NOVA SCOTIA
Health and Wellness

# INFLUENZA

## Surveillance Report
## 2011–2012 Influenza Season

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# Introduction

Influenza is an illness of the respiratory tract caused by influenza A and B viruses, characterized by the acute onset of fever, headache, myalgia, prostration, sore throat and cough. Influenza derives its public health importance from the epidemic potential of the virus and the associated morbidity and seriousness of complications. Current respiratory pathogen activity across the province is summarized in the **Respiratory Watch** report**.** This report is produced weekly or biweekly, according to level of respiratory pathogen activity.

Immunization is widely recognized as the most effective means to reduce the morbidity and mortality associated with influenza. Each year in Canada, the National Advisory Committee on Immunization (NACI) publishes a statement with recommendations as to the groups that should be targeted by seasonal immunization programs (1). Previously, influenza immunization data were reported based on these NACI target groups, however, in 2010 the Nova Scotia Department of Health and Wellness (DHW) made publicly funded influenza vaccine available to all individuals 6 months of age or older, so data are reported for all Nova Scotians (6 months of age and older).

This report will review the epidemiology of laboratory-confirmed influenza and trends in influenza-like illness (ILI) for the 2011–2012 season. As well, it will review seasonal influenza vaccine coverage rates for Nova Scotia and select groups, including children aged 6 months to 23 months, residents and staff of long-term care facilities and staff of acute care facilities.

# Methods

The 2011-2012 influenza season was defined using the Public Health Agency of Canada (PHAC) influenza surveillance weeks; it began August 28, 2011 and ended August 25, 2012. Data on influenza cases, ILI, sentinel swabbing, and vaccine coverage used in this report were obtained from several sources, as described below. Further information on surveillance case definitions, reporting procedures, and forms can be found in the Nova Scotia Communicable Disease Control Manual (2).

## Influenza Cases and Outbreaks

Influenza is a notifiable disease in Nova Scotia under the Health Protection Act. Influenza cases are classified based on standardized case definitions and are reported to the Department of Health and Wellness (DHW) through the Application for Notifiable Disease Surveillance (ANDS).

Respiratory pathogen testing including influenza testing is available for the acute care setting and long term care / adult residential care settings. Specific influenza surveillance testing is available in emergency departments as directed by Nova Scotia Department of Health and Wellness. Testing from the community is not performed unless special circumstances exist and on the approval by a Capital District Health Authority (CDHA) Microbiologist.

Laboratory testing consists of a multiplex nucleic acid amplification assay (NAAT) for a broad range of respiratory viral pathogens or a streamlined nucleic acid amplification assay for the detection of Influenza A, Influenza B, Respiratory Syncytial Virus only.

Public Health Surveillance Subtyping of Influenza virus type A positive samples is performed. Testing during the season will determine the strains which are circulating.

Outbreaks of influenza must also be reported to public health as per the Health Protection Act. Outbreaks are reported to DHW through a secure web-based application (Outbreak Summaries), allowing users to monitor trends in outbreaks. Outbreak Summaries facilitate standardized and systematic documentation of outbreak data and allows users to query, summarize, and generate reports.

## Influenza-Like Illness (ILI)

An Emergency Room (ER) surveillance system was implemented in Nova Scotia in April 2009. Emergency departments in 41 hospitals across the province began monitoring for trends in ILI in the community in order to determine disease activity levels and to detect waning, re-emergence, and severity of illness. Infection control practitioners report the total number of patients seen in the ER and the total number meeting the ILI case definition on a weekly basis to DHW. The ILI surveillance case definition is:

Acute onset* of respiratory illness with:

Fever AND Cough

AND

One or more of the following: sore throat, joint pain, muscle pain, malaise or extreme weakness which could be due to influenza virus.

**Note:** In children under 5, gastrointestinal symptoms may also be present.

In patients under 5 or 65 and older, fever may not be prominent.

*Distinct change from normal status to respiratory illness over 1-3 days, based on clinical judgment.

## Vaccine Coverage

The 2011-2012 influenza season was the second non-pandemic influenza season for which the influenza vaccine was publicly funded for all Nova Scotians 6 months of age and older. In the fall of each year, DHW provides a supply of vaccine to the district Public Health Services (PHS) offices that in turn distribute the vaccine to physician practices and other health care providers.

Data on the number of individuals who received the influenza vaccine is available from two sources: the provincial Medical Services Insurance (MSI) physician-billing database (provides data on individuals who received influenza vaccine at physician offices); and the DHW data collection tools used by district PHS. These data collection tools capture aggregate summaries of immunization data from clinics, healthcare facilities and other community agencies [e.g., Victorian Order of Nurses (VON)]. In order to calculate

complete coverage rates for healthcare facilities, the total number of staff, volunteers and residents/patients who received influenza vaccine, either at the facility or by another provider are reported.

Vaccine coverage rates are determined by calculating the number of individuals who received the vaccine as a proportion of the total number of individuals eligible to receive the vaccine. Denominator data for the population vaccine coverage rates are obtained from Statistics Canada and are estimates based on the 2006 Census. Denominator data for vaccine coverage rates in acute and long-term care facilities are obtained through the DHW data collection tools.

It is of note that influenza vaccine administration processes and collection of vaccine coverage data during the 2009–2010 pandemic influenza season were unique to that year, and as such, data will not be compared to the 2009-2010 season in this report.

# Limitations

## Influenza Testing

Testing of clinical specimens for influenza varied between the Provincial Public Health Laboratory Network (PPHLN) and the IWK Health Centre Laboratory. Respiratory virus testing at the PPHLN was only offered for acute care inpatients (excluding IWK Health Centre clients), long-term care and adult residential care facility residents, and public health certified sentinel ER testing requests. Influenza testing at the IWK Health Centre was offered for IWK inpatients, emergency patients and other clients as appropriate for clinical purposes. Testing of patients was completed under the guidance of the Chief of IWK Laboratories and at the discretion of IWK Health physicians.

## Vaccine Coverage

A number of limitations should be considered when interpreting the vaccination coverage rates presented in this report. With the exception of the computerized MSI physician-billing database, surveillance data were collected in a paper-based format from the sources described above. Many long-term care facilities, occupational health clinics and private agencies did not report their data by the specified target groups and instead reported a total number for all groups combined. Also, facilities may not have included the staff and residents/patients immunized by other providers, so coverage rates of facilities may not be accurate.

There is also the potential for duplicate reporting as well as misclassification. For example, a staff member of a facility who received vaccine from a physician would be captured in the MSI database and may also have been reported by the facility in which the individual was employed if the data collection tools were not completed correctly.

In past years, DHW reported influenza vaccine coverage rates among health care workers in acute care facilities. These reports distinguished between direct contact and support staff but never clearly defined these categories, which may have caused inconsistencies in reported rates among this target group. Further, during the 2009-2010 influenza pandemic, health care worker denominator data was not

available and as a result, coverage rates could not be calculated. Data for this target group were not collected for the 2010-2011 influenza season and so rates were not available for this season. Health care worker immunization data collection resumed for the 2011-2012 influenza season.

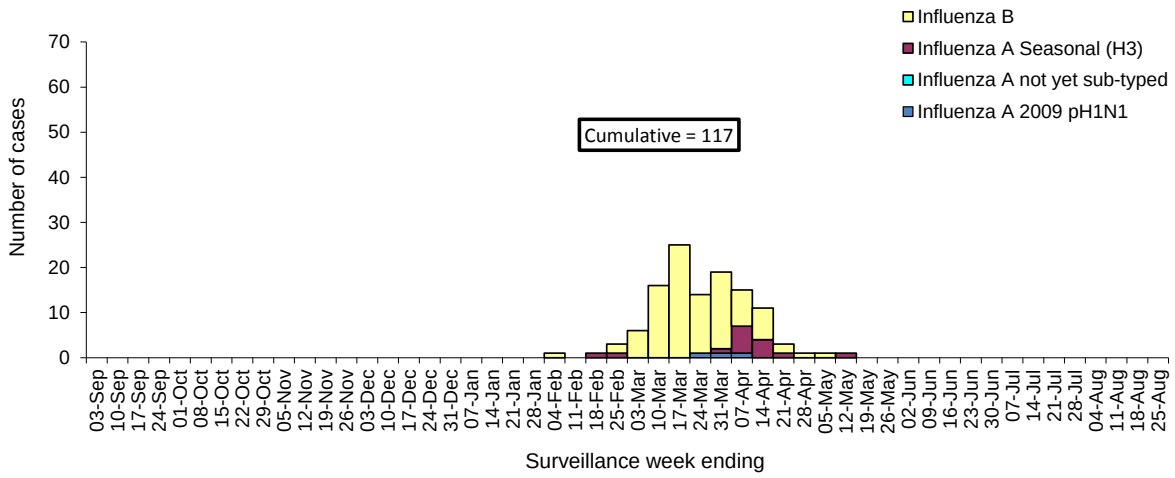
Children less than nine years of age receiving seasonal influenza vaccine for the first time require two doses administered at least four weeks apart. Due to limitations in data extraction, it is difficult to determine the number of doses administered to a specific individual. Each dose is counted as someone being fully immunized and the numbers presented in this age group may overestimate true vaccine coverage rates.

# Results

## Influenza Cases and Outbreaks

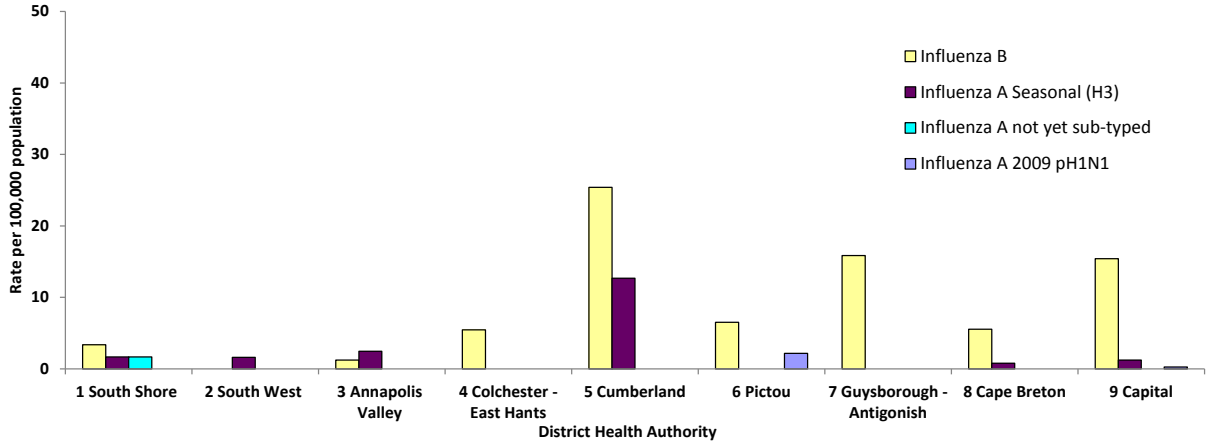
Cases of Influenza A, influenza B, and pandemic strain influenza (2009 pH1N1) were reported in Nova Scotia during the 2011–2012 season. The number of laboratory-confirmed cases of each type is shown in Figure 1. The predominant strain circulating in the province was Influenza B, accounting for 85% of all laboratory-confirmed cases during the 2011–2012 influenza season.

**Figure 1: Number of laboratory-confirmed cases of influenza by type and surveillance week, Nova Scotia, 2011-2012 Influenza Season**



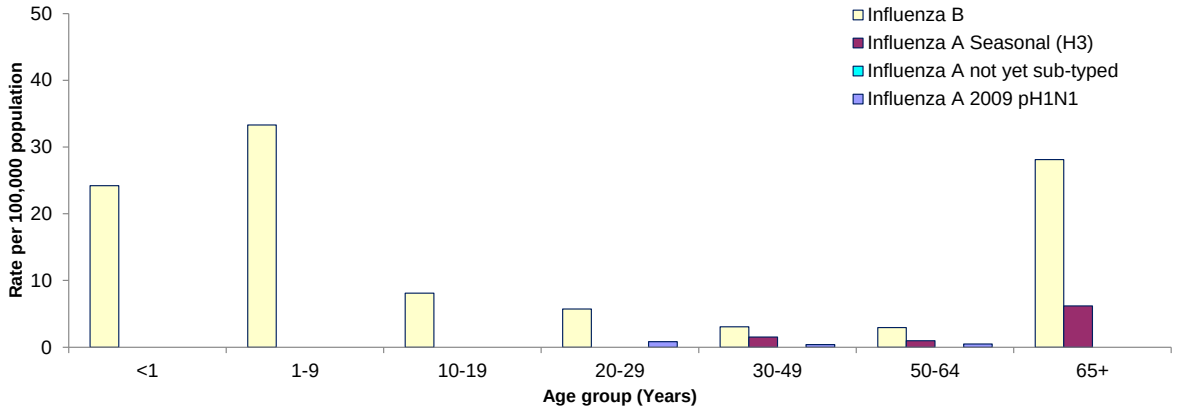

Influenza cases were reported from all District Health Authorities (DHAs) during the 2011–2012 season. As shown in Figure 2, influenza B had relatively higher rates across most DHAs. Influenza A was only reported in seven of the nine DHAs. The predominant strain (for those sub-typed) was Influenza A Seasonal (H3).

**Figure 2: Reported rate of influenza cases per 100,000 population by type and DHA, Nova Scotia, 2011-2012 Influenza Season**



Influenza cases were reported across all age groups (Figure 3) during the 2011–2012 season. Children under 10 years of age and those 65 years of age and older were the age groups with the highest rate of reported cases.

**Figure 3: Reported rate of influenza cases per 100,000 population by type and age group, Nova Scotia, 2011-2012 Influenza Season**

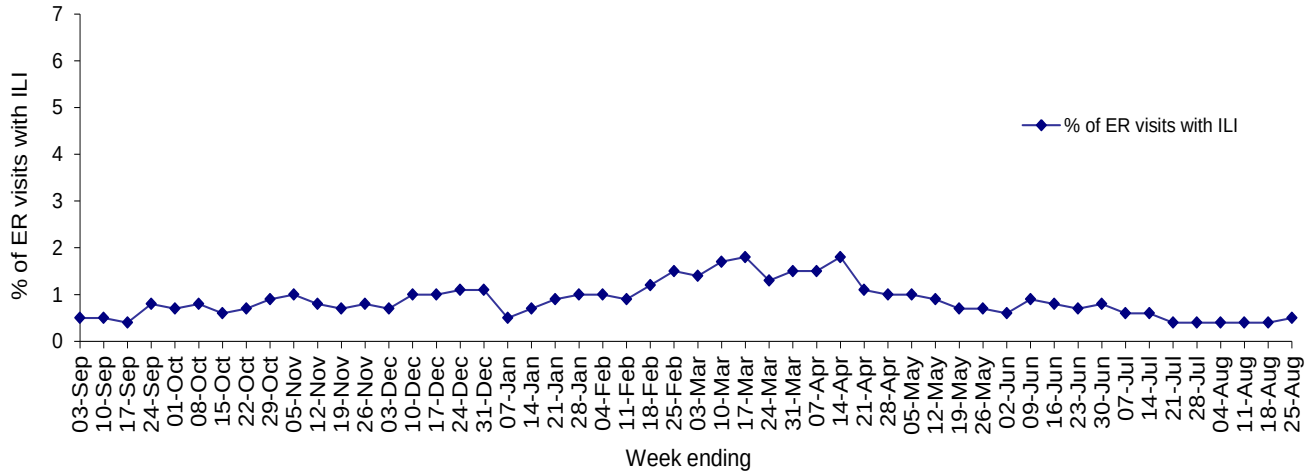



Ninety-three respiratory-related outbreaks were reported during the 2011–2012 influenza season. Of the 56 outbreaks in LTC facilities this year, enhanced respiratory virus testing was able to identify an agent in 80.3% of outbreaks. Schools/daycares reported 31 outbreaks during the 2011-2012 influenza season, while 6 outbreaks were reported by other facilities.

## Influenza-Like Illness

The proportions of patient visits with influenza-like illness over time, monitored at emergency rooms across the province, are presented in Figure 4. The proportion of emergency room visits with ILI was consistently at or below 1.8% of visits throughout the season, with activity increasing in mid-February. This was followed by a gradual decrease in ILI ER visits after April 14.

**Figure 4: Percentage of ER visits with ILI, Nova Scotia, 2011–2012 Influenza Season**



## Vaccine Coverage

The publicly funded influenza immunization program provided a total of 409,960 doses of seasonal trivalent influenza vaccine (TIV) distributed to district PHS by DHW for the 2011–2012 influenza season. Of these, PHS distributed a total of 409,034 doses (99.8%) of influenza vaccine to vaccine providers.

The overall vaccine coverage rate for Nova Scotia was 35.4% (Table 1). The coverage rate by DHA ranged from 28.0% (DHA 6) to 42.3% (DHA 4).

**Table 1: Influenza vaccine coverage by provider type for those 6 months of age and older by DHA, Nova Scotia, 2011-2012 Influenza Season**

| DHA | DHA Population (6 mos and older) | Vaccinated by physicians | | Vaccinated by public health/other | | Total vaccinated | |
|---|---|---|---|---|---|---|---|
| | | n | % | n | % | n | % |
| 1 | 59,119 | 18,850 | 31.9 | 4,009 | 6.8 | 22,859 | 38.7 |
| 2 | 61,383 | 13,016 | 21.2 | 5,375 | 8.8 | 18,391 | 30.0 |
| 3 | 80,948 | 27,019 | 33.4 | 2,581 | 3.2 | 29,600 | 36.6 |
| 4 | 72,911 | 25,581 | 35.1 | 5,243 | 7.2 | 30,824 | 42.3 |
| 5 | 31,213 | 5,996 | 19.2 | 3,678 | 11.8 | 9,674 | 31.0 |
| 6 | 45,586 | 7,225 | 15.8 | 5,555 | 12.2 | 12,780 | 28.0 |
| 7 | 43,522 | 9,525 | 21.9 | 4,722 | 10.8 | 14,247 | 32.7 |
| 8 | 125,184 | 32,838 | 26.2 | 13,054 | 10.4 | 45,892 | 36.7 |
| 9 | 408,593 | 126,685 | 31.0 | 14,732 | 3.61 | 141,417 | 34.6 |
| Nova Scotia | 928,456 | 269,838* | 29.1 | 58,949 | 6.3 | 328,787* | 35.4 |

*Columns will not add up as there were 3,103 physician immunizations that were not associated with a DHA

## Influenza Vaccine Coverage Estimates for specified populations

### *Children 6 to 23 Months of Age*

Influenza vaccine for children aged 6 to 23 months has been publicly funded since the 2004-2005 influenza season. As the majority of this age group is vaccinated by primary health care providers, the majority of the data used to calculate vaccine coverage estimates was obtained from the MSI physician-billing database. A small proportion of this age group was vaccinated by public health.

Coverage rates for children aged 6 to 23 months for the past seven influenza seasons (except the 2009-2010 pandemic flu season) are presented in Table 2. Approximately 62% of children aged 6 to 23 months were vaccinated during the 2011–2012 influenza season.

**Table 2: Influenza vaccine coverage (including MSI billing) for children 6 to 23 months of age, Nova Scotia, 2005-2006 to 2011–2012 Influenza Seasons**

| Year | Population aged 6 – 23 months | Vaccinated by physicians | | Vaccinated by public health/other | | Total vaccinated | |
|---|---|---|---|---|---|---|---|
| | | n | % | n | % | n | % |
| 2011-2012 | 12,419 | 7,342 | 59.1 | 400 | 3.2 | 7742 | 62.3 |
| 2010–2011 | 12,419 | 8,429 | 67.9 | 594 | 4.8 | 9,023 | 72.7 |
| 2009-2010 | - | - | - | - | - | - | - |
| 2008–2009 | 12,459 | 6,237 | 50.1 | 153 | 1.2 | 6,390 | 51.3 |
| 2007–2008 | 12,483 | 5,436 | 43.5 | 193 | 1.5 | 5,629 | 45.1 |
| 2006–2007 | 12,636 | 4,268 | 33.8 | 219 | 1.7 | 4,487 | 35.5 |
| 2005–2006 | 12,660 | 4,709 | 37.2 | 250 | 2.0 | 4,959 | 39.2 |

The majority (59.1%) of children aged 6 to 23 months were vaccinated by primary care physicians (Table 3). The percent of children vaccinated by DHA ranged from 26.6% (DHA 6) to 76.6% (DHA 9).

**Table 3: Influenza vaccine coverage for children 6 to 23 months of age by provider and DHA, Nova Scotia, 2011–2012 Influenza Season**

| DHA | Population aged 6 – 23 months | Vaccinated by physicians | | Vaccinated by public health/other | | Total vaccinated | |
|---|---|---|---|---|---|---|---|
| | | n | % | n | % | n | % |
| 1 | 606 | 337 | 55.7 | 18 | 3.0 | 355 | 58.6 |
| 2 | 770 | 214 | 27.8 | 42 | 5.5 | 256 | 33.3 |
| 3 | 1,025 | 549 | 53.6 | 0 | 0.0 | 549 | 53.6 |
| 4 | 946 | 663 | 70.1 | 45 | 4.8 | 708 | 74.9 |
| 5 | 330 | 78 | 23.7 | 26 | 7.9 | 104 | 31.6 |
| 6 | 658 | 140 | 21.3 | 35 | 5.3 | 175 | 26.6 |
| 7 | 522 | 168 | 32.2 | 49 | 9.4 | 217 | 41.6 |
| 8 | 1,604 | 562 | 35.0 | 154 | 9.6 | 716 | 44.6 |
| 9 | 5,961 | 4,535 | 76.1 | 31 | 0.5 | 4,566 | 76.6 |
| Nova Scotia | 12,419 | 7,342* | 59.1 | 400 | 3.2 | 7,742* | 62.3 |

*Columns will not add up as there were physician immunizations that were not associated with a DHA

### *Pregnant Women and Aboriginal Persons Living on Reserve*

As shown in Table 4, 18.9% of pregnant women and 56.6% of Aboriginals living on reserve received the influenza vaccine. The majority of pregnant women were vaccinated by physicians.

**Table 4: Influenza immunization coverage rates for pregnant women and aboriginals living on reserve, Nova Scotia, 2011 – 2012 Influenza Season**

| Target Group | Population | Vaccinated by physicians | | Vaccinated by public health/other | | Total vaccinated | |
|---|---|---|---|---|---|---|---|
| | | n | % | n | % | n | % |
| Pregnant Women | 10,203 | 1,747 | 17.1 | 180 | 1.8 | 1,927 | 18.9 |
| Aboriginal Living on Reserve | 9,237 | n/a | - | 5,225 | 57.0 | 5,225 | 56.6 |

### *Health Care Workers in Acute Care Facilities*

Acute care facilities provided district PHS with the total number of health care workers that they employ, as well as the number who received influenza vaccine. Health care worker immunization rates are shown in Table 5. The 2011-2012 rate was 49.0% which is similar to rates reported in previous years.

**Table 5: Percentage of health care workers in acute care facilities vaccinated for influenza, Nova Scotia, 2005-2006 to 2011–2012 Influenza Seasons**

| Year | Total Vaccinated | Number of Staff* in Acute Care Facility | % Vaccinated |
|---|---|---|---|
| 2011-2012 | 12,834 | 26,199 | 49.0 |
| 2010-2011 | n/a** | n/a** | n/a** |
| 2009-2010 | n/a*** | n/a*** | n/a*** |
| 2008-2009 | 8,799 | 21,097 | 41.7 |
| 2007-2008 | 11,045 | 23,505 | 47.0 |
| 2006-2007 | 13,840 | 29,047 | 47.6 |
| 2005-2006 | 11,396 | 21,439 | 53.2 |

*Excludes volunteers

**Data not collected for this target group in 2010-2011

***Denominator data not available to calculate rates

Vaccine coverage rates for staff of acute care facilities by DHA are shown in Table 6. The highest vaccine coverage rate was reported in DHA 3 (61.1%) while the lowest was reported in DHA 5 (40.0%).

**Table 6: Influenza immunization coverage rates for health care workers in acute care facilities by DHA, 2011–2012 Influenza Season**

| DHA | Total Vaccinated | Number of Staff* in Acute Care Facility | % Vaccinated |
|---|---|---|---|
| 1 | 619 | 1,141 | 54.3 |
| 2 | 706 | 1,500 | 47.1 |
| 3 | 943 | 1,543 | 61.1 |
| 4 | 470 | 1,054 | 44.6 |
| 5 | 263 | 657 | 40.0 |
| 6 | 422 | 980 | 43.1 |
| 7 | 464 | 938 | 49.5 |
| 8 | 1,758 | 3,958 | 44.4 |
| 9 | 7,189 | 14,428 | 49.8 |
| Nova Scotia | 12,834 | 26,199 | 49.0 |

*Excludes volunteers

### *Residents and staff of Long-Term Care Facilities*

Long-term care facilities (LTCF) in Nova Scotia report the total number of individuals living in the institution, and the number of these residents who received the influenza vaccine. It is also their responsibility to report the number of staff and volunteers in their facility, and the number of staff and volunteers who received their influenza immunization at their place of employment or from another provider (e.g. family physician). The national target for influenza vaccine coverage among staff, volunteers and residents of LTCF is 95%.

The target coverage rate of 95% of residents, staff, and volunteers was reached in 11% of the LTCF in Nova Scotia for the 2011-2012 influenza season (Table 7). The highest percentage of facilities meeting the target coverage rate is 40% seen in DHA 7. In DHA 2 and DHA 3, none of the facilities met the 95% target coverage rate.

**Table 7: Number and percent of long-term care facilities that met the national target for influenza immunization coverage (95%) of staff, volunteers, and residents, 2011-2012 Influenza Season**

| DHA | Met Target | Number of LTCFs | % Met Target |
|---|---|---|---|
| 1 | 3 | 10 | 30% |
| 2 | 0 | 8 | 0% |
| 3 | 0 | 8 | 0% |
| 4 | 1 | 16 | 6% |
| 5 | 1 | 10 | 10% |
| 6 | 1 | 7 | 14% |
| 7 | 4 | 10 | 40% |
| 8 | 1 | 22 | 5% |
| 9 | 2 | 26 | 8% |
| **Nova Scotia** | **13** | **117** | **11%** |

The overall vaccine coverage rates for residents of LTCF in Nova Scotia have been above 90% since at least 2001, however, the target of 95% has not been met in the province in the previous eleven seasons (Table 8). For the 2011-2012 influenza season, the vaccine coverage rate in LTCF was 92.3%, which is similar to what has been reported in previous years

**Table 8: Influenza vaccine coverage (%) for residents of long-term care facilities, Nova Scotia, 2001-2002 to 2011–2012 Influenza Seasons**

| Year | 11-12 | 10–11 | 09–10 | 08–09 | 07–08 | 06–07 | 05–06 | 04–05 | 03–04 | 02–03 | 01–02 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Percent Vaccinated | 92.3 | 92.7 | - | 91.1 | 94.2 | 94.2 | 94.6 | 94.7 | 94.3 | 94.0 | 92.7 |

Influenza vaccine coverage rates for residents of long-term care facilities by DHA are shown in Table 9. Coverage in the districts ranged from 88.4% (DHA 7) to 94.3% (DHA 3). The target coverage rate of 95% (among residents) was not reached in any facility in Nova Scotia.

**Table 9: Influenza immunization coverage for residents of long-term care facilities by DHA, Nova Scotia, 2011–2012 Influenza Season**

| DHA | Total vaccinated | Number of residents in LTC | % Vaccinated |
|---|---|---|---|
| 1 | 597 | 654 | 91.3 |
| 2 | 439 | 476 | 92.2 |
| 3 | 814 | 863 | 94.3 |
| 4 | 650 | 708 | 91.8 |
| 5 | 416 | 464 | 89.7 |
| 6 | 554 | 599 | 92.5 |
| 7 | 471 | 533 | 88.4 |
| 8 | 1,323 | 1,448 | 91.4 |
| 9 | 2,593 | 2,770 | 93.6 |
| Nova Scotia | 7,857 | 8,515 | 92.3 |

The influenza vaccine coverage rates for staff and volunteers of long-term care facilities in each DHA are shown in Table 10. Overall, staff and volunteers of LTCF had a 59.9% coverage rate in the province. The highest estimate of coverage was 80.1% in DHA 4, and the lowest rate was 44.8% in DHA 2. Overall, long-term care staff had higher coverage rates than volunteers in the facility.

**Table 10: Influenza immunization coverage rates for staff and volunteers of long-term care facilities by DHA, Nova Scotia, 2011 – 2012 Influenza Season**

| | Staff | | | Volunteers | | | Staff & Volunteers | | |
|---|---|---|---|---|---|---|---|---|---|
| DHA | Total Vaccinated | Number of Staff in LTC | % Vaccinated | Total vaccinated | Number of staff in LTC | % Vaccinated | Total vaccinated | Number of staff & volunteers | % Vaccinated |
| 1 | 677 | 960 | 70.5 | 142 | 366 | 38.8 | 819 | 1,326 | 61.8 |
| 2 | 366 | 770 | 47.5 | 23 | 99 | 23.2 | 389 | 869 | 44.8 |
| 3 | 950 | 1,490 | 63.7 | 28 | 41 | 68.3 | 978 | 1,531 | 63.9 |
| 4 | 756 | 933 | 81.0 | 106 | 143 | 74.1 | 862 | 1,076 | 80.1 |
| 5 | 314 | 553 | 56.8 | 14 | 90 | 15.5 | 328 | 643 | 51.0 |
| 6 | 432 | 917 | 47.1 | 22 | 34 | 64.7 | 454 | 951 | 47.7 |
| 7 | 486 | 795 | 61.1 | 47 | 73 | 64.4 | 533 | 868 | 61.4 |
| 8 | 1,358 | 2,270 | 59.8 | 94 | 153 | 61.4 | 1,452 | 2,423 | 59.9 |
| 9 | 2,707 | 4,066 | 66.6 | 316 | 1,002 | 31.5 | 3,023 | 5,068 | 59.6 |
| Nova Scotia | 8,046 | 12,754 | 63.1 | 792 | 2,001 | 39.6 | 8,838 | 14,755 | 59.9 |

# Adverse Events Following Immunization (AEFI)

During the 2011–2012 influenza seasonal immunization campaign, nineteen adverse events following immunization (AEFI) were reported in Nova Scotia possibly associated with influenza vaccine. Most were moderate in nature (local reaction at injection site and rash), with one being a serious event. No cases were admitted to hospital, and all recovered.

# References


1. Public Health Agency of Canada. An Advisory Committee Statement (ACS), National Advisory Committee on Immunization (NACI), Statement on Seasonal Influenza Vaccine for 2011–2012. CCDR 2011; 37, acs-5. (http://www.phac-aspc.gc.ca/publicat/ccdr-rmtc/11vol37/acs-dcc-5/index-eng.php)

2. Department of Health and Wellness. Communicable Disease Control Manual. Available from: http://novascotia.ca/hpp/cdpc/cdcmanual.