



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:

Is the situation changing?	Indicated by trends in: <ul style="list-style-type: none"> laboratory confirmed cases reported to the National Notifiable Diseases Surveillance System; GP Sentinel influenza-like illness (ILI) Surveillance; emergency department (ED) presentations for ILI; ILI-related absenteeism and call centre calls; and sentinel laboratory test results.
How severe is the disease, and is severity changing?	Indicated by trends in: <ul style="list-style-type: none"> hospitalisations, ICU admissions and deaths from sentinel systems; and clinical severity in hospitalised cases and ICU admissions.
Is the virus changing?	Indicated by trends in: <ul style="list-style-type: none"> drug resistance; and genetic drift or shift from laboratory surveillance.

Summary

- Levels of influenza-like illness (ILI) in the community continued to increase through both sentinel general practitioner surveillance systems and ILI presentations to emergency departments.
- Notifications have continued to rise nationally, with notifications highest in Queensland, New South Wales and South Australia. In recent weeks, influenza notifications have started to increase in all other states and territories. Currently the weekly number of notifications in the ACT, New South Wales, Queensland and Tasmania are above the peak frequency of notifications observed in 2010.
- During this reporting period there were 3,159 laboratory confirmed notifications of influenza, with Queensland reporting the highest number of notifications, followed by New South Wales and South Australia. The majority of virus detections have been pandemic (H1N1) 2009, with co-circulation of influenza B.
- The previously high proportion of influenza B in South Australia has started to decline with increasing numbers of pandemic (H1N1) 2009 notifications. The majority of states and territories have reported mostly pandemic (H1N1) 2009, with co-circulation of influenza B, except in Tasmania where there is mostly influenza B circulating, and Western Australia where there is very little influenza B circulating and mostly pandemic (H1N1) 2009.
- As at 5 August 2011, there have been 13,521 confirmed cases of influenza reported to the National Notifiable Diseases Surveillance System (NNDSS) in 2011. Currently the weekly number of notifications being reported nationally is above the peak frequency experienced in previous years, except 2009.
- The WHO has reported that influenza activity in the temperate regions of the northern hemisphere remains at low. Influenza transmission continues to occur in a few countries of the tropical region. After peaking in early June, influenza transmission in South Africa has declined to low levels. In New Zealand, rates of national ILI consultations are currently slightly above baseline activity levels and influenza type B is currently the predominant strain circulating.

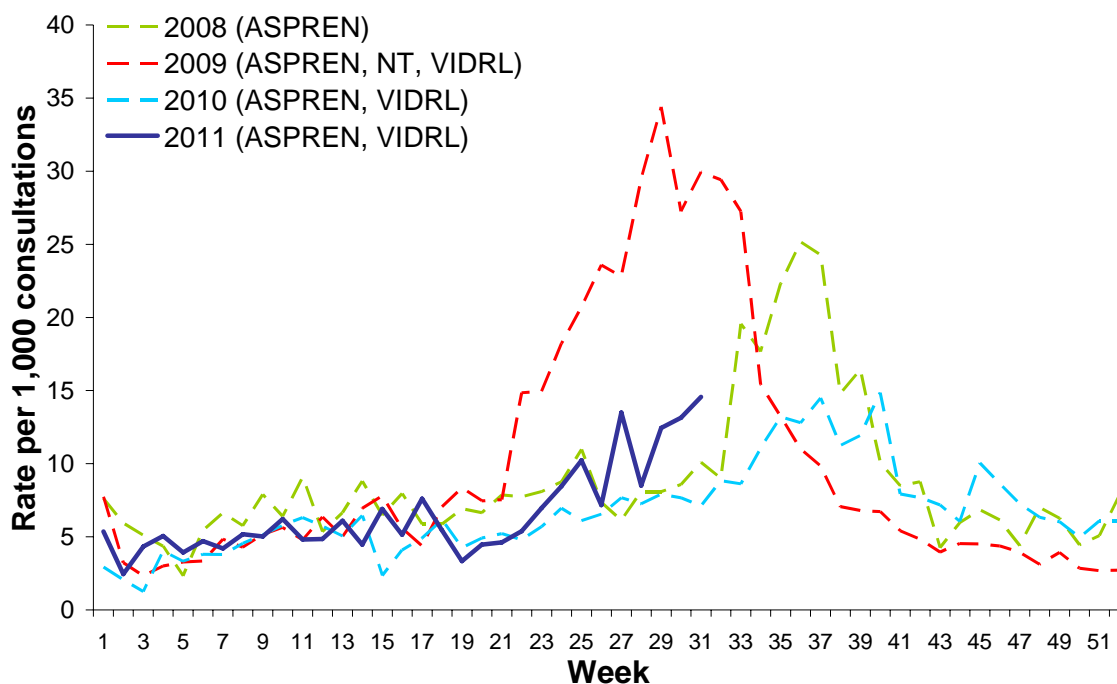
1. Influenza activity in Australia

Influenza-Like Illness

Sentinel General Practice Surveillance

In recent weeks, sentinel general practitioner ILI consultation rates have continued to increase. In the week ending 31 July 2011, the national ILI consultation rate to sentinel GPs was 15 cases per 1,000 consultations, up from 13 cases per 1,000 consultations last fortnight (Figure 1).

Figure 1. Weekly rate of ILI reported from GP ILI surveillance systems from 1 January 2008 to 31 July 2011*



* Delays in the reporting of data may cause data to change retrospectively. As data from the VIDRL surveillance system is combined with ASPREN data for 2010 and 2011, rates may not be directly comparable across 2008 and 2009.

SOURCE: ASPREN and VIDRL GP surveillance system¹.

In the fortnight ending 31 July 2011, specimens were collected from almost 43% of ASPREN ILI patients. Of these patients, 55 specimens (34%) were positive for influenza, which is consistent with the proportion that was positive in the previous fortnight. Thirty-seven specimens were typed as influenza type A, and were mostly pandemic (H1N1) 2009; and the remainder (18) were influenza type B. Forty-three specimens were positive for other respiratory viruses, with the majority of these being rhinovirus (14) and respiratory syncytial virus (14) (Table 1).

Table 1. ASPREN ILI consultations laboratory respiratory viral tests that were positive for influenza or other respiratory virus, 1 January 2011 to 31 July 2011.

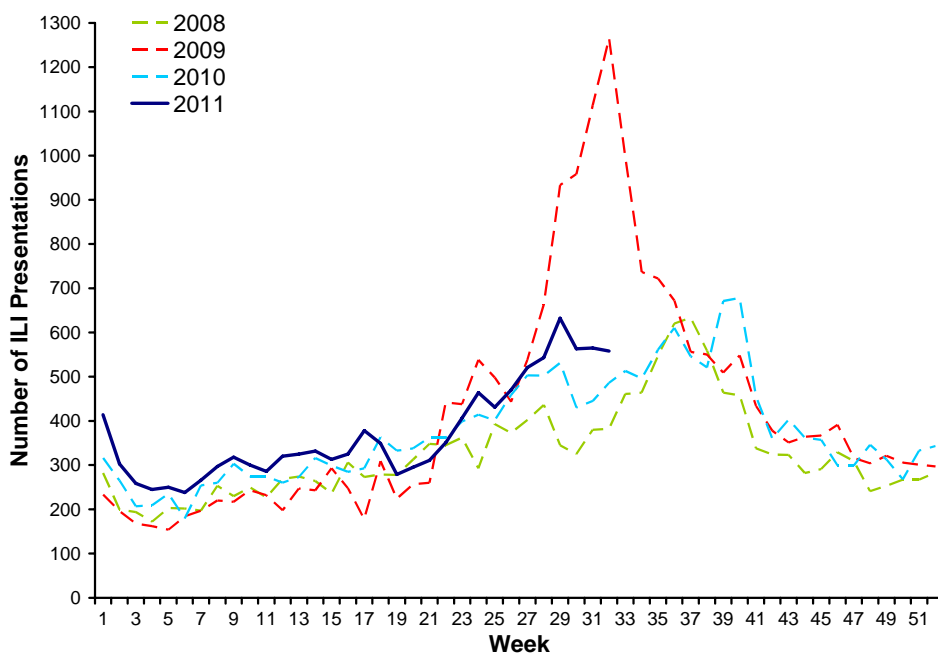
	ASPREN Fortnight (18-31 July 2011)	ASPREN YTD (1 Jan – 31 July 2011)
Total specimens tested	161	817
Total Influenza Positive	55	194
Influenza A	37	142
<i>Pandemic (H1N1) 2009</i>	32	113
<i>Seasonal A/H3N2</i>	3	7
<i>Influenza A untyped</i>	2	22
Influenza B	18	52
Total Positive other Resp. Viruses*	43	233

* Other respiratory viruses include RSV, para-influenza, adenovirus and rhinovirus.

Western Australia Emergency Departments

In the fortnight ending 31 July 2011, respiratory viral presentations to WA EDs remained stable, and presentations continued to be above baseline levels. Over this period there were 1,123 presentations, including 78 admissions (Figure 2). The proportion of presentations admitted to hospital over this period remained stable and represented 7% of presentations.

Figure 2. Number of respiratory viral presentations to WA EDs from 1 January 2008 to 7 August 2011, by week

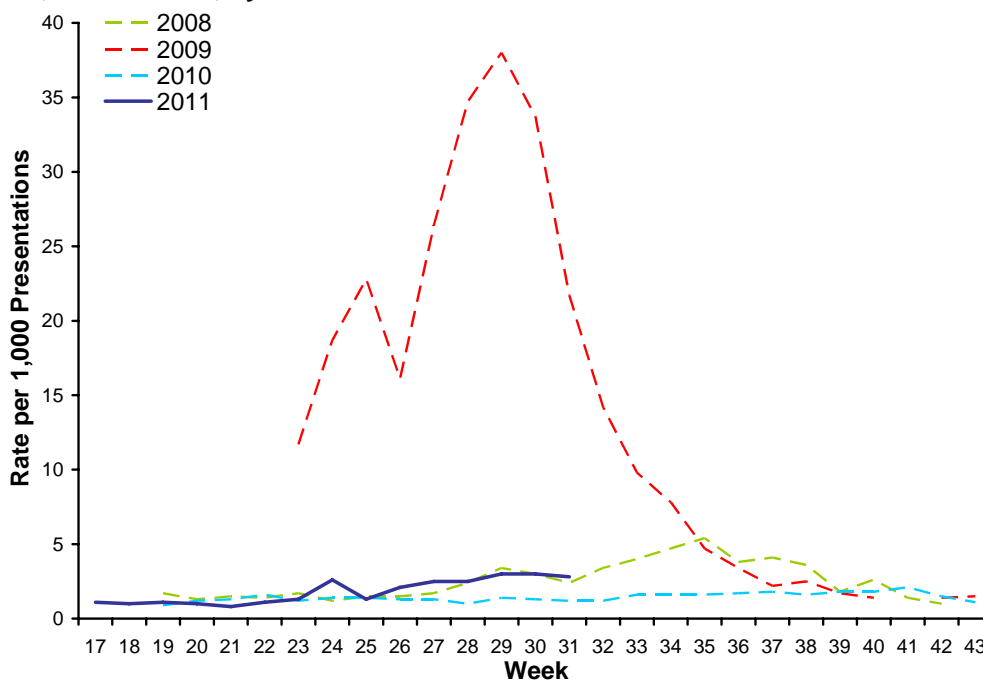


Source: WA 'Virus Watch' Report²

New South Wales Emergency Departments

In the week ending 5 August 2011 the rate of ILI presentations to NSW EDs was 2.8 cases per 1,000 presentations (Figure 3). This is slightly lower than the previous week's rate (3.0 per 1,000 presentations). A high proportion of presentations were reported among people aged 15 to 34 years (55%). Total admissions to critical care units trended downwards and remained within the usual range for this time of year.³

Figure 3. Rate of influenza-like illness presentations to NSW Emergency Departments between May and October, 2008 to 2011, by week



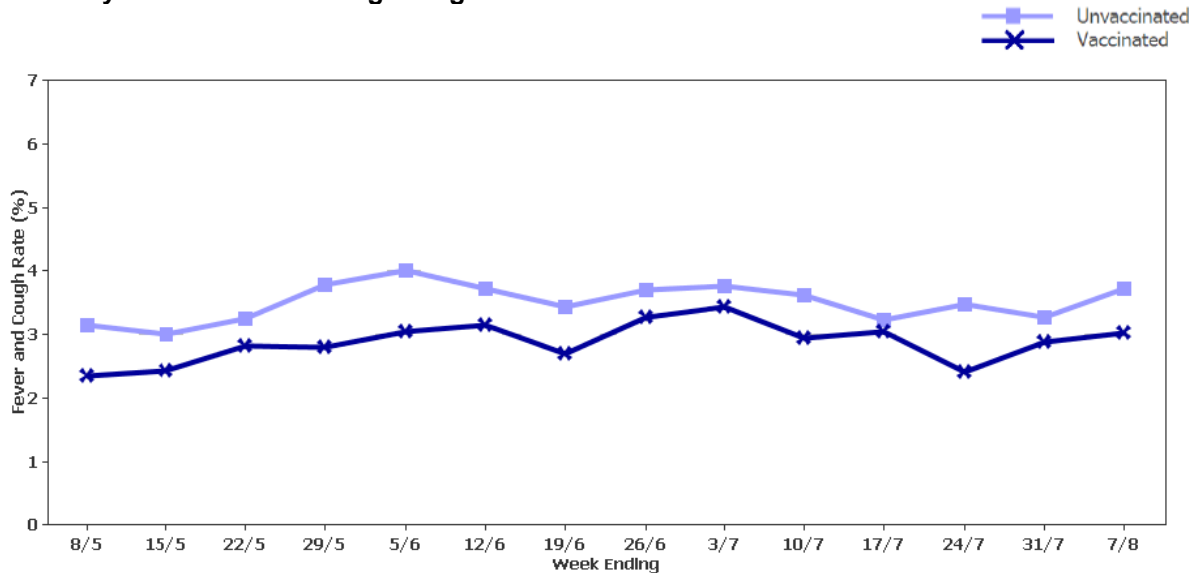
Source: NSW Influenza Weekly Epidemiology Report³

FluTracking

FluTracking, a national online system for collecting data on ILI in the community, reported that in the week ending 7 August 2011 fever and cough was reported by 3.0% of vaccinated participants and 3.7% of unvaccinated participants (Figure 4)⁴. Fever, cough and absence from normal duties was reported by 2.0% of vaccinated participants and 2.1% of unvaccinated participants.

Up to 7 August 2011, 6,944 out of 10,579 (65.6%) participants reported having received the seasonal vaccine so far. Of the 2,406 participants who identified as working face-to-face with patients, 1,931 (80.3%) have received the vaccine.

Figure 4. Rate of ILI symptoms among Flutracking participants by week, from week ending 8 May 2011 to week ending 7 August 2011.

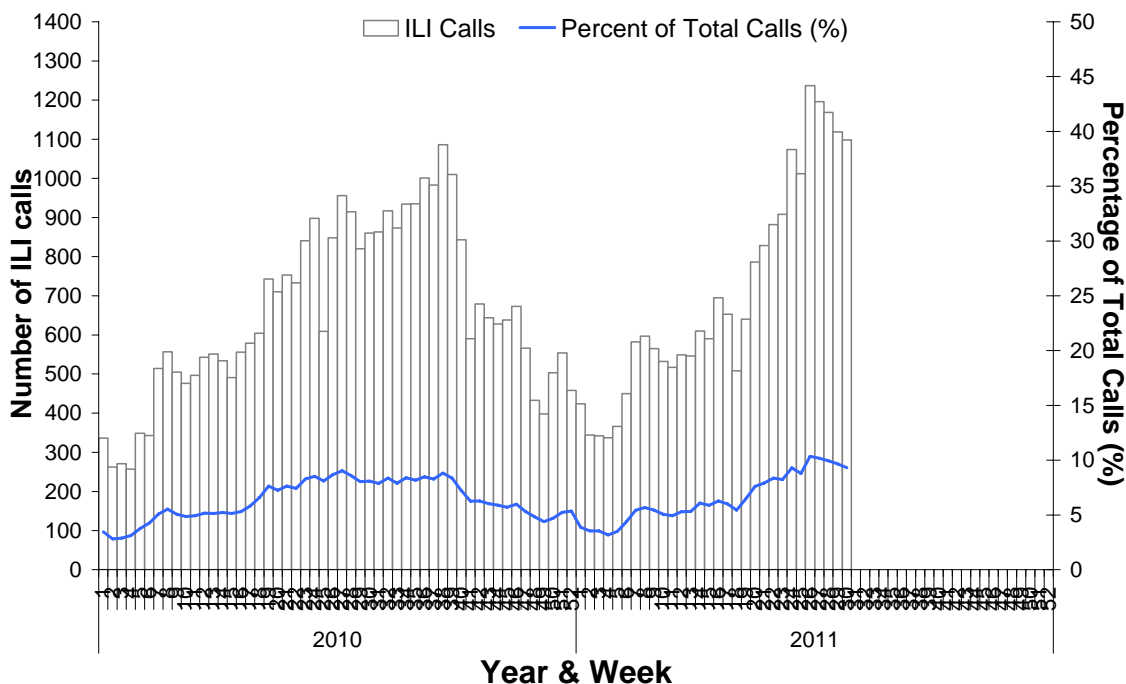


Source: FluTracking

National Health Call Centre Network

The number of ILI-related calls to the National Health Call Centre Network (NHCCN) continued to decline slightly during this fortnight compared to recent weeks. The percentage of total calls also declined slightly. In the week ending 31 July 2011, 9% of calls to the NHCCN were ILI related, which is above the same period in 2010 (Figure 5).

Figure 5. Number of calls to the NHCCN related to ILI and percentage of total calls, Australia, 1 January 2010 to 31 July 2011



Note: National data do not include QLD and VIC
Source: NHCCN data

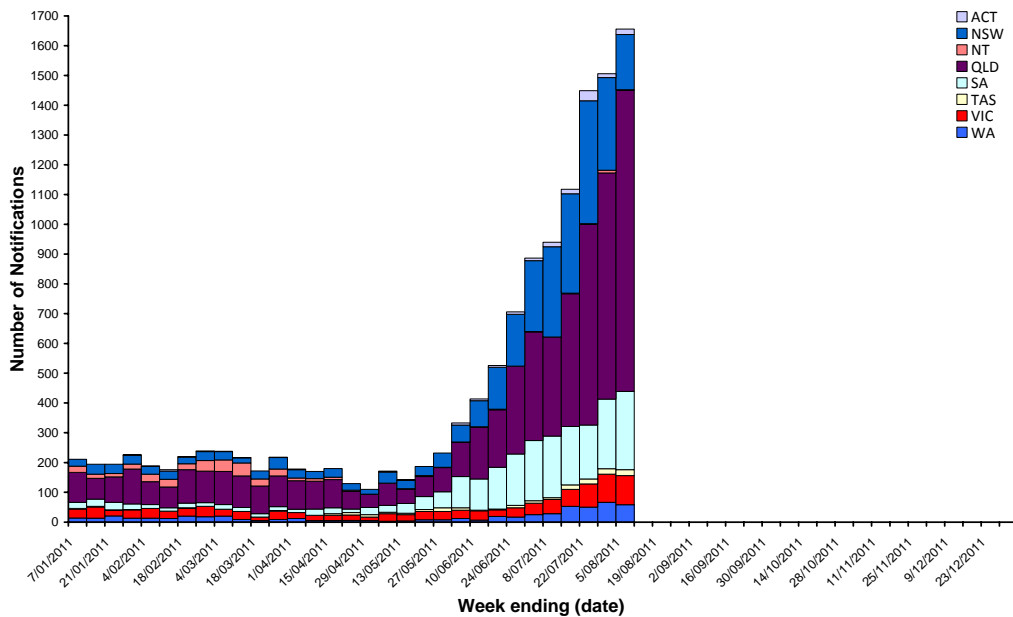
Laboratory Confirmed Influenza

Laboratory Confirmed Cases Notified to Health Departments

Please note: Queensland influenza notification numbers in the recent reporting period should be interpreted with caution. A data quality issue has been identified resulting in an over estimate of valid notifications. Almost all of the duplicate records have been invalidated, however some duplicates may still be included in this fortnights data.

During this reporting period there were 3,159 laboratory confirmed influenza notifications reported to the NNDSS. Of these notifications, there were 1,771 in Qld, 497 in NSW, 497 in SA, 193 in Vic, 124 in WA, 35 in TAS, 31 in the ACT, and 11 in the NT (Figure 6). A weekly breakdown of trends by state and territory highlights that notifications have continued to be highest in Queensland, New South Wales and South Australia, with increases being observed in all other states and territories. The weekly number of influenza notifications currently being reported in the ACT, New South Wales, Queensland and Tasmania are higher than the peak frequency experienced in 2010 (Figure 8).

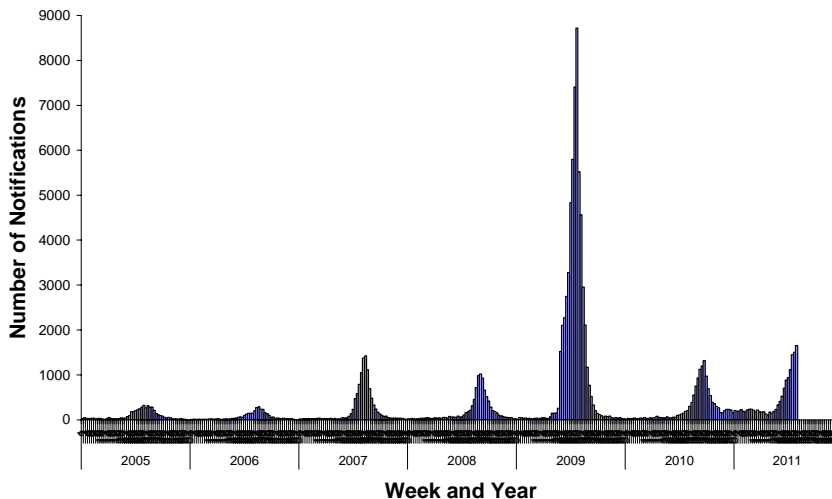
Figure 6. Laboratory confirmed cases of influenza in Australia, 1 January to 5 August 2011, by state, by week.



Source: NNDSS 2011

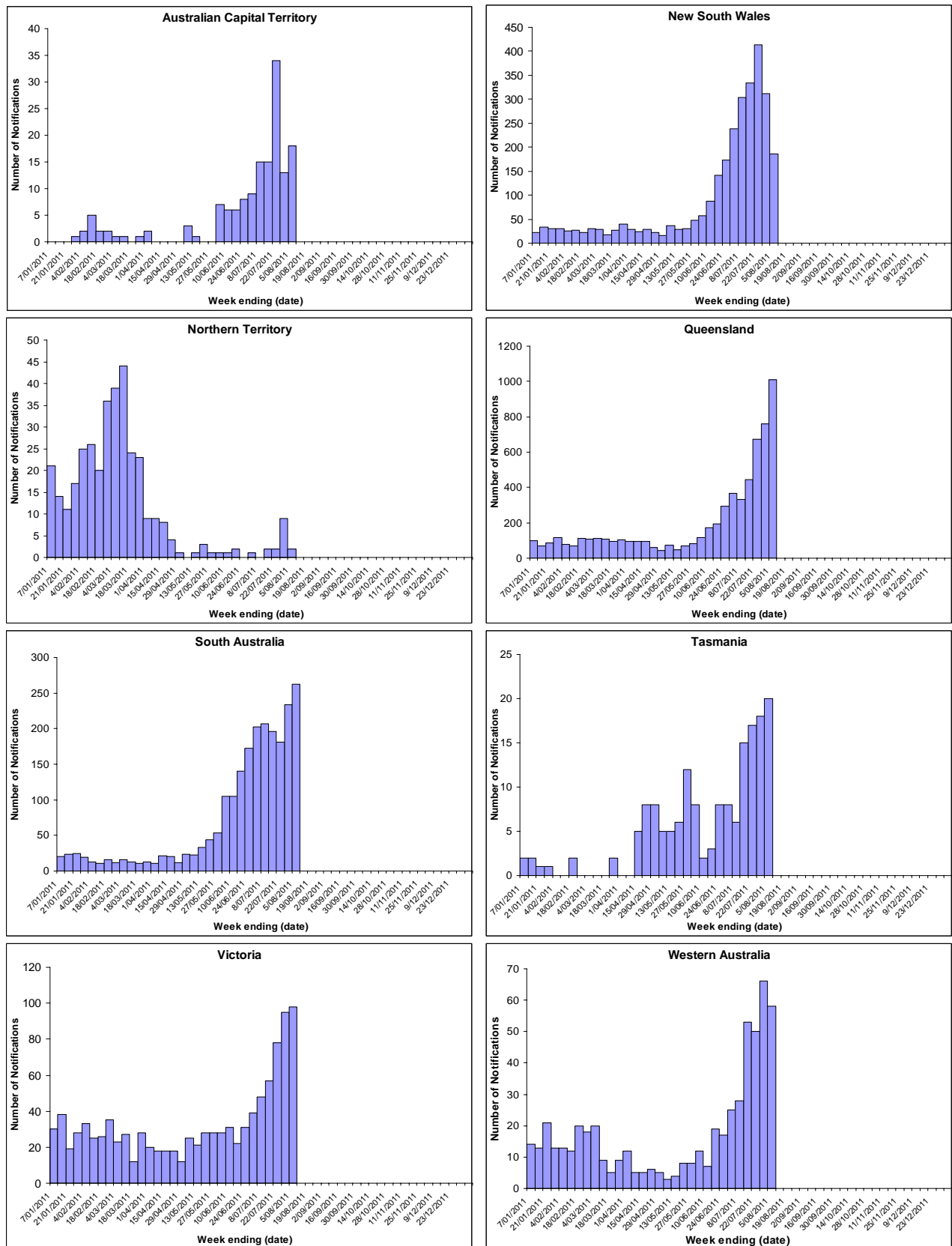
Up to 5 August, there have been 13,521 laboratory confirmed notifications of influenza diagnosed during 2011 (Figure 7). Of these notifications, there have been 6,176 notified in Qld, 2,840 in NSW, 2,241 in SA, 1,039 in Vic, 558 in WA, 356 in the NT, 159 in Tas and 152 in the ACT. Currently the weekly number of notifications being reported nationally is above the peak frequency experienced in previous years, except 2009. Over the summer months, all jurisdictions reported higher than usual numbers of notifications, especially in the Northern Territory and Queensland. The reason for this unusually high activity is not clear, but it does not appear to be due solely to increased testing.

Figure 7. Laboratory confirmed cases of influenza in Australia, 1 January 2005 to 5 August 2011



Source: NNDSS

Figure 8. State breakdowns of laboratory confirmed cases of influenza, 1 January to 5 August 2011, by week



Source: NNDSS

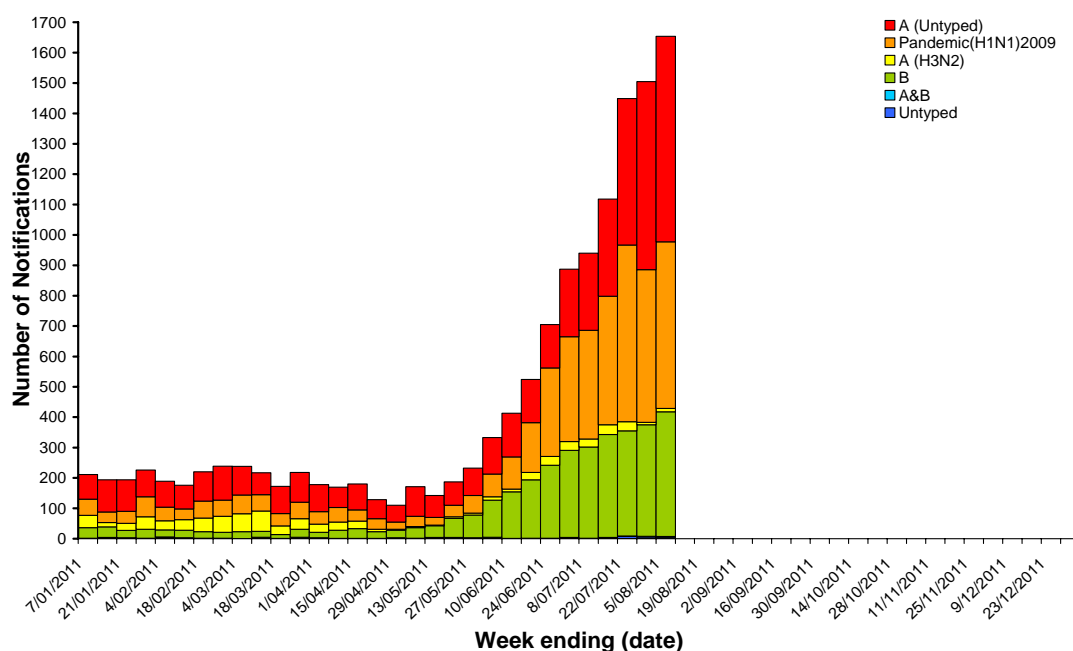
Of the 3,159 influenza notifications reported to the NNDSS this reporting period, 2,366 were influenza A (1,296 were influenza A (untyped), 1,051 were pandemic (H1N1) 2009 and 19 were A/H3N2), 778 were influenza B, 4 were influenza A and B and 11 notifications were reported as untyped (Figure 9). Compared to the beginning of the year, there appears to be very little A/H3N2 circulating.

In recent weeks the proportion of influenza B in South Australia has started to decline and currently represents 49% of their notifications, with the remainder being mostly pandemic (H1N1) 2009. The majority of states and territories have reported mostly pandemic (H1N1) 2009, with co-circulation of influenza B. However, in Tasmania influenza B is the dominant strain, and in Western Australia there is very little influenza B circulating and of the small number of A/H3N2 notifications nationally these are also mostly from Western Australia.

So far in 2011, 4,921 (36%) cases have been sub-typed as influenza A (untyped), 4,328 (32%) as pandemic (H1N1) 2009, 788 (6%) as type A/H3N2, and 44 (<1%) were type A&B. A further 3,383 (25%) have been characterised as influenza type B and 57 (<1%) were untyped (Figure 9).

Note: Northern Territory sub-typing results reported to the NNDSS as "Influenza A/Not Pandemic" have been counted as influenza A/H3N2 notifications.

Figure 9. Laboratory confirmed cases of influenza in Australia, 1 January 2011 to 5 August 2011, by sub-type and week



Source: NNDSS

Sentinel Laboratory Surveillance

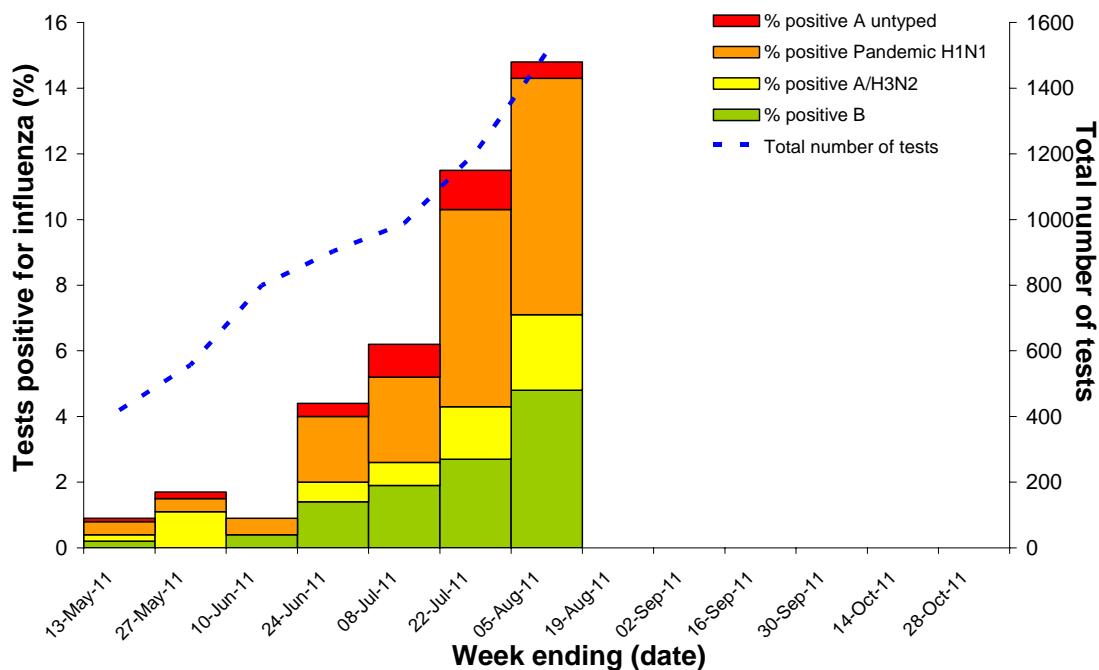
Results from sentinel laboratory surveillance systems for this reporting period show that 14.8% (224/1,510) of the respiratory tests conducted over this period were positive for influenza (Table 2). Positive influenza specimens were reported from all sentinel laboratories, except the Northern Territory.

Table 2. Sentinel laboratory respiratory testing results, 23 July to 5 August 2011

	NSW NIC	WA NIC	NT (Reported by WA NIC)	VIC NIC	TAS Laboratories
Total specimens tested	418	657	2	279	154
Total Influenza Positive	53	93	0	46	32
Positive Influenza A	36	92	0	17	6
<i>Pandemic (H1N1) 2009</i>	25	72	0	7	5
<i>A/H3N2</i>	5	20	0	9	0
<i>Influenza A untyped</i>	6	0	0	1	1
Positive Influenza B	17	1	0	29	26
The most common respiratory virus detected	Influenza A	Influenza A	-	Picornavirus	Influenza B

In 2011 a total of 8.0% of specimens have been positive for influenza. A breakdown of subtypes within this positive proportion by fortnight is highlighted in Figure 10.

Figure 10. Proportion of sentinel laboratory* tests positive for influenza, by subtype and fortnight, 30 April to 5 August 2011.



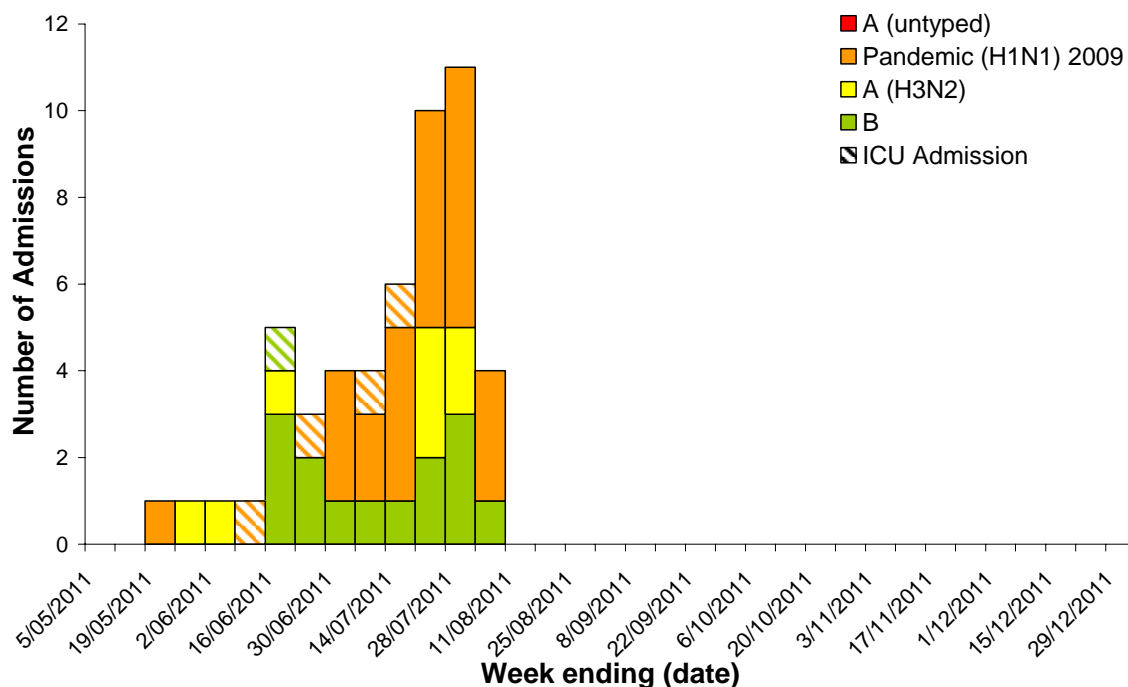
* Tasmanian sentinel data included from 9 July 2011

Influenza Hospitalisations

Influenza Complications Alert Network (FluCAN) – Victoria and the Australian Capital Territory

The Influenza Complications Alert Network (FluCAN) sentinel hospital system in Victoria, South Australia, Western Australia and the ACT has reported 51 hospitalisations, including five ICU admissions, associated with influenza since 1 May 2011. Over half of the hospitalisations and 80% of ICU admissions have been associated with pandemic (H1N1) 2009 infection. The mean age of patients hospitalised has been 47.3 years.

Figure 11. Number of influenza hospitalisations at sentinel hospitals, Victoria, South Australia, Western Australia and the ACT, by week and influenza subtype, 1 May to 4 August 2011



Source: FluCAN Sentinel Hospitals

Australian Paediatric Surveillance

The Australian Paediatric Surveillance Unit (APSU) conducts seasonal surveillance of children aged 15 years and under who are hospitalised with severe complications of influenza. Between 1 July and 9 August 2011, there have been 21 hospitalisations associated with severe influenza complications in children, including 8 ICU admissions. The majority of these hospitalisations were associated with pandemic (H1N1) 2009 infection, and of the 13 hospitalisations with completed questionnaires, 7 were noted as having underlying chronic conditions.

Deaths associated with influenza and pneumonia

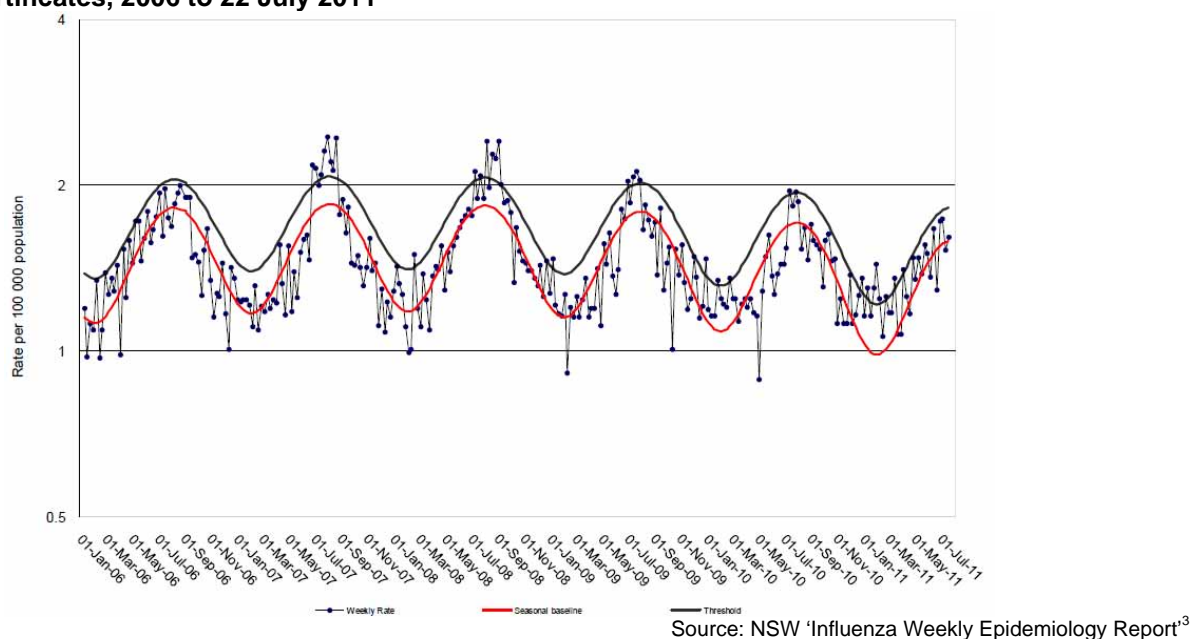
Nationally Notified Influenza Associated Deaths

In 2011, 10 influenza associated deaths have been notified to the NNDSS, with a median age of 53.5 years. Eight of these cases were reported as having a pandemic (H1N1) 2009 infection, one with influenza type B and the other case reported as having influenza type A (untyped).

New South Wales Influenza and Pneumonia Death Registrations

Death registration data up to 22 July 2011 showed that there were 1.6 pneumonia or influenza associated deaths per 100,000 population in NSW, which is below the seasonal threshold of 1.8 per 100,000 NSW population for this period (Figure 12).³

Figure 12. Rate of deaths classified as influenza and pneumonia from the NSW Registered Death Certificates, 2006 to 22 July 2011



2. Virology

Typing and antigenic characterisation

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

From 1 January to 7 August 2011, there were 1,088 Australian influenza isolates subtyped by the WHO CC with almost half of these isolates subtyped as pandemic (H1N1) 2009 (46%) (Table 3).

Table 3. Typing of influenza isolates from the WHO Collaborating Centre, from 1 January 2011 to 7 August 2011

Type/Subtype	ACT	NSW	NT	QLD	SA	TAS	VIC	WA	TOTAL
Pandemic (H1N1) 2009	0	115	29	242	28	17	50	27	508
A(H3N2)	0	5	48	125	9	3	15	10	215
B	0	23	35	69	177	2	54	5	365
Total	0	143	112	436	214	22	119	42	1088

SOURCE: WHO CC

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

Antigenic characterisation has shown influenza isolates to be a close match with the composition of the 2011 southern hemisphere influenza vaccine with some viruses showing reduced reactivity, however there has been insufficient testing to date to determine any general trends.

Antiviral Resistance

The WHO Collaborating Centre in Melbourne has reported that from 1 January 2011 to 7 August 2011, one isolate (out of 1,240 tested) has shown resistance to oseltamivir by enzyme inhibition assay (EIA). A further isolate, out of a total of 7 pandemic H1N1 (2009) tested by pyrosequencing, has shown the H275Y mutation known to confer resistance to oseltamivir.

3. International Influenza Surveillance

The WHO⁵ has reported that as at 29 July 2011 influenza activity in the temperate regions of the northern hemisphere remains low or undetectable. In the tropical zone, influenza transmission has continued to occur in a few countries of the Americas, the Dominican Republic, El Salvador and Columbia; western Africa, primarily Ghana and Cameroon; and parts of Asia in India, Bangladesh and Singapore. Influenza transmission in South Africa has declined to low levels, after peaking in early to mid June. Viral transmission within South Africa has been primarily associated with pandemic A(H1N1) 2009, however influenza type B has made up a larger proportion of cases hospitalised with severe infections.

In New Zealand⁶, for the week ending 7 August 2011, the rate of national ILI consultations are only slightly above the baseline activity levels with 7 of the 20 district health boards above the national average weekly consultation rate. Influenza type B was the predominant strain followed by influenza A(H3N2).

National Influenza Centres in 35 countries have reported that for the period 3 to 16 July 2011, a total of 945 specimens were reported as positive for influenza viruses, 664 (70%) were typed as influenza A and 281 (30%) as influenza B. Of the sub-typed influenza A viruses reported, 49% were pandemic (H1N1)2009 and 51% were influenza A(H3N2)⁷.

WHO have released a summary review of the northern hemisphere winter influenza season⁸. The summary review notes that the most commonly detected virus was different in North America, where influenza A(H3N2) and influenza type B co-circulated with pandemic (H1N1) 2009, and Europe, where influenza A(H1N1)2009 was by far the most commonly detected virus. Although it was no longer the predominant influenza virus circulating in many parts of the world, pandemic (H1N1) 2009 otherwise behaved much the same way as it had during the pandemic in terms of the age groups most affected and the clinical pattern of illness. More than 90% of viruses detected around the world during the northern hemisphere influenza season were similar antigenically to those found in the seasonal trivalent influenza vaccine. Antiviral resistance in pandemic (H1N1)2009 remained at a very low level.

The WHO has released their recommendation for the antigen composition of 2011-2012 northern hemisphere influenza season trivalent flu vaccine⁹. It is recommended that vaccines contain the following:

- an A/California/7/2009 (H1N1)-like virus;
- an A/Perth/16/2009 (H3N2)-like virus;
- a B/Brisbane/60/2008-like virus.

This recommended composition is the same as the 2010-2011 Northern Hemisphere and the 2011 Southern Hemisphere vaccine compositions.

4. 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 pandemic (H1N1) 2009 and seasonal influenza 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 through flu@health.gov.au.

Sentinel General Practice Surveillance

The Australian Sentinel Practices Research Network (ASPREN) has Sentinel GPs who report ILI presentation rates in NSW, NT, SA, ACT, VIC, QLD, TAS and WA. As jurisdictions joined ASPREN at different times and the number of GPs reporting has changed over time, the representativeness of ASPREN data in 2011 may be different from that of previous years. ASPREN data and VIDRL influenza surveillance data are sent to the Department on a weekly basis. 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.

Further information on Sentinel GPs' Influenza Surveillance and ASPREN activities are available at www.dmac.adelaide.edu.au/aspren.

Sentinel Emergency Department Data

WA - ED surveillance data are extracted from the 'Virus Watch' Report. This report is provided weekly. The Western Australia Influenza Surveillance Program collects data from eight Perth EDs.

NSW - ED surveillance data are extracted from the 'Weekly Influenza Report, NSW'. The New South Wales Influenza Surveillance Program collects data from 56 EDs across New South Wales.

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 on FluTracking is available at www.flutracking.net/index.html.

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-nndss-casedefs-cd_flu.htm.

Analyses of Australian cases 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), sentinel Tasmanian laboratories, and ASPREN (national).

Influenza Complications Alert Network (FluCAN)

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

- Victoria – Geelong Hospital, Royal Melbourne Hospital, Monash Medical Centre and Alfred Hospital;
- Australian Capital Territory – Canberra Hospital and Calvary Hospital;
- South Australia – Royal Adelaide Hospital;
- 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.

Australian Paediatric Surveillance Unit

The Australian Paediatric Surveillance Unit (APSU) conducts seasonal surveillance of children aged 15 years and under who are hospitalised with severe complications of influenza. Reports are collated on a weekly basis from approximately 1,300 paediatricians and other child health clinicians around Australia. The protocol and case definition is available at:

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

Data are provided weekly to the Health Protection and Surveillance Branch from the WHO CC.

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. However these are an underestimation of the true number of deaths occurring in the community associated with influenza.

NSW influenza and pneumonia deaths data are collected from the NSW Registry of Births, Deaths and Marriages. Figure 12 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.

5. References

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- 8 WHO Summary review of the 2010-2011 northern hemisphere winter influenza season. Available from: http://www.who.int/csr/disease/influenza/2010_2011_GIP_surveillance_seasonal_review/en/index.html. Accessed 16 June 2011.
- 9 WHO Recommended composition of influenza virus vaccines for use in the 2011-2012 northern hemisphere influenza season. Available from: http://www.who.int/csr/disease/influenza/recommendations_2011_12north/en/index.html. Accessed 3 June 2011.