Influenza Immunization Report

2018-2019 INFLUENZA SEASON

Department of Health & Wellness

Summary of the 2018-2019 Influenza Season

Overall

- 36.1% of the Nova Scotia population (>6 months of age) received the influenza vaccine (Table 1).
- There were differences in influenza immunization coverage rates across the zones (32.7 – 37.1 %) (Table 1).
- The coverage rate in 2018-2019 (36.1 %) was lower than the rate in 2017-2018 (36.8 %) (Figure 1).
- Since the introduction of the universal publicly funded influenza vaccine program in 2010-2011, vaccine coverage was highest in the 2013-2014 season (41.8 %) and lowest in the 2011-2012 season (35.4 %) (Figure 1).
- New this season, the inactivated high-dose trivalent influenza vaccine (HD-TIV) was offered to Long Term Care Facility (LTCF) residents 65 years and older. The inactivated quadrivalent influenza vaccine (QIV) was offered for all other individuals 6 months of age and older. This also included
- all staff and those residents of LTCFs under 65 years of age.

Target Groups

Community-based

- Among community-based target groups, adults ≥ 65 years had the highest coverage rates (62.7 %) and pregnant females had the lowest coverage rates (14.4 %) (Table 1).
- The coverage rate for children aged 6-59 months was 45.5 % (Table 1).
- Across the zones there were differences in target group coverage rates (Table 1).
- Coverage rates for Aboriginal people living on reserve were not estimated due to data limitations (see Methods).

Care Facility-based

- Among care facility-based target groups, residents of long-term/residential care facilities (92.0%) had the highest coverage rates and acute care staff had the lowest coverage rates (39.9 %) (Table 1).
- Across the zones there were differences in target group coverage rates (Table 1).
- The coverage rate for staff and volunteers of long term care facilities (46.4%) was statistically significantly higher than in 2017-2018 (44.7 %) (Figure 3).
- The acute care health care worker coverage rate of 39.9% (Table 1) for 2018-2019 is lower than the 2017-2018 rate of 40.8%.
- Over the past five influenza seasons coverage rates for residents of long-term care facilities have consistently been above 90%, but have not met the 95% target.

Provider Type

- The majority of influenza immunizations were administered by physicians (55.8%), followed by pharmacists (42.6%) and public health/other providers (1.6%) (Table 2).
    - Among all target groups, physicians provided the majority of immunizations, followed by pharmacists and public health/other. However, there were differences in the proportions across zones and target groups (Table 2).
    - Among all zones, with the exception of northern zone, physicians provided the majority of immunizations, followed by pharmacists and public health/other. In northern zone, physicians and pharmacists both provided 48.5% of the immunizations within the zone.
- Since the introduction of pharmacists as an influenza vaccine provider in the 2013-2014 influenza season, the proportion of vaccine administered by pharmacists has steadily increased. The proportion of influenza vaccine administered by physicians and public health/other providers has decreased over the same period with a steeper decline among public health/other providers (Figure 4).

Adverse Events Following Immunization (AEFI)

- During the 2018-2019 influenza season, there were 5 AEFIs (0.0001% of all flu immunizations) that met the case definition for reporting to the Public Health Agency of Canada (PHAC).

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. Immunization is widely recognized as the most effective means to reduce the morbidity and mortality associated with influenza.

The National Advisory Committee on Immunization (NACI) recommends that everyone aged 6 months or older receive the influenza vaccine with particular focus on certain population groups (1). A particular focus is placed on people at high risk of influenza-related complications or hospitalization such as people of any age who are residents of long term care facilities, people over 65 years old, children 6-59 months old, pregnant women, those with immune compromising conditions and Aboriginal peoples living on reserve. A particular focus is also placed on people capable of transmitting influenza to those at high risk such as health care providers. In 2005, PHAC issued a national immunization coverage goal of 95% coverage for residents of long-term care facilities and staff who have extensive contact with residents (2).

In 2010, the Nova Scotia Department of Health and Wellness (DHW) implemented a universal publicly funded influenza vaccine program for all individuals 6 months of age or older. In the fall of each year, DHW provides a supply of vaccines to the local public health offices that in turn distribute the vaccines to physicians, pharmacists and other health care providers. Pharmacists were introduced as immunizers (for Nova Scotians aged 5 years and older) in the 2013-2014 influenza season.

This report presents the 2018-2019 influenza vaccine coverage rates for the Nova Scotia population with a focus on select sub-groups of interest. The report also includes; the proportion of influenza vaccine administered by provider type and the number of adverse events following immunization (AEFIs) during the 2018-2019 influenza season.

Methods

Vaccine Coverage
Vaccine coverage rates represent the number of individuals who received the vaccine (numerator) as a proportion of the total number of individuals eligible to receive the vaccine (denominator).

Numerator:
Data on the number of individuals who received the vaccine (between October 1, 2018 and March 31, 2019) was extracted from the following sources:

- Provincial Medical Services Insurance (MSI) physician-billing database (provides data on individuals who received influenza immunizations by physicians);
- MSI Pharmacare database (provides data on individuals who received influenza immunizations by pharmacists); and
- Panorama database (provides data on individuals who received influenza immunizations by public health);
- DHW data collection tools used by local public health services (PHS). These data collection tools capture aggregate summaries of immunization data from clinics, long term care and acute care facilities (e.g. IWK), and other community agencies (e.g., Victorian Order of Nurses).

The following immunizations (n=286, 0.08% of all immunizations) were excluded from the numerator:

- Males reported as pregnant
- Females under the age of 12 or over the age of 50 reported as pregnant
- Children under the age of 5 immunized by pharmacists
- Infants < 6 months of age immunized by any provider
- Second dose for children

Aboriginal Persons Living on Reserve:
Aboriginal status is not captured in the physician or pharmacist influenza immunization data. It is only captured in the data from public health/other providers. During the 2018-2019 influenza season public health/other providers administered influenza vaccine to 1222 Aboriginal persons living on reserve. The influenza vaccine coverage rate was not estimated for this target group due to incomplete information from all vaccine providers.

Denominator:
Data on the number of individuals eligible to receive the vaccine came from several sources:

- Statistics Canada: July 2019 NS population estimates based on the 2016 Census. To calculate the population > 6 months of age, the population <= 6 months of age was estimated (half of the total number of births for the year) and subtracted from the total population.
- Nova Scotia Vital Statistics: the total number of births reported for 2018. Total number of births was used to estimate the total number of pregnant women.
- Nova Scotia Health Authority/IWK: Number of staff, long term care volunteers, and long term care residents

For comparisons with previous influenza seasons, data from previous years' influenza immunization reports were used.

Denominator data used for community-based adults ≥ 65 years, also includes individuals ≥ 65 years in long-term care, as the breakdown of LTC residents by age is not available to subtract from the total population.

Adverse Events Following Immunization

- Data on the number of AEFIs reported to PHAC were obtained from Panorama.

Influenza Immunization Coverage in Nova Scotia

Influenza immunization coverage rates for the 2018-2019 influenza season are summarized in Table 1 and Figures 1 to 3. Coverage rates for the total population and specific target groups are presented by zone and for the province in Table 1 and coverage rates over time are presented in Figures 1 to 3. Immunization coverage methodology is presented in the methods section above and immunization counts (numerator) and population counts (denominator) are presented in the appendix.

Table 1: Summary of influenza immunization coverage (%) by zone, Nova Scotia, 2018-2019

	Target Group	WESTERN	NORTHERN	EASTERN	CENTRAL	IWK	NOVA SCOTIA
Overall	Total Population > 6 months	32.7	34.1	36.5	37.1		36.1
Community-Based Target Groups	Children 6-59 months	29.4	35.9	39.6	54.3		45.5
	Adults ≥65 years	58.5	59.4	59.2	67.9		62.7
	Pregnant	11.0	10.1	14.0	16.1		14.4
Care Facility-Based Target Groups	Acute Care Staff	37.6	41.4	44.3	36.2	57.6	41.3
	Long-Term Care Staff & Volunteers	38.3	51.5	45.1	53.8		46.6
	Long-Term Care Residents	91.9	90.0	92.3	93.7		92.0

Figure 1: Influenza vaccine coverage (%) by influenza season, Nova Scotia, 2010-2019

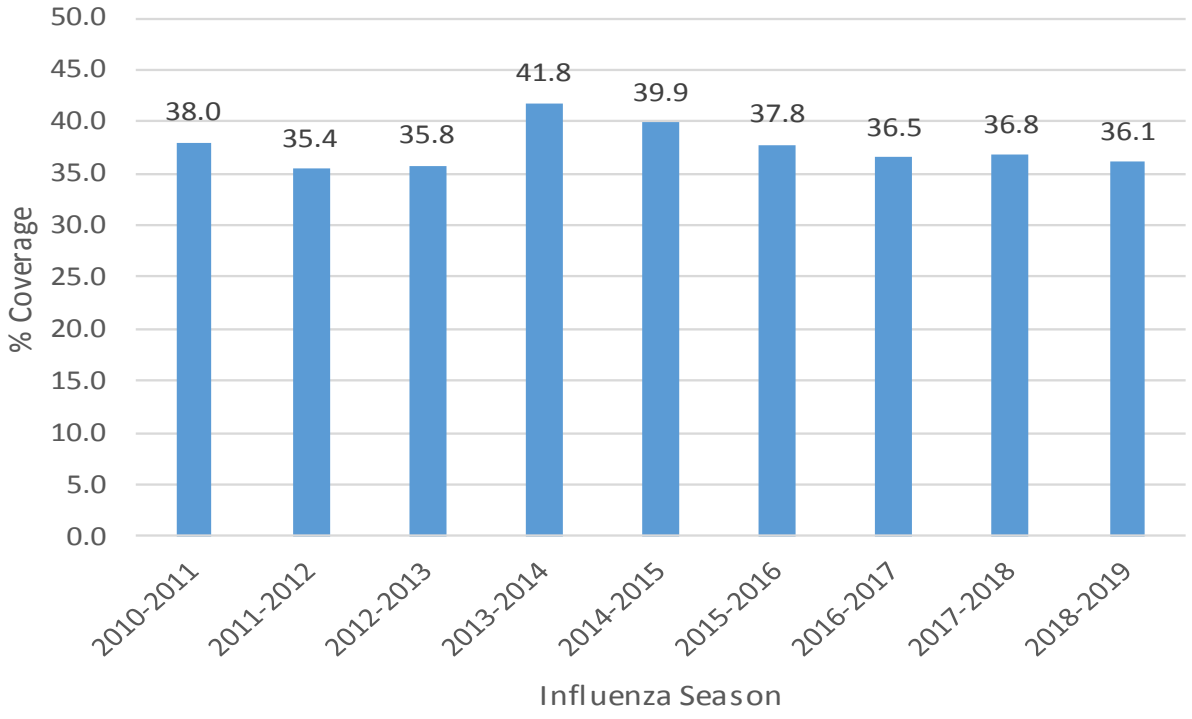
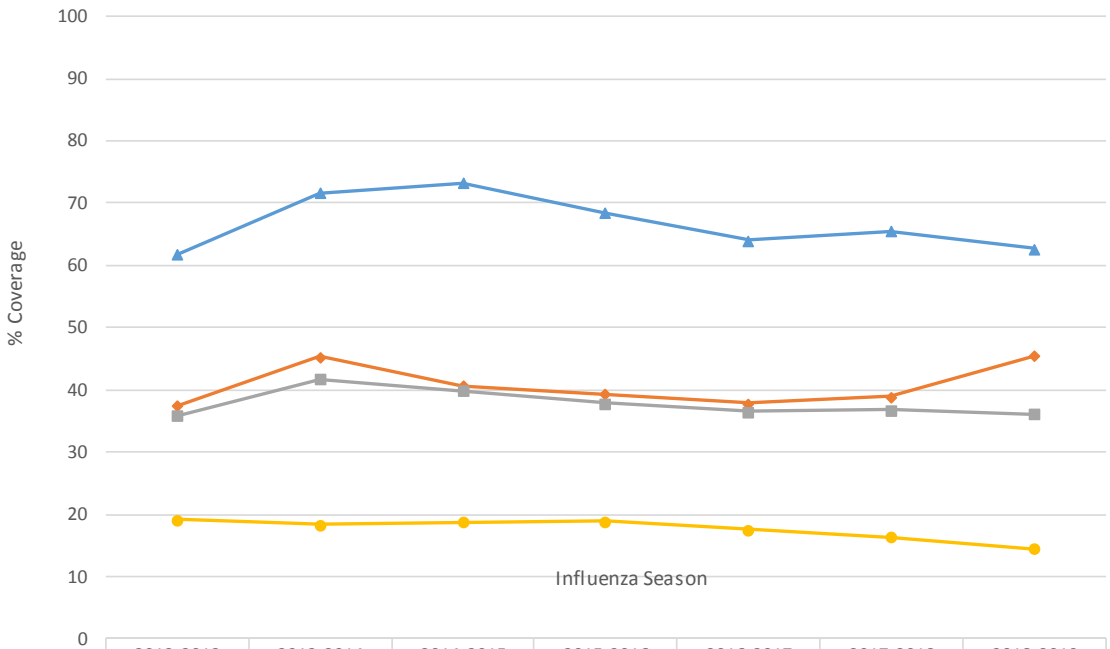
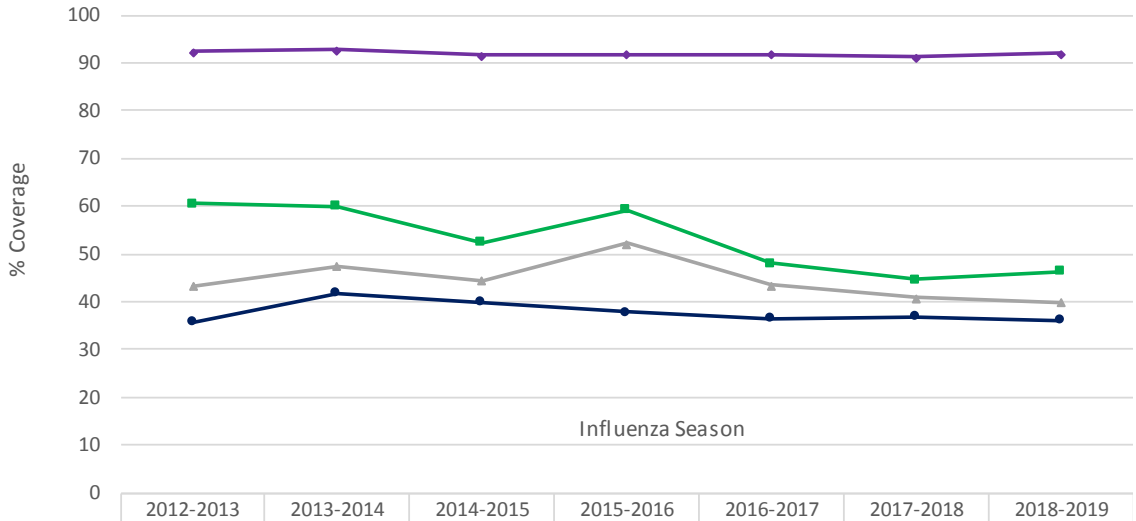


Figure 2: Influenza vaccine coverage (%) by select community-based target populations, Nova Scotia, 2012-2013 to 2018-2019



	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019
Adults ≥ 65 years	61.8	71.6	73.3	68.4	64.1	65.5	62.7
Children 6-59 months	37.4	45.4	40.6	39.3	37.8	38.9	45.5
Nova Scotia	35.8	41.8	39.9	37.8	36.5	36.8	36.1
Pregnant Women	19.1	18.4	18.8	18.9	17.5	16.4	14.4

Figure 3: Influenza vaccine coverage (%) by select care facility-based populations, Nova Scotia, 2012-2013 to 2018-2019



	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019
LTCF Residents	92.3	92.8	91.6	91.9	91.9	91.3	92.0
LTCF Staff & Volunteers	60.5	60	52.4	59.3	48.1	44.7	46.4
Acute Care Staff*	43.3	47.5	44.5	52.2	43.5	40.8	39.9
Nova Scotia	35.8	41.8	39.9	37.8	36.5	36.8	36.1

* Acute care staff rates include volunteers between 2012-2013 and 2015-2016. Volunteer totals were unavailable for the 2016-2017 to 2018-2019 influenza season. The 2016-2017 to 2018-2019 figure excludes volunteers.

Influenza Vaccine Administration by Provider Type

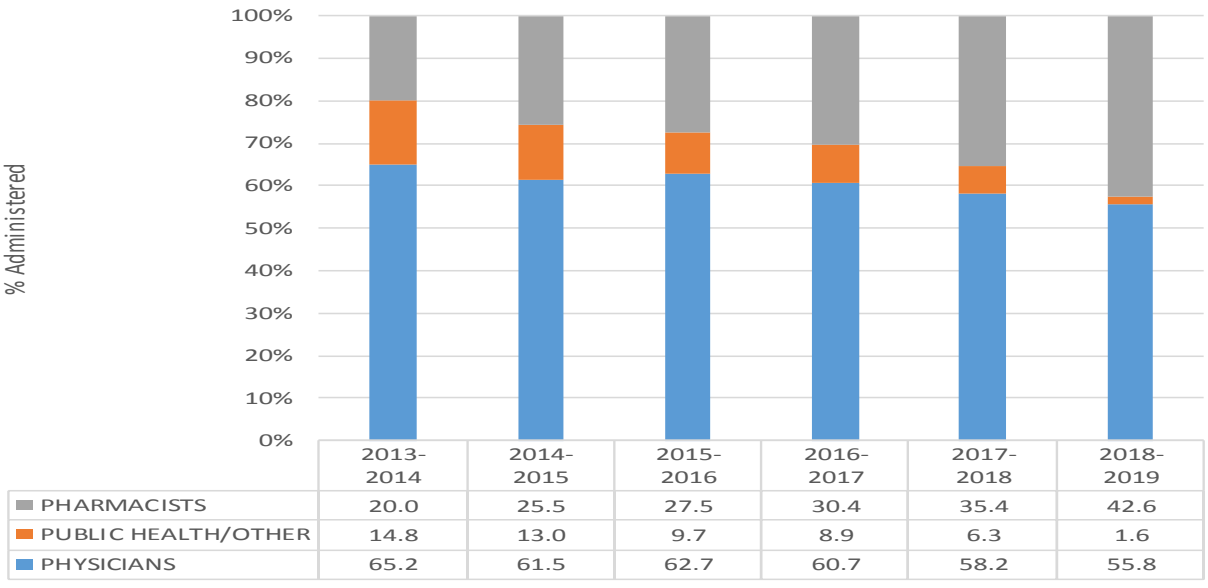
Influenza vaccine administration by provider type for the 2018-2019 influenza season is summarized in Table 2 and Figure 4. The number of vaccines administered by provider type are presented in the appendix.

Table 2: Proportion of influenza vaccine administration by provider type for select target groups and zone, Nova Scotia, 2018-2019

	WESTERN	NORTHERN	EASTERN	CENTRAL	NOVA SCOTIA
Total Population (Overall)					
Physicians	**51.5**	**48.5**	**54.0**	**59.2**	**55.8**
Pharmacists	**47.9**	**48.5**	**40.5**	**40.7**	**42.6**
Public Health/Other	**0.7**	**3.0**	**5.5**	**0.2**	**1.6**
Children 6-59 Months					
Physicians	**95.8**	**79.0**	**81.6**	**99.4**	**94.0**
Pharmacists*	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**
Public Health/Other	**4.2**	**21.0**	**18.4**	**0.6**	**6.0**
Adults ≥ 65 Years					
Physicians	**53.7**	**51.6**	**57.4**	**63.7**	**58.4**
Pharmacists	**46.2**	**48.1**	**40.9**	**36.3**	**41.2**
Public Health/Other	**0.2**	**0.3**	**1.7**	**0.0**	**0.4**
Pregnant					
Physicians	**76.8**	**69.6**	**65.4**	**87.4**	**80.7**
Pharmacists	**22.0**	**17.8**	**14.7**	**12.6**	**14.3**
Public Health/Other	**1.2**	**12.6**	**19.9**	**0.0**	**5.0**

*Pharmacists do not immunize children 6-59 months of age

Figure 4: Influenza vaccine administration by provider type, Nova Scotia, 2013-2014 to 2018-2019



Adverse Events Following Immunization (AEFI)

An adverse event following immunization (AEFI) is any untoward medical occurrence which follows immunization and which does not necessarily have a causal relationship with the vaccine. PHAC collects and monitors data on AEFI to identify potential concerns regarding vaccine safety.

During the 2018-2019 Nova Scotia seasonal influenza immunization campaign, there were 5 AEFIs (0.0001% of all flu immunizations) that were reported to PHAC by DHW.

Limitations

Immunization data collected from NSHA for clinics, long term care and acute care facilities (e.g. IWK), and other community agencies is reported in aggregate form. Data is sent from facilities/clinics to local Public Health services where it is summarized at the zone level and then sent to DHW. Potential for slight mathematical errors exist in this process, however, once the data are analyzed at DHW every effort is made to identify and remedy any errors.

Denominator data for calculating the immunization rate for those community-based Nova Scotians, ≥65 years, also includes people ≥65 years in LTC. Therefore, the immunization rate for community-based individuals may be a slight under-estimation.

The number immunized in long-term care and health-care facilities may be underestimated as some facilities do not report on staff/patients immunized by other providers external to the facility (family physicians, etc.). However, those immunized by other providers would still be reflected in the provincial immunization rate. Conversely, there is also the possibility for duplicate reporting if staff/patients of a facility who received the vaccine from a physician are counted by the facility and also captured in the MSI database. This issue is minimized by only including staff (and volunteers in the case of long term care) listed as immunized 'in-house' when calculating the provincial immunization rate.

Children under the age of nine receiving the seasonal influenza vaccine for the first time are recommended by NACI to receive a second dose of the vaccine (at least four weeks apart) (1). For this report, second doses have been identified and removed from the physician or public health/other data. Should some first vaccines be miscoded, then they will have been removed from further calculations. This may lead to a slight underestimation of vaccination rates overall.

References

1. Public Health Agency of Canada. An Advisory Committee Statement, National Advisory Committee on Immunization (NACI), Statement on Seasonal Influenza Vaccine for 2014-2015 CCDR 2014; http://www.phac-aspc.gc.ca/naci-ccni/assets/pdf/flu-grippe-eng.pdf.
2. Public Health Agency of Canada. Outcomes from the National Consensus Conference for Vaccine-Preventable Diseases in Canada; 2008; http://www.phac-aspc.gc.ca/publicat/ccdr-rmtc/08pdf/34s2-eng.pdf.
3. World Health Organization, Adverse events following immunization (AEFI); 2015; http://www.who.int/vaccine_safety/initiative/detection/AEFI/en/.

APPENDIX

Table A1: Influenza vaccine coverage by zone and proportion of vaccine administered by provider type, Nova Scotia, 2018-2019 influenza season

ZONE	# VACCINATED	POPULATION AGED ≥ 6 MONTHS	COVERAGE RATE	PHYSICIANS		PUBLIC HEALTH/OTHER		PHARMACISTS	
				n	%	n	%	n	%
Western	64,571	197,284	**32.7**	**33,237**	51.5	435	0.7	**30,899**	47.9
Northern	51,236	150,322	**34.1**	**24,856**	48.5	1,534	3.0	**24,846**	48.5
Eastern	58,425	160,155	**36.5**	**31,552**	54.0	3,219	5.5	**23,654**	40.5
Central	166,105	448,230	**37.1**	**98,279**	59.2	293	0.2	**67,533**	40.7
Unknown	4,575	-	**-**	**4,555**	-	-	-	**20**	-
NOVA SCOTIA	**344,912**	**955,990**	**36.1**	**192,479**	**55.8**	**5,481**	**1.6**	**146,952**	**42.6**

Table A2: Influenza vaccine coverage for children 6 to 59 months of age and vaccine administration by provider type and zone, Nova Scotia, 2018-2019 influenza season

ZONE	# VACCINATED	POPULATION AGED 6-59 MONTHS	COVERAGE RATE	PHYSICIANS		PUBLIC HEALTH/OTHER	
				n	%	n	%
Western	2,154	7,336	**29.4**	2,063	95.8	91	4.2
Northern	2,188	6,095	**35.9**	1,729	79.0	459	21.0
Eastern	2,425	6,130	**39.6**	1,980	81.6	445	18.4
Central	10,552	19,435	**54.3**	10,487	99.4	65	0.6
Unknown	424		**-**	424	-		-
NOVA SCOTIA	**17,743**	**38,996**	**45.5**	**16,683**	**94.0**	**1,060**	**6.0**

Table A3: Influenza vaccine coverage rates for community residents[+] ≥ 65 years of age and vaccine administration by provider type and zone, Nova Scotia, 2018-2019 influenza season

ZONE	# VACCINATED	POPULATION AGED ≥65 YEARS	COVERAGE RATE	PHYSICIANS		PUBLIC HEALTH/OTHER		PHARMACISTS	
				n	%	n	%	n	%
Western	28,916	49,426	**58.5**	15,517	53.7	54	0.2	13,345	46.2
Northern	20,088	33,847	**59.4**	10,362	51.6	70	0.3	9,656	48.1
Eastern	23,313	39,410	**59.2**	13,380	57.4	400	1.7	9,533	40.9
Central	49,482	72,823	**67.9**	31,510	63.7	24	0.0	17,948	36.3
Unknown	803	0	**-**	800	-	0	-	3	-
NOVA SCOTIA	**122,602**	**195,505**	**62.7**	**71,569**	**58.4**	**548**	**0.4**	**50,485**	**41.2**

[+]Excluding residents of long-term care facilities from the number vaccinated

Table A4: Influenza vaccine coverage rates for pregnant women and vaccine administration by provider type and zone, Nova Scotia, 2018-2019 influenza season

ZONE	# VACCINATED	# PREGNANT	COVERAGE RATE	PHYSICIANS		PUBLIC HEALTH/OTHER		PHARMACISTS	
				n	%	n	%	n	%
Western*	168	1,527	**11.0**	129	76.8	2	1.2	37	22.0
Northern	135	1,333	**10.1**	94	69.6	17	12.6	24	17.8
Eastern	191	1,369	**14.0**	125	65.4	38	19.9	28	14.7
Central	682	4,236	**16.1**	596	87.4	0	0.0	86	12.6
Unknown	45		-	41	-	4	-	-	-
NOVA SCOTIA	**1,221**	**8,465**	**14.4**	**985**	**80.7**	**61**	**5.0**	**175**	**14.3**

Table A5: Influenza vaccine coverage among health care workers in acute care facilities by zone, Nova Scotia, 2018-2019 influenza season

Zone	Total vaccinated	Number of staff	% Vaccinated
1-Western	1,494	4,038	37.0
2- Northern	1,093	2,642	41.4
3-Eastern	2,070	4,685	44.2
4-Central	3,678	10,354	35.5
IWK	1,668	3,341	49.9
Nova Scotia	10,003	25,060	39.9

Table A6: Influenza immunization coverage for residents of long-term care facilities by zone, Nova Scotia, 2018-2019 influenza season

ZONE	# VACCINATED	# RESIDENTS	% VACCINATED
Western	2,077	2,261	**91.9**
Northern	1,610	1,789	**90.0**
Eastern	1,656	1,795	**92.3**
Central	1,648	1,758	**93.7**
Nova Scotia	6,991	7,603	**92.0**

Table A7: Influenza immunization coverage for staff and volunteers of long-term care facilities by zone, Nova Scotia, 2018-2019 influenza season

ZONE	# VACCINATED	# STAFF & VOLUNTEERS	% VACCINATED
Western	1,619	4,225	**38.3**
Northern	1,458	2,832	**51.5**
Eastern	1,282	2,845	**45.1**
Central	1,682	3,128	**53.8**
Nova Scotia	6,041	13,030	**46.4**