



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:

<p>Is the situation changing?</p>	<p>Indicated by trends in:</p> <ul style="list-style-type: none"> • laboratory confirmed cases reported to the National Notifiable Diseases Surveillance System (NNDSS); • influenza associated hospitalisations; • emergency department (ED) presentations for influenza-like illness (ILI); • general practitioner (GP) consultations for ILI; • ILI-related call centre calls and community level surveys of ILI; and • sentinel laboratory test results.
<p>How severe is the disease, and is severity changing?</p>	<p>Indicated by trends in:</p> <ul style="list-style-type: none"> • hospitalisations, intensive care unit (ICU) admissions and deaths; and • clinical severity in hospitalised cases and ICU admissions.
<p>Is the virus changing?</p>	<p>Indicated by trends in:</p> <ul style="list-style-type: none"> • drug resistance; and • antigenic drift or shift of the circulating viruses.

SUMMARY

- Compared with the previous year, most jurisdictions reported higher than usual numbers of influenza notifications during the 2012/13 inter-seasonal period.
- The onset of the winter influenza season is usually marked by a distinct and sustained rise in influenza activity. Nationally, influenza activity has continued to remain relatively stable, suggesting that the influenza season has not yet commenced.
- As at 21 June 2013, there have been 4,422 laboratory confirmed cases of influenza reported. Currently the NNDSS is receiving around 200 notifications per week from jurisdictions. Compared with more recent years, it appears that the 2013 winter influenza season will be starting later.
- Nationally, whilst influenza A remains the predominant influenza virus type (60%), the proportion of influenza B notifications has continued to increase. During 2012 the season there were very few notifications of pandemic (H1N1) 2009. Whilst the majority of influenza A reports are unsubtyped, so far in 2013 more than 9% of overall notifications have been reported as pandemic (H1N1) 2009.
- There have been low numbers of influenza associated hospitalisations so far in 2013.
- The WHO has reported that influenza activity in the northern hemisphere temperate zones has continued to decrease to low levels. In the temperate countries of South America and South Africa, influenza activity has started to increase, consistent with their influenza seasonal trends.
- The United States have reported four cases of the influenza A(H3N2) variant virus that were associated with fair attendance and contact with swine. The virus detected is the same as the variant viruses detected during the 2012 multi-state outbreak, which was also associated with swine exposure at agricultural fairs.
- The WHO has reported that since 21 May 2013, no new human cases of influenza A(H7N9) have been reported.

1. Influenza-like Illness Activity

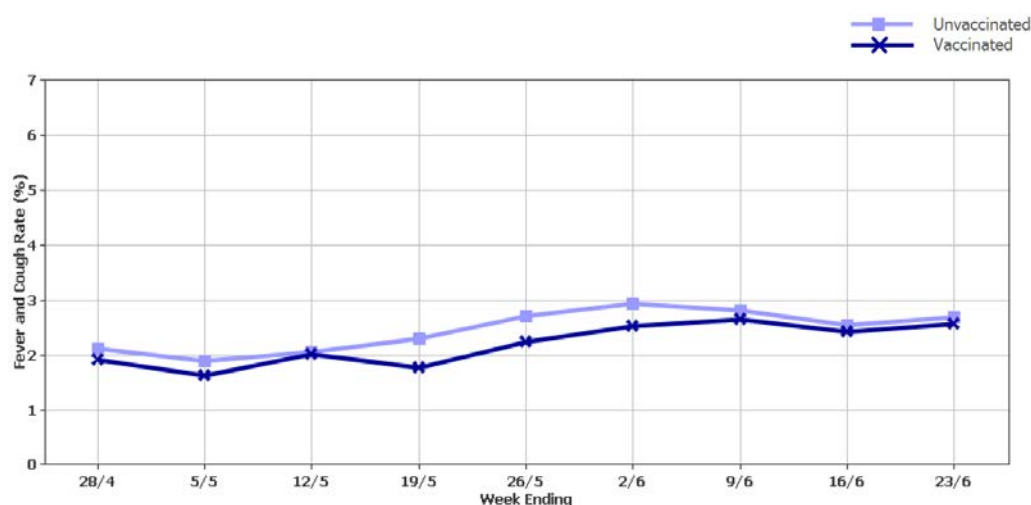
Community Level Surveillance

FluTracking

FluTracking, a national online system for collecting data on ILI in the community, noted that in the week ending 23 June 2013, fever and cough was reported by 2.6% of vaccinated participants and 2.7% of unvaccinated participants (figure 1).¹ Fever, cough and absence from normal duties was reported by 1.5% of vaccinated participants and 1.4% of unvaccinated participants. Rates of ILI among FluTracking participants have been relatively stable over the most recent fortnight and are less than in previous years for the same period (figure 2).

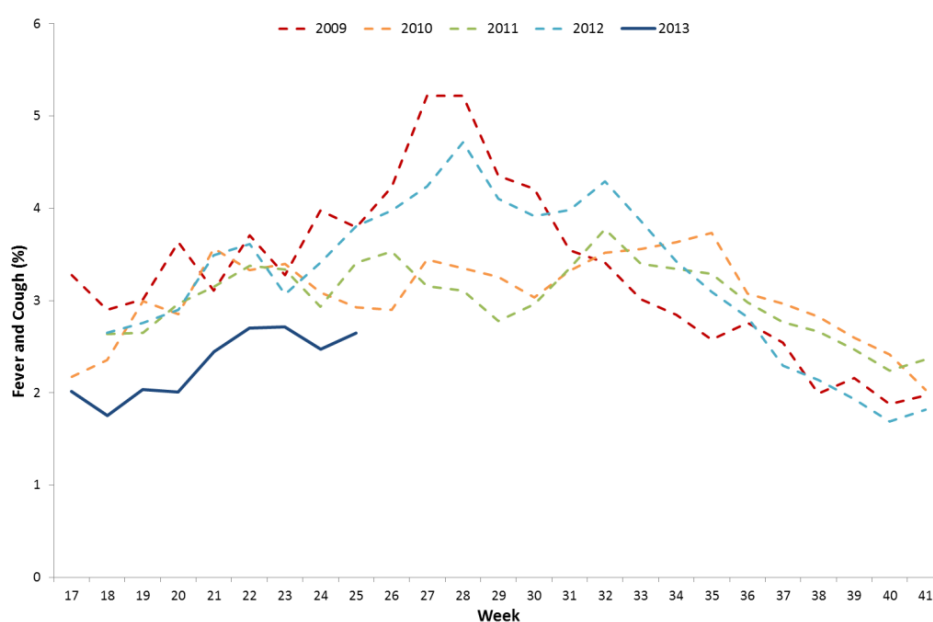
In the week ending 23 June 2013, 59% of participants reported having received the seasonal vaccine so far. Of the participants who identified as working face-to-face with patients, 77% have received the vaccine.

Figure 1. Proportion of cough and fever among FluTracking participants, week ending 28 April 2013 to 23 June 2013, by vaccination status and week



Source: FluTracking¹

Figure 2. Proportion of fever and cough among FluTracking participants, between May and October, 2009 to 2013, by week

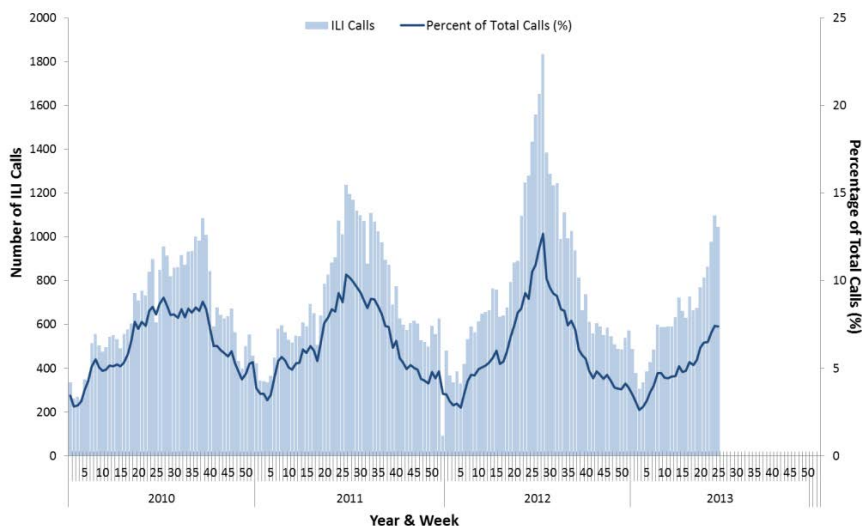


Source: FluTracking¹

National Health Call Centre Network

Following relatively steady increases in ILI related calls to the National Health Call Centre Network (NHCCN), in the week ending 23 June 2013 the number of ILI related calls decreased slightly to 1,100 calls. ILI calls during this week represented 7.4% of total calls. The number and proportion of ILI related calls to the NHCCN so far this year are consistent with historical trends (figure 3).

Figure 3. Number of calls to the NHCCN related to ILI and percentage of total calls, Australia, 1 January 2010 to 14 October 2013, by week

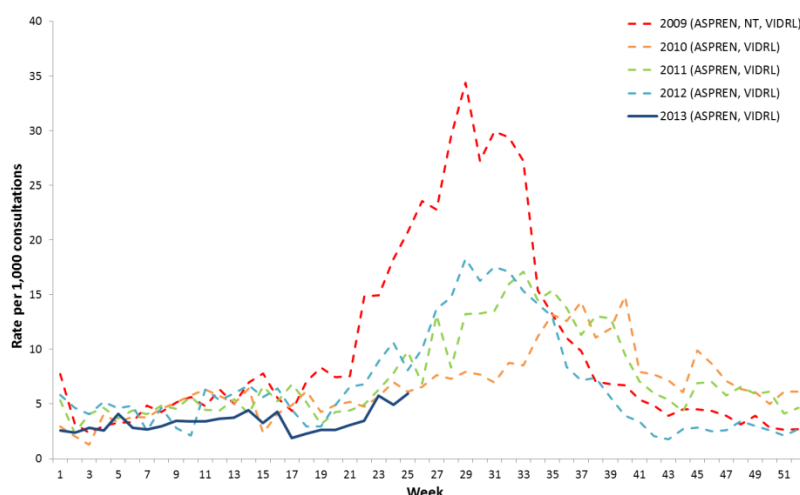


Note: NHCCN data do not include Queensland and Victoria
Source: NHCCN

Sentinel General Practice Surveillance

In the week ending 23 June 2013, the sentinel general practitioner ILI consultation rate increased to 6.0 cases per 1,000 consultations (figure 4). Compared with previous years, the ILI consultation rate is slightly lower than the usual rate for this time of year.

Figure 4. Weekly rate of ILI reported from GP ILI surveillance systems, 1 January 2009 to 23 June 2013, by week*



* Delays in the reporting of data may cause data to change retrospectively. As data from the previous Northern Territory surveillance scheme were combined with ASPREN and VIDRL surveillance data in 2009, rates may not be directly comparable with 2010-2013 trends. SOURCE: ASPREN and VIDRL² GP surveillance system.

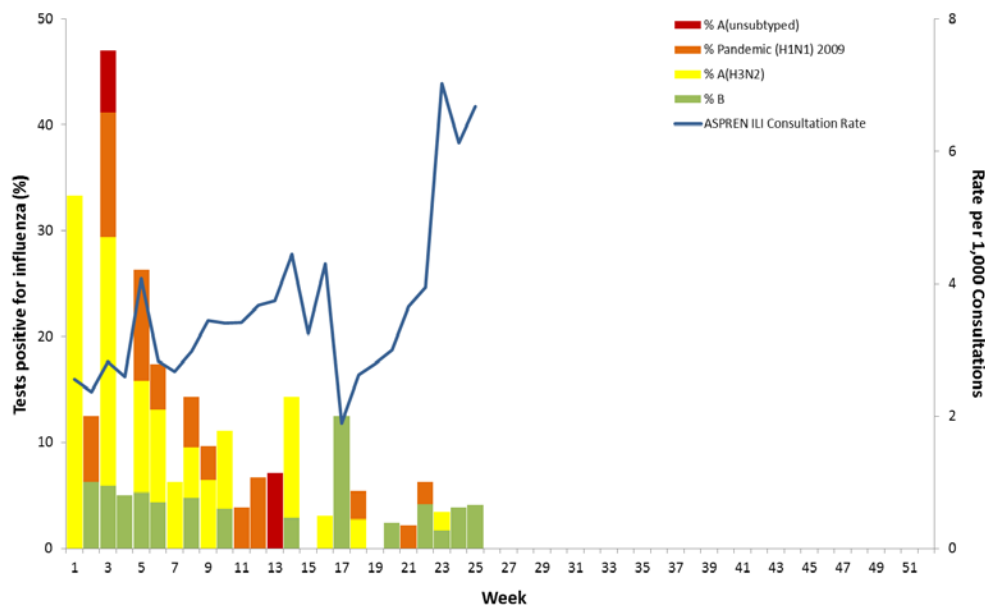
In the fortnight ending 23 June 2013, specimens were collected from around 40% of ASPREN ILI patients. Of these patients, 4.0% were positive for influenza, down from 4.7% in the previous fortnight. All of these specimens were positive for influenza type B (figure 5 and table 1). This fortnight, over a third of the specimens collected were positive for other respiratory viruses, with the majority of these being rhinovirus and respiratory syncytial virus.

Table 1. ASPREN laboratory respiratory viral test results of ILI consultations, 1 January to 23 June 2013

	Fortnight (9 June to 23 June 2013)	YTD (1 January – 23 June 2013)
Total specimens tested	101	729
Total Influenza Positive (%)	4.0	7.7
Influenza A (%)	0.0	5.1
<i>Pandemic (H1N1) 2009 (%)</i>	<i>0.0</i>	<i>1.8</i>
<i>A (H3N2) (%)</i>	<i>0.0</i>	<i>3.0</i>
<i>A (unsubtyped) (%)</i>	<i>0.0</i>	<i>0.3</i>
Influenza B (%)	4.0	2.6
Other Resp. Viruses (%)*	36.6	35.3

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

Figure 5. Proportion of respiratory viral tests positive for influenza in ILI patients and GP ILI consultation rate, 1 January to 23 June 2013, by week



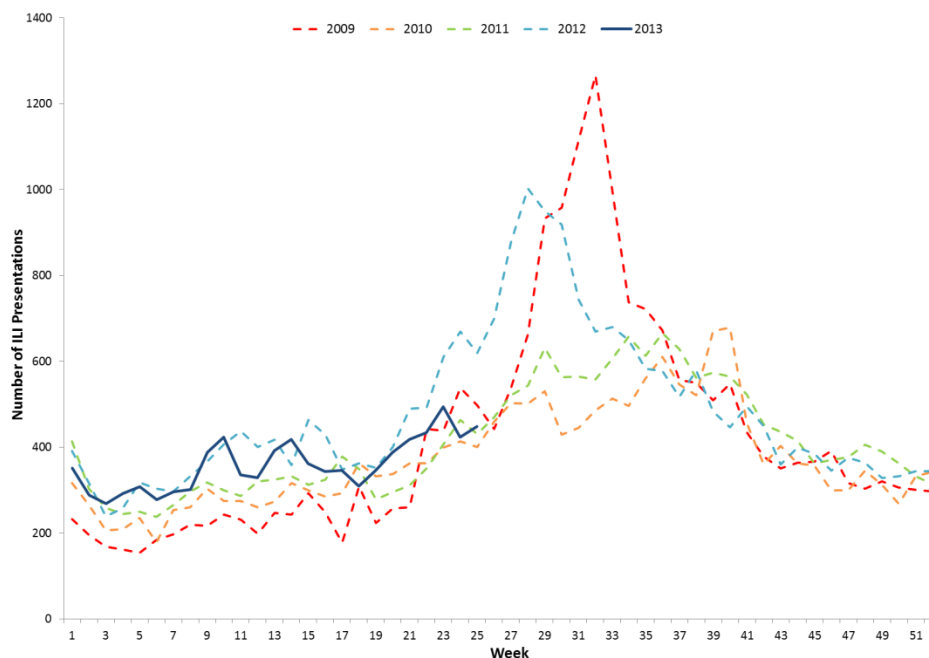
SOURCE: ASPREN and WA SPN

Sentinel Emergency Department Surveillance

Western Australia Emergency Departments

Respiratory viral presentations to Western Australia emergency departments increased slightly this week (figure 6). The number and rate of admissions remains relatively stable. The number of viral respiratory presentations is considered to be within the lower range of level reported in recent years. The proportion of cases admitted was 6.7% for the week ending 23 June 2013.

Figure 6. Number of respiratory viral presentations to Western Australia emergency departments, 1 January 2009 to 23 June 2013, by week



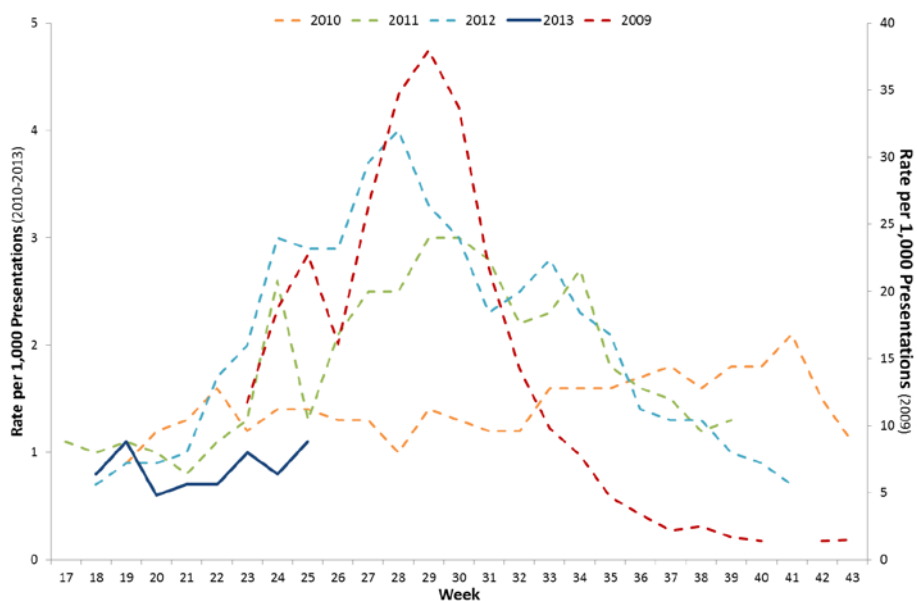
Source: WA 'Virus Watch' Report³

New South Wales Emergency Departments

In the week ending 23 June 2013 the number of patients presenting to NSW emergency departments with influenza-like illness was steady at a rate of 1.1 cases per 1,000 presentations. The presentation rate was below the usual range for this time of year (figure 7). Admissions from emergency departments to critical care units for ILI and pneumonia increased slightly this week and were within the usual range for this time of year. The NSW emergency department surveillance system uses a statistic called the 'index of increase', with value of 15 considered to suggest that influenza is circulating widely in the NSW community. Currently influenza-like

illness presentation are at an index of increase value of 13, suggesting that the influenza has not yet commenced in NSW.⁴

Figure 7. Rate of influenza-like illness presentations to New South Wales emergency departments, between May and October, 2009 to 2013, by week



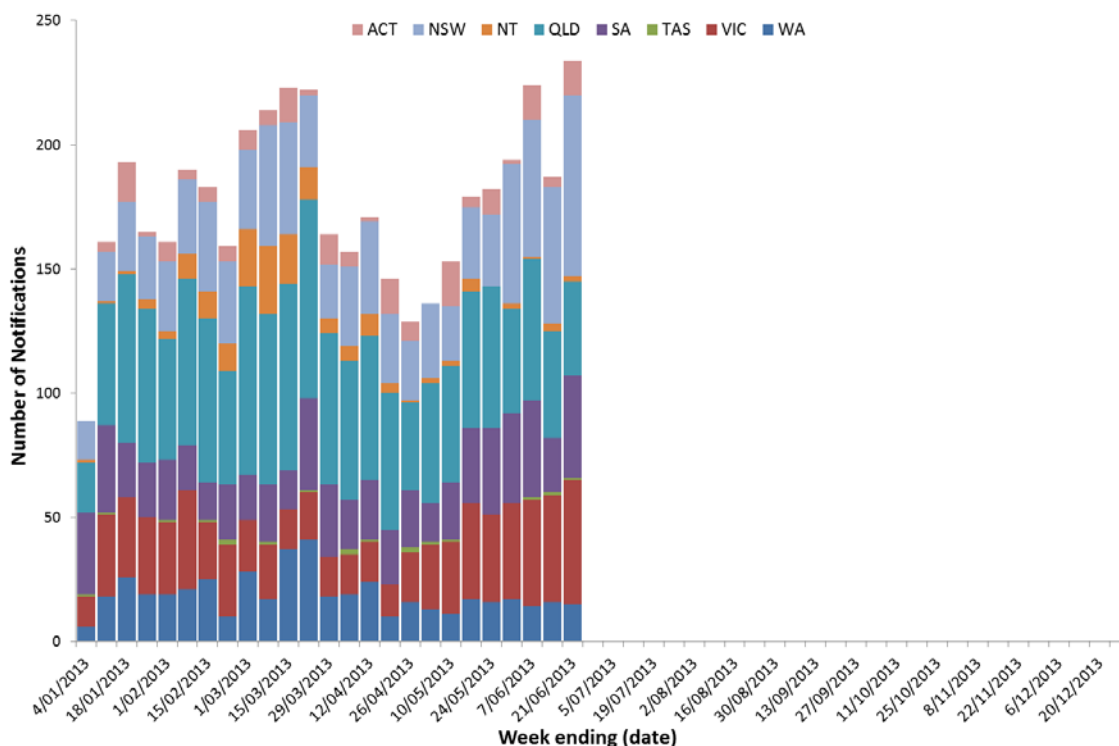
Source: 'NSW Health Influenza Surveillance Report'⁴

2. Laboratory Confirmed Influenza Activity

Notifications of Influenza to Health Departments

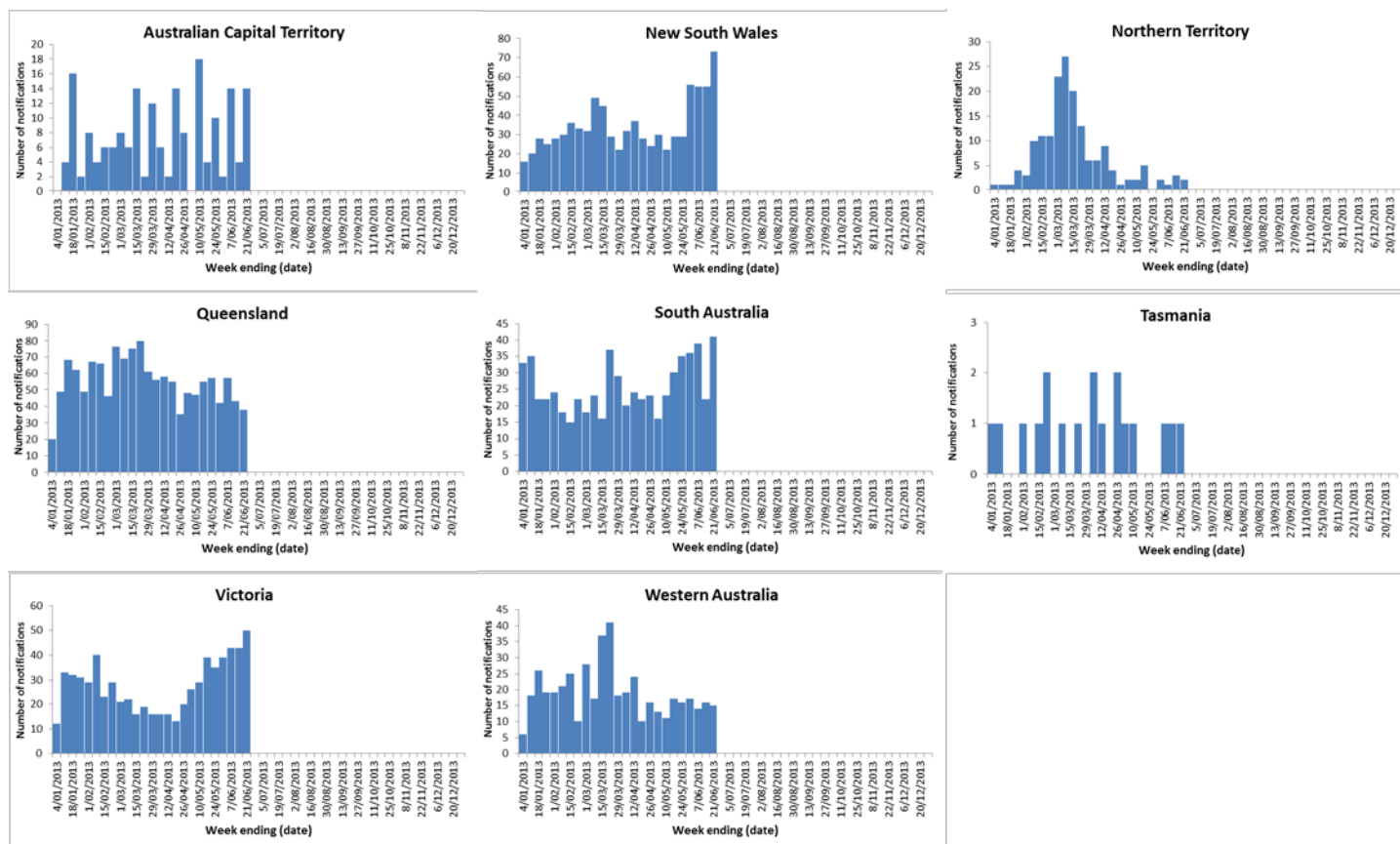
During the reporting period there were 421 laboratory confirmed influenza notifications reported to the NNDSS, similar to the number of notifications reported in the previous fortnight (418). Nationally, notifications have continued to remain relatively stable (figure 8). Almost a third of notifications this fortnight were from New South Wales (128), followed by Victoria (22%; 93) and Queensland (19%; 81). Notifications reported from all other jurisdictions this fortnight were: South Australia (63), Western Australia (31), the ACT (18), the NT (5) and Tasmania (2). A weekly breakdown of trends by state and territory highlights that there has been some recent increased influenza activity in Victoria, South Australia and New South Wales; however the relative increase in the number of notifications is small (figure 9).

Figure 8. Notifications of laboratory confirmed influenza, Australia, 1 January to 21 June 2013, by state or territory and week



Source: NNDSS

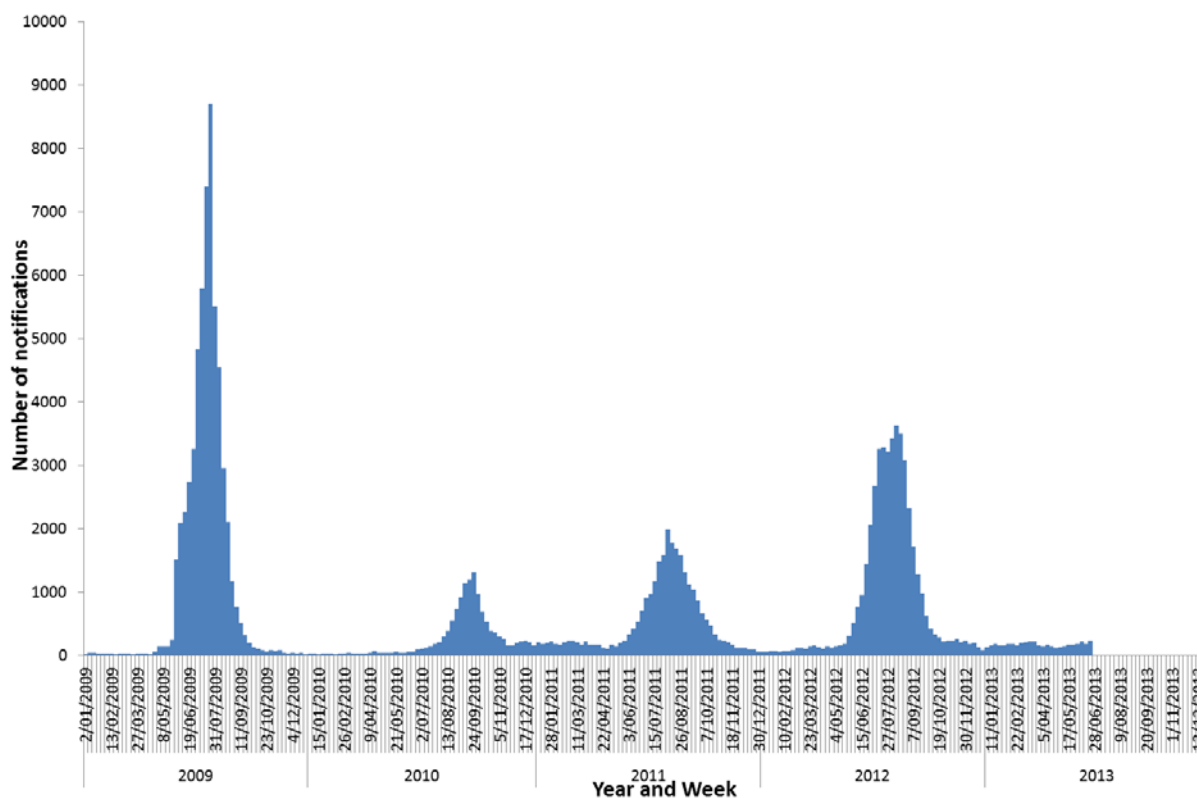
Figure 9. Notifications of laboratory confirmed influenza, 1 January to 21 June 2013, by state or territory and week



Source: NNDSS

Up to 21 June 2013, there have been 4,422 laboratory confirmed notifications of influenza diagnosed during 2013 (figure 10). Of these notifications, there have been 1,379 in Queensland, 863 in New South Wales, 692 in Victoria, 645 in South Australia, 473 in Western Australia, 184 in the ACT, 168 in the Northern Territory and 18 in Tasmania. Over the 2012-13 interseasonal period, higher than usual numbers of influenza notifications were reported from most jurisdictions.

Figure 10. Notifications of laboratory confirmed influenza, Australia, 1 January 2009 to 21 June 2013, by week

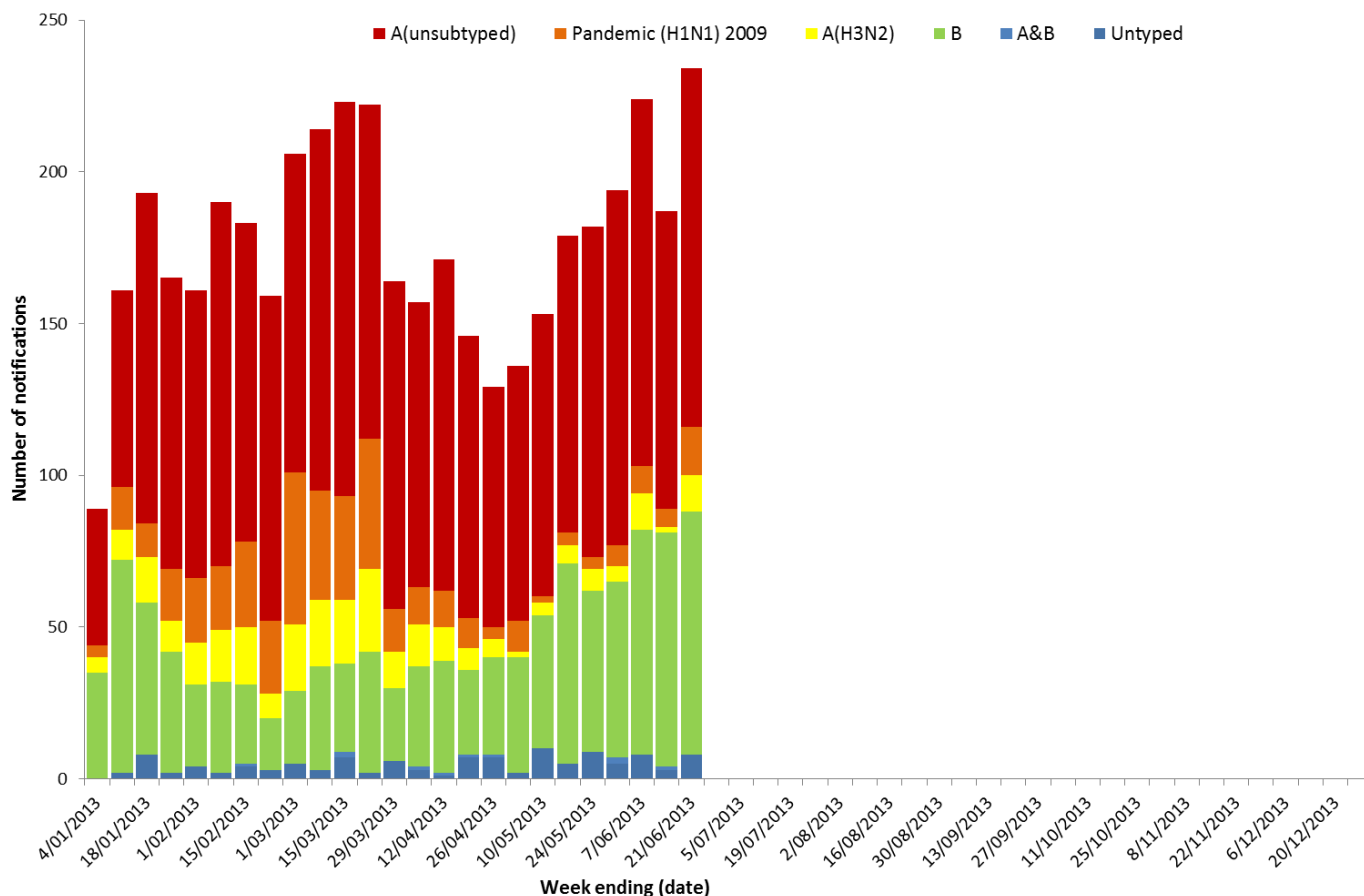


Source: NNDSS

Of the 421 influenza notifications reported to the NNDSS this reporting period, 252 were influenza A (216 were influenza A (unsubtyped), 22 were pandemic (H1N1) 2009 and 14 were A(H3N2)), 157 were influenza B, 1 was A&B and 11 were untyped (figure 11). Nationally, whilst influenza A remains the predominant influenza virus type representing 60% of notifications this reporting period, the proportion of influenza B notifications continued to increase (37%).

Up to 21 June 2013, 3,230 cases (73%) were reported as influenza A (57% influenza A (unsubtyped), 9% pandemic (H1N1) 2009 and 7% A(H3N2)) and 1,066 (24%) were influenza B. A further 10 (<1%) were influenza type A&B and 116 (3%) were untyped (figure 11). Whilst the majority of influenza A reports are unsubtyped, so far in 2013 more than 9% of overall notifications have been reported as pandemic (H1N1) 2009, compared to less than 1% in 2012.

Figure 11. Notifications of laboratory confirmed influenza, Australia, 1 January to 21 June 2013, by sub-type and week



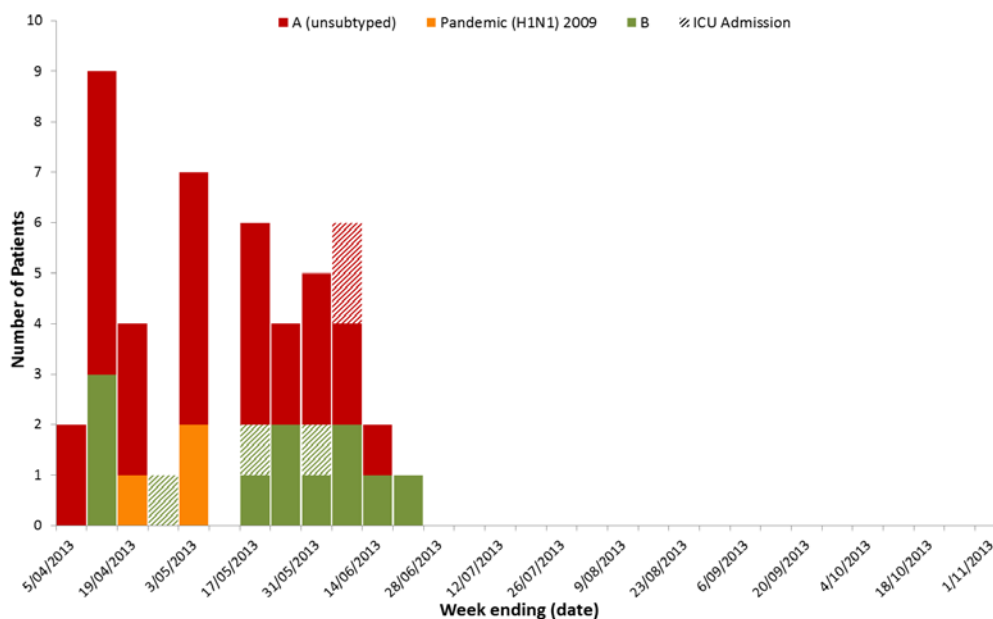
Source: NNDSS

Hospitalisations

Influenza Complications Alert Network (FluCAN)

The Influenza Complications Alert Network (FluCAN) sentinel hospital surveillance system has reported that there have been low numbers of admissions to the sentinel hospitals with confirmed influenza. Since 5 April 2013, 11% of influenza patients have been admitted directly to ICU. Overall, the majority of admissions have been with influenza A, with 30% of cases due to influenza B (figure 12). Around 34% of the cases are aged 65 years and over (median age 53 years) and 72% of all cases have known medical co-morbidities.

Figure 12. Number of influenza hospitalisations at sentinel hospitals, 5 April to 21 June 2013, by week and influenza subtype



Source: FluCAN Sentinel Hospitals

Deaths Associated with Influenza and Pneumonia

Nationally Notified Influenza Associated Deaths

So far in 2013, 6 influenza associated deaths have been notified to the NNDSS, with a median age of 67.5 years. The majority of these cases were reported as having an influenza type A infection. 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.

3. Virological Surveillance

Typing and Antigenic Characterisation

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

From 1 January to 24 June 2013, there were 178 Australian influenza viruses subtyped by the WHO CC with 46% being pandemic (H1N1) 2009, around a third influenza A(H3N2) and the remainder influenza B, predominately from the Yamagata lineage (table 2).

Table 2. Australian influenza viruses typed by HI or PCR from the WHO Collaborating Centre, 1 January to 24 June 2013

Type/Subtype	ACT	NSW	NT	QLD	SA	TAS	VIC	WA	TOTAL
Pandemic (H1N1) 2009	0	6	20	48	7	0	1	0	82
A(H3N2)	2	4	2	20	5	1	29	0	63
B/Victoria lineage	1	2	0	3	4	0	0	0	10
B/Yamagata lineage	0	6	0	7	3	2	5	0	23
Total	3	18	22	78	19	3	35	0	178

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.

Antiviral Resistance

The WHO CC has reported that from 1 January to 24 June 2013, one influenza virus (out of 162 tested) has shown reduced inhibition to the neuraminidase inhibitor oseltamivir by enzyme inhibition assay. This virus was a pandemic (H1N1) 2009 virus with a H275Y mutation in the neuraminidase gene, which is known to confer resistance to oseltamivir.

2013-14 Northern Hemisphere Vaccine

In February 2013, the WHO recommended⁵ that trivalent vaccines for use in the 2013-14 northern hemisphere influenza season contain the following:

- an A/California/7/2009 (H1N1)pdm09-like virus;
- an A(H3N2) virus antigenically like the cell-propagated prototype virus A/Victoria/361/2011;
- a B/Massachusetts/2/2012-like virus.

Additionally, WHO recommended that quadrivalent vaccines containing two influenza B viruses contain the above three viruses and a B/Brisbane/60/2008-like virus.

In comparison to the current 2013 southern hemisphere vaccine, this recommendation changed the B component and also recommended a change in the virus used as an A/Victoria/361/2011-like virus. WHO noted that whilst the B component continued to be of the B/Yamagata lineage, the HA genes of most viruses of the B/Yamagata lineage fell within two genetic clades that were antigenically distinct. As the proportion of viruses in clade 2 (represented by B/Massachusetts/2/2012) markedly increased over viruses in clade 3 (represented by B/Wisconsin/1/2010) in the lead up to the February 2013 assessment, the WHO expert group therefore recommended the change to the B component. Whilst most of the circulating viruses have remained antigenically like the cell-propagated A/Victoria/361/2011 virus, the egg propagated vaccine virus had antigenic changes that induced antibodies that reacted less well to recently circulating cell-propagated viruses.⁶

4. International Influenza Surveillance

The WHO⁷ has reported that as at 21 June 2013, influenza activity in the northern hemisphere temperate zones has continued to decrease to low levels. Similarly, across most regions of tropical Asia activity has decreased, however in Sri Lanka and Viet Nam influenza activity associated with influenza A has continued to increase. In the temperate countries of South America and South Africa, influenza activity has started to increase consistent with the beginning of their traditional influenza seasons.

In New Zealand⁸, through sentinel surveillance the national ILI consultation rate was 13.9 per 100,000 patient population for the week ending 23 June 2013. The current rate of ILI is well below the baseline level of activity (50 ILI consultations per 100,000 patient population). Virological surveillance through both sentinel and non-sentinel laboratories shows that so far this year, 44% have been influenza type B viruses, 22% influenza A(H3N2), 21% were influenza A(untyped) and 13% were pandemic (H1N1) 2009 virus detections.

National Influenza Centres (NICs) and other national influenza laboratories from 66 countries, areas or territories reported that for the period 26 May to 8 June 2013, a total of 906 specimens were positive for influenza viruses with 68% being influenza A and 32% were influenza B. Of the sub-typed influenza A viruses, 75% were pandemic (H1N1) 2009 and 25% were influenza A(H3N2). Of the characterised B viruses, 71% belong to the B/Yamagata lineage and 29% to the B/Victoria lineage.⁹

Influenza A(H3N2) variant virus outbreak – United States of America¹⁰

In 2010 a variant influenza A(H3N2) virus was identified in pigs in the United States. The variant virus is a mixture of an influenza A(H3N2) virus, already present in pigs in North America, with the matrix (M) gene from the pandemic (H1N1) 2009 virus. In 2011, 12 cases of A(H3N2)v infection were detected in the United States, with a further 309 cases detected in 2012. More recently in 2013, an additional 4 cases have been detected. To date, all human infections have occurred in the United States and the epidemiology of the current outbreak so far appears to be consistent with the 2012 outbreak of cases.

The infections have mostly been associated with prolonged exposure to pigs at agricultural fairs. Limited human-to-human spread of the virus had been detected in 2012, however no sustained community transmission was identified. Illness associated with influenza A(H3N2)v infection has been mostly mild with symptoms similar to seasonal influenza, however like seasonal influenza, serious illness can occur especially among people with certain underlying health conditions, pregnant women, elderly persons and young children. In 2012, of the 309 cases detected, there were 16 associated hospitalisations and 1 death; so far in 2013 no hospitalisations or deaths have been reported.

The US CDC note that steps to make a vaccine against influenza A(H3N2)v have been taken, however currently no vaccine is available. The current northern hemisphere (and also southern hemisphere) seasonal influenza vaccines are not formulated to provide protection against influenza A(H3N2)v, however antiviral medications, oseltamivir and zanamivir, used to treat seasonal influenza can treat influenza A(H3N2)v infections. Previous serological studies have suggested that significant numbers of adults have some existing immunity against this virus, however children aged less than 10 years have little to no immunity against the influenza A(H3N2)v virus.

Human infection caused by the avian influenza A (H7N9) virus - China^{11,12}

On 31 March 2013, the public health authorities of China reported to WHO three cases of laboratory-confirmed human infection with avian influenza A(H7N9) virus. Since February 2013, when the first case reported their illness onset, a total of 132 laboratory-confirmed cases of human infection with avian influenza A(H7N9) have been reported to WHO, including 37 deaths. Almost all of the cases were detected in China (131) and with one case from Taiwan reporting recent travel in China. This was the first time that human infection with the avian influenza A(H7N9) subtype had been detected.

Most cases have occurred in middle-aged or older men and most cases have been considered severe. Human infection appears to be related to exposure to live poultry or contaminated environments, however investigations are ongoing regarding the animal reservoir(s) which the virus is circulating in, the main exposures and routes of transmission, and the scope of the virus spread among people and animals. Whilst four small human clusters have been reported, evidence does not support sustained human-to-human transmission.

Since 21 May 2013 no new human cases of avian influenza A(H7N9) have been reported.

5. 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](mailto:flu@health.gov.au) (flu@health.gov.au).

Geographic Spread of Influenza Activity

(i) Influenza Activity Levels

Activity level	Laboratory notifications		Influenza outbreaks
Sporadic	Small no of lab confirmed influenza detections (not above expected background level) ⁺	AND	No outbreaks
Localised	Recent increase in lab confirmed influenza detections above background level ⁺⁺ in less than 50% of the influenza surveillance regions ^{**} within the state or area	OR	Single outbreak only
Regional	Significant ^{***} recent increase in lab confirmed influenza detections above baseline in less than 50% of the influenza surveillance regions within the state or area	OR	> 1 outbreaks occurring in less than 50% of the influenza surveillance regions within the state or area ⁺⁺⁺
Widespread	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	OR	> 1 outbreaks occurring in equal to or greater than 50% of the influenza surveillance regions within the state or area

+ Small no of lab detections = not above expected background level as defined by state epidemiologists.

++ Increase in lab confirmed influenza detections = above expected threshold 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.

+++ Areas to be subdivision of NT (2 regions), WA (3 regions) and QLD (3 regions) that reflect significant climatic differences within those states resulting in differences in the timing of seasonal influenza activity on a regular basis.

Recent = within the current reporting period.

(ii) Syndromic Surveillance Activity

Syndromic surveillance systems*
No evidence of increase in ILI via syndromic surveillance systems
Evidence of increase in ILI via syndromic surveillance systems

* 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). Syndromic surveillance is reported on a state 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 symptoms in communities. Further information on FluTracking is available from the [FluTracking website](http://www.flutracking.net/index.html) (www.flutracking.net/index.html).

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. Further information about the NHCCN, please refer to the [Health Direct website](http://www.healthdirect.org.au) (http://www.healthdirect.org.au).

Sentinel General Practice Surveillance

The sentinel general practice ILI surveillance data between 2009 and 2013 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 2013 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.

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

Sentinel Emergency Department Data

- (i) *Western Australia* – Emergency Department ILI surveillance data are extracted from the Western Australian ‘Virus Watch’ Report. This report is produced weekly. Emergency Department data are provided by the Emergency Department Information System (EDIS), which incorporates data from the following hospitals: Royal Perth Hospital, Sir Charles Gairdner Hospital, Fremantle Hospital, Princess Margaret Hospital, King Edward Memorial Hospital, Bunbury Hospital, Armadale Hospital, Joondalup Health Campus, Swan District Hospital and Rockingham General Hospital. For further information, please refer to the [Western Australian Department of Health Virus WATCH website](http://www.public.health.wa.gov.au/3/487/3/virus_watch.pm) (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](http://www.health.nsw.gov.au/Infectious/Influenza/Pages/reports.aspx) (www.health.nsw.gov.au/Infectious/Influenza/Pages/reports.aspx).

- (iii) *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 from the [Department of Health and Ageing website](http://www.health.gov.au/internet/main/publishing.nsf/Content/cda-surveil-nndss-casedefs-cd_flu.htm) (www.health.gov.au/internet/main/publishing.nsf/Content/cda-surveil-nndss-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;
- 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. For further information refer to [Qld Health's Influenza Surveillance website](http://www.health.qld.gov.au/ph/cdb/sru_influenza.asp) (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 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 'NSW Health Influenza Surveillance Report'. 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.

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