



AUSTRALIAN INFLUENZA SURVEILLANCE Summary Report

**No.4, 2010, REPORTING PERIOD:
23 January 2010 – 29 January 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/NNDS; GP Sentinel ILI Surveillance; and ED presentations of ILI at sentinel hospitals (NSW and WA). Laboratory data are used to determine the proportion of pandemic (H1N1) 2009 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/shift from laboratory surveillance.

Summary

- As at 29 January 2010, there have been 37,649 confirmed cases of pandemic (H1N1) 2009 and 191 deaths reported in Australia.
- National influenza activity remains low and at levels experienced at the same time in previous years as measured by:
 - Influenza-like illness (ILI) presentation rates to General Practitioners;
 - ILI presentations to emergency departments (EDs) in NSW and WA;
 - FluTracking surveillance of ILI;
 - Enquiries to the National Health Call Centre Network (NHCCN); and
 - Absenteeism rates.
- As at 24 January 2010, the WHO Regional Offices reported at least 14,711 deaths associated with pandemic (H1N1) 2009 worldwide. Much of the Northern Hemisphere passed a peak of pandemic influenza activity between late October and late November 2009. However, virus transmission remains active in several later affected areas, particularly in North Africa, limited areas of Eastern and Southeastern Europe, and in parts of South and East Asia. In the Southern Hemisphere, sporadic cases of pandemic influenza continued to be reported without evidence of sustained community transmission.
- Pandemic influenza (H1N1) continues to be the predominant circulating influenza virus in nearly all countries where influenza is reported except in China, where there have been outbreaks due to influenza B (48.8% of all influenza positive specimens).
- The WHO Collaborating Centre in Melbourne has reported that four pandemic (H1N1) 2009 isolates collected in Australia have shown resistance to oseltamivir by enzyme inhibition assay (EIA) and nine pandemic (H1N1) 2009 clinical specimens have shown the H275Y mutation known to confer resistance to oseltamivir.

- To date, WHO reported that 220 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.

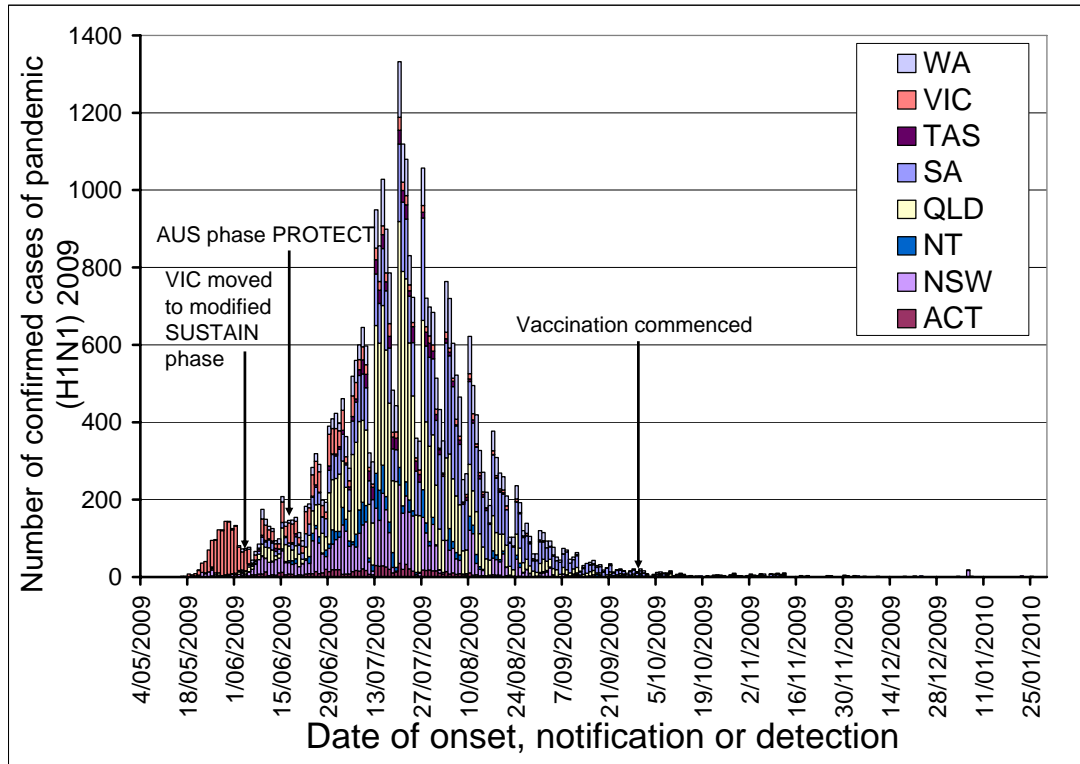
1. Influenza activity in Australia

Laboratory Confirmed Cases

There have been 65 new laboratory confirmed pandemic (H1N1) 2009 notifications reported this reporting period^a. However, pandemic influenza activity is currently low in Australia. Sporadic cases of pandemic influenza continue to be reported without evidence of sustained community transmission (Figures 1 and 2).

As of 29 January 2010 there were 37,649 confirmed cases of pandemic (H1N1) 2009 in Australia, including 191 pandemic influenza-associated deaths.

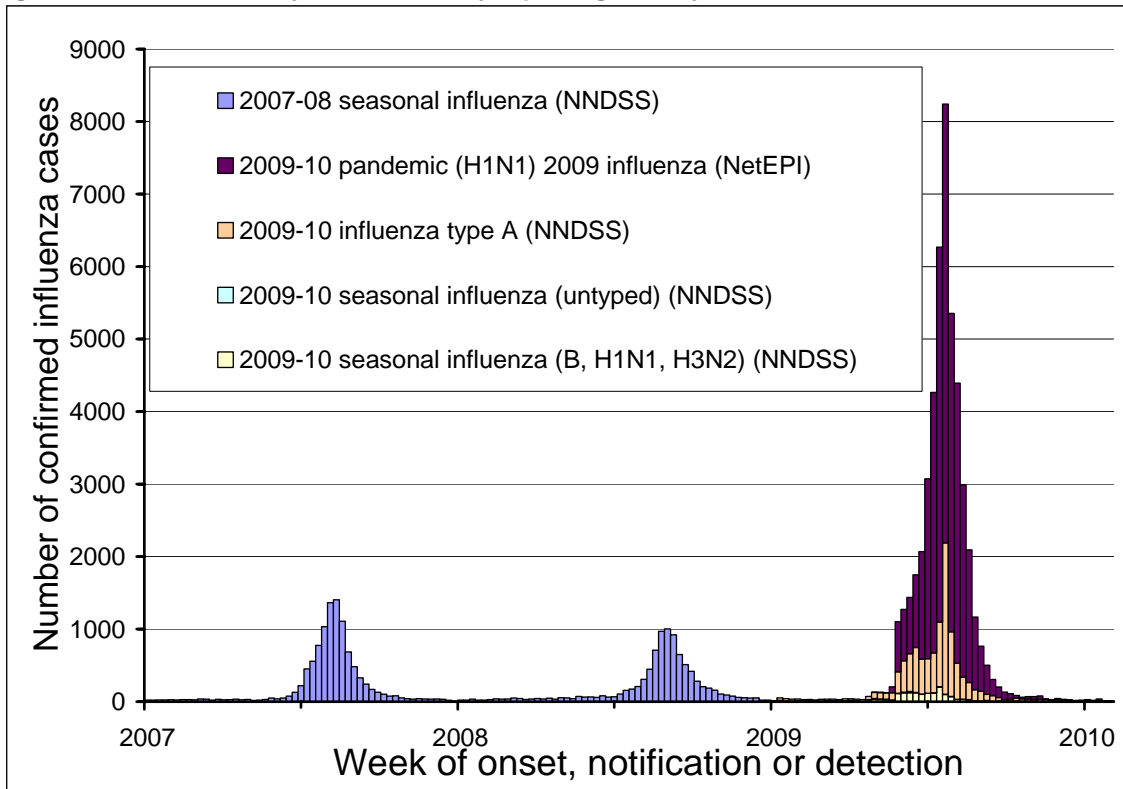
Figure 1. Laboratory confirmed cases of pandemic (H1N1) 2009 in Australia, to 29 January 2010



Source: NetEPI database

^a Please note that this increase in laboratory confirmed pandemic (H1N1) 2009 notifications is due to a backlog in data entry by jurisdictions. Data are subject to change retrospectively as jurisdictions are cleaning and validating their records.

Figure 2. Influenza activity in Australia, by reporting week, years 2007, 2008, 2009* and 2010*



* Data on pandemic (H1N1) 2009 cases is extracted from NetEPI; data on seasonal influenza is extracted from NNDSS.
Sources: NNDSS and NetEPI databases

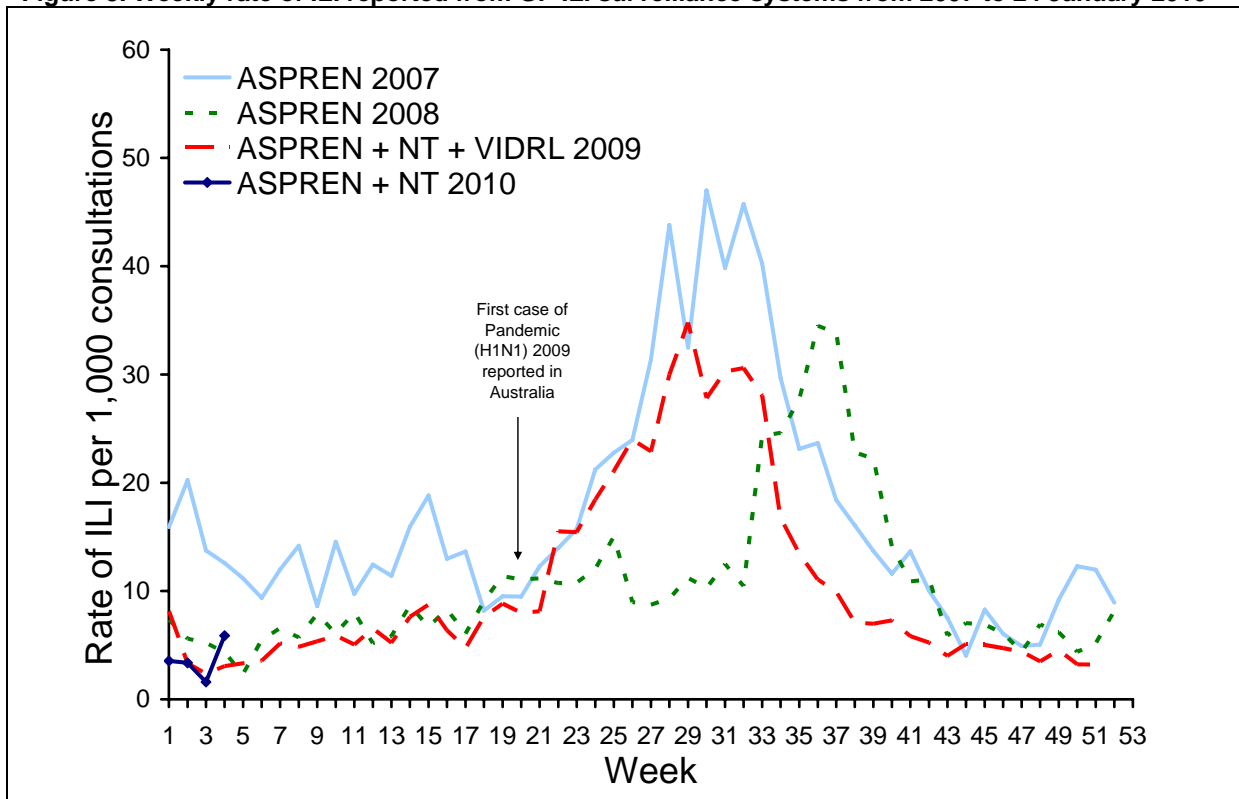
Influenza-Like Illness ^b

Sentinel General Practice Surveillance

Combined data available from the Australian Sentinel Practices Research Network (ASPREN) and the Northern Territory GP surveillance system, up until 24 January 2010, show that nationally, influenza like illness (ILI) consultation rates are low and consistent with levels usually seen at this time of the year (Figure 3).

In the last week, the presentation rate to sentinel GPs in Australia was approximately 5 cases per 1,000 patients seen.

Figure 3. Weekly rate of ILI reported from GP ILI surveillance systems from 2007 to 24 January 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.

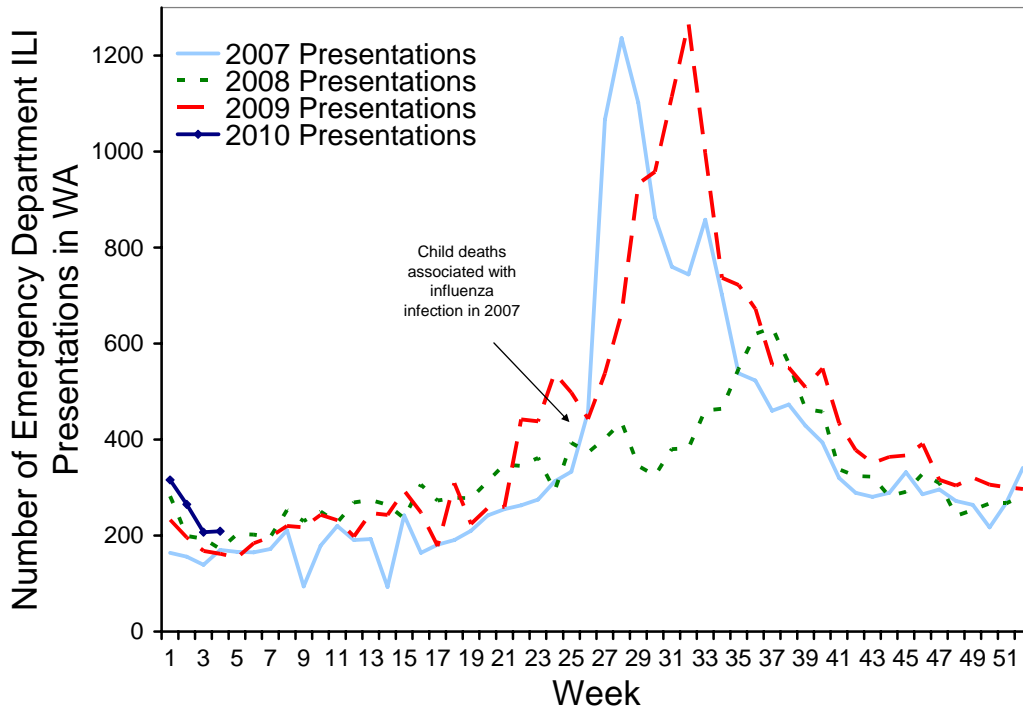
SOURCE: ASPREN, NT

^b As the counting of every case is not feasible in the PROTECT phase, influenza activity, including Influenza Like Illness (ILI) activity in the community is instead monitored by surveillance systems including: GP Sentinel ILI surveillance; Emergency Department presentations of ILI at sentinel hospitals (NSW and WA); and Absenteeism rates. Laboratory data are used to determine the proportion of pandemic (H1N1) 2009 circulating in the community.

WA emergency departments

The number of ILI presentations reported in Western Australian EDs remained stable and are at low levels similar to those seen in previous years (Figure 4).

Figure 4. Number of Emergency Department presentations due to ILI in Western Australia from 1 January 2007* to 24 January 2009 by week



* In early July 2007 (week 26), several deaths associated with influenza infection were reported in children from Western Australia. The public response to these deaths could account for the sudden increase in ILI presentations to Perth EDs in 2007.

Source: WA 'Virus Watch' Report

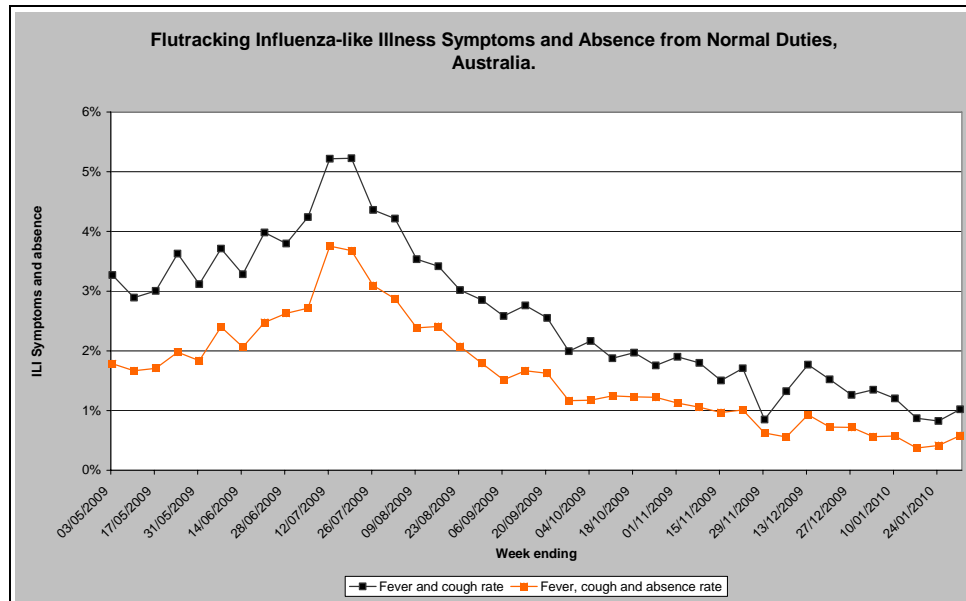
NSW emergency departments

In December 2009, there were 88 presentations to NSW EDs with ILI. This is below levels seen in November 2009 (116 presentations) but higher than in December 2008 (75 presentations).

Flutracking

Flutracking, a national online tool for collecting data on ILI, reported that activity remained at low levels both nationally and at the State level in the week ending 31 January 2010 (figure 5).

Figure 5. Rate of ILI symptoms and absence from regular duties among Flutracking participants by week (week ending 3 May 2009 to week ending 31 January 2010)

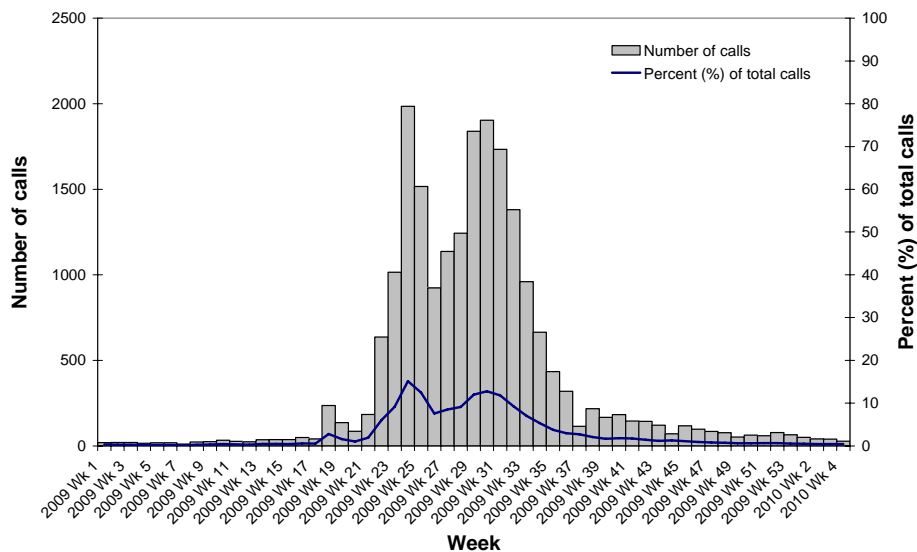


Source: Flutracking Interim Weekly Report

National Health Call Centre Network

The number of ILI related calls received by the National Health Call Centre Network (NHCCN) remained stable, with 28 calls in the week ending 29 January 2010. At the peak of the 2009 season, the NHCCN received approximately 1900 ILI-related calls per week. The number of calls is currently at baseline levels (Figure 6).

Figure 6. Number of calls to the National Health Call Centre Network (NHCCN) related to ILI, Australia, 1 January 2009 (Wk1) to 29 January 2010 (Wk3)*



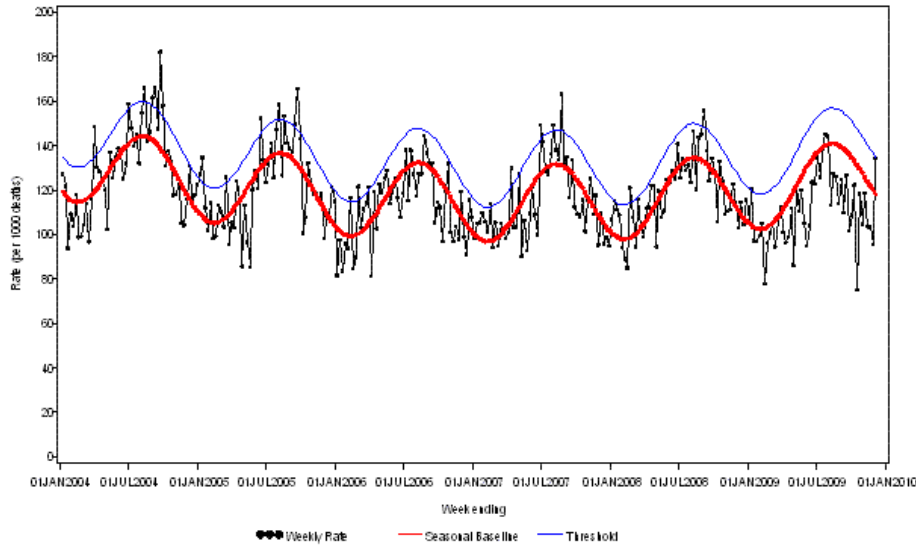
*Data in the most recent week are incomplete and will update retrospectively.

SOURCE: NHCCN data

Deaths associated with influenza and pneumonia

Death registration data show that as at 4 December 2009, there were 134 pneumonia or influenza deaths per 1,000 deaths in NSW, which was higher than previous weeks and was at the threshold of levels expected at that time of year (Figure 7).

Figure 7: Rate of deaths classified as influenza and pneumonia as per NSW Registered Death Certificates, 2004 – 2009

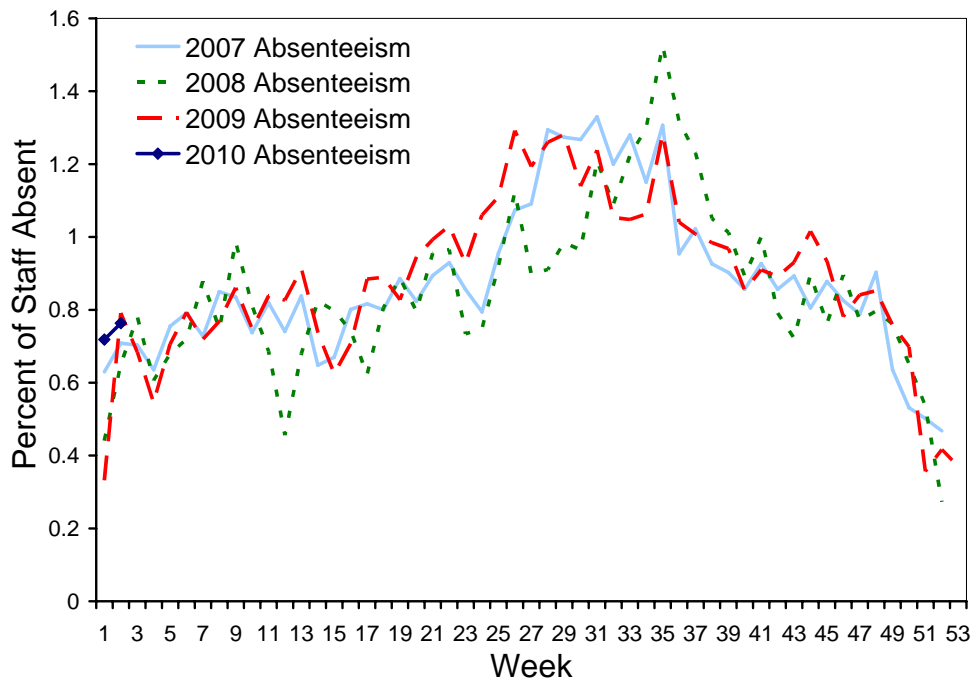


Source: NSW 'Influenza Monthly Epidemiology Report'

Absenteeism

The most recent data indicate that in the first two weeks of 2010 (ending 20 January), national absenteeism rates were consistent with those seen at the beginning of previous years (Figure 8).

Figure 8. Rates of absenteeism of greater than 3 days absent, National employer, 14 January 2007 to 20 January 2010, by week.



SOURCE: Absenteeism data (Employer not disclosed)

Sentinel Laboratory Surveillance - confirmed influenza notifications

While limited laboratory data were available for this reporting period, reporting laboratories continued to show that no samples were confirmed positive for Influenza A virus (Table 1).

Table 1. Laboratory Respiratory tests that tested positive for influenza A and pandemic (H1N1) 2009

	ASPREN* – national	WA & NT (reported by WA NIC)
Latest report		
Number of specimens tested	1	69 (at 29/2)
Number tested which were Influenza A	0	0
Number tested which were pandemic (H1N1) 2009	0	0

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

From 1 January to 11 December 2009, type A was the predominant seasonal influenza type reported by all jurisdictions. Of the type A notifications for which there was subtyping information in NNDSS, the ratio of seasonal H1N1 to H3N2 was 1:2.3.

2. Overview of pandemic (H1N1) 2009 severity - to 15 January 2010 ^c

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 to provide evidence on the severity of the disease in Australia (Table 1).

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, to 15 January 2010

	Confirmed pandemic (H1N1) 2009 cases	Hospitalised cases	ICU cases	Deaths
Total number	37,569	13% (4,912/37,569 confirmed cases)	14% (674/4,912 hospitalisations)	191
Crude rate per 100,000 population	175.8	23.0	3.2	0.9
Median age (years)	21	31	44 [^]	53 [^]
Females	51% (19,112/37,569)	51% (2,494/4,912)	53% (360/674)	44%
Vulnerable groups (Indigenous, pregnant & individuals with at least 1 co-morbidity)	n/a	57% (2,787/4,912)	67% (451/674)	67%
Indigenous people~	11% (3,864/34,656)	20% (799/3,958)	20% (102/523)	13%
Pregnant women*	n/a	27% (279/1,045 hospitalised females aged 15-44 years)	15% (42/279 hospitalised pregnant women)	4%
Cases with at least 1 co-morbidity	n/a	45% (2,206/4,912)	63% (425/674)	62%

[#]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 is 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 in ages of ICU cases and deaths 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.

^c 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 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 2009 to 1 February 2010, 1,586 Australian influenza isolates have been subtyped by the WHO CC (Table 3).

Table 3. Typing of Influenza isolates from the WHO Collaborating Centre, from 1 January 2009 to 1 February 2010

Antigenic characterization	ACT	NSW	NT	QLD	SA	TAS	VIC	WA	TOTAL
A(H1N1)	2	25	0	29	21	1	11	27	116
Pandemic (H1N1) 2009	41	100	144	78	182	9	223	387	1164
A(H3N2)	16	101	8	41	2	8	41	68	285
B	0	8	0	1	0	0	4	8	21
Total	59	234	152	149	205	18	279	490	1586

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 a random sample of all those in the community, hence proportions of pandemic (H1N1) 2009 to seasonal are not representative of the proportions circulating. Early in the pandemic all influenza A untypeable samples were sent to the WHO CC for testing and later many pandemic (H1N1) 2009 positive samples were sent for confirmation, resulting in biases in the data.

Of the 1,586 influenza isolates subtyped by the WHO CC, 884 have been antigenically characterized, with 70% confirmed as pandemic A/H1N1 2009 (A/California/7/2009-like).

In general, seasonal influenza A strains are the same as strains in the vaccine. A number of A(H3N2) viruses similar to the reference virus A/Perth/16/2009, have been isolated in Queensland, Western Australia and New South Wales during the influenza season in Australia. As viruses of this type have also been isolated elsewhere in 2009, an A(H3N2) A/Perth/16/2009-like virus has been recommended for inclusion in the 2010 Australian seasonal influenza vaccine. Influenza B strains match more closely with those in the 2009-2010 Northern and Southern Hemisphere vaccine and may be drifting.

INTERNATIONAL UPDATES

The Global Influenza Surveillance Network (GISN) is monitoring the global circulation of influenza viruses, including pandemic, seasonal and other influenza viruses infecting, or with the potential to infect, humans including seasonal influenza. Globally, since the beginning of the pandemic on 19 April 2009 to 23 January 2010, cumulatively 153 countries shared a total of 23,743 specimens (18,368 clinical samples and 5,375 virus isolates) with WHO CCs. (3)

Pandemic A(H1N1) continues to be the predominant circulating influenza virus in nearly all countries where influenza is reported. The most recent data showed that pandemic (H1N1) 2009 accounted for 100% of influenza A virus subtype detections in sentinel specimens in Europe and more than 98% in America. China on the other hand reported outbreaks due to influenza B (48.8% of all influenza positive specimens). Sporadic detections of seasonal A(H1N1), A(H3N2) and influenza B viruses were reported from a few countries such as Iran, Japan, the Russian Federation and Tunisia. (1)

ANTIVIRAL RESISTANCE

Pandemic (H1N1) 2009

To date, WHO reported that 220 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. (3)

The WHO CC in Melbourne has reported that four isolates have shown resistance to oseltamivir by enzyme inhibition assay (EIA) and nine clinical specimens have shown the H275Y mutation known to confer resistance to oseltamivir (Table 4).

Table 4. Neuraminidase resistance testing of Australian pandemic (H1N1) 2009 viruses[^]

Description	No. tested	EIA Resistant	H275Y mutation
Viral isolates	587	4	-
Clinical specimens	276	-	9

[^] Validation of data has identified that some specimens contained only very low proportions of H275Y mutant, and thus, they have been excluded in further reports.

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.(2) More recent oseltamivir resistance testing data on seasonal influenza strains from Australia 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 2 December 2010)	97.2% (36/37) resistant to oseltamivir	0% (0/40) resistant to oseltamivir	0% (0/6) resistant to oseltamivir

4. International Influenza Surveillance^d

As at 24 January 2010, the WHO Regional Offices reported at least 14,711 deaths associated with pandemic (H1N1) 2009 worldwide. As many countries have stopped counting individual cases, particularly of milder illness, the global case count is likely to be significantly lower than the actual number of cases. (3)

Much of the Northern Hemisphere passed a peak of fall and wintertime pandemic influenza activity between late October and late November 2009. However, virus transmission remains active in several later affected areas, particularly in North Africa, limited areas of eastern and Southeastern Europe, and in parts of South and East Asia. In the Southern Hemisphere, sporadic cases of pandemic influenza continued to be reported without evidence of sustained community transmission. (3)

North America – peak influenza activity occurred during October in Mexico, the United States, and Canada.

- In the US, during week 3 (up to 23 January 2010), influenza activity remained similar to the previous reporting period. The proportion of outpatient visits for influenza-like illnesses (ILI) was below the national baseline. About 98% of subtyped influenza A viruses reported to CDC were pandemic (H1N1) 2009 influenza viruses. (4)
- In Canada, during week 3 (up to 23 January 2010), all influenza indicators continued to be either at baseline level or considerably under the expected level for this time of the year. The national ILI consultations rate was similar to the previous week and is still significantly below the expected range for this time of the year. Only 0.04% of the specimens tested were positive for influenza and the pandemic (H1N1) 2009 strain still accounted for 100% of the positive influenza A subtyped specimens during this reporting period. Only one specimen tested positive for influenza B. While influenza activity was very low, the respiratory syncytial virus transmission continued to increase. (5)

Europe – During week 3, only Bulgaria, Malta, Poland, Romania and Slovakia reported medium ILI or severe acute respiratory infection activity. Of the 840 sentinel samples tested, 15% were positive for influenza A, of which more than 99% were pandemic (H1N1) 2009 influenza. (6)

- Pandemic influenza activity is generally decreasing across the UK during week 4 (ending 28 January). The weekly ILI consultation rate decreased or remained stable across the UK. A decrease in respiratory syncytial virus detections has been observed recently. The main influenza virus circulating in the UK continues to be the pandemic (H1N1) 2009 strain, with few influenza H1 (non-pandemic), H3 and B viruses detected. The majority of pandemic influenza cases continue to be mild. (7)
- In Ireland, influenza activity remained stable during week 3 (ending 24 January). The sentinel GP ILI consultation rate decreased to 12.2 per 100,000 population during this period. The highest sentinel GP age-specific ILI consultation rates occurred in the 65 year age group. The number of laboratory confirmed cases of pandemic (H1N1) 2009 and hospitalisations continued to decrease and there were no ICU admissions. Pandemic (H1N1) 2009 was the only influenza virus circulating in week 3. (8)

^d When possible, information in this section is collated from reports available within the current reporting period.

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.

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

- 1 WHO Pandemic (H1N1) 2009 - Update 85 & Virological Surveillance Weekly Update. Available from <http://www.who.int/csr/don/en/>. Accessed 2 February 2010.
- 2 WHO Influenza A virus resistance to oseltamivir and other antiviral medicines, 4 June 2009. Available from: <http://www.who.int/csr/disease/influenza/2008-9nhemisummaryreport/en/index.html>. Accessed 4 February 2010.
- 3 WHO Pandemic (H1N1) 2009 - Update 85 & Virological Surveillance Weekly Update. Available from <http://www.who.int/csr/don/en/>. Accessed 2 February 2010.
- 4 CDC FluView Weekly report, Week 3 ending 23 January 2010. Available from: <http://www.cdc.gov/flu/weekly/>. Accessed 2 February 2010.
- 5 Canada FluWatch Weekly report, week 3 ending 23 January 2010. Available from: <http://www.phac-aspc.gc.ca/fluwatch/09-10/index-eng.php>. Accessed 2 February 2010.
- 6 ECDC pandemic update. Available from: <http://ecdc.europa.eu/en/healthtopics/Documents/Forms/AllItems.aspx>. Accessed 2 February 2010.
- 7 HPA weekly pandemic flu media update week 4, ending 28 January 2010. Available from: <http://www.hpa.org.uk/webw/HPAweb&Page&HPAwebAutoListName/Page/1240732817665?p=1240732817665>. Accessed 2 February 2010.
- 8 Influenza Surveillance in Ireland - Weekly Update. Influenza week 3, ending 24 January 2010. Available from: <http://www.ndsc.ie/hpsc/A-Z/EmergencyPlanning/AvianPandemicInfluenza/SwineInfluenza/Surveillance%20Reports/>. Accessed 2 February 2010.