

Influenza Epidemiology Report, NSW

Including H1N1 influenza 09

1 May to 30 September 2009

Prepared by the Population Health Division, 30 September 2009

Note: This is the last weekly report to routinely include data on hospital and intensive care admissions, flu clinic activity and GP Sentinel Surveillance. From next week a shorter report will be posted including a summary of data from emergency departments and ambulance call outs, deaths, and laboratory testing.

Summary

- The number of influenza-like illness presentations to emergency departments has continued to decline over the last 7 days from the peak in mid-July, and is now at levels expected for this time of year.
- Area health services have reported a total of 1267 patients with H1N1 influenza 09 admitted to hospitals in NSW since the start of the influenza epidemic.
- Intensive care units have reported 243 patients admitted to intensive care units with confirmed H1N1 influenza 09.
- As of 30 September 2009, there have been 51 deaths reported in association with confirmed H1N1 influenza 09 in NSW.
- There have been 5173 cases with laboratory confirmed H1N1 influenza 09 reported in NSW.

Introduction

A novel influenza A virus (H1N1 influenza 2009 -previously called human swine influenza) was identified in April 2009 in the United States and Mexico. Since then, widespread community transmission of the virus has been confirmed in other continents including Australia.

Illness in most people has been generally mild, and broadly similar to seasonal influenza. Features that are unusual include the younger age of cases, the relative sparing of the over 60 year old age group, and the out-of-season timing of the epidemic in the northern hemisphere.

The community was initially generally susceptible to a novel influenza virus. This means that despite the generally mild profile of the illness, the impact of the virus has been substantial, particularly as community transmission became established in Australia during the winter.

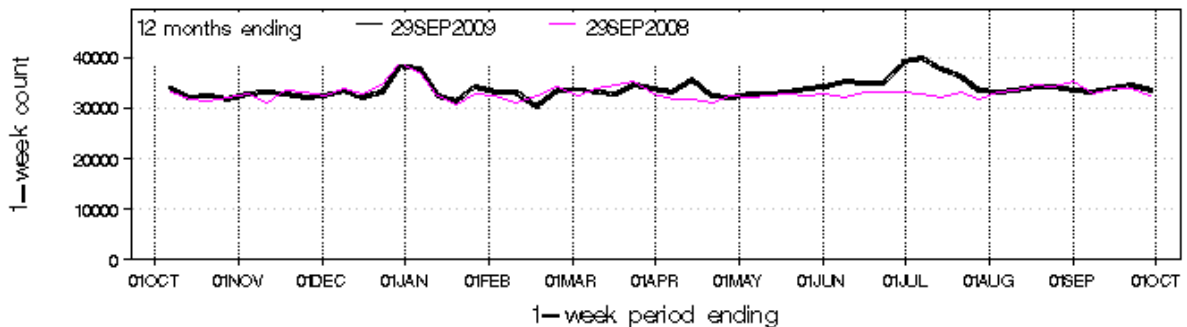
This document provides a summary of the surveillance for influenza, including H1N1 influenza 09, undertaken by NSW Health to date. This includes data from a range of surveillance systems.

Emergency Department (ED) presentations

Data from 52 NSW emergency departments are included. Comparisons are made with data for the preceding six years. Recent counts are subject to change.

Presentations for any reason

Figure 1: Total weekly presentations for any reason to NSW emergency departments, 2008-2009*

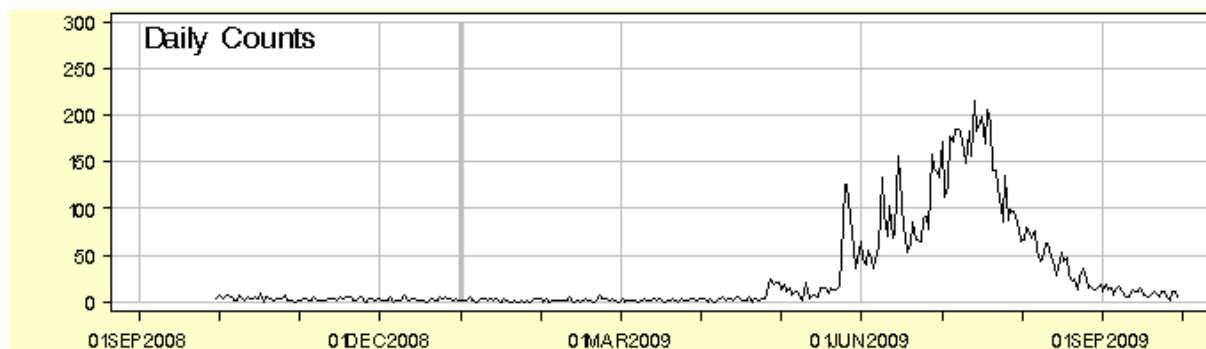


* Some people presenting to NSW emergency departments have been referred to an influenza clinic without being recorded in the regular ED information system. (Under-reporting of influenza-related ED presentations will occur in this situation.) Includes data from 52 emergency departments. Source: NSW Health Public Health Real-time Emergency Department Surveillance System (PHREDSS) and the NSW Emergency Department Data Collection (HOIST).

- Presentations for any reason to emergency departments peaked at around 40,000 presentations per week in early July.
- In the last 7 days, there were 33,470 presentations for any reason which is lower than the preceding week, but slightly higher than the same week in 2008 (Figure 1).

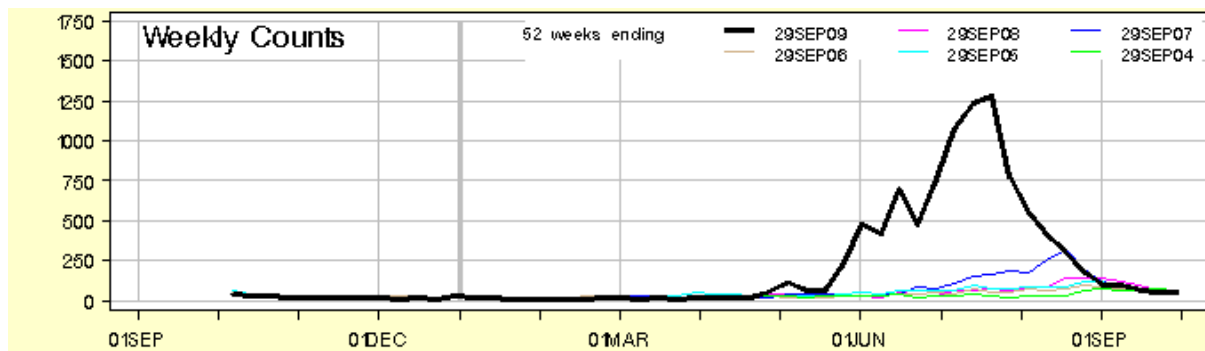
Presentations for influenza-like illness

Figure 2: Daily presentations with influenza-like illness to NSW emergency departments, 2008-2009*



* Some people presenting to NSW emergency departments have been referred to an influenza clinic without being recorded in the regular ED information system. Includes data from 49 emergency departments. Source: NSW Health Public Health Real-time Emergency Department Surveillance System (PHREDSS) and the NSW Emergency Department Data Collection (HOIST).

Figure 3: Comparison of weekly influenza-like illness presentations to NSW emergency departments, 2003-2009*



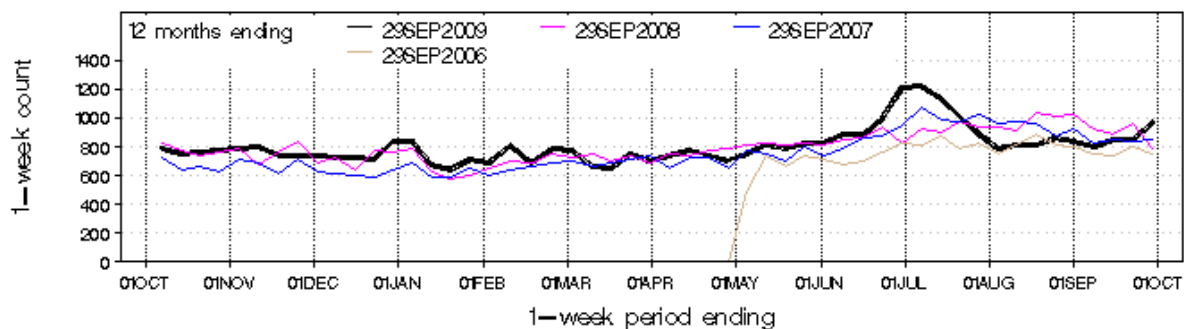
* Some people presenting to NSW emergency departments have been referred to an influenza clinic without being recorded in the regular ED information system. Includes data from 49 emergency departments. Source: NSW Health Public Health Real-time Emergency Department Surveillance System (PHREDSS) and the NSW Emergency Department Data Collection (HOIST).

- Presentations to emergency departments for influenza-like illness peaked in mid July at around 1300 presentations per week. The July peak was approximately three times the previous highest peak of 2007.
- In the last 7 days, there were 53 presentations with influenza-like illness. This is similar to the previous week. It is now at levels expected for this time of year (Figures 2 and 3).

Ambulance calls for breathing problems

Data from the Sydney Ambulance Operations Region are included.

Figure 4: Total weekly count of urgent ambulance calls for breathing problems to the Sydney metro ambulance region, 2006-2009.

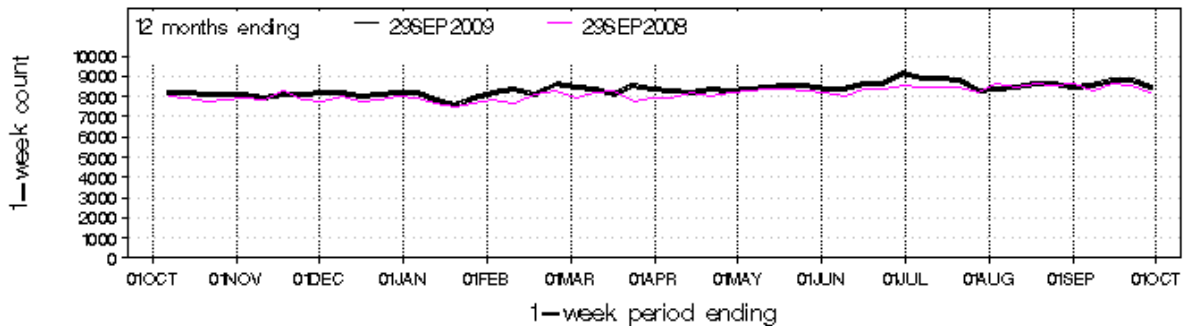


Source: NSW Health Public Health Real-time Emergency Department Surveillance System (PHREDSS) and the NSW Emergency Department Data Collection (HOIST).

- Urgent ambulance call outs for breathing problems have declined from their peak in early July. There was an increase in call outs for breathing problems in the past week associated with the dust storm activity.
- The highest rates of urgent ambulance call outs for breathing problems this year occurred around the first week of July, at around 1300 call outs per week (Figure 4).

Admissions to hospital from emergency departments for any reason

Figure 5: Total weekly admissions to hospital for any reason from NSW emergency departments, 2008-2009*

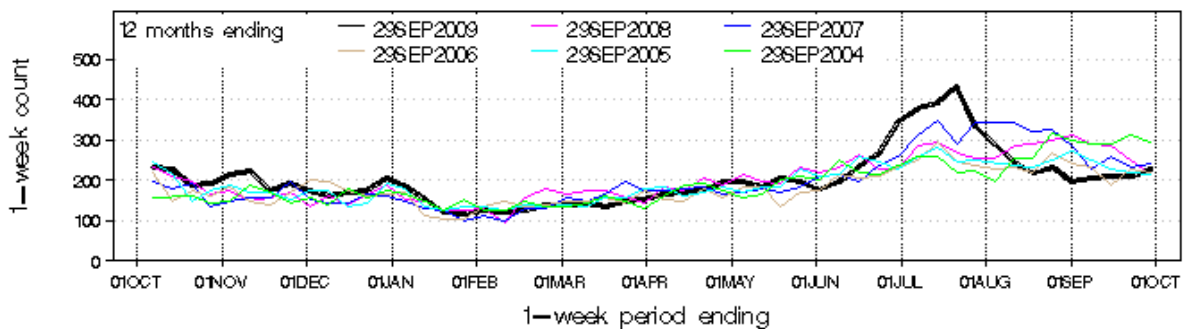


* Some people presenting to NSW emergency departments have been referred to an influenza clinic without being recorded in the regular ED information system. (Under-reporting of influenza-related ED presentations will occur in this situation.) Includes data from 52 emergency departments. Source: NSW Health Public Health Real-time Emergency Department Surveillance System (PHREDSS) and the NSW Emergency Department Data Collection (HOIST).

- The number of admissions for any reason from EDs remains at normal seasonal levels. Admissions peaked at around 9,000 admissions per week at the end of June.
- In the last 7 days, there were 8490 patients admitted to hospital following presentation to emergency departments.
- The number of admissions is 311 higher than the count of 8179 for the same week in 2008. (Figure 5).

Admissions to hospital from emergency departments for pneumonia or influenza-like illness

Figure 6: Weekly counts of admissions to hospital for pneumonia or influenza-like illness from NSW emergency departments, 2006-2009*.



* Some people presenting to NSW emergency departments have been referred to an influenza clinic without being recorded in the regular ED information system. (Under-reporting of influenza-related ED presentations will occur in this situation.) Includes data from 49 emergency departments. Source: NSW Health Public Health Real-time Emergency Department Surveillance System (PHREDSS) and the NSW Emergency Department Data Collection (HOIST).

- Weekly counts for patients admitted to hospital following presentation to emergency departments with pneumonia or influenza-like illness remained steady in the last 7 days. Admissions from emergency departments to hospital for pneumonia or influenza-like illness peaked in mid July at around 410 admissions.

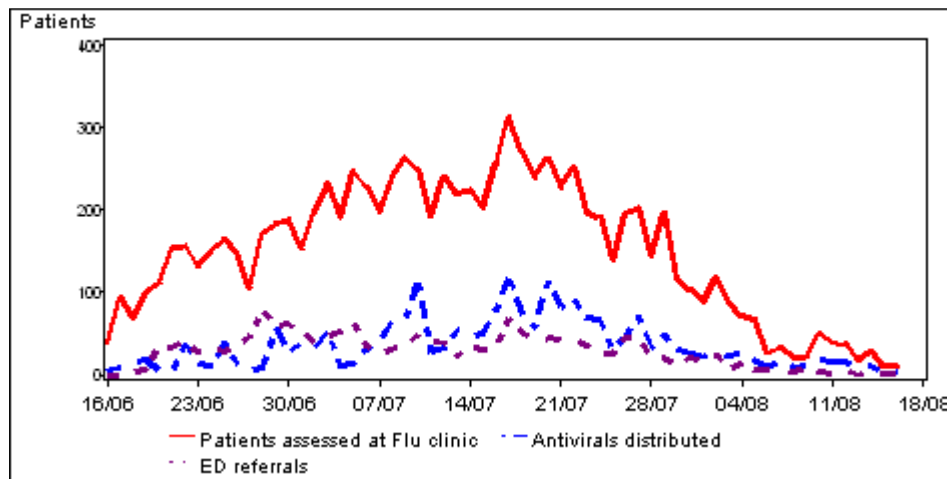
- There were 229 admissions in the last 7 days with pneumonia or influenza-like illness.
- Recent weekly counts are at the lower end of the expected range for this time of year and well below the seasonal peaks of previous years. (Figure 6)

Flu clinics

Flu clinics are located at many public hospitals. Flu clinics open as required to manage patients with suspected influenza.

- Presentations to flu clinics peaked in the third week of July at 250-300 presentations per day.
- Due to reduced demand, most flu clinics have ceased to be operational.
- Data from flu clinics will no longer be reported unless demand increases and clinics re-open.

Figure 7: Total daily assessments in NSW influenza clinics, 16 June to 16 August 2009.



Source: NSW Health Flu Clinic surveillance database.

Hospital and intensive care unit (ICU) admissions associated with H1N1 influenza 09

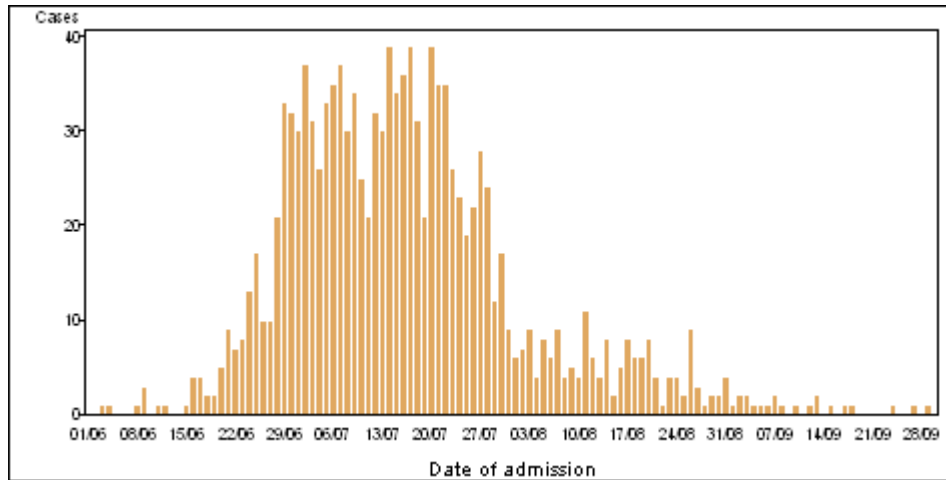
Summary

Since the beginning of the pandemic there have been:

- 1267 cases reportedly admitted to hospital with confirmed H1N1 influenza 09 in total. Admissions were at their highest levels in early to mid July, with around 35 patients admitted per day. (Figure 8)
- 243 cases reportedly admitted to intensive care units with confirmed H1N1 influenza 09 in total. ICU admissions peaked in early to mid July at around 6 patients admitted each day.

Hospital admissions

Figure 8: Confirmed H1N1 influenza 09 cases admitted to hospital in NSW by date of admission, 1 June to 30 September 2009*



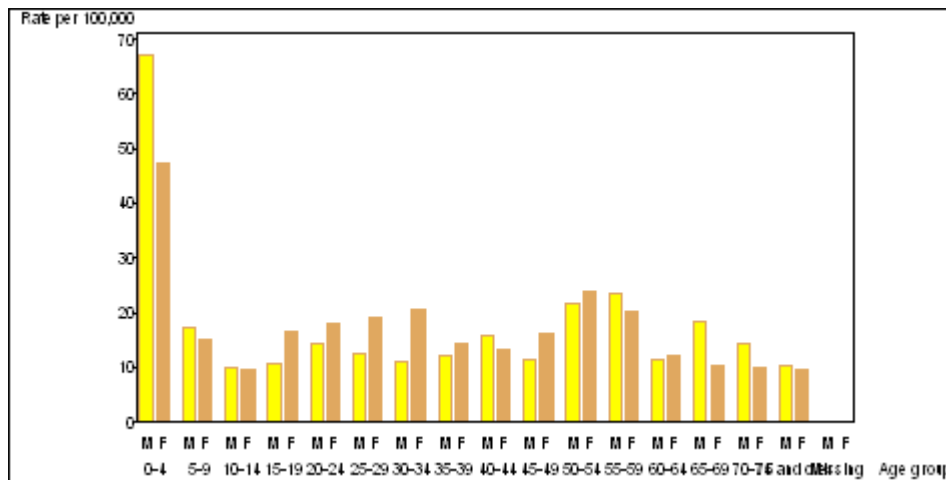
*Recent results are subject to reporting delays. Source: NSW Health NetEpi Swine Flu database.

Table 1: Age of cases admitted to hospital with confirmed H1N1 influenza 09, 1 June to 30 September 2009

Age group	Number of cases	Percent of cases	Rate per 100,000 population
0-4	269	21.2	57.9
5-9	71	5.6	16.3
10-14	45	3.6	9.9
15-19	66	5.2	14.0
20-24	79	6.2	16.2
25-29	78	6.2	15.9
30-34	77	6.1	15.9
35-39	68	5.4	13.3
40-44	73	5.8	14.8
45-49	70	5.5	14.0
50-54	109	8.6	23.3
55-59	92	7.3	21.9
60-64	45	3.6	11.8
65-69	41	3.2	14.4
70-74	28	2.2	12.1
75 and over	46	3.6	9.8
Missing	10	0.8	.
Total	1267	100.0	18.0

Source: NSW Health NetEpi Swine Flu database.

Figure 9: Age and sex distribution of cases (rate per 100,000) ever admitted to hospital with confirmed H1N1 influenza 09, 1 May to 30 September 2009



Source: NSW Health NetEpi Swine Flu database.

- Hospital admissions were highest in July, at about 35 cases per day. Admissions decreased in August to fewer than 10 cases per day, and have decreased further in September. Note that delays in reporting may mean that recent numbers are under-reported.
- The age groups of confirmed cases admitted to hospital remain similar to previous weeks, with 0-5 year old children representing the largest proportion of hospital admissions with H1N1 influenza 09 (Table 1, Figure 9).
- Hospitalisation of confirmed cases has been greatest in Sydney South West, at a rate 1.5 times the average across NSW. Sydney West, Greater West and Hunter New England have also experienced high rates of hospital admissions (Table 2).

Table 2: Total confirmed H1N1 influenza 09 cases admitted to hospital by NSW Area Health Service, 1 May to 30 September 2009

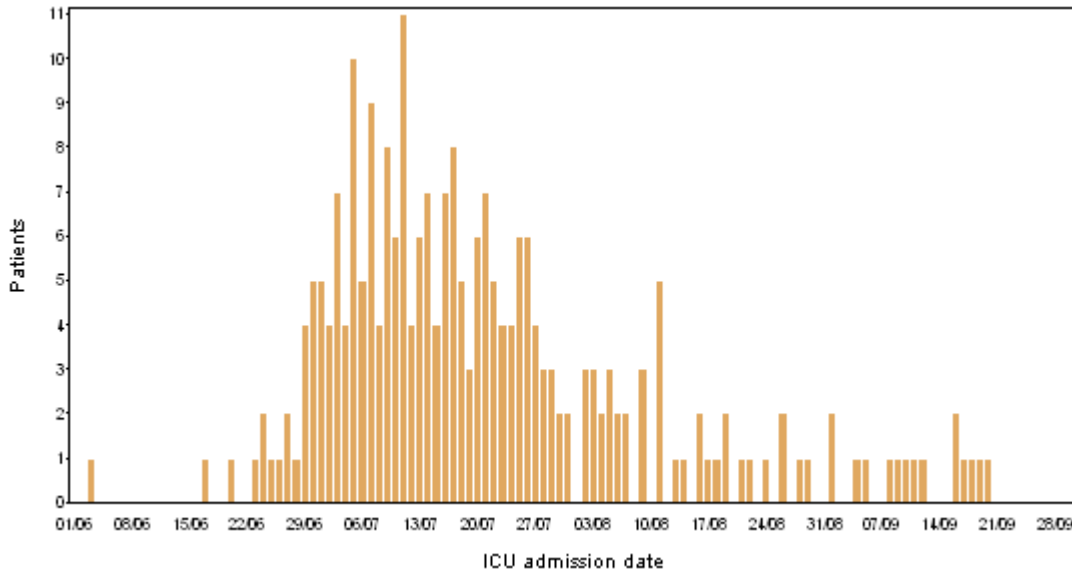
Area Health Service	Total	Rate (per 100,000)
Sydney South West	360	25.6
South-Eastern Sydney and the Illawarra	113	9.3
Sydney West	273	23.9
Northern Sydney and the Central Coast	97	8.5
Hunter and New England	198	22.8
North Coast	70	14.0
Greater Southern	77	15.9
Greater West	72	23.9
Justice Health	5	
Not applicable	2	
All NSW	1267	18.0

Source: NSW Health NetEpi Swine Flu database.

Intensive care admissions

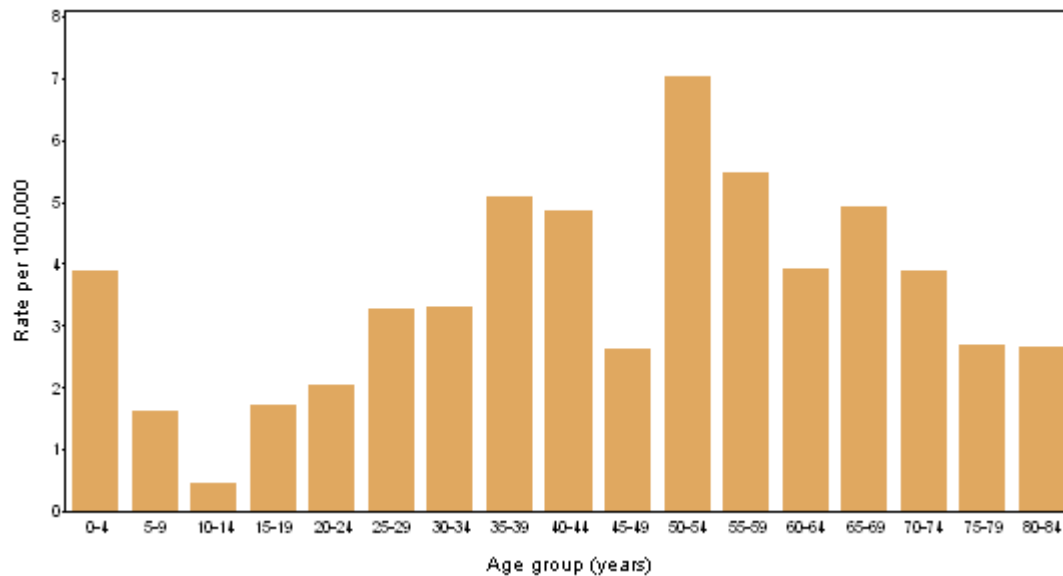
The ANZIC Research Centre is collaborating with NSW Health to compile data on patients with influenza A admitted to intensive care units (ICUs) across New South Wales. Data has been collected on patients with confirmed H1N1 influenza 09 admitted to intensive care since 1 June.

Figure 10: Confirmed H1N1 influenza 09 cases admitted to intensive care units in NSW by date of ICU admission, 1 June to 30 September 2009*.



*Recent results are subject to reporting delays. Source: ANZIC database.

Figure 11: Age distribution of cases (rate per 100,000) admitted to intensive care with confirmed H1N1 influenza 09, 1 June to 30 September 2009



Source: ANZIC database.

Table 3: Age of cases admitted to intensive care with confirmed H1N1 influenza 09, 1 June to 30 September 2009

Age group	Patients	Percent of patients	Rate per 100,000 population
0-4	18	7	3.9
5-9	7	3	1.6
10-14	2	1	0.4
15-19	8	3	1.7
20-24	10	4	2.0
25-29	16	7	3.3
30-34	16	7	3.3
35-39	26	11	5.1
40-44	24	10	4.9
45-49	13	5	2.6
50-54	33	14	7.0
55-59	23	9	5.5
60-64	15	6	3.9
65-69	14	6	4.9
70-74	9	4	3.9
75-79	5	2	2.7
80-84	4	2	2.6
85 and over	0		
TOTAL	243	100	3.4

Source: ANZIC database

- ICU admissions peaked in early to mid July at around 6 patients admitted each day, and have decreased in recent weeks. (Figure 10)
- The majority of ICU admissions of confirmed cases of H1N1 influenza 09 have been in the 30-59 year age group (Table 3, Figure 11).
- Those at increased risk of admission to intensive care with H1N1 influenza 09 infection include pregnant women, Aboriginal and Torres Strait Islander people, and those with chronic disease or morbid obesity.

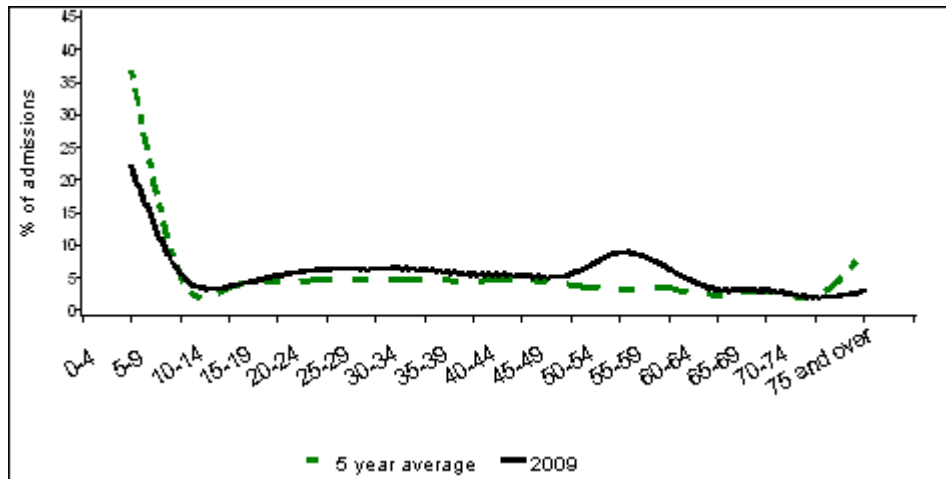
Table 4: Risk groups of cases admitted to intensive care with confirmed H1N1 influenza 09, 1 June to 30 September 2009

Risk group	Patients	Percent of patients
Any chronic disease	165	68
Pregnant or 28 days post partum	17	7
Morbid obesity	25	10
No risk factors reported	32	13

Source: ANZIC database.

Comparison of admissions with H1N1 influenza 09 with previous years' admissions with normal seasonal influenza

Figure 12: Age distribution of cases admitted to hospital with confirmed H1N1 influenza 09 in NSW, with comparison to cases with normal seasonal influenza admitted to hospital in the years 2004-2008.



Source: NSW Health NetEpi Swine Flu database and Admitted Patients Data Collection.

- Figure 12 shows the proportion in each age group of all cases admitted to hospital with confirmed H1N1 influenza 09, and the age groups of people admitted to hospital with influenza over the previous 5 years. (Source: Admitted Patients Data Collection)
- There is a shift towards young adult and middle-aged adults in those admitted to hospital with H1N1 influenza 09, compared to those admitted to hospital with normal seasonal influenza over the previous 5 years.

Deaths associated with laboratory confirmed H1N1 influenza 09

- As of 30 September 2009 there have been 51 deaths to date in association with confirmed H1N1 influenza 09 in NSW. Of these, 46 had underlying chronic conditions and 5 are under investigation.
- Deaths in association with H1N1 influenza 09 have occurred in people aged 9-85 years (Table 5).

Table 5: Age distribution of deaths in association with confirmed H1N1 influenza 09, 1 May to 30 September 2009

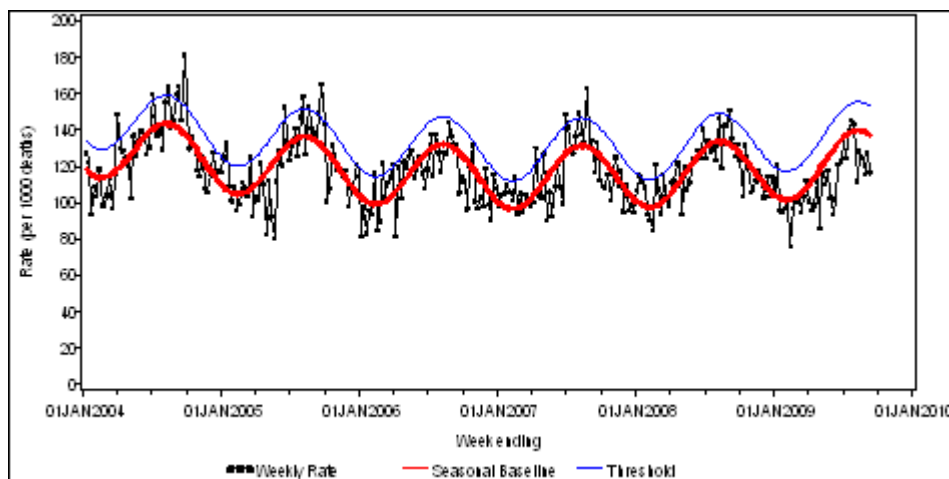
Age group	Number of cases	Percent of cases
Under 40	5	9.8
40-49	8	15.7
50-59	17	33.3
60-69	8	15.7
70+	13	25.5
TOTAL	51	100.0

Source: NSW Health NetEpi Swine Flu database.

Deaths with influenza or pneumonia reported on the death certificate

- While pneumonia has many causes, a well-known marker of seasonal and pandemic influenza activity is an increase in the number of death certificates that mention pneumonia or influenza as a cause of death (Figure 13)
- The predicted seasonal baseline estimates the predicted rate of influenza or pneumonia deaths in the absence of influenza epidemics.
- If deaths exceed the epidemic threshold, then it may be an indication that influenza is circulating widely.
- Deaths referred to a coroner are not yet available for analysis. Deaths in younger people may be more likely to require a coronial inquest. Therefore influenza-related deaths in younger people may be under-represented in these data.
- Death registration data show that as of 11 September 2009, there were 115 pneumonia or influenza deaths per 1000 deaths in NSW, which was below the seasonal threshold of 155 per 1000.

Figure 13: Rate of deaths classified as influenza and pneumonia as per NSW Registered Death Certificates, 2004-2009



Source: NSW Registry of Births, Deaths and Marriages.

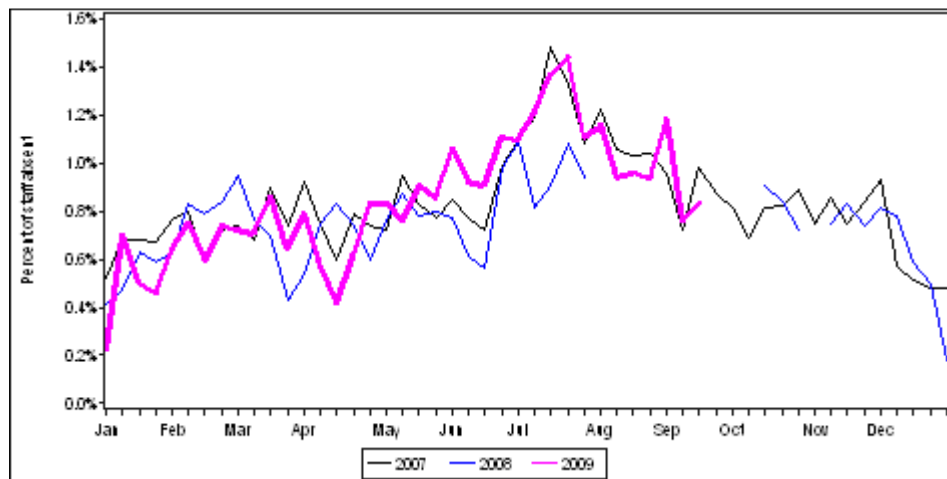
Community impact

Workplace absenteeism is an indicator of the level of influenza activity in the community. One major Australian employer with more than 10,000 NSW employees, has provided data on the proportion of their employees absent from work due to illness for more than 3 consecutive days. Data is available to the week ending 16 September. This period includes the period with the peak in emergency presentations and hospital admissions for influenza-like illness.

In the week ending 16 September, 2009, 0.8% of their NSW employees took sick leave, which is similar to the level of the previous week.

Absenteeism this year is similar to the levels reached during the winter of 2007 when influenza incidence was also high.

Figure 14: Weekly proportion of employees of a national employer taking more than 3 consecutive days sick leave, NSW, to 16 September 2009 with comparison to 2007-2008*.



* Data were not available for some weeks in 2008. Source: Absenteeism Data.

GP Sentinel Surveillance

The NSW General Practitioner Sentinel Surveillance program was established to monitor influenza like illness activity in the community as part of the response to the H1N1 influenza 09 pandemic. Participating practices reported each week on the proportion of patients presenting with influenza like illness, and the results of laboratory testing for these patients.

- The rate of GP visits for influenza-like illness was highest in late July, with around 30% of these patients testing positive for H1N1 influenza 09.
- There has been a steady decline in the rate of presentations and the proportion of those with influenza-like illness testing positive for H1N1 influenza 09 since early August.

Table 6: GP Sentinel Surveillance, rate of influenza-like illness presentations, and proportion of laboratory tests positive for H1N1 influenza 09, for the weeks 13 July to 21 September 2009.

Week commencing	Number of practices participating	Number of patients seen	Number of patients seen with influenza-like illness	Rate (per 1000 patients presenting)	% positive for H1N1
13 July 2009	2	246	22	89.4	16.7
20 July 2009	13	762	79	103.7	35.6
27 July 2009	24	1024	128	125.0	31.0
3 August 2009	26	1139	101	88.7	18.8
10 August 2009	29	1566	101	64.5	13.6
17 August 2009	27	1582	85	53.7	9.3
24 August 2009	22	982	42	42.8	3.4
31 August 2009	20	1106	38	34.4	0
7 September 2009	17	1063	27	25.4	8.7
14 September 2009	14	1090	16	14.7	0
21 September 2009	7	702	13	18.5	0
TOTAL	201	11262	652	57.9	16.8

NSW laboratory confirmed cases of H1N1 influenza 09

Since the move to the PROTECT phase on 17 June 2009, the approach towards testing has changed. The focus is now on testing those with more severe illness who require hospitalisation. Therefore, confirmed cases are likely to be only a small proportion of true cases of H1N1 influenza 09.

- There were 5173 confirmed cases reported between 1 May and 30 September 2009. (Table 7)
- The highest number of confirmed cases is in children aged 0-4 years and people aged 15-19 years. (Table 8, Figure 14)
- Overall, 80% of confirmed cases have been aged between 3 and 54 years

Table 7: Total confirmed H1N1 influenza 09 cases by NSW Area Health Service, 1 May to 30 September 2009

Area Health Service	Cases
Sydney South West	1274
South-Eastern Sydney and the Illawarra	472
Sydney West	1034
Northern Sydney and the Central Coast	457
Hunter and New England	663
North Coast	519
Greater Southern	530
Greater West	179
Justice Health	31
Not applicable	14
All NSW	5173

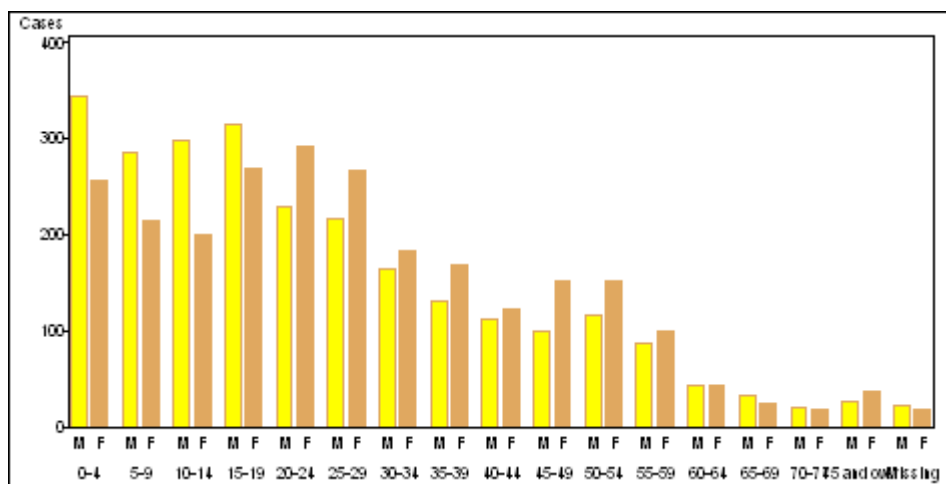
Source: NSW Health NetEpi Swine Flu database.

Table 8: Confirmed H1N1 influenza 09 cases by age group, NSW 1 May to 30 September 2009

Age group	Number of confirmed cases	Percent of confirmed cases
0-4	611	11.8
5-9	511	9.9
10-14	512	9.9
15-19	597	11.5
20-24	530	10.2
25-29	493	9.5
30-34	355	6.9
35-39	307	5.9
40-44	237	4.6
45-49	256	4.9
50-54	274	5.3
55-59	191	3.7
60-64	87	1.7
65-69	57	1.1
70-74	39	0.8
75 and over	65	1.3
Missing	51	1.0
Total	5173	100.0

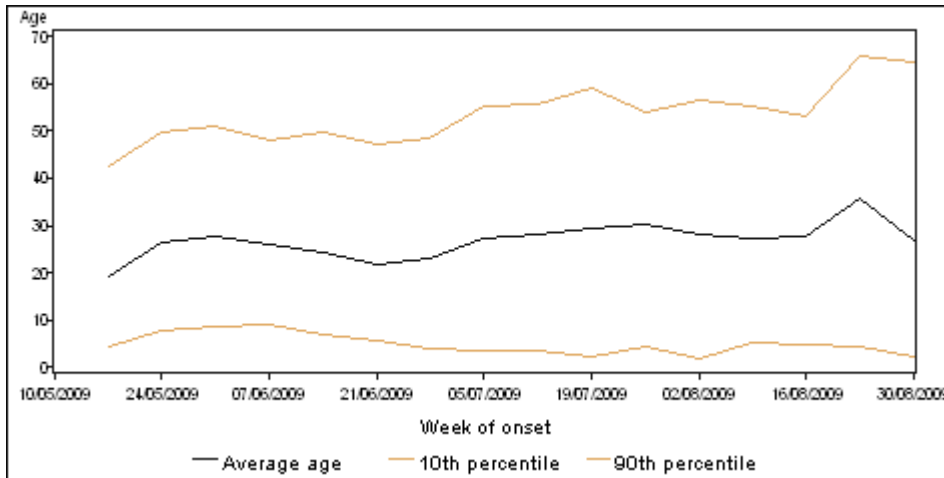
Source: NSW Health NetEpi Swine Flu database.

Figure 15: Confirmed H1N1 influenza 09 cases in NSW by sex and age group, 1 May to 30 September 2009



Source: NSW Health NetEpi Swine Flu database.

Figure 16: Average age and 10th and 90th percentiles of age of confirmed H1N1 influenza 09 cases in NSW by date of onset, 1 May to 30 September 2009

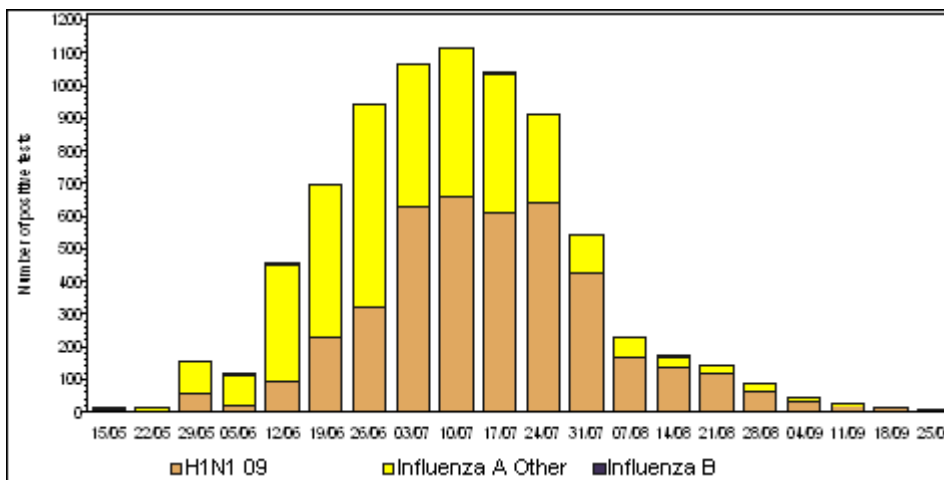


Source: NSW Health NetEpi Swine Flu database.

Laboratory testing summary for influenza (including H1N1 influenza 09)

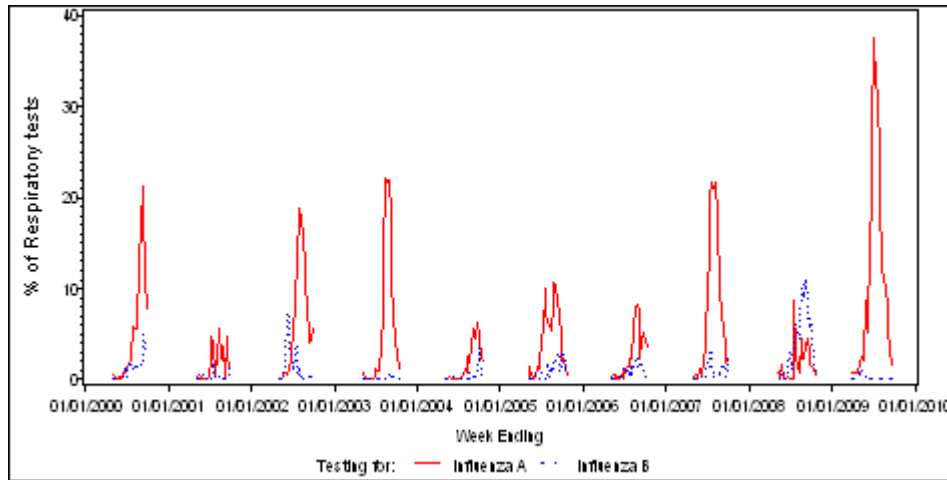
- The number of tests for respiratory viruses performed at NSW public hospital laboratories continued to decrease in the week ending 25 September 2009, (Table 9)
- 1.4% of these tests were positive for influenza A in the week ending 25 September 2009.
- 63% of those positive for influenza A were also positive for H1N1 influenza 09
- Respiratory Syncytial Virus (RSV) was the most common respiratory virus detected in the week ending 25 September 2009.

Figure 17: Number of positive laboratory tests for influenza at selected NSW public hospital laboratories for weeks ending 1 May to 25 September 2009



Note: Excludes point of care tests. Influenza laboratory diagnoses using virology are reported by South Eastern Area Laboratory Services (SEALS), Institute of Clinical Pathology and Medical Research (ICPMR), South West Area Pathology Services (SWAPS)- from 12/6, Pacific Laboratory Medicine Services (PaLMS)-from 19/6, Royal Prince Alfred Hospital (RPAH), Hunter Area Pathology Services (HAPS), Nepean-from 24/7 and St Vincent's Hospital (SYDPATH).

Figure 18: Percent of laboratory tests positive for influenza A and influenza B, at selected NSW public hospital laboratories 2000-2009



Note: Excludes point of care tests. Influenza laboratory diagnoses using virology are reported by South Eastern Area Laboratory Services (SEALS), Institute of Clinical Pathology and Medical Research (ICPMR), South West Area Pathology Services (SWAPS)- from 12/6, Pacific Laboratory Medicine Services (PaLMS)-from 19/6, Royal Prince Alfred Hospital (RPAH), Hunter Area Pathology Services (HAPS), Nepean-from 24/7 and St Vincent's Hospital (SYDPATH).

Table 9: Summary of testing for respiratory viruses and influenza at selected NSW public hospital laboratories, weeks ending 15 May to 25 September 2009

Week ending	Total tests for respiratory viruses	Total influenza A positive tests	Total influenza B positive tests	Total H1N1 influenza 09 positive tests	% positive for influenza A (of all respiratory virus tests)	% positive for H1N1 influenza 09 (of all respiratory virus tests)	% positive for H1N1 influenza 09 (of all influenza A positive tests)
15/05/2009	477	7	5	0	1.5%	0.0%	0.0%
22/05/2009	534	12	3	1	2.2%	0.2%	8.3%
29/05/2009	1775	153	4	58	8.6%	3.3%	38%
05/06/2009	2157	110	7	17	5.1%	0.8%	15%
12/06/2009	2886	450	3	92	16%	3.2%	20%
19/06/2009	3615	693	0	228	19%	6.3%	33%
26/06/2009	3478	941	0	322	27%	9.3%	34%
03/07/2009	2824	1064	3	630	38%	22%	59%
10/07/2009	3499	1111	0	657	32%	19%	59%
17/07/2009	3356	1037	1	607	31%	18%	59%
24/07/2009	3755	911	0	642	24%	17%	70%
31/07/2009	2637	541	0	424	21%	16%	78%
07/08/2009	1918	231	0	164	12%	8.6%	71%
14/08/2009	1499	168	2	135	11%	9.0%	80%
21/08/2009	1424	141	0	116	9.9%	8.1%	82%
28/08/2009	1129	87	0	60	7.7%	5.3%	69%
04/09/2009	837	43	0	32	5.1%	3.8%	74%
11/09/2009	795	23	1	20	2.9%	2.5%	87%
18/09/2009	756	13	0	10	1.7%	1.3%	77%
25/09/2009	585	8	1	5	1.4%	0.9%	63%

Note: Excludes point of care tests. Influenza laboratory diagnoses using virology are reported by South Eastern Area Laboratory Services (SEALS), Institute of Clinical Pathology and Medical Research (ICPMR), South West Area Pathology Services (SWAPS)- from 12/6, Pacific Laboratory Medicine Services (PaLMS)-from 19/6, Royal Prince Alfred Hospital (RPAH), Hunter Area Pathology Services (HAPS), Nepean-from 24/7 and St Vincent's Hospital (SYDPATH).