



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 12 March, there have been 49^a confirmed cases of pandemic (H1N1) 2009 influenza reported in Australia, bringing the total of confirmed cases to 37,685 since May 2009. In addition, there have been 162 reported cases of influenza type A not sub-typed and 28 cases of influenza type B.
- Influenza-like illness remains relatively low nationally. However, some indicators are showing increases or are at levels slightly above those experienced at the same time in previous years.
- NSW have reported that rhinovirus was the most common respiratory virus diagnosed by sentinel laboratories in February 2010.
- Pandemic (H1N1) 2009 influenza virus continues to be the predominant influenza virus circulating worldwide. In China and Hong Kong, however, influenza B is predominant. Other countries reporting an increase in influenza B activity include Iran, Mongolia and the Russian Federation
- As at 7 March 2010, the WHO Regional Offices reported at least 16,713 deaths associated with pandemic (H1N1) 2009 influenza worldwide. In the Northern Hemisphere the area areas of highest transmission are currently in Southeast Asia, with lower levels of transmission in other parts of Asia and in Eastern and Southern Europe.
- In China, of all the influenza B viruses that have been antigenically characterised, the majority have been influenza B/Victoria viruses with a few influenza B/Yamagata viruses. Of the B/Victoria viruses, 44.7% are related to B/Brisbane/60/2008, which is included in 2010 Southern Hemisphere seasonal influenza vaccine.

^a Total cases have dropped from Report #10 as a result of verification processes.

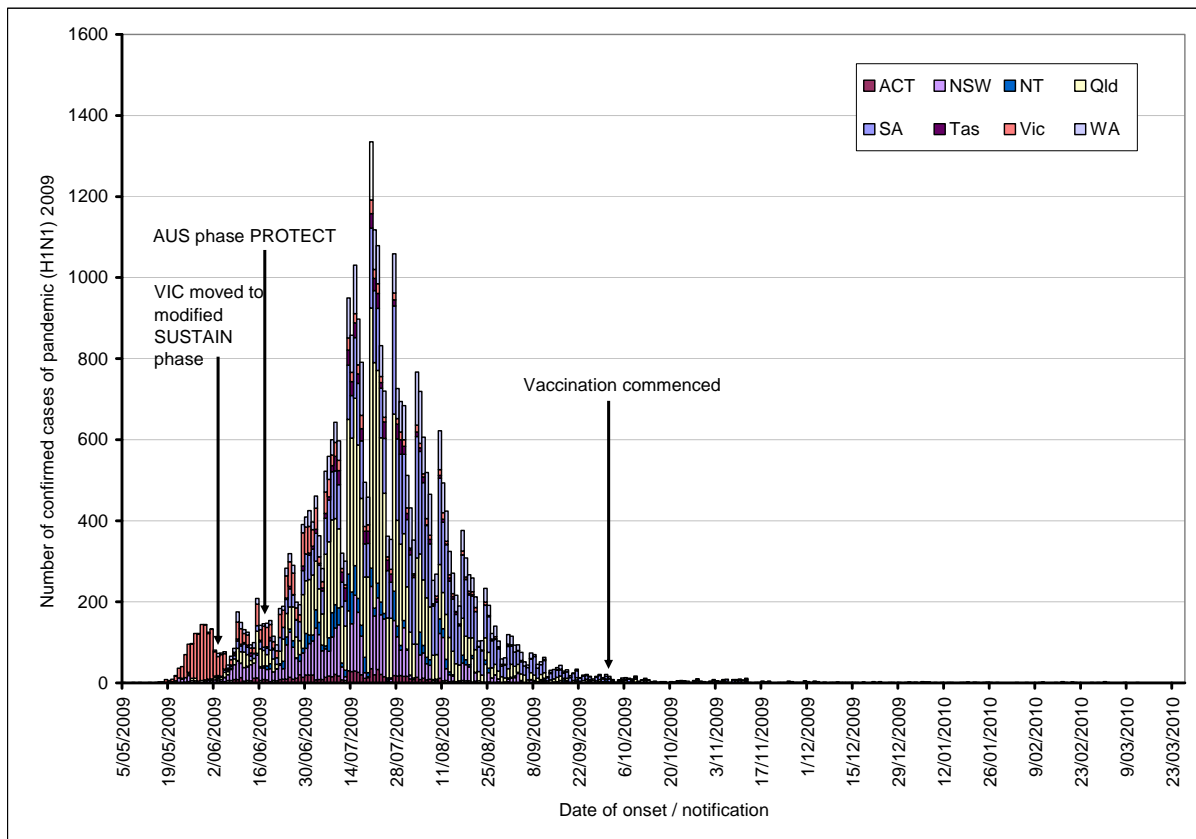
1. Influenza activity in Australia

Laboratory Confirmed Cases

There were two new laboratory confirmed pandemic (H1N1) 2009 notifications reported this reporting period. Pandemic influenza activity remains low and sporadic cases of pandemic influenza continue to be reported without evidence of sustained community transmission. In the same period, there were 15 cases of influenza A not sub-typed and 2 cases of influenza B (Figures 1 and 2).

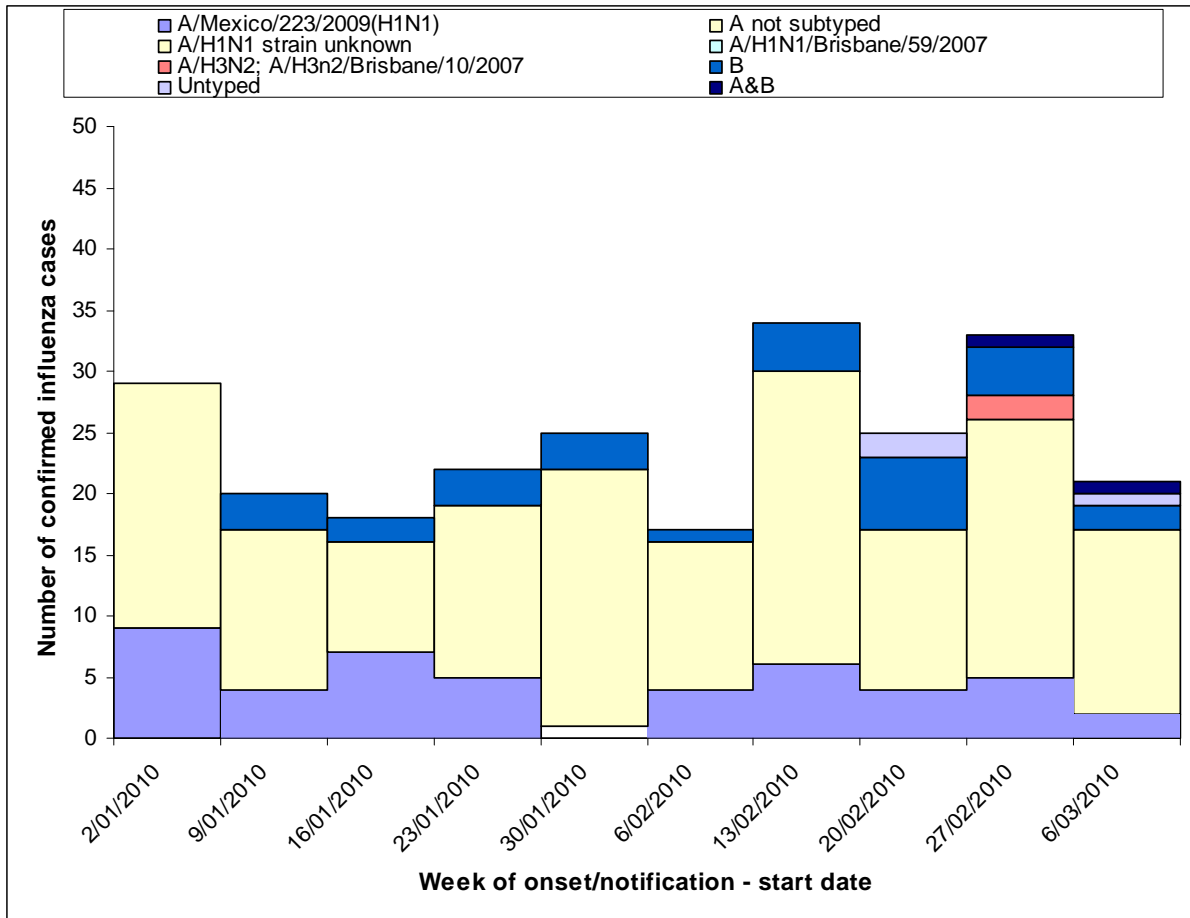
There were 37,685 confirmed cases of pandemic (H1N1) 2009 in Australia as at 12 March 2010, including 191 pandemic influenza-associated deaths. Of these, 37,636 cases were reported in 2009 and 49 cases were reported in 2010.

Figure 1. Laboratory confirmed cases of pandemic (H1N1) 2009 in Australia, to 12 March 2010



Source: NetEpi (2009; NSW 2010) and NNDSS (2010)

Figure 2. Laboratory confirmed cases of influenza (pandemic (H1N1) 2009 and seasonal) in Australia, 1 January 2010 to 12 March 2010, by week and type



Source: NNDSS and NetEpi (NSW).

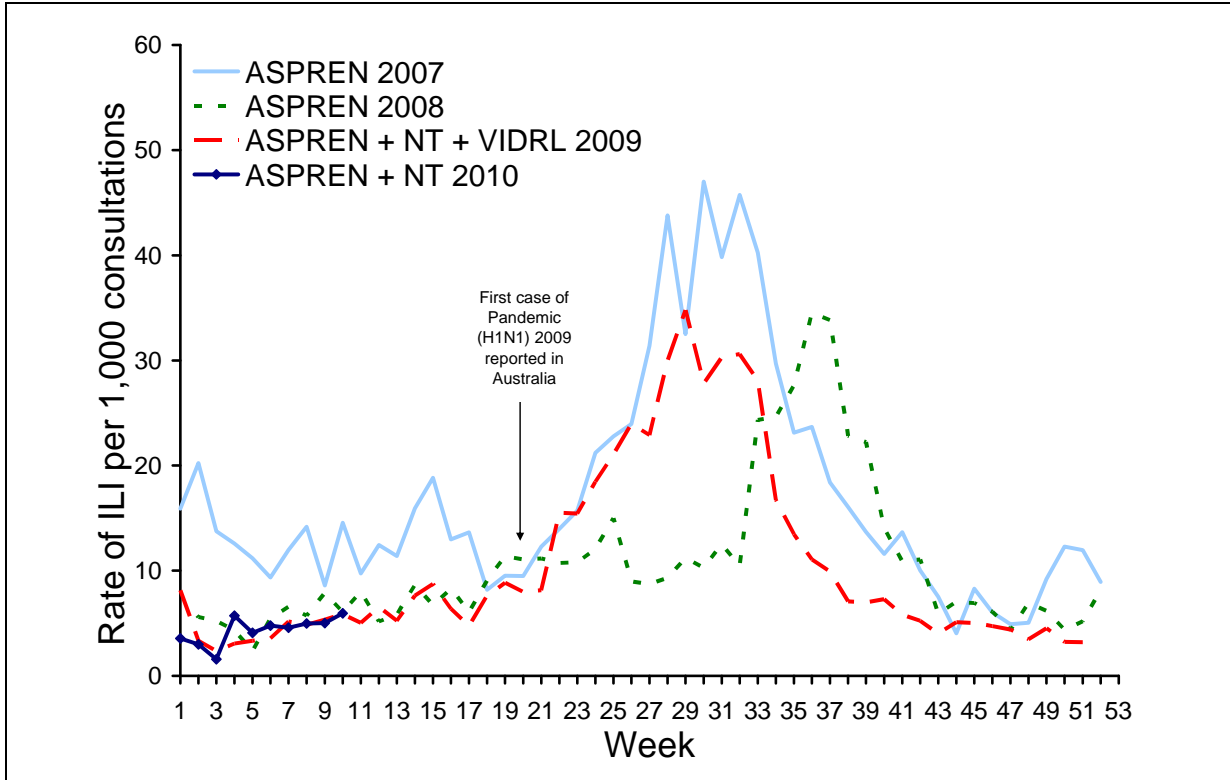
Influenza-Like Illness

Sentinel General Practice Surveillance

Combined data available from the Australian Sentinel Practices Research Network (ASPREN) and the Northern Territory GP surveillance system up until 7 March 2010 show that nationally, ILI consultation rates have remained stable and are consistent with levels seen in 2008 and 2009.

In the last week, the presentation rate to sentinel GPs in Australia was approximately 6 cases per 1,000 consultations (Figure 3).

Figure 3. Weekly rate of ILI reported from GP ILI surveillance systems from 1 January 2007 to 7 March 2010*



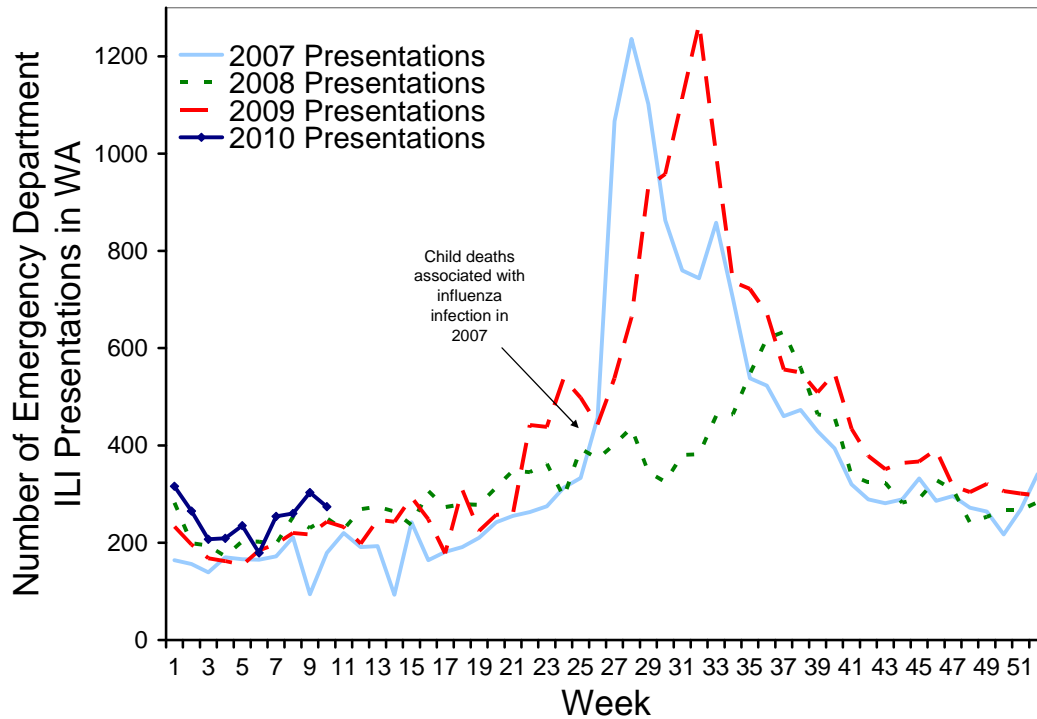
* Delays in the reporting of data may cause data to change retrospectively. As data from the NT surveillance system is combined with ASPREN data for 2010, rates may not be directly comparable across 2007, 2008 and 2009.

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 7 March 2010, however remained above levels seen at the same time in previous years (Figure 4).

Figure 4. Number of Emergency Department presentations due to ILI in Western Australia from 1 January 2007 to 7 March 2010 by week



Source: WA 'Virus Watch' Report

NSW emergency departments

In February 2010, there were 88 presentations with influenza-like illness to New South Wales EDs. This is less than in the previous month (95 presentations), but greater than the count of 57 for the month of February 2009.

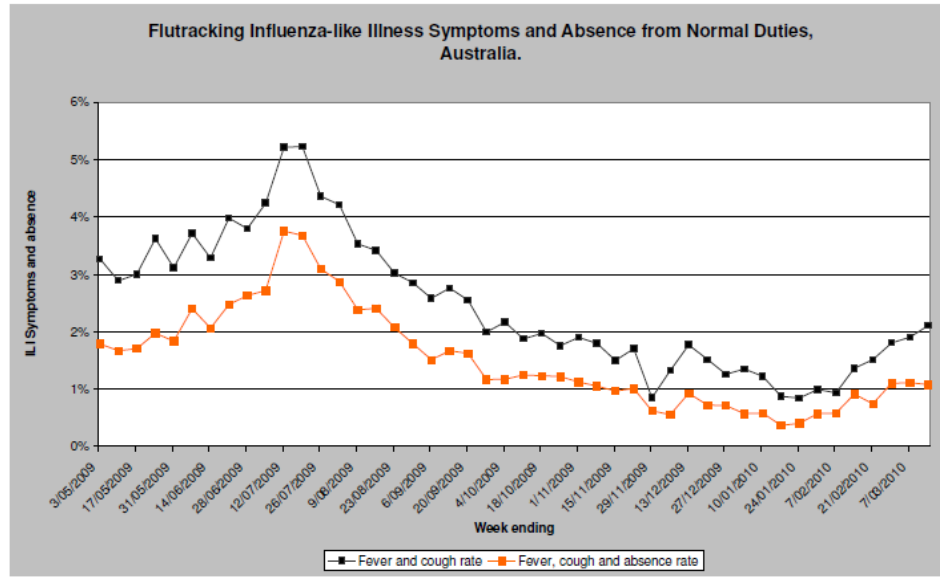
There were four admissions to hospital following presentation to emergency departments with influenza-like illness in February 2010. This is lower than the previous month (January six admissions), but greater than February 2009 when one person was admitted with ILI.

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 14 March 2010 there has been a further slight increase in influenza-like illness levels nationally (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 14 March 2010)

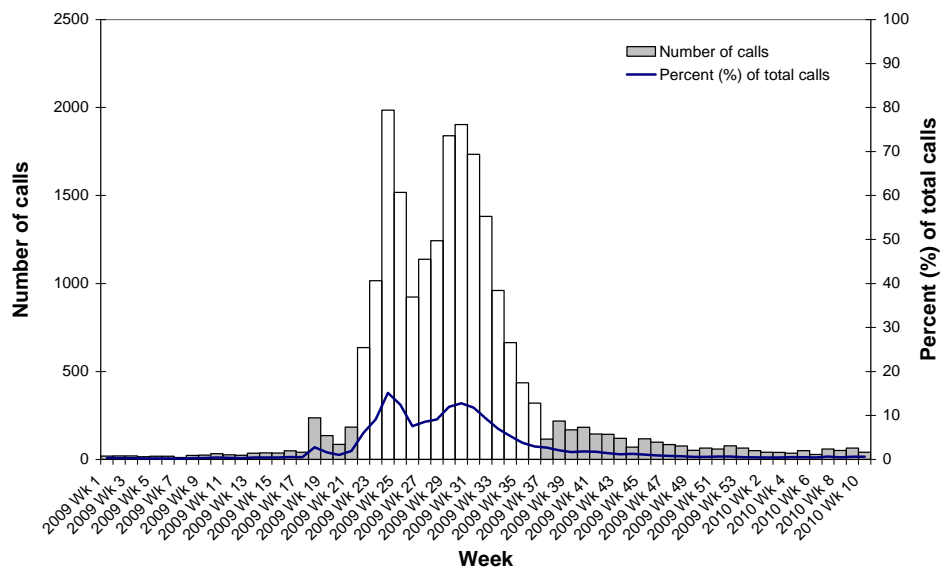


Source: Flutracking Interim Weekly Report

National Health Call Centre Network

The number of ILI-related calls received by the NHCCN remained low in the week ending 12 March 2010 with 41 calls. 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 12 March 2010

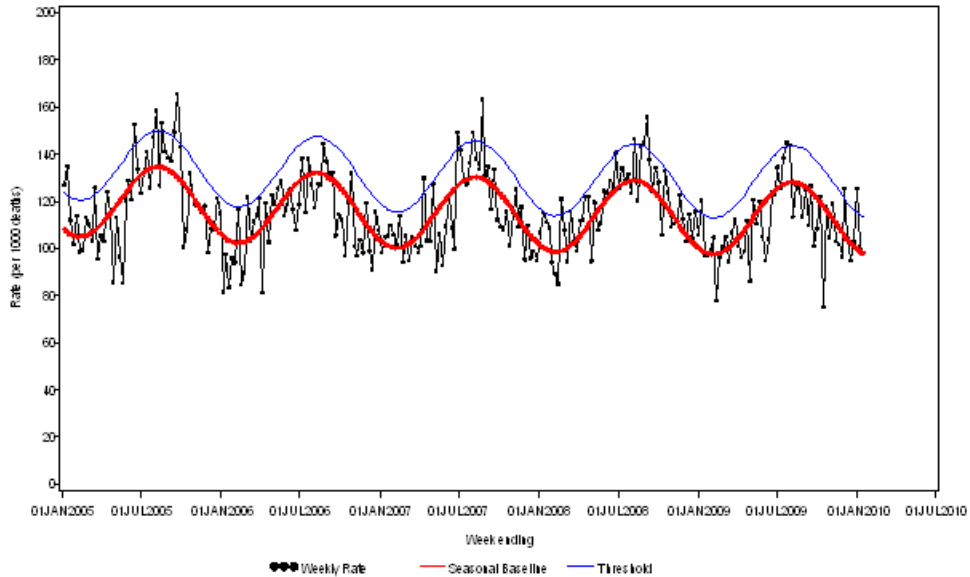


Source: NHCCN data

Deaths associated with influenza and pneumonia

Death registration data show that as at 12 February 2010, there were 101 pneumonia or influenza deaths per 1,000 deaths in NSW, which is below the seasonal threshold of levels expected at that time of year (Figure 7).

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

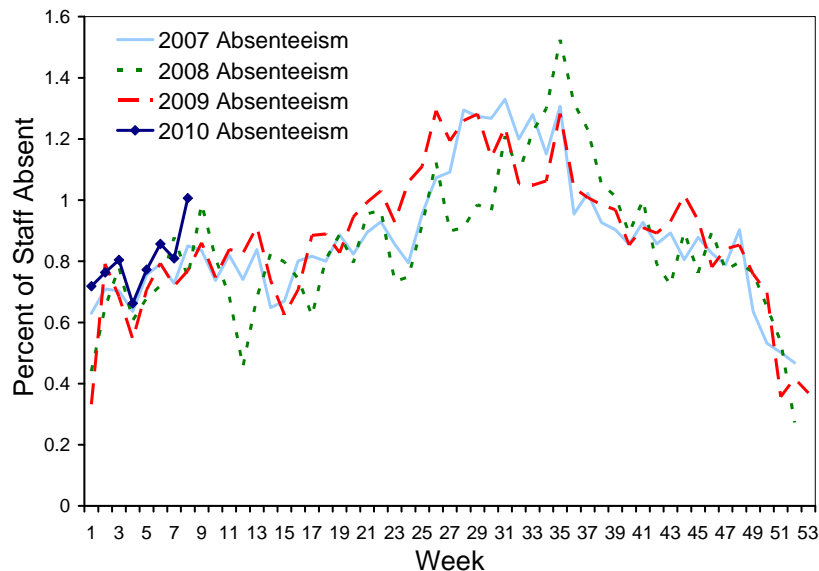


Source: NSW 'Influenza Monthly Epidemiology Report'

Absenteeism

The most recent data indicate that in the week ending 3 March 2010, national absenteeism rates increased and were above levels seen at the beginning of previous years (Figure 8).

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



SOURCE: Absenteeism data

Sentinel Laboratory Surveillance - confirmed influenza notifications

Results from sentinel laboratory surveillance systems for this reporting period show that only 1 of the respiratory tests conducted over this period were positive for influenza (Type A/H3N2) (Table 1).

Table 1. Laboratory respiratory tests that tested positive for influenza

	ASPREN* – national		NT (reported by WA NIC)	NSW NIC
Number of specimens tested	5	82 (at 12/3)	N/A	53 (at 12/3)
Number tested which were Influenza A	0	1	0	0
<i>Number tested which were pandemic (H1N1) 2009</i>	0	0	0	0
<i>Number tested which were seasonal A/H1N1</i>	0	0	0	0
<i>Number tested which were A/H3N2</i>	0	1	0	0
<i>Number tested which were Influenza A untyped</i>	0	0	0	0
Number tested which were Influenza B	0	0	0	0

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

Rhinovirus was the most common respiratory virus diagnosed by NSW sentinel laboratories in February 2010. 1

2. Overview of pandemic (H1N1) 2009 severity - to 12 March 2010^b

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 12 March 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	49
Crude rate per 100,000 population	172.1	22.8	3.1	0.9	0.2
Median age (years)	21	31	44 [^]	53 [^]	28 ^{**}
Females	51% (19,139/37,636)	51% (2,528/4,992)	53% (364/681)	44%	35% (17/49)
Vulnerable groups (Indigenous, pregnant & 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% (1/49)
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. Continuous improvement in the quality of data has also resulted in an apparent drop in the median age of confirmed cases and the proportion females.

^{**} Continuous improvements in the quality of data and small numbers have also resulted in an apparent drop in the median age of confirmed cases and the proportion females.

^b 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.

3. Virology

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

From 1 January 2010 to 14 March 2010, there were 11 Australian influenza isolates subtyped by the WHO CC (Table 3).

Table 3. Typing of influenza isolates from the WHO Collaborating Centre, from 1 January 2010 to 14 March 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	0	0	3	0	0	1	5	1	10
A(H3N2)	0	0	0	0	0	0	0	0	0
B	0	0	0	0	0	0	1	0	1
Total	0	0	3	0	0	1	6	1	11

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 11 influenza isolates subtyped, 1 has been antigenically characterized, and 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 27 February 2010, 153 countries shared a total of 24,332 specimens (18,756 clinical samples and 5,576 virus isolates) with WHO Collaborating Centres for further characterisation.²

Pandemic (H1N1) 2009 influenza virus continues to be the predominant influenza virus circulating worldwide. In China and Hong Kong, however, influenza B is predominant. Other countries reporting an increase in influenza B activity include Iran, Mongolia and the Russian Federation.²

From September 1 2009 - 7 March 2010, in China, 1211 influenza B viruses have been antigenically characterised. Of those 1103 are B/Victoria viruses; 55.3% (610) related to B/Malaysia/2506/2004-like and 44.7% (493) related to B/Brisbane/60/2008 (included in 2010 Southern Hemisphere seasonal influenza vaccine). 108 samples were B/Yamagata viruses related to B/Florida/4/2006-like.³

ANTIVIRAL RESISTANCE

Pandemic (H1N1) 2009

To date, WHO reported that 264 oseltamivir resistant pandemic (H1N1) 2009 viruses had been detected and characterised worldwide. All of these isolates showed the same H275Y mutation but all were sensitive to zanamivir. Of the oseltamivir resistant cases reported to WHO with a known clinical background, 22% were severely immunosuppressed, 25% were associated with treatment and 6% were associated with post-exposure prophylaxis.

The WHO CC in Melbourne has reported that from 1 January 2010 to 7 March 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 4).

Table 4. Neuraminidase resistance testing of Australian pandemic (H1N1) 2009 influenza viruses

	2009		2010	
	Viral isolates	Clinical specimens	Viral isolates	Clinical specimens
No. tested	587	276	2	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 5.

Table 5. Resistance Testing – Seasonal Influenza - Global

Country	% of H1N1 viruses	% of A(H3N2)	% of B viruses
Australia (since 1 January 2009 and up to 12 March 2010)	97.2% (36/37) resistant to oseltamivir	0% (0/54) resistant to oseltamivir	0% (0/6) resistant to oseltamivir

4. International Influenza Surveillance

WHO Summary as at 7 March 2010

- There have been 16,713 deaths associated with pandemic (H1N1) 2009 worldwide.
- Northern Hemisphere
 - Overall activity decreasing
 - The most active area of transmission is South East Asia
 - Lower levels of circulation persist in other parts of Asia and in Eastern and South-Eastern Europe.
 - Circulation of Influenza B continues to increase and is spreading westward, most notably in China, Mongolia, Iran and the Russian Federation.
- 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 6.

Table 6. International influenza surveillance by country/region.

Country/ Region	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
Northern Hemisphere					
USA ⁵	Low	1.9%	5.1%	99.4%	73.4%
Canada ⁶	Low	1.7%	0.12%	33.0%	100.0%
Europe ⁷	Low*	Not reported	5.8%	95.1%	87.2%
UK ⁸	Low	0.01% - 0.03%	3.4%	Not reported	Not reported
China ³	Not reported	4.1%- 6.1%	28.5%	11.6%	49.1%
Southern Hemisphere					
New Zealand ⁹	Low	0.02%	0%	N/A	N/A
Chile ¹⁰	Low	Not reported	1.4%	0%	N/A
Argentina ¹¹	Low	<0.01%	Not reported	Not reported	Not reported
Australia	Low	0.6%	2.1%	100%	33%

*Except Greece, which reported medium activity.

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 Victoria and 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 influenza-like-illness (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 Emergency Department (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 8 Perth Emergency Departments (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.

6. References

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