



**No. 15, 2010, REPORTING PERIOD:
10 April 2010 – 16 April 2010**

The Department of Health and Ageing acknowledges and greatly appreciates the providers of the many sources of data used to collate this report and to inform public health decisions regarding influenza.

Key Indicators

The counting of every case of pandemic influenza is no longer feasible in the PROTECT phase. Influenza activity and severity in community is instead monitored by the surveillance systems listed below.

Is the situation changing?	Indicated by laboratory confirmed cases reported to NetEpi and/or National Notifiable Diseases Surveillance System (NNDSS); GP Sentinel influenza-like illness (ILI) Surveillance; and emergency department (ED) presentations of ILI at sentinel hospitals (New South Wales and Western Australia). Laboratory data are used to determine the proportion of pandemic (H1N1) 2009 influenza circulating in the community.
How severe is the disease, and is severity changing?	Indicated by number of hospitalisations, ICU admissions and deaths from sentinel hospital surveillance as well as emergence of more severe clinical picture in hospitalised cases and ICU admissions.
Is the virus changing?	Indicated by emergence of drug resistance or gene drift or shift from laboratory surveillance.

Summary

- In 2010, as at 16 April, there have been 60 confirmed cases of pandemic (H1N1) 2009 influenza reported in Australia, bringing the total of confirmed cases to 37,696 since May 2009. There have been three new confirmed cases of pandemic (H1N1) 2009 influenza reported in Australia during this reporting period, including two diagnosed during this period.
- Of the 394 confirmed cases of influenza diagnosed during 2010 up to 16 April, 15% have been sub-typed as pandemic (H1N1) 2009, 1% as A/H3N2 and 70% as type A not sub-typed. A further 12% have been identified as type B.
- During this reporting period, one hospitalisation, involving ICU admission and associated with pandemic (H1N1) 2009 influenza, has been reported by sentinel hospitals.
- Levels of influenza-like illness (ILI) in the community remain relatively low and reporting from laboratories indicates that little of this ILI is due to influenza. The most common respiratory viruses diagnosed by sentinel laboratories in March 2010 were (RSV) respiratory syncytial virus (NSW) and parainfluenza-1 (WA).
- Pandemic (H1N1) 2009 influenza virus continues to be the predominant influenza virus circulating worldwide and accounted for 81.3% of all influenza A viruses subtyped globally. Seasonal Influenza B viruses continue to actively circulate in East Asia, but are also being detected across other parts of Asia and Europe.
- In China, Influenza B accounted for more than 88.7% of all influenza viruses detected in the past week. From 1 September 2009 to 11 April 2010, 90.3% of antigenically characterised influenza B viruses were B/Victoria and 9.7% were B/Yamagata viruses. Of the B/Victoria viruses, 47.7% were related to B/Brisbane/60/2008, which is included in the 2010 Southern Hemisphere seasonal influenza vaccine, and 52.3% were related to B/Malaysia/2506/2004-like.
- As at 4 April 2010, the WHO Regional Offices reported over 17,798 deaths associated with pandemic (H1N1) 2009 influenza worldwide. In the Northern Hemisphere the areas of highest transmission are Southeast Asia, West Africa and the Americas.

1. Influenza activity in Australia

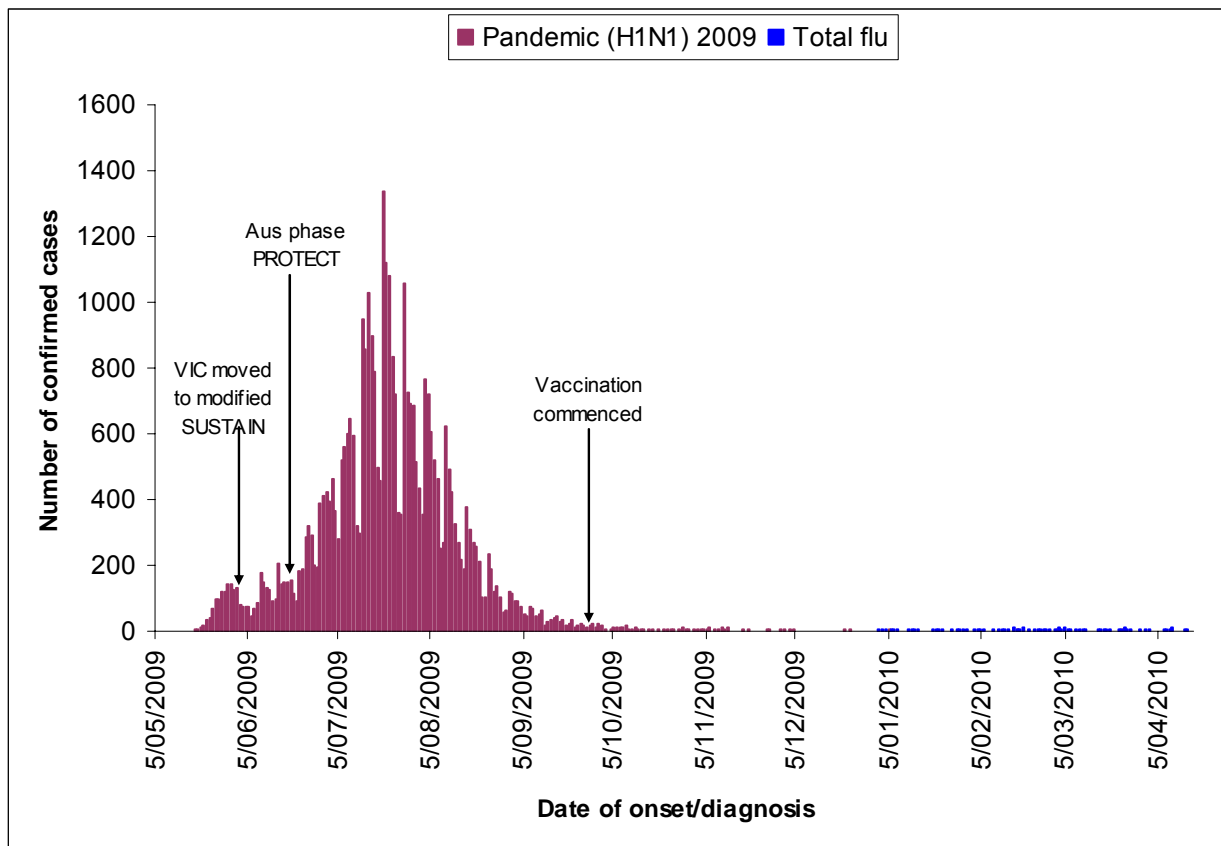
Laboratory Confirmed Cases

Pandemic influenza activity remains low and sporadic cases of pandemic influenza continue to be reported without evidence of sustained community transmission. There were two laboratory confirmed pandemic (H1N1) 2009 cases diagnosed during this reporting period in Australia. One more case, diagnosed during the previous reporting period, has been reported this reporting period (Figure 1).

In the same period, there were 10 cases of influenza A not sub-typed (nine in Queensland and one in Victoria), and two cases of influenza B (one in Queensland and one in Victoria).

There have been 37,696 confirmed cases of pandemic (H1N1) 2009 in Australia as at 16 April 2010, including 191 pandemic influenza-associated deaths. Of these, 37,636 cases were reported in 2009 and 60 cases were reported in 2010.

Figure 1. Laboratory confirmed cases of pandemic (H1N1) 2009 and total influenza in Australia, to 16 April 2010

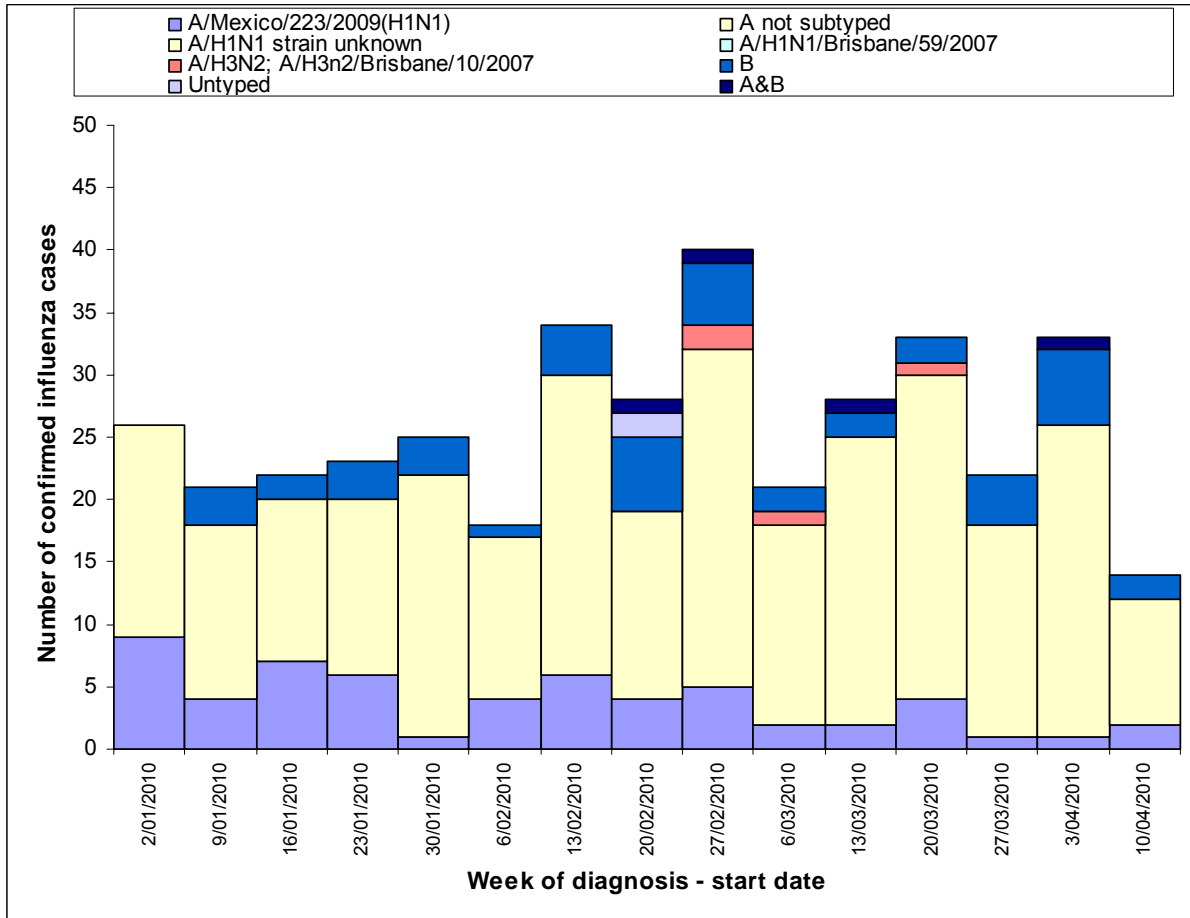


Note: Total influenza series starts on 1 January 2010.
Source: NetEpi (2009; NSW 2010) and NNDSS (2010)

There have been 394 confirmed cases of influenza of all types diagnosed during 2010 up to 16 April. Of those, 60 (15%) have been sub-typed as pandemic (H1N1) 2009, 4 (1%) as A/H3N2 and 277 (70%) as influenza type A not sub-typed. A further 47 (12%) have been characterised as influenza type B (Figure 2).

Influenza type A not further sub-typed is the predominant type in Australia to date this year. While it is expected that this is pandemic influenza (H1N1) 2009, it has a higher age profile (median age 39 years) than cases confirmed as the pandemic (H1N1) 2009 strain (27 years).

Figure 2. Laboratory confirmed cases of influenza (pandemic (H1N1) 2009 and seasonal) in Australia, 1 January 2010 to 16 April 2010, by week and type



Source: NNDSS and NetEpi (NSW).

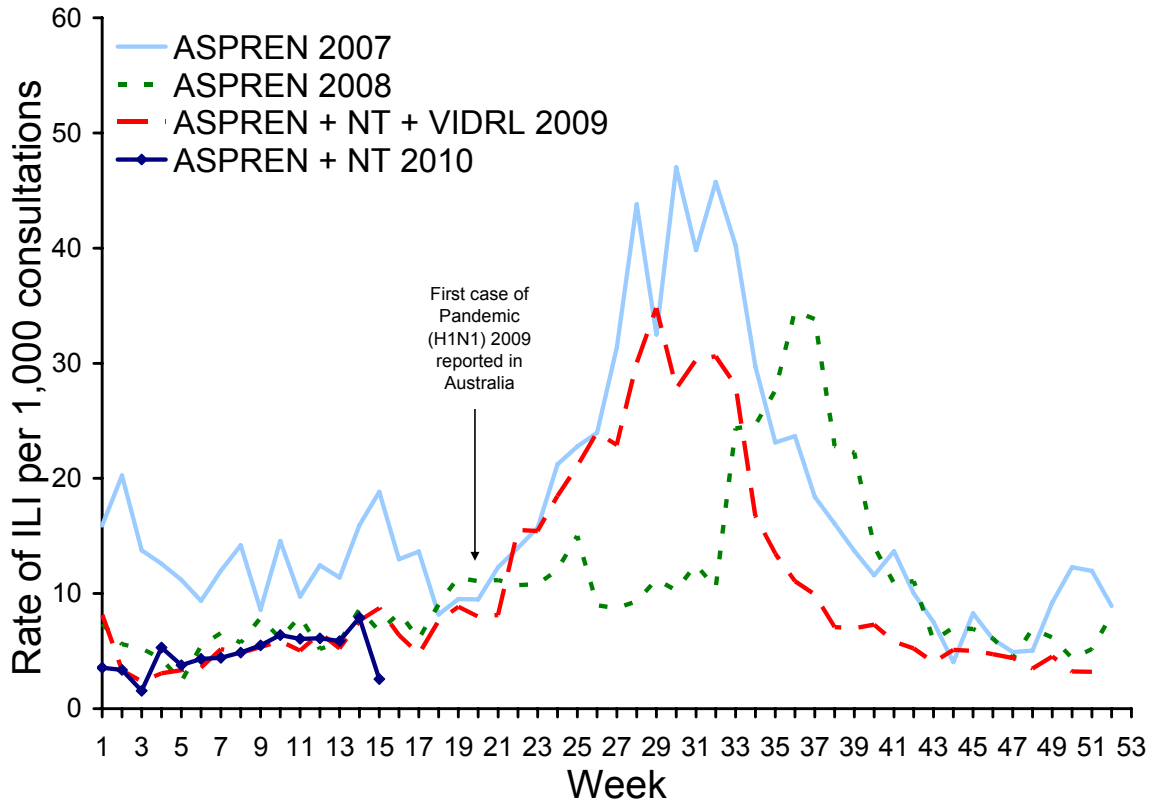
Influenza-Like Illness

Sentinel General Practice Surveillance

Combined data available from the Australian Sentinel Practices Research Network (ASPREN) and the Northern Territory GP surveillance system up until 11 April 2010 show that national ILI consultation rates decreased and are below levels seen in 2008 and 2009. Of particular note, ILI consultation rates decreased sharply in NSW, from 31 to four patients per 1,000 consultations.

In the last week, the presentation rate to sentinel GPs in Australia decreased to approximately three cases per 1,000 consultations (Figure 3). This coincided with a drop in rates reported by NSW sentinel GPs and it is possible that this rate will increase retrospectively.

Figure 3. Weekly rate of ILI reported from GP ILI surveillance systems from 1 January 2007 to 11 April 2010*



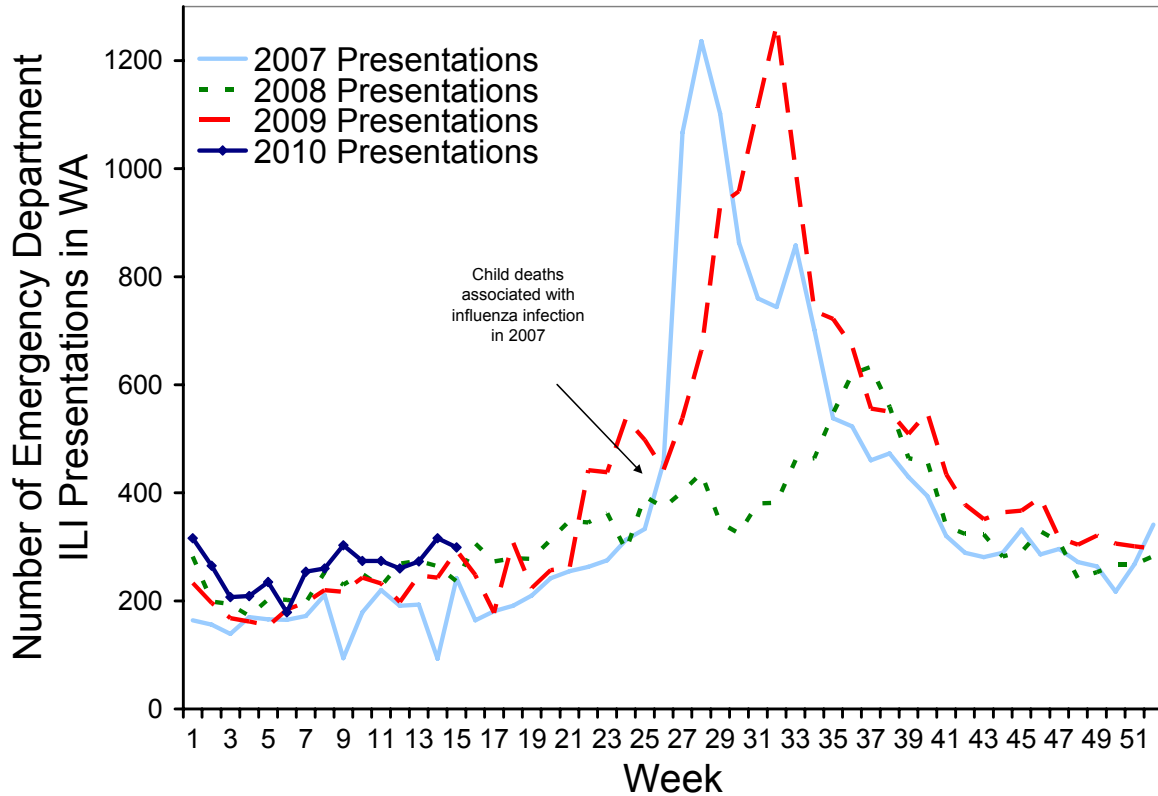
* Delays in the reporting of data may cause data to change retrospectively. As data from the NT surveillance system is combined with ASPREN data for 2010, rates may not be directly comparable across 2007, 2008 and 2009.

SOURCE: ASPREN, and NT GP surveillance system.

WA Emergency Departments

The number of ILI presentations reported in Western Australian EDs decreased slightly in the week ending 11 April 2010. Levels are similar to those seen at the same time in 2008 (Figure 4).

Figure 4. Number of ED presentations due to ILI in Western Australia from 1 January 2007 to 11 April 2010 by week



Source: WA 'Virus Watch' Report

NSW Emergency Departments

In March 2010, there were 90 presentations of ILI to New South Wales EDs. This is a similar number of presentations to the previous month (88 presentations), but more than that recorded in March 2009 (49 presentations).

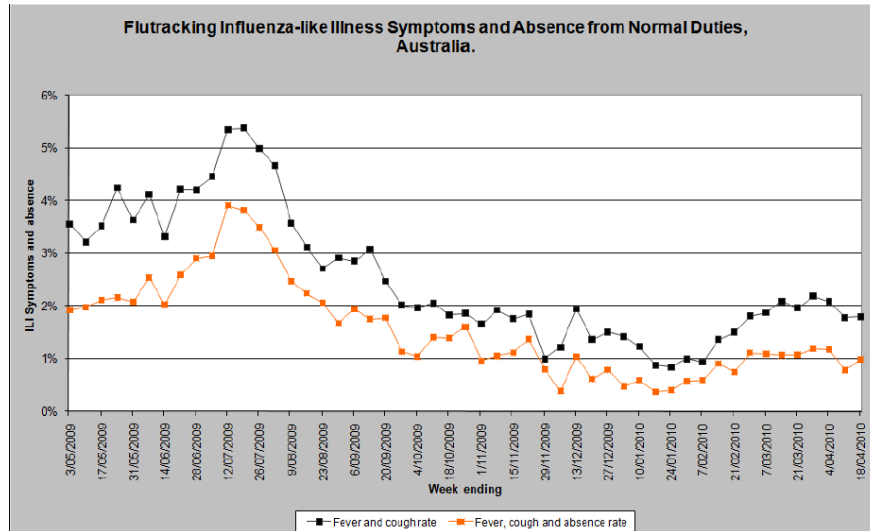
There were five hospital admissions following presentation to EDs with ILI in March 2010, compared with four in February 2010 and one in March 2009.

Source: NSW Health 'Influenza Monthly Epidemiology Report'¹

Flutracking

Flutracking, a national online system for collecting data on ILI in the community, reported that in the week ending 18 April 2010 ILI levels have remained low and relatively stable at the national level (Figure 5).

Figure 5. Rate of ILI symptoms and absence from regular duties among Flutracking participants by week (from 3 May 2009 to week ending 18 April 2010)

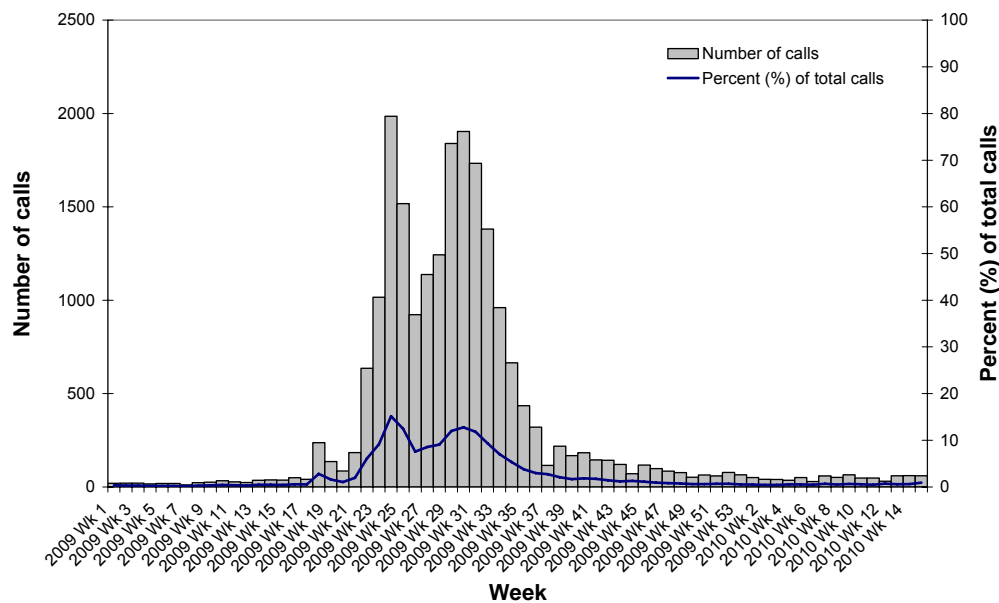


Source: Flutracking Interim Weekly Report

National Health Call Centre Network

The number of ILI-related calls received by the NHCCN increased in the week ending 16 April 2010, with 60 calls compared with 44 in the previous reporting period. The number of calls is currently at baseline levels (Figure 6).

Figure 6. Number of calls to the NHCCN related to ILI, Australia, 1 January 2009 to 16 April 2010

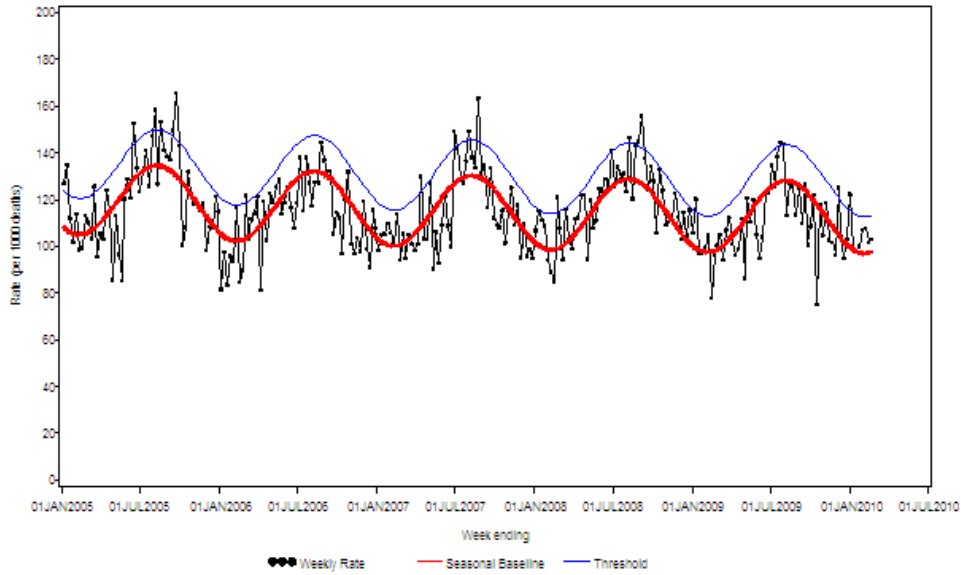


Source: NHCCN data

Deaths associated with influenza and pneumonia

Death registration data show that as at 12 March 2010, there were 69 pneumonia or influenza deaths per 1,000 deaths in NSW, which is below the seasonal threshold of 99 per 1,000 (Figure 7).

Figure 7. Rate of deaths classified as influenza and pneumonia from the NSW Registered Death Certificates, 2005 – 2010

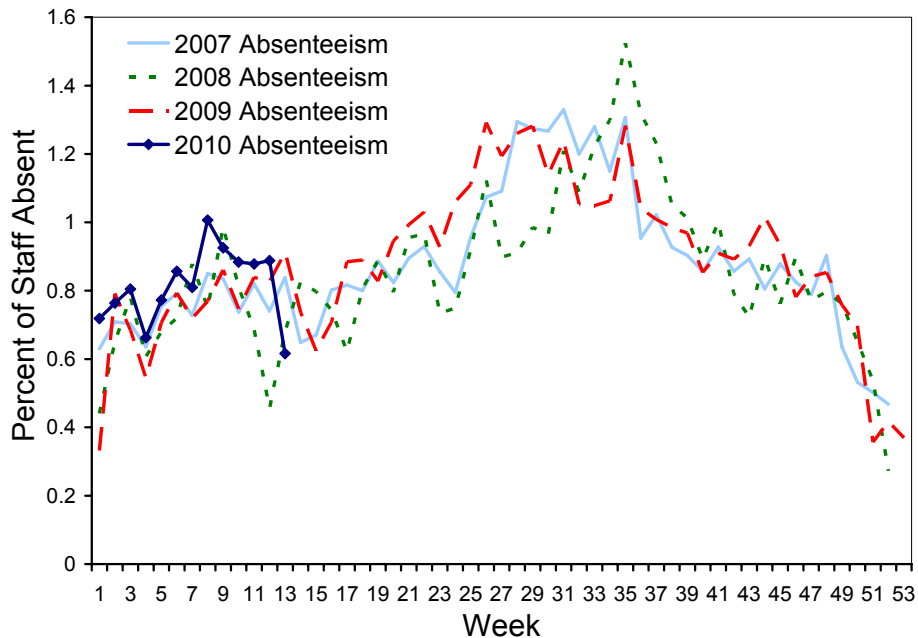


Source: NSW 'Influenza Monthly Epidemiology Report'

Absenteeism

The most recent data indicate that in the week ending 7 April 2010, national absenteeism rates were similar to levels seen in previous years (Figure 8).

Figure 8. Rates of absenteeism (greater than 3 days absent), national employer, from 28 January 2007 to 7 April 2010, by week.



SOURCE: Absenteeism data

Sentinel Laboratory Surveillance - confirmed influenza notifications

Results from sentinel laboratory surveillance systems for this reporting period show that four of the respiratory tests conducted over this period were positive for influenza. Two were positive for pandemic (H1N1) 2009 and two were Type A/H3N2 (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	1	54	90	N/A	79
Number tested which were Influenza A	0	1	3	0	0
<i>Number tested which were pandemic (H1N1) 2009</i>	<i>0</i>	<i>1</i>	<i>1</i>	<i>0</i>	<i>0</i>
<i>Number tested which were seasonal A/H1N1</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>Number tested which were A/H3N2</i>	<i>0</i>	<i>0</i>	<i>2</i>	<i>0</i>	<i>0</i>
<i>Number tested which were Influenza A untyped</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>
Number tested which were Influenza B	0	0	0	0	0

*ASPREN tests are collected every Tuesday. Results are reported for a rolling fortnight as data changes retrospectively.

Respiratory syncytial virus was the most common respiratory virus diagnosed by NSW sentinel laboratories, and parainfluenza-1 was the most common respiratory virus diagnosed by WA laboratories.

2. Overview of influenza severity - to 16 April 2010 ^a

While pandemic (H1N1) 2009 is generally considered a mild disease at the community level, it has had serious consequences at the acute end of the disease. 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.

Table 2. Summary of severity indicators of pandemic (H1N1) in Australia, 2009 and 2010 up to 16 April 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	60
Crude rate per 100,000 population	172.1	22.8	3.1	0.9	0.3
Median age (years)	21	31	44 [^]	53 [^]	27
Females	51% (19,139/37,636)	51% (2,528/4,992)	53% (364/681)	44%	42% (25/60)
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%	2% (1/60)
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.

* 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.

Influenza Hospitalisations

The Influenza Complications Alert Network (FluCAN) has reported three influenza hospitalisations for the period 1 March – 16 April 2010. Of those, two were associated with pandemic (H1N1) 2009 and one was associated with Type A/H3N2 (Table 3 and Figure 9). One of these hospitalisations has been during this reporting week and involved ICU admission. FluCAN data has included data from 10 sentinel hospitals from all jurisdictions except NT and ACT.

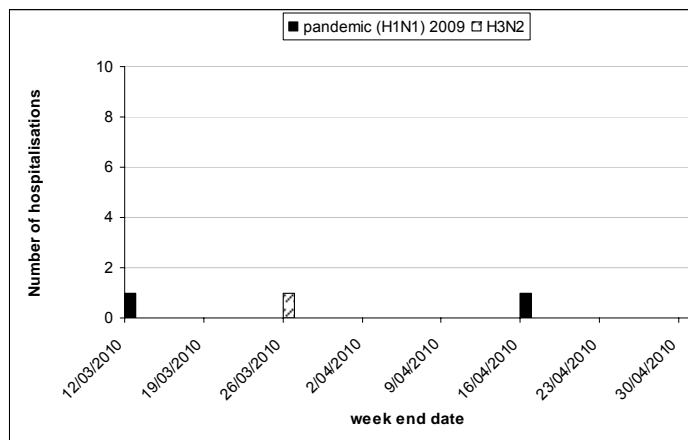
^a Note that while the analysis of severity is on-going, updates are presented as required when there are significant changes detected. With the current low levels of pandemic (H1N1) 2009 influenza activity in Australia it is anticipated that the indicators of pandemic severity will not vary significantly.

Table 3. Number of influenza hospitalisations, sentinel hospitals, Australia, 1 March to 16 April, 2010

Type of influenza	Week ending	Total
	16 April 2010	1 March – 16 April
Pandemic (H1N1)	1	2
Type A/H3N2	0	1
<i>All types</i>	1	3

Source: Influenza Complications Alert Network (FluCAN). Data are from 10 sentinel hospitals from all jurisdictions except ACT and NT.

Figure 9. Number of influenza hospitalisations, sentinel hospitals, Australia, 1 March to 16 April 2010



Source: FluCAN data from 10 sentinel hospitals in all jurisdictions except ACT and NT

3. Virology

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

From 1 January 2010 to 18 April 2010, there were 30 Australian influenza isolates subtyped by the WHO CC (Table 4). Twenty were Pandemic (H1N1) 2009, three were A(H3N2) and seven were type B.

Table 4. Typing of influenza isolates from the WHO Collaborating Centre, from 1 January 2010 to 18 April 2010

Antigenic characterization	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	6	2	20
A(H3N2)	0	0	0	0	0	0	3	0	3
B	0	0	0	0	0	0	7	0	7
Total	1	0	3	7	0	1	16	2	30

SOURCE: WHO CC

Please note: There may be up to a months 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.

Of the 30 subtyped influenza isolates, 11 have been confirmed as pandemic A/H1N1 2009 (A/California/7/2009-like).

INTERNATIONAL UPDATES

The Global Influenza Surveillance Network (GISN) continues to monitor the global circulation of influenza viruses, including pandemic, seasonal and other influenza viruses infecting, or with the potential to infect, humans. Since the beginning of the pandemic on 19 April 2009 to 10 April 2010, 155 countries shared a total of 25,174 specimens (19,333 clinical samples and 5,841 virus isolates) with WHO Collaborating Centres for further characterisation.¹

Pandemic (H1N1) 2009 influenza virus continues to be the predominant influenza virus circulating worldwide and accounted for 81.3% of all influenza A viruses subtyped globally. Seasonal Influenza B viruses continue to actively circulate in East Asia, but are also being detected across other parts of Asia and Europe.

In China, influenza B accounted for 88.7% of all influenza viruses detected in the past week. From 1 September 2009 to 11 April 2010, 2790 influenza B viruses have been antigenically characterised. Of those, 2519 (90.3%) are B/Victoria viruses; 52.3% (1318) related to B/Malaysia/2506/2004-like and 47.7% (1201) related to B/Brisbane/60/2008 (included in 2010 Southern Hemisphere seasonal influenza vaccine). Of the samples, 271 (9.7%) were B/Yamagata viruses related to B/Florida/4/2006-like.²

ANTIVIRAL RESISTANCE

Pandemic (H1N1) 2009

The WHO has reported that 285 oseltamivir resistant pandemic (H1N1) 2009 viruses had been detected and characterised worldwide. All but one of these isolates showed the same H275Y mutation but were sensitive to zanamivir. One case of pandemic (H1N1) 2009 in an immunocompromised child has shown reduced susceptibility to zanamivir and oseltamivir due to an amino acid mutation in the neuraminidase. No onward transmission was detected.³

The WHO Collaborating Centre in Melbourne has reported that from 1 January 2010 to 18 April 2010, no isolates have shown resistance to oseltamivir by enzyme inhibition assay (EIA) and two clinical specimens collected in Australia have shown the H275Y mutation known to confer resistance to oseltamivir (Table 5).

Table 5. Neuraminidase resistance testing of Australian pandemic (H1N1) 2009 influenza viruses

	2009		2010	
	Viral isolates	Clinical specimens	Viral isolates	Clinical specimens
No. tested	587	276	10	3
EIA Resistant	4	N/A	0	N/A
H275Y mutation	N/A	9	N/A	2

Seasonal Influenza

The last WHO report on resistance of seasonal influenza strains to oseltamivir was released on 4 June 2009, during the Northern Hemisphere influenza season 2008-2009 and stated that 96% of seasonal influenza A (H1N1) isolates tested from 36 countries worldwide were resistant to oseltamivir.⁴ Australian oseltamivir resistance testing data on seasonal influenza strains are shown in Table 6.

Table 6. Resistance Testing – Seasonal Influenza – Australia 1 January 2009 to 18 April 2010

Country	% of H1N1 viruses	% of A(H3N2)	% of B viruses
Australia	92.6% (38/41) resistant to oseltamivir	0% (0/54) resistant to oseltamivir	0% (0/6) resistant to oseltamivir

4. International Influenza Surveillance

WHO Summary as at 4 April 2010

- There have been over 17,798 deaths associated with pandemic (H1N1) 2009 worldwide.
- Northern Hemisphere
 - The most active areas of pandemic influenza virus transmission are parts of Southeast Asia, West Africa and the tropical zone of the Americas.
 - Pandemic influenza is the predominant strain worldwide, but seasonal influenza B viruses continues to be predominate in East Asia, and is being detected across other parts of Asia and Europe.
 - In the US, regional pandemic (H1N1) 2009 influenza activity has been reported by Alabama and Georgia.
- Southern Hemisphere
 - Low influenza activity, with sporadic detections of pandemic and seasonal influenza viruses.
 -

Recent influenza activity in selected areas of the Northern and Southern Hemispheres is shown in Table 7.

Table 7. International influenza surveillance by country/region for the most recent reporting week

Country/region	End date of most recent reporting week in 2010	Overall influenza activity level	Proportion of GP visits that were for ILI	Proportion of			
				Respiratory tests positive for Influenza	Influenza which was influenza A	Influenza A which was Pandemic (H1N1) 2009	Influenza A which was untyped
Northern Hemisphere							
USA ⁵	10 April	Low	0.9%	2.7%	100%	63.5%	34.6%
Canada ⁶	10 April	Low	0.91%	0.4%	83.3%	60.0%	40.0%
Europe ⁷	16 April	Low	Not reported	7.6%	32.5%	76.9%	23.1%
UK ⁸	15 April	Low	≤0.03%	0.0%	N/A	N/A	N/A
China ²	11 April	Not reported	3.4% - 3.9%	16.6%	6.5%	34.3%	0.0%
Southern Hemisphere							
NZ ⁹	11 April	Low	0.02%	6.7%	N/A	N/A	N/A
Chile ¹⁰	26 January	Low	Not reported	1.4%	0%	N/A	N/A
Argentina ¹¹	26 February	Low	<0.01%	Not reported	Not reported	Not reported	Not reported
Australia	16 April	Low	0.3%	1.8%*	86%**	17%**	83%**

*Source: Sentinel Laboratory Surveillance (see Table 1)

**Source: NNDSS (see Figure 2)

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

All jurisdictions except QLD are reporting pandemic (H1N1) 2009 cases using NetEpi, a web-based outbreak case reporting system. Data from jurisdictional systems are being imported into NetEpi by VIC, NSW, WA, TAS and SA, and the remainder are entering directly into NetEpi. QLD ceased reporting hospitalisations into NetEpi on 6 July 2009.

Analyses of Australian cases are based on clinical onset date, if this information is available. Where an onset date is not available, notification date has been used. Victoria uses a calculated onset date which is the earliest available date calculated from specimen date, onset date, notification date or detection date. This assumption was made for all calculations and data on which the figures are based.

National Notifiable Diseases Surveillance System (NNDSS)

NNDSS comprises of notifications from jurisdictions of laboratory-confirmed influenza cases. Laboratory confirmed influenza is notifiable in all jurisdictions in Australia. Confirmed pandemic (H1N1) 2009 cases are being received from all jurisdictions through NNDSS except for New South Wales. NSW is also unable to send seasonal influenza notifications data.

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 is 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.

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 13 sentinel hospitals across Australia. The data for this reporting period are sourced only from ten hospitals and do not include NT or ACT.

6. References

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