended that quadrivalent vaccines contain the above three viruses and a B/Brisbane/60/2008-like virus, which is currently in the 2012 southern hemisphere vaccine.
1. Geographic Spread of Influenza Activity in Australia

In the fortnight ending 14 September 2012, the geographic spread of influenza activity reported by state and territory Health Departments was ‘widespread’ in New South Wales, Victoria and South Australia; and ‘regional’ in the Top End of the Northern Territory. The Western Australian regions, the Centre of the Northern Territory and the ACT reported localised activity, while the Queensland regions and Tasmania reported sporadic activity (figure 1). Across Australia influenza activity was reported as either decreasing or no change in activity. During this period all jurisdictions reported no evidence of an increase in ILI via syndromic surveillance systems (with the exception of the ACT, which did not report). Definitions of these activity levels are provided in the Data Considerations section of this report.

Figure 1. Map of influenza activity by state and territory, 1 to 14 September 2012

2. Influenza-like Illness Activity

Community Level Surveillance

**FluTracking**

FluTracking, a national online system for collecting data on ILI in the community, noted that in the week ending 16 September 2012, fever and cough was reported by 2.1% of vaccinated participants and 2.5% of unvaccinated participants (figure 2). Fever, cough and absence from normal duties was reported by 1.2% of vaccinated participants and 1.4% of unvaccinated participants. The downward trend in rates of ILI among FluTracking participants has continued during this most recent fortnight and is consistent with previous years for the same period (figure 3).

Up to 16 September 2012, 54.2% of participants reported having received the seasonal vaccine so far. Of the 2,575 participants who identified as working face-to-face with patients, 73.2% have received the vaccine.

Figure 2. Proportion of cough and fever among Flutracking participants, week ending 6 May 2012 to 16 September 2012, by vaccination status and week

Source: FluTracking.
Figure 3. Proportion of fever and cough among FluTracking participants, between May and October, 2008 to 2012, by week

National Health Call Centre Network
In the week ending 16 September 2012, the number of ILI related calls to the National Health Call Centre Network (NHCCN) continued to decrease with 938 calls representing 7.2% of total calls. This decrease follows a peak of 1,836 ILI related calls (12.7%) in mid-July. The number and proportion of ILI weekly related calls to the NHCCN in 2012 have been higher than the peaks experienced in 2010 and 2011 (figure 4).

Figure 4. Number of calls to the NHCCN related to ILI and percentage of total calls, Australia, 1 January 2010 to 16 September 2012, by week

Sentinel General Practice Surveillance
In the week ending 16 September 2012, sentinel general practitioner ILI consultation rates increased to 9.2 cases per 1,000 consultations, although it remains well below the peak of 18.2 cases in mid-July (figure 5). Compared with previous years (excluding 2009), there was an earlier increase and a slightly higher peak in ILI consultation rates compared with the seasonal peaks reported in 2010 and 2011.
Figure 5. Weekly rate of ILI reported from GP ILI surveillance systems, 1 January 2008 to 16 September 2012, by week*

In the fortnight ending 16 September 2012, specimens were collected from over 44% of ASPREN ILI patients. Of these patients, 28% were positive for influenza, down from 38% in the previous fortnight. Fourteen per cent were positive for influenza type A and 13% were influenza type B with the majority likely to be attributed to A(H3N2) (figure 6 and table 1). Around 18% of specimens collected were positive for other respiratory viruses this fortnight, with the majority of these being rhinovirus, RSV or human metapneumovirus.

Table 1. ASPREN laboratory respiratory viral test results of ILI consultations, 1 January 2012 to 16 September 2012.

<table>
<thead>
<tr>
<th>Fortnight (18 August – 16 September 2012)</th>
<th>YTD (1 January – 16 September 2012)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total specimens tested</td>
<td>158</td>
</tr>
<tr>
<td>Total Influenza Positive (%)</td>
<td>27.8</td>
</tr>
<tr>
<td>Influenza A (%)</td>
<td>14.6</td>
</tr>
<tr>
<td>Pandemic (H1N1) 2009 (%)</td>
<td>0.0</td>
</tr>
<tr>
<td>Influenza A (unsubtyped) (%)</td>
<td>14.6</td>
</tr>
<tr>
<td>Influenza B (%)</td>
<td>13.3</td>
</tr>
<tr>
<td>Other Resp. Viruses (%)</td>
<td>18.4</td>
</tr>
</tbody>
</table>

* Other respiratory viruses include RSV, parainfluenza, adenovirus and rhinovirus.

Figure 6. Proportion of respiratory viral tests positive for influenza in ILI patients and GP ILI consultation rate, 1 January 2012 to 16 September 2012, by week

SOURCE: ASPREN and WA SPN
Sentinel Emergency Department Surveillance

Western Australia Emergency Departments
In the week ending 16 September, respiratory viral presentations to Perth emergency departments increased, however, the proportion of cases admitted fell from 6.9% to 5.5% within the period. The current levels are similar to the peak levels experienced in previous years (figure 7). Over the fortnight to 16 September there were 1,096 presentations, including 68 admissions.

Figure 7. Number of respiratory viral presentations to Western Australia emergency departments, 1 January 2008 to 16 September 2012, by week

New South Wales Emergency Departments
In the week ending 14 September 2012 the number of patients presenting to NSW emergency departments with influenza-like illness was relatively similar to the previous week at 1.3 cases per 1000 presentations. The presentation rate was below the usual range for this time of year and well below the peak of activity seen in mid-July (figure 8). Total admissions from emergency departments to critical care units for ILI and pneumonia increased this week and were slightly above the usual range for this time of year.

Figure 8. Rate of influenza-like illness presentations to New South Wales emergency departments, between May and October, 2008 to 2012, by week

Source: WA ‘Virus Watch’ Report

Source: NSW Influenza Weekly Epidemiology Report
Northern Territory Emergency Departments

In the fortnight ending 15 September 2012, 358 patients presented with ILI to emergency departments across the Northern Territory compared with 365 in the previous fortnight. The number of presentations to emergency departments in the Northern Territory between May and August 2012 were slightly higher compared to previous years (excluding 2009), however they remain well below the peak reported in 2011 (figure 9).

Figure 9. Number of ILI presentations to Northern Territory emergency departments, 1 January 2008 to 15 September 2012, by week

3. Laboratory Confirmed Influenza Activity

Notifications of Influenza to Health Departments

During the reporting period there were 2,730 laboratory confirmed influenza notifications reported to the NNDSS, with a 49% decrease on notifications reported in the previous fortnight (5,371). Nationally, notifications have continued to decrease (figure 10). Half of notifications this fortnight were from Queensland (1,356) where there continues to be a decreasing trend. Notifications reported from all other jurisdictions this fortnight were: Victoria (511), New South Wales (294), Western Australia (281), South Australia (224), the ACT (27), Tasmania (19), and the NT (18). A weekly breakdown of trends by state and territory highlights that notifications are decreasing across all jurisdictions (figure 11).

Figure 10. Notifications of laboratory confirmed influenza, Australia, 1 January to 14 September 2012, by state or territory and week
In 2010 and 2011, with the predominance of the pandemic (H1N1) 2009 virus, the age distribution of influenza notifications showed a downward trend with increasing age. However, in 2012 with the predominance of influenza A(H3N2), the age distribution of influenza notifications has shown a bimodal trend with peaks in those aged 0-4 years and in those aged 70 years and over, with a small peak among those aged 30-44 years. This age distribution is more reflective of traditional pre-pandemic seasons (figure 12).

Up to 14 September, there have been 39,465 laboratory confirmed notifications of influenza diagnosed during 2012 (figure 13). Of these notifications, there have been 15,378 in Queensland, 6,986 in New South Wales, 5,170 in South Australia, 5,071 in Victoria, 4,860 in Western Australia, 1,036 in Tasmania, 609 in the ACT and 355 in the Northern Territory.

Source: NNDSS

Figure 11. Notifications of laboratory confirmed influenza, 1 January to 14 September 2012, by state or territory and week

Figure 12. Rates of laboratory confirmed influenza, 1 January 2008 to 14 September 2012, by age group

Source: NNDSS
Of the 2,730 influenza notifications reported to the NNDSS this reporting period, 1,564 were influenza A (1,345 were influenza A (unsubtype), 212 were A(H3N2) and 7 were pandemic (H1N1) 2009), 1,156 were influenza B and 10 notifications were reported as influenza C or untyped (figure 13). The majority of type A (unsubtype) notifications are likely to be attributed to A(H3N2).

Up to 14 September 2012, 31,603 cases (80%) were reported as influenza A (62% influenza A (unsubtype), 17% A(H3N2) and 1% pandemic (H1N1) 2009) and 7,759 (20%) were influenza B. A further 43 (<1%) were influenza type A&B, 5 (<1%) were influenza C, and 55 (<1%) were untyped (figure 14).

Nationally, influenza A(H3N2) and influenza B are the predominant circulating viruses. So far in 2012 there have been very few notifications of pandemic (H1N1) 2009 reported. In recent weeks there has been an increasing proportion of influenza B notifications across a number of jurisdictions. Influenza B currently represents 60% of notifications in New South Wales, 59% in the Australian Capital Territory, 53% in Tasmania and 47% in Queensland. In recent years, the proportion influenza A(H3N2) viruses circulating in the community has been low. This may have led to some reductions in immunity across the population and thus be a contributing factor to both the predominance of this virus among the population and the apparent intensity of the season.
Sentinel Laboratory Surveillance

Results from sentinel laboratory surveillance systems for this reporting period show that 15.0% of the respiratory viral tests conducted over this period were positive for influenza, a decrease from 25.1% in the previous fortnight (table 2). Influenza A(H3N2) was the predominant influenza virus reported. A breakdown of subtypes within this positive proportion by fortnight is highlighted in figure 15.

Table 2. Sentinel laboratory respiratory virus testing results, 1 September to 14 September 2012

<table>
<thead>
<tr>
<th></th>
<th>NSW NIC</th>
<th>WA NIC</th>
<th>VIC NIC</th>
<th>TAS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total specimens tested</td>
<td>424</td>
<td>1017</td>
<td>207</td>
<td>207</td>
</tr>
<tr>
<td>Total influenza positive</td>
<td>28</td>
<td>202</td>
<td>37</td>
<td>11</td>
</tr>
<tr>
<td>Positive influenza A</td>
<td>13</td>
<td>126</td>
<td>25</td>
<td>3</td>
</tr>
<tr>
<td>Pandemic (H1N1) 2009</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>A (H3N2)</td>
<td>13</td>
<td>124</td>
<td>22</td>
<td>1</td>
</tr>
<tr>
<td>A (unsubtyped)</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Positive influenza B</td>
<td>15</td>
<td>76</td>
<td>12</td>
<td>8</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></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Most common respiratory virus detected</td>
<td>Rhinovirus</td>
<td>Influenza A</td>
<td>Influenza A</td>
<td>Rhinovirus</td>
</tr>
</tbody>
</table>

Source: National Influenza Centres (WA, Vic, NSW) and Tasmanian laboratories (PCR testing)

Figure 15. Proportion of sentinel laboratory tests positive for influenza, 26 May to 14 September 2012, by subtype and fortnight

Hospitalisations

Influenza Complications Alert Network (FluCAN)
The Influenza Complications Alert Network (FluCAN) sentinel hospital surveillance system has reported that the number of confirmed influenza hospital admissions continues to decrease since the peak in mid-July. Since 7 April 2012, 9% of influenza patients have been admitted directly to ICU. Overall, the majority of admissions have been with influenza A, with 16% of cases due to influenza B (figure 16). Around 47% of the cases are aged 65 years and over (median age 61 years) and 76% of all cases have known medical co-morbidities.

Figure 16. Number of influenza hospitalisations at sentinel hospitals, 7 April to 14 September 2012, by week and influenza subtype

Source: FluCAN Sentinel Hospitals
Queensland Public Hospital Admissions (EpiLog)
Admissions to public hospitals in Queensland of confirmed influenza are detected through the EpiLog system. Up to 16 September 2012, there have been 1,540 admissions of confirmed influenza this year, including 145 to intensive care units. In the most recent fortnight, hospital admissions have declined to 62 admissions from the peak of 343 admissions in mid-August (figure 17). The age distribution of confirmed influenza admissions in 2012 shows a bimodal distribution with the highest peak in the 70 years and over age group, followed by a secondary peak in the 0-9 year age group.

Figure 17. Number of influenza admissions to Queensland public hospitals, with onset from 1 January to 16 September 2012, by week and type of admission

Paediatric Severe Complications of Influenza
The Australian Paediatric Surveillance Unit conducts seasonal surveillance of children aged 15 years and under who are hospitalised with severe complications of influenza. Between 1 July and 19 September 2012, there have been 33 hospitalisations associated with severe complications of influenza, including 10 ICU admissions. More than 60% of hospitalisations were associated with influenza A infections, with the remaining hospitalisations associated with influenza B. Around one-third of the cases had an underlying chronic condition reported.

Deaths Associated with Influenza and Pneumonia
Nationally Notified Influenza Associated Deaths
So far in 2012, 47 influenza associated deaths have been notified to the NNDSS, with a median age of 81 years. Around 90% of cases were reported as having influenza A(unsubtyped) or A(H3N2), with the A(unsubtyped) infections also likely to be attributable to A(H3N2). The number of influenza associated deaths reported to the NNDSS are reliant on the follow up of cases to determine the outcome of their infection and most likely do not represent the true mortality impact associated with this disease.

New South Wales Influenza and Pneumonia Death Registrations
Death registration data for the week ending 24 August 2012 show that there were 1.96 pneumonia or influenza associated deaths per 100,000 population in NSW, which is above the epidemic threshold of 1.71 per 100,000 NSW population (Figure 18). Between 1 July and 24 August 2012, the majority of deaths were in persons aged over 65 years. The rate of deaths classified as influenza and pneumonia was above the epidemic threshold for most of July. The increase in the death rate is consistent with increases observed in laboratory isolations of influenza and emergency department ILI activity.
4. Virological Surveillance

Typing and Antigenic Characterisation

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

From 1 January to 17 September 2012, there were 1,282 Australian influenza viruses subtyped by the WHO CC with over two-thirds being influenza A(H3N2) and nearly a third influenza B. So far this year, very few viruses have been pandemic (H1N1) 2009 (table 3). It is noted that for the Northern Territory these typing data are not reflective of their season, where there was an early predominance of influenza B in the 'Central' region, and currently in the 'Top End' region there is a predominance of influenza A(H3N2).

Table 3. Australian influenza viruses typed by HI or PCR from the WHO Collaborating Centre, 1 January 2012 to 17 September 2012

<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>Pandemic (H1N1) 2009</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>11</td>
<td>5</td>
<td>20</td>
</tr>
<tr>
<td>A(H3N2)</td>
<td>18</td>
<td>209</td>
<td>0</td>
<td>116</td>
<td>97</td>
<td>37</td>
<td>344</td>
<td>46</td>
<td>867</td>
</tr>
<tr>
<td>B</td>
<td>2</td>
<td>45</td>
<td>51</td>
<td>69</td>
<td>32</td>
<td>7</td>
<td>74</td>
<td>115</td>
<td>395</td>
</tr>
<tr>
<td>Total</td>
<td>20</td>
<td>254</td>
<td>52</td>
<td>187</td>
<td>130</td>
<td>44</td>
<td>429</td>
<td>166</td>
<td>1282</td>
</tr>
</tbody>
</table>

SOURCE: WHO CC

Note: There may be up to a month delay on reporting of samples. Viruses tested by the WHO CC are not necessarily a random sample of all those in the community.

*These results do not reflect the current predominance of influenza A(H3N2) in the Top End region of the Northern Territory.

The WHOCC has analysed some of the currently circulating influenza viruses. Whilst almost all of the influenza A(H3N2) viruses are of a more recent strain that differs from the A(H3N2) strain in the 2012 Southern Hemisphere seasonal influenza vaccine, it is expected that the vaccine will still offer significant protection. Additionally there is some co-circulation of the two influenza B lineages. The majority of influenza B viruses are of the B/Victoria lineage and are similar to the strain in the current vaccine. Some cross-protection against influenza B viruses of the other (B/Yamagata) lineage is expected in adults, though less so for children.

Recent analysis of the B/Brisbane/60/2008-like viruses suggests that around 46% are 'low reactor' compared with the reference virus. As these low reactor viruses do not form a distinct genetic group among the B/Victoria lineage viruses, they are not considered to represent an emerging antigenic drift variant.

Antiviral Resistance

The WHO CC has reported that from 1 January to 17 September 2012, one influenza virus (out of 1076 tested) has shown resistance to the neuraminidase inhibitor oseltamivir. This virus was a pandemic (H1N1) 2009 virus with H275Y mutation in the neuraminidase gene, which is known to confer resistance to oseltamivir.

2013 Southern Hemisphere Vaccine

On 19 September 2012, the WHO recommended that vaccines for the 2013 influenza season (southern hemisphere winter) contain the following:

- an A/California/7/2009 (H1N1)pdm09-like virus
- an A/Victoria/361/2011 (H3N2)-like virus; and
- a B/Wisconsin/1/2010-like virus.

Figure 18. Rate of deaths classified as influenza and pneumonia from the NSW Registered Death Certificates, 1 January 2007 to 24 August 2012
The WHO recommends that quadrivalent vaccines contain the above three viruses and a B/Brisbane/60/2008-like virus, which is currently in the 2012 southern hemisphere vaccine.

In comparison to the current 2012 southern hemisphere vaccine, the recommended A(H3N2) and B viruses have been changed in line with the 2012/13 northern hemisphere vaccine. The WHO notes in their recommendations that:

- the majority of recent A(H3N2) viruses were antigenically and genetically similar to A/Victoria/361/2011, the vaccine virus recommended for the northern hemisphere 2012/13 season.
- the proportion of B/Yamagata/16/88 lineage viruses increased in many parts of the world but B/Victoria/2/87 lineage viruses predominated in some countries. The majority of recent B/Victoria/2/87 lineage viruses were antigenically and genetically closely related to the current southern hemisphere vaccine virus (B/Brisbane/60/2008). Most recently isolated B/Yamagata/16/88 lineage viruses were antigenically closely related to B/Wisconsin/1/2010-like viruses. The inclusion of a B/Yamagata/16/88 lineage virus in the southern hemisphere trivalent vaccine is due to the increase proportion of B/Yamagata/16/88 lineage viruses over the past 12 months, relative to B/Victoria/2/87 lineage viruses.

The WHO have noted that countries which expect B/Victoria lineage viruses to predominate in the 2013 southern hemisphere winter may continue to use a B/Brisbane/60/2008-like virus in their trivalent influenza vaccines. In this regard, viruses analysed by the WHO CC showed that during the 2012 Australian influenza season around 15% of influenza B viruses have been the B/Wisconsin/1/2010-like virus, with the remaining 85% being B/Brisbane/60/2008-like viruses (45% of these viruses reported as ‘low-reactor’ against the reference virus).

5. International Influenza Surveillance

The WHO has reported that as at 14 September 2012, in tropical zone countries, influenza transmission in the Caribbean, Central and tropical Southern America continues to be at low levels. A few areas of tropical Asia have experienced recent significant influenza virus circulation, most notably in Thailand. In the southern hemisphere temperate region, Australia, Chile, New Zealand, Paraguay and South Africa all reported decreases in influenza activity.

In New Zealand, for the week ending 16 September 2012, the national weekly rate of ILI consultations was 34.2 per 100,000 patient population, a slight increase from the previous week (32.6 per 100,000). Virological surveillance through both sentinel and non-sentinel laboratories shows that so far this year 66% have been influenza A(H3N2) viruses, 11% were pandemic (H1N1) 2009 and 10% influenza B viruses, with the remainder being influenza A (unsubtyped). It is noted that currently influenza A(H3N2) viruses remain the predominant virus in many regions.

Influenza A(H3N2) viruses are the most commonly reported type/sub-type in recent weeks across the southern hemisphere temperate region including Chile, South Africa, and Australia. The previous predominance of pandemic (H1N1) 2009 reported in Central America has transitioned to a predominance of influenza B. In tropical Asia, southern China and southeast Asia, there has been a predominance of influenza A (H3N2), however in Thailand, India and Sri Lanka, both pandemic (H1N1) 2009 and influenza B have been circulating.

National Influenza Centres (NICs) and other national influenza laboratories from 78 countries, areas or territories reported that for the period 19 August to 1 September 2012, a total of 1,870 specimens were positive for influenza viruses with 69% being influenza A and 31% were influenza B. Of the sub-typed influenza A viruses, 85% were influenza A(H3N2) and 14% were influenza pandemic (H1N1) 2009. Of the characterised B viruses, 70% belong to the B-Yamagata lineage and 30% to the B-Victoria lineage.

Influenza A (H3N2) Variant Viruses—United States of America

Since July 2012, the US CDC has reported 305 cases of influenza infections associated with a variant swine influenza A(H3N2) virus, including 16 hospitalisations and one associated death. This variant of the A(H3N2) virus was first detected in humans in July 2011, though only 12 human cases were reported in 2011. The variant virus contains the M gene from the human pandemic (H1N1) 2009 virus, which may confer increased transmissibility to and among humans. Most cases to date have occurred in children, who have little immunity against this virus. Though limited human-to-human transmission of this virus has occurred, this variant is not readily spreading between people at this time. Human illness with the variant virus has been generally consistent with signs and symptoms of seasonal influenza, including groups at high risk of complications.

Influenza A (H1N2) Variant Virus—United States of America

On 7 September 2012 the US CDC reported three human infections with an influenza A (H1N2) variant virus which contains the M gene from the pandemic (H1N1) 2009 virus. All three cases were reported in Minnesota and associated with prolonged contact with pigs. It is noted that influenza A(H1N2) viruses normally circulate in swine, with rare human infections having previously been detected.
6. Data Considerations

The information in this report is reliant on the surveillance sources available to the Department of Health and Ageing. As access to sources increase as the season progresses, this report will be updated with the 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.

Geographic Spread of Influenza Activity

### Influenza Activity Levels

<table>
<thead>
<tr>
<th>Activity level</th>
<th>Laboratory notifications</th>
<th>Influenza outbreaks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sporadic</td>
<td>Small no of lab confirmed influenza detections (not above expected background level)*</td>
<td>AND No outbreaks</td>
</tr>
<tr>
<td>Localised</td>
<td>Recent increase in lab confirmed influenza detections above background level** in less than 50% of the influenza surveillance regions within the state or area</td>
<td>OR Single outbreak only</td>
</tr>
<tr>
<td>Regional</td>
<td>Significant*** recent increase in lab confirmed influenza detections above baseline in less than 50% of the influenza surveillance regions within the state or area</td>
<td>OR &gt; 1 outbreaks occurring in less than 50% of the influenza surveillance regions within the state or area***</td>
</tr>
<tr>
<td>Widespread</td>
<td>Significant recent increase in lab confirmed influenza detections above baseline in equal to or greater than 50% of the influenza surveillance regions within the state or area</td>
<td>OR &gt; 1 outbreaks occurring in equal to or greater than 50% of the influenza surveillance regions within the state or area</td>
</tr>
</tbody>
</table>

* Small no of lab detections = not above expected background level as defined by state epidemiologists.
** Influenza surveillance region within the state/area as defined by state epidemiologists.
*** Significant increase is a second threshold to be determined by the state epidemiologists to indicate level is significantly above the expected baseline.

### Syndromic Surveillance Activity

<table>
<thead>
<tr>
<th>Syndromic surveillance systems*</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>No evidence of increase in ILI via syndromic surveillance systems</td>
<td></td>
</tr>
<tr>
<td>Evidence of increase in ILI via syndromic surveillance systems</td>
<td></td>
</tr>
</tbody>
</table>

* Syndromic surveillance systems = GP sentinel surveillance, ED ILI surveillance, Flu tracking (this may be due to a variety of respiratory viruses so the report could add a note to indicate if other evidence suggests that the increase is suspected to be influenza activity or due to another respiratory pathogen).

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 symptoms in communities.

Further information is available on the FluTracking website.

Sentinel General Practice Surveillance

The sentinel general practice ILI surveillance data between 2008 and 2012 consists of two main general practitioner schemes, the Australian Sentinel Practices Research Network (ASPREN) 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 2012 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 30% of all ILI patients presenting to ASPREN sentinel GPs are swabbed for laboratory testing. Please note the results of ASPREN ILI laboratory respiratory viral tests now include Western Australia.

For further information please visit ASPREN or VIDRL coordinated sentinel GP ILI surveillance program.

Sentinel Emergency Department Data

- **Western Australia**—Emergency Department ILI surveillance data are extracted from the ‘Virus Watch’ Report. This report is produced weekly. The Western Australia Influenza Surveillance Program collects data from eight Perth emergency departments.
- **New South Wales**—Emergency Department ILI surveillance data are extracted from the ‘Weekly Influenza Report, NSW’. The New South Wales Influenza Surveillance Program collects data from 56 emergency departments across New South Wales.
- **Northern Territory**—this sentinel program collects data from the following hospitals: 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.

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 at: [http://www.health.gov.au/internet/main/publishing.nsf/Content/cda-surveil-ndss-casedefs-cd_flu.htm](http://www.health.gov.au/internet/main/publishing.nsf/Content/cda-surveil-ndss-casedefs-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 laboratories reporting PCR results. Additionally, approximately 30% of all ILI patients presenting to ASPREN based sentinel GPs are swabbed for laboratory testing.

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 and Westmead Hospital
- 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 Hospital, Royal Melbourne Hospital, Monash Medical Centre and Alfred Hospital, and
- Western Australia—Royal Perth Hospital.

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.

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.

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 and Ageing. Notifications of influenza associated deaths are likely to underestimate the true number of influenza associated deaths occurring in the community.

NSW influenza and pneumonia deaths data are collected from the NSW Registry of Births, Deaths and Marriages. Figure 16 is extracted from the "Weekly Influenza Report, NSW". NSW Registered Death Certificates are 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.

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.
7. References


2. Victorian Infectious Disease Reference Laboratory, The 2012 Victorian Influenza Vaccine Effectiveness Audit Report, Report 20, Week Ending 16 September 2012

3. Western Australia Health, Virus WAtch, Week Ending 16 September 2012


5. WHO, Recommended composition of influenza virus vaccines for use in the 2013 southern hemisphere influenza season

6. WHO, Influenza Update No. 168, 14 September 2012

7. New Zealand Influenza Weekly Update, 10 to 16 September 2012 [Accessed 21 September 2012]


9. United States Centres for Disease Control and prevention (CDC), Influenza A (H3N2) Variant Virus outbreaks Update [Accessed 21 September 2012]

10. United States Centres for Disease Control and prevention (CDC), H1N2 Variant Virus Detected in Minnesota Report [Accessed 10 September 2012]