# FluWatch

Public Health Agency of Canada | Agence de la santé publique du Canada

**June 21 to July 4, 2015 (weeks 25 and 26)**

## Overall Summary

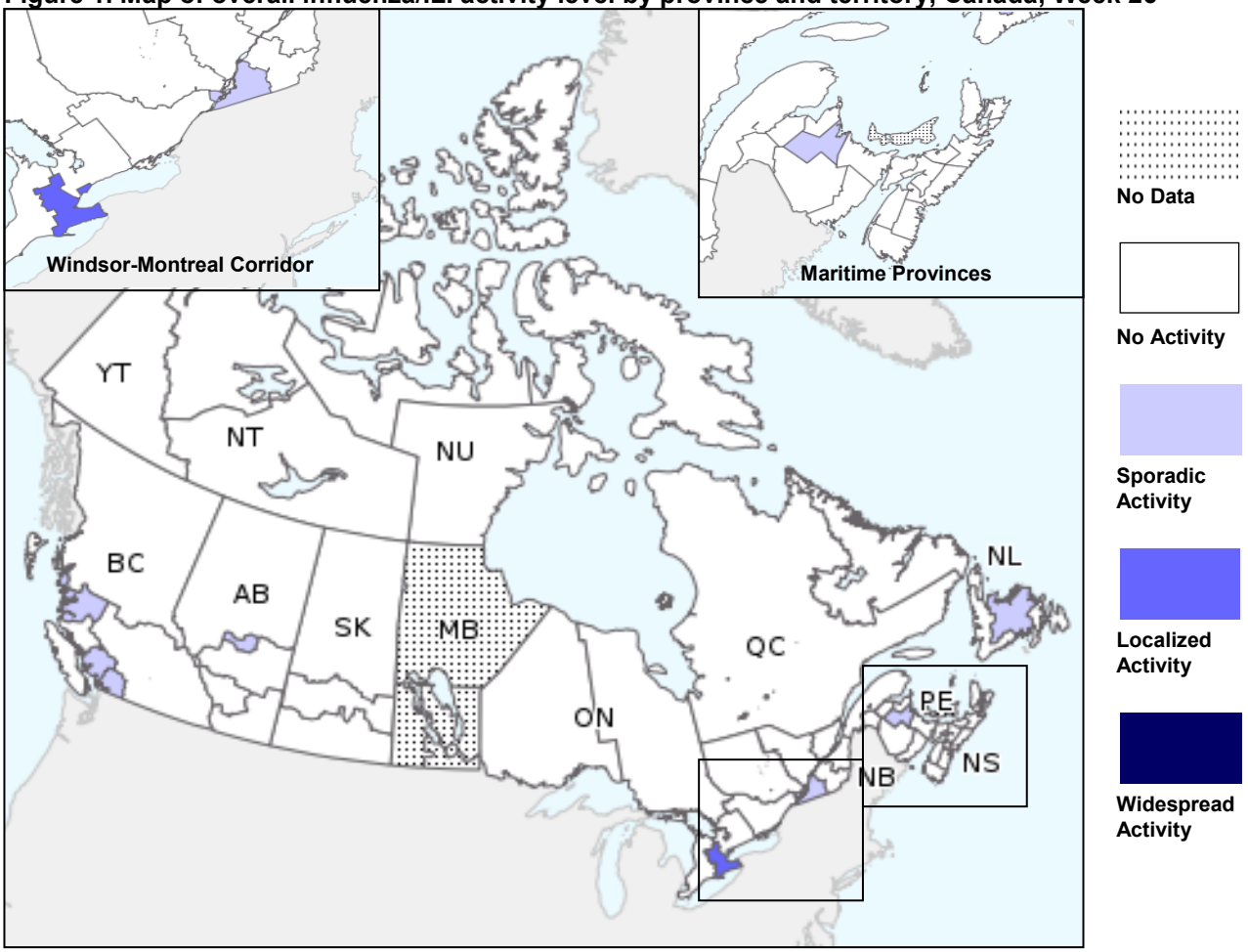
- In weeks 25 and 26, influenza activity in Canada continued to decline and has reached inter-seasonal levels.
- Overall, low influenza activity was reported from jurisdictions.
- As of week 26, 7,819 hospitalizations and 598 deaths have been reported from participating regions, which is more than were reported last year at this time (5,538 hospitalizations and 332 deaths).
- An increase in the number of Influenza A(H3N2) in the past weeks has been reported; however, influenza laboratory detections remained low in weeks 25 and 26.
- An outbreak of MERS-CoV is ongoing in the Republic of Korea; the peak of the outbreak occurred on June 1, 2015. The risk to Canadians remains low.

**Are you a primary health care practitioner (General Practitioner, Nurse Practitioner or Registered Nurse) interested in becoming a FluWatch sentinel for the 2014-15 influenza season? Contact us at FluWatch@phac-aspc.gc.ca**

## Influenza/ILI Activity (geographic spread)

In week 26, one region in ON reported localized activity. Sporadic activity was reported in regions of Western and Eastern Canada. Overall, there is low influenza/ILI activity in Canada.

**Figure 1. Map of overall influenza/ILI activity level by province and territory, Canada, Week 26**

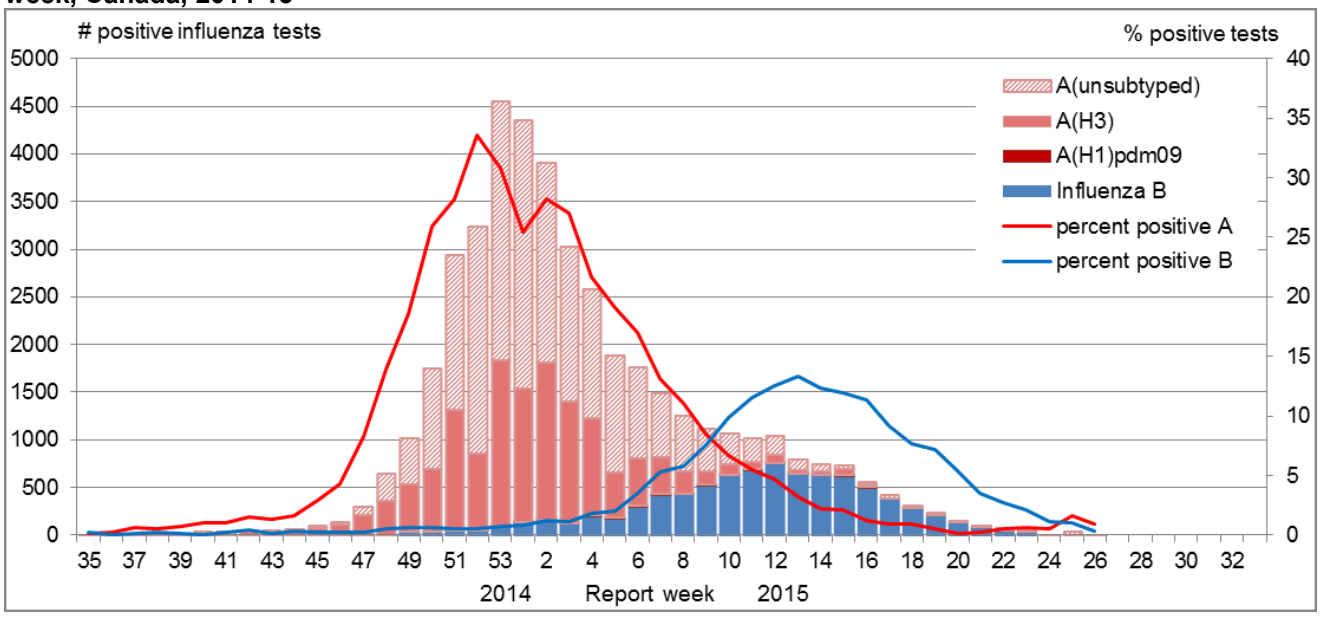



Note: Influenza/ILI activity levels, as represented on this map, are assigned and reported by Provincial and Territorial Ministries of Health, based on laboratory confirmations, sentinel ILI rates and reported outbreaks. Please refer to detailed definitions at the end of the report. Maps from previous weeks, including any retrospective updates, are available on the FluWatch website.

## Influenza and Other Respiratory Virus Detections

The number of positive influenza tests continued to decline from 41 in week 25 to 19 (1.3% of tests) in week 26. Over the past few weeks, an increase in the number of influenza A(H3N2) has been observed. Most jurisdictions reported low numbers of influenza detections in week 26 (Table 1). To date this season, detailed information on age and type/subtype has been received for 37,413 cases (Table 2). Adults ≥65 years of age have predominantly been affected by influenza A, accounting for 62% of influenza A detections.

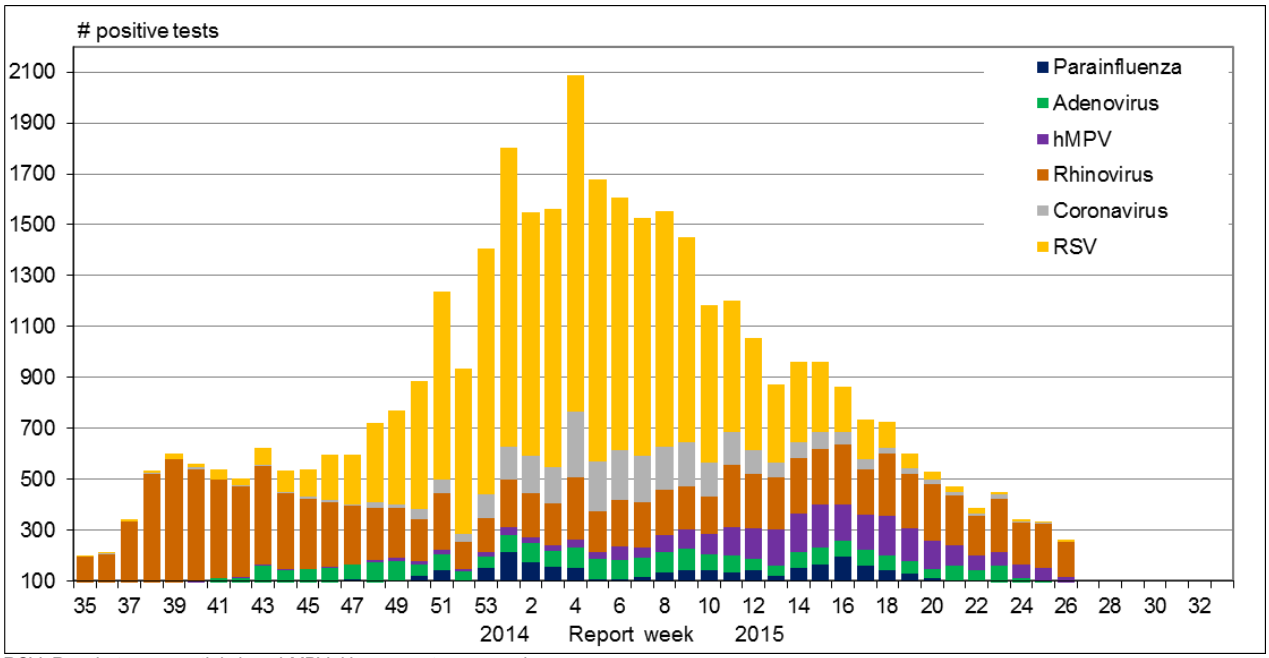
**Figure 2. Number of positive influenza tests and percentage of tests positive, by type, subtype and report week, Canada, 2014-15**




Detections for all other respiratory viruses have continued to decline and have reached inter-seasonal levels (figure 3). In weeks 25 and 26, Rhinovirus was the most predominant virus among other respiratory viruses.

For more details, see the weekly Respiratory Virus Detections in Canada Report.

**Figure 3. Number of positive laboratory tests for other respiratory viruses by report week, Canada, 2014-15**




RSV: Respiratory syncytial virus; hMPV: Human metapneumovirus

**Table 1. Weekly and cumulative numbers of positive influenza specimens by type, subtype and province, Canada, 2014-15**

| Reporting provinces[1] | Weekly (June 28 to July 4, 2015) | | | | | Cumulative (August 24, 2014 to July 4, 2015) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Influenza A | | | | B | Influenza A | | | | B |
| | A Total | A(H1)pdm09 | A(H3) | A(UnS) | B Total | A Total | A(H1)pdm09 | A(H3) | A(UnS) | B Total |
| BC | 9 | 0 | 6 | 3 | 1 | 3553 | 28 | 2647 | 878 | 504 |
| AB | 1 | 0 | 1 | 0 | 0 | 3709 | 14 | 3540 | 155 | 1006 |
| SK | 0 | 0 | 0 | 0 | 0 | 1320 | 0 | 841 | 479 | 411 |
| MB | 0 | 0 | 0 | 0 | 0 | 1124 | 1 | 390 | 733 | 227 |
| ON | 3 | 0 | 2 | 1 | 1 | 11196 | 51 | 4737 | 6408 | 1554 |
| QC | 1 | 0 | 0 | 1 | 0 | 11459 | 4 | 422 | 11033 | 3912 |
| NB | 0 | 0 | 0 | 0 | 0 | 1196 | 0 | 193 | 1003 | 536 |
| NS | 0 | 0 | 0 | 0 | 0 | 511 | 1 | 123 | 387 | 263 |
| PE | 0 | 0 | 0 | 0 | 0 | 131 | 1 | 128 | 2 | 109 |
| NL | 0 | 0 | 0 | 0 | 2 | 629 | 0 | 123 | 506 | 81 |
| **Canada** | **14** | **0** | **9** | **5** | **4** | **34828** | **100** | **13144** | **21584** | **8603** |
| **Percentage[2]** | 77.8% | 0.0% | 64.3% | 35.7% | 22.2% | 80.2% | 0.3% | 37.7% | 62.0% | 19.8% |

**Table 2. Weekly and cumulative numbers of positive influenza specimens by type, subtype and age-group reported through case-based laboratory reporting[3], Canada, 2014-15**

| Age groups (years) | Weekly (June 28 to July 4, 2015) | | | | | Cumulative (August 24, 2014 to July 4, 2015) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Influenza A | | | | B | Influenza A | | | | B | Influenza A and B | |
| | A Total | A(H1) pdm09 | A(H3) | A (UnS) | Total | A Total | A(H1) pdm09 | A(H3) | A (UnS) | Total | # | % |
| **<5** | 0 | 0 | 0 | 0 | 0 | 2092 | 22 | 809 | 1261 | 568 | 2660 | 7.1% |
| **5-19** | 0 | 0 | 0 | 0 | 1 | 1782 | 6 | 956 | 820 | 808 | 2590 | 6.9% |
| **20-44** | 1 | 0 | 1 | 0 | 0 | 3455 | 18 | 1677 | 1760 | 1153 | 4608 | 12.3% |
| **45-64** | 1 | 0 | 0 | 1 | 0 | 3887 | 22 | 1667 | 2198 | 1843 | 5730 | 15.3% |
| **65+** | 2 | 0 | 1 | 1 | 0 | 18768 | 13 | 7300 | 11455 | 2930 | 21698 | 58.0% |
| **Unknown** | 0 | 0 | 0 | 0 | 0 | 120 | 0 | 101 | 19 | 7 | 127 | 0.3% |
| **Total** | 4 | 0 | 2 | 2 | 1 | 30104 | 81 | 12510 | 17513 | 7309 | 37413 | 100.0% |
| **Percentage[2]** | 80.0% | 0.0% | 50.0% | 50.0% | 20.0% | 80.5% | 0.3% | 41.6% | 58.2% | 19.5% | | |

[1] Specimens from NT, YT, and NU are sent to reference laboratories in other provinces. Cumulative data includes updates to previous weeks.
[2] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
[3] Table 2 includes specimens for which demographic information was reported. These represent a subset of all positive influenza cases reported.
UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

## Antiviral Resistance

During the 2014-2015 influenza season, the NML has tested 1,960 influenza viruses for resistance to oseltamivir and 1,872 influenza viruses for resistance to zanamivir. All viruses were sensitive to zanamivir and two influenza A(H3N2) viruses were resistant to oseltamivir. A total of 1,480 influenza A viruses (99.9%) were resistant to amantadine (Table 3).

**Table 3. Antiviral resistance by influenza virus type and subtype, Canada, 2014-15**

| Virus type and subtype | Oseltamivir | | Zanamivir | | Amantadine | |
|---|---|---|---|---|---|---|
| | # tested | # resistant (%) | # tested | # resistant (%) | # tested | # resistant (%) |
| **A (H3N2)** | 968 | 1 | 966 | 0 | 1458 | 1457 (99.9%) |
| **A (H1N1)** | 22 | 0 | 22 | 0 | 23 | 23 (100%) |
| **B** | 968 | 1 | 884 | 0 | NA[1] | NA[1] |
| **TOTAL** | 1958 | 2 | 1872 | 0 | 1481 | 1480 |

[1]NA: Not Applicable

## Influenza Strain Characterizations

During the 2014-2015 influenza season, the National Microbiology Laboratory (NML) has characterized 1,127 influenza viruses [212 A(H3N2), 21 A(H1N1) and 894 influenza B].

**Influenza A (H3N2):** When tested by hemagglutination inhibition (HI) assay (n=212), one virus was antigenically similar to A/Texas/50/2012, five showed reduced titers to A/Texas/50/2012 and 206 were antigenically similar to A/Switzerland/9715293/2013, which is the influenza A(H3N2) component recommended for the 2015 Southern Hemisphere influenza vaccine. Additionally, 1,220 A(H3N2) viruses were unable to be tested by HI assay; however, sequence analysis showed that 1,218 belonged to a genetic group that typically shows reduced titers to A/Texas/50/2012. **Influenza A(H1N1):** Twenty-one A(H1N1) viruses characterized were antigenically similar to A/California/7/2009. **Influenza B:** Of the 894 influenza B viruses characterized, 793 viruses were antigenically similar to B/Massachusetts/2/2012, three viruses showed reduced titers against B/Massachusetts/2/2012, and 98 were B/Brisbane/60/2008-like (Figure 4).

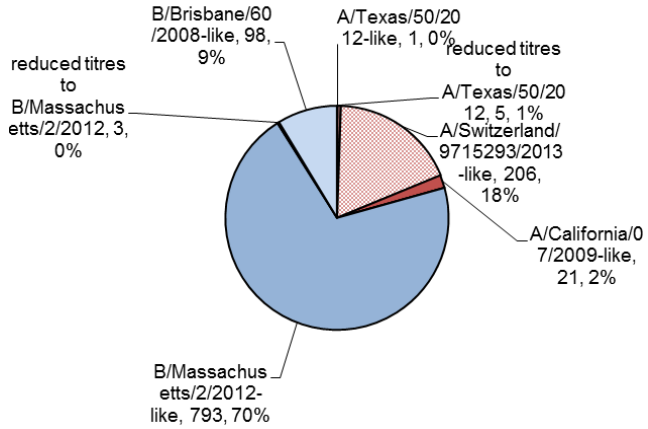


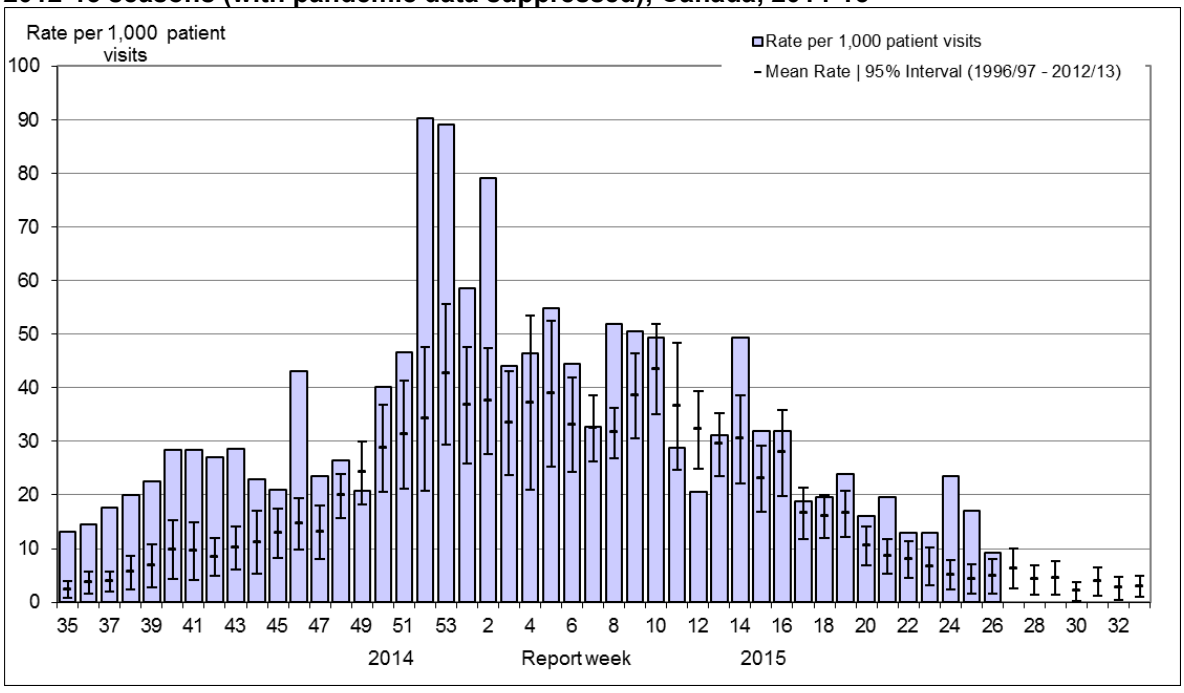

**Figure 4. Influenza strain characterizations, Canada, 2014-15, N = 1,127**

The NML receives a proportion of the number of influenza positive specimens from provincial laboratories for strain characterization and antiviral resistance testing. Characterization data reflect the results of haemagglutination inhibition (HAI) testing compared to the reference influenza strains recommended by WHO.

## Influenza-like Illness Consultation Rate

The national influenza-like-illness (ILI) consultation rate decreased from 17.4 consultations per 1,000 in week 25 to 9.31 consultations per 1,000 in week 26 (Figure 5).

**Figure 5. Influenza-like-illness (ILI) consultation rates by report week, compared to the 1996-97 through to 2012-13 seasons (with pandemic data suppressed), Canada, 2014-15**

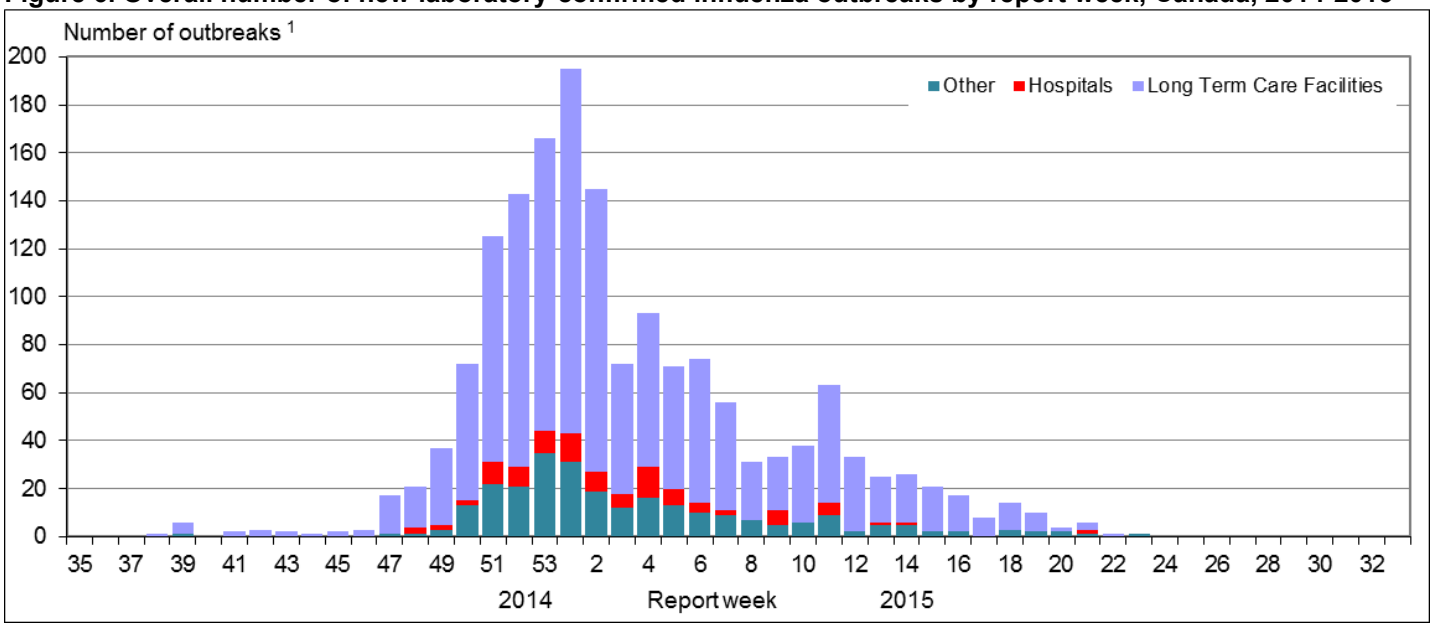



No data available for mean rate for weeks 19 to 39 for the 1996-1997 through 2002-2003 seasons. Delays in the reporting of data may cause data to change retrospectively. The calculation of the average ILI consultation rate over 17 seasons was aligned with influenza activity in each season. In BC, AB, and SK, data is compiled by a provincial sentinel surveillance program for reporting to FluWatch. Not all sentinel physicians report every week.

## Influenza Outbreak Surveillance

In weeks 25 and 26, no new outbreaks of influenza were reported (Figure 6). The last influenza outbreak was reported in week 23. To date this season, 1,279 outbreaks in LTCFs have been reported and the majority of those with known subtypes were attributable to A(H3N2). There have been a higher number of reported influenza outbreaks to date this season compared to the same period in previous seasons.

**Figure 6. Overall number of new laboratory-confirmed influenza outbreaks by report week, Canada, 2014-2015**

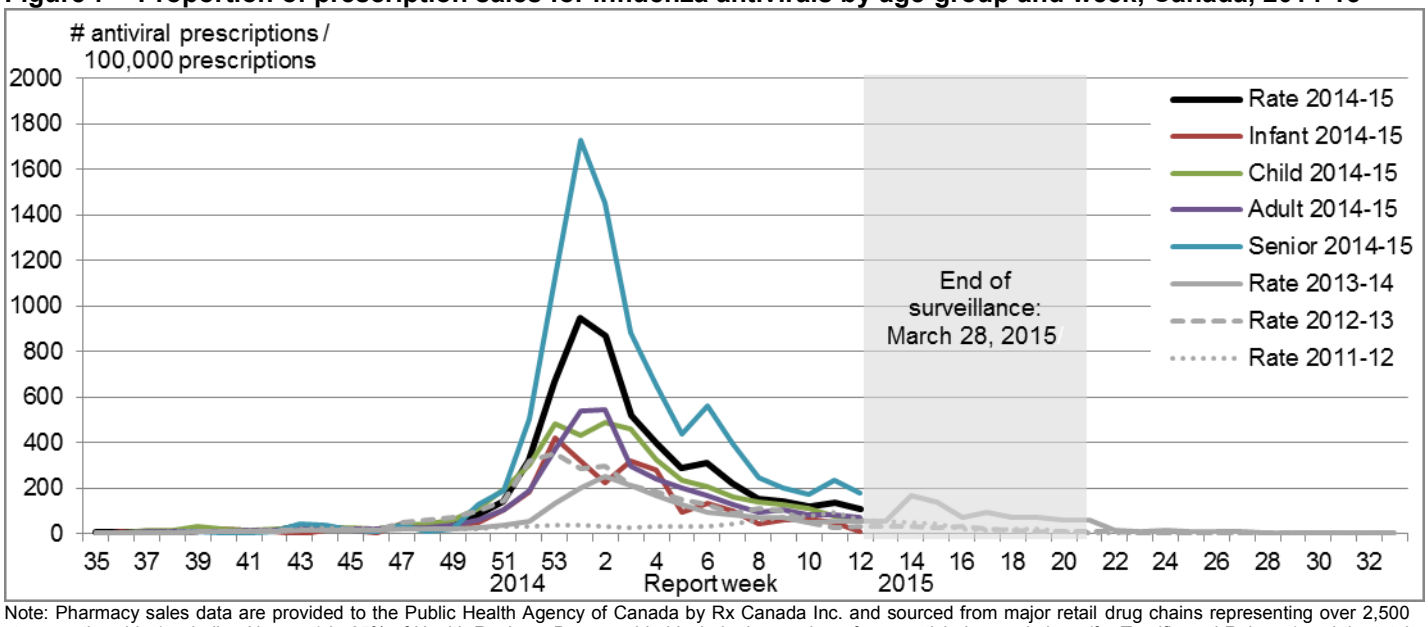



[1]All provinces and territories except NU report influenza outbreaks in long-term care facilities. All provinces and territories with the exception of NU and QC report outbreaks in hospitals. Outbreaks of influenza or influenza-like-illness in other facilities are reported to FluWatch but reporting varies between jurisdictions. Outbreak definitions are included at the end of the report.

## Pharmacy Surveillance

Pharmacy surveillance for sales of influenza antivirals has ended for the 2014-2015 influenza season (Figure 7).

**Figure 7 – Proportion of prescription sales for influenza antivirals by age-group and week, Canada, 2014-15**




Note: Pharmacy sales data are provided to the Public Health Agency of Canada by Rx Canada Inc. and sourced from major retail drug chains representing over 2,500 stores nationwide (excluding Nunavut) in 85% of Health Regions. Data provided include the number of new antiviral prescriptions (for Tamiflu and Relenza) and the total number of new prescriptions dispensed by Province/Territory and age group. Age-groups: Infant: 0-2y, Child: 2-18y; Adult: 19-64y, Senior: ≥65y

## Sentinel Hospital Influenza Surveillance

### Paediatric Influenza Hospitalizations and Deaths (IMPACT)

In weeks 25 and 26, two laboratory-confirmed influenza-associated paediatric (≤16 years of age) hospitalizations were reported by the Immunization Monitoring Program Active (IMPACT) network. Both cases reported in week 25 were influenza B (Figure 8a). No ICU admissions were reported.

To date this season, 713 hospitalizations have been reported by the IMPACT network, 512 (72%) of which were cases of influenza A. Among cases for which the influenza A subtype was reported, 98% (163/166) were A(H3N2) (Table 4). To date, 96 cases were admitted to the ICU, of which 54 (56%) were 2 to 9 years of age (Figure 9a). A total of 65 ICU cases reported to have at least one underlying condition or comorbidity. Five deaths have been reported.

Note: The number of hospitalizations reported through IMPACT represents a subset of all influenza-associated paediatric hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

### Adult Influenza Hospitalizations and Deaths (CIRN)

Surveillance has ended for the 2014-2015 influenza season.

This season, 2,228 cases have been reported; 1,912 (86%) with influenza A. The majority of cases (81%) were among adults ≥65 years of age (Table 5). One hundred and seventy two ICU admissions have been reported and 128 cases were adults ≥65 years of age. Among the 172 ICU admissions, 27 were due to influenza B (12 in adults 45 to 64 years of age and 15 in adults over the age of 65). A total of 123 ICU cases (72%) reported to have at least one underlying condition or comorbidity. Of the 123 ICU cases with known immunization status, 40 (33%) reported not having been vaccinated this season. One hundred and thirty-five deaths have been reported, 124 (92%) of the deaths were adults >65 years of age (Figure 9B).

Note: The number of hospitalizations reported through PCIRN represents a subset of all influenza-associated adult hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

**Table 4 – Cumulative numbers of paediatric hospitalizations with influenza reported by the IMPACT network, Canada, 2014-15**

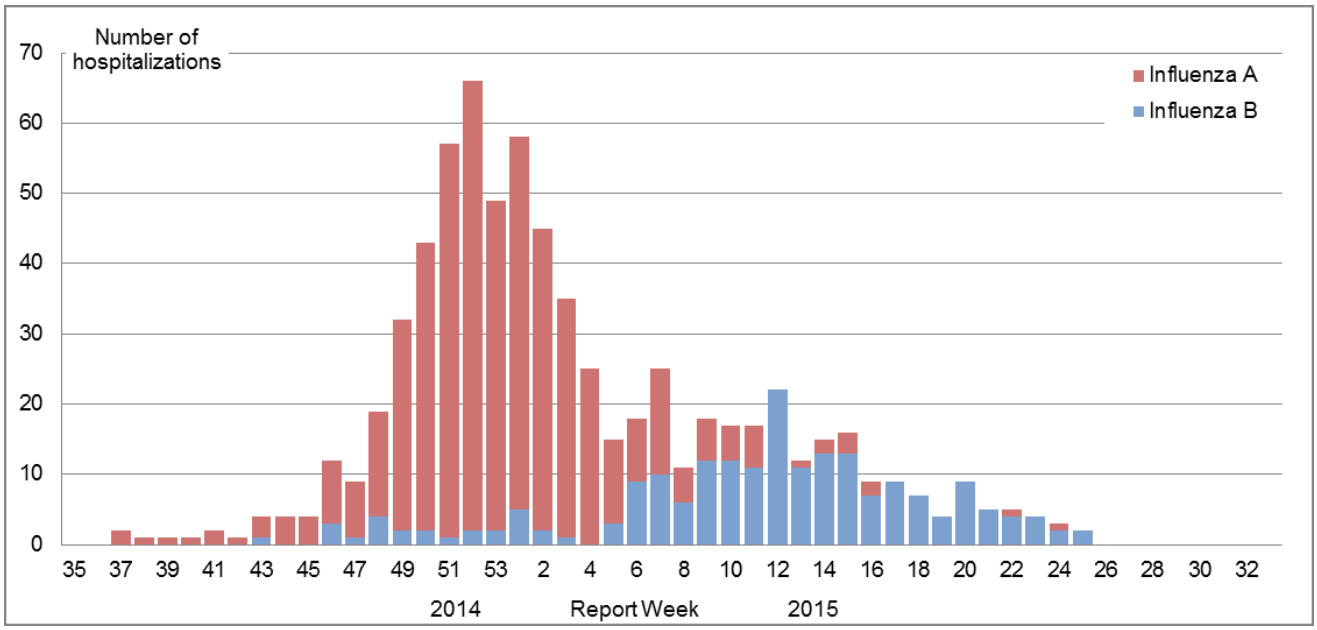
| Age groups | Cumulative (24 Aug. 2014 to 4 July 2015) | | | | | |
|---|---|---|---|---|---|---|
| | Influenza A | | | | B | Influenza A and B |
| | A Total | A(H1) pdm09 | A(H3) | A (UnS) | Total | # (%) |
| 0-5m | 84 | 0 | 19 | 65 | 16 | 100 (14.0%) |
| 6-23m | 116 | 2 | 36 | 78 | 44 | 160 (22.4%) |
| 2-4y | 122 | 1 | 39 | 82 | 52 | 174 (24.4%) |
| 5-9y | 129 | 0 | 44 | 85 | 52 | 181 (25.4%) |
| 10-16y | 61 | 0 | 25 | 36 | 37 | 98 (13.7%) |
| Total | 512 | 3 | 163 | 346 | 201 | 713 |
| % [1] | 71.8% | 0.6% | 31.8% | 67.6% | 28.2% | 100.0% |

**Table 5 – Cumulative numbers of adult hospitalizations with influenza reported by the PCIRN-SOS network, Canada, 2014-15**

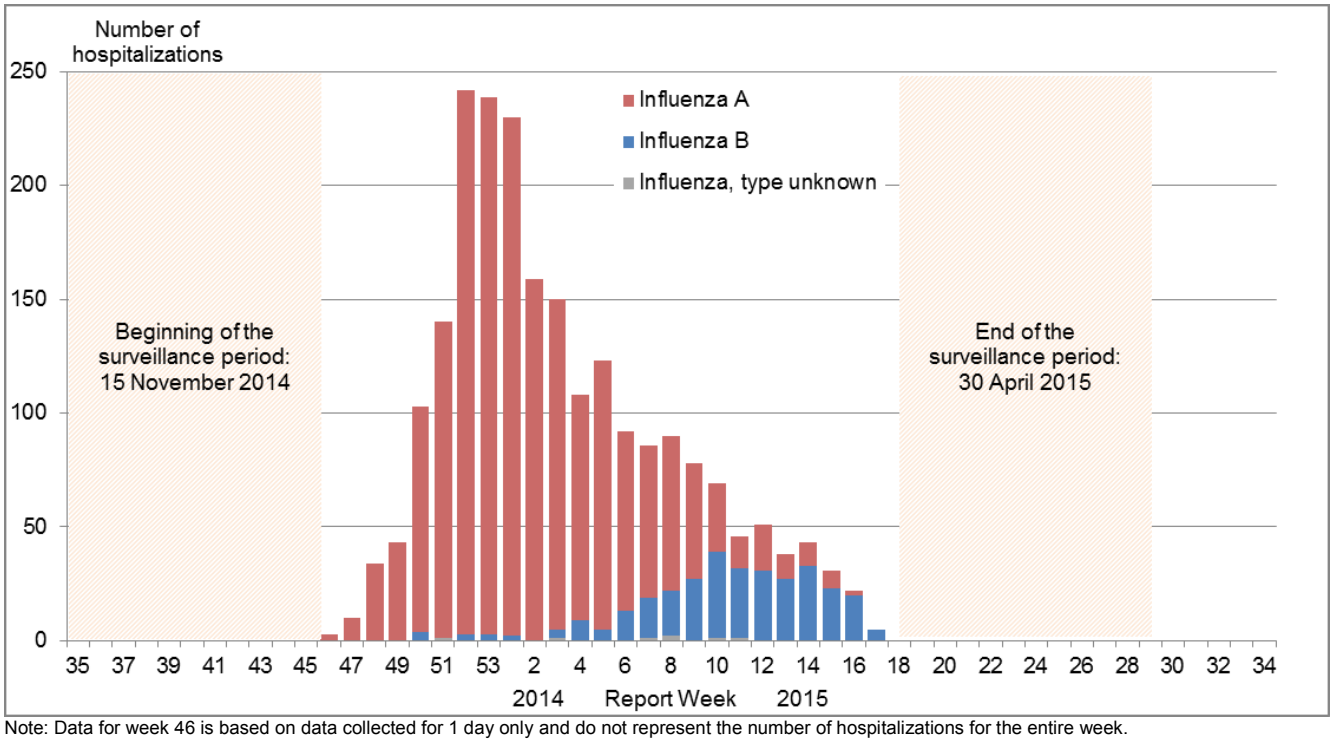
| Age groups (years) | Cumulative (15 Nov. 2014 to 2 May 2015) | | | | | |
|---|---|---|---|---|---|---|
| | Influenza A | | | | B | Influenza A and B |
| | A Total | A(H1) pdm09 | A(H3) | A(UnS) | Total | # (%) |
| 16-20 | 3 | 0 | 1 | 2 | 1 | 4 (0.2%) |
| 20-44 | 106 | 1 | 56 | 49 | 16 | 122 (5%) |
| 45-64 | 217 | 3 | 99 | 115 | 76 | 293 (13%) |
| 65+ | 1586 | 4 | 760 | 822 | 223 | 1809 (81%) |
| Total | 1912 | 8 | 916 | 988 | 316 | 2228 |
| % | 86% | 0.4% | 48% | 52% | 14% | 100% |

[1] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections. UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

**Figure 8 – Number of cases of influenza reported by sentinel hospital networks, by week, Canada, 2014-15**
**A) Paediatric hospitalizations (≤16 years of age, IMPACT)**



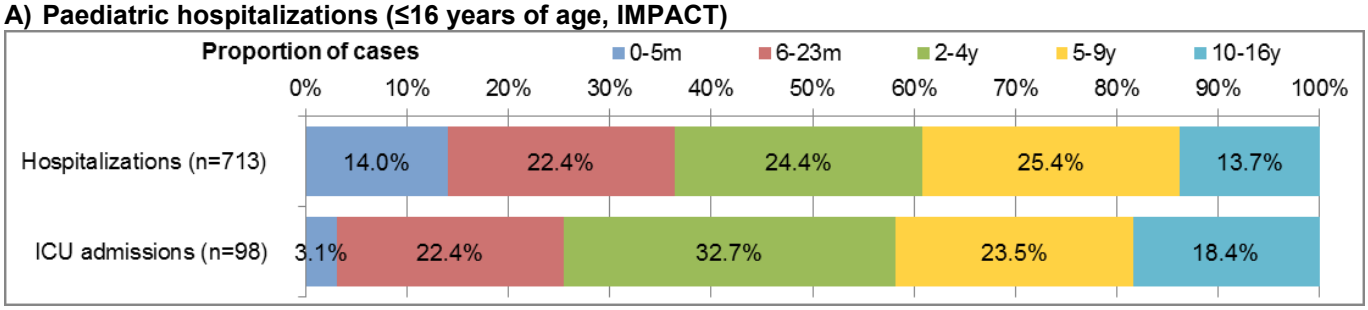

**B) Adult hospitalizations (≥16 year of age, PCIRN-SOS)**



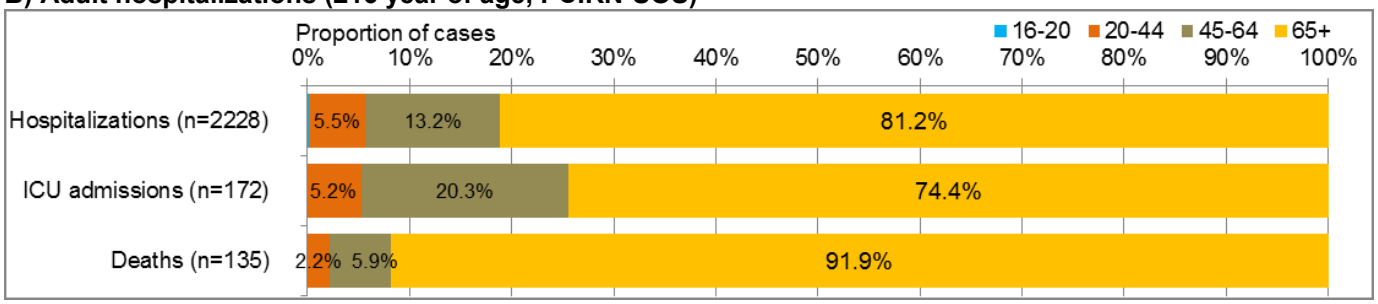

Note: Data for week 46 is based on data collected for 1 day only and do not represent the number of hospitalizations for the entire week.

**Figure 9 – Percentage of hospitalizations, ICU admissions and deaths with influenza reported by age-group, Canada, 2014-15**

**A) Paediatric hospitalizations (≤16 years of age, IMPACT)**



**B) Adult hospitalizations (≥16 year of age, PCIRN-SOS)**




## Provincial/Territorial Influenza Hospitalizations and Deaths

In week 26, 65 laboratory-confirmed influenza-associated hospitalizations were reported from participating provinces and territories*. Of the 65 hospitalizations, 59 (91%) were due to influenza A and 49 (75%) were in patients ≥65 years of age.

Since the start of the 2014-15 season, 7,819 hospitalizations have been reported; 6,702 (86%) with influenza A. Among cases for which the subtype of influenza A was reported, 99.2% were A(H3N2). The majority of cases (70%) were ≥65 years of age (Table 6). A total of 395 ICU admissions have been reported to date: 51% (n=203) were in adults ≥65 years of age and 75% were due to influenza A. A total of 598 deaths have been reported since the start of the season: three children <5 years of age, five children 5-19 years, 45 adults 20-64 years, and 545 adults ≥65 years of age. Influenza A has been reported in 90% of deaths. Adults 65 years of age or older represent 91% of all deaths reported this season. Detailed clinical information (e.g. underlying medical conditions) is not known for these cases

* Note: Influenza-associated hospitalizations are not reported to PHAC by the following Provinces and Territory: BC, NU, and QC. Only hospitalizations that require intensive medical care are reported by Saskatchewan. ICU admissions are not distinguished among hospital admissions reported from Ontario. Data may also include cases reported by the IMPACT and PCIRN networks. The number of new influenza-associated hospitalizations and deaths reported for the current week may include cases from Ontario that occurred in previous weeks, as a result of retrospective updates to the cumulative total. It is important to note that the hospitalization or death does not have to be attributable to influenza, a positive laboratory test is sufficient for reporting.

**Table 6 – Cumulative number of hospitalizations with influenza reported by the participating provinces and territories, Canada, 2014-15**

| Age groups (years) | Cumulative (24 Aug. 2014 to 4 July 2015) | | | | | |
|---|---|---|---|---|---|---|
| | Influenza A | | | | B | Influenza A and B |
| | A Total | A(H1) pdm09 | A(H3) | A (UnS) | Total | # (%) |
| **0-4** | 433 | 6 | 153 | 274 | 95 | 528 (7%) |
| **5-19** | 285 | 2 | 137 | 146 | 117 | 402 (5%) |
| **20-44** | 403 | 4 | 245 | 154 | 135 | 538 (7%) |
| **45-64** | 647 | 10 | 285 | 352 | 159 | 806 (10%) |
| **65+** | 4880 | 5 | 2365 | 2510 | 587 | 5467 (70%) |
| **Unknown** | 54 | 0 | 51 | 3 | 24 | 78 (1%) |
| **Total** | 6702 | 27 | 3236 | 3439 | 1117 | 7819 |
| **Percentage[1]** | 85.7% | 0.4% | 48.3% | 51.3% | 14.3% | 100.0% |

[1] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

See additional data on Reported Influenza Hospitalizations and Deaths in Canada: 2009-10 to 2014-15 on the Public Health Agency of Canada website.

## Emerging Respiratory Pathogens

**Human Avian Influenza**

Influenza A(H7N9): Since the last FluWatch report, no new laboratory-confirmed cases of human infection with avian influenza A(H7N9) virus were reported by the World Health Organization. Globally to July 9, 2015, the WHO reported a total of 672 laboratory-confirmed human cases with avian influenza A(H7N9) virus, including 271 deaths. Documents related to the public health risk of influenza A(H7N9), as well as guidance for health professionals and advice for the public is updated regularly on the following websites:
*PHAC – Avian influenza A(H7N9)*
*WHO – Avian Influenza A(H7N9)*

**Middle East Respiratory Syndrome Coronavirus (MERS-CoV)**

Since the last report, the United Arab Emirates (UAE), Republic of Korea, Saudi Arabia, and the Philippines have reported cases of MERS-CoV. Globally, from September 2012 to July 9, 2015, the WHO has reported a total of 1,368 laboratory-confirmed cases of infection with MERS-CoV, including 487 deaths. The public health risk posed by MERS-CoV in Canada remains low (see the PHAC Assessment of Public Health Risk) and for the latest global risk assessment posted by the WHO on July 7, 2015: WHO MERS-CoV

An ongoing outbreak in the Republic of Korea has resulted in 186 cases including 35 deaths.
This outbreak represents the largest nosocomial oubreak outbside the Middle East. The peak of the outbreak occurred on June 1, 2015. National South Korean authorities have intensified case and contact management activities. All cases reported from outside the Middle East have either had a recent travel history to the Middle East or could be linked to a chain of transmission originating from a case with a travel history to the Middle East.
Documents related to the public health risk of MERS-CoV, as well as guidance for health professionals and advice for the public is updated regularly on the following websites:
*PHAC – Middle East respiratory syndrome coronavirus (MERS-CoV)*
*WHO – Coronavirus infections*

## International Influenza Reports

*World Health Organization influenza update*
*World Health Organization FluNet*
*WHO Influenza at the human-animal interface*
*Centers for Disease Control and Prevention seasonal influenza report*
*European Centre for Disease Prevention and Control - epidemiological data*
*South Africa Influenza surveillance report*
*New Zealand Public Health Surveillance*
*Australia Influenza Report*
*Pan-American Health Organization Influenza Situation Report*

**FluWatch Definitions for the 2014-2015 Season**

**Abbreviations**: Newfoundland/Labrador (NL), Prince Edward Island (PE), New Brunswick (NB), Nova Scotia (NS), Quebec (QC), Ontario (ON), Manitoba (MB), Saskatchewan (SK), Alberta (AB), British Columbia (BC), Yukon (YT), Northwest Territories (NT), Nunavut (NU).

**Influenza-like-illness (ILI):** Acute onset of respiratory illness with fever and cough and with one or more of the following - sore throat, arthralgia, myalgia, or prostration which is likely due to influenza. In children under 5, gastrointestinal symptoms may also be present. In patients under 5 or 65 and older, fever may not be prominent.

**ILI/Influenza outbreaks**

**Schools:** Greater than 10% absenteeism (or absenteeism that is higher (e.g. >5-10%) than expected level as determined by school or public health authority) which is likely due to ILI. Note: it is recommended that ILI school outbreaks be laboratory confirmed at the beginning of influenza season as it may be the first indication of community transmission in an area.

**Hospitals and residential institutions:** two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case. Institutional outbreaks should be reported within 24 hours of identification. Residential institutions include but not limited to long-term care facilities (LTCF) and prisons.

**Workplace:** Greater than 10% absenteeism on any day which is most likely due to ILI.

**Other settings:** two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case; i.e. closed communities.

*Note that reporting of outbreaks of influenza/ILI from different types of facilities differs between jurisdictions.*

**Influenza/ILI Activity Levels**

**1 = No activity:** no laboratory-confirmed influenza detections in the reporting week, however, sporadically occurring ILI may be reported

**2 = Sporadic:** sporadically occurring ILI and lab confirmed influenza detection(s) with **no outbreaks** detected within the influenza surveillance region†

**3 = Localized:** (1) evidence of increased ILI* ;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring in **less than 50% of the influenza surveillance region†**

**4 = Widespread:** (1) evidence of increased ILI*;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring **in greater than or equal to 50% of the influenza surveillance region†**

*Note: ILI data may be reported through sentinel physicians, emergency room visits or health line telephone calls.*

** More than just sporadic as determined by the provincial/territorial epidemiologist.*

*† Influenza surveillance regions within the province or territory as defined by the provincial/territorial epidemiologist.*

*We would like to thank all the Fluwatch surveillance partners who are participating in this year's influenza surveillance program.*

This report is available on the Public Health Agency website at the following address: http://www.phac-aspc.gc.ca/fluwatch/index.html.

Ce rapport est disponible dans les deux langues officielles.