Influenza (FLU) Update for Week #04
Week Ending 1-26-19

The CDC reported that **Influenza** (**Flu**) activity, which includes diagnosed flu as well as **ILI** (**Influenza-Like-Illness**), increased again. The percentage of respiratory specimens testing positive for flu increased to 19.2% from 16.1% last week, all 10 Regions reported flu levels above baseline, and the number of hospitalizations from flu continued to increase. This may indicate that this Flu Season will have a second peak in cases.

Influenza A viruses were the most common found in the samples tested, with Influenza A(H1N1)pdm09 the most dominant, except in Region 4 (the Southeast), which again had A(H3) viruses dominate. Influenzas A (H1N1), A (H3N2) and Influenza B viruses were co-circulating.

The vast majority of the flu viruses were genetically similar to the 2018/19 Flu Vaccine with Influenza A viruses in the greater than/equal to (**>**) 95% range.

A Canadian Study, published in *Eurosurveillance*, presented the first vaccine effectiveness (VE) rates for this season which showed an overall VE for all combined flu viruses as 68%; H1N1 alone was 72%.
The published article can be found here:
https://www.eurosurveillance.org/content/10.2807/1560-7917.ES.2019.24.4.1900055

The CDC has published its *2018/19 Flu Season Preliminary Burden Estimates* with 9.8 – 11.4 million flu illnesses, 4.6 – 5.4 million medical visits for flu, and 113,000 – 136,000 flu-related hospitalizations.

See this link for more details on Flu and ILI activity, including charts, graphs and maps:
https://www.cdc.gov/flu/weekly/index.htm

FirstWatch RIN (**Regional Influenza Network**): **Alerts showed an increase last week from the previous week.**

For the most recently reported week, ending January 26, 2019, the CDC reported:
Influenza-like illness (ILI) visits to clinics & other non-hospital facilities increased to at 3.8% (l. w. 3.3%) & remained <u>above</u> the national baseline of 2.2%. All 10 regions reported ILI at or above their region-specific baselines, with a range of 2.4% to 6.5%. New York City and 23 states reported high ILI activity.

Flu cases, documented by positive flu tests on respiratory specimens, were reported as Widespread in 45 states, a significant increase. Clinical lab testing for influenza was positive for 19.2% of specimens, compared to 16.1% last week, with a range of 11.3% (Region 3) to 21.9% in Region 1. All regions were in the double digits, with three (3) at **>** 20% range.

Influenza A remained the dominant flu for 98.0% of the flu tests reported (same as last week), with 75.2% (81.2% last week) as A (H1N1)pdm09 viruses and the H3N2 subtype at 24.8% (18.8% last week). The rest of the tests showed 2.0% (same as last week) tested as Influenza B viruses, with 42.9% the Yamagata lineage and 57.1% as the Victoria lineage.

This shows the same percentages of Influenza A and B viruses, although the subtype percentages were different. Typically, Influenza B viruses cause less severe illness and occur more towards the Spring.

More than 99% of the flu viruses tested were found to have greatly reduced inhibition to the antivirals oseltamivir, zanamivir (100%), and peramivir (Tamiflu, Relenza, and Rapivab, respectively). High resistance continued to the adamantane group of antivirals, namely Amantadine and rimantadine (Flumadine), which are also not effective for any Influenza B viruses.

Baloxavir marboxil, under the brand name Xofluza, is a new influenza antiviral drug approved in October 2018, as a new alternative. It also works on Influenza B viruses and controls the virus in a different way.

The CDC recommends treatment with antivirals, as early as possible, for those with confirmed or suspected flu with severe, complicated, or progressive disease, those who are hospitalized, or at high risk for complications of flu. See this link for a list of those at risk for complications from flu: **https://www.cdc.gov/flu/about/disease/high_risk.htm**

The CDC provides an interactive U.S. map that will link to each state's public health authorities. ILI and Flu information and processes, as well as other diseases and public health topics.   This site includes a tremendous amount of information at the State and even Local level. Find it at this site:
https://www.cdc.gov/flu/weekly/usmap.htm

For Influenza-Like Illness:

High ILI Activity: (**New York City & 23 states**): Alabama, Alaska, Arkansas, Colorado, Connecticut, Georgia, Indiana, Kentucky, Louisiana, Maryland, Massachusetts, Mississippi, Nebraska, New Jersey, New Mexico, North Carolina, Oklahoma, Rhode Island, South Carolina, Texas, Utah, Vermont, and Virginia
Moderate ILI Activity: (**Puerto Rico & 10 states**): Arizona, Hawaii, Kansas, Minnesota, Missouri, New Hampshire, New York, Pennsylvania, West Virginia, and Wyoming
Low Activity: (**Washington D.C., & 13 states**): California, Florida, Idaho, Illinois, Iowa, Maine, Michigan, Nevada, Oregon, South Dakota, Tennessee, Washington, and Wisconsin,
Minimal Activity: (4 states): Delaware, Montana, North Dakota, and Ohio

For Flu (positive flu tests)**:**

Widespread Activity: (45 states): Alabama, Arizona, Arkansas, California, Connecticut, Delaware, Florida, Georgia, Idaho, Illinois, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, Wisconsin, and Wyoming
Regional Activity (**Puerto Rico & 3 states**): Colorado, Indiana, and West Virginia
Local Activity (2 states): Alaska, and Hawaii
Sporadic Activity: (Washington D.C., & the U.S. Virgin Islands)
Guam did not report

Other Data:

The Hospitalization rate from Flu was 15.3 per 100,000 (last week 14.8/100,000). Older adults (age $\geq$ 65 years) had the highest hospitalization rate at 39.8 per 100,000 (l.w. 38.3/); children (ages 0-4) had 27.3 per 100,000 (last week 26.5/), and adults (age 50-64 years) at 20.5 per 100,000 (l.w. 19.8/). Most, 93% (l.w. same %), were caused by Influenza A viruses; 5.7% (l.w. 5.8%) were from Influenza B viruses; 0.6% (l.w. same %) showed co-infection with both Influenza A and B viruses; and 0.6% (l.w. 0.7%) were not typed for a specific flu virus. Note, for clarity, the percentages reported by the CDC add up to 99.9%.

Death rates for pneumonia & influenza in adults remained at 7.2% and at the epidemic threshold of 7.2% for week #3. Death reports often aren't reported for data purposes the same week and are typically reported by the CDC a week behind.

There were another two (2) pediatric deaths attributed to flu reported this week, for a total of 24 for this flu season.

Flu in Canada, Europe & the World:

Canada:
According to the Public Health Agency of Canada (PHAC), Flu continued to circulate throughout Canada flu for Week #03, ending 1/26/19. The Eastern Regions reported higher levels of flu than the Western Regions of the country. They also reported that it seems that peak activity has passed with most indicators showing decreasing or stable levels, at least when grouped as a whole   Influenza A remained the most common strain, with the majority Influenza A(H1N1)pdm09. Per the Canadian Influenza VE study mentioned above, this season's flu shot is about 72% effective in all age groups, particularly among young children who have been more affected by influenza this year, compared to other groups.

Widespread Activity in 2 Regions: Que. (1), and P.E.I. (1)
Localized Activity in 19 Regions: Alta. (1), Ont. (6), Que. (3), N.L. (1), N.S. (4), and N.B. (4)
Sporadic Activity in 31 Regions: B.C. (5), Alta. (4), Sask. (3), Man. (5), Que (3), N.B. (3), N.L. (3), Nvt. (3), N.W.T. (1) and Y.T. (1)
No Activity in 3 Regions: N.W.T. (1)

For more specific information see:
On flu activity: https://www.canada.ca/en/public-health/services/publications/diseases-conditions/fluwatch/2018-2019/week4-january-20-january-26-2019.html

Canadian Flu Information:
https://www.canada.ca/en/public-health/services/diseases/flu-influenza.html

General Page for Canadian Flu Watch Surveillance with links to different components:
https://www.canada.ca/en/public-health/services/diseases/flu-influenza/influenza-surveillance.html

About the Canadian Influenza Activity Surveillance System:
https://www.canada.ca/en/public-health/services/diseases/flu-influenza/influenza-surveillance/about-fluwatch.html

Europe:
According to the European Center for Disease Prevention & Control **(ECDC), for Week # 4 (Jan 21-27, 2019)**, Influenza activity continued to increase throughout the European Region. The samples taken from those with ILI or ARI (acute respiratory illness), by sentinel primary healthcare sites, showed 51.3% positive for flu viruses. The majority of circulating viruses remained Influenza A (H1N1)pdm09 and (H3N2) co-circulating (proportions varied by country), with few influenza B viruses found. Mortality from 23 Member States reported excess mortality in adult and in elderly populations overall, but noted that the pertinent data was supplied by just a few countries.
For more information see: http://flunewseurope.org/

World: The **World Health Organization (WHO) provides info** on Influenza in Member Countries **here**: https://www.who.int/influenza/surveillance_monitoring/en/

First Responder Specific Information

There are many websites that may be helpful in planning and managing seasonal flu within First Responder organizations. A few of those websites are included here**:**
NIOSH on Flu for Employers/Employees:
https://www.cdc.gov/niosh/topics/flu/

Protection from Flu:
https://www.cdc.gov/flu/protect/habits/index.htm

Weekly Flu Map:
https://www.cdc.gov/flu/weekly/usmap.htm

World Map Showing Flu & Other Infectious Diseases:
http://www.healthmap.org/en/

Other Actions First Responders Should Consider

First Responders should be vaccinated for Flu each season to prevent getting flu themselves, taking it home to family members, or transmitting it to patients in their care. Family members and patients may be at increased risk of complications from flu.

Perform proper hand hygiene including frequent handwashing and the use of hand sanitizers in general, and particularly when providing patient care or after touching surfaces.

Masks (N95 or N100) should be used in the presence of patients with cough and/or fever; preferably before being within 6 feet of the patient. This becomes even more important if droplet producing procedures are being performed (i.e. suctioning, nebulizer treatments, BVM, intubation).

Care should be taken to avoid touching your own face and mucous membranes (eyes, mouth, nose) since the flu virus is frequently found on surfaces such as door knobs, writing & recording tools (pens and tablets), cot and equipment handles, phones, light switches, as well as clothing, bed clothes, etc.

Report signs/symptoms of flu to your physician or other appropriate provider for early assessment and care. Alert your employer per policy.

Cough and sneeze into your sleeve, if a tissue is not available, and not onto your hands. Watch this Youtube video for a humorous but educational approach on the subject. **https://www.youtube.com/watch?v=CtnEwvUWDo0**

Stay away from others if you are sick.

Be aware of your exposure risk and history to prevent exposing others. Take extra precautions or avoid those with immunocompromise, when possible, if you have a known or likely exposure.

Antivirals may be indicated for the treatment of flu, particularly for those in high risk groups, those who are hospitalized or have severe, complicated or progressing flu. Those that present with 48 hours of the onset of symptoms may also be given antivirals, based on PCP judgement but make sure the practitioner is aware of their First Responder Role. See **https://www.cdc.gov/flu/antivirals/whatyoushould.htm**

And, for consideration when looking at yourself, your family and friends, or your patients, consider the following information regarding complications of flu:
Flu is much more worrisome for the very young and the elderly, as well as those who fit into one of the high risk categories see this link for the list: **https://www.cdc.gov/flu/about/disease/high_risk.htm** . Signs of ILI/Flu in this group requires careful assessment to rule out complications and these groups are much more likely to need medical oversight to assure adequate care. Young children and those over 65 are typically at greater risk for complications, hospitalization, and even death. Consideration should be given to perhaps monitoring these groups more closely, with inclination for more comprehensive assessment and transport for further evaluation, when presented with possible flu and any signs of complications.
Complications of flu, sometimes requiring hospitalization and even leading to death, tend to occur after the person has begun to get better from the flu and then appears to relapse. EMS personnel may want to look more closely at those patients when the call is not about the initial signs and symptoms of flu, but about increasing or different signs that have appeared, often from five days to two weeks after the initial flu symptoms began.

A study was published by the Institute for Clinical Evaluative Sciences in *NEJM (New England Journal of Medicine)*. See details below:

Flu infection may raise risk of heart attack, particularly in first 7 days

Study confirms importance of flu vaccination for people at risk of heart disease.

Researchers looked at nearly 20,000 Ontario adult cases of lab-confirmed influenza (2009-2014) and then identified 332 patients who were hospitalized for a heart attack within one year of flu diagnosis.

For this population, the risk of heart attack was

6 times higher

within the first week of a flu diagnosis.

Factors that may be associated with more risk:
- being age 65 and older
- infection with influenza B
- no previous heart attack

The researchers say that people at risk of heart disease should take care to prevent flu through measures including handwashing and vaccination, and should not delay medical evaluation for heart symptoms, particularly in the first week of an acute respiratory infection.

Kwong JC et al. NEJM. 2018.

Institute for Clinical Evaluative Sciences
ices.on.ca

Public Health Ontario | Santé publique Ontario

Image courtesy of ICES/PHO

"The researchers add that patients should not delay medical evaluation for heart symptoms particularly within the first week of an acute respiratory infection." (Lisa Schnirring, News Editor: *CIDRAP News* ;Jan 25, 2018)

For more information on Influenza and the Heart Attack Study, please see the link below.

https://www.eurekalert.org/pub_releases/2018-01/pho-rcl011818.php

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