



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 by the following 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 • gene drift or shift from laboratory surveillance.

Summary

- Levels of influenza-like illness (ILI) in the community show signs of increasing through some surveillance systems (ASPREN, WA and NSW Emergency Departments and NHCCN calls).
- Reporting from laboratories suggests that little of this community ILI is due to influenza. Respiratory syncytial virus (RSV) was the most common respiratory virus diagnosed by WA sentinel laboratories, picornavirus in VIC, RSV and rhinovirus were the most common respiratory viruses in NSW.
- Of the 931 confirmed cases of influenza diagnosed during 2010 up to 18 June, 9.2% have been sub-typed as pandemic (H1N1) 2009, 76.1% as type A not sub-typed (likely to be mostly pandemic influenza), 0.9% as A/H3N2 and 9.1% have been characterised as type B.
- Sentinel hospitals have reported no hospitalisations for influenza during this period, and ANZICS reported no ICU admissions for influenza A.
- In 2010, there have been 86 confirmed cases of pandemic (H1N1) 2009 influenza reported in Australia, bringing the total of confirmed cases to 37,722 since May 2009. There have been two new confirmed cases of pandemic (H1N1) 2009 influenza diagnosed and reported in Australia (Qld and WA) during this reporting period.
- Influenza B is the predominant type of influenza virus circulating worldwide. Pandemic (H1N1) 2009 influenza virus accounted for 70.8% of all influenza A viruses subtyped globally in the last reporting period.
- In China, influenza B accounted for 78.2% of influenza viruses detected in the week to 6 June 2010. Of these, approximately 51.7% are the same strain as that in the 2010 Southern Hemisphere vaccine.
- As at 13 June 2010, the WHO Regional Offices reported over 18,172 deaths associated with pandemic (H1N1) 2009 influenza worldwide. Overall pandemic influenza transmission remains low.

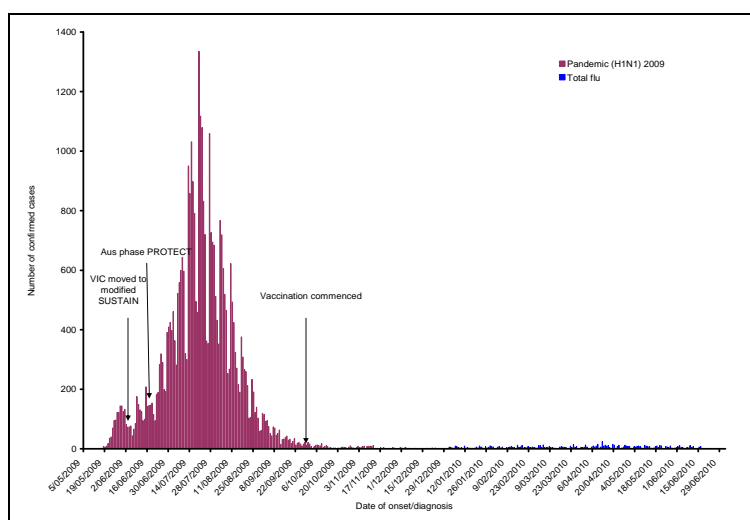
1. Influenza activity in Australia

Laboratory Confirmed Cases

Pandemic influenza activity remains low and sporadic cases of pandemic influenza continue to be reported without evidence of sustained community transmission (Figure 1). There were two laboratory confirmed pandemic (H1N1) 2009 cases (Qld, WA) diagnosed during this reporting period.

In the same period, 11 confirmed cases of influenza have been diagnosed. They included 7 of type A not sub-typed (6 in Qld, 1 in SA), one of type A/H1N1(Vic) and one untyped (WA).

Figure 1. Laboratory confirmed cases of pandemic (H1N1) 2009 and total influenza in Australia, to 18 June 2010

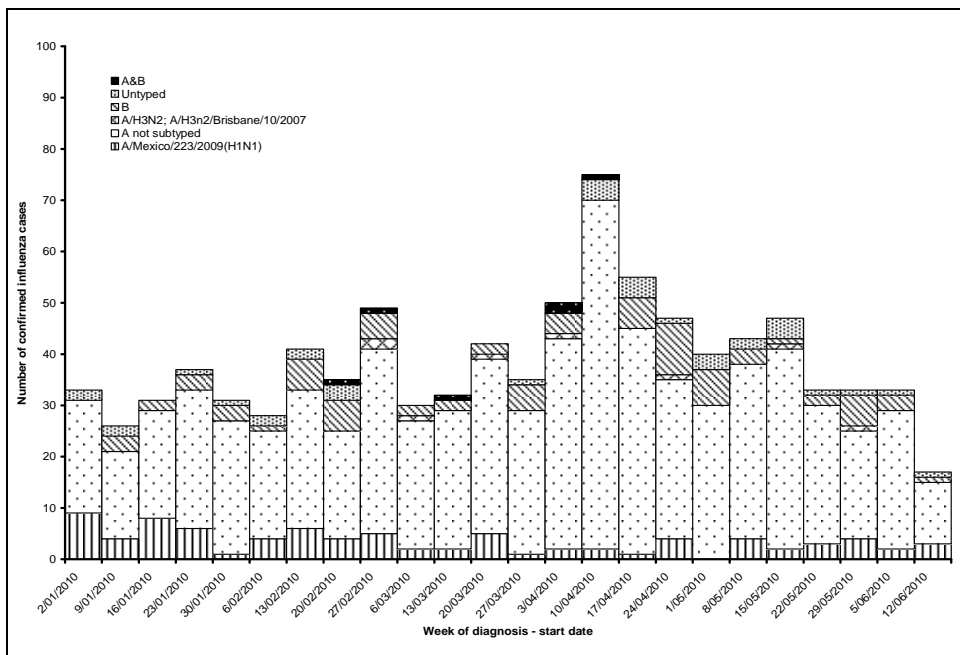


Note: Total influenza series starts on 1 January 2010.
Source: NetEpi (2009; NSW 2010) and NNDSS (2010)

There have been 931 confirmed cases of influenza of all types diagnosed during 2010 up to 18 June. Of those, 86 (9.2%) have been sub-typed as pandemic (H1N1) 2009, 708 (76.1%) as influenza type A not sub-typed, 8 (0.9%) as A/H3N2 and 6 (0.6%) as type A&B. A further 85 (9.1%) have been characterised as influenza type B and 36 (3.9%) have been untyped (Figure 2).

Influenza type A not further sub-typed is the predominant type in Australia to date this year. While it is expected that the majority will be pandemic (H1N1) 2009, these cases have a higher age profile (median age 44 years) than cases confirmed with the pandemic (H1N1) 2009 strain (28 years in 2010). The proportion of women diagnosed with Influenza type A not further sub-typed is also higher (51.7%) compared to that diagnosed with the pandemic (H1N1) 2009 strain (46.5% in 2010).

Figure 2. Laboratory confirmed cases of influenza (pandemic (H1N1) 2009 and seasonal) in Australia, 1 January 2010 to 18 June 2010, by week and type



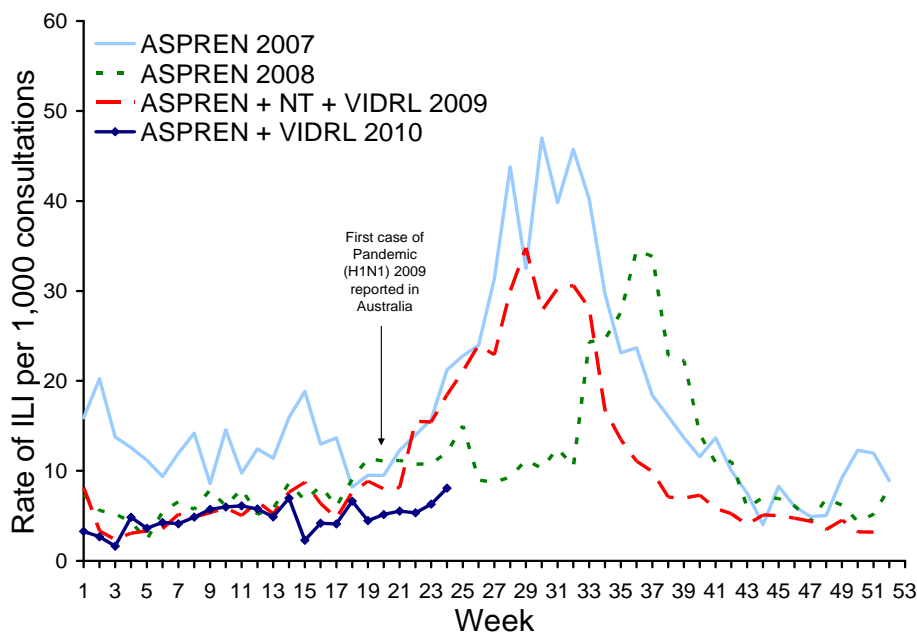
Source: NNDSS and NetEpi (NSW).

Influenza-Like Illness

Sentinel General Practice Surveillance

In the week ending 13 June 2010, national ILI consultation rates to sentinel GPs remained low and trending upwards, with the presentation rate approximately eight cases per 1,000 consultations (Figure 3). Seventy-six GPs reported through ASPREN this reporting period.

Figure 3. Weekly rate of ILI reported from GP ILI surveillance systems from 1 January 2007 to 13 June 2010*



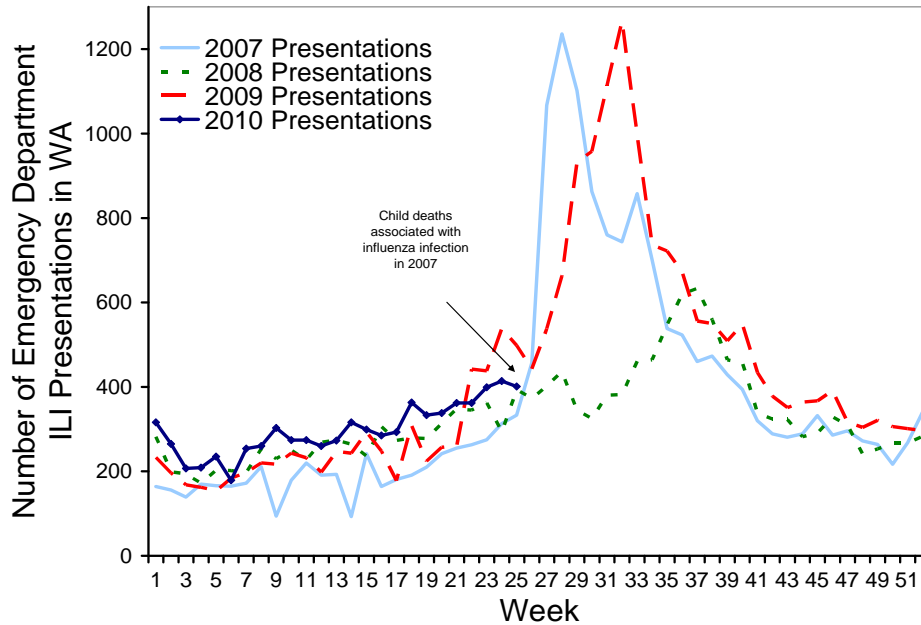
* Delays in the reporting of data may cause data to change retrospectively. As data from the NT surveillance system is combined with ASPREN data for 2010, rates may not be directly comparable across 2007, 2008 and 2009.

SOURCE: ASPREN, and VIDRL GP surveillance system.

WA Emergency Departments

Respiratory viral presentations reported in Western Australian EDs in the week ending 20 June 2010 continue to show an upward trend (Figure 4).

Figure 4. Number of respiratory viral presentations to Western Australia EDs from 1 January 2007 to 20 June 2010 by week

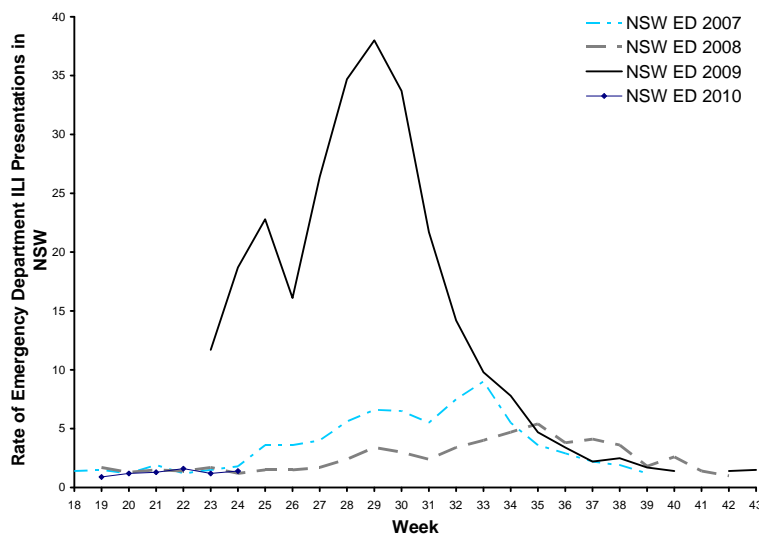


Source: WA 'Virus Watch' Report

NSW Emergency Departments

In the week ending 11 June 2010, ILI presentations to NSW EDs remained low and similar to levels seen at the same time in 2007 and 2008 (Figure 5). In the month of May 2010, there were 187 ILI presentations to NSW ED's, which was an increase from 150 in April 2010 but lower than the count of 915 for May 2009. There were 14 admissions to hospital following presentation to emergency departments with ILI in May 2010.

Figure 5: ILI presentations to NSW EDs from 2007-2010, by week.



Source: NSW Health 'Influenza Weekly Epidemiology Report

Geographic spread of influenza and ILI – Jurisdictional Surveillance

In the fortnight ending 11 June 2010, influenza and ILI activity as reported by state and territory Health Departments indicated that there was 'no' activity in one state (VIC) and 'sporadic' activity in all other states (Figure 6).

'No' activity is defined as no laboratory-confirmed cases of influenza and no increase in cases in syndromic surveillance systems. 'Sporadic' activity is defined as small numbers of laboratory-confirmed influenza cases or a single laboratory-confirmed influenza outbreak during the reporting period, but no increase in cases in syndromic surveillance systems.

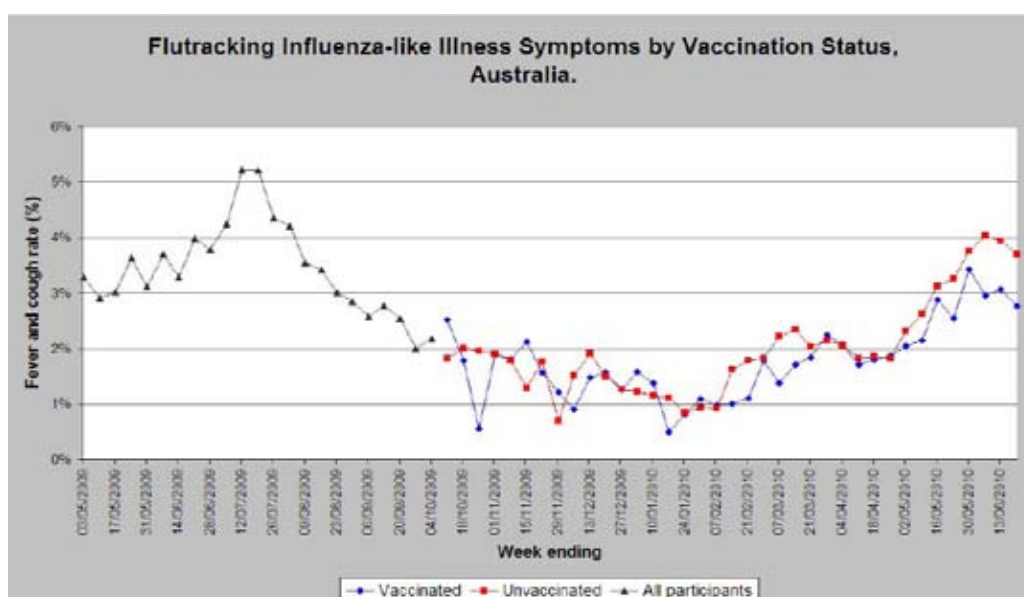
Figure 6. Map of influenza and ILI activity, by state and territory, during fortnight ending 11 June 2010



Flutracking

Flutracking, a national online system for collecting data on ILI in the community, reported that ILI levels decreased in the week ending 20 June 2010 (Figure 7).

Figure 7. Rate of ILI symptoms and absence from regular duties among Flutracking participants by week, from week ending 6 June 2009 to week ending 20 June 2010



Source: Flutracking Interim Weekly Report

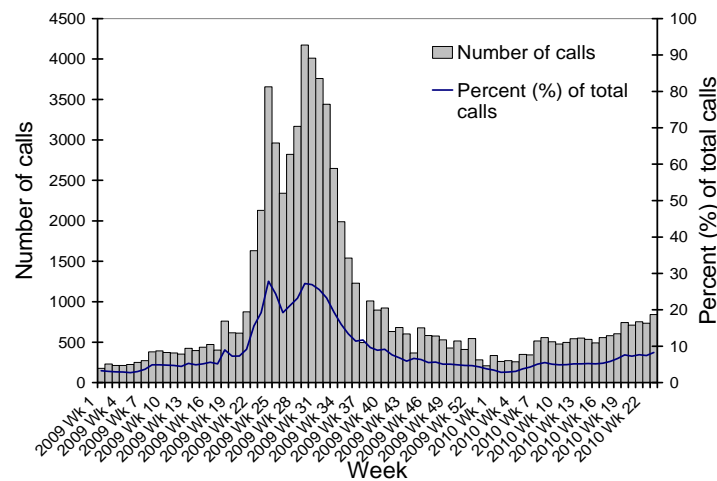
National Health Call Centre Network

The case definition for ILI calls to the National Health Call Centre Network (NHCCN) has changed as of this reporting period in order to include ILI-related calls in children under 15 years of age, which were not being included in the previous case definition due to a change in recording calls by the service provider. The new case definition includes more caller groups, and as such total call numbers have increased for both 2009 and 2010.

Although ILI-related calls have been increasing gradually from the start of 2010, the number of ILI calls, and percent of total calls, remain at levels similar to late 2009 (Figure 8). Call numbers cannot be compared between early 2009 and early 2010 as not all call centres were online in early 2009. The difference in operating call centre numbers accounts for this apparent increase in recorded ILI calls (and baseline levels) between the two years.

The number of calls to the National Health Call Centre Network (NHCCN) continued to increase this reporting period, and remains at baseline levels (Figure 8).

Figure 8. Number of calls to the NHCCN related to ILI, Australia, 1 January 2009 to 18 June 2010

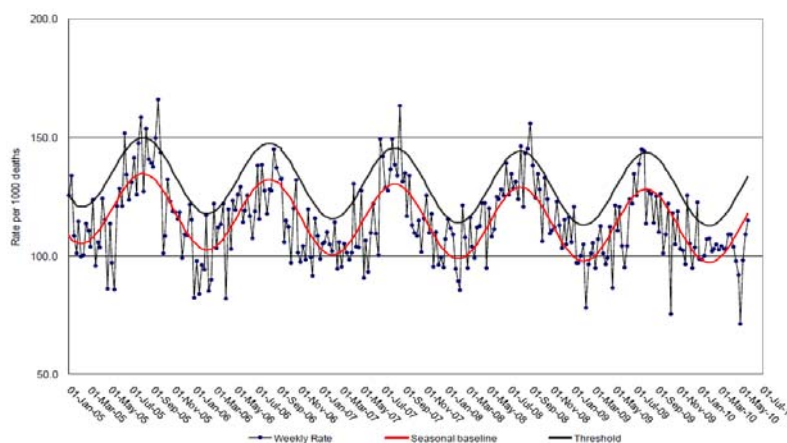


Note: national data does not include QLD and VIC
Source: NHCCN data

Deaths associated with influenza and pneumonia

Death registration data show that as at 28 May 2010, there were 96 pneumonia or influenza deaths per 1,000 deaths in NSW, which is below the seasonal threshold of 117 per 1,000 (Figure 9).

Figure 9. Rate of deaths classified as influenza and pneumonia from the NSW Registered Death Certificates, 2005 to 11 June 2010.

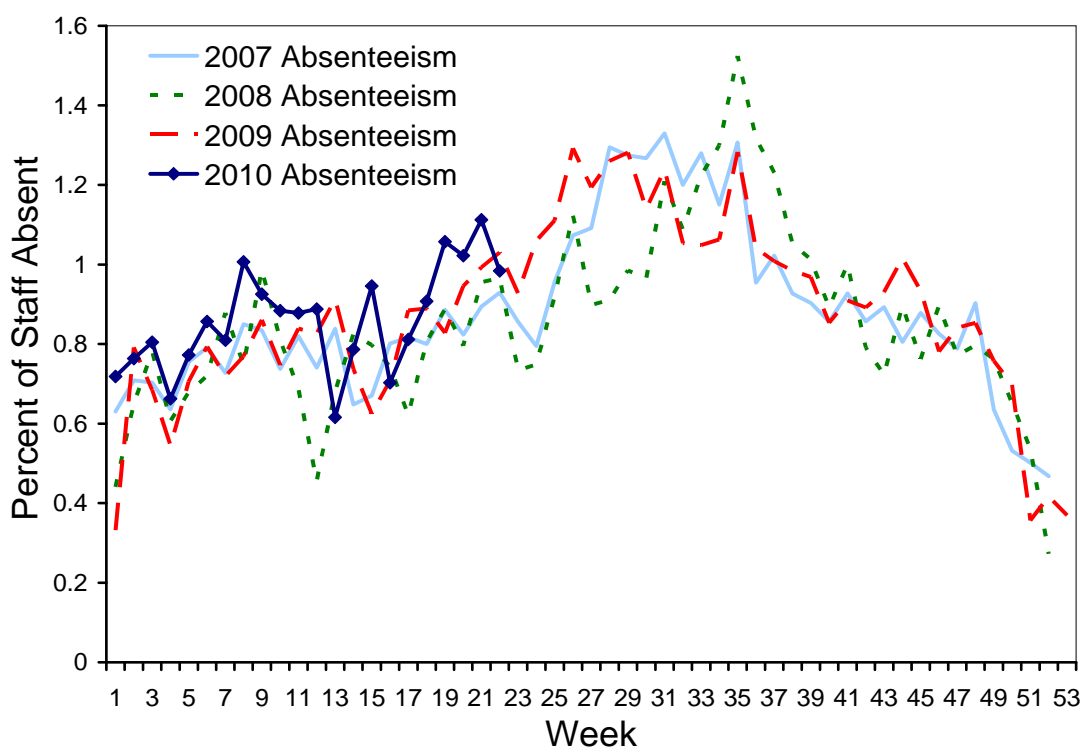


Source: NSW 'Influenza Monthly Epidemiology Report'

Absenteeism

In the week ending 9 June 2010, national absenteeism decreased, and was similar to levels seen at the same time in previous years (Figure 10).

Figure 10. Rates of absenteeism (greater than 3 days absent on sick leave), national employer, from 28 January 2007 to 9 June 2010, by week.



SOURCE: Absenteeism data

Sentinel Laboratory Surveillance - confirmed influenza notifications

Results from sentinel laboratory surveillance systems for this reporting period show that 2.2% (7/313) of the respiratory tests conducted over this period were positive for influenza (Table 1).

Table 1. Laboratory respiratory tests that tested positive for influenza

	ASPREN – national	NSW NIC	WA NIC	NT (Reported by WA NIC)	VIC NIC
Number of specimens tested	24	82	128	N/A	79
Number tested which were Influenza A	2	0	5	0	0
<i>Number tested which were pandemic (H1N1) 2009</i>	0	0	2	0	0
<i>Number tested which were seasonal A/H1N1</i>	0	0	0	0	0
<i>Number tested which were A/H3N2</i>	0	0	3	0	0
<i>Number tested which were Influenza A untyped</i>	2	0	0	0	0
Number tested which were Influenza B	0	0	0	0	0
The most common respiratory virus detected	RSV	RSV & rhinovirus	RSV	N/A	picornavirus

2. Overview of influenza severity to 18 June 2010 ¹

While pandemic (H1N1) 2009 is generally considered a mild disease at the community level, it has had serious consequences for some who experience it. Figures of hospitalisations, ICU admissions and deaths are currently used as indicators of the severity of the disease in Australia (Table 2).

Pandemic (H1N1) data for 2009 are currently being finalised through cleaning and validation processes. It is possible that these processes will result in some changes in the data presented here. Validated data will be progressively reported as these steps are completed.

There have been a total of 37,722 confirmed cases of pandemic (H1N1) 2009 in Australia as at 11 June 2010, including 191 pandemic influenza-associated deaths. Of these, 37,636 cases were reported in 2009 and 86 cases were reported in 2010.

Table 2. Summary of severity indicators of pandemic (H1N1) in Australia, 2009 and 2010 up to 18 June 2010

	2009 [#]				2010 ^a
	Confirmed pandemic (H1N1) 2009 cases	Hospitalised cases	ICU cases	Deaths	Confirmed (H1N1) 2009 cases
Total number	37,636	13% (4,992/37,636) confirmed cases)	14% (681/4,992 hospitalisations)	191	86
Crude rate per 100,000 population	172.1	22.8	3.1	0.9	0.4
Median age (years)	21	31	44 [^]	53 [^]	28
Females	51% (19,139/37,636)	51% (2,528/4,992)	53% (364/681)	44%	46.5% (40/86)
Vulnerable groups (Indigenous persons, pregnant women & individuals with at least 1 co-morbidity)	n/a	58% (2,892/4,992)	74% (504/681)	67%	n/a
Indigenous people~	11% (3,877/34,750)	20% (808/4,048)	19% (102/533)	13%	3.3% (2/60)
Pregnant women*	n/a	27% (287/1,056 hospitalised females aged 15-44 years)	16% (47/289) hospitalised pregnant women)	4%	n/a
Cases with at least 1 co-morbidity	n/a	46% (2,303/4,992)	67% (457/681)	62%	n/a

^a Data for 2009 from NetEpi, Data for 2010 from NNDSS and NetEpi (NSW).

[#]Data are extracted from a number of sources depending on the availability of information. Figures used in the analysis have been provided in parentheses. Data are not always complete for each summarised figure.

~The denominator for this row is the number of confirmed cases for which Indigenous status is known. In 2010, 26 cases had Indigenous status unknown.

* Includes women in the post-partum period.

[^] Validation of data has identified anomalies affecting median ages for ICU cases and deaths in reports #28-33 2009 and report #1 2010. Correction has resulted in a change in the median ages of ICU cases and deaths from report #2, 2010.

¹ Note that while the analysis of severity is on-going, updates are presented as required when there are significant changes detected. With the current low levels of pandemic (H1N1) 2009 influenza activity in Australia it is anticipated that the indicators of pandemic severity will not vary significantly.

Influenza Hospitalisations

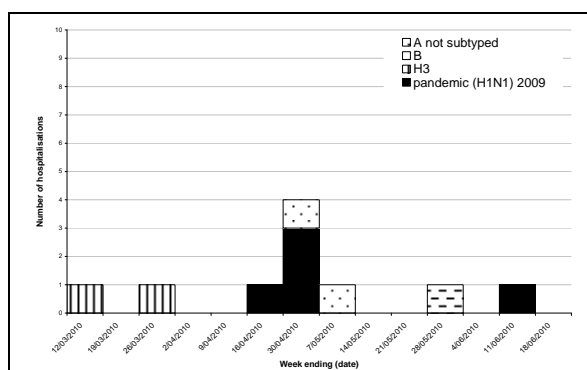
The Influenza Complications Alert Network (FluCAN) reported no influenza hospitalisations from selected hospitals for the week ending 18 June 2010. For the period of 1 March to 18 June 2010, FluCAN has reported a total of 10 influenza hospitalisations (Table 3 and Figure 11). Of those, five have been associated with pandemic (H1N1) 2009, including three with ICU admission.

Table 3. Number of influenza hospitalisations, sentinel hospitals, Australia, 1 March to 18 June 2010

Type of influenza	Week ending	Total 1 March – 18 June
	18 June 2010	
Pandemic (H1N1)	0	5
Type A/H3	0	2
Type B	0	2
Type A not subtyped	0	1
<i>All types</i>	<i>0</i>	<i>10</i>

Source: Influenza Complications Alert Network (FluCAN). Data are from 11 sentinel hospitals from all jurisdictions except NT.

Figure 11. Number of influenza hospitalisations, sentinel hospitals, Australia, 1 March to 18 June 2010

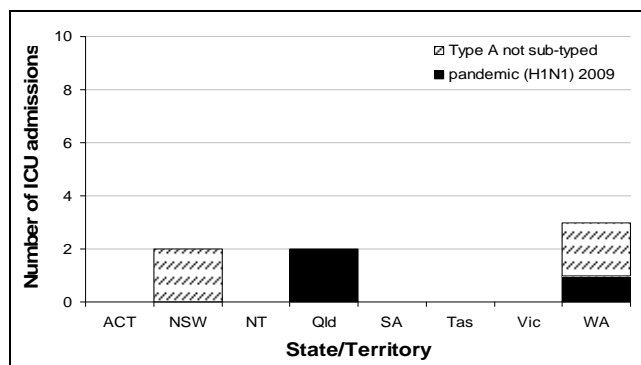


Source: FluCAN data from 11 sentinel hospitals in all jurisdictions except NT

Intensive care

The Australian and New Zealand Intensive Care Society (ANZICS) has reported a total of seven ICU admissions for influenza in 2010, and none for this reporting period. Of these, three have been associated with pandemic (H1N1) 2009 influenza and four with Type A not further sub-typed (Figure 12).

Figure 12. Number of ICU admissions for influenza, ANZICS, Australia, 1 January to 18 June 2010



Source: Australian and New Zealand Intensive Care Society (ANZIC) data base

3. Virology

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

From 1 January 2010 to 20 June 2010, there were 48 Australian influenza isolates subtyped by the WHO CC (Table 4).

Table 4. Typing of influenza isolates from the WHO Collaborating Centre, from 1 January 2010 to 20 June 2010

Type/Subtype	ACT	NSW	NT	QLD	SA	TAS	VIC	WA	TOTAL
A(H1N1)	0	0	0	0	0	0	0	0	0
Pandemic (H1N1) 2009	1	0	3	7	0	1	7	11	30
A(H3N2)	0	0	0	0	0	0	4	4	8
B	0	0	0	0	0	0	9	1	10
Total	1	0	3	7	0	1	20	16	48

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, hence proportions of pandemic (H1N1) 2009 to seasonal are not representative of the proportions circulating.

Antigenic characterisation of 13 Pandemic (H1N1) 2009 isolates has shown 12 to be the A/California/7/2009-like strain and one a low reactor version of this strain. Antigenic characterisation of 1 type A/H3N2 isolate has shown to be the A/Perth/16/2009-like low reactor version of the strain.

International Updates

In the week ending 5 June 2010, based on FluNet reporting by National influenza Centres from 24 countries, 68.1% of positive specimens were typed as influenza B and 31.9% were typed as influenza A. Pandemic (H1N1) 2009 influenza virus accounted for 70.8% of all influenza A viruses subtyped globally by the WHO Collaborating Centres in the week ending 18 June 2010. Increasing, sporadic A(H3N2) influenza viruses are being reported globally and in some parts of Africa, the proportion of A(H3N2) virus detections have increased and have exceeded that of pandemic (H1N1). Seasonal Influenza B viruses are the predominant influenza virus in Hong Kong, China, the Russian Federation and Ukraine.¹

In China, influenza B accounted for 78.2% of all influenza viruses detected in the week to 6 June 2010. From 1 September 2009 to 6 June 2010, 4214 influenza B viruses have been antigenically characterised. Of those, 3782 (89.7%) were B/Victoria viruses, including 42.4% (1604) related to B/Malaysia/2506/2004-like and 57.6% (2178) related to B/Brisbane/60/2008 (included in 2010 Southern Hemisphere seasonal influenza vaccine). The remaining 432 (10.3%) were B/Yamagata viruses related to B/Florida/4/2006-like.²

Antiviral Resistance

Pandemic (H1N1) 2009

The WHO has reported that 298 oseltamivir resistant pandemic (H1N1) 2009 viruses have been detected and characterised worldwide. All but one of these isolates showed the same H275Y mutation but were sensitive to zanamivir.¹

The WHO Collaborating Centre in Melbourne has reported that from 1 January 2010 to 20 June 2010, no isolates (out of 10 tested) have shown resistance to oseltamivir by enzyme inhibition

assay (EIA) and two isolates (out of 15 tested) have shown the H275Y mutation known to confer resistance to oseltamivir.

4. International Influenza Surveillance

WHO Summary as at 13 June 2010

There have been over 18,172 deaths associated with pandemic (H1N1) 2009 worldwide.

- Northern Hemisphere
 - Overall pandemic influenza activity remains low worldwide with geographically limited circulation in parts of Central America, the Caribbean, South and Southeast Asia.
 - Seasonal influenza type B viruses:
 - are the predominant type of influenza virus circulating globally
 - are circulating at low levels across Asia, South America and some parts of Africa
 - are the predominant type of influenza virus in Hong Kong, China, the Russian Federation and Ukraine
- Southern Hemisphere
 - Pandemic and seasonal influenza activity is sporadic.
 - Overall ILI remains low in Australia and New Zealand.
 - A small number of pandemic influenza virus detections in Chile and Uruguay.
 - Small numbers of seasonal influenza A/H3N2 and type B viruses have been detected in South Africa

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 and improve, this report will be refined and additional information will be included.

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 Team through flu@health.gov.au

On 17 June 2009 Australia commenced the transition to a new response phase called PROTECT, in which laboratory testing is directed towards people with moderate or severe illness; those more vulnerable to severe illness; and those in institutional settings. This means that the number of confirmed cases does not reflect how many people in the community have acquired pandemic (H1N1) 2009 infection.

NetEpi

In 2009, NetEpi, a web-based outbreak case reporting system for pandemic (H1N1) 2009, was used as the primary source of enhanced data on confirmed cases, hospitalisations and ICU admissions in all jurisdictions. In 2010, only data for NSW are sourced from NetEpi.

Analyses of Australian cases are based on the diagnosis date, which is the earliest of the onset date, specimen date or notification date.

National Notifiable Diseases Surveillance System (NNDSS)

Laboratory confirmed influenza (all types) is notifiable in all jurisdictions in Australia. Confirmed cases of influenza are notified through NNDSS by all jurisdictions except NSW. NSW data are sourced from NetEpi.

Data Analysis

Analysis of confirmed influenza cases is conducted on combined NetEpi and NNDSS data. Analysis of morbidity (hospitalisations and ICU admissions) and mortality data in 2009 has been conducted on combined NetEpi and QLD hospitalisation data.

Laboratory Surveillance data

Laboratory testing data are extracted from the 'NSW Influenza Report,' and the 'The 2009 Victorian Influenza Vaccine Effectiveness Audit Report' (VIDRL) 'South Australian Seasonal Influenza Report'. These reports are provided weekly.

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

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

Sentinel General Practice Surveillance

The Australian Sentinel Practices Research Network (ASPREN) has Sentinel GPs who report ILI presentation rates in NSW, 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 2009 may be different from that of previous years. ASPREN data are sent to the Surveillance Branch on a weekly basis. Northern Territory GP surveillance data are sent to the Surveillance Branch on a weekly basis. VIDRL influenza surveillance data are sent to the Surveillance Branch on a weekly basis.

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

Sentinel ED 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 'Influenza Monthly Epidemiology Report, NSW'. This report is provided monthly. The New South Wales Influenza Surveillance Program collects data from 49 EDs across New South Wales.

Absenteeism

A national organisation provides data on the number of employees who have been on sick leave for a continuous period of more than three days. These data are not influenza or ILI specific and absenteeism may be a result of other illnesses.

National Health Call Centre Network

A national organisation provides call centre data for calls relating to ILI or influenza. Data are provided daily and are collated weekly and have been presented in this report to show the pattern of calls to this Call Centre over the 2009 season. Data is available for all jurisdictions other than QLD and VIC.

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.

Data have been provided weekly and have been presented in this report to show the pattern of self reported ILI in the community over the 2009 season.

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

FluCAN

The Influenza Complications Network (FluCAN) collects detailed clinical information on all hospitalised cases of influenza and pneumonia from a sample of 15 sentinel hospitals across Australia. The data for this reporting period are sourced only from 11 hospitals and do not include NT.

Australian and New Zealand Intensive Care Society data (ANZICS data)

The Australian and New Zealand Intensive Care Society provides data from a 'near real time' registry of patients admitted to Australian ICUs. This documents the key factors influencing mortality, as well as the need for hospitalisation and mechanical ventilation. Information collected includes person characteristics and information on relevant co-morbidities, nature of the clinical syndrome associated with pandemic (H1N1) 2009, major therapeutic interventions from which

organ failure outcomes can be imputed, vaccination status and vital status at time of ICU discharge and hospital discharge.

6. References

- 1 WHO Pandemic (H1N1) 2009 - Update 105 & Virological Surveillance Weekly Update. Available from <http://www.who.int/csr/don/en/> Accessed 24 June 2010.
- 2 Chinese National Influenza Centre Influenza Weekly Report 6 June 2010. Available from: <http://www.cnic.org.cn/eng/> Accessed 24 June 2010.