

**INFLUENZA IN THE NORTH BAY PARRY
SOUND DISTRICT HEALTH UNIT
REGION:
THE 2009/10 SEASON REPORT**

December, 2010



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NBPSDHU INFLUENZA REPORT: 2009/10 SEASON

December 2010

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Executive Summary

This report summarizes the 2009/10 influenza season in the North Bay Parry Sound District Health Unit (NBPSDHU) area. Surveillance for the 2009/10 influenza season began on August 23, 2009 and ended on August 28, 2010.

There were a total of 110 laboratory confirmed cases reported for the NBPSDHU region, with 60% of those cases occurring within the NBPSDHU Adjusted Nipissing District. Confirmed influenza cases began appearing in late September 2009, and increased to a high of 43 cases towards the middle of October, thereafter decreasing to one case at the end of November 2009. The predominating strain was Influenza A, which constituted 100% of all cases, with 44% of these cases identified as the pH1N1 strain. Of all the confirmed cases, 54% of these 110 cases were not subtyped, one case was classified as unable to be typed, one as 'other' and one identified as an H3N2 strain.

Within Ontario and on a national level, the pH1N1 strain of influenza A was the predominant strain type. A higher percentage of influenza A cases were confirmed as strain type pH1N1 in the NBPSDHU area (44%) compared to Ontario (36.5%). However, more cases in the North Eastern area were typed as pH1N1 strain type (57.6%).

Of the cases confirmed by laboratory testing as influenza infections, 13.6%, the majority, were 55-59 years old, followed by 10-14 year olds (10.9%). More females were cases overall (59.1%), and females were more highly represented as cases in the 65 years and older and 15-19 years old age categories (constituted 80% of cases in each category). Overall, 8% and 4% of cases reported having received either the pH1N1 or seasonal influenza vaccine, respectively. Among those infected with the pH1N1 strain, 8.3% reported having received the pH1N1 vaccine and 6.3% the seasonal influenza vaccine. It was unknown whether a case received either a pH1N1 vaccine or a seasonal influenza in a considerable percentage of all confirmed cases (21% and 15%, respectively) and in pH1N1 cases (18.8% and 12.5% respectively).

Influenza activity in the NBPSDHU area became sporadic at week 39 (September 27, 2009) and increased from sporadic to localized and finally to widespread activity from weeks 41 to 43 (October 4-October 31, 2009). Weeks 44 and 45 (November 1-14, 2009) saw diminishing activity to a localized level, which decreased further during weeks 46 to 48 (November 15-December 5, 2009) to sporadic level activity. Sporadic activity was identified later in the season at weeks 2 and 3 (January 10-23, 2010) with no further subsequent activity.

Eight respiratory outbreaks were identified and reported in the 2009/10 season. Two outbreaks (20%) occurred in November, 2009 and two (20%) in February, 2010. The majority, 75%, took place in long term care homes and the remaining two outbreaks (25%) in hospital settings. Half (four) of the outbreaks were attributed to other organisms (including one metapneumovirus and three entero/rhinovirus outbreaks), two (25%) to RSV, one (12.5%) to influenza A, and one (12.5%) to parainfluenza (all types).

The number of schools reporting high absenteeism (i.e. an absentee rate 10% of the school population) increased through the week of October 18th, 2009 (week 42), reaching a peak of 71 schools reporting increased absenteeism in week 43 (October 25th, 2009). These numbers decreased gradually through weeks 44 (October 31st, 2009) to an estimated 65 schools reporting high absenteeism and approximately 26 in the 45th week (November 7th, 2009). No schools reported high absenteeism on or after the week of November 24th, 2009.

Emergency department visit surveillance was initiated on the 43rd surveillance week (November 6, 2009). Visits related to influenza-like illness and the percent of ED visits that were ILI-related were elevated at the initiation of surveillance and declined in subsequent weeks.

December 2010

Seasonal vaccines were distributed to regional general practitioners and other health organizations (e.g. LTCHs, nursing stations, etc.) for administration or directly administered by the health unit's Vaccine Preventable Diseases program vaccination clinics located across the NBPSDHU area. A total of 5,086 seasonal influenza vaccines were administered through these vaccination clinics. Of those, 2,413 (47%) were administered to individuals classified as belonging to high priority populations.

The majority of the 28,795 individuals who received the pandemic H1N1 vaccines were vaccinated at VPD vaccination clinics (22,800 individuals receiving partial or full dose schedule or 79%). Those vaccinated at either workplace clinics, community care access centers, group homes, community health centers & general practitioners numbered at 3,894 (13.6%) with the remainder administered by long-term care and retirement homes, as well as hospitals. Approximately an equal number of males and females were vaccinated with the pH1N1 vaccine across all age groups. The Public Health Agency of Canada recommended children aged 6 months to less than 3 years old, and 3 to 9 year olds with chronic conditions receive two half doses of the pH1N1 vaccine 21 days apart^[1]. Approximately 50% of children aged 6 months to less than 3 years of age received their second recommended half dose of the vaccine from the VPD vaccination clinics. Of the 230 children aged 3 years to 9 years old with chronic conditions, 69 (30%) received the recommended second half dose of the vaccine from the same clinics.

Of the pH1N1 vaccines administered, only 0.3% (80) were given at workplace clinics. A total of 3,812 pH1N1 vaccines were administered through other providers: 24.3% administered by community health centers, 173 (4.5%) by group homes, 0.5% by CCACs and 70.6% by general practitioners. Data for seasonal influenza administration by providers other than the health unit were not collected.

Of the health unit staff, 81% reported having received the pH1N1 vaccine and 38% having received the seasonal influenza vaccine, although vaccination was not mandatory in the 2009/10 season.

Seasonal influenza vaccination rates of residents in long-term care homes was similar across the 2008/09 season and was highest (94% in 2009/10) among the three facility types (LTCHs, retirement homes & hospitals). In retirement homes and hospitals, the same rate fell between 2008/09 and 2009/10 influenza seasons (91% to 81% and 72% to 50%, respectively). Seasonal influenza immunization rates fell across all facility types across the 2008/09 to 2009/10 seasons (69% to 42% in long-term care homes, 97% to 74% in retirement homes and 71% to 38% in hospitals).

Resident pH1N1 immunization rates were highest in retirements at 91%, followed by long-term care homes at 78% and hospitals at 64%. A majority of staff were immunized with the pH1N1 vaccine at all facility types (80% among retirement home staff, 71% among hospital staff and 56% of long-term care home staff).

Table of Contents

1.0 Introduction	1
1.1 Influenza.....	1
1.2 The Health Unit’s Role in Preventing and Managing Influenza	1
1.3 Influenza Surveillance	1
1.4 Data Sources and Definitions.....	3
2.0 Laboratory-Based Influenza & Strain Identification	4
2.1 Laboratory-Based Influenza	4
2.2 Strain Identification	4
3.0 Laboratory Confirmed Case Characteristics and Outcomes	6
3.1 Age and Gender	6
3.2 Influenza Vaccination Status.....	6
3.3 Deaths	6
4.0 Influenza Activity Level.....	9
5.0 Respiratory Infection & Influenza Outbreaks.....	11
5.1 Respiratory Outbreaks	11
6.0 School & Emergency Department Surveillance	12
6.1 School Absenteeism.....	12
6.2 Emergency Department Visits	13
7.0 Vaccination Coverage.....	15
7.1 Background	15
7.2 North Bay Parry Sound District Community Influenza Vaccination Clinics.....	15
7.3 Workplace and Pharmacy Vaccination Clinics	18
7.4 Community Care Access Centers, Group Homes, Community Health Centers & General Practitioners.....	18
7.5 Facility / Institutional Vaccination Coverage	19
8.0 References	21

1.0 Introduction

1.1 Influenza

Within the Canadian population, influenza is a major cause of morbidity, mortality and loss of productivity.^[2] It occurs annually, mainly during the fall and winter months and is caused predominantly by influenza A viruses, as well as B viruses.^[2] The incidence of influenza is known to fluctuate from year to year due to the virulence of circulating strains and the susceptibility of the population.^[2] Factors such as vaccine coverage, vaccine match and antigenic changes to the virus affect the susceptibility of the population.^[2] Those most susceptible to serious complications, hospitalization and even death are children aged 6-23 months, individuals with chronic medical conditions (of any age), individuals 65 years of age and older, and residents (of any age) of long-term care homes (LTCH) and other chronic care facilities.^[2] As such, vaccination of these high-risk individuals, as well as those capable of transmitting influenza to those of high risk (e.g. staff), is essential for reducing the incidence and burden of influenza.

In April 2009, a novel strain of Influenza A caused an outbreak in Mexico and the United States. Today known as pandemic H1N1 (pH1N1), the strain spread rapidly throughout the United States, Canada and worldwide. With the advent of the pH1N1 vaccine in the fall of 2009, individuals belonging to groups who experience a higher risk of severe complications were termed high priority groups to receive the vaccine. These included individuals under the age of 65 with chronic conditions, pregnant women, healthy children from 6 months to less than 5 years of age, individuals living in isolated or remote communities, and individuals who care for those who are high risk (e.g. health care workers, household contacts or care providers)^[3].

1.2 The Health Unit's Role in Preventing and Managing Influenza

The Vaccine Preventable Disease (VPD) Program and the Communicable Disease Control (CDC) Program at the North Bay Parry Sound District Health Unit (NBPSDHU) with the assistance of the research and surveillance team play integral roles in preventing and managing influenza cases and outbreaks within the community and LTCH. The activities and services conducted by each program are identified in Table 1.

1.3 Influenza Surveillance

Ongoing surveillance is essential for the early detection of influenza activity, for monitoring circulating strains, and for determining its epidemiology. It is also used to inform outbreak-management, preparedness planning, and preventative practise decision-making.

Canada's national influenza surveillance system FluWatch, collects data on five main indicators of influenza:

- 1) Laboratory-based influenza and other respiratory virus detections from sentinel laboratories across Canada;
- 2) Strain identification and antiviral resistance for circulating influenza viruses from the National Microbiology Laboratory;
- 3) Influenza-like illness (ILI) primary care consultation rates from sentinel practitioners across Canada;
- 4) Regional influenza activity levels as assigned by provincial and territorial FluWatch representatives; and
- 5) Paediatric influenza-associated hospital admissions and mortality data through the Immunization Monitoring Program ACTive (IMPACT).^[4]

The NBPSDHU's CDC program actively monitors indicators 1, 2 and 4 for the NBPSDHU area. Although a sentinel physician may be located with the NBPSDHU region, their presence within the region and any data collected by them is not shared with health units, which inhibits monitoring of ILI primary care consultation rates (3). No IMPACT program facility precludes pediatric influenza-associated hospital admissions and mortality data (5).

Table 1. Influenza Prevention and Management Related Activities and Services Conducted by Vaccine Preventable Diseases Program, and Communicable Disease Control Program

Vaccine Preventable Diseases Program	Communicable Disease Control Program
<ul style="list-style-type: none"> ▪ Promoting the annual influenza vaccine to the community, and in particular to high risk groups. ▪ Providing information kits and recommendations regarding the vaccine to health care professionals. ▪ Providing community influenza vaccination clinics throughout the NBPSDHU area. ▪ Ensuring vaccine availability to all LTCHs, physician offices, hospitals, jails, First Nation communities, and nursing agencies. Organizations such as workplaces, health care agencies, retirement homes, provincial and federal government facilities (e.g. jails), schools, pharmacies with occupational health departments and shelters must complete a pre-qualification process through the Ontario Ministry of Health and Long-Term Care if they are storing and/or administering the vaccine. ▪ Investigating all reported cases of adverse vaccine events. ▪ Providing mass immunization in the event of a pandemic. ▪ Inspecting vaccines stored on non-Health Unit premises (e.g. family physician’s offices, hospitals, LTCH, etc.) to ensure adequate temperature control and viability of vaccines. ▪ Maintaining vaccine inventory through the Biological Inventory Ordering System (BIOS) for the Public Health Branch of the Ministry of Health and Long-Term Care (MOHLTC). 	<ul style="list-style-type: none"> ▪ Assisting in the investigation, confirmation and management of respiratory outbreaks. ▪ Following up with confirmed influenza cases to obtain details of disease, for example: vaccination status; date of onset; and travel history. ▪ Timely reporting of all relevant case and outbreak information to the MOHLTC via the Integrated Public Health Information System (iPHIS). ▪ Providing influenza specimen kits to LTCHs. ▪ Arranging transportation of influenza specimens to Public Health Laboratories (PHL). ▪ Notifying LTCHs and hospitals of facility outbreaks. ▪ Developing and revising internal outbreak response plans. ▪ Providing consultation on the development and revision of influenza control policies for LTCHs and hospitals. ▪ Providing ongoing consultation on influenza surveillance. ▪ Promoting the annual influenza vaccination to staff of LTCHs and hospitals. ▪ Sponsoring the NBPSDHU CDC e-Community, which provides timely information on reportable diseases (including influenza) and outbreak statuses for LTCHs and hospitals in the NBPSD. ▪ Hosting weekly outbreak teleconferences during influenza season to provide a means of communication amongst facilities. ▪ Providing weekly influenza reports to health care providers within the NBPSDHU area. ▪ Conducting school surveillance and follow-up on reported high absenteeism rates. ▪ Providing schools with Influenza Packages for every student. ▪ Producing and updating "What Now" resources for LTCHs, schools and daycares. This resource includes educational resources and fact sheets regarding influenza and infection control. ▪ Assisting in the investigation of outbreaks. ▪ Participating in hospital and long-term care home Infection Control Committees. ▪ Updating the Health Unit website weekly for the number of laboratory confirmed cases.

1.4 Data Sources and Definitions

The influenza data presented for the NBPSDHU area within this report has been derived from iPHIS (integrated Public Health Information System). iPHIS is a provincial client health record and reporting system which provides secure access to one client record by multiple public health providers and programs, and allows communicable disease surveillance information to be shared. Influenza activity levels for North East Ontario were collated from the 2009/10 Public Health Ontario weekly influenza bulletins.

Influenza rates were calculated using population estimates from Statistics Canada, and laboratory confirmed cases diagnosed by the NBPSDHU. The population estimates adjust for census under-coverage, and include non-permanent residents. All rates within the report are presented per 100,000 population. When referring to the area of Nipissing District that is served by the NBPSDHU in this report the area has been identified as the 'Adjusted Nipissing District'.

For the purposes of this report influenza case numbers and rates have been presented across the influenza season by surveillance week number. Week numbers correspond with the calendar year, whereby week 1 is the first week in January, and week 52 is the last week in December. This method allows comparison of data across multiple years. Where week numbers have been referenced in the text, the week start date has been included in brackets as an added time reference.

2.0 Laboratory-Based Influenza & Strain Identification

2.1 Laboratory-Based Influenza

110 cases of influenza were identified through confirmatory laboratory testing in the NBPSDHU jurisdiction beginning the week of August 30, 2009 to the end of the week of August 22nd, 2010 (i.e. the 2009/10 influenza season) (see Table 2). The 2009/10 season total was slightly higher than the 103 cases seen previously in the 2008/09 season. Similarly, the crude rate in 2008/09 within NBPSDHU jurisdiction was 87.7 cases per 100,000, higher than the 82.2 cases per 100,000 rate in 2008/09, and the rate for the two previous seasons.

The Parry Sound district experienced a higher rate of influenza infections (103.2 case per 100,000 persons) compared to the NBPSDHU adjusted Nipissing District (66 cases per 100,000 persons). Conversely, the pH1N1 infection rate was higher in the NBPSDHU adjusted Nipissing district (43.0 cases per 100,000 persons) compared to the Parry Sound district rate (28.1 cases per 100,000). Meanwhile, the rate of Influenza A pH1N1 strain within the NBPSDHU area was 38.0 cases per 100,000, comparable to the rate seen at the Ontario level (36.2 cases per 100,000 persons) and lower than the North East Ontario rate (55.3 cases per 100,000 persons).

Table 2. Laboratory confirmed influenza cases (crude rate per 100,000 population).

	NBPSDHU			North East Ontario	Ontario
	Parry Sound District	Adjusted Nipissing District	NBPSDHU Total		
2009/10	44 (103.2)	66 (78.8)	110 (87.7)	547 (96.1)	7,627 (58.6)
Influenza A pH1N1	12 (28.1)	36 (43.0)	48 (38.0)	315 (55.3)	4,731 (36.2)
2008/09	58 (135.6)	45 (54.5)	103 (82.1)	231 (40.9)	8,245 (68.4)
2007/08	40 (93.5)	46 (55.7)	86 (68.6)	205 (36.3)	5,137 (40.1)
2006/07	35 (82.2)	50 (60.2)	85 (67.7)	200 (35.3)	2,930 (23.1)

Data sources for: 1) 2006, 2007, 2008, & 2009 population: Provincial Health Planning Database (PHDB), extracted [Sept-2010]; 2) NBPSDHU 2006/07, 2007/08, 2008/09 and 2009/10 season cumulative totals: iPHIS, Data extracted Sept-2010; 3) North East Ontario and Ontario 2006/07 season totals: MOHLTC, Public Health Division. Ontario Influenza Bulletin: Surveillance Week 34-35, 2007, Table 3; 4) North East Ontario and Ontario 2007/08 season totals: MOHLTC, Public Health Division. Ontario Influenza Bulletin: Surveillance Week 34-35, 2008, Table 3; 6) North East Ontario and Ontario 2008/09 season totals: MOHLTC, Public Health Division. Ontario Influenza Bulletin: Surveillance Week 35, 2009, Table 2 & 4; 4) North East Ontario and Ontario 2009/10 season totals: MOHLTC, Public Health Division. Ontario Influenza Bulletin: Surveillance Weeks 34 & 35, 2010, Table 3.

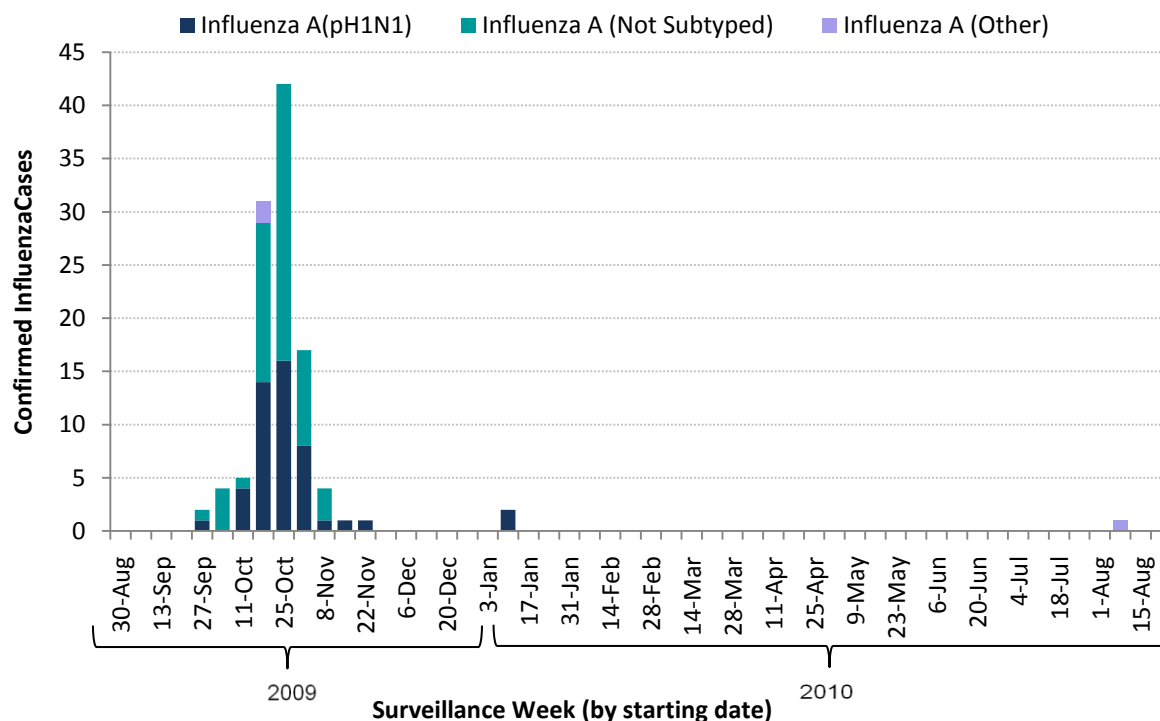
2.2 Strain Identification

All 110 cases confirmed for influenza testing were strain type Influenza A. Of these cases, 44% (48 cases) were of the Influenza A pH1N1 strain, 54% (59 cases) were Influenza A cases that were not subtyped and 3% were Influenza A cases belonging to another category (one was classified as other, one could not be typed and one was subtype H3N2). Both in north east Ontario and all of Ontario, influenza A pH1N1 was the predominating strain type (58% and 62% respectively). A large majority (97%) of cases occurred between August 30th and November 31st 2009 (see Figure 1). Three confirmed cases of influenza were identified from January 1st 2010 to August 28th, 2010.

2.2.1 Influenza Virus Strain Sub-Type

From August 30, 2009 to March 19, 2010, the National Microbiology Laboratory (NML) antigenically characterized 852 influenza viruses received from sentinel public health and hospital laboratories across Canada [2]. A majority of viruses (836 or 98.1%) were strain type A/California/07/2009 (H1N1) (see Table 3). Of the subtyped cases, 98% (48 cases) were strain A/California/07/2009 (H1N1), comparable to the national proportion for the same strain. One additional case (2%) identified in the NBPSDHU area was the A/Perth/16/2009 strain.

Figure 1 . Confirmed influenza cases for the NBPSDHU region by subtype and surveillance week during the 2009/10 influenza season.



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted September, 2010 by NBPSDHU.

Table 3. Influenza strain characterization, NBPSDHU (n=49) & Canada (n=852), 2009/10 influenza season ^[2]

Strain	No. Cases (%) in NBPSDHU	No. Cases (%) in Canada
A/California/07/2009 (H1N1)	48 (98.0)	836 (98.1)
A/Brisbane/59/2007 (H1N1)-like	0 (0)	3 (0.4)
A/Perth/16/2009 (H3N2)-like	1 (2.0)	8 (0.9)
A/Brisbane/10/2007 (H3N2)-like	0 (0)	2 (0.2)
B/Brisbane/60/2008	0 (0)	2 (0.2)
B/Florida/04/2006	0 (0)	1 (0.1)

Data Sources for: 1) No. Cases (%) in NBPSDHU: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted September, 2010 by NBPSDHU. 2) No. Cases (%) in Canada: National Advisory Committee on Immunization (NACI). Statement on Seasonal Trivalent Inactivated Influenza Vaccine (TIV) for 2010-2011. Canada Communicable Disease Report. 2010; 36(6): 1-49.

3.0 Laboratory Confirmed Case Characteristics and Outcomes

3.1 Age and Gender

Figure 2 shows the number of confirmed cases grouped by age group and gender. The majority of cases were persons 55-59 years old (13.6%) followed by 10-14 year olds (10.9%) and 15-19 year olds, 40-44 year olds and people over the age of 65 years old (9.1% for each group). More cases were female (59.1%) than male. Females constituted 80% of the cases who were either 65 years and older or between the ages of 15-19 years old.

Influenza A was the only strain type for all confirmed influenza cases in the 2009/10 season across all age groups (see Figure 3). Confirmed cases 15-19 years old had the highest proportion of pH1N1 infections (58.3%), however pH1N1 was confirmed consistently across all age groups. The only other strain type found in confirmed cases was an influenza A H3N2 subtype in a case who was 65 years of age or older. Across age categories, 20-80% of samples were not subtyped beyond an influenza A confirmation.

3.2 Influenza Vaccination Status

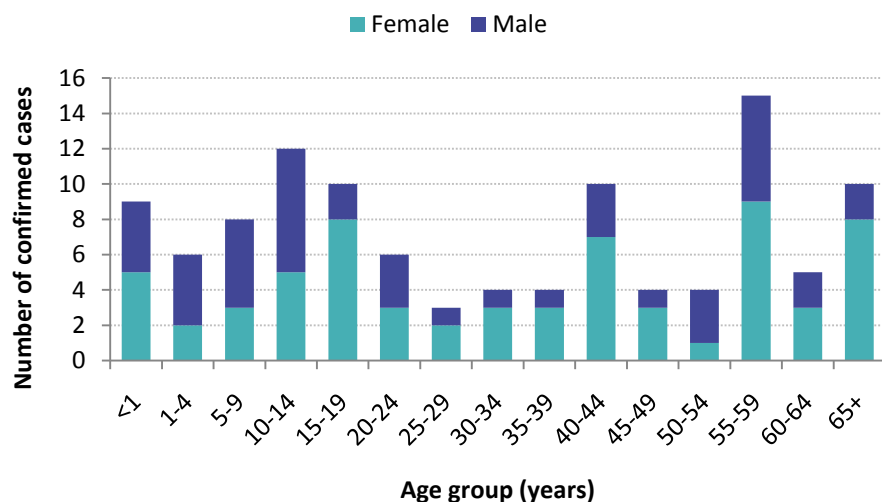
All 110 confirmed cases were queried for their seasonal influenza and pH1N1 vaccine status (i.e., whether either vaccine was received, not received or if it was unknown). Of all the influenza A cases (both subtyped and unsubtyped), 6% had received the seasonal influenza vaccine and 8% received the pH1N1 vaccine (see Figure 4). The pH1N1 and seasonal influenza vaccine status were unknown for a substantial portion of cases (21% and 15% respectively).

Of the influenza A cases subtyped as pH1N1, 8.3% reported having received the pH1N1 vaccine, and 6.3% the seasonal influenza vaccine (see Figure 5). Among this group, 18.8% and 12.5% did not know whether they were administered the pH1N1 or seasonal influenza vaccine respectively. None of the cases in either the subtyped or unsubtyped group had received both vaccines. All of the individuals who received the seasonal influenza vaccine were 60 years and older, and 75% were infected with influenza A subtype pH1N1 (the remaining other case was not subtyped). Of the individuals who received the pH1N1 vaccine, 20% were between the ages of 45-49 years, 20% between 55-59 years, and 20% in the 1-5 years age category (n=8). Half of these cases were infected with subtype pH1N1 and the other half were unsubtyped.

3.3 Deaths

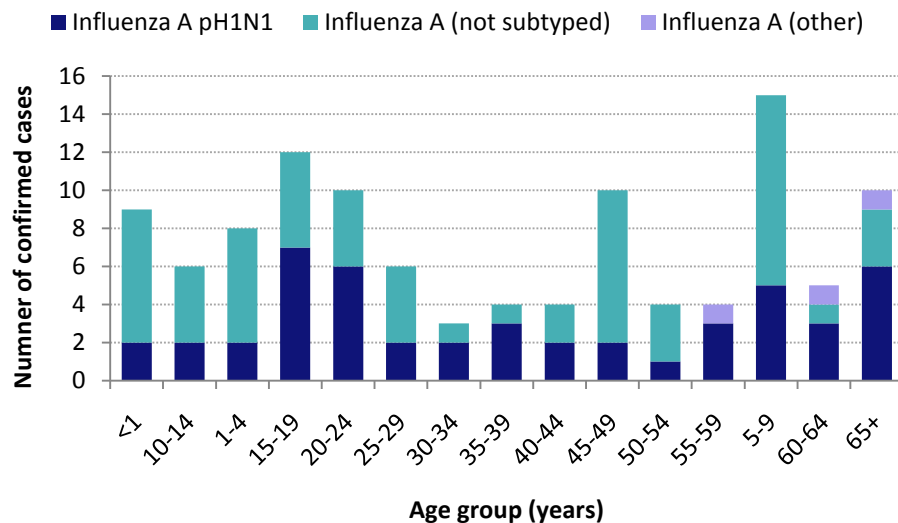
Three deaths were associated with cases of pH1N1 strain of influenza A in the 2009/10 season. Influenza A pH1N1 was the reported underlying cause of disease for two of the deaths. The remaining other death had no known cause as the underlying disease after a coroner's investigation; however the case had other risk factors and was positive for pH1N1.

Figure 2. Laboratory confirmed influenza cases by sex and age group for NBPSDHU area, 2009/10



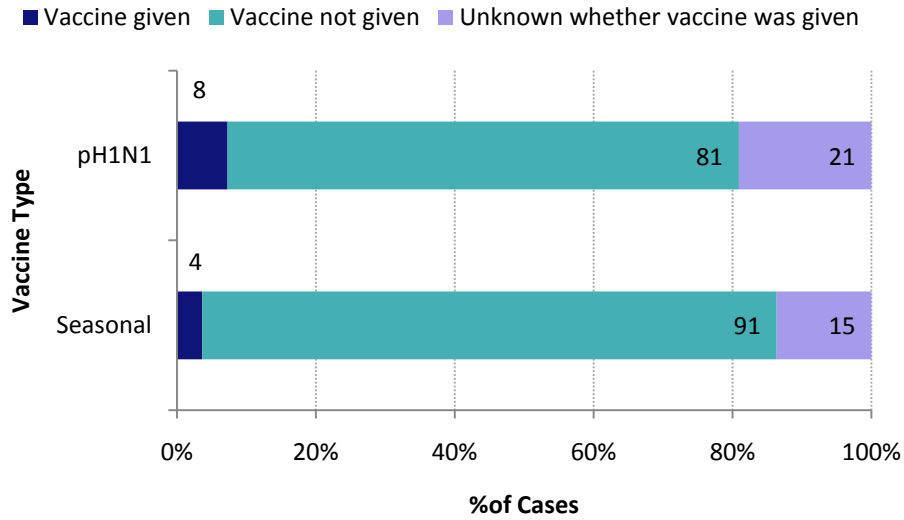
Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted September, 2010 by NBPSDHU.

Figure 3. Laboratory confirmed influenza cases by strain and age-group for NBPSDHU area, 2008/09



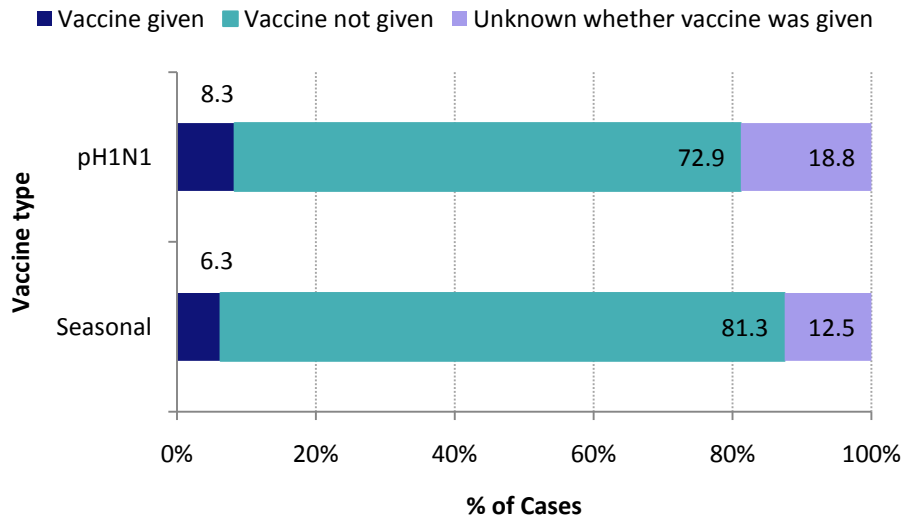
Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted September, 2010 by NBPSDHU.

Figure 4. Influenza vaccination status of laboratory confirmed influenza cases for NBPSDHU area, 2009/10 season



Data Source: North Bay Parry Sound District Health Unit, Communicable Disease Control Program internal data. 2009/10 Influenza Season.

Figure 5. Influenza vaccination status of laboratory confirmed influenza A (pH1N1) cases for NBPSDHU area, 2009/10 season



Data Source: North Bay Parry Sound District Health Unit, Communicable Disease Control Program internal data. 2009/10 Influenza Season.

DEFINITIONS

Influenza Activity Level

Influenza activity is categorized into one of the following four levels:

No activity: No laboratory confirmed influenza within the health unit/influenza surveillance area, during the past four weeks, although sporadically occurring ILI may or may not be present. ^[5]

Sporadic: Sporadically (infrequently) occurring (ILI) and at least one confirmed influenza case with no outbreaks detected within the health unit area. ^[5]

Localized: Sporadically occurring ILI and confirmed influenza together with outbreaks of ILI in schools and work sites or laboratory-confirmed influenza in residential institutions occurring in < 50% of the health unit. Outbreaks affect a single and/or adjacent geographic area within the health unit jurisdiction, e.g. outbreaks in a nursing home and a school in close proximity to each other. ^[5]

Widespread: Sporadically occurring ILI and confirmed influenza together with outbreaks of ILI in schools and work sites or laboratory-confirmed influenza in residential institutions occurring in ≥ 50% of the health unit. Outbreaks affect multiple and non-adjacent geographic areas within the health unit jurisdiction, such as two or more regions of the health unit, two or more municipalities, two or more electoral wards, etc. ^[5]

Influenza-Like Illness:

General Population: Acute onset of respiratory illness with fever and cough and with 1 or more of the following: sore throat, arthralgia, myalgia, or prostration which could be due to influenza virus. In children under 5, gastrointestinal symptoms may also be present. In patients under 5 or 65 and older, fever may not be prominent.

Outbreaks in schools and worksites: greater than 10% absenteeism on any day, most likely due to ILI Outbreaks in residential institutions: two or more cases of ILI within a two day period, with at least one laboratory confirmed case of influenza. ^[6]

4.0 Influenza Activity Level

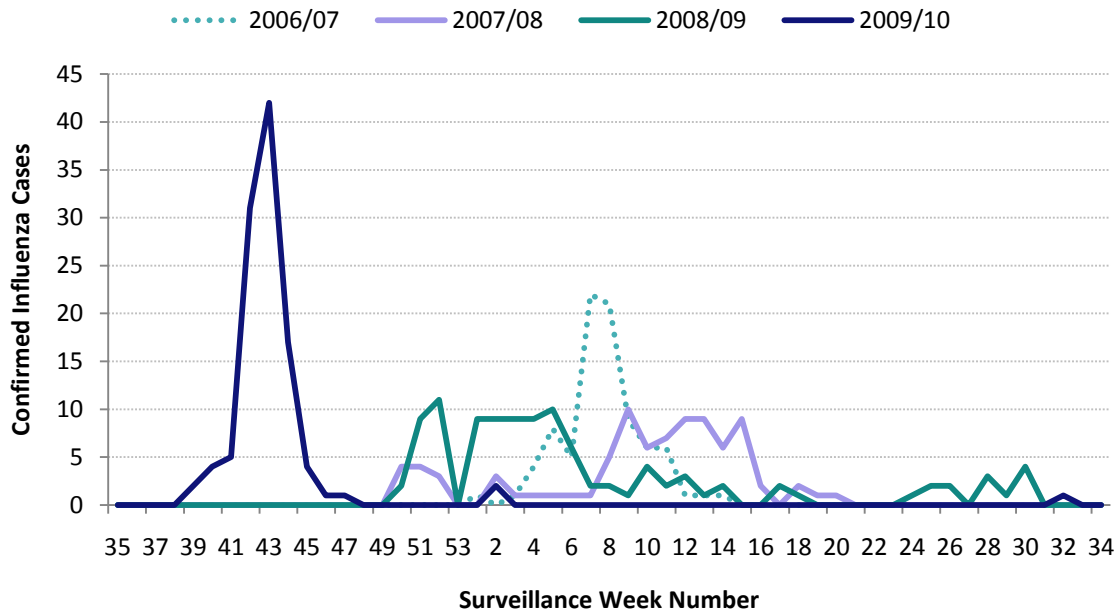
Influenza activity is assessed and reported weekly by the Medical Officer of Health to the Public Health Division of the MOHLTC (see definitions). For reporting purposes, it is defined as the level of influenza-like illness prevalent in the local community.

As illustrated in figure 6, the length of the 2009/10 influenza season was comparable to the previous season, if assessed by the length of time between the first and last case, with the first cases appearing in week 39 (September 27-October 3, 2009) and the last case in week 32 (August 9-15, 2010). However, in contrast with the 2008/09 previous season where peak activity occurred between December to January, most confirmed cases occurred in October through November 2009 during the 2009/10 season (107 cases, or 97% of all cases being reported within this time frame).

Sporadic influenza activity within the NBPSDHU area was first seen week 39 (see Figure 7). Soon after, influenza activity became localized in week 42 (October 18, 2009), and widespread the following week (October 25, 2009). Activity in weeks 44 and 45 (November 1-14, 2010) diminished to localized activity, followed by sporadic activity in weeks 46-48 (November 15-December 5, 2009). Meanwhile, in the 2008/09 season, activity, whether sporadic or localized, persisted during a longer time span: approximately 17 weeks in late 2008 and early 2009, and 6 weeks in the summer of 2009.

From weeks 49 to 1 of the following year (December 6, 2009-January 9, 2010), no activity was seen. Influenza activity was assessed as sporadic during weeks 2-3 (January 10-23, 2010), and no further activity was identified during the rest of the influenza season. Overall, there was less sporadic or localized activity identified in the 2009/10 season compared to the 2008/09 season, with a one week instance of widespread activity.

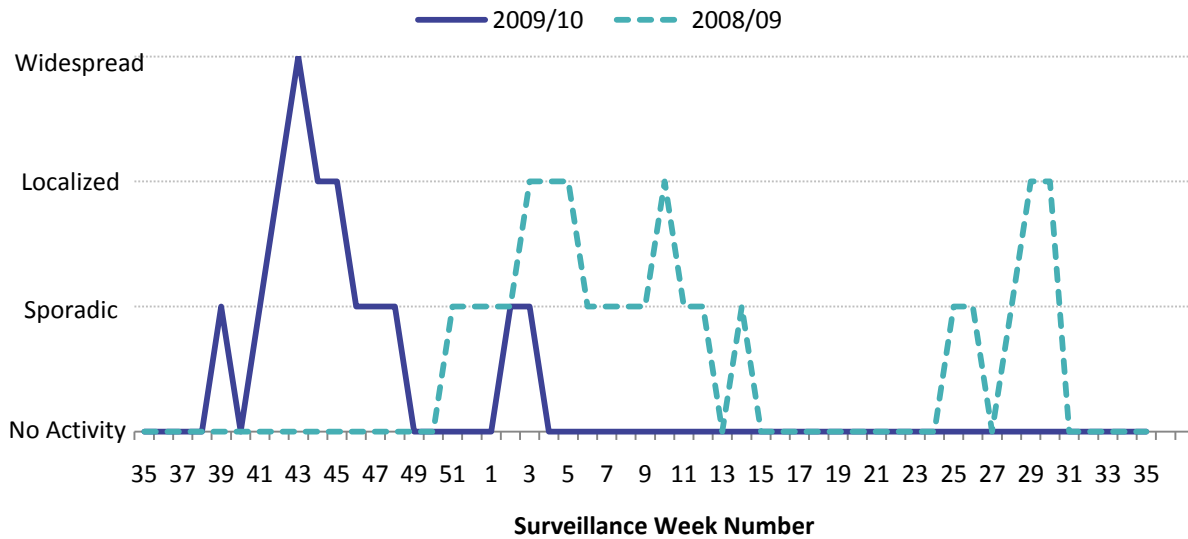
Figure 6. Laboratory confirmed influenza cases* per surveillance week* for NBPSDHU, 2006/07 to 2009/10



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted September 2010 by NBPSDHU.

* Number of cases by the episode accurate date per surveillance week.

Figure 7. Influenza activity levels by week number for North Bay Parry Sound District, 2008/09 & 2009/10



Data Source: North Bay Parry Sound District Health Unit, Communicable Disease Control Program internal Data. 2008/09 & 2009/10 Influenza Season.

DEFINITIONS

Institutional respiratory outbreak

Two cases of acute respiratory tract illness within 48 hours, at least one of which must be laboratory-confirmed.

OR

Three cases of acute respiratory illness (laboratory confirmation not necessary) occurring within 48 hours in a geographic area (e.g., unit, floor)

OR

More than two units having a case of acute respiratory tract illness within 48 hours.^[6]

Outbreak duration

The number of days from the onset of illness in the first case until the outbreak was declared over.

5.0 Respiratory Infection & Influenza Outbreaks

Public Health Units are required to report all respiratory infection outbreaks within the community and institutions to the Public Health Division of the MOHLTC.

5.1 Respiratory Outbreaks

In the 2009/10, eight respiratory outbreaks were identified and reported, lower than the 27 outbreaks reported or identified in the 2008/09 season (see Table 4). The first outbreak occurred in October 2009 while the last outbreak began in May 2010. Two outbreaks were reported in November 2009 as well as in February 2010.

Of these eight outbreaks, two (25%) were attributed to respiratory syncytial virus (RSV), one (12.5%) to parainfluenza of all types, and one (12.5%) to influenza A. Four respiratory outbreaks (50%) were caused by other organisms.

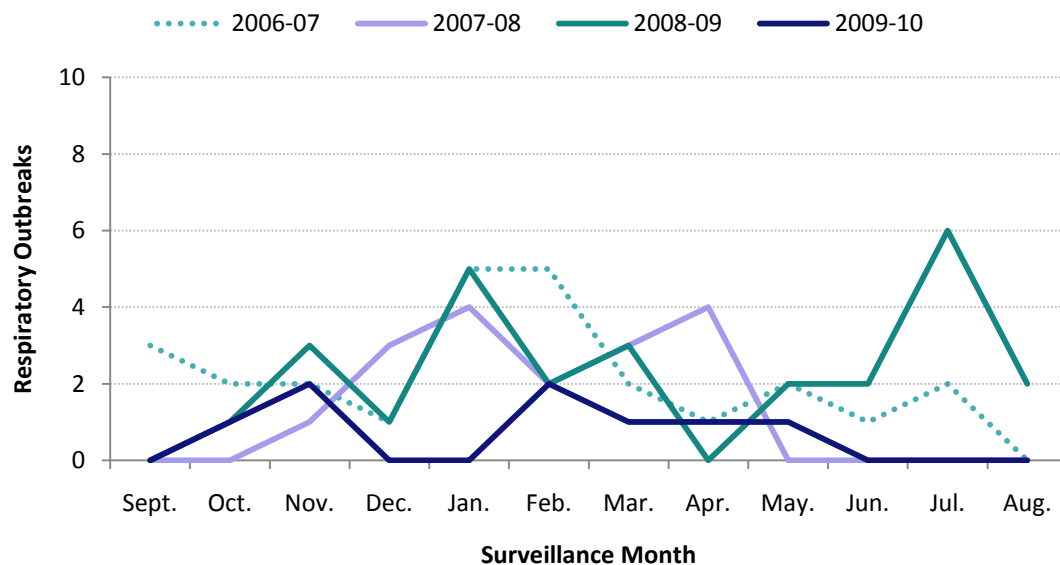
A majority of six (75%) of the outbreaks occurred within long-term care homes, and two (25%) took place in hospitals. In contrast, the 2008/09 season saw seven (25.9%) outbreaks in youth recreational camps in addition to fifteen in long term care homes and five in hospitals. The median duration for all outbreaks was 22 days (range: 10-36 days). RSV outbreaks endured a median of 24 days (range: 10-38 days).

Table 4. Total number (N) and percentage (%) of respiratory outbreaks for the 2008/09 and 2009/10 season in the NBPSDHU region.

Outbreaks	No. Outbreaks (%) in 2008/09	No. Outbreaks (%) in 2009/10
Influenza A pH1N1	3 (11.1)	0 (0.0)
Influenza A	0 (0.0)	1 (12.5)
Influenza B	1 (3.7)	0 (0.0)
Influenza A & B	0 (0.0)	0 (0.0)
Parainfluenza (All types)	1 (3.7)	1 (12.5)
RSV	3 (11.1)	2 (25.0)
Other organisms ¹	7 (25.9)	4 (50.0) ¹
No organism identified	12 (44.5)	0 (0.0)
TOTAL	27 (100)	8 (100)
Types of Institutions		
Long-Term Care Homes	15 (55.6)	6 (75.0)
Hospitals	5 (18.5)	2 (25.0)
Recreational Camps	7 (25.9)	0 (0.0)
Other	0 (0.0)	0 (0.0)
Unknown	0 (0.0)	0 (0.0)
TOTAL	27 (100)	8 (100)

¹Includes 1 metapneumovirus and 3 entero/rhinovirus outbreaks

Figure 8. Confirmed respiratory infection outbreaks* per surveillance month for NBPSDHU, 2005/06 to 2008/09 seasons.



Data Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database, extracted September, 2010 by NBPSDHU.

* Number of outbreaks by the onset of index case per surveillance month.

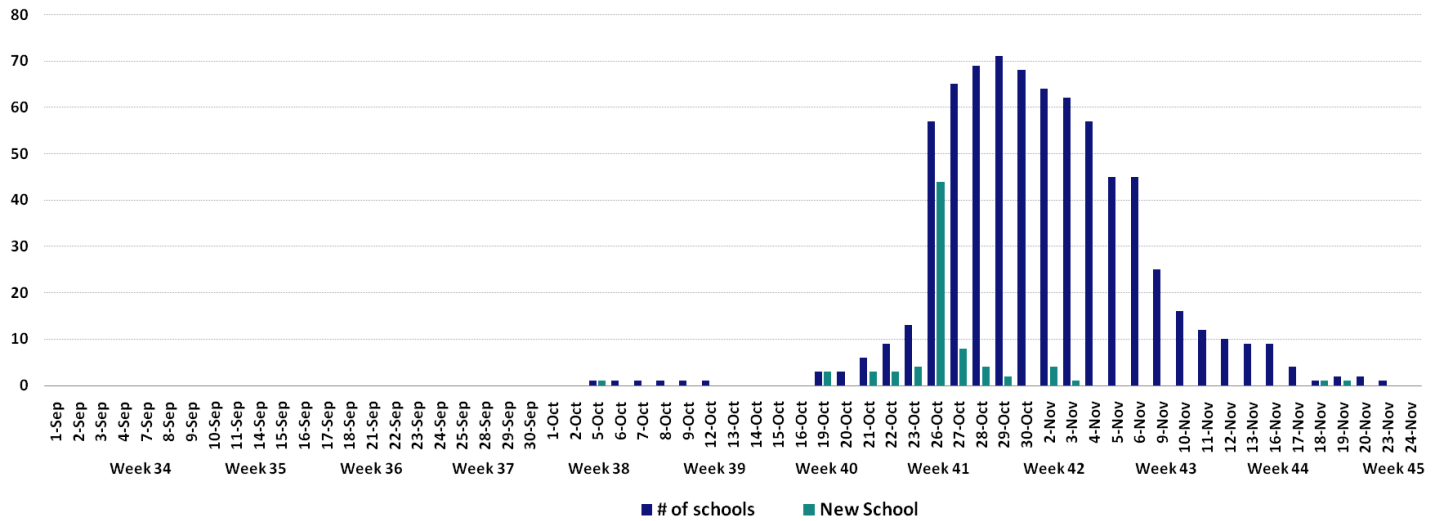
6.0 School & Emergency Department Surveillance

6.1 School Absenteeism

Absenteeism is monitored as an indicator for the acquisition and transmission of influenza-like illness (ILI) for both the school and the community. Absenteeism rates reflect all-cause absenteeism and are not necessarily due to ILI. The NBPSDHU requests schools with absentee rates that are 10% of the total school population (student and staff) report their increase in absenteeism to the health unit by telephone during the influenza season. Once reported, the absentee rate is monitored daily until it falls below the normal absentee rate at the school, or below a rate of 5%

Figure 9 shows the number of schools with increased absenteeism (staff and students) up to November 24th, 2009, as reported to the Ministry of Health and Long-Term Care. Both total school counts and number of new schools are displayed for each weekday (i.e. weekends excluded). The number of schools reporting higher than normal absentee rates increased through October 19th (Week 40), to a peak of 71 schools on October 28th, 2010 (Week 41). However, increased absenteeism was reported as a new occurrence for 44 schools on the week of October 25th, 2010. This peak coincided with the highest number of cases seen in any surveillance week in the 2009/10 season: 42 during the week of October 25th (surveillance week 41). As of November 24th, there were no schools in the NBPSDHU area reporting increased absenteeism.

Figure 9. Total number of schools reporting high absenteeism by date (school day)



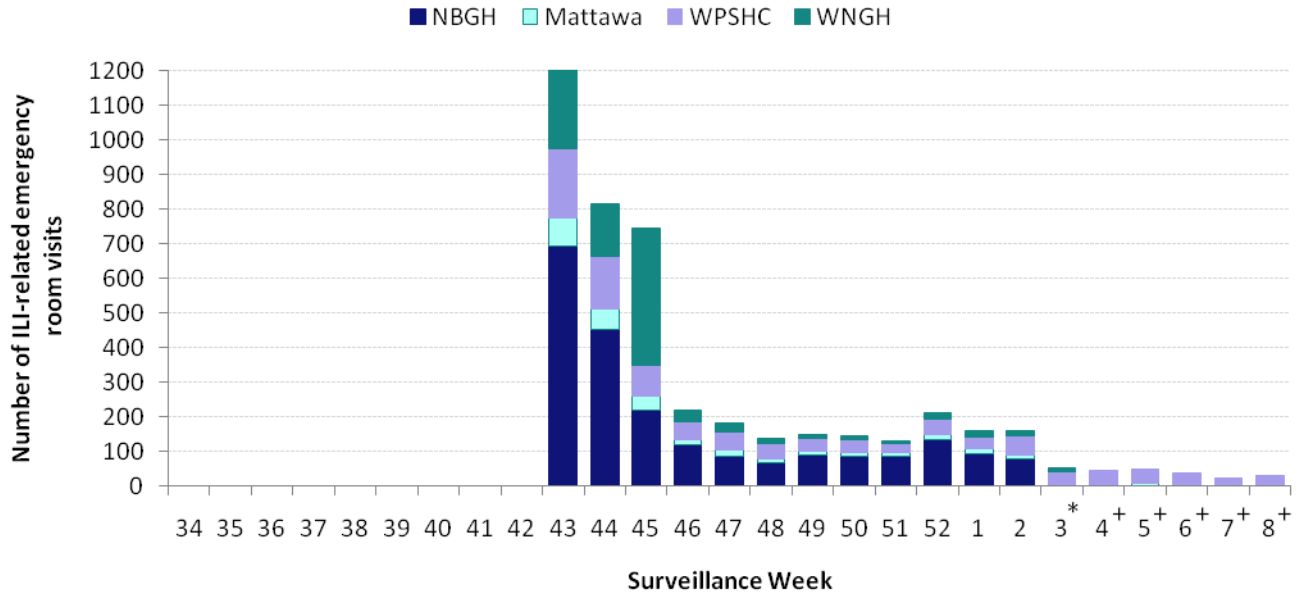
Note: Updated November 27, 2009 at 11:02. Data complete up to November 24, 2009.

6.2 Emergency Department Visits

As of week 43 (November 6, 2009) emergency departments located within the NBPSDHU region were requested by the NBPSDHU to provide daily counts of emergency department (ED) visits, and ILI-related visits. This information is not typically collected by the health unit, but was used at the beginning of the 2009/2010 season to help determine if and when influenza assessment centres should be mobilized within the community. There were two main limitations associated with collecting ED data: 1) ED counts were manually collated by each hospital which proved to be a burden to hospital resources, and 2) The criteria used to define an ILI-related visit differed across hospitals.

Figures 10 and 11 illustrate that ED ILI-related visits were already elevated at the time surveillance was initiated, and across the region accounted for almost half of all ED visits. ILI-related visits appear to have started to decline after week 43, however, without data from the preceding weeks it is unknown whether they were already on the decline when surveillance began. Once ILI-related visits began to return to normal, the health unit was requested by hospitals if they could discontinue surveillance due to the burden it was placing on hospital human resources.

Figure 10. Total number of ILI-related visits to ED by hospital and surveillance week.



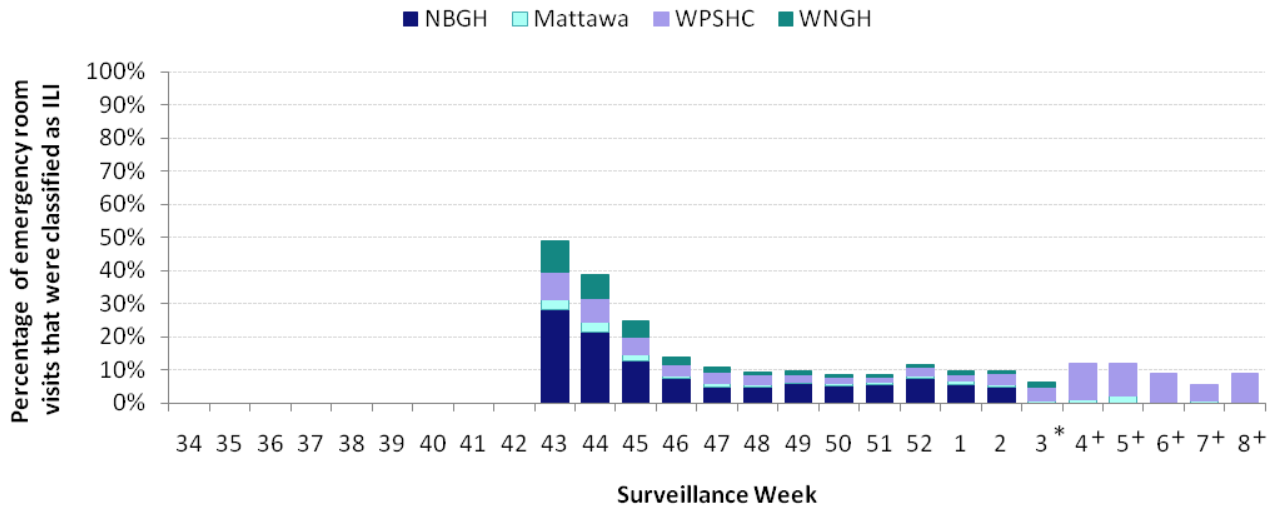
Data sources: Data has been provided to NBPSDHU by each individual hospital. **Note:** Data for WPSHC represents the FRI screening failures.

*Incomplete NBGH data for week 3.

+Data for NBGH & WNGH not provided for weeks 4 to 8.

Note: NBGH = North Bay General Hospital; Mattawa = Mattawa General Hospital; WPSHC = West Parry Sound Health Centre; WNGH = West Nipissing General Hospital

Figure 11. Percent of ED visits that were ILI-related by hospital and surveillance week.



Data sources: Data has been provided to NBPSDHU by each individual hospital. **Note:** Data for WPSHC represents the FRI screening failures.

*Incomplete NBGH data for week 3.

+Data for NBGH & WNGH not provided for weeks 4 to 8.

Note: NBGH = North Bay General Hospital; Mattawa = Mattawa General Hospital; WPSHC = West Parry Sound Health Centre; WNGH = West Nipissing General Hospital

DEFINITIONS

High Priority Individuals

Individuals are categorized as high priority if they meet one or more of the following criteria: children aged 6-23 months; individuals with chronic medical conditions (of any age); individuals 65 years of age and older; residents (of any age) of LTCH and other chronic care facilities; healthy pregnant women; individuals capable of transmitting influenza to those of high risk (e.g. health care and other care providers, household contacts of people at high risk of influenza complications, child care provider to children aged 0 to 23 months, individuals who provide services within closed or relatively closed settings to persons at high risk); and individuals in direct contact with avian-influenza infected poultry during culling operations.^[4]

7.0 Vaccination Coverage

7.1 Background

Public Health is required by the Ontario Public Health Standards to provide provincially funded immunization programs to any eligible person in the health unit, including: board of health-based clinics; school-based clinics, community-based clinics; and, outreach clinics to priority populations. Subsequently, the NBPSDHU administers seasonal influenza vaccinations throughout the influenza season to the general population, as well as those classified as high priority.

Aggregate vaccination numbers categorized by age, gender and priority group (i.e. general population and high priority population) are reported by the Health Unit's VPD program to the Public Health Branch of the MOHLTC on a monthly basis as part of the *Universal Influenza Immunization Program*. The numbers reported to the MOHLTC include those vaccinations administered by the Health Unit through community vaccination clinics, as well as those administered by nursing agencies via workplace and pharmacy clinics. The total number of vaccinated staff and long-term care residents within LTCH and hospitals is also reported to the MOHLTC via the CDC program.

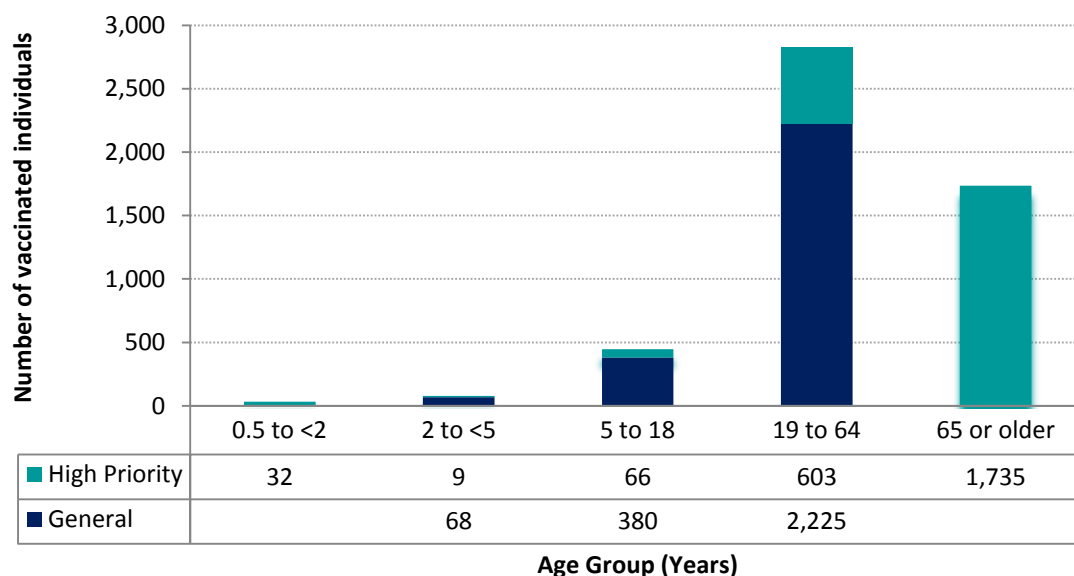
7.2 North Bay Parry Sound District Community Influenza Vaccination Clinics

In the 2009/2010 season, 5,086 seasonal influenza vaccines were administered by the NBPSDHU community influenza vaccination clinics. Vaccinations were given to 2,445 (48%) high priority individuals. Of the high priority group, 1,735 (71%) were persons 65 or older (see Figure 10). Overall, equal numbers of females and males were vaccinated overall and by age category (see Figure 11). Compared to the 2008/2009 influenza season, the overall number vaccinated fell 42%. Likewise, vaccines administered to individuals of high priority decreased below the 2008/2009 number by 27% (see Figure 12).

Meanwhile, 22,800 individuals received at least one pH1N1 vaccine. Approximately equal numbers of females and males were vaccinated across all age groups (see Figure 13). Age and gender were unknown for 383 individuals (approximately 2% of individuals). On October 20th, 2009, the Public Health Agency of Canada recommended children aged 6 months to 9 years of age receive two half doses of the pH1N1 vaccine at least 21 days apart^[7]. This recommendation changed on November 12th, 2009 to only children aged 6 months to less than 3 years of age and 3 to 9 year olds with chronic conditions receiving two half doses 21 days apart^[1]. Healthy children aged 3 to 9 years of age were recommended to receive only one half dose. This update was based on findings from clinical trials in Europe indicating one half dose as providing an acceptable level of protection for the healthy children between 3 to 9 years old age group.

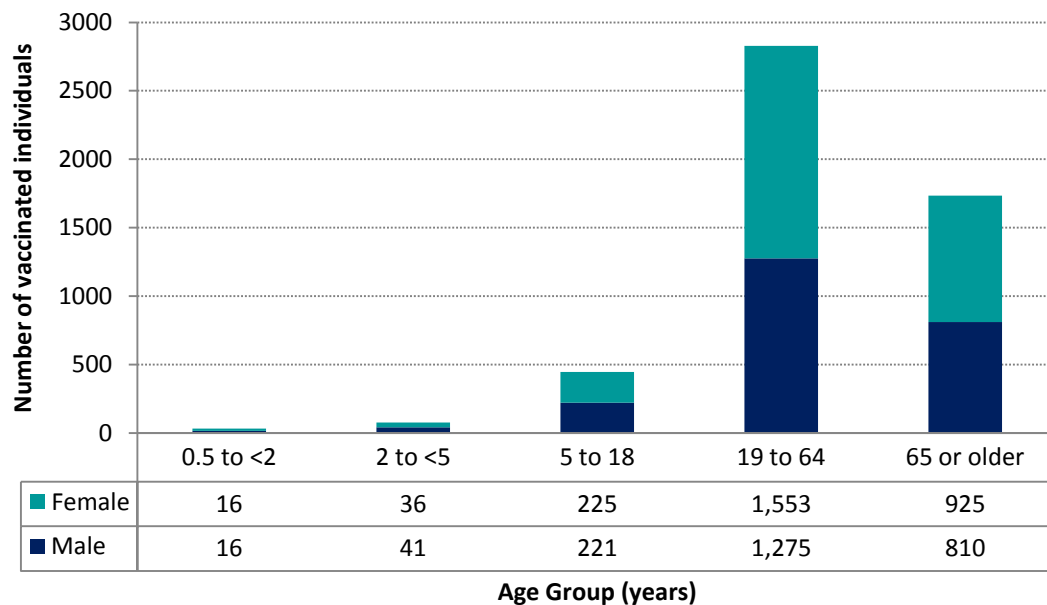
At least one half dose of the pH1N1 vaccine was administered to 2,822 children by the VPD program vaccination clinics. Half of the children aged from 6 months to less than 3 years old received a second half dose (see Figure 14). Of the 3 to 9 year olds with chronic conditions, 30% did not receive a second half dose by the VPD vaccination clinics. For those children who received two vaccinations, time between the first and second vaccination ranged from 1 to 119 days, with a median of 25 days. A small number of children (12) received a vaccine before the recommended 21 day interval between the two vaccinations.

Figure 10. Number of individuals vaccinated for seasonal influenza by the NBPSDHU Community Vaccination Clinics, by age group, and priority classification, 2009/10.



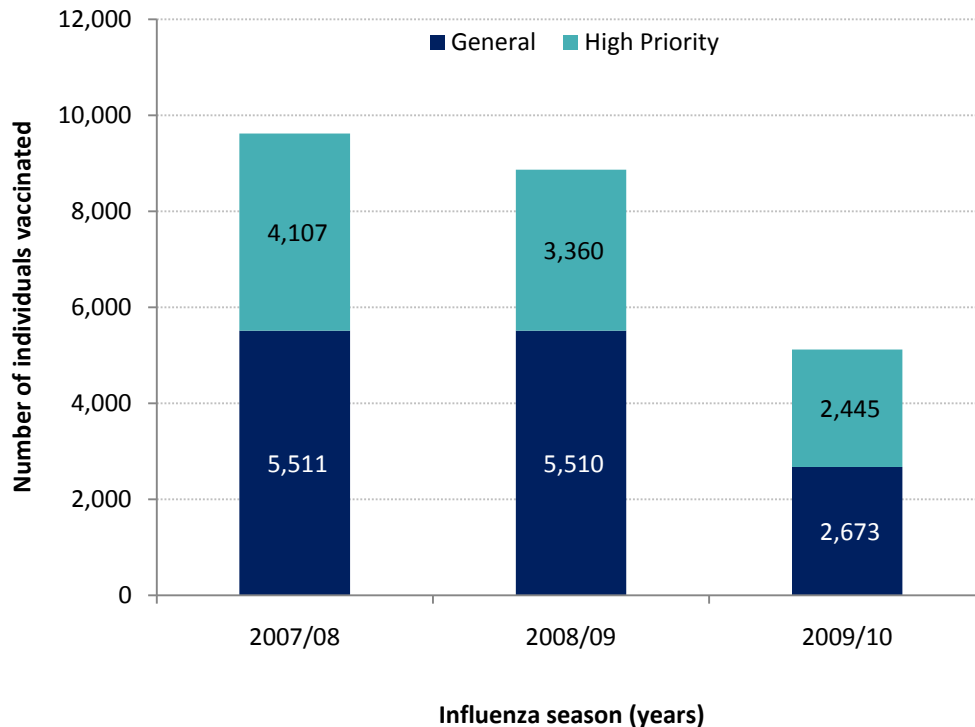
Data source: Ministry of Health and Long-Term Care, Universal Influenza Immunization Program, extracted September 7, 2010.

Figure 11. Number of individuals vaccinated for seasonal influenza by the NBPSDHU Community Vaccination Clinics by age group, and gender, 2009/10



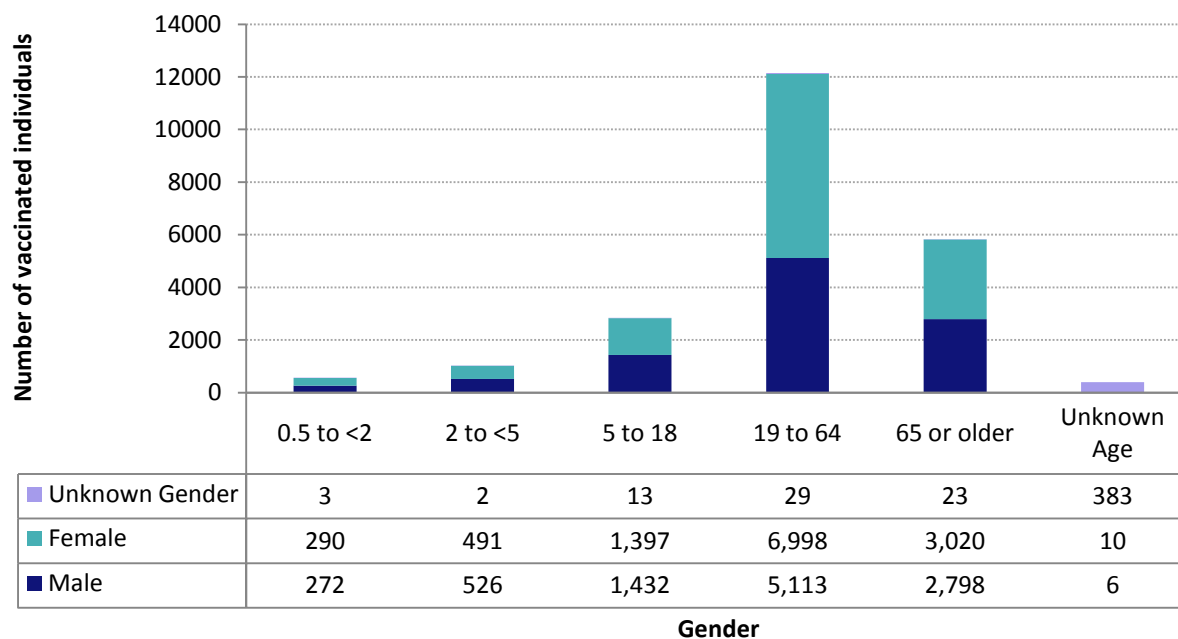
Data source: Ministry of Health and Long-Term Care, Universal Influenza Immunization Program, extracted September 7, 2010.

Figure 12. Number of individuals vaccinated for seasonal influenza by the NBPSDHU Community Vaccination Clinics by priority group and influenza season, 2008/09



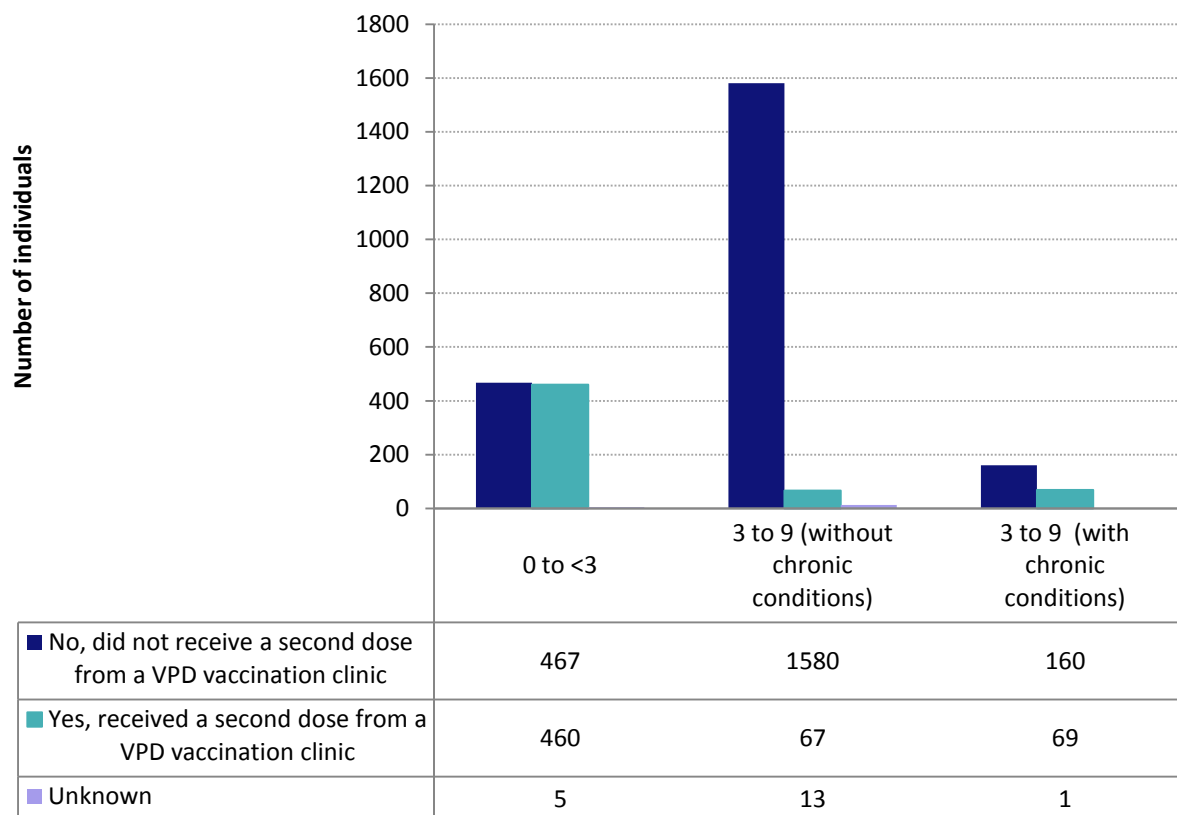
Data source: Ministry of Health and Long-Term Care, Universal Influenza Immunization Program, extracted September 7, 2010

Figure 13. Number of individuals vaccinated for pH1N1 by the NBPSDHU Community Vaccination Clinics by age group, and gender, 2009/10



Data source: NBPSDHU pH1N1 Vaccination Internal Access Database, Vaccine Preventable Diseases Program internal data. Extracted September 15, 2010.

Figure 14. Number of individuals aged 0 to <3 years old, 3 to 9 years old (without a chronic condition) and 3 to 9 years old (with a chronic condition) who did and did not receive a second pH1N1 vaccine by the NBPSDHU community vaccination clinics, 2009/10



Age Categories by Health Status

Data source: NBPSDHU pH1N1 Vaccination Internal Access Database, Vaccine Preventable Diseases Program internal data. Extracted September 15, 2010.

7.3 Workplace and Pharmacy Vaccination Clinics

Nursing agencies provide fee-for-service vaccination clinics to workplaces and pharmacies throughout the NBPSDHU area. The Health Unit’s VPD program works closely with these agencies to ensure vaccine availability, and collection of aggregate vaccination numbers categorized by age, gender and priority group.

In the 2009/10 season, seasonal flu vaccinations were not administered via workplace or pharmacy vaccination clinics. Of all the pH1N1 vaccines administered, only 80 (0.3%) were received from workplace clinics.

7.4 Community Care Access Centers, Group Homes, Community Health Centers & General Practitioners

Vaccines are disbursed by the health unit to regional Community Care Access Centers (CCACs), group homes, community health centers and general practitioners. In the 2009/10 season, seasonal flu vaccinations were distributed to the previously stated organizations/health care providers, however data for seasonal influenza vaccines administered are not collected. A total of 3,812 pH1N1 vaccines were administered through these providers: 928 (24.3%) by community health centers, 173 (4.5%) by group homes, 20 (0.5%) by CCACs and 2,690 (70.6%) by general practitioners.

7.5 Facility / Institutional Vaccination Coverage

7.5.1 North Bay Parry Sound District Health Unit

NBPSDHU staff were not mandated to receive either the seasonal influenza vaccine or the pH1N1 vaccine. Documentation for immunizations was also not required. According to self-report or supplemental documentation, an estimated 81% of regular staff received the pH1N1 vaccine and 38% received the seasonal influenza vaccine. Data was not collected for casual staff.

7.5.2 Long Term Care, Retirement Facilities and Hospitals

The MOHLTC has been collecting seasonal influenza immunization rates for staff and residents of LTCHs since 1999 and for hospital staff since 2000. Seasonal influenza immunization coverage rates are reported to the Medical Officer of Health each year and compiled by the Public Health Division in order to evaluate the effectiveness of the Universal Influenza Immunization Program. Local hospitals also submit influenza immunization numbers for staff and long term care residents/patients.

Seasonal flu vaccination of long-term care residents is known to reduce morbidity and mortality. The National Advisory Committee on Immunization recommends vaccinating health care providers with the seasonal influenza vaccine to prevent transmission of influenza to high risk populations, such as adults over the age of 65, and considers this to be an essential component of the standard of care for the protection of their patients. [4]

Six out of twelve (50%) of the long-term care and retirement homes met the resident target rate (95% of residents vaccinated with the seasonal influenza vaccine) in the 2009/10 season, a higher percentage than seen in the 2008/09 season when only four of the twelve facilities (41.7%) met the same standard. Among staff at the same facilities in the 2009/10 season, three of the twelve facilities (25%) met the staff target rate of 70% immunized or higher, comparatively lower than the 2008/09 season in which nine of the twelve facilities (75%) met the same target rate. Resident immunization rates were lower in five of the twelve facilities, stayed the same in two facilities and were higher in five facilities.

In long-term care homes, resident immunization rates were slightly higher than the previous season (94% in 2009/10 compared to 91% in 2008/09; see Table 5). In contrast, the resident immunization rate in retirement homes decreased from 91% in 2008/09 to 81% in 2009/10. The percentage of hospital residents who received the seasonal influenza vaccine was lower overall (50%) in the 2009/10 compared to the previous 2008/09 season (72%). Staff immunization rates decreased in long-term care homes, retirement homes and hospitals from the 2008/09 season compared to the 2009/10 season (69% to 42%, 97% to 74% and 71% to 38%, respectively). Overall, average seasonal influenza immunization rates among residents were similar in the 2009/10 season compared to the 2008/09 season. Yet, overall staff immunization rates dropped from 71% across all facilities in 2008/09, to 40% in 2009/10. Facilities in the adjusted Nipissing district had higher rates of immunization among residents in the 2009/10 season compared to the 2008/09 season, while residents rates in Parry Sound facilities remained similar. However, staff immunization rates decreased in both districts in 2009/10 from the previous season, with facilities in the Parry Sound and adjusted Nipissing district vaccinating 45% and 38% of staff in 2009/10, respectively.

In response to the emergence of the novel pandemic H1N1 (pH1N1) strain of the influenza virus in April 2009, an adjuvanted (includes an agent to boost immunity) and an unadjuvanted (does not include an immunity-boosting agent) were approved for use in Canada. The Public Health Agency of Canada identifies persons under the age of 65 years with chronic conditions and health care workers who care for persons highly susceptible to influenza-related complications as the highest priority groups to receive the inactivated monovalent adjuvanted pH1N1 immunizations. [2] Adults aged 65 years and older are not as susceptible as

younger populations or higher risk populations to contract pH1N1, but once infected have a higher risk of complications and death from influenza.

In general, 78% of residents in long-term care, 91% of retirement home residents and 64% of hospital long-term care residents/patients received a pH1N1 immunization (see Table 6). The pH1N1 vaccine was administered to 56% of staff at long-term care facilities, 80% of staff at retirement homes and 71% of staff. Overall, an average of 75% of residents were immunized with the pH1N1 vaccine. The average percentage of staff vaccinated with the pH1N1 vaccine was 67%. Facilities in the Parry Sound district vaccinated a larger percentage of residents (80% versus 69% for adjusted Nipissing district facility residents). The staff pH1N1 vaccination rate was slightly higher in facilities within the adjusted Nipissing district compared to the same rate in Parry Sound facilities (68% and 64%, respectively).

Table 5. Number (No.) and Percent (%) of Residents and Staff Immunized for Seasonal Influenza, in Long-Term Care Homes, Retirement Homes and Hospitals in 2008/09 and 2009/10 Influenza Seasons, NBPSDHU area.

Facility Type	RESIDENTS				STAFF			
	2008/09		2009/10		2008/09		2009/10	
	No. Residents	No. Immunized (%)	No. Residents	No. Immunized (%)	No. Staff	No. Immunized (%)	No. Staff	No. Immunized (%)
Long-Term Care Homes (n=9)	1,159	1,055 (91)	1,156	1,091 (94)	1,254	870 (69)	1,316	551 (42)
Retirement Homes (n=3)	236	215 (91)	251	204 (81)	98	95 (97)	100	74 (74)
Hospitals (n=5)	289	207 (72)	270	136 (50)	2,739	1,936 (71)	3,101	1,176 (38)
Total:	1,684	1,497 (89)	1,524	1,431 (85)	4,299	3,116 (72)	4,517	1,801 (40)
<i>Adjusted Nipissing District</i>	1,257	1,106 (88)	1,079	1,024 (95)	3,236	2,493 (77)	3,347	1,270 (38)
<i>Parry Sound District</i>	427	391 (92)	445	407 (91)	1,063	623 (59)	1,170	531 (45)

Data source: Communicable Disease Control internally collected data. Extracted September 24, 2010.

Table 6. Number (No.) and Percent (%) of Residents and Staff Immunized for pH1N1 Influenza, in Long-Term Care Homes, Retirement Homes and Hospitals in the 2009/10 Influenza Season, NBPSDHU area.

Facility Type	RESIDENTS		STAFF	
	No. Residents	No. Immunized (%)	No. Staff	No. Immunized (%)
Long-Term Care Homes (n=9)	1,156	853 (78)	1,316	737 (56)
Retirement Homes (n=3)	236	215 (91)	98	78 (80)
Hospitals (n=5)	287	185 (64)	3,101	2,200 (71)
Total:	1,704	1,225 (72)	4,517	3,015 (67)
<i>Adjusted Nipissing District</i>	1,261	870 (69)	3,347	2,267 (68)
<i>Parry Sound District</i>	443	355 (80)	1,170	748 (64)

Data source: Communicable Disease Control internally collected data. Extracted September 24, 2010.

8.0 References

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