

Influenza Monthly Epidemiology Report, NSW

April 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

In April:

- 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 12 584 specimens tested, 448 (3.6%) were positive for influenza. The number and proportion positive is slightly higher than usual for this time of year. Influenza A(H3N2) was the predominant strain.
- National surveillance indicated low influenza activity across the country; influenza viruses circulating appear to be a good match with the 2015 seasonal trivalent influenza vaccine.

2. Emergency Department (ED) influenza-like illness activity

Data from 59 NSW emergency departments are included. Comparisons are made with data for the preceding 5 years. Recent counts are subject to change.

Source: NSW Health Public Health Real-time Emergency Department Surveillance System (PHREDSS) managed by the Centre for Epidemiology and Evidence, NSW Ministry of Health.

ED Presentations for influenza-like illness:

Monitoring emergency departments (ED) presentations for influenza-like illness (ILI) provides important information on the burden that influenza and other similar respiratory infections place on hospitals during the influenza season. The changes in ILI presentations to EDs can also be used to predict the start, peak and end of the influenza season in NSW.

The PHREDSS surveillance system uses a statistic called the 'index of increase' to indicate when presentations 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 April 2015:

- The index of increase for ILI presentations was 6.1 at the end of April, increased from the previous month but still consistent with inter-seasonal activity.
- For the month of April there were 165 ED presentations for ILI (rate 0.8 per 1,000 presentations) consistent with the historical average for this time of year (Figure 1).
- Pneumonia presentations continued to be above the historical average in April (Figure 2).
- Admissions from EDs to critical care units for ILI and pneumonia were above the usual range for most of the month but decreased towards the end of the month (Figure 3).
- Bronchiolitis presentations were slightly above the usual range for this time of year. Presentations tend to increase around this time each year and usually reflect increasing circulation of respiratory syncytial virus (RSV) infection in the community (Figure 4).

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

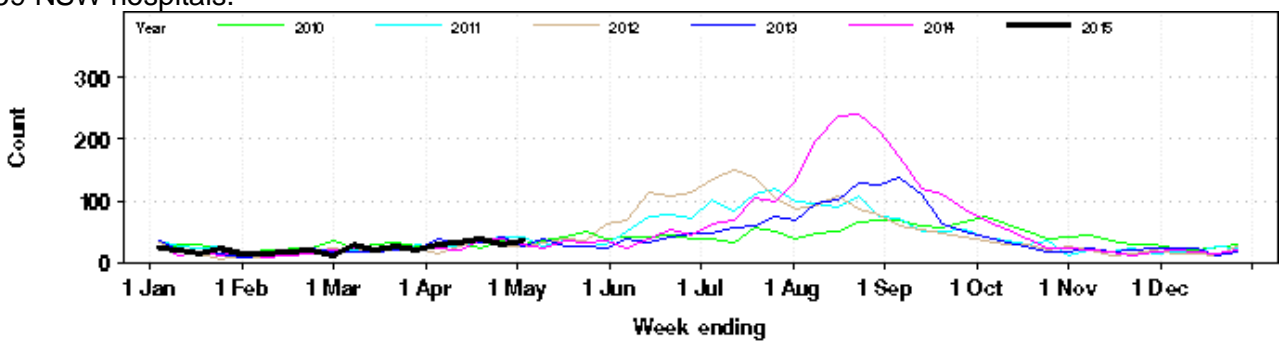


Figure 2: Total weekly counts of Emergency Department presentations for pneumonia, from January – April 2015 (black line), compared with each of the 5 previous years (coloured lines), for 59 NSW hospitals

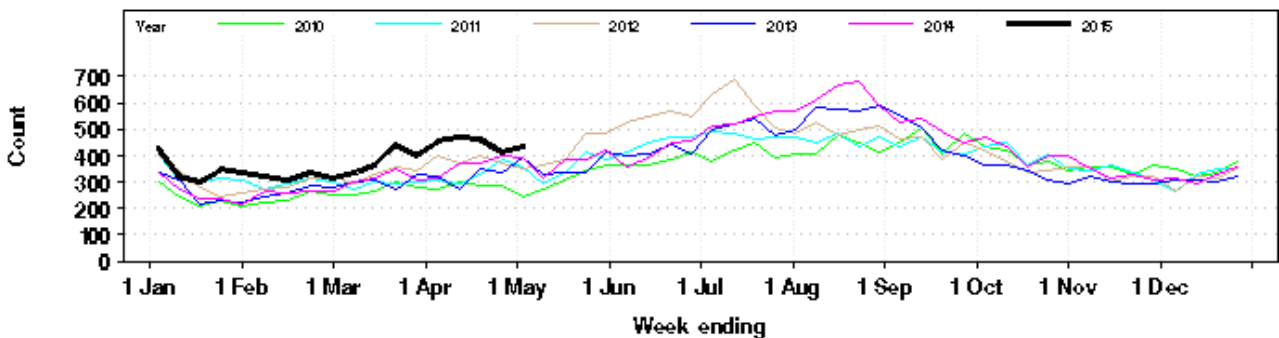


Figure 3: Total weekly counts of Emergency Department presentations for pneumonia or influenza-like illness and admitted to a critical care ward, from January – April 2015 (black line), compared with each of the 5 previous years (coloured lines), for 59 NSW hospitals

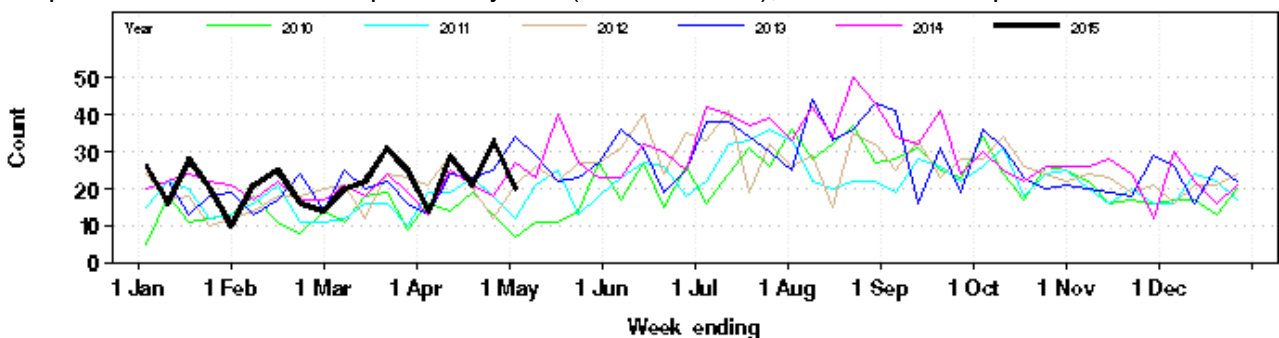
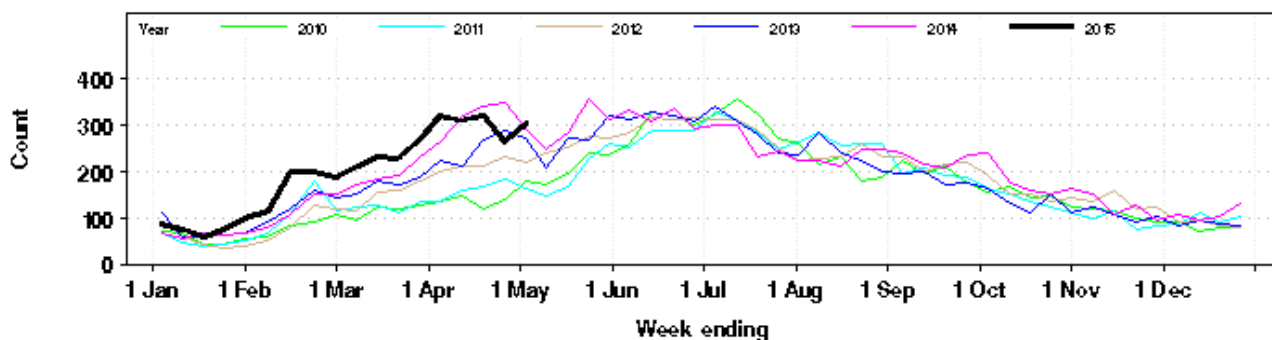


Figure 4: Total weekly counts of Emergency Department visits for bronchiolitis, from January – April 2015 (black line), compared with the 5 previous years (coloured lines).



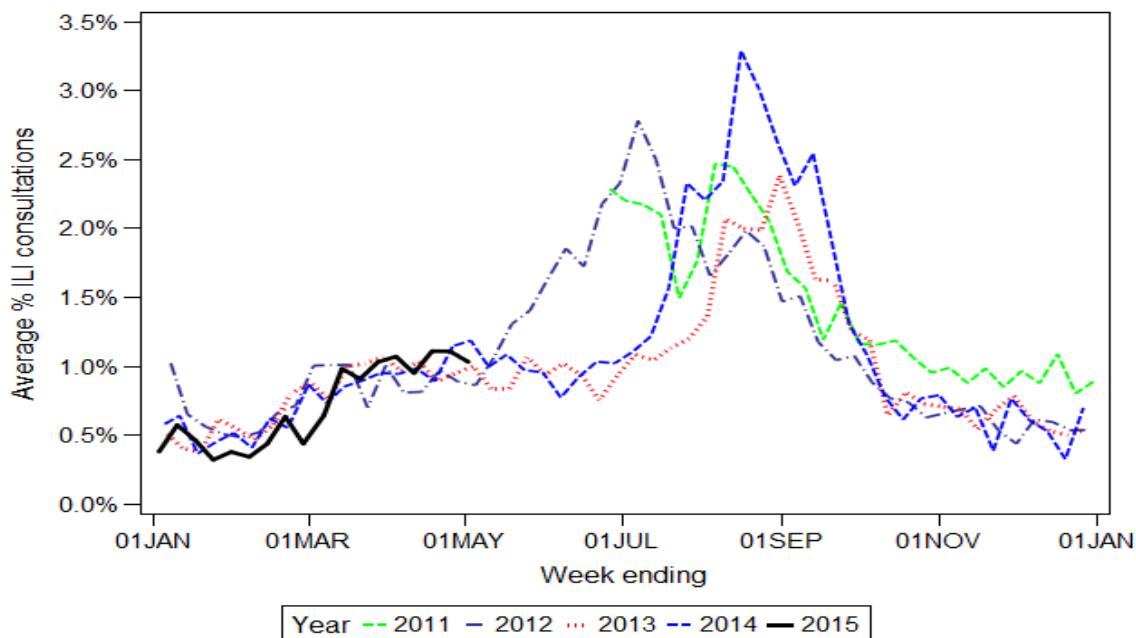
3. Community Illness Surveillance

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 April, weekly reports were received on average from 15 sentinel practices.
- The average rate for patient consultations with ILI was 1.0% (range 0.0 – 2.1), consistent with the historical average (Figure 5).

Figure 5. ILI consultations as a percentage of all consultations at sentinel general practices, by week of consultation, July 2011 to April 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.

4. Laboratory testing summary for influenza

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

In April 2015:

- A total of 12 584 tests for respiratory viruses were performed at sentinel NSW laboratories and 448 (3.6%) were positive for influenza (Table 1). This was higher than usual for this time of year but still consistent with inter-seasonal activity.
- 285 specimens tested positive for influenza A – 105 of these tested positive for A(H3N2), 13 tested positive for influenza A(H1N1) and 167 were not typed further (Table 1, Figure 6).
- 163 cases of influenza B were reported (Table 1, Figure 6).

There is no additional characterisation data yet available from the WHO Collaborating Centre for Reference and Research on Influenza (WHOCC) in Melbourne on samples collected in April. WHOCC reports that characterisation of NSW samples collected since January 2015 has confirmed circulation of the three influenza strains covered in the trivalent seasonal vaccine as well as an additional B strain (B/Victoria lineage) which is covered in the quadrivalent seasonal vaccine.

Rhinoviruses were the leading respiratory viruses identified by laboratories, with respiratory syncytial virus (RSV) continuing to increase as expected for this time of year.

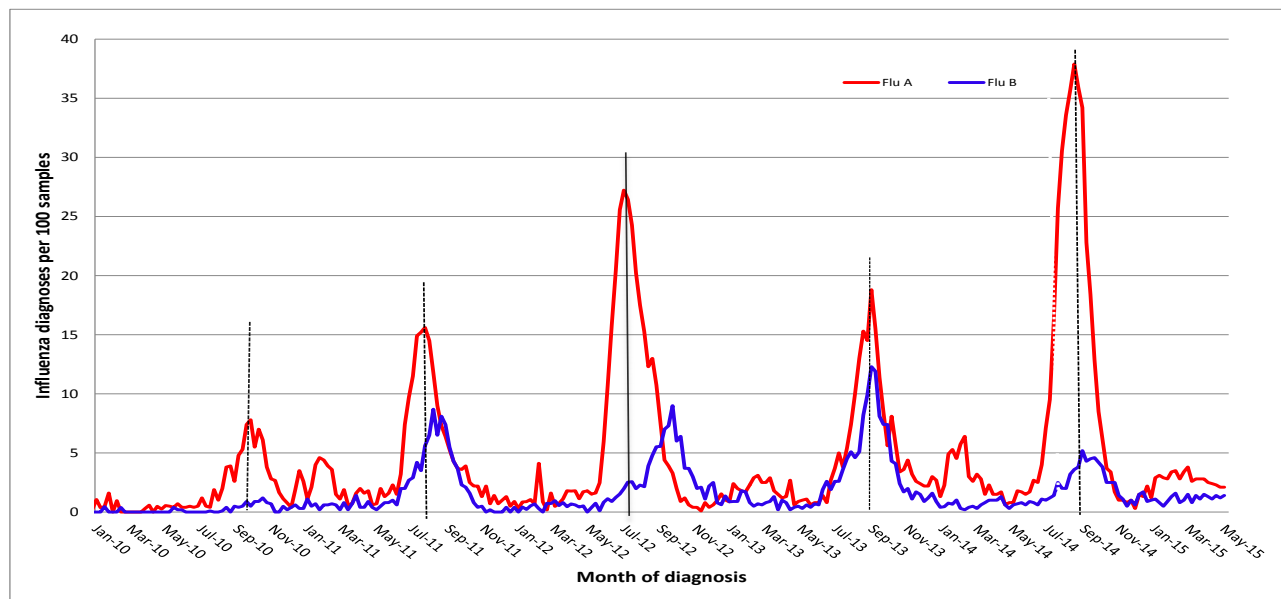
Table 1: Summary of testing for influenza and other respiratory viruses at sentinel NSW laboratories, 1 January to 3 May 2015.

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%)	82	(33.9%)	21	(8.7%)	140	(57.9%)	108	(1.3%)	181	117	767	1084	52	34
03/05/2015*	12584	285	(2.3%)	105	(36.8%)	13	(4.6%)	167	(58.6%)	163	(1.3%)	257	187	1351	1443	59	78
Week ending																	
05/04/2015	2358	58	(2.5%)	24	(41.4%)	2	(3.4%)	32	(55.2%)	31	(1.3%)	44	29	252	258	4	8
12/04/2015	2403	57	(2.4%)	32	(56.1%)	2	(3.5%)	23	(40.4%)	26	(1.1%)	53	51	275	336	13	12
19/04/2015	2721	63	(2.3%)	21	(33.3%)	2	(3.2%)	40	(63.5%)	37	(1.4%)	63	36	322	333	14	24
26/04/2015	2525	53	(2.1%)	20	(37.7%)	3	(5.7%)	30	(56.6%)	31	(1.2%)	49	39	254	252	14	15
03/05/2015	2577	54	(2.1%)	8	(14.8%)	4	(7.4%)	42	(77.8%)	38	(1.5%)	48	32	248	264	14	19

Note * Five week reporting period used

** All samples are tested for influenza viruses. Not all samples are tested for all of the other viruses listed.

Figure 6: Percent of laboratory tests positive for influenza A and influenza B, 1 January 2010 – 3 May 2015, New South Wales. (see Notes below)



Notes on sentinel laboratory surveillance:

- Data is provided by participating sentinel laboratories on a weekly basis and excludes serology.
- Participating sentinel laboratories include the following: South Eastern Area Laboratory Services, Institute of Clinical Pathology and Medical Research, The Children’s Hospital at Westmead, Sydney South West Pathology Service, Pacific Laboratory Medicine Service, Royal Prince Alfred Hospital, Hunter Area Pathology Service, Nepean Hospital Pathology, Douglas Hanley Moir Pathology, VDRLab, Lavery Pathology, SydPath (St Vincent’s) Pathology, and Medlab.

Laboratory-confirmed influenza outbreaks in residential care facilities and other settings

There were two influenza A outbreaks in institutions reported for the month of April (Table 2). There was also one influenza A outbreak reported on a cruise ship. Influenza outbreaks on cruise ships are reasonably common at this time of year due to high number of people travelling between the northern and southern hemispheres.

Influenza outbreak reports increased dramatically in 2012 and 2014 when the influenza A(H3N2) strain predominated.

Table 2. Reported influenza outbreaks in NSW institutions, January 2010 to April 2015.

Year	2010	2011	2012	2013	2014	2015*
No. of outbreaks	2	4	39	12	120	7

* Year to date.

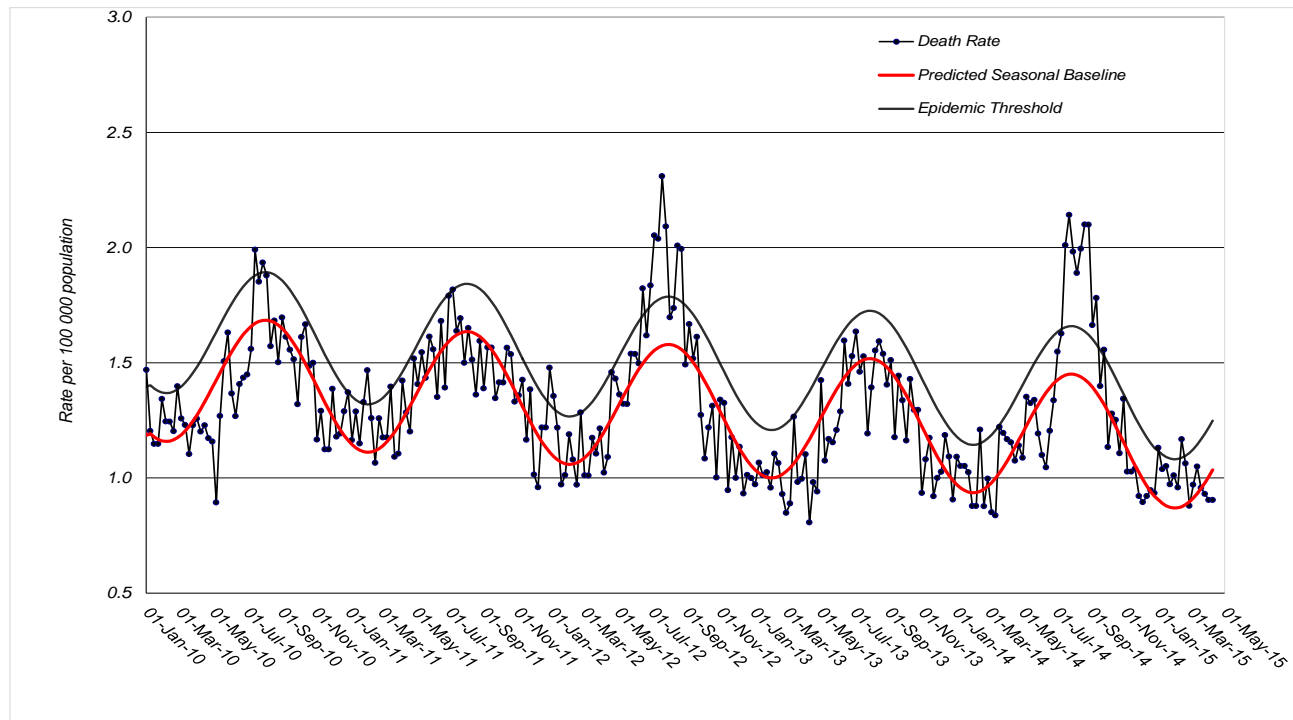
5. Deaths with pneumonia or influenza reported on the death certificate

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 10 April:

- There were 0.90 pneumonia and influenza deaths per 100 000 NSW population, which is below the epidemic threshold of 1.24 per 100 000 population (Figure 7).
- Up to 10 April, out of 12 255 deaths there has been one death certificate mentioning influenza, and 1056 mentioning pneumonia.

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

The Australian Department of Health has reported the following:

- Australia is currently in the inter-seasonal period for influenza, with overall influenza activity at low levels.
- Influenza activity across jurisdictions is variable. Activity since the start of the year has been higher in a majority of jurisdictions than at the same time last year, however many jurisdictions

have reported a decline in activity in the most recent reporting week compared with the week prior.

- Nationally, influenza A is the predominant circulating virus type; of those viruses where subtyping data are available, influenza A(H3N2) is the most common.
- Influenza viruses circulating in Australia appear to be a good match with the 2015 seasonal trivalent influenza vaccine.
- Influenza-like illness (ILI) levels detected through the sentinel GP ILI surveillance system remain lower than previous years. In the most recent fortnight, rhinovirus infection was the most common cause of ILI detected.

For further information on the National Notifiable Disease Surveillance System, which includes laboratory-confirmed influenza reports, see:

<http://www.health.gov.au/internet/main/publishing.nsf/Content/cda-ozflu-2014.htm>

Global Influenza Update

The World Health Organization (WHO) reported on current influenza activity in the [WHO Global Influenza Update](#) of 4 May 2015 (with data up to 19 April) which indicated that:

- In North America, influenza activity continued to decrease and was close to inter-seasonal levels with influenza B virus predominant in the last weeks.
- In Europe, influenza activity continued to decline in most countries. Influenza B virus remained predominant in recent weeks.
- In northern Africa, influenza activity decreased almost to inter-seasonal levels.
- In western Asia, a decrease in influenza activity mainly associated with A(H1N1) virus was observed in the last weeks.
- In the temperate countries of Asia, influenza activity of mainly influenza B virus was further declining.
- In tropical countries of the Americas, influenza activity was low in most countries.
- In tropical Asia, influenza activity and influenza-like illness (ILI) activity continued to decrease in southern Asia, where influenza A(H1N1) virus predominated. Influenza activity has continued to decrease from its peak in southern China including Hong Kong Special Administrative Region, China. In the southern hemisphere, influenza activity remained at inter-seasonal levels.
- In tropical countries of the Americas, influenza activity remained low in most countries.
- In tropical Asia, influenza activity and influenza-like illness (ILI) activity continued to decrease in southern Asia, where influenza A(H1N1) virus predominated. Influenza activity has continued to decrease from its peak in southern China including Hong Kong Special Administrative Region, China. In the southern hemisphere, influenza activity remained at inter-seasonal levels.

WHO also reported influenza laboratory data for the period 5 to 18 April 2015, which noted:

- Of the 65 361 specimens, 8249 were positive for influenza viruses, of which 2566 (31%) were typed as influenza A and 5683 (69%) as influenza B.
- Of the sub-typed seasonal influenza A viruses, 670 (37.6%) were influenza A(H1N1) and 1114 (62.4%) were influenza A(H3N2).
- Of the characterized B viruses, 1127 (95%) belonged to the B-Yamagata lineage and 59 (5%) to the B-Victoria lineage.

Avian influenza Update

WHO has not posted any further updates on avian influenza since its report to [31 March 2015](#) (referred to in last month's report) which included updates on human infections with avian influenza A H5, H7 and H9 strains.

Other sources of more recent 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](#) .

7. Recommended composition of Australian influenza vaccines in 2015

A WHO consultation held in September 2014 recommended that trivalent vaccines for use in the 2015 influenza season (southern hemisphere winter) contain the following:

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

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

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

These changed vaccine recommendations from the previous year reflect observed antigenic drift in circulating A(H3N2) and B/Yamagata lineage viruses. For more information see: http://www.who.int/influenza/vaccines/virus/recommendations/2015_south/en/

8. Recommended composition of influenza virus vaccines for use in the 2014-2015 northern hemisphere influenza season

WHO has also recently recommended that trivalent vaccines for use in the [2015-2016 influenza season](#) (northern hemisphere winter) should contain the same influenza strains as for the 2015 southern hemisphere influenza vaccines (as above).