1. Influenza Notifications in Queensland

Data Sources: Queensland Health Notifiable Conditions Register 05/09/2011 and ASPREN website 05/09/2011

Influenza Notifications
Year to date (YTD) there have been 8629 notifications of influenza in Queensland. Subtype is recorded for 3275 of the 7053 notifications of influenza A, comprising 2744 pandemic (H1N1)2009 and 531 H3N2. There have been 1569 notifications of influenza B. Typing data were unavailable for seven notifications.

Figure 1 shows notifications for influenza A and B by week of onset and Influenza Like Illness (ILI) presentation rates, per 1000 consultations, by week. Please see section below for an explanation of the Australian Sentinel Practices Research Network (ASPREN). Untyped influenza notifications have been excluded from this graph.

The YTD notification count is 1.6 times the five year mean for the same period. However, it is important to note that the profile of influenza notifications is not the same each year, especially with
regard to the start of the season. Comparison of YTD data, or counts during a particular week, across years may be misleading. In addition, there have been changes to diagnostic methods and test requesting practices in recent years, which may influence counts.

The 2011 profile shows significant inter-seasonal activity at the beginning of the year. There is a sustained increasing trend in notifications from around week 21, which is consistent with the commencement of the 2011 influenza season. The downward trend from week 33 is consistent with a season peak in week 32, with 1004 notifications.

Please note that recent week notifications will usually be underestimated in data presented by date of disease onset.

**Figure 2: Age and gender profile of Influenza notifications and age specific rates in Queensland (2011) to 4th September.**

Data Sources: Queensland Health Notifiable Conditions Register 05/09/2011

*The Estimated Resident Population – (ERP), 2009 was used*


Figure 2 shows 2011 YTD influenza notifications and rates by age group and gender. The highest influenza notification rate occurred in the <1 age group (472.0 per 100,000 population) and the lowest rate occurred in the 80+ age group (90.8 per 100,000 population). The median age of notification was 24 years with an age range of <1 to 96 years. Influenza notifications were slightly higher in females (53%) than males (47%).

Table 1 provides a weekly count of influenza notifications by HSD and YTD totals.
## Table 1: Influenza notifications by week of onset and Health Service District (HSD) from north (top) to south (bottom), Queensland, 2011 (as on 4 September)

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**Queensland (Total)**

| 3 | 101 | 72 | 87 | 118 | 74 | 70 | 108 | 115 | 105 | 110 | 95 | 105 | 87 | 94 | 95 | 57 | 45 | 51 | 71 | 48 | 64 | 87 | 110 | 178 | 206 | 297 |

### YTD Total

| 352 | 345 | 468 | 672 | 732 | 1004 | 758 | 725 | 660 | 308 | 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 8629 |
ASPREN
ASPREN is a national syndromic surveillance program co-ordinated by the Discipline of General Practice at the University of Adelaide and The Royal Australian College of General Practitioners. One of the conditions under surveillance is influenza like illness (ILI).

General practitioners (GP) participating in the ASPREN program contribute data on the proportion of consultations which are ILI related. Currently there are 19 Queensland GPs participating in the program, although not all may participate each week.

Figure 1 shows ILI rates, as presentations per 1000 consultations, for Queensland GPs participating in the ASPREN program. An increasing trend is apparent from week 27 and is generally consistent with the profile of laboratory confirmed influenza notifications. There is a downward trend beginning in week 33. Caution should be used in interpreting these data, which may be subject to change due to delays in data submission. Recent week (36) data may be incomplete.

2. Influenza Activity in Australia (reporting period 6th August to 19th August, 2011)

Last updated 29 August 2011

- Levels of influenza-like illness (ILI) in the community continued to increase through both sentinel general practitioner surveillance systems and ILI presentations to emergency departments.
- Notifications have decreased in Queensland, New South Wales and South Australia, but have continued to increase in all other states and territories. Nationally the number of notifications has decreased in recent weeks. Currently the weekly number of notifications in the ACT, New South Wales, Queensland and Tasmania remain above the peak frequency of notifications observed in 2010.
- During this reporting period there were 3,096 laboratory confirmed notifications of influenza, with Queensland reporting the highest number of notifications, followed by New South Wales and South Australia. Nationally, the majority of virus detections have been pandemic (H1N1) 2009, with co-circulation of influenza B.
- The majority of states and territories have predominately reported pandemic (H1N1) 2009, with co-circulation of influenza B, except in Tasmania where there is mostly influenza B, and in Western Australia where there is mostly pandemic (H1N1) 2009, some A/H3N2 and very little influenza B.
- As at 19 August 2011, there have been 16,990 confirmed cases of influenza reported to the National Notifiable Diseases Surveillance System (NNDSS) in 2011. Currently the weekly number of notifications being reported nationally is above the peak frequency experienced in previous years, except 2009.
- The WHO Collaborating Centre have reported a recent cluster of influenza viruses showing resistance to oseltamivir, all have been the pandemic (H1N1) 2009 subtype.

FluTracking

FluTracking is a pilot online health surveillance system which aims to detect epidemics of influenza. It is a joint initiative of The University of Newcastle, Hunter New England Area Health Service (NSW Health) and Hunter Medical Research Institute. Participation is voluntary and involves the completion of a weekly online survey during the influenza season.
Data are collected on basic demographics, symptoms of ILI and absenteeism. See the FluTracking website for further information about this program or to enrol as a ‘Flu Tracker’.

Burden of Illness Pyramid

A method for estimating the relationship between influenza-like illness at the community level with national influenza laboratory reports. Figure and table below describe surveillance levels from cough and fever through to positive laboratory test for influenza (self-reported) among 1,553 FluTracking participants nationally, for the five weeks beginning week ending 8/5/11 to 5/6/11.

This analysis will be repeated throughout the year to monitor changes in the proportion of ILI cases that progress through each step of the surveillance pyramid as influenza incidence increases. Note that all data is self-report, (see screenshot of questions over page).

Figure 3: Influenza burden of illness pyramid reproduced with permission from Dr Craig Dalton flutracking@hnehealth.nsw.gov.au.

Figure 4 provides a summary of Queensland FluTracking data from May to early August. There is an increasing and divergent trend in the percentage of unvaccinated participants reporting fever and cough from week 30, compared with those who reported vaccination. Although these data are unlikely to be representative of the Queensland population, the trend is consistent with high levels influenza circulation in the community during the reporting period.

Figure 4: Queensland FluTracking weekly fever and cough rate, stratified by vaccination status, weeks 20-33 in 2011. Figure provided by flutracking@hnehealth.nsw.gov.au.

Compiled by the Epidemiology, Surveillance and Research Unit
Communicable Diseases Branch
Health Protection Directorate
Division of the Chief Health Officer
EPI@health.qld.gov.au
5 September 2011
3. **International Influenza Activity (reporting period 6th August to 19th August, 2011)**

The WHO has reported that as at 12 August 2011 influenza activity in the temperate regions of the northern hemisphere remains low or undetectable. In the tropical zone, influenza activity is low, with some transmission reported in countries of the Americas (Dominican Republic, Columbia; and Brazil); western Africa (Ghana and Cameroon); and southern Asia (India, Bangladesh, Thailand and Singapore). Influenza transmission in South Africa has declined to low levels, after peaking in early to mid June. Viral transmission within South Africa was dominated by pandemic A(H1N1) 2009, with smaller numbers of influenza type B.

In New Zealand, for the week ending 21 August 2011, the national rate of ILI consultations are now slightly below the baseline activity levels with half of the twenty district health boards above the national average weekly consultation rate. Influenza type B continues to be the predominant strain followed by influenza A(H3N2).

National Influenza Centres in 52 countries have reported that for the period 17 to 30 July 2011, a total of 1,009 specimens were reported as positive for influenza viruses, 685 (68%) were typed as influenza A and 324 (32%) as influenza B. Of the sub-typed influenza A viruses reported, 52% were pandemic (H1N1)2009 and 48% were influenza A(H3N2).

WHO have released a summary review of the northern hemisphere winter influenza season. The summary review notes that the most commonly detected virus was different in North America, where influenza A(H3N2) and influenza type B co-circulated with pandemic (H1N1) 2009, and Europe, where influenza A(H1N1)2009 was by far the most commonly detected virus. Although it was no longer the predominant influenza virus circulating in many parts of the world, pandemic (H1N1) 2009 otherwise behaved much the same way as it had during the pandemic in terms of the age groups most affected and the clinical pattern of illness. More than 90% of viruses detected around the world during the northern hemisphere influenza season were similar antigenically to those found in the seasonal trivalent influenza vaccine. Antiviral resistance in pandemic (H1N1)2009 remained at a very low level.

The WHO has released their recommendation for the antigen composition of 2011-2012 northern hemisphere influenza season trivalent flu vaccine. It is recommended that vaccines contain the following:
- an A/California/7/2009 (H1N1)-like virus;
- an A/Perth/16/2009 (H3N2)-like virus;
- a B/Brisbane/60/2008-like virus.

This recommended composition is the same as the 2010-2011 Northern Hemisphere and the 2011 Southern Hemisphere vaccine composition.
4. Virology

Typing and antigenic characterisation - WHO Collaborating Centre for Reference & Research on Influenza (WHO CC) in Melbourne

From 1st January to 21st August 2011, there were 1,288 Australian influenza isolates processed by the WHO CC, with 65% (837/1288) type A and 35% (451/1288) type B. Subtyping of influenza A isolates indicated that 73% (611/837) were pandemic (H1N1) 2009 and 27% (226/837) were A/H3N2 (Table 2).

Table 2: Typing of influenza isolates from the WHO Collaborating Centre, from 1 January 2011 to 21 August 2011

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Please note: There may be up to a month delay on reporting of samples
Isolates tested by the WHO CC are not necessarily a random sample of all those in the community

Antigenic characterisation has shown influenza isolates to be a close match with the composition of the 2011 southern hemisphere influenza vaccine with some viruses showing reduced reactivity, however there has been insufficient testing to date to determine any general trends.

Antiviral Resistance

The WHO Collaborating Centre in Melbourne has reported that from 1 January 2011 to 21 August 2011, 12 isolates (out of 1,291 tested) have shown resistance to oseltamivir by enzyme inhibition assay (EIA). A further 7 isolates, out of a total of 57 tested by pyrosequencing, have shown the H275Y mutation known to confer resistance to oseltamivir. A total of 19 influenza viruses have shown resistance to oseltamivir, all have been the pandemic (H1N1) 2009 subtype. The recent increases in oseltamivir resistance, in pandemic (H1N1) 2009 influenza isolates, occurred in New South Wales and are currently being investigated.

Reference
