

2007/2008 Influenza Season Summary



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Introduction

Influenza, commonly referred to as the flu, is a respiratory infection caused by the influenza virus. Various strains of the virus circulate throughout the world year-round, causing local outbreaks. In Canada, flu season usually runs from November to April and an estimated 10-25% of Canadians may get the flu each year¹. Influenza is associated with a considerable economic burden in terms of health care costs, lost days of work or education and general social disruption². Most people will recover from influenza within a week or ten days, but some, including those over 65 years and adults or children with chronic conditions, such as diabetes and cancer, are at greater risk of more severe complications, such as pneumonia or possibly death¹. This report summarizes influenza activity in the Haliburton, Kawartha, Pine Ridge (HKPR) District Health Unit (HU) area during the 2007/2008 flu season (November 2007 to May 2008).

Methods

- **Sporadic cases of influenza reported in HKPR District:** These data are derived from the Integrated Public Health Information System (iPHIS), which contains all the laboratory confirmed cases of influenza reported to the health unit.
- **Immunization coverage rate in HKPR region:** Immunization coverage rate for 2007/2008 flu season was calculated as follows: total vaccine doses administered by HKPR District HU (include doses administered directly through immunization clinics by health unit staff and those supplied through doctors offices, clinics and institutions) divided by the population estimate for HKPR District HU region for the year 2007.
- **Immunization coverage rate in Acute care and Long-term care Facility (LTCF) in HKPR region:** Immunization coverage rate for this group was calculated as follows:
Staff: Number of staff that received immunization divided by total number of staff.
Residents (LTCF): Number of residents that received immunization by total number of residents.
Those who received immunization after November 15, 2008* are not included in the rates reported.
- **Influenza and Respiratory outbreaks:** Any respiratory outbreaks occurring in long term care homes, retirement homes and hospitals, reported to the health unit, are included in this report.
- **Provincial and National data:** The national and provincial data used for comparison in this report are derived from the Flu Watch and the Ontario Influenza Bulletin respectively.

Local Data: Epidemiology

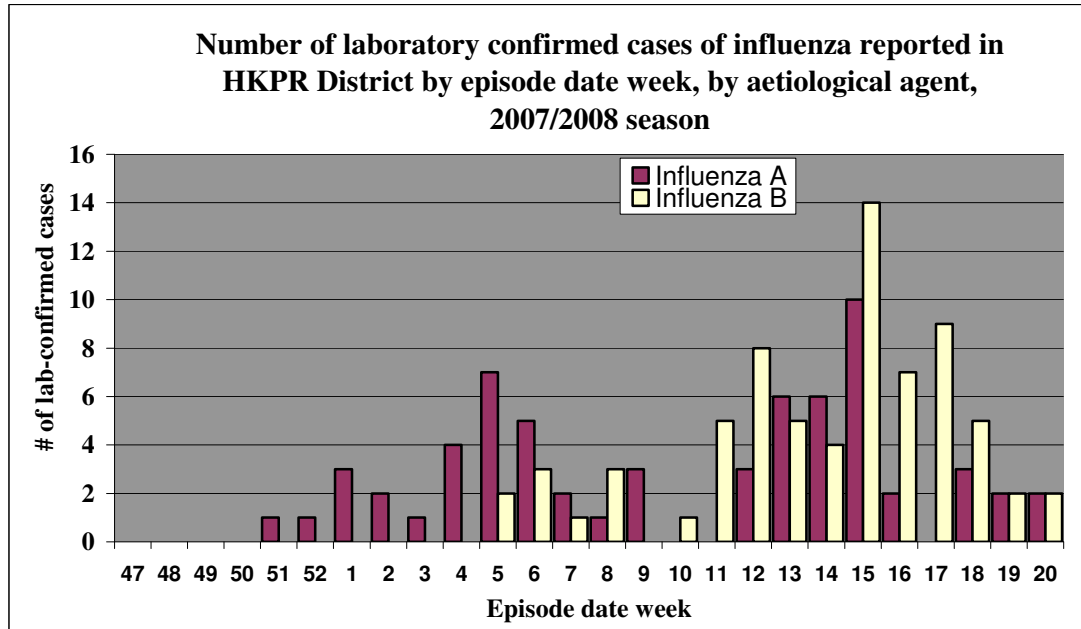
The onset date of the first laboratory confirmed case of influenza for the 2007/2008 influenza season was Dec 21, 2007 which was about a month later than the first case for the previous influenza season. A total of 135 laboratory confirmed cases of influenza were reported to the HKPR District HU during 2007/2008 (Figure 1). The distribution of lab confirmed cases by county is shown in Figure 2. A slightly higher proportion of Influenza B (53%) than Influenza A cases (47%) were reported for 2007/2008; 24% cases were in children (14 years and younger) and approximately 15% were in those 65 years and older (Figure 3). Equal proportions (50%) of male and female cases were reported.

* Dead line provided by the Ministry of Health

Local Respiratory Outbreaks

A total of 24 respiratory institutional outbreaks were reported to the HKPR District HU during the 2007/2008 influenza season. The outbreaks reported included one Influenza A, one Influenza B, three Respiratory Syncytial Virus, one Parainfluenza virus and eighteen undetermined organism(s).

Figure 1

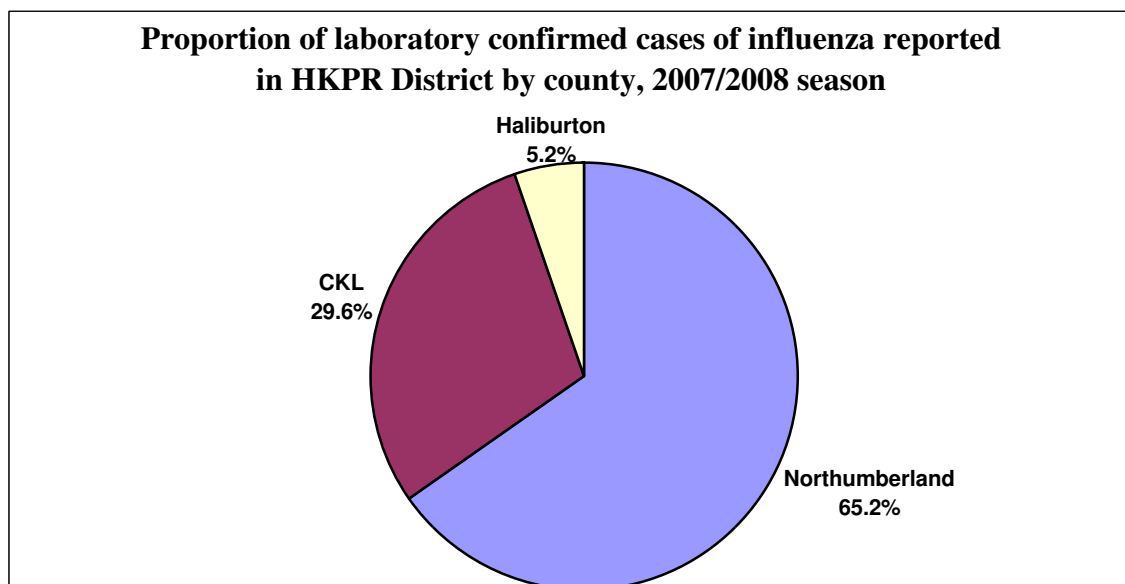


Note: Episode date start week # 47: November 18 –24, 2008

Episode date end week # 20: May 11 –May 17, 2008

- One case of Influenza B was reported in June, but not included in the graph, as it was reported after the local flu season was declared over by the HKPR District HU.

Figure 2



Comparison with Previous Influenza Seasons

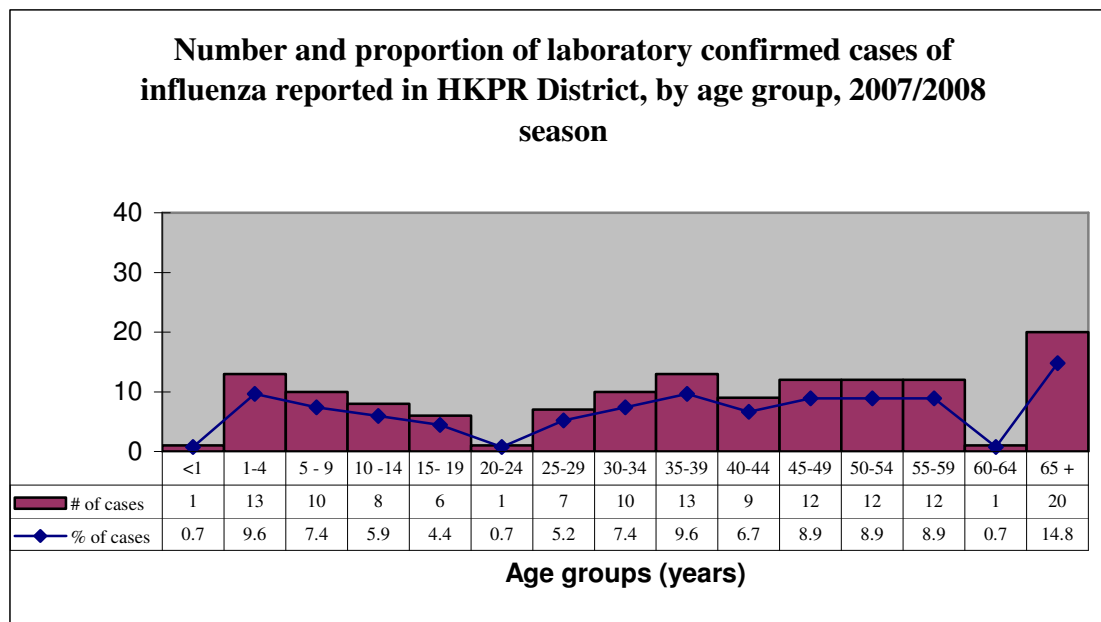
The 2007/2008 season was compared with the previous two influenza seasons (2005/2006 and 2006/2007) (Table 1). During the 2007/2008 season, 135 cases were reported including both influenza A and B, 47% and 53% respectively. There were 140 laboratory confirmed cases of influenza reported in HKPR District during the 2006/2007 influenza season of which 99% were influenza A and 1% was influenza B. During the 2005/2006 influenza season, 65% of the total number of cases reported (n=106) were influenza B and 35% were influenza A. Clear shifts in proportions of influenza A versus B reported between consecutive influenza seasons for the last three seasons were observed.

Table 1: Comparison of 2007/2008 Influenza season with previous seasons

Influenza season	Influenza A	Influenza B	Total cases
2005/2006	37 (35%)	69 (65%)	106
2006/2007	138 (99%)	2 (1%)	140
2007/2008	64 (47%)	71 (53%)	135

During the 2007/2008 season, 24% of the cases were in children up to 14 years of age which was significantly higher than the number reported for those 65+ years (14.8%) (Figure 3). The trend was similar when broken down by the etiological agent (Influenza A rate for <14 years age group was 29% and for 65+ age group was 15.6%; Influenza B rate for <14 years was 18.3% and for 65+ age group was 14%). The distribution of cases among various age groups was similar for the previous two influenza seasons. Canadian data for 2007-2008 season showed that the majority of influenza A cases were reported in children <10 years of age (24.1% or 1,290/5,356), followed by adults between 25 to 44 years of age (22.0% or 1,180/5,356). The majority of influenza B cases were in adults > 65 years of age (25.8% or 970/3,765) followed by those 25 to 44 years of age (19.8% or 746/3,765).

Figure 3



Provincial Summary (2007/2008 Season)

Provincial summary data were obtained from the weekly Ontario Influenza Bulletins³ (September 1, 2007 to May 24, 2008). For that time period in Ontario, a total of 5064 influenza cases were reported. Influenza A accounted for approximately 59% of cases and the other 41% were influenza B cases. A total of 771 respiratory outbreaks were reported in Ontario. The causative organisms identified for these outbreaks were as follows: influenza A (19.1%), influenza B (18.7%), influenza A and B (2%), Parainfluenza (4%), respiratory syncytial virus (5.8%), other organisms (3.4%) and no organisms identified (47%).

National Summary (2007/2008 Season)

The National summary information are based on data provided by the Public Health Agency of Canada through the FluWatch program. This report summarizes influenza activity in Canada reported in the 2007-2008 Season Update⁴ during the current 2007-2008 season from August 27, 2007, up to and including May 17, 2008 weekly flu reports⁵. Influenza activity in Canada overall was relatively mild from September to late December 2007, except in some regions in Alberta and Ontario, where localized influenza activity was reported mid to late October 2007. Influenza activity steadily increased across the country from mid-January to early April and then declined. Overall influenza activity in Canada for the 2007-2008 season remained mild to moderate and was similar to the previous two seasons³.

Regional variations in the peak and spread of influenza A and influenza B detections were also observed. In Ontario, British Columbia and Quebec, influenza A detections predominated and peaked first (in January and February), followed by increases in influenza B detections later in the season (between late February to early April). Dual peaks for influenza A detections were observed in Ontario; the first peak occurred in early January 2008 followed by a second peak in late March to mid-April. The majority of influenza A cases were reported in children < 5 years of age (24.1% or 1,290/5,356), followed by adults between 25 to 44 years of age (22.0% or 1,180/5,356). The majority of influenza B cases were in adults > 65 years of age (25.8% or 970/3,765) followed by those 25 to 44 years of age (19.8% or 746/3,765).

To date, 1,281 influenza viruses have been antigenically characterized by the National Microbiology Laboratory (NML): 461 (36.0%) A (H1N1), 218 (17.0%) A (H3N2) and 602 (47.0%) B viruses. Of the 461 influenza A (H1N1) viruses characterized, 439 (95.2%) were antigenically similar to A/Solomon Islands/3/2006 and 22 (4.8%) were antigenically similar to A/Brisbane/59/2007. Of the 218 influenza A (H3N2) viruses characterized, 9 (4.1%) were antigenically similar to A/Wisconsin/67/2005 and 209 (95.9%) were antigenically similar to A/Brisbane/10/2007. Of the 602 influenza B isolates characterized, 16 (2.7%) were anti-genically similar to B/Malaysia/2506/2004 and 586 (97.3%) were antigenically similar to B/Florida/4/2006 (belonging to the B/Yamagata lineage). The majority of influenza viruses identified early in the season were influenza A/Solomon Islands/3/2006 (H1N1)-like; however, the number of influenza B/Florida/4/2006 viruses have been increasing since early-January and since the beginning of April represent the majority of influenza strains characterized so far this season.

Vaccine Composition

The 2007/2008 influenza vaccine (trivalent vaccine) contained the following viral antigens:

- A/Solomon Islands/03/2006 (H1N1)-like virus
- A/Wisconsin/ 67/2005 (H3N2)-like virus
- B/Malaysia/2506/2004

A/Wisconsin/67/2005 is antigenically equivalent to A/Hiroshima/52/2005

Vaccine Coverage

The Ontario Universal Influenza Immunization Program (UIIP) provides free influenza vaccine to anyone aged six months and older who lives, works or goes to school in Ontario. Approximately 38.8% of HKPR residents received the annual immunization through UIIP during the 2007/2008 season. The immunization rates were also calculated for long term care and acute care facilities separately. For the 2007/2008 influenza season, the average rate of flu immunization in HKPR District Health Unit's Long Term Care Homes (LTCHs) staff was 72% (range 36-99%) and for residents was 90.6% (range 72-100%), which is slightly lower than immunization rates reported for the 2006/2007 season (84% for staff and 94% for residents). The average coverage rate for staff in acute care setting also decreased from an average of 70% in the 2006/2007 influenza season to an average of 58.5% this year.

Antiviral Resistance

During the 2007/2008 season, the NML has tested 946 influenza A isolates (538 A (H1N1), 408 A (H3N2)) for amantadine resistance and found that 43.6% (412/946) were resistant. On the basis of amantadine resistance patterns observed, Public Health Agency of Canada continues to recommend against the use of amantadine for the treatment and prevention of influenza⁴. Until more data are collected regarding amantadine susceptibility patterns in influenza A strains, Oseltavimир is the drug of choice for both treatment and prophylaxis of influenza A.

Discussion

The rate of Influenza B was slightly higher than influenza A in the HKPR District HU region during the 2007/2008 season, however both the Provincial and National data revealed a slightly higher incidence for Influenza A than Influenza B. National data revealed that some of the influenza A (H3N2) strains reported were closely related to the vaccine strains A/Solomon islands/3/2006 and A/Wisconsin/67/2005, although there was also a small percentage of A/Brisbane/59/2007 as well as A/Brisbane/10/2007 strains reported, which were not included in the vaccine. A higher proportion of the Influenza B strain (97% of the influenza B isolates) reported this year (B/Florida/4/2006) was not included in the vaccine. The majority of influenza virus strains identified early in the season were influenza A/Solomon Islands/3/2006 (H1N1)-like; however, the number of influenza B/Florida/4/cases had been increasing since early January. This may explain the increased number of influenza B cases since January for this flu season in the HKPR District HU region. Despite this antigenic drift, some cross-protection among strains belonging to the same A/subtype or B/lineage is expected⁶. The scientific literature also suggests that with a good match, influenza vaccination has been shown to prevent laboratory-confirmed influenza illness in approximately 70% or more of

healthy individuals, and the severity of infection will be less in vaccinated individuals^{7,8}. The similarity of some of the circulating strains to the vaccine strains as well as the cross protection among strains may explain the mild to moderate influenza activity overall.

In 2007/2008, the overall vaccine coverage rate for the HKPR District HU area was slightly higher (38.8%) than 2006/2007 (36%). The majority of influenza cases reported (76%) were either not immunized or reported to have an unknown immunization status. The immunization rate among acute healthcare workers was less than the previous influenza season, however staff that got immunized after November 15, 2008* were not included in the rate.

The total number of influenza cases reported in the HKPR District Health Unit was compared with those from the neighbouring health units (Peterborough and Durham) using the summary of cases published through the Ontario Influenza Bulletin. The number of cases reported during the time period September 1, 2007 to May 10th 2008 in HKPR region was similar to that reported in Durham (n=129) and Peterborough (n=126). However, many factors should be considered while comparing number of cases reported between different health units. The testing patterns of local physicians or hospitals might be different in different health unit regions. Rates of routine testing done for influenza cases might also differ between health units. The population size and age distribution of different Health Units also should be taken in to account while comparing between health units. Demographically, the proportions of various age groups are similar between Peterborough and HKPR; however, Durham has a greater proportion of children. Overall immunization rate as well as the age distribution of cases of the neighbouring health units could not be compared at this time due to the unavailability of the data.

Conclusion

Since many people who have influenza-like symptoms do not seek medical attention or have lab tests to confirm the diagnosis, the lab confirmed case counts are likely an underestimate of the actual influenza activity within community. Frequent changes in the antigens constituting the viral subtype may occur over time but influenza A is the principal cause of wide-spread epidemics associated with high mortality rates and influenza pandemics⁷ and hence it is recommended that individuals be vaccinated against influenza every year.

References

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