Influenza Monthly Epidemiology Report, NSW

November 2015

This report describes the surveillance for influenza and other respiratory pathogens, undertaken by NSW Health to date. This includes data from a range of surveillance systems.

For weekly communicable disease surveillance updates refer to the Communicable Disease Weekly Report at http://www.health.nsw.gov.au/publichealth/infectious/index.asp.

1. Summary

- Influenza A and B strains are continuing to circulate at low inter-seasonal levels.
- Influenza activity is likely to remain at low levels until the winter of 2016.

In November:

- The rate of influenza like illness (ILI) presentations to selected emergency departments was low and consistent with inter-seasonal activity.
- The rate of ILI consultations at sentinel general practices was low and consistent with inter-seasonal activity.
- The proportion of deaths attributed to pneumonia and influenza was low and below the epidemic threshold.
- Of 13 015 respiratory specimens tested, 37 (1.2%) were positive for influenza which indicates activity is low. Influenza A viruses predominated over B strains.

2. Hospital Surveillance

NSW emergency department (ED) surveillance for influenza-like illness (ILI) and other respiratory illnesses is conducted through PHREDSS [1].

The PHREDSS surveillance system uses a statistic called the 'index of increase' to indicate when ILI presentations [2] are increasing at a statistically significant rate. It accumulates the difference between the previous day's count of presentations and the average for that weekday over the previous 12 months. An index of increase value of 15 is a considered an important signal for the start of the influenza season in NSW as it suggests influenza is circulating widely in the community.

In November 2015:

- The index of increase for ILI presentations was 1.3 at the end of November, well below the seasonal threshold.

[1] NSW Health Public Health Rapid, Emergency Disease and Syndromic Surveillance system. Managed by the Centre for Epidemiology and Evidence, NSW Ministry of Health. Data from 59 NSW emergency departments are included. Comparisons are made with data for the preceding five years. Recent counts are subject to change. This includes data from 59 NSW emergency departments (EDs), representing approximately 85% of metropolitan ED presentations and approximately 60% of rural ED presentations.
[2] ILI is when the treating ED doctor makes a provisional clinical diagnosis of ILI Syndrome, which includes: 'influenza-like illness' or 'influenza' (including 'pneumonia with influenza').

- ED presentations for ILI were within the historical average for this time of year (Figure 1).
- ED presentations for pneumonia [3] were above the historical average (Figure 2).
- Pneumonia or ILI presentations which resulted in admissions to critical care units for ILI and pneumonia were within the usual range for this time of year (Figure 3).
- Bronchiolitis presentations were within the usual range for this time of year.
- The category combining all respiratory, fever and unspecified infection presentations remained above the usual range for this time of year for all of November. During the last week of November, presentations were elevated: in children aged 5 to 16 years; adults aged 65 years and over; in South Western Sydney and Western Sydney LHD's; and, at the Dubbo Base and Royal Prince Alfred Hospitals (data not shown).

Figure 1: Total weekly counts of ED visits for influenza-like illness, from January – November 2015 (black line), compared with each of the 5 previous years (coloured lines), for 59 NSW hospitals.*

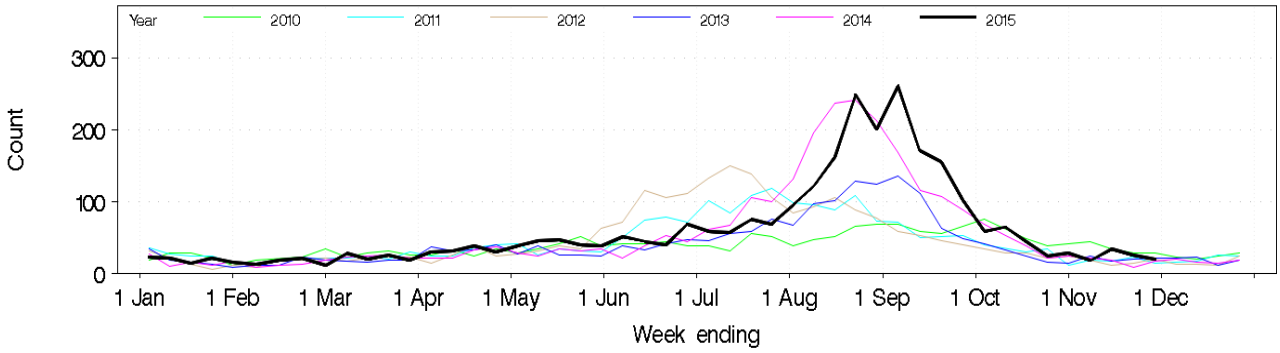


Figure 2: Total weekly counts of ED presentations for pneumonia, from January – November 2015 (black line), compared with each of the 5 previous years (coloured lines), for 59 NSW hospitals.

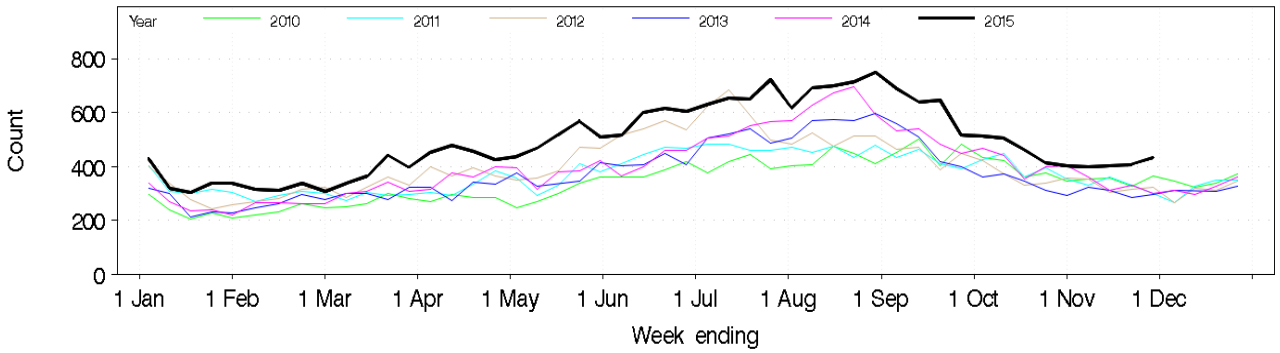
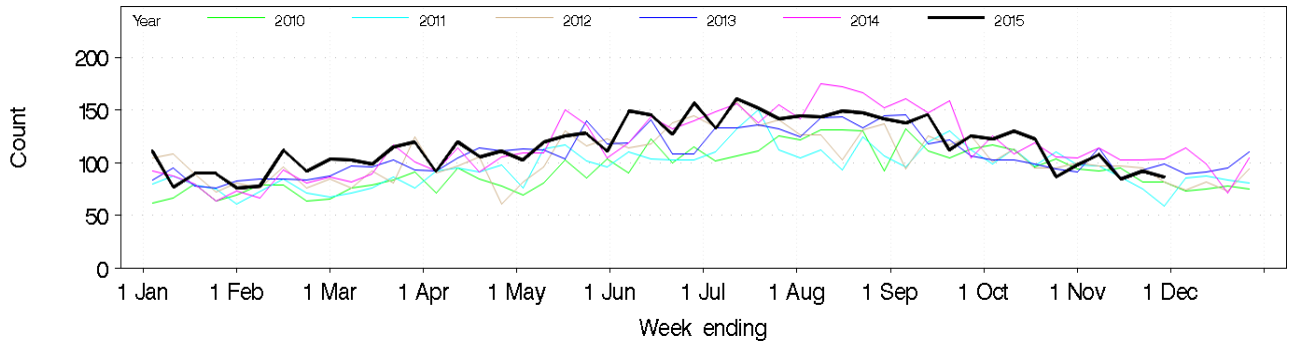


Figure 3: Total weekly counts of ED presentations for pneumonia or influenza-like illness and admitted to a critical care ward, from January – November 2015 (black line), compared with each of the 5 previous years (coloured lines), for 59 NSW hospitals



[3] Pneumonia is when there is a provisional clinical diagnosis of Pneumonia Syndrome, which includes: 'viral, bacterial or unspecified pneumonia', 'SARS', or 'legionnaire's disease'. Excludes the diagnosis 'pneumonia with influenza'.

3. Laboratory testing summary for influenza

Sentinel laboratory surveillance for influenza and other respiratory viruses is conducted throughout the year [4].

In November 2015:

- A total of 13 015 tests for respiratory viruses were performed at sentinel NSW laboratories and 37 (1.2%) were positive for influenza (Table 1). This is within the usual range for this time of year.
- 23 specimens tested positive for influenza A – 9 of these tested positive for A(H3N2), 1 tested positive for influenza A(H1N1) and 13 were not typed further (Table 1, Figure 4 & 5).
- 14 cases of influenza B were reported (Table 1, Figure 4 & 5).

Influenza activity continued to decline and is at low levels. Rhinoviruses were the leading respiratory viruses identified by laboratories; other respiratory viruses were circulating as expected for this time of year.

Table 1: Summary of testing for influenza and other respiratory viruses at sentinel NSW laboratories, 1 January to 1 November 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
02/08/2015*	22771	1125	(4.9%)	332	(29.5%)	141	(12.5%)	654	(58.1%)	2125	(9.3%)	721	273	1878	2484	149	425
30/08/2015	32606	3717	(11.4%)	1435	(38.6%)	599	(16.1%)	1715	(46.1%)	7819	(24.0%)	747	295	1014	2369	69	445
04/10/2015*	39698	3536	(8.9%)	1354	(38.3%)	595	(16.8%)	1587	(44.9%)	7092	(17.9%)	1159	577	745	2576	78	626
01/11/2015	15305	528	(8.9%)	238	(38.3%)	50	(16.8%)	240	(44.9%)	612	(17.9%)	520	401	165	1589	63	253
29/11/2015	13015	136	(8.9%)	51	(38.3%)	16	(16.8%)	69	(44.9%)	106	(17.9%)	444	296	141	2120	116	144
Week ending																	
08/11/2015	3448	44	(1.3%)	17	(38.6%)	4	(9.1%)	23	(52.3%)	44	(1.3%)	145	75	38	568	21	40
15/11/2015	3420	41	(1.2%)	17	(41.5%)	5	(12.2%)	19	(46.3%)	27	(0.8%)	97	80	34	534	37	40
22/11/2015	2995	28	(0.9%)	8	(28.6%)	6	(21.4%)	14	(50.0%)	21	(0.7%)	103	70	33	516	24	23
29/11/2015	3152	23	(0.7%)	9	(39.1%)	1	(4.3%)	13	(56.5%)	14	(0.4%)	99	71	36	502	34	41

Notes**: * Five week reporting period used;** ** HMPV - Human metapneumovirus.
Note that while all samples are tested for influenza viruses, not all samples are tested for all of the other viruses listed.

[4]: 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. HAPS data not included for week 41 2015.

Figure 4: Weekly influenza positive test results by type and sub-type reported by NSW sentinel laboratories, 1 January to 1 November 2015.

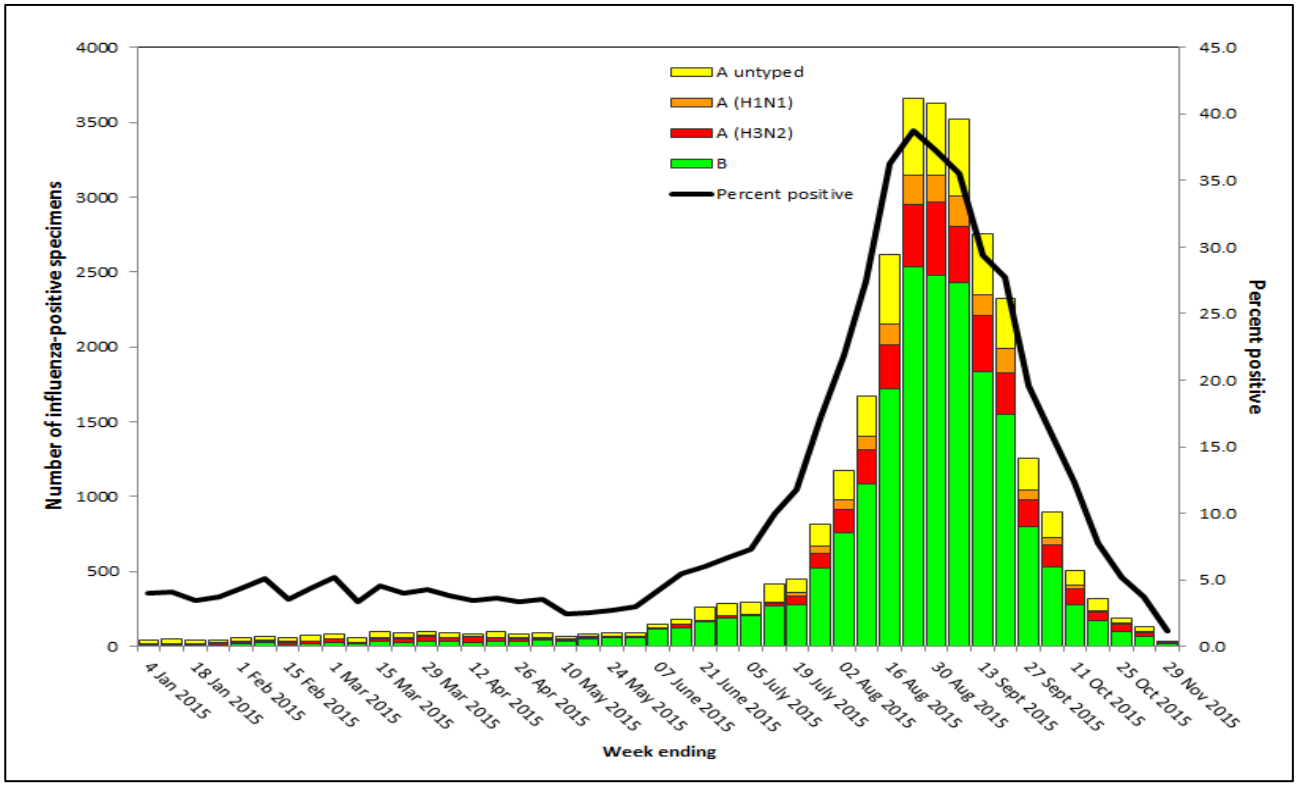
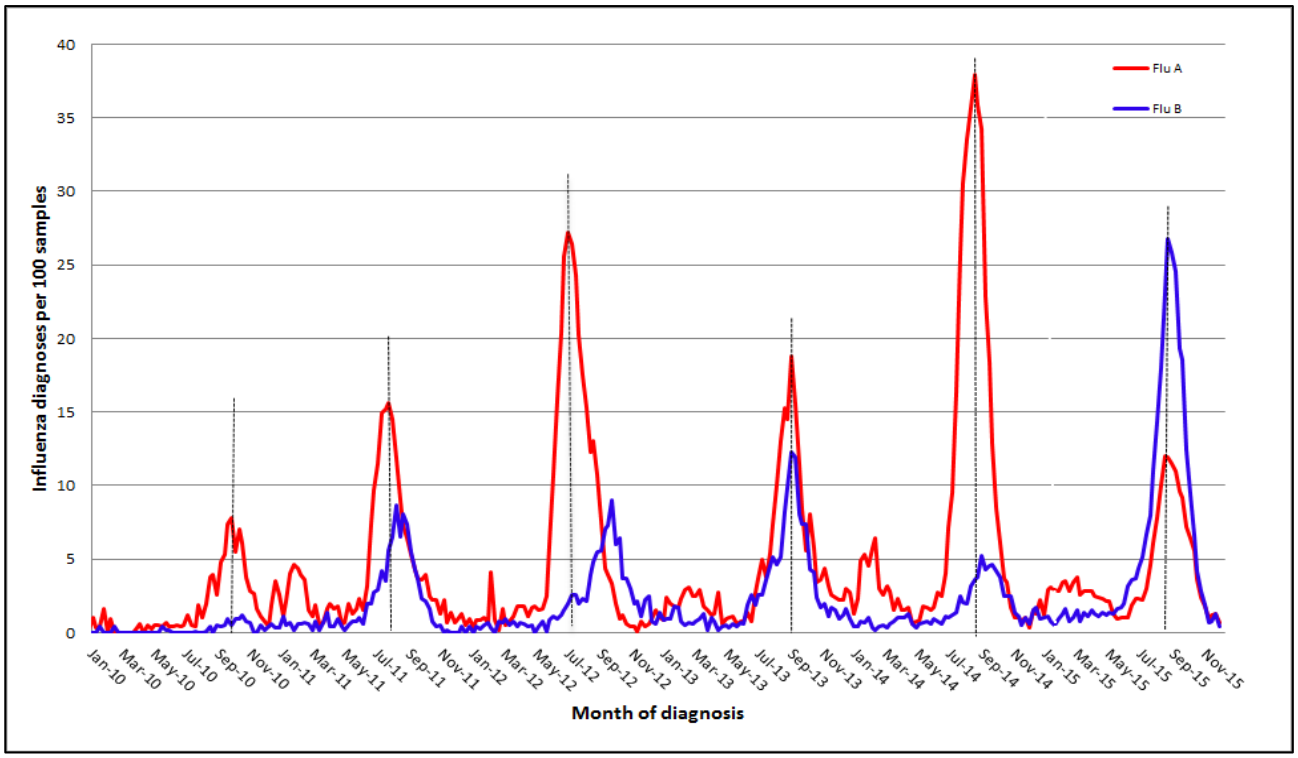


Figure 5: Percent of laboratory tests positive for influenza A and influenza B reported by NSW sentinel laboratories, 1 January 2010 to 1 November 2015.



4. Community Surveillance

Influenza notifications by Local Health District (LHD)

During November there were 47 notifications of influenza confirmed by polymerase chain reaction (PCR) testing. Notifications have been trending down since September.

Rates were low and similar across all LHDs (Table 2).

Table 2: Weekly notifications of laboratory-confirmed influenza by Local Health District.

Local Health District	Week ending 29 Nov 2015		Previous 4 weeks	
	Number of notifications	Rate per 100 000 population	Number of notifications	Rate per 100 000 population
Central Coast	3	0.9	3	0.9
Far West	0	0	2	6.52
Hunter New England	2	0.22	10	1.06
Illawarra Shoalhaven	1	0.25	2	0.5
Mid North Coast	0	0	2	1.09
Murrumbidgee	5	2.09	3	1.4
Nepean Blue Mountains	1	0.27	4	1.18
Northern NSW	2	0.67	4	1.35
Northern Sydney	10	1.11	13	1.48
South Eastern Sydney	12	1.34	11	1.23
South Western Sydney	0	0	7	0.71
Southern NSW	1	0.49	2	0.97
Sydney	0	0	5	0.81
Western NSW	3	1.08	4	1.44
Western Sydney	7	0.76	13	1.4

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

Influenza outbreaks in institutions

There have been no recent outbreaks in institutions reported; the last outbreak to be reported was 16 October (Table 3). Two older outbreaks have been identified retrospectively.

In the year to date, there have been 102 laboratory confirmed influenza outbreaks in institutions reported to NSW public health units (Table 3): 59 have been due to influenza A, 31 due to influenza B and12 were combined A and B. At least 1360 residents were reported to have had ILI symptoms and 169 required hospitalisation. Fifty-two deaths in residents linked to these outbreaks have been reported, all of whom were noted to have other significant co-morbidities.

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 residential aged care facilities (Table 3).

Table 3: Reported influenza outbreaks in NSW institutions, January 2010 to November 2015.

Year	2010	2011	2012	2013	2014	2015*
No. of outbreaks	2	4	39	12	120	102

Notes: * Year to date.

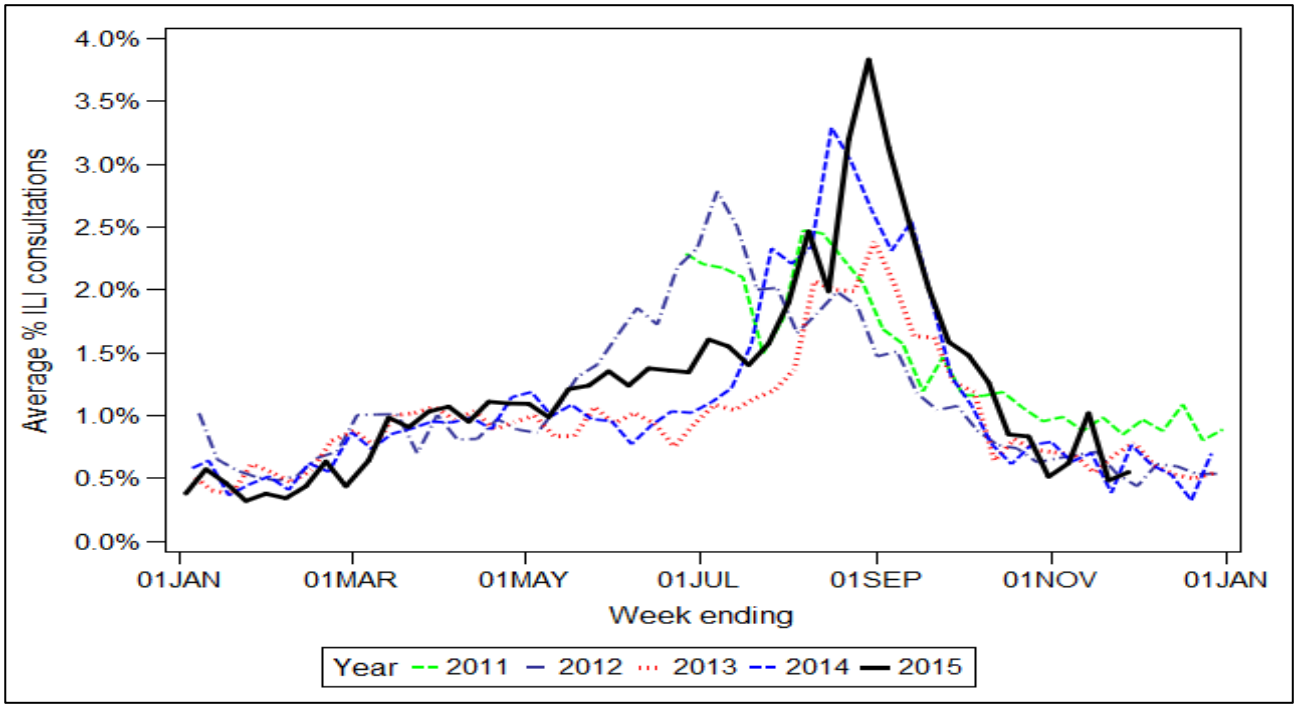
Electronic General Practice Surveillance (eGPS)

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.

- For November, weekly reports were received on average from 3 sentinel practices (all Northern Sydney practices).
- The average rate for patient consultations with ILI was 0.6% (range 0.0 – 2.3), consistent with the historical average (Figure 6).

Figure 6. ILI consultations as a percentage of all consultations at sentinel general practices, by week of consultation, July 2011 to November 2015.



Notes on eGPS data:

- The number of practices reporting may vary from week to week. Data is available from Week 29, 2011.
- **Data generated from eGPS should be interpreted with caution as it is not representative of all practices within the participating LHDs or across NSW.**

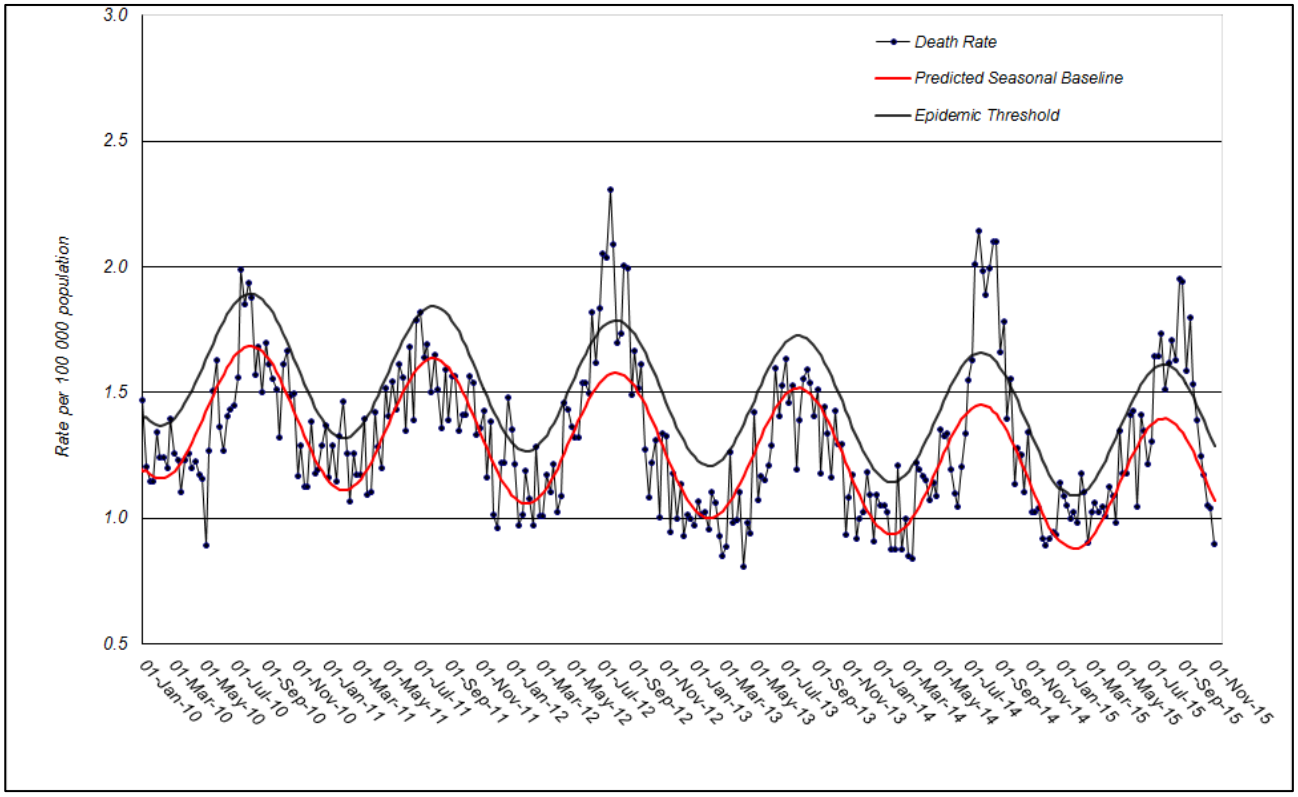
5. Deaths with pneumonia or influenza reported on the death certificate

Deaths registration data is routinely reviewed for deaths attributed to pneumonia or influenza. While pneumonia has many causes, a well-known indicator 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. 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 6 November:

- In 2015 there have been 80 of 44 904 death certificates which mentioned influenza: two deaths were in children aged under 5 years, one death was in a person aged 35 years, four deaths were in people aged 55 to 64 years and the remainder were in people aged over 65 years.
- A total of 4,333 of 44 904 death certificates mentioned pneumonia.
- There were 0.90 influenza and pneumonia deaths per 100 000 NSW population, which was below the epidemic threshold of 1.29 per 100 000 population (Figure 7).

Figure 7: Rate of deaths classified as influenza and pneumonia per 100 000 NSW population, 2010 - 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 one week behind reports from emergency departments and laboratories. In addition, previous weekly rates may also change due to longer delays in reporting some deaths.

6. National and International Influenza Surveillance

National Influenza Surveillance

No new national influenza surveillance reports were available in this reporting period.

The Australian Department of Health has published its final update on national influenza surveillance for the 2015 influenza season with data up to 9 October 2015. At that time, national influenza activity had continued to decline following a seasonal peak in mid-August and it was anticipated that influenza activity would decline to inter-seasonal levels in the next few weeks.

Follow the link for the archive of Australian Influenza Surveillance Reports.

Global Influenza Update
The latest WHO global update on 30 November 2015 provides data up to 15 November. Influenza activity was reported as low in most parts of the world with the exception of western Asia and Bahrain, Oman and Qatar where increased influenza activity was reported, mainly due to the influenza A (H1N1)pdm09 strain.

Follow the link for the WHO influenza surveillance reports.

Avian Influenza Update:
Human infections with avian influenza viruses

WHO has published its monthly updated risk assessment of human infections with avian influenza viruses Influenza at the human-animal interface as of 13 November 2015. This report provides updated information on human cases of infection with H5 and H7 clade viruses and outbreaks among animals.

The overall risk assessment for these viruses remains unchanged. 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.

For H7N9, WHO has noted current evidence suggests that this virus has not acquired the ability of sustained transmission among humans but it is possible that limited human-to-human transmission may have occurred where there was unprotected close contact with symptomatic human cases.

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

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

7. Composition of 2016 Australian influenza vaccines

The WHO Consultation on the Composition of Influenza Vaccines for the 2016 Southern Hemisphere was held in Memphis on 21-23 September 2015. Following the Consultation, WHO announced its recommendations for the composition of trivalent vaccines for use in the 2016 influenza season (southern hemisphere winter) as follows:

- an A/California/7/2009 (H1N1)pdm09-like virus;
- an A/Hong Kong/4801/2014 (H3N2)-like virus;
- a B/Brisbane/60/2008-like virus (Victoria lineage).

It is recommended that quadrivalent vaccines containing two influenza B viruses contain the above three viruses and a B/Phuket/3073/2013-like virus.

This is a change to both the A/H3 (previously A/Switzerland) and B (previously B/Phuket Yamagata lineage) viruses from the vaccine recommendations for the southern hemisphere in 2015 and the northern hemisphere in 2015-2016. More details about the most recent recommendations can be found at: http://www.who.int/influenza/vaccines/virus/recommendations/2016_south/en/ .

The Commonwealth Government has announced that trivalent influenza vaccines will be replaced by quadrivalent vaccines in the National Immunisation Program (NIP) for 2016. For further information see: http://www.health.gov.au/internet/ministers/publishing.nsf/Content/health-mediarel-yr2015-ley133.htm .