NSW Health Influenza Surveillance Report

Week 27: 29 June to 5 July 2015

Summary:

- **All measures indicate that the influenza season has commenced, however hospital activity remains low to moderate.**
- **Influenza activity is expected to continue to increase from now until the season peaks.**

In this reporting week:

- Hospital surveillance – presentations to NSW emergency departments for influenza-like illness (ILI) increased and were above the flu season threshold. Bronchiolitis presentations remained high.
- Laboratory surveillance – the proportion of respiratory samples positive for influenza was low (7.3%) but continues to increase, with influenza B viruses predominant. Respiratory syncytial virus (RSV) and rhinovirus activity remain high.
- Community surveillance – influenza notifications were highest in metropolitan areas but low overall. Data collected from ASPREN and FluTracking show low but increasing ILI activity as expected for this time of year. There were two reports of an influenza outbreak in an institution.
- Deaths - The NSW Registry of Births, Deaths, and Marriages have recorded 11 deaths in association with influenza in 2015.
- National and international influenza surveillance – Across Australia the influenza activity is variable. While influenza notifications are higher than at this point last year, they are still at low levels.

About this report:

Health Protection NSW collects and analyses surveillance data on influenza and other respiratory viruses. Surveillance reports are produced weekly commencing in May, and continuing until the end of the influenza season. Monthly reports are produced throughout the rest of the year.

The influenza surveillance reports include data from a range of surveillance systems and sources concerned with Emergency Department illness surveillance, laboratory (virological) surveillance, and community illness surveillance. Pneumonia and influenza mortality data are also monitored and reported upon periodically.

For further information on influenza see the NSW Health Influenza website.

1. Hospital Surveillance

NSW emergency department (ED) presentations for influenza-like illness (ILI) and other respiratory illnesses Source**:** NSW PHREDSS [1]

For the week ending 5 July 2015:

- ILI presentations increased slightly and were within the range of activity seen in previous years (Figure 1 and Table 1). The index of increase for ILI presentations was 18 on 5 July, similar to the previous week. (The index crossed the threshold of 15 on 26 Juneconsistent with the start of the influenza season).
- The proportion of ILI presentations to all ED presentations increased but was low at 1.5 per 1000 presentations.
- ED presentations for pneumonia increased slightly this week and remain above the usual range seen for this time of year (Figure 2).
- Pneumonia or ILI presentations which resulted in admission to critical care decreased further this week and were within the usual range for this time of year (Figure 3 and Table 1).
- The overall numbers of respiratory, fever and unspecified infection presentations increased this week and remained above the usual range for this time of year. Presentations were particularly elevated among children aged under 5 years old and in South Western Sydney LHD (Table 1).
- Bronchiolitis presentations increased further this week and continued to be elevated and were well above the usual range for this time of year (Figure 4 and Table 1).

Figure 1: Total weekly counts of ED visits for influenza-like illness, from January – 5 July 2015 (black line), compared with each of the 5 previous years (coloured lines).

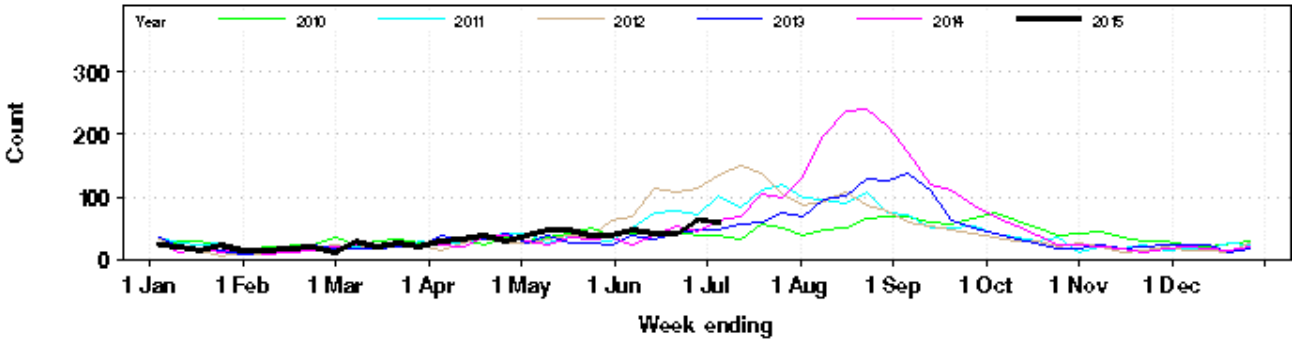
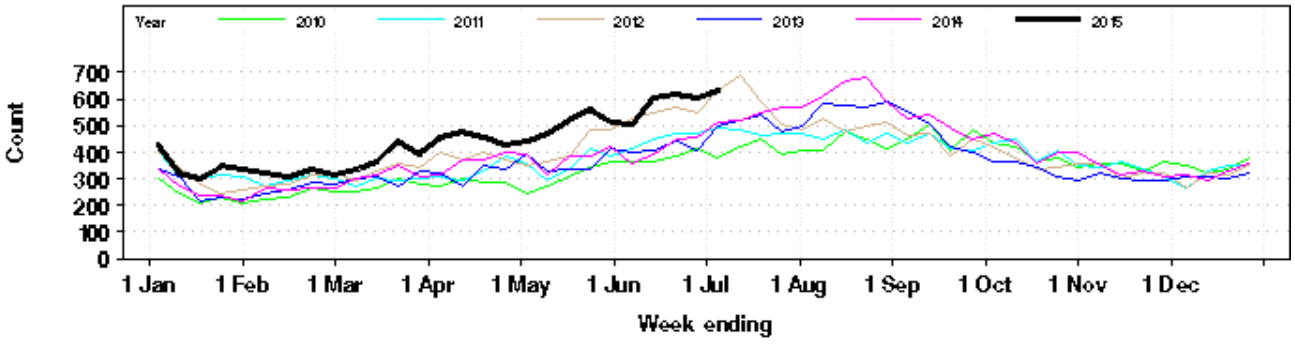


Figure 2: Total weekly counts of ED presentations for pneumonia, from January – 5 July 2015 (black line), compared with each of the 5 previous years (coloured lines).



[1] NSW Health Public Health Real-time Emergency Department Surveillance System (PHREDSS) is managed by the Centre for Epidemiology and Evidence, NSW Ministry of Health. Data from 59 NSW emergency departments (ED) are included. Comparisons are made with data for the preceding five years. Recent counts are subject to change.

Figure 3: Total weekly counts of ED presentations for pneumonia or influenza-like illness and admitted to a critical care ward, from January – 5 July 2015 (black line), compared with each of the 5 previous years (coloured lines).

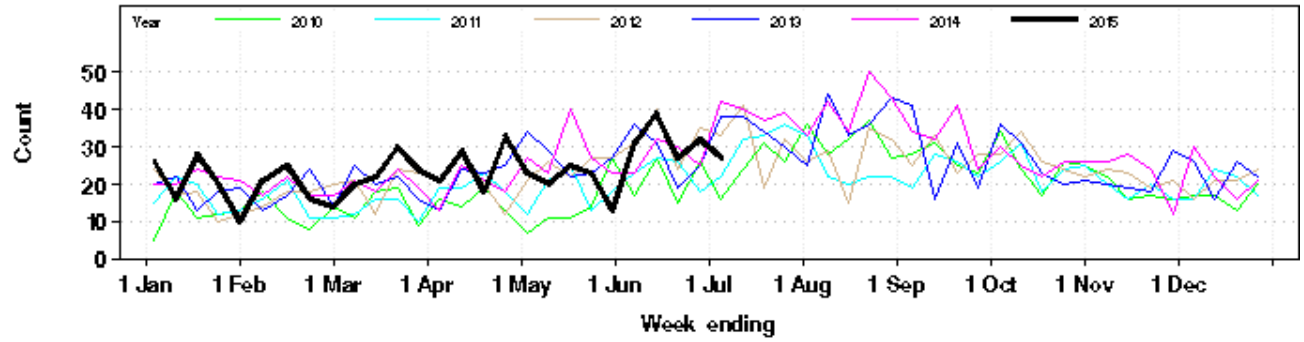


Figure 4: Total weekly counts of ED visits for bronchiolitis, from January – 5 July 2015 (black line), compared with the 5 previous years (coloured lines).

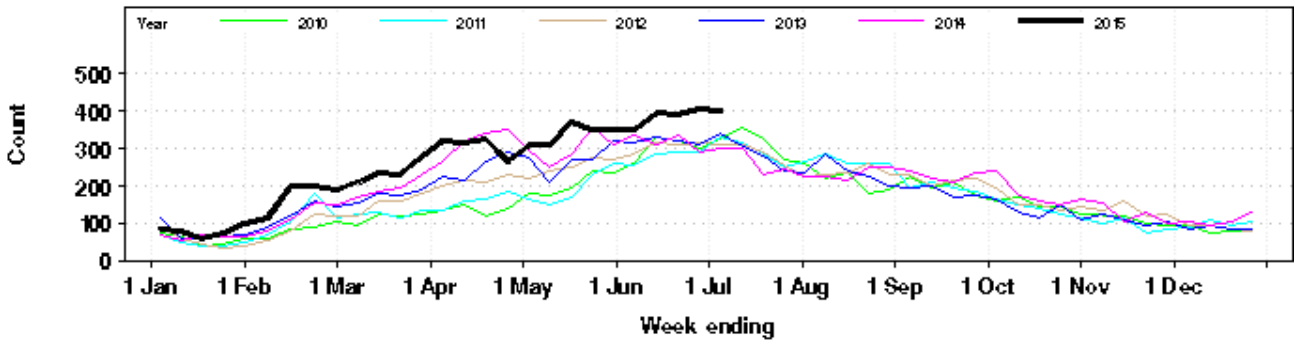


Table 1: Weekly ED and Ambulance Respiratory Activity Summary for the week ending 5 July 2015. Includes data from 59 NSW EDs and the NSW Ambulance Division. *

Data source	Diagnosis or problem category	Trend since last week	Comparison with usual range for time of year	Statistically significant age groups (if any)	Statistically significant local increase (if any)	Action other than this report (if any)	Comment
ED presentations, 59 NSW hospitals	Influenza like illness (ILI)	Decreased	Usual				
	Pneumonia	Increased	**Above**				
	Pneumonia and ILI admissions	Steady	Above				
	Pneumonia and ILI critical care admissions	Decreased	Usual				
	Bronchiolitis	Steady	Above		**Ryde Hospital**		Bronchiolitis is a disease of infants.
	Respiratory illness, fever or unspecified infections	Steady	**Above**		**South Western Sydney LHD**		
	Asthma	Decreased	Usual				
Ambulance Triple Zero (000) calls, NSW	Breathing problems	Steady	Usual				

*** Notes on Table 1:** Statistically significant increases are shown in bold. Recent activity counts are subject to change. This is a routine general report for information on respiratory activity and is additional to public health situation reports that advise of unusual increases in activity in particular provisional ED diagnosis groupings or Ambulance problem categories.

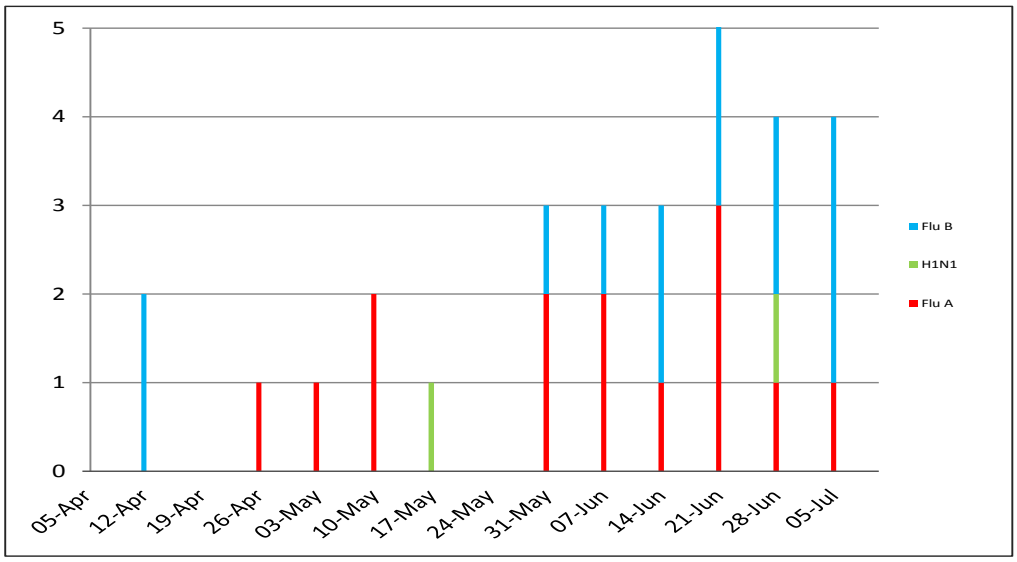
FluCAN (The Influenza Complications Alert Network)

In 2009, the FluCAN surveillance system was created to be a rapid alert system for severe respiratory illness requiring hospitalisation. Data is provided on patients admitted with influenza confirmed by polymerase chain reaction (PCR) testing.

In NSW, three hospitals participate in providing weekly FluCAN data: Westmead Hospital, John Hunter Hospital and the Children's Hospital at Westmead.

- During week 27 there were four influenza admissions reported in NSW sentinel hospitals (Figure 5).
- Since 1 April 2015, there have been 30 hospital admissions reported for influenza; 16 with influenza A and 14 with influenza B (Figure 5).
- Of these admissions, 10 were paediatric (<16 years of age) cases and 20 were in adults. Four cases were admitted to ICU/HDU.

Figure 5: FluCAN – Number of confirmed influenza hospital admissions in NSW, April – July 2015.



2. Laboratory Surveillance

For the week ending 5 July 2015 the number and proportion of respiratory specimens reported by NSW sentinel laboratories [2] which tested positive for influenza A or influenza B increased compared to the activity levels seen in the previous week (Table 2 and Figures 6 and 7).

A total of 4,013 tests for respiratory viruses were reported with 293 specimens (7.3%) testing positive for influenza viruses. Influenza B was more commonly identified than influenza A.

Rhinovirus and respiratory syncytial virus (RSV) were the leading respiratory viruses reported. Other viruses are circulating at usual levels for this time of year (Table 2).

[2]: Preliminary laboratory data is provided by participating sentinel laboratories on a weekly basis and are subject to change. Point-of-care test results have been included since August 2012 but serological diagnoses are not included. **Participating sentinel laboratories:** South Eastern Area Laboratory Services, The Children's Hospital at Westmead, Sydney South West Pathology Service, Pacific Laboratory Medicine Service, Royal Prince Alfred Hospital, Hunter Area Pathology Service, Pathology West (Westmead & Nepean), Douglas Hanley Moir Pathology, VDRLab, Laverty Pathology, SydPath (St Vincent's), Medlab, and Laverty.

Table 2: Summary of testing for influenza and other respiratory viruses at NSW laboratories, 1 January to 5 July, 2015.

Month ending	Total Tests	TEST RESULTS															
		Influenza A								Influenza B		Adeno	Parainf 1, 2 & 3	RSV	Rhino	Entero	HMPV **
		Total		H3N2		H1N1 pdm09		A (Not typed)		Total							
		Total	(%)	Total	(%A)	Total	(%A)	Total	(%A)	Total	(%)						
01/02/2015*	5920	182	(3.1%)	40	(22.0%)	11	(6.0%)	131	(72.0%)	55	(0.9%)	150	181	181	607	59	49
01/03/2015	6287	212	(3.4%)	72	(34.0%)	14	(6.6%)	126	(59.4%)	75	(1.2%)	128	83	271	842	24	29
29/03/2015	8577	242	(2.8%)	87	(36.0%)	21	(8.7%)	135	(55.8%)	108	(1.3%)	181	117	767	1084	52	34
03/05/2015*	12584	285	(2.3%)	125	(43.9%)	13	(4.6%)	147	(51.6%)	163	(1.3%)	257	187	1351	1443	59	78
31/05/2015	12244	128	(1.0%)	42	(32.8%)	9	(7.0%)	83	(64.8%)	200	(1.6%)	272	167	1276	1514	64	64
28/06/2015	15431	297	(1.9%)	56	(18.9%)	16	(5.4%)	225	(75.8%)	581	(3.8%)	378	183	1585	2027	96	135
Week ending																	
05/07/2015	4013	90	(2.2%)	5	(5.6%)	9	(10.0%)	78	(86.7%)	203	(5.1%)	107	59	425	512	20	61

Notes:
* Five-week reporting period.
** Human metapneumovirus

Figure 6: Influenza positive test results by type and sub-type reported by NSW sentinel laboratories, 1 January 2015 to 5 July 2015.

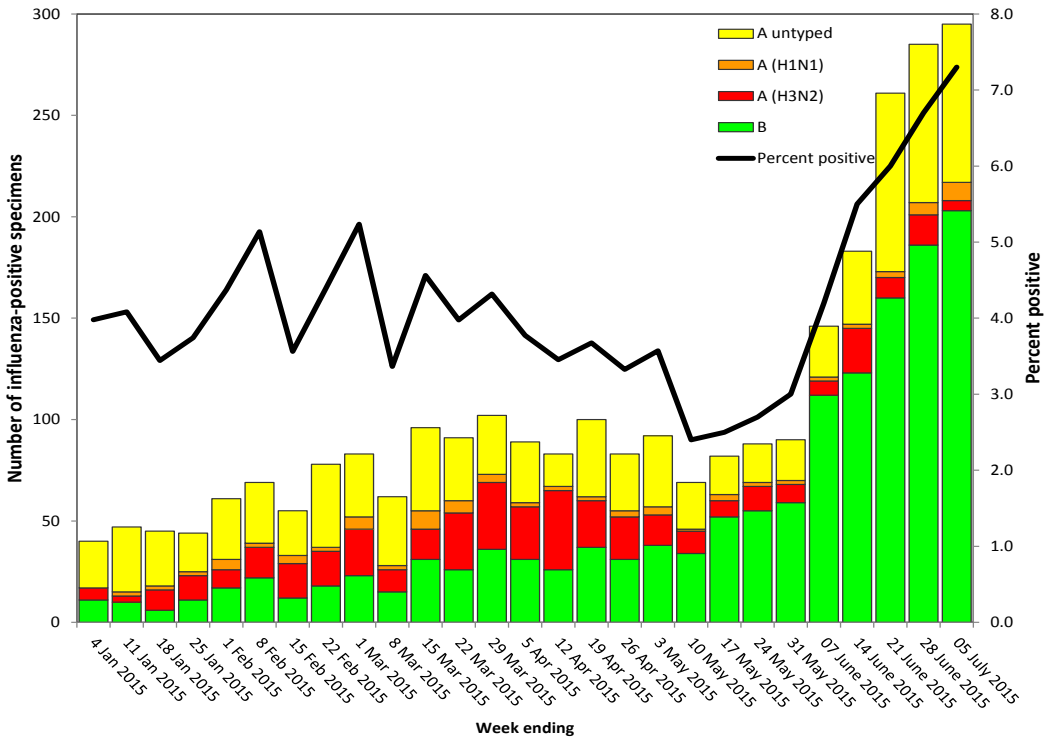


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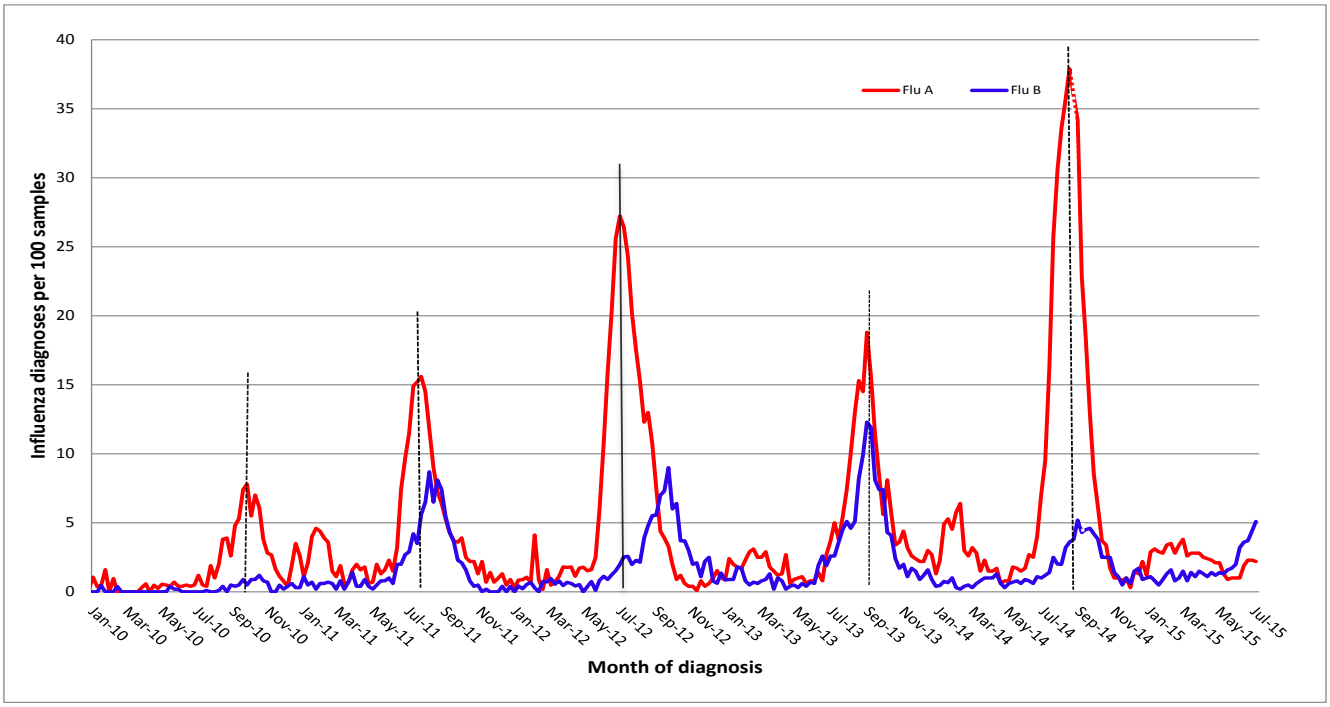
Figure 7: Percentage of laboratory tests positive for influenza A and influenza B, 1 January 2010 – 5 July 2015, New South Wales.



3. Community Surveillance

Influenza notifications by Local Health District (LHD)

In the week ending 05 July, there were 198 notifications of influenza confirmed by polymerase chain reaction (PCR) testing. The highest numbers of notifications were for residents of Nepean Blue Mountains and Northern NSW LHDs (Table 3).

Influenza activity has been lower in most non-metropolitan LHDs. Notification rates per population are not particularly instructive when case numbers are low.

Table 3: Notifications of laboratory-confirmed influenza by NSW Local Health District of residence.

Local Health District	Week ending 5 July 2015		Previous 4 weeks	
	Number of notifications	Rate per 100 000 population	Average weekly notifications	Rate per 100 000 population
Central Coast	4	1.20	4	1.05
Far West	0	0.00	1	2.45
Hunter New England	23	2.53	16	1.73
Illawarra Shoalhaven	4	1.00	4	0.88
Mid North Coast	4	1.86	5	2.21
Murrumbidgee	6	2.07	2	0.60
Nepean Blue Mountains	17	4.62	14	3.87
Northern NSW	14	4.71	9	2.94
Northern Sydney	24	2.67	27	3.01
South Eastern Sydney	27	3.02	29	3.19
Southern NSW	5	2.43	3	1.58
South Western Sydney	13	1.38	24	2.49
Sydney	22	3.55	15	2.46
Western NSW	5	1.80	3	0.99
Western Sydney	30	3.24	40	4.34

Note: * All data are preliminary and may change as more notifications are received. Excludes notifications based on serology.

Influenza outbreaks in institutions

There were two influenza outbreaks reported in residential care facilities this week, both were due to influenza A.

In the year to date there have been 14 laboratory-confirmed influenza outbreaks in institutions reported to NSW public health units (Table 4).

People in older age-groups are at higher risk of infection from influenza A(H3N2) strains than from the influenza A(H1N1) strain. The influenza A(H3N2) strain predominated in 2012 and 2014 and was associated with an increase in influenza outbreaks in institutions, particularly aged care facilities (Table 4).

Table 4. Reported influenza outbreaks in NSW institutions, 2010 to June 2015.

Year	2010	2011	2012	2013	2014	2015 *
No. of outbreaks	2	4	39	12	120	14

* Year to date.

Electronic General Practice Surveillance (eGPS)

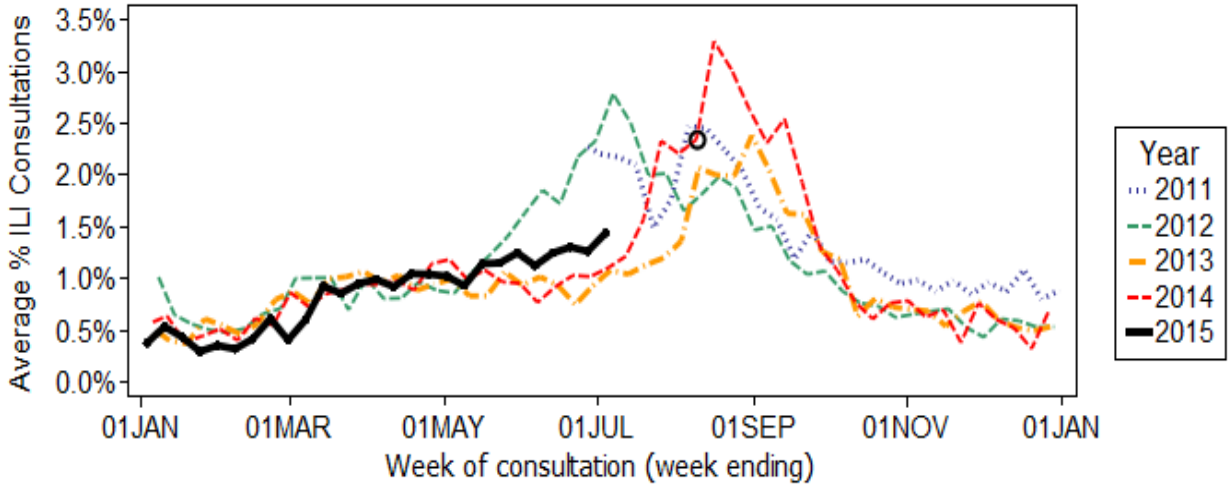
eGPS is a primary care influenza surveillance system involving sentinel general practices within three NSW Local Health Districts (LHD): Northern Sydney (NS), South Eastern Sydney (SES) and Illawarra Shoalhaven (IS). The system monitors patient consultations for influenza-like illness (ILI) as an indicator of influenza activity. Consultations for ILI are identified each week by an automatic search of electronic records for validated combinations of ILI terms rather than diagnosis codes.

Data generated from eGPS should be interpreted with caution as they are not representative of all practices within the participating LHDs or across NSW.

In Week 27:

- There were 9 surveillance reports received from eGPS sentinel practices in NSW;
- The average rate of ILI patient consultations was low at 1.4% (range 0.1 – 3.0%), which was higher than the previous week and within the range for the same time period in the last four years. (Figure 8).

Figure 8. Average rate of influenza-like presentations to sentinel general practices by week of consultation 2011-2015 (year to date).



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The Australian Sentinel Practices Research Network (ASPREN)

ASPREN is a network of sentinel general practitioners (GPs) run through the Royal Australian College of General Practitioners and the University of Adelaide which has collected de-identified information on influenza-like illness (ILI) and other conditions seen in general practice since 1991. Participating GPs in the program report on the proportion of patients presenting with an ILI. The number of GPs participating on a weekly basis may vary.

In week 27 there were 12 ASPREN reports received from NSW GPs. The overall consultation rate for ILI was low at 2.0 per cent and within the usual range seen for this time of year.

For further information please see the ASPREN website.

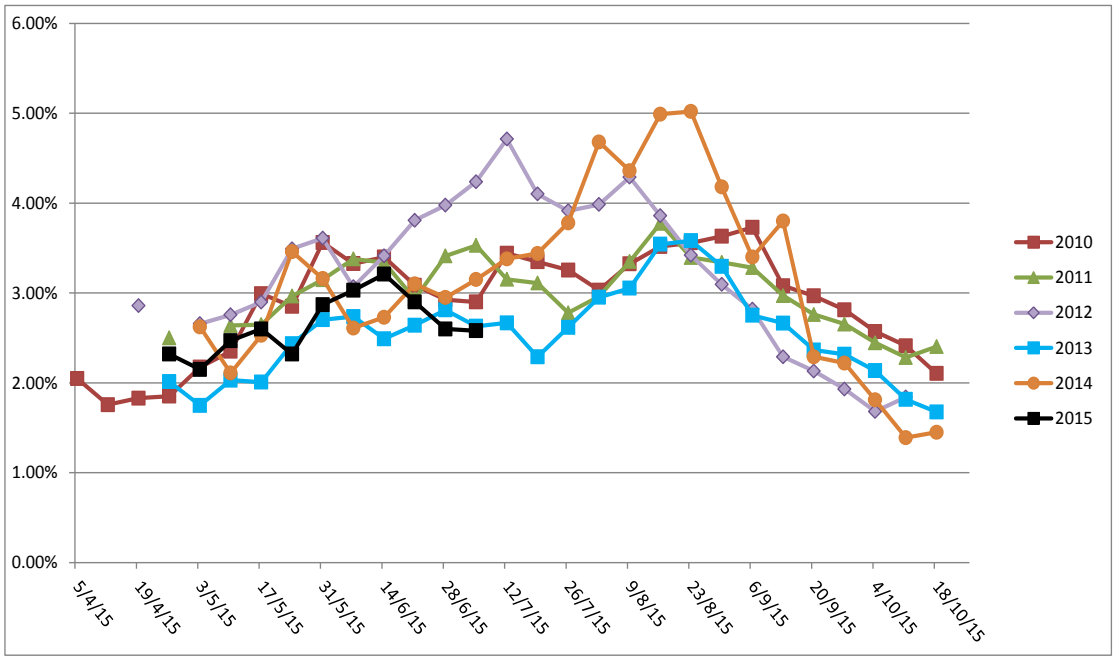
FluTracking.net

FluTracking.net is an online health surveillance system to detect epidemics of influenza. FluTracking is a project of the University of Newcastle, the Hunter New England Local Health District and the Hunter Medical Research Institute. It involves participants from around Australia completing a simple online weekly survey which is used to generate data on the rate of ILI symptoms in communities.

In week 27 FluTracking received reports for 6153 people in NSW, including:

- 2.6% of respondents reported fever and cough, similar to the previous week and below the usual range for this time of year (Figure 9);
- 1.3% of respondents reported fever, cough and absence from normal duties, lower than the previous week (data not shown).

Figure 9: FluTracking – Weekly influenza like illness reporting rate, NSW, 2010 – 2015.



For further information please see the FluTracking website.

4. Deaths with pneumonia or influenza reported on the death certificate

Deaths registration data is routinely reviewed for deaths attributed to pneumonia or influenza. Pneumonia has many causes, however an increase in the number of death certificates that mention pneumonia or influenza as a cause of death is an indicator of seasonal and pandemic influenza

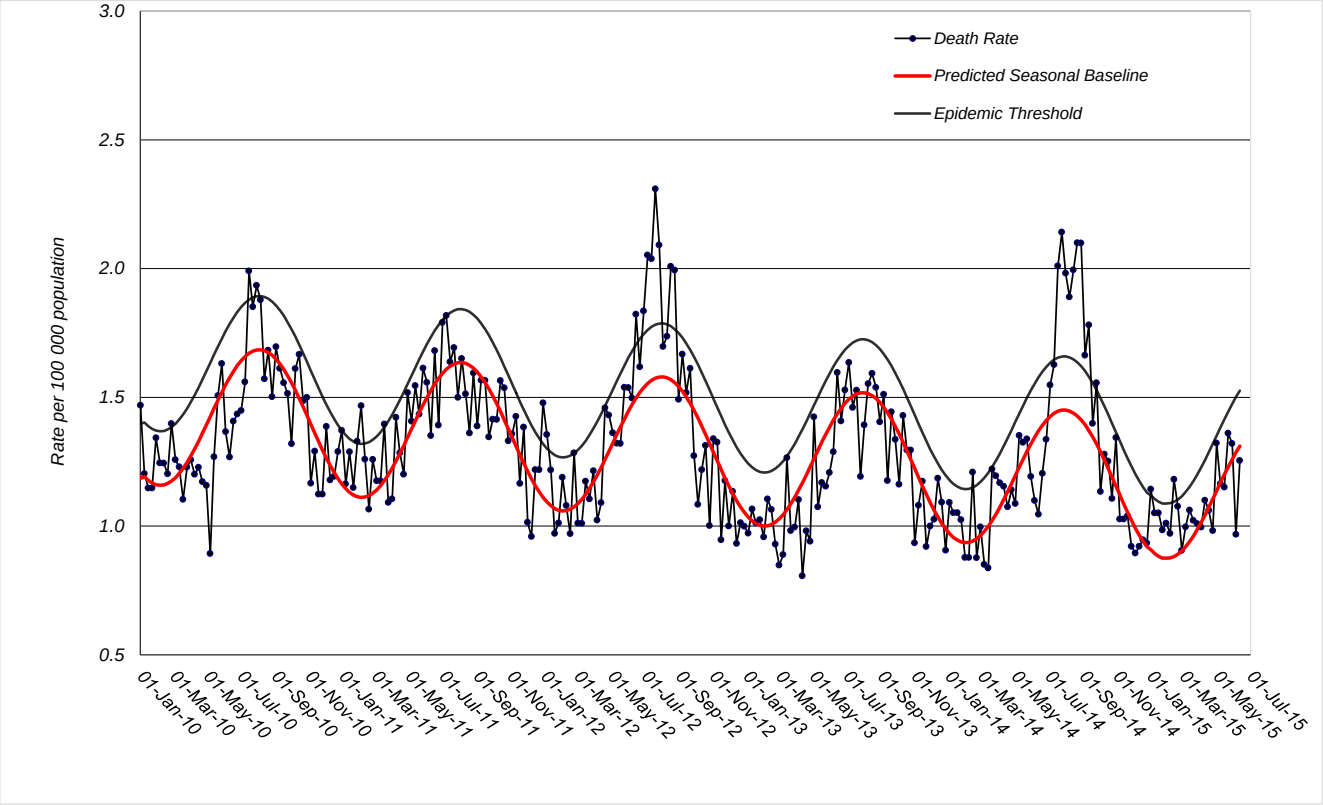
activity. The predicted seasonal baseline estimates the predicted rate of influenza or pneumonia deaths in the absence of influenza epidemics. If deaths exceed the epidemic threshold, then it may be an indication that influenza is beginning to circulate widely.

For the week ending 12 June:

- Up to 12 June, 11 of 21 634 death certificates mentioned influenza (all were in people aged over 65 years).
- Up to 12 June 1902 of 21 634 death certificates mentioned pneumonia.

- There were 1.25 pneumonia and influenza deaths per 100 000 NSW population, which was below the epidemic threshold of 1.52 per 100 000 population (Figure 10).

Figure 10: Rate of deaths classified as influenza and pneumonia per 100 000 NSW population, 2010 – 12 June 2015.



Source: NSW Registry of Births, Deaths and Marriages.

*** Notes on interpreting death data:**

(1) The number of deaths mentioning "Pneumonia or influenza" is reported as a rate per 100,000 NSW population. Using the NSW population provides a more stable and reliable denominator than deaths from all causes. This is because pneumonia and influenza are known to contribute to increases in deaths from non-respiratory illnesses, such as deaths due to ischaemic heart disease. As the number of these deaths will increase with rises in influenza activity, the actual effect of influenza on mortality rates will be obscured if all-cause mortality is used as the denominator. This limitation is avoided by using the NSW population, which is relatively constant throughout the year, as the denominator.

(2) Deaths referred to a coroner during the reporting period may not be 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.

(3) The interval between death and death data availability is usually at least 7 days, and so these data are several? weeks behind reports from emergency departments and laboratories. In addition, previous weekly rates may also change due to longer delays in reporting some deaths.

5. National and International Influenza Surveillance

National Influenza Surveillance

The Australian Department of Health has reported up to 8 July 2015.

Current activity:

- There are indications that the 2015 influenza season has started, with notifications of laboratory confirmed influenza to the National Notifiable Diseases Surveillance System(NNDSS) increasing in recent weeks.
- All jurisdictions, excluding the NT, have reported increasing activity.
- While laboratory confirmed influenza notifications reported so far this year are twice the number reported for the same period in previous years, they are still at low levels when considering the peak of last year's season.
- The number of notifications, and the onset and peak of the influenza season may be influenced by a range of factors, including immunity to circulating strains, increased public awareness, the healthcare seeking behaviours of patients and testing and notification practices of medical practitioners.
- Nationally, notifications have been highest among those aged over 85 years with a secondary peak in those aged between 5 and 14 years.
- Systems that monitor influenza-like illness (ILI) show variable activity levels. FluTracking is reporting low levels of ILI in the community while ILI levels detected through calls to the National Health Call Centre Network and through presentation to sentinel GPs are increasing.
- Influenza B is currently the predominant influenza virus type circulating in Australia.
- Infection due to influenza B virus is often thought to be milder than influenza A virus infection; however recent studies do not support this widely held view.
- The seasonal influenza vaccines appear to be a good match for circulating strains.
-

Severity of the 2015 season:

- The timing and peak of influenza notifications and clinical severity of infected cases varies from year to year.
- The overall scale and clinical severity of this year's influenza season will become apparent at it progresses.
- So far in 2015, 36 influenza associated deaths have been notified to the NNDSS.

Follow the link for the Australian Influenza Surveillance Reports which provide the latest information on national influenza activity.

Global Influenza Update

The World Health Organization (WHO) reported on current influenza activity in the WHO Global Influenza Update of 29 June 2015 (with data up to 14 June) which indicated that:

- In North America, influenza activity was at low, inter-seasonal levels. Influenza type B continued to be the predominant strain in circulation in recent weeks.
- In Europe, influenza activity remained low with influenza B predominant in recent weeks
- In northern Africa, influenza activity remained at low levels in most countries with influenza A activity being predominant throughout the whole season.
- In western Asia, most countries reported decreasing influenza activity remaining at low levels in recent weeks.
- In the temperate countries of Asia, influenza activity remained at low levels.
- In tropical countries of the Americas, low inter-seasonal levels of influenza activity were reported in most countries except Peru where low levels of influenza type A circulation was detected.

- In tropical Asia, increased influenza activity was reported from Hong Kong(Special Administrative Region, China), Singapore, southern China, Viet Nam, and Sri Lanka with influenza type A viruses predominating in recent weeks.
- In the Southern Hemisphere, influenza activity increased in most of the regions but remained at low levels. However, South Africa reported high influenza activity with influenza A(H1N1)pdm09 and A(H3N2) co-circulation in recent weeks

WHO reported global influenza laboratory data for the period 31 May to 14 June 2015, which noted:

- Of the 23 577 specimens submitted for testing, 1 620 were positive for influenza viruses, of which 1117 (69%) were typed as influenza A and 503 (31%) as influenza B.
- Of the sub-typed seasonal influenza A viruses, 172 (23%) were influenza A (H1N1) and 582 (77%) were influenza A(H3N2).
- Of the characterized B viruses, 69 (83%) belonged to the B-Yamagata lineage and 14 (17%) to the B-Victoria lineage.

Avian influenza Update

Human infection with avian influenza A(H5) viruses
WHO report that from 2003 through 23 June 2015, 842 laboratory-confirmed human cases of avian influenza A(H5N1) virus infection have been officially reported to WHO from 16 countries. Of these cases, 447 have died.

Since the last WHO Influenza update on 1 May 2015, two new laboratory-confirmed human cases of avian influenza A(H5N1) virus infection were reported to WHO from Egypt.

Overall public health risk assessment for avian influenza A(H5) viruses:
Whenever avian influenza viruses are circulating in poultry, sporadic infections and small clusters of human cases are possible in people exposed to infected poultry or contaminated environments, therefore sporadic human cases would not be unexpected.

Human infections with avian influenza A(H7N9) viruses in China
A total of 672 laboratory-confirmed cases of human infection with avian influenza A(H7N9) viruses, including at least 271 deaths have been reported to WHO. The majority of recently reported human cases are associated with exposure to infected live poultry or contaminated environments, including markets where live poultry are sold. WHO advises that further sporadic human cases of avian influenza A(H7N9) infection are expected in affected and possibly neighbouring areas. Should human cases from affected areas travel internationally, their infection may be detected in another country during or after arrival. If this were to occur, community level spread is considered unlikely as the virus does not have the ability to transmit easily among humans.

WHO is assessing the epidemiological situation and conducting further risk assessment based on the latest information. Overall, the public health risk from avian influenza A(H7N9) viruses has not changed.

Human infections with avian influenza A(H9N2) viruses in Egypt
Two laboratory-confirmed cases of human infection with avian influenza A(H9N2) virus were reported to WHO from Egypt. Both cases occurred in children and both were detected through influenza-like illness (ILI) surveillance. The cases had mild illnesses, were not treated with antiviral medications, and were not hospitalised. One case had exposure to poultry and the second had likely exposure to an environment contaminated with poultry waste.

Overall public health risk assessment for avian influenza A(H9N2) viruses: Further human cases and small clusters could occur as this virus is circulating in poultry populations across Asia and Middle East. This virus does not seem to transmit easily between humans and tends to result in mild clinical disease, therefore the current likelihood of community-level spread and public health impact of this virus is considered low.

The latest WHO monthly risk assessment report for human infections with avian influenza A strains H5, H7, H9 is available here: WHO Avian influenza monthly summary 23 June 2015

Other sources of information on avian influenza and the risk of human infection include the following:

- US CDC Avian influenza
- European CDC (ECDC) Avian influenza
- Public Health Agency of Canada Avian influenza H7N9 .

Recommended composition of 2015 Australian influenza vaccines

The WHO Consultation on the Composition of Influenza Vaccines for the Southern Hemisphere 2015 was held in Geneva on 22-24 September 2014. Following the Consultation, WHO changed its recommendations for the composition of trivalent vaccines for use in the 2015 influenza season (southern hemisphere winter) as follows:

- A/California/7/2009 (H1N1)pdm09-like virus;
- A/Switzerland/9715293/2013 (H3N2)-like virus [a];
- B/Phuket/3073/2013-like virus.

It is recommended that quadrivalent vaccines containing two influenza B viruses contain the above three viruses and a B/Brisbane/60/2008-like virus.

[a] A/South Australia/55/2014, A/Norway/466/2014 and A/Stockholm/6/2014 are A/Switzerland/9715293/2013-like viruses

These changes from the previous vaccine recommendations (for the southern hemisphere in 2014 and the northern hemisphere in 2014-2015) reflect observed antigenic drift in circulating A(H3N2) and B/Yamagata lineage viruses. More details about the most recent recommendations can be found at: http://www.who.int/influenza/vaccines/virus/recommendations/2015_south/en/ .