

NSW Health Influenza Surveillance Report

Week 36: 5 September to 11 September 2016

Summary:

- **Seasonal influenza activity remains high but is past the peak of activity for this season.**
- **Influenza A(H3N2) remains the dominant circulating influenza strain.**

In this reporting week:

- [Hospital Surveillance](#) – influenza like illness (ILI) presentations to selected emergency departments increased slightly but remain below peak levels. The index of increase indicates that activity peaked on 28 August 2016.
- [Laboratory surveillance](#) – the total number of influenza isolations decreased this week with the proportion of respiratory samples positive for influenza at 28.2%.
- [Community surveillance](#) – influenza notifications continued to be high across most local health districts (LHD), but decreasing. General Practice and community-based surveillance systems suggested slight increasing ILI activity. Influenza activity continues to impact heavily on the aged care sector with 32 new respiratory outbreaks reported this week in residential aged care facilities.
- [National and international influenza surveillance](#) – the most recent national reports suggest influenza activity at the national level continued to increase, with most regions of Australia reporting widespread and increasing activity. Current influenza strains are well matched to the 2016 influenza vaccines.

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

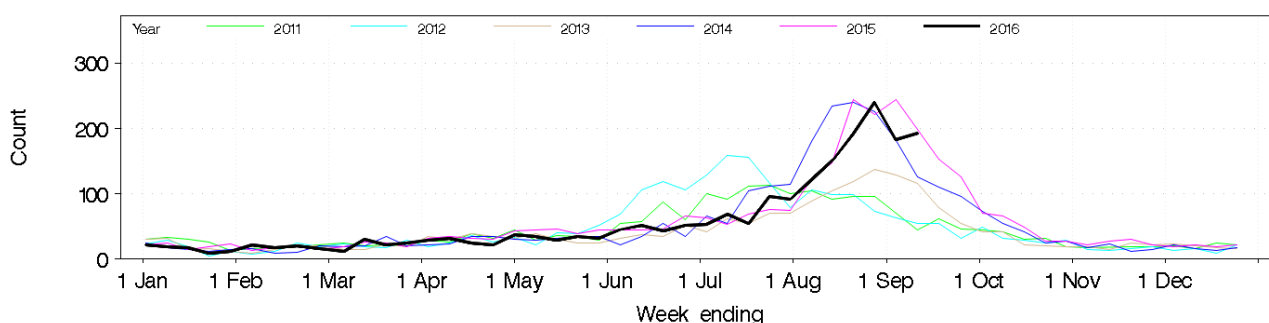
NSW emergency department (ED) presentations for influenza-like illness (ILI) and other respiratory illnesses

Source: PHREDSS [1]

For the week ending 11 September 2016:

- ILI presentations [2] increased slightly this week although it is unlikely that activity will continue to increase. Presentations were significantly above the five-year mean in the 35-64 years and over 65 year olds and in the Murrumbidgee, Hunter New England and Northern Sydney LHDs (Figure 1 and Table 1).
- The index of increase for ILI presentations was 35.0 on 11 September, lower than the previous week (38.3). The index appears to have peaked on Sunday 28 August 2016 at 61.0, lower than the peak of 64.2 seen in 2015.
- The proportion of ILI presentations to all ED presentations was moderate at 4.2 per 1000 presentations, lower than the previous week (5.6).
- ED presentations for pneumonia [3] were steady and remained within the usual range for this time of year. Presentations were significantly above the five-year mean at Campbelltown Hospital (Table 1.)
- ILI presentations which resulted in admission increased and were above the usual range for this time of year (Figure 2 and Table 1). Admissions were significantly above the five-year mean in people aged over 65 years and in the Murrumbidgee and Northern Sydney LHDs. Admissions for pneumonia decreased and were within the usual range for this time of year. Admissions were significantly above the five-year mean at Campbelltown and Bowral District Hospitals (Table 1). Presentations which resulted in admissions to critical care decreased and were within the usual range for this time of year (Figure 3 and Table 1).
- Bronchiolitis presentations this week decreased and were within the usual range for this time of year (Table 1).
- Presentations in the category combining all respiratory, fever and unspecified infections decreased and were within the usual range for this time of year. Presentations were significantly above the five-year mean in the 0-4 years, 17-34 years and over 65 year olds and in Hunter New England, South Western Sydney and Northern Sydney LHDs (Table 1).

Figure 1: Total weekly counts of ED visits for influenza-like illness, all ages, from 1 January – 11 September 2016 (black line), compared with each of the 5 previous years (coloured lines).



[1] NSW Health Public Health Rapid, Emergency Disease and Syndromic Surveillance system. Centre for Epidemiology and Evidence, NSW Ministry of Health. Comparisons are made with data for the preceding five years. Recent counts are subject to change. As of 31 March 2016, data from 60 NSW emergency departments are included representing approximately 82% of ED visits in the 2015-16 financial year. The coverage of rural EDs is lower than metropolitan EDs. Data shown represents unplanned presentations to hospital EDs.

[2] The ED 'ILI' syndrome includes provisional diagnoses selected by a clinician of 'influenza-like illness' or 'influenza' (including 'pneumonia with influenza'), avian and other new influenza viruses.

[3] The ED 'Pneumonia' syndrome includes provisional diagnoses selected by a clinician of 'viral, bacterial, atypical or unspecified pneumonia', 'SARS', or 'legionnaire's disease'. It excludes the diagnosis 'pneumonia with influenza'.

Figure 2: Total weekly counts of ED presentations for influenza-like-illness that were admitted, all ages, from 1 January – 11 September 2016 (black line), compared with each of the 5 previous years (coloured lines).

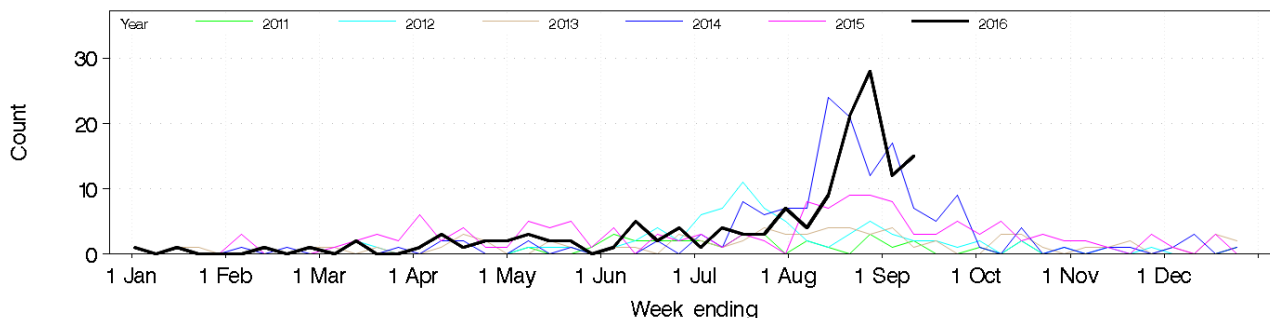


Figure 3 Total weekly counts of ED presentations for pneumonia or influenza-like illness and admitted to a critical care ward, all ages, from January – 11 September 2016 (black line), compared with each of the 5 previous years (coloured lines).

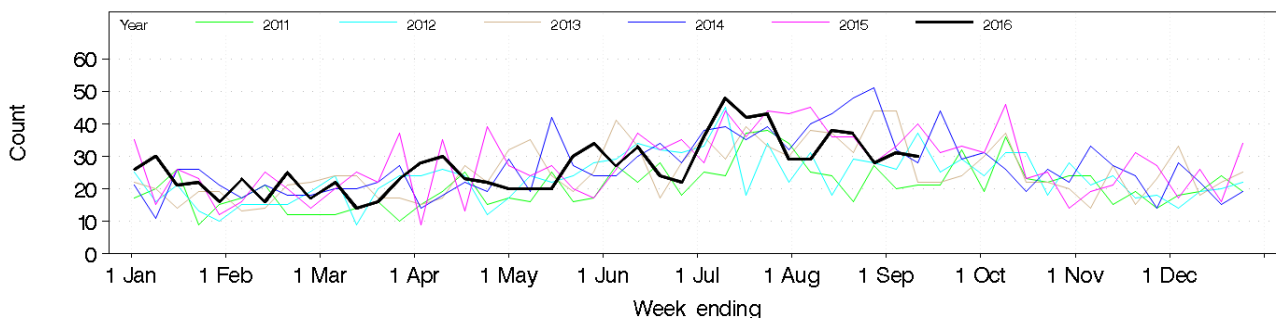


Table 1: Weekly ED and Ambulance Respiratory Activity Summary for the week ending 11 September 2016. Includes data from 60 NSW EDs and the NSW Ambulance Division [4].

| Data source | Diagnosis or problem category | Trend since last week | Comparison with usual range for time of year* | Statistically significant age groups (if any) | Locations with weekly counts significantly above the 5 year mean | Severity indicators** with weekly counts significantly above the 5 year mean | Comment |
|------------------------------------|---|-----------------------|---|---|---|--|---|
| ED presentations, 60 NSW hospitals | Influenza-like illness (ILI) | Increased | Usual | 35-64 years 65+ years | Murrumbidgee LHD Hunter New England LHD Northern Sydney LHD | | Daily index of increase = 35.0 (seasonal threshold crossed on 26 June 2016) |
| | ILI Admissions | Increased | Above | 65+ years | Murrumbidgee LHD Northern Sydney LHD | | |
| | Pneumonia | Steady | Usual | | Campbelltown Hospital | | |
| | Pneumonia admissions | Decreased | Usual | | Campbelltown Hospital Bowral District Hospital | | |
| | Pneumonia and ILI critical care admissions | Decreased | Usual | | | | |
| | Asthma | Increased | Usual | | | | |
| | Bronchiolitis | Decreased | Above | | Manning Base Hospital | | Bronchiolitis is a disease of infants. Daily index of increase = 18.6 |
| | Breathing problems | Steady | Usual | 0-4 years | The Children's Hospital at Westmead | | |
| | All respiratory illness, fever and unspecified infections | Decreased | Above | 0-4 years 17-34 years 65+ years | Hunter New England LHD South Western Sydney Northern Sydney PHU | | |

[4] Notes for Table 1: *The usual range for the time of year is the range of weekly counts for the same week in the previous five years for ED presentations. Key: Non-bold and green =usual range; Non-bold and orange= above usual range, but not significantly; Bold and red = statistically greater than usual range. Counts are statistically significant if they are at least five standard deviations above the five-year mean for ED presentations; the ILI 'daily index of increase' is statistically significant above a threshold of 15. **Severity indicators include: Admission to a ward or critical care service; Triage category 1; Ambulance arrival and Death in ED.

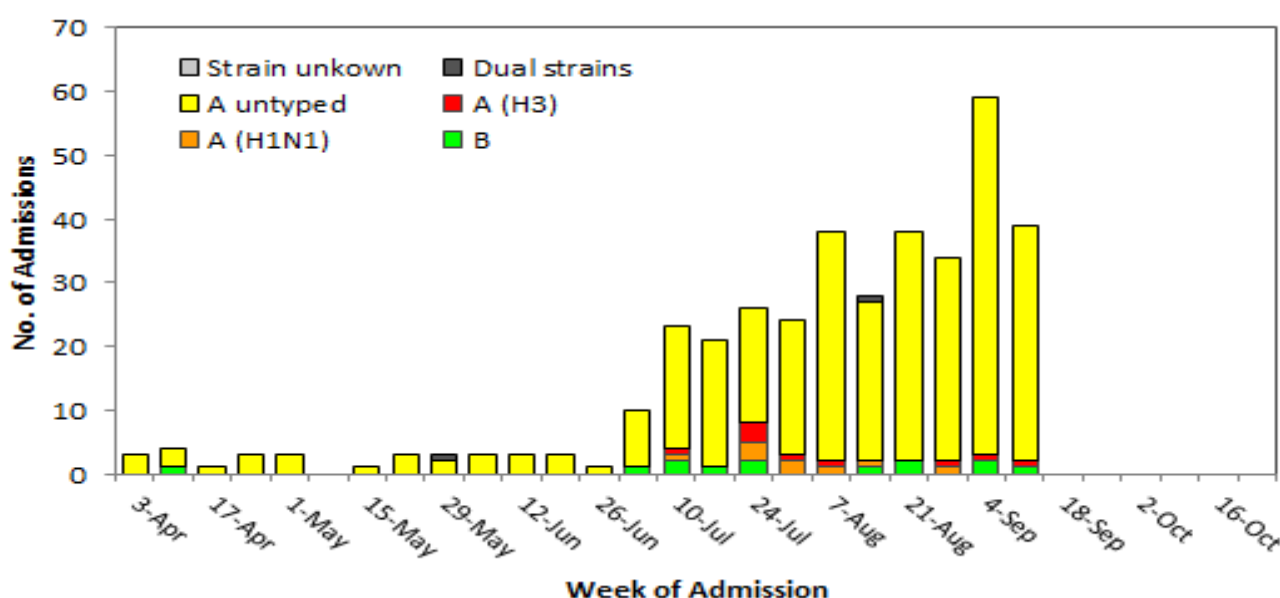
FluCAN (The Influenza Complications Alert Network)

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 36 there were 39 influenza admissions (29 adult and 10 children) in NSW sentinel hospitals (Figure 5).
- Since 1 April 2016, there have been 371 hospital admissions reported for influenza; 356 with influenza A, 13 with influenza B and two with co-infections (Figure 4).
- Of these admissions, 103 were paediatric (<16 years of age) cases and 268 were in adults. Twenty-four cases were admitted to ICU/HDU.

Figure 4: FluCAN – Number of confirmed influenza hospital admissions in NSW, 03 April – 11 September, 2016.



2. Laboratory Surveillance

For the week ending 11 September 2016 the number and proportion of respiratory specimens reported by NSW sentinel laboratories [5] which tested positive for influenza A or influenza B decreased and indicates that the peak of activity for 2016 occurred during the week ending 4 September (Table 2).

A total of 12,139 tests for respiratory viruses were reported this week with 28.2% testing positive for influenza viruses, down from 13,167 tests and a 31.7% influenza-positive rate in the previous week. Influenza A(H3N2) is the dominant circulating influenza strain while influenza B activity remains at a low level (Figures 5 and 6). Influenza activity is expected to continue to decrease over the next few weeks.

[5]: 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.

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Participating sentinel laboratories: Pathology North (Hunter, Royal North Shore Hospital), Pathology West (Nepean, Westmead), South Eastern Area Laboratory Services, Sydney South West Pathology Service (Liverpool, Royal Prince Alfred Hospital), The Children's Hospital at Westmead, Australian Clinical Labs, Douglas Hanly Moir Pathology, Laverty Pathology, Medlab, SydPath, VDRLab to June 2016.

Influenza was the leading respiratory virus reported, with other viruses circulating at usual but increasing levels for this time of year (Table 2).

Table 2: Summary of testing for influenza and other respiratory viruses at NSW laboratories, 1 January to 11 September 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 | (%A) | Total | (%A) | Total | (%A) | Total | (%) | | | | | | |
| 31/01/2016 | 8079 | 270 (3.3%) | 45 (16.7%) | 114 (42.2%) | 111 (41.1%) | 38 (0.5%) | | | | | | | | | |
| 28/02/2016 | 9810 | 397 (4.0%) | 54 (13.6%) | 199 (50.1%) | 144 (36.3%) | 96 (1.0%) | | | | | | | | | |
| 03/04/2016* | 14699 | 555 (3.8%) | 32 (5.8%) | 271 (48.8%) | 248 (44.7%) | 138 (0.9%) | | | | | | | | | |
| 01/05/2016 | 13614 | 457 (3.4%) | 16 (3.5%) | 268 (58.6%) | 173 (37.9%) | 152 (1.1%) | | | | | | | | | |
| 29/05/2016 | 15760 | 398 (2.5%) | 57 (14.3%) | 157 (39.4%) | 184 (46.2%) | 115 (0.7%) | | | | | | | | | |
| 03/07/2016* | 22487 | 1065 (4.7%) | 227 (21.3%) | 269 (25.3%) | 569 (53.4%) | 167 (0.7%) | | | | | | | | | |
| 31/07/2016 | 24176 | 3796 (15.7%) | 1021 (26.9%) | 722 (19.0%) | 2052 (54.1%) | 291 (1.2%) | | | | | | | | | |
| 28/08/2016 | 40031 | 10953 (27.4%) | 1852 (16.9%) | 1002 (9.1%) | 7999 (73.0%) | 705 (1.8%) | | | | | | | | | |
| Week ending | | | | | | | | | | | | | | | |
| 04/09/2016 | 13167 | 3907 (29.7%) | 202 (5.2%) | 127 (3.3%) | 3578 (91.6%) | 273 (2.1%) | | | | | | | | | |
| 11/09/2016 | 12139 | 3163 (26.1%) | 157 (5.0%) | 104 (3.3%) | 2902 (91.7%) | 269 (2.2%) | | | | | | | | | |

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

Figure 5: Weekly influenza positive test results by type and sub-type reported by NSW sentinel laboratories, 1 January to 11 September 2016.

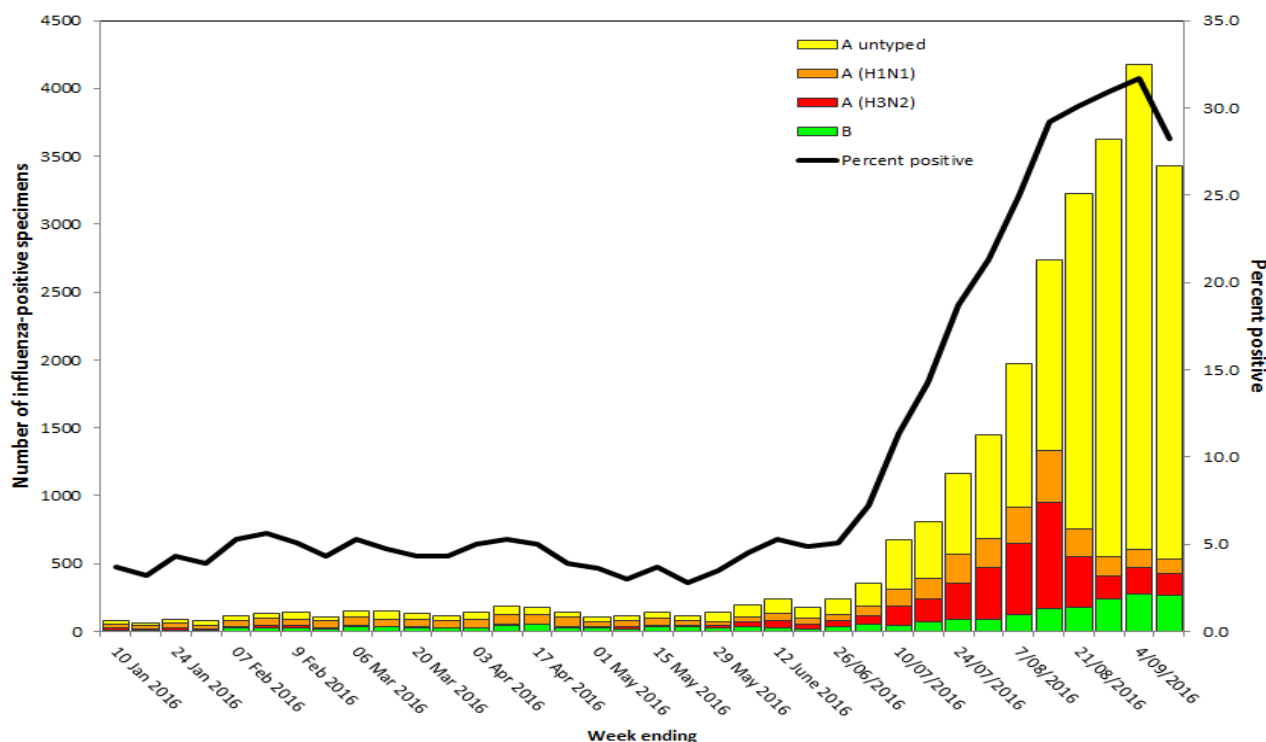
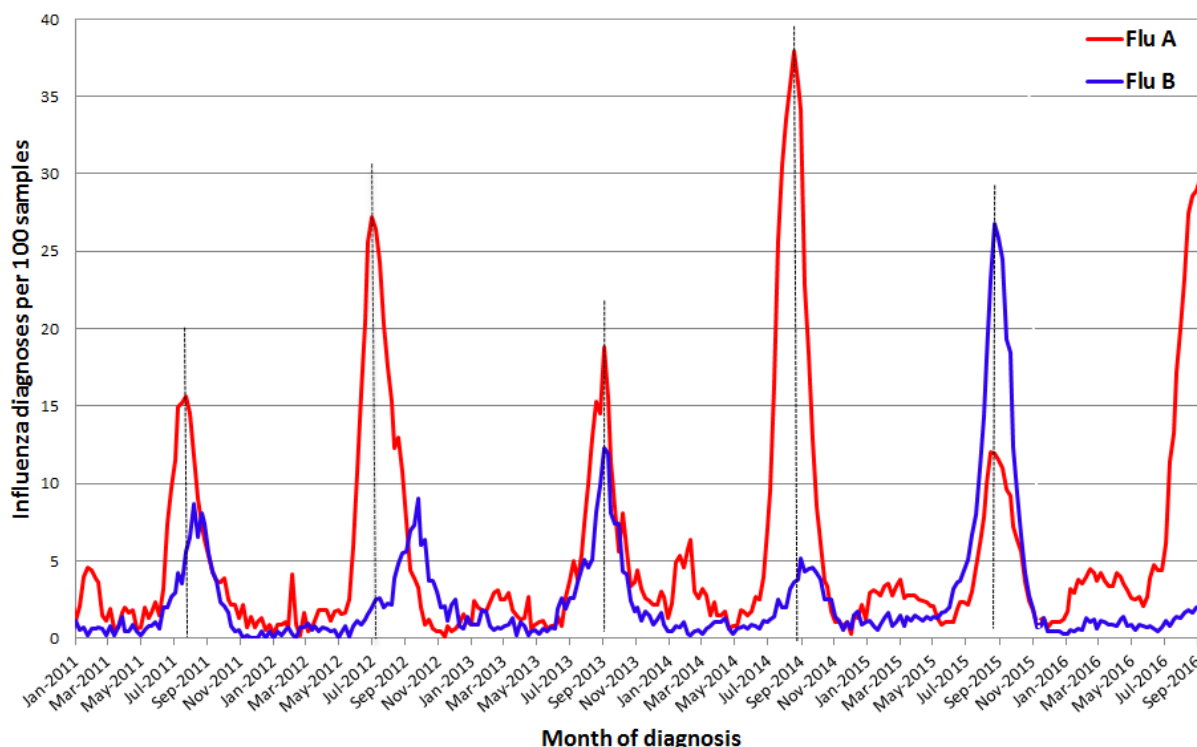


Figure 6: Percentage of laboratory tests positive for influenza A and influenza B by week, 1 January 2010 – 11 September 2016, New South Wales.



3. Community Surveillance

Influenza notifications by Local Health District (LHD)

In the week ending 11 September there were 3,211 notifications of influenza confirmed by polymerase chain reaction (PCR) testing, lower than the 3,628 notifications in the previous week.

Population rates were highest in the Murrumbidgee, Northern Sydney and Western Sydney Local Health Districts (Table 3). Overall notifications decreased in the majority of areas with the exception of the Murrumbidgee area who had an increase in notifications 70.77 up from 56.95 in the previous week.

Table 3: Weekly notifications of laboratory-confirmed influenza by local health district.

| Local Health District | Week ending 11 Sep 2016 | | Previous 4 weeks | |
|-----------------------|-------------------------|-----------------------------|-------------------------|-----------------------------|
| | Number of notifications | Rate per 100 000 population | Number of notifications | Rate per 100 000 population |
| Central Coast | 126 | 37.26 | 104 | 30.76 |
| Far West | 2 | 6.56 | 1 | 3.28 |
| Hunter New England | 380 | 41.46 | 271 | 29.6 |
| Illawarra Shoalhaven | 122 | 30.29 | 114 | 28.24 |
| Mid North Coast | 45 | 20.69 | 43 | 19.77 |
| Murrumbidgee | 169 | 70.77 | 87 | 36.33 |
| Nepean Blue Mountains | 164 | 43.76 | 189 | 50.36 |
| Northern NSW | 95 | 31.63 | 92 | 30.55 |
| Northern Sydney | 619 | 68.26 | 600 | 66.11 |
| South Eastern Sydney | 324 | 35.85 | 373 | 41.25 |
| South Western Sydney | 329 | 34.05 | 319 | 33.02 |
| Southern NSW | 73 | 35 | 58 | 27.69 |
| Sydney | 233 | 37.07 | 236 | 37.47 |
| Western NSW | 98 | 35.34 | 43 | 15.41 |
| Western Sydney | 432 | 45.63 | 516 | 54.5 |

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

Influenza outbreaks in institutions

There were 36 new respiratory outbreaks reported this week; all but one were due to influenza A. All outbreaks this week were in residential aged care facilities except for two in mental health facilities, one in a hospital ward and one in a military facility (Table 4).

In the year to date there have been 210 laboratory confirmed influenza outbreaks in institutions reported to NSW public health units (Table 4): 203 have been due to influenza A, five were influenza B, and two were combined influenza A and B outbreaks. At least 1,926 residents were reported to have had ILI symptoms and 203 required hospitalisation. Ninety-nine 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. In 2015, influenza B was the predominant strain, and was also the cause of some influenza outbreaks in institutions, particularly residential aged care facilities (Table 4).

Table 4: Reported influenza outbreaks in NSW institutions, January 2010 to 21 August 2016.

| Year | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016* |
|---------------------|------|------|------|------|------|------|-------|
| Number of outbreaks | 2 | 4 | 39 | 12 | 120 | 103 | 210 |

Notes: * Year to date.

Electronic General Practice Surveillance (eGPS)

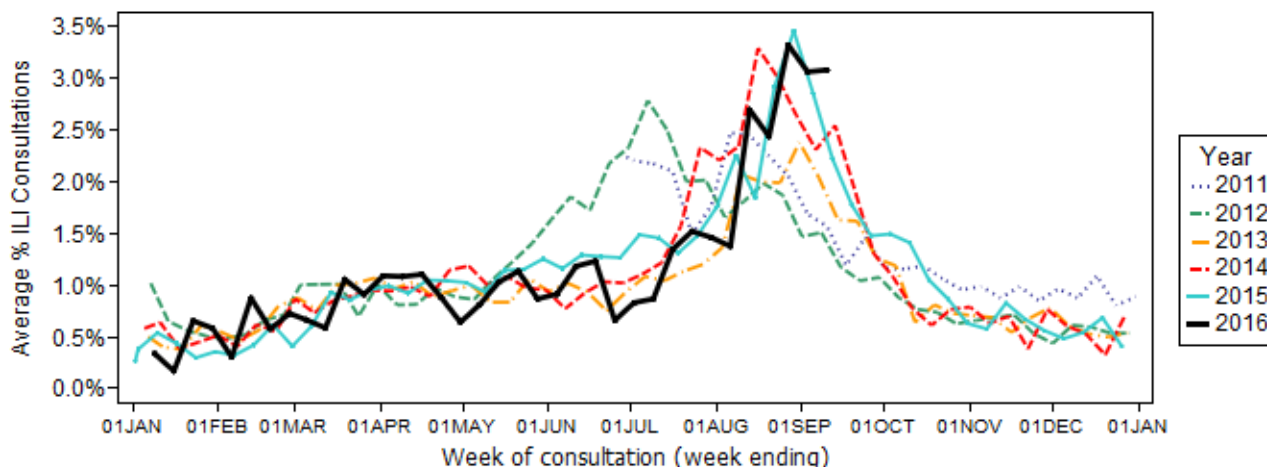
eGPS is a primary care influenza surveillance system involving sentinel general practices within three NSW Local Health Districts (LHD): Northern Sydney (NS), South Eastern Sydney (SES) and Illawarra Shoalhaven (IS). The system monitors patient consultations for influenza-like illness (ILI) as an indicator 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.

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 36:

- there were 5 surveillance reports received from eGPS sentinel practices in NSW;
- the average rate of ILI patient consultations was 3.1% (range 1.3 – 4.6%), the same as the previous week (Figure 7).

Figure 7. Average rate of influenza-like presentations to sentinel general practices by week of consultation 2011-2016 (year to date).



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 36 there were 43 ASPREN reports received from NSW GPs. The overall consultation rate for ILI was moderate at 2.9%, higher than the previous week (2.6%).

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.

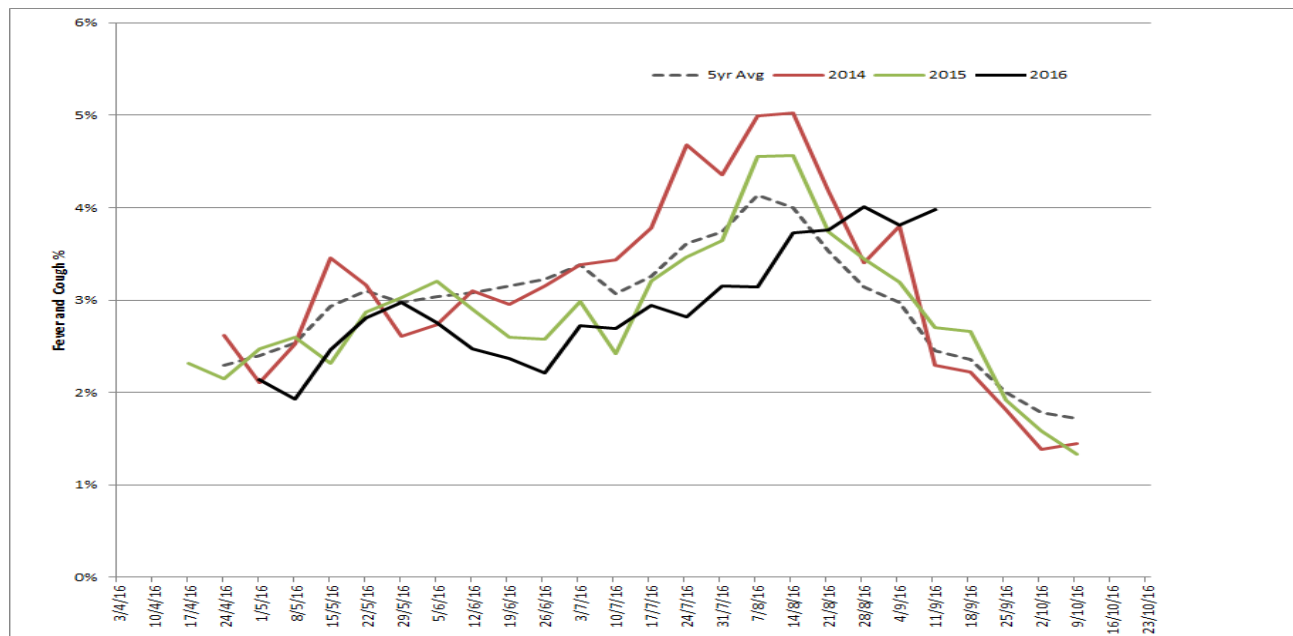
Participants complete a simple online weekly survey which is used to generate data on the rate of ILI symptoms in communities.

In week 36 FluTracking received reports for 7283 people in NSW with the following results:

- 4.0% of respondents reported fever and cough, higher than the previous week (3.8%) (Figure 8).
- 2.6% of respondents reported fever, cough and absence from normal duties, similar to the previous week (2.5%) (data not shown).

Across Australia, fever and cough was reported by 2.3% of vaccinated participants and 2.9% of unvaccinated participants. Fever, cough and absence from normal duties was reported by 1.6% of vaccinated participants and 2.2% of unvaccinated participants.

Figure 8: FluTracking – weekly influenza-like illness reporting rate, NSW, 2011 – 2016.



For further information please see the [FluTracking](#) website.

4. National and International Influenza Surveillance

National Influenza Surveillance

In the *Australian Surveillance Report No.7*, with data up to 2 September 2016, influenza activity continued to increase at the national level, with most regions of Australia reporting widespread and increasing activity. Of note:

- National indicators of influenza-like illness (ILI) declined in the last fortnight, suggesting that the season may be close to peaking. The proportion of patients presenting to sentinel general practitioners with ILI and testing positive for influenza declined slightly this fortnight.
- Influenza A(H3N2) continued to be the dominant circulating influenza virus nationally in recent weeks, noting jurisdictional variation.
- Notification rates for the year to date have been highest in adults aged 85 years or older, with a secondary peak in the very young, aged less than 5 years. This is consistent with influenza A(H3N2) being typically more prevalent in older age groups.
- Clinical severity for the season to date, as measured through the proportion of patients admitted directly to ICU and deaths attributable to pneumonia or influenza, is low to moderate.
- To date, the seasonal influenza vaccines appear to be a good match for circulating virus strains.

Follow the link for the [Australian Influenza Surveillance Reports](#) which provide the latest information on national influenza activity.

Global Influenza Update

The latest [WHO global update on 5 September 2016](#) provides data up to 21 August. Influenza activity varied in countries of temperate South America and increased steadily in the last few weeks in South Africa and Oceania. Influenza activity in the temperate zone of the northern hemisphere was at inter-seasonal levels. Follow the link for the [WHO influenza surveillance reports](#).

Avian Influenza Update:

Human infections with avian influenza viruses

The monthly WHO risk assessment of human infections with avian and swine influenza viruses (see [Influenza at the human-animal interface](#)) was published on 19 July 2016. This report provides updated information on human cases of infection with animal influenza viruses and outbreaks among animals caused by novel influenza strains.

Of note:

- Since the previous update, new human infections with A(H5N1), A(H7N9), A(H9N2) and A(H1N2)v viruses were reported.
- The overall public health risk from currently known influenza viruses at the human-animal interface has not changed. Further human infections with viruses of animal origin can be expected, but the likelihood of sustained human-to-human transmission remains low.

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](#).

5. Composition of 2016 Australian influenza vaccines

The National Immunisation Program (NIP) used quadrivalent influenza vaccines in 2016 for the first time. The four strains chosen are based on the recommendations of the WHO Consultation on the Composition of Influenza Vaccines for the 2016 Southern Hemisphere. Following the Consultation, WHO announced its recommendations for the composition of trivalent and quadrivalent vaccines for use in the 2016 influenza season (southern hemisphere winter).

For trivalent vaccines:

- 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).

For quadrivalent vaccines it was recommended that a second influenza B virus be added:

- a B/Phuket/3073/2013-like virus (Yamagata lineage).

Of note, the trivalent vaccine recommendations included strain changes for both the A(H3N2) and B components. The recommended A(H1N1) strain has remained unchanged since 2010. More details about the most recent influenza vaccine recommendations can be found at:

http://www.who.int/influenza/vaccines/virus/recommendations/2016_south/en/.

The WHO consultation on the composition of influenza vaccines for the Northern Hemisphere 2016-2017 was held in February 2016. The recommended composition was unchanged from the composition recommended for the 216 Southern Hemisphere vaccines (above). For information about the Northern Hemisphere vaccine recommendations can be found at:

http://www.who.int/influenza/vaccines/virus/recommendations/2016_17_north/en/