

Influenza Monthly Epidemiology Report, NSW

March 2016

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 levels slightly higher than is usual for this time of year, with influenza A(H1N1) viruses the most common strain identified.
- The rate of influenza like illness (ILI) presentations to selected emergency departments was low and consistent with inter-seasonal activity.
- Emergency department presentations for bronchiolitis increased markedly.
- The rate of ILI consultations at sentinel general practices was low.
- The proportion of deaths attributed to pneumonia and influenza remained low.
- The increased local influenza activity corresponds to increased seasonal influenza activity reported in the Northern Hemisphere where influenza A(H1N1) strains are also predominating.

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 considered an important signal for the start of the influenza season in NSW as it suggests influenza is circulating widely in the community.

In March 2016:

- ED presentations for ILI were steady and within the usual range for this time of year (Figure 1).
- ED presentations for pneumonia decreased [3] and were within the usual range (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 (data not shown).

[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 60 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').

[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'.

- Bronchiolitis presentations increased markedly during the second half of March and are at the upper limit of the usual range for this time of year (Figure 3).
- The category combining all respiratory, fever and unspecified infection presentations have increased from the previous month and remain above the usual range for this time of year (data not shown).

Figure 1: Total weekly counts of ED visits for influenza-like illness, from January to March 2016 (black line), compared with each of the 5 previous years (coloured lines), for 60 NSW hospitals.

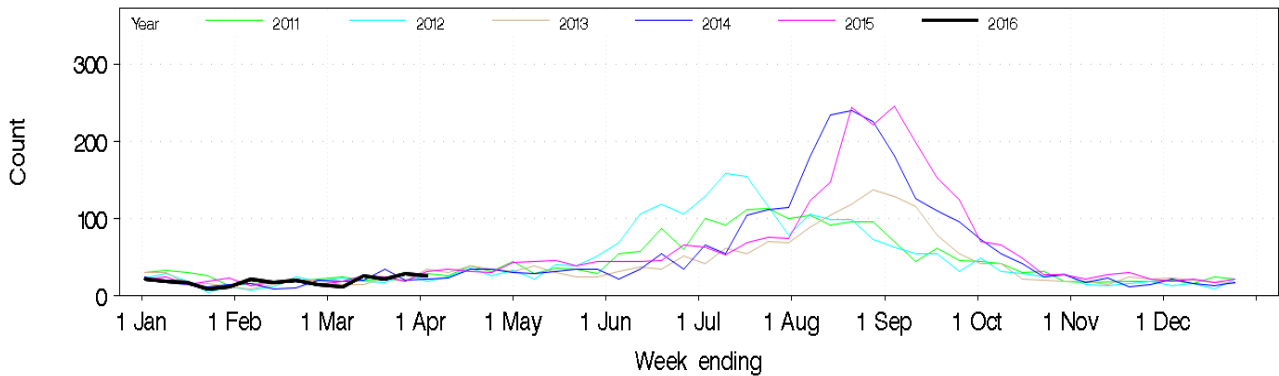


Figure 2: Total weekly counts of ED presentations for pneumonia, from January to March 2016 (black line), compared with each of the 5 previous years (coloured lines), for 60 NSW hospitals.

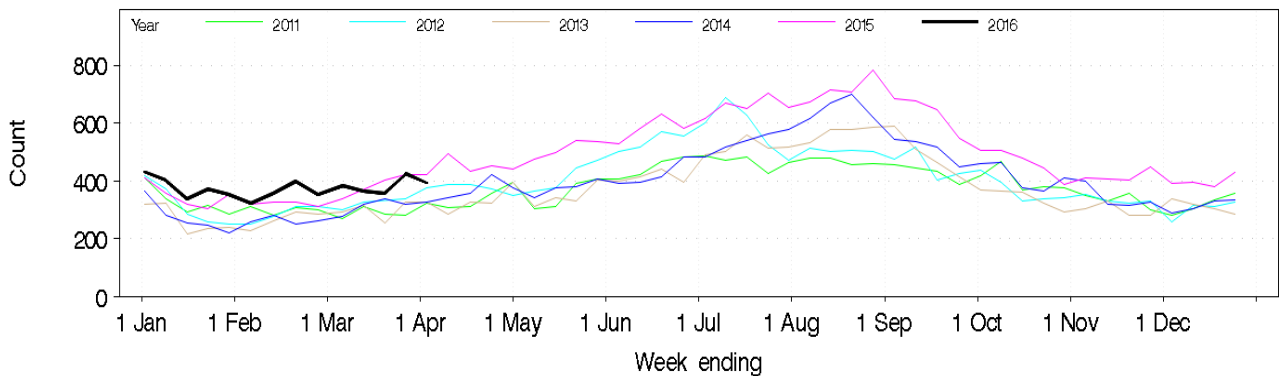
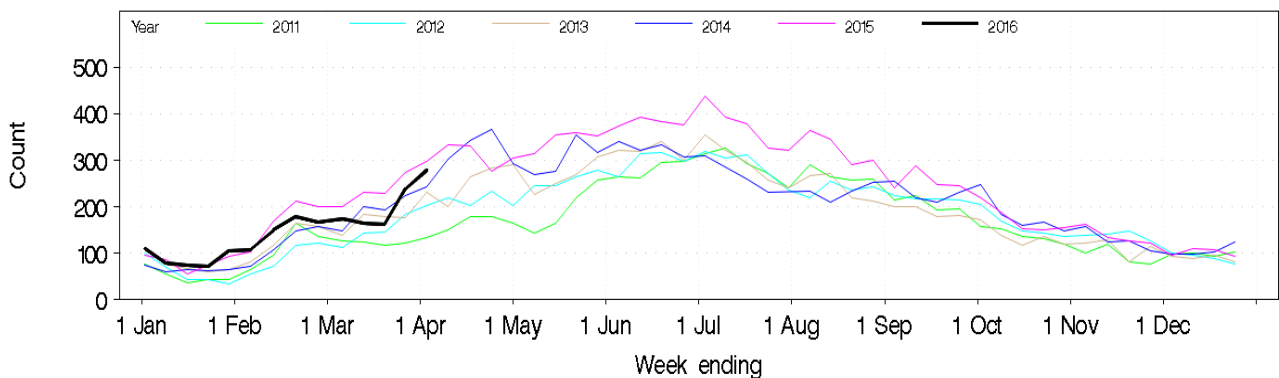


Figure 3: Total weekly counts of Emergency Department visits for bronchiolitis, from January – March 2016 (black line), compared with the 5 previous years (coloured lines) for 60 NSW Hospitals.



3. Laboratory testing summary for influenza

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

In March 2016:

- A total of 14,699 tests for respiratory viruses were performed at sentinel NSW laboratories and 694 (5.0%) were positive for influenza (Table 1).
- 555 specimens tested positive for influenza A – 33 of these tested positive for A(H3N2), 272 tested positive for influenza A(H1N1) and 249 were not typed further (Table 1, Figure 4 & 5).
- 139 cases of influenza B were reported (Table 1, Figure 4 & 5).

The number of influenza notifications was higher this month than for the previous month (February). Activity for this time of year is higher than previous historical data. Rhinoviruses were the leading respiratory viruses identified by laboratories.

Respiratory syncytial virus (RSV) activity has started to increase with almost three times as many positive tests as the previous month. This fits with the historical pattern of increasing RSV activity during the autumn months and is consistent with the rise in emergency department presentations for bronchiolitis noted in the PHREDSS data.

Table 1: Summary of testing for influenza and other respiratory viruses at sentinel NSW laboratories, 1 January to 3 April 2016.

Month ending	Total Tests	TEST RESULTS															
		Influenza A				Influenza B		Adeno	Parainf 1, 2 & 3	RSV	Rhino	HMPV **	Entero				
		Total	(%)	H3N2	H1N1 pdm09	A (Not typed)	Total							(%)			
		Total	(%)	Total	(%A)	Total	(%A)	Total	(%A)	Total	(%)						
01/02/2016	8079	270	(3.3%)	45	(16.7%)	114	(42.2%)	111	(41.1%)	38	(0.5%)	202	179	202	941	73	96
28/02/2016	9810	397	(4.0%)	54	(13.6%)	199	(50.1%)	144	(36.3%)	96	(1.0%)	208	244	323	1484	80	150
03/04/2016*	14699	555	(3.8%)	33	(5.9%)	272	(49.0%)	249	(44.9%)	139	(0.9%)	282	412	937	1862	68	188
Week ending																	
06/03/2016	2793	117	(4.2%)	11	(9.4%)	62	(53.0%)	44	(37.6%)	32	(1.1%)	78	62	133	412	10	42
13/03/2016	3161	116	(3.7%)	0	(0.0%)	54	(46.6%)	62	(53.4%)	33	(1.0%)	52	89	173	427	6	38
20/03/2016	3096	105	(3.4%)	10	(9.5%)	47	(44.8%)	48	(45.7%)	28	(0.9%)	57	87	190	369	15	30
27/03/2016	2749	94	(3.4%)	4	(4.3%)	48	(51.1%)	41	(43.6%)	24	(0.9%)	54	88	214	313	12	38
03/04/2016	2900	123	(4.2%)	8	(6.5%)	61	(49.6%)	54	(43.9%)	22	(0.8%)	41	86	227	341	25	40

Notes: * Five week period

** HMPV - Human metapneumovirus.

All samples are tested for influenza viruses but not all samples are tested for all of the other viruses listed. There is no data for Pathology North - Hunter Laboratory for week ending 3/4/2016.

[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:** Pathology North (Royal North Shore Hospital, Hunter, Lismore, Coffs Harbour laboratories); Pathology West (Westmead, Nepean laboratories); South Eastern Area Laboratory Services; Sydney South West Pathology Service (Liverpool, Royal Prince Alfred Hospital laboratories), The Children's Hospital at Westmead; Douglas Hanly Moir Pathology; Laverty Pathology; Medlab; SydPath (St Vincent's Hospital), VDRLab.

Figure 4: Weekly influenza positive test results by type and sub-type reported by NSW sentinel laboratories, 1 January to 3 April 2016.

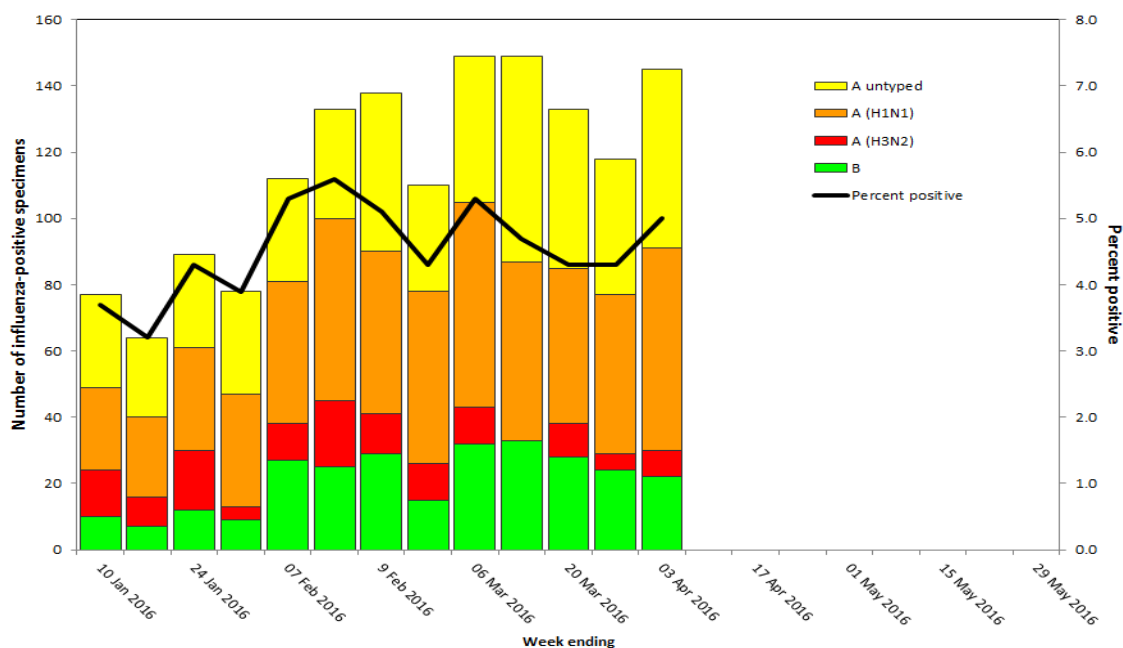
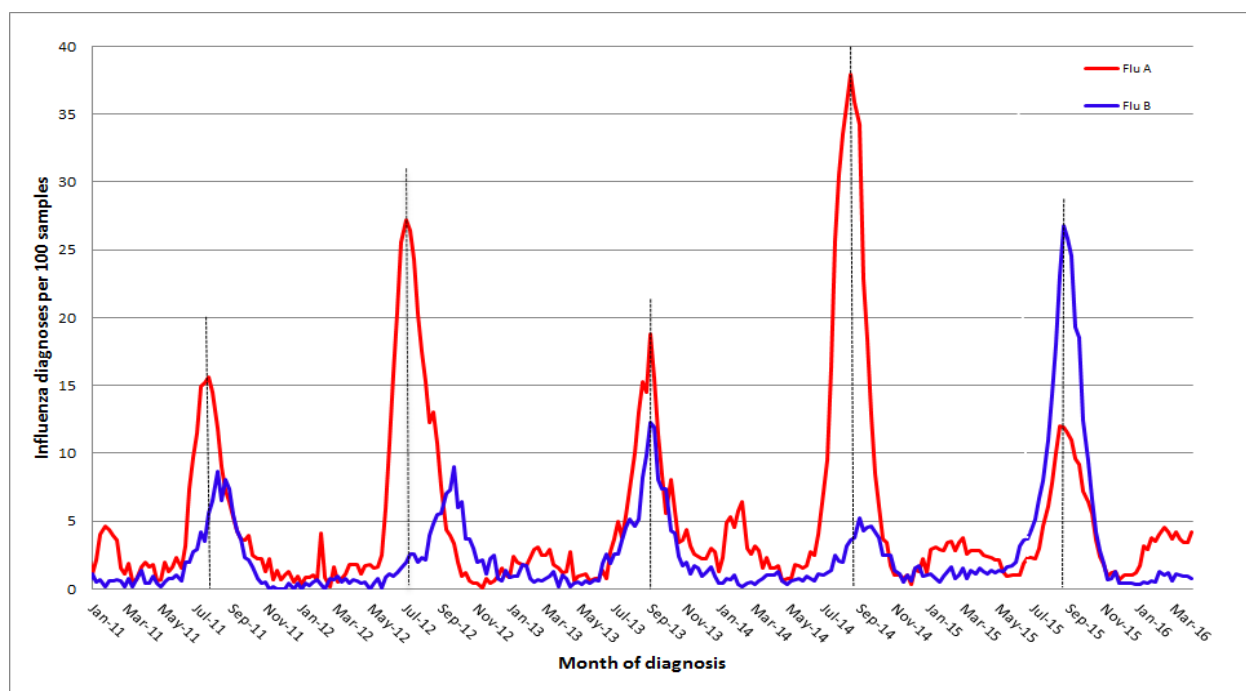


Figure 5: Percent of laboratory tests positive for influenza A and influenza B reported by NSW sentinel laboratories, 1 January 2010 to 3 April 2016.



4. Community Surveillance

Influenza notifications by Local Health District (LHD)

During March there were 649 notifications (five week period) of influenza confirmed by polymerase chain reaction (PCR) testing, notably higher than the 447 influenza notifications reported for February 2016.

Rates were low and similar across all LHDs with the exception of Northern Sydney LHD which had the most the notifications each week and the highest notification rate overall (Table 2).

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

Local Health District	Week ending 03 Apr 2016		Previous 4 weeks	
	Number of notifications	Rate per 100 000 population	Number of notifications	Rate per 100 000 population
Central Coast	3	0.89	5	1.58
Far West	0	0	1	3.28
Hunter New England	2	0.22	12	1.28
Illawarra Shoalhaven	6	1.49	4	0.93
Mid North Coast	1	0.46	2	1.03
Murrumbidgee	1	0.42	2	0.73
Nepean Blue Mountains	7	1.87	6	1.53
Northern NSW	6	2	4	1.17
Northern Sydney	41	4.52	34	3.78
South Eastern Sydney	18	1.99	23	2.54
South Western Sydney	7	0.72	5	0.52
Southern NSW	0	0	1	0.48
Sydney	16	2.55	10	1.59
Western NSW	4	1.44	3	1.17
Western Sydney	26	2.75	19	2.01

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

Influenza outbreaks in institutions

There was one influenza A outbreak reported this month in a military facility, the fourth institutional outbreak reported to date in 2016 (Table 3).

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. In 2015, influenza B was the predominant strain, and was also 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 March 2016.

Year	2010	2011	2012	2013	2014	2015	2016*
No. of outbreaks	2	4	39	12	120	103	4

Notes: * Year to date.

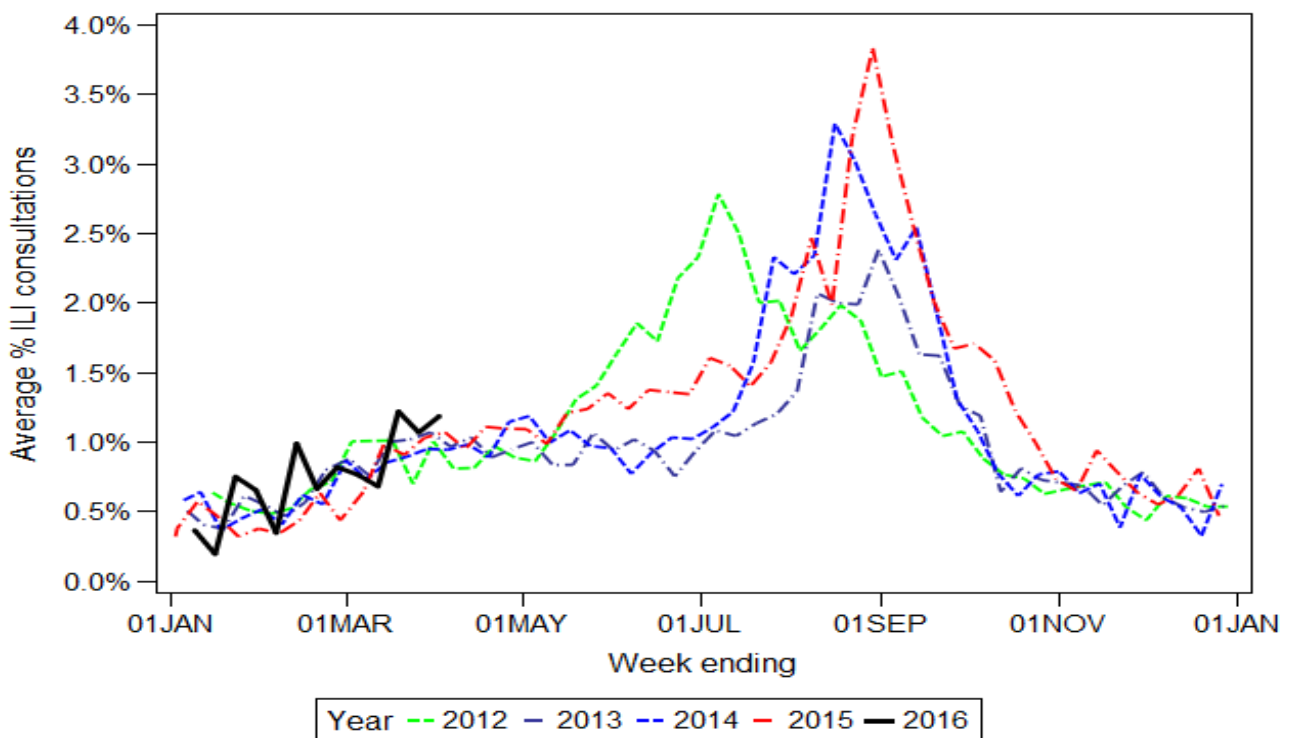
Electronic General Practice Surveillance (eGPS)

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.

In March 2016:

- Weekly reports were received on average from 5 sentinel practices (all Northern Sydney practices).
- The average rate for patient consultations with ILI was 1.0% (range 0.0 – 3.6), slightly above the historical average (Figure 6).

Figure 6. ILI consultations as a percentage of all consultations at sentinel general practices, by week of consultation, 2012 to March 2016.



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

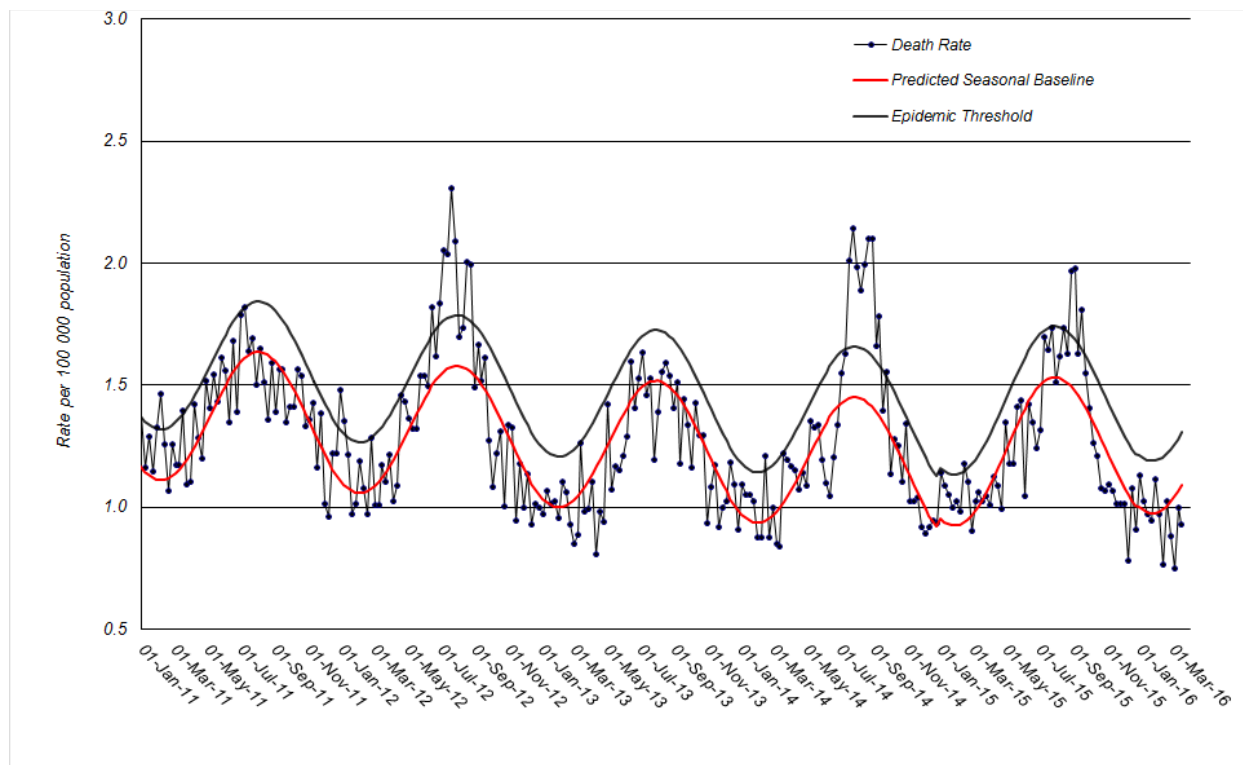
Deaths registration data is routinely reviewed for deaths attributed to pneumonia or influenza. While pneumonia has many causes, a well-known indicator of seasonal and pandemic influenza activity is an increase in the number of death certificates that mention pneumonia or influenza as a cause of death.

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 2016 up to 18 March there have been 9,936 death certificates registered. Of note:

- 4 death certificates have mentioned influenza: one death was in 54 year old and three deaths were in persons aged 75 years and over
- 798 death certificates mentioned pneumonia
- In the week to 18 March there were 0.93 influenza and pneumonia deaths per 100 000 NSW population, which was below the epidemic threshold of 1.31 per 100 000 population (Figure 7).

Figure 7: Rate of deaths classified as influenza and pneumonia per 100 000 NSW population, 2011 - 2016.



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

Although national influenza surveillance reports are not produced at this time of year, many jurisdictions are reporting increased influenza activity. Total national reports of laboratory-confirmed influenza in January were high, similar to 2015 but higher than in earlier years.

For further information on the National Notifiable Disease Surveillance System, which includes laboratory-confirmed influenza reports, see: <http://www9.health.gov.au/cda/source/cda-index.cfm>.

Global Influenza Update

The latest [WHO global update on 4 April 2016](#) provides data up to 20 March. Globally, elevated levels of influenza activity continued to be reported in North America, in parts of Europe and in Northern Temperate Asia. An increase in influenza B virus activity has been reported in Northern

Temperate Asia, South East Asia and Europe. Follow the link for the [WHO influenza surveillance reports](#).

Avian Influenza Update: Human infections with avian influenza viruses

The most recent WHO risk assessment of human infections with avian influenza viruses (see [Influenza at the human-animal interface](#)) was published on 25 February 2016. This report provides updated information on human cases of infection with H5 and H7 clade viruses and outbreaks among animals.

During March 2016, WHO noted that China has reported an additional 30 additional laboratory-confirmed cases of human infection with avian influenza A(H7N9) virus, including 11 deaths, and with three clusters. In March China also reported one additional case of human infection with A(H5N6) virus.

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.

For the trivalent vaccine 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>.