Sydney Local Health District
Influenza Annual Report
2017
Disclaimer

This report is produced by the Sydney Local Health District (SLHD) Public Health Unit (PHU). The data regarding disease notifications have been obtained using the NSW Notifiable Conditions Information Management System (NCIMS), accessed through the Secure Analytics for Population Health Research and Intelligence (SAPHaRI) platform on 1 February 2018. Information in the database is obtained from the diagnosing doctor. All dates related to notification data in this report are based on the symptom onset dates. When the symptom onset date is unknown, the earlier of either the specimen collection date or notification date is used. Only notifications in NSW residents are included in this report.

The data regarding emergency department presentations and admissions were obtained through the NSW Emergency Department Records for Epidemiology (EDRE), accessed through SAPHaRI on 1 February 2018. All dates related to emergency department presentations or admissions in this report are based on the date of arrival at the emergency department. Emergency department presentation or admission data are presented based on the postcode residence of the case, not based on facilities located within SLHD.

The data regarding hospitalisations were taken from the admitted patient data collection (APDC) dataset accessed through SAPHaRI on 6 February 2018. APDC records all inpatient separations (i.e. hospitalisations both overnight and same day) from all public, private, psychiatric and public nursing homes in NSW. Separation date determines the year of hospitalisation and data were extracted for NSW residents only. The count of hospitalisations in this report is based on an episode of care and a patient can have several episodes of care during one hospital stay. Both overnight and day admissions are included in the count of hospitalisations. Influenza and pneumonia hospitalisations are extracted from this database based on the principal diagnostic ICD-10 codes J09-J18. NSW residents hospitalised interstate are not accounted for in this analysis. The APDC dataset for NSW has been historically updated on an annual basis for the preceding complete fiscal year i.e. data were complete for the 2016-17 fiscal year at the time of data extraction. Therefore data on influenza hospitalisations contained within this report are for the 2016 calendar year only.

All residential aged care facilities (ACFs) across NSW are encouraged to notify their local PHU of any outbreaks of influenza-like illness during the influenza season. As there is no mandatory notification process, reported data on outbreaks in ACFs may not represent the true burden in the community and therefore must be interpreted with caution.

It is a mandatory requirement of all ACFs to report any death of a resident during an influenza outbreak, whether the individual was affected by influenza or not. The Australian Department of Health also sets targets for the influenza vaccination coverage rates of both staff (95%) and residents (95%) in ACFs in the national guidelines.¹

The vaccination coverage rates in this report were taken from the Health Statistics NSW web portal (http://www.healthstats.nsw.gov.au/) on 2 February 2018. These data are extracted from the NSW Population Health Survey, which is an annual computer-assisted telephone survey providing information regarding behavioural risk factors and access to health services for the NSW population. The population for the survey includes 8 000-16 000 NSW residents, including approximately 1 000 people per LHD. Vaccination rates reported from this survey should be interpreted with caution as they may not accurately reflect population level coverage rates for influenza.

In this report, disease or emergency department rates were calculated using the Australian Bureau of Statistics’ estimated resident population data for SLHD and NSW. Note that numbers may vary depending on the date the data were extracted from the database. The data within this report may be subject to revision and should not be published or distributed further without approval of the Director, SLHD Public Health Unit.

Please note: due to the late release of updated 2016 census population estimates from NSW Health (i.e. end of April 2018), the rates of disease by LGA in this series of annual reports are by the 2011 LGA boundaries only.

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Background to this report

In Australia, influenza is usually most prevalent during autumn and winter when seasonal epidemics occur. In Australia, it has been estimated that 13 500 hospitalisations and 3 000 deaths due to influenza occur each year in people aged 50 years and over. Secondary complications from influenza infection include bacterial infection, particularly pneumonia, bronchitis, and cardiac infections.

Vaccination is the best protection for individuals against infection and complications from the disease. Children less than five years, adults aged 65 years and over, and other people with chronic conditions are at greatest risk of complications from influenza. Influenza and pneumococcal vaccination are offered free of charge in Australia as part of the National Immunisation Program to groups at risk of severe disease and complications, including pregnant women, people aged 65 years and over, and Aboriginal children (<5 years) and adults. In 2018 it will also be offered free of charge to all children aged between 6 months and 5 years of age. In 2016, the quadrivalent influenza vaccine (protecting against two influenza A types and both types of influenza B) was introduced as part of the national immunisation schedule.

Influenza is a notifiable disease under the NSW Public Health Act 2010. NSW Health reports on the influenza burden in NSW during each season, and provides an annual report on influenza activity. These reports are available from the NSW Health webpage at http://www.health.nsw.gov.au/Infectious/Influenza/Pages/reports.aspx. This annual report is designed to provide information on the epidemiology of influenza for clinicians, policy makers and service planners within SLHD on the local population.

Two factors may influence the interpretation of the data in this report. Firstly, a rapid PCR test for detection of influenza (by subtype only) was introduced into most public tertiary hospitals in NSW in 2017, which may have led to increased testing rates. Secondly, NSW Health data shows that influenza testing in NSW has increased five-fold over the last five years (i.e. 2012 to 2016), with the average number of tests performed for influenza in NSW at 133 953/year (range 48 529 – 260 426). The annual average positive notification ratio (number of laboratory tests positive for influenza/100 tests performed) increased from 11.6 in 2012 to 13.9 in 2016. In 2017, there were 254 370 tests performed and a positive notification ratio of 38.6 tests positive/100 tests performed, a significant increase in testing as well as the number of respiratory samples found positive for influenza during 2017.

Please note: due to the late release of updated 2016 census population estimates from NSW Health (i.e. end of April 2018), the rates of disease by LGA in this series of annual reports is by the 2011 LGA boundaries only.

Executive summary

This report provides a summary of the epidemiology of influenza in Sydney Local Health District (SLHD) for 2017, and is intended to complement state level data reported by NSW Health. The key findings for SLHD are:

- Total notifications and age-standardised rates for influenza were the highest in 2017 for NSW and SLHD compared to the last ten years, with over 8000 SLHD residents infected with influenza in 2017. Note that the number of influenza tests performed in NSW in 2017 was double the annual average number of tests performed in the previous five years. Since 2012, the annual average positive notification ratio (number of tests positive/100 tests performed) for influenza has increased over three fold in NSW.
- Between 2008 and 2014, there was little difference between age-standardised rates for males and females in SLHD compared to NSW. However rates of influenza in females vs males have diverged across SLHD and NSW from 2015. In 2017, age-standardised rates for influenza were higher for females compared to males in SLHD, and across NSW.
- During the last ten years, children under 5 years of age in SLHD have generally experienced the highest influenza rates compared to other age groups. This trend continued in 2017, with the influenza rates highest in children aged 0-4 years, followed by those aged 5-19 years and greater than 65 years.
- During the last ten years, influenza notifications have generally been influenza A. However, in 2017 greater than 40% of all samples tested were influenza B.
- From 2008 to 2013, age-standardised influenza notification rates in all SLHD Local Government Areas (LGAs) were stable; however, from 2014 to 2017 influenza notification rates increased 5-8 times in all LGAs in SLHD, with this trend reflected across NSW. In 2017, Canada Bay LGA had the influenza highest notification rates of all SLHD LGAs.
- There were 25 outbreaks of influenza in SLHD aged care facilities (ACFs) in 2017, the highest number reported since 2014. However, hospitalisation rates of SLHD ACF residents halved between 2014 and 2017. Estimated influenza vaccination rates for residents and staff in SLHD ACFs still remain below the targets set by the Australian Department of Health.
- In 2017, the number of emergency department (ED) presentations and admissions by SLHD residents related to influenza and pneumonia was the highest compared to the last ten years, with the peak of activity from July –September accounting for 40-45% of the total ED presentations and admissions for influenza and pneumonia.
- Age-standardised hospitalisation rates for influenza and pneumonia remained lower for SLHD residents compared to average NSW rates for 2016.
- Influenza vaccination coverage rates for SLHD residents aged 65 years and over were comparable to NSW coverage rates in this age group. However, vaccine coverage rates for pneumococcal vaccine appear to have been declining over the last five years in NSW, with SLHD having coverage rates of less than 50% in this age group.
1. Epidemiology of influenza notifications in SLHD

1.1 Notifications and age-standardised rates by year

Figure 1: Influenza notifications and age-standardised rates (per 100 000 population), 2008 - 2017, SLHD and NSW*

- Total notifications and age-standardised rates for influenza were the highest in 2017 for NSW and SLHD compared to the last ten years, with over 8000 SLHD residents infected with influenza in 2017.
- Between 2008 and 2017, the age-standardised rate of influenza has been fairly similar between NSW and SLHD.

*Note: During 2009 when the H1N1 influenza pandemic strain was circulating, laboratory testing for influenza ceased mid-way through the season to conserve overall laboratory capacity for other routine tests in laboratories across NSW.
1.2 Age-standardised notifications by gender

Figure 2: Influenza age-standardised notification rates for SLHD by gender: 2008 to 2017

![Influenza age-standardised notification rates for SLHD by gender: 2008 to 2017](image)

Source: Notifiable Conditions Incident Management System (NCIMS). 01/02/2018.

- Between 2008 and 2014, there was little difference between age-standardised rates for males and females in SLHD compared to NSW. However rates of influenza in females vs males have diverged across SLHD and NSW from 2015. In 2017, age-standardised rates for influenza were higher for females compared to males in both SLHD and NSW.
- Proportionately, more females have been affected by influenza than males in SLHD over the last ten years, and this is consistent with NSW data.
1.3 Age-specific influenza notification rates for SLHD

Figure 3: Influenza age-specific notification rates (per 100,000 population), 2008–2017, SLHD

- During the last ten years, children aged 0-4 years in SLHD have generally experienced the highest rates of influenza compared to other age groups. This trend continued in 2017, with the highest rates of disease experienced by children aged 0-4 years, followed by those aged 5-19 years and those aged 65 years and over.

Source: Notifiable Conditions Incident Management System (NCIMS). 01/02/2018
1.4 Notifications by Local Government Area (LGA) in SLHD

Figure 4: Age-standardised notification rates for influenza (per 100 000 population) by LGA, 2008 – 2017, SLHD*

* Only the portion of Sydney LGA within the SLHD boundary is included.

Source: Notifiable Conditions Incident Management System (NCIMS). 01/02/2018.

- Between 2008 and 2013, age-standardised influenza notification rates in all SLHD LGAs were stable, followed by a 5-8 fold increase in all LGAs between 2014 and 2017.
- In 2017, Canada Bay LGA had the highest influenza notification rate of all SLHD LGAs.
1.5 Notifications by subtype of influenza in SLHD

Figure 5a: Proportion of influenza samples by subtype, 2008 - 2017, SLHD

- During the last ten years, influenza notifications have remained predominantly influenza A. However, in 2015 and 2017, greater than 50% and 40% of all samples tested were influenza B, respectively.

Figure 5b: Subtype of influenza notifications in SLHD, 2017, by age group

- During the last year, influenza A has been the dominant subtype (Figure 5a), with influenza B more prominent in children < 15 years (Figure 5b).
1.6  *Influenza outbreaks in aged care facilities (ACFs)*

Table 1: Comparison of influenza outbreaks in aged care facilities, SLHD, 2014-2017*

<table>
<thead>
<tr>
<th></th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of outbreaks</td>
<td>7</td>
<td>5</td>
<td>19</td>
<td>25</td>
</tr>
<tr>
<td>Number of residents affected with ILI (number with ILI who are lab confirmed)</td>
<td>91</td>
<td>59</td>
<td>301 (147)</td>
<td>413 (202)</td>
</tr>
<tr>
<td>Number of staff affected (number with ILI who are lab confirmed)</td>
<td>45</td>
<td>12</td>
<td>134 (40)</td>
<td>94 (25)</td>
</tr>
<tr>
<td>Number of residents with ILI who were hospitalised</td>
<td>21 (23%)</td>
<td>13 (22%)</td>
<td>44 (15%)</td>
<td>46 (11%)</td>
</tr>
<tr>
<td>Number of resident deaths due to influenza</td>
<td>11 (12%)</td>
<td>4 (7%)</td>
<td>11 (4%)</td>
<td>10 (2%)</td>
</tr>
<tr>
<td>Estimated resident vaccination rate (range)</td>
<td>90-100%</td>
<td>61-100%</td>
<td>21-100%</td>
<td>44-100%</td>
</tr>
<tr>
<td>Estimated staff vaccination rate (range)</td>
<td>36-42%</td>
<td>35-51%</td>
<td>9-92%</td>
<td>3-92%</td>
</tr>
</tbody>
</table>

*The data reported above relate only to those influenza outbreaks notified to the PHU during the influenza season. Note that it is not mandatory for ACFs to notify the PHU of influenza outbreaks.

- The proportion of ACF residents hospitalised during an influenza outbreak decreased between 2014 and 2017 from 23 to 11%.
- Although the estimated range of vaccination rates amongst residents remains high in most ACFs, there were a number of ACFs in 2017 reporting sub-optimal rates (i.e. >95% as set by the Department of Health).
- Staff vaccination rates in ACFs of SLHD are also sub-optimal compared to the targets set by the Department of Health (>95% staff vaccinated with influenza vaccine).
2. Burden of influenza disease within SLHD

2.1 Emergency department presentations and admissions

Figure 6: Emergency department presentations for influenza and pneumonia, 2012 - 2017, by year and month

Source: Emergency Department Records for Epidemiology. 01/02/2018.

Figure 7: Emergency department admissions for influenza and pneumonia, 2012 - 2017, by year and month

Source: Emergency Department Records for Epidemiology. 01/02/2018.
• The total number of emergency department (ED) presentations related to influenza and pneumonia for SLHD residents was the highest in 2017 (n=2245, 15% higher than in 2016) compared to the last ten years (Figure 6), with the peak of activity from July –September accounting for 45% of the total ED presentations for influenza and pneumonia in 2017.

• The total number of ED admissions related to influenza and pneumonia for SLHD residents was the highest in 2017 (n=1465, 13% higher than 2016) compared to the last ten years (Figure 7), with the peak of activity from July – September accounting for 40% of the total ED admissions for influenza and pneumonia in 2017.
2.2 Hospitalisation rates for influenza and pneumonia: NSW vs SLHD

Figure 8: Hospitalisation rates for influenza and pneumonia (all ages), 2008 – 2016, NSW vs SLHD

Source: Admitted Patient Data Collection. 06/02/2018.

2.3 Hospitalisation rates for influenza and pneumonia in SLHD by age

Figure 9: Age-specific hospitalisation rates (per 100 000 population) for influenza and pneumonia, 2008-2016, SLHD

Source: Admitted Patient Data Collection. 06/02/2018.

- Age-standardised hospitalisation rates for influenza and pneumonia remain lower for residents of SLHD compared to the average NSW rates (Figure 8). As noted in NSW, people aged 65 years and over are at increased risk of hospitalisation for influenza and pneumonia compared to all other age groups (Figure 9).
3. Vaccination coverage rates for influenza

3.1 Vaccination coverage rates for SLHD

Figure 10: Influenza and pneumococcal vaccine coverage rates for persons aged 65 years and over (%), by year: NSW vs SLHD*


*Note: vaccination coverage rates on Health Statistics NSW are reported by fiscal year, the data has been represented in terms of calendar years above for consistency and ease of interpretation in regards to this report.

- Influenza vaccination coverage rates for SLHD residents aged 65 years and over are fairly comparable to that achieved across NSW. However, vaccine coverage rates for pneumococcal vaccine appear to have been declining over the last five years across NSW, with SLHD having coverage rates of less than 50% in this age group.
- Pneumococcal vaccine is provided free of charge to residents of SLHD in a high risk group e.g. those aged 65 years and over and people with chronic conditions by general practitioners. SLHD PHU is working with the Central and Eastern Sydney Primary Healthcare Network to explore these findings and implement strategies to improve rates.