Summit County Public Health
Influenza Surveillance Report
2018 – 2019 Season
Report #8
Flu Surveillance Week 9 (12/2/2018 to 12/8/2018)
Centers for Disease Control and Prevention MMWR Week 49

Summit County Surveillance Data:

During **Week 9**, influenza-related activity remained low.

Table 1: Overall Influenza Activity Indicators in Summit County by Week

	Week 8 MMWR 48 N (%)[1]	Week 9 MMWR 49 N (%)[1]	Percent change from previous week	Number of weeks increasing or decreasing
Lab Reports				
Test Performed	517	495	**- 4.3%**	**↓1**
Positive Tests (Number and %)	8 (1.6)	5 (1.0)	**- 37.5%**	**↓2**
Influenza A (Number and %)	6 (1.2)	5 (1.0)	**- 16.7%**	**↓2**
Influenza B (Number and %)	2 (0.4)	0 (0.0)	**- 100%**	**↓1**
Influenza hospitalizations:	4	4	**NC**	**NC**
Influenza ILI Community Report:				
Long-term Care Facilities	0	1	**+ 100%**	**↑1**
Correctional & Addiction Facilities	0	0	--	--
Physician Offices & Clinics	0	1	**+ 100%**	**↑1**
Pharmacy Prescriptions				
Amantidine	1	1	**NC**	**NC**
Rimantidine Flumadine	0	0	--	--
Relenza	0	0	--	--
Oseltamivir Tamiflu	1	5	**+ 400%**	**↑1**
Total antiviral prescriptions	2	6	**+ 300%**	**↑1**
Schools absenteeism daily rate[2]	6.5	5.9	**- 9.2%**	**↓2**
Deaths				
Pneumonia associated	4 (4.0)	5 (4.8)	**+ 20.2%**	**↑2**
Influenza associated	0	0	--	--
Emergency room visits (EpiCenter)[3]				
Constitutional Complaints	465 (7.9)	471 (8.2)	**+ 3.8%**	**↑1**
Fever and ILI	73 (1.2)	82 (1.4)	**+ 16.7%**	**↑1**

1) N and % are reported when available; NC = no change

2) Absence is for any reason. Percent is from total number of students enrolled. Data was collected from 7 schools or school districts throughout Summit County (n = ~37,000 students)

3) Percent is from total number of emergency room interactions

Note: *Data is provisional and may be updated as more information is received.* Percentages should be interpreted with caution. Small changes in number can result in large changes in percent. When a percentage , or prevalence, is available in this table, the percent change will be calculated from those values

Zero deaths related to influenza were reported during Week 9, and there were five reported deaths associated with pneumonia. **Figure 1** displays weekly Summit County death counts associated with pneumonia and influenza.

Acute Care Hospitalizations: There were four flu-related hospitalizations reported during Week 9. (**Figure 2**)

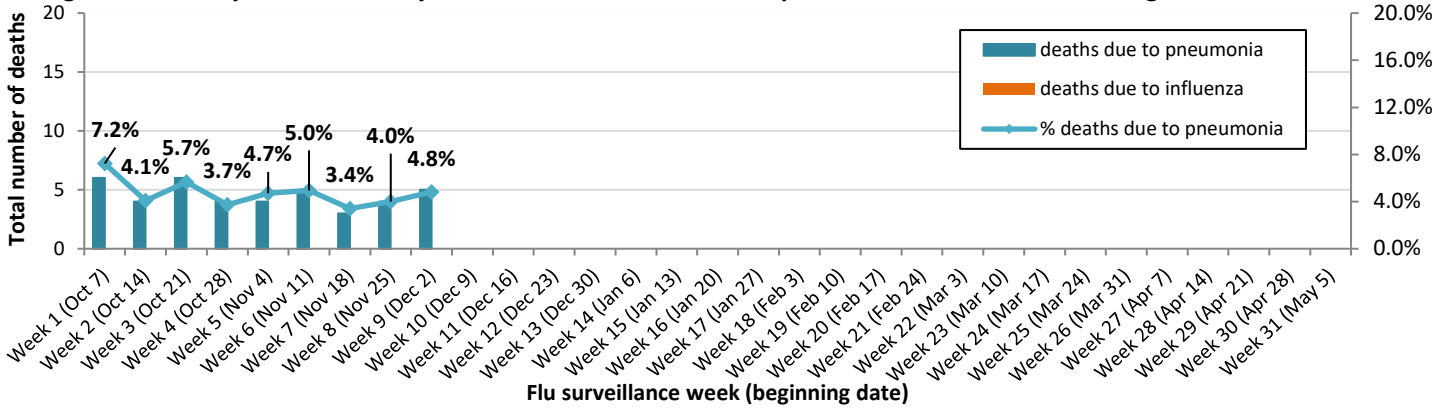
COMMUNITY ILI REPORTS:
Influenza like Illness (ILI) as defined by the CDC is fever (temperature of 100°F [37.8°C] or greater) and a cough and/or a sore throat without a known cause other than influenza.
Long Term Care Facilities: There was 1 case of ILI reported.
Correctional and Inpatient Addiction facilities: There were 0 cases of ILI reported.
Physician offices and clinics: During Week 9, there was 1 case of ILI reported.

Pharmacies: Six prescriptions for antiviral medications were reported during Week 9.

School absenteeism includes absences regardless of reason. In Week 9, the absence rate was 5.9%, which was a 9% decrease from the rate in Week 8 (6.4%).

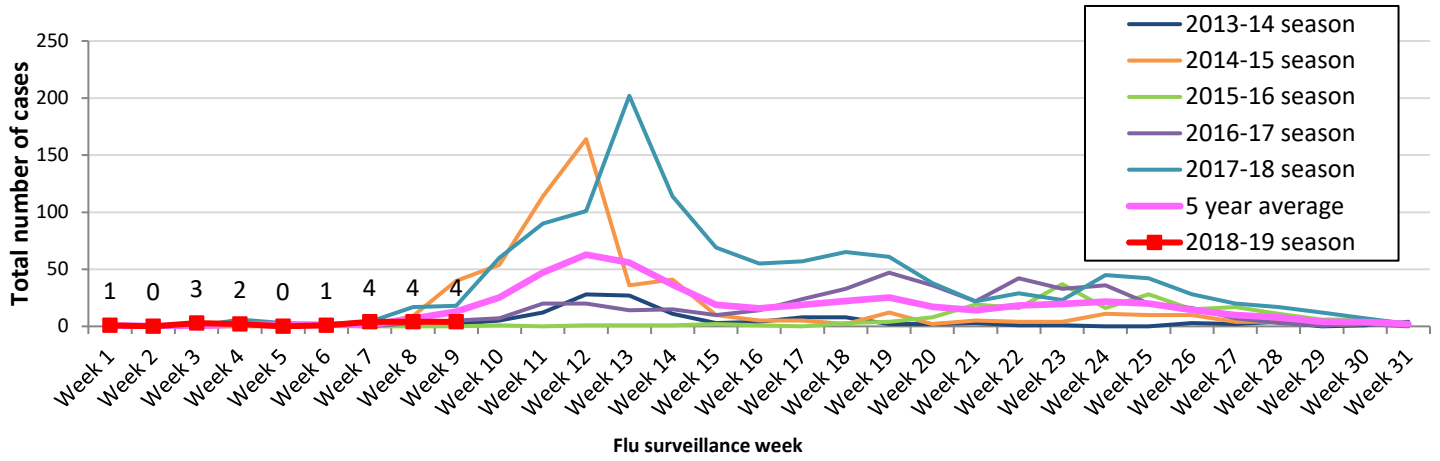
Lab reports: During the Week 9, Summit County labs performed 495 tests, of which 5 tested positive (all were influenza A). **(Figure 4)** Both the number of tests ordered an positive results decreased during Week 9.

Figure 1. Weekly Summit County death counts associated with pneumonia and influenza during 2018-2019 season



Influenza-associated hospitalizations: Summit County hospitals reported four influenza-associated hospitalizations in Week 8. **Figure 2** displays weekly confirmed hospitalization counts for Summit County **(season count to date = 19).**

Figure 2. Summit County influenza-associated hospitalizations by week, 2018-2019 and previous five seasons



EpiCenter collects and analyzes health related data in real time to provide information about the health of the community. This system tracks ER visits related to constitutional complaints and fever and ILI. **Figure 3** displays the weekly number of ER visits related to ILI and flu symptoms in Summit County, and there were 82 ILI-related visits reported during Week 9, which was 1.4% of total ED visits (n = 5807). This percentage was a 17% increase from Week 8.

Figure 3. Weekly ER visits in Summit County related to Fever + ILI stratified by age groups, 2018 to 2019

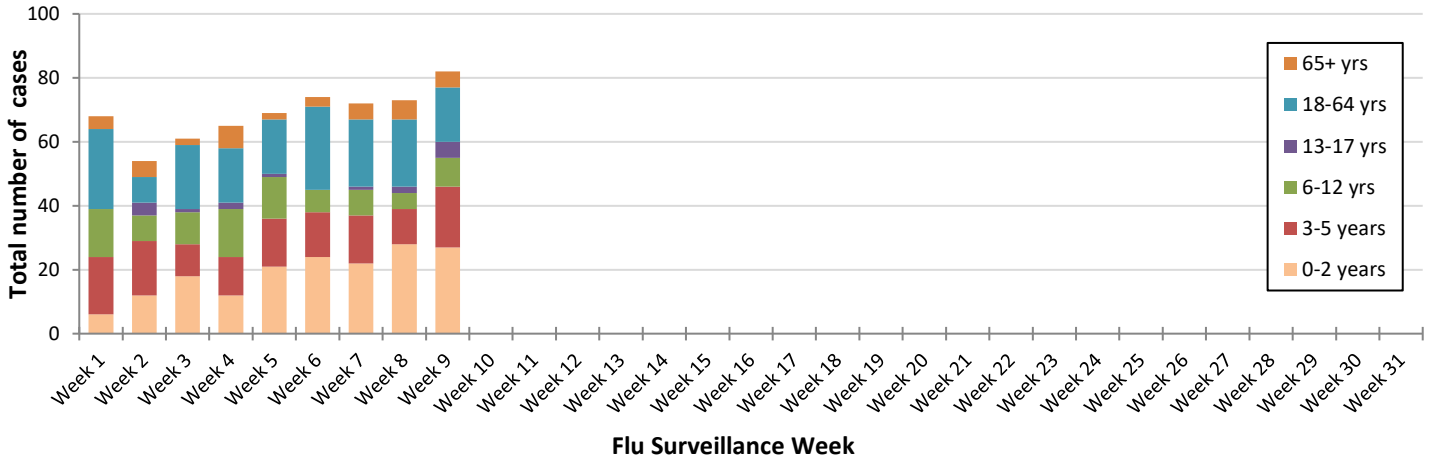
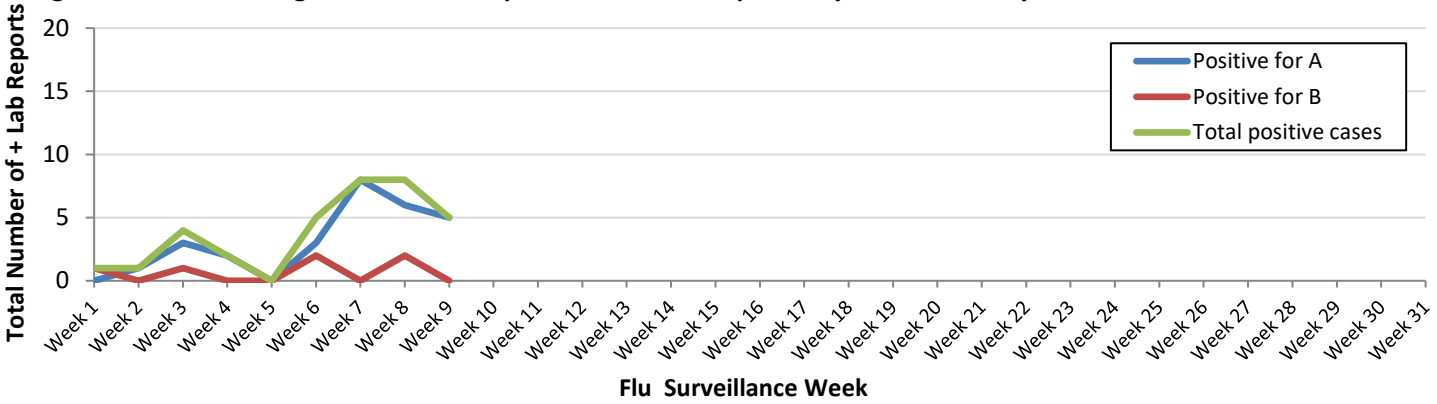


Figure 4. Influenza diagnostic tests with positive results completed by Summit County health facilities, 2018 - 2019 season



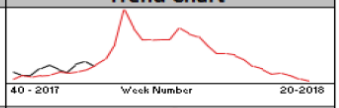
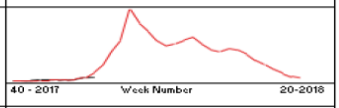
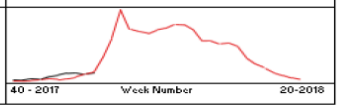
Ohio Influenza Activity:

Current Ohio Activity Level (Geographic Spread) – Local

Definition: Increased ILI in 1 region; ILI activity in other regions is not increased AND recent (within the past 3 weeks) lab evidence of influenza in region with increased ILI, OR 2 or more institutional outbreaks (ILI or lab confirmed) in 1 region; ILI activity in other regions is not increased AND recent (within the past 3 weeks) lab evidence of influenza in region with the outbreaks; virus activity is no greater than sporadic in other regions.

During MMWR Week 49, public health surveillance data sources indicate minimal intensity for influenza-like illness (ILI) in outpatient settings reported by Ohio's sentinel providers. The percentage of emergency department visits with patients exhibiting constitutional symptoms and fever and ILI specified ED visits are below baseline levels. Reported cases of influenza-associated hospitalizations are **above** the seasonal threshold*. There were 45 influenza-associated hospitalizations reported during MMWR Week 49.

Ohio Influenza Activity Summary Dashboard (December 2 – December 8, 2018):

Data Source	Current week value	Percent Change from last week[1]	# of weeks[2]	Trend Chart[3]
Influenza-like Illness (ILI) Outpatient Data (ILINet Sentinel Provider Visits)	1.01%	-15.13%	↓ 1	
Thermometer Sales (National Retail Data Monitor)	1069	-3.17%	↓ 1	
Fever and ILI Specified ED Visits (EpiCenter)	1.82%	-1.62%	↓ 1	
Constitutional ED Visits (EpiCenter)	9.02%	1.35%	↑ 1	
Confirmed Influenza-associated Hospitalizations (Ohio Disease Reporting System)	45	2.27%	↑ 5	
Outpatient Medical Claims Data[4]	0.36%	5.88%	↑ 1	

[1]Interpret percent changes with caution. Large variability may be exhibited in data sources with low weekly values.
[2]Number of weeks that the % change is increasing or decreasing.
[3]Black lines represent current week's data; red lines represent baseline averages
[4]Medical Claims Data provided by athenahealth®

Source: https://www.odh.ohio.gov/en/seasflu/Ohio-Flu-Activity

National Influenza Activity

Influenza activity in the United States remained slightly elevated. Influenza A(H1N1)pdm09, influenza A(H3N2), and influenza B viruses continue to co-circulate, with influenza A(H1N1)pdm09 viruses reported most commonly by public health laboratories since September 30, 2018. Below is a summary of the key influenza indicators for the week ending December 8, 2018:

- **Viral Surveillance:** Influenza A viruses have predominated in the United States since the beginning of October. The percentage of respiratory specimens testing positive for influenza in clinical laboratories remains low.
    - **Virus Characterization:** The majority of influenza viruses characterized antigenically and genetically are similar to the cell-grown reference viruses representing the 2018–2019 Northern Hemisphere influenza vaccine viruses.
    - **Antiviral Resistance:** All viruses tested show susceptibility to the neuraminidase inhibitors (oseltamivir, zanamivir, and peramivir).
- **Influenza-like Illness Surveillance (Figure 5):** The proportion of outpatient visits for influenza-like illness (ILI) remained at 2.2%, which is at the national baseline of 2.2%. Five of 10 regions reported ILI at or above their region-specific baseline level.
    - **ILI State Activity Indictor Map (Figure 6):** One state experienced high ILI activity; Puerto Rico and four states experienced moderate ILI activity; New York City, the District of Columbia and nine states experienced low ILI activity; and 36 states experienced minimal ILI activity.
- **Geographic Spread of Influenza (Figure 7):** The geographic spread of influenza in three states was reported as widespread; 10 states reported regional activity; 21 states reported local activity; the District of Columbia, Puerto Rico, the U.S. Virgin Islands and 16 states reported sporadic activity; and Guam did not report.
- **Influenza-associated Hospitalizations:** A cumulative rate of 1.9 laboratory-confirmed influenza-associated hospitalizations per 100,000 population was reported.
- **Pneumonia and Influenza Mortality:** The proportion of deaths attributed to pneumonia and influenza (P&I) was below the system-specific epidemic threshold in the National Center for Health Statistics (NCHS) Mortality Surveillance System.
- **Influenza-associated Pediatric Deaths:** One influenza-associated pediatric death was reported to CDC for week 49.

Figure 5. Percentage of visits for influenza-like illness (ILI) reported by the U.S. Outpatient Influenza-like Surveillance Network (ILINet), weekly national summary, 2018-2019 and selected previous seasons

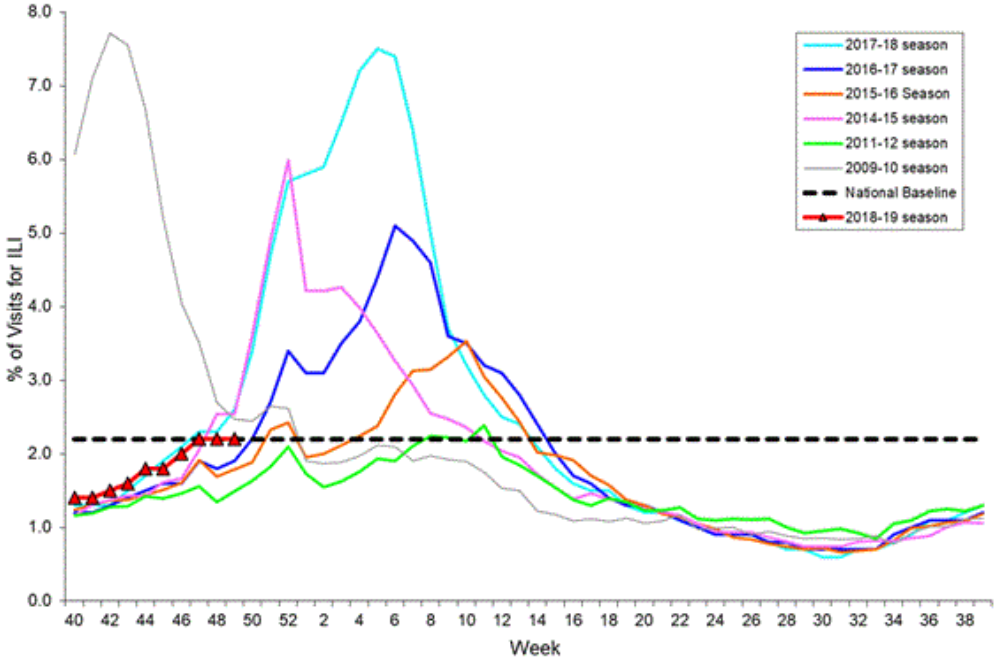


Figure 6. Influenza-like illness (ILI) activity level indicator determined by data reported to ILINet

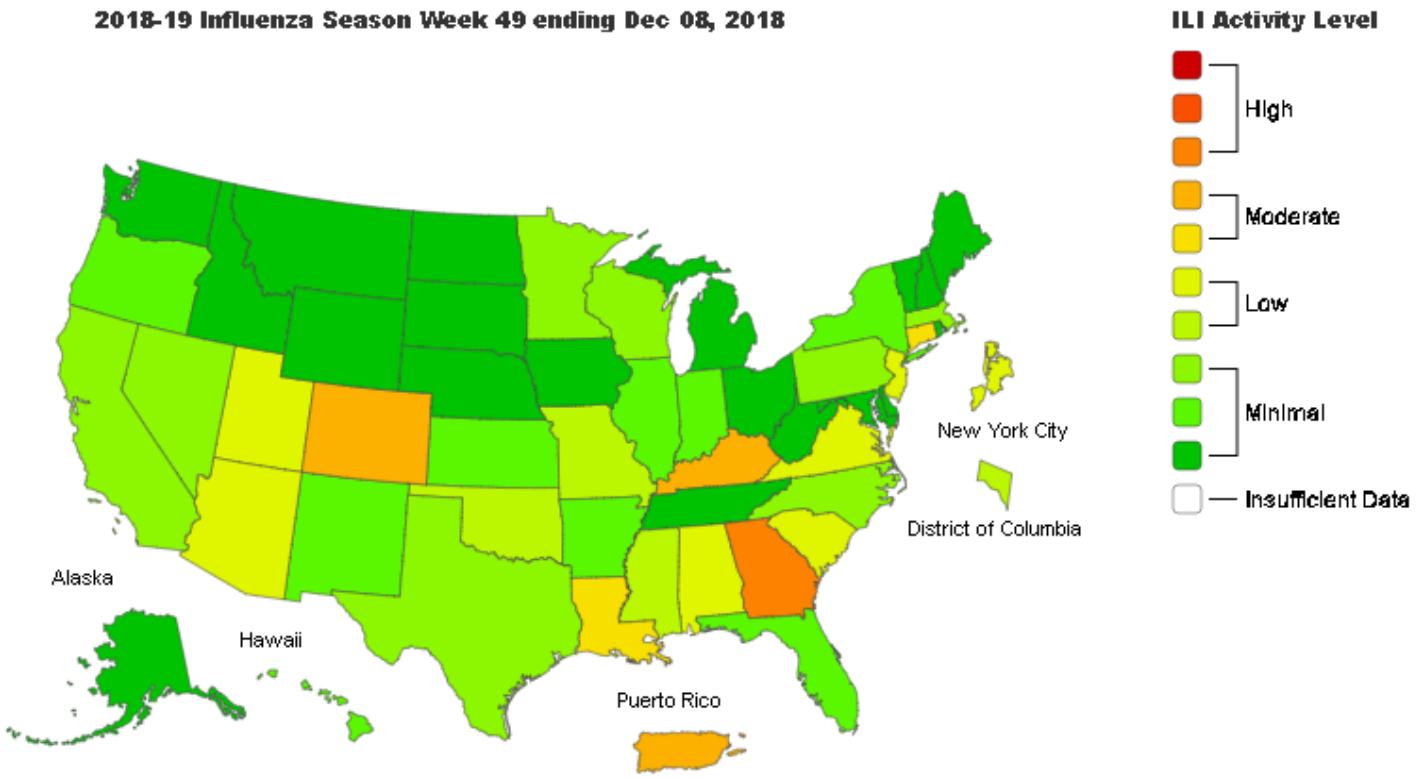
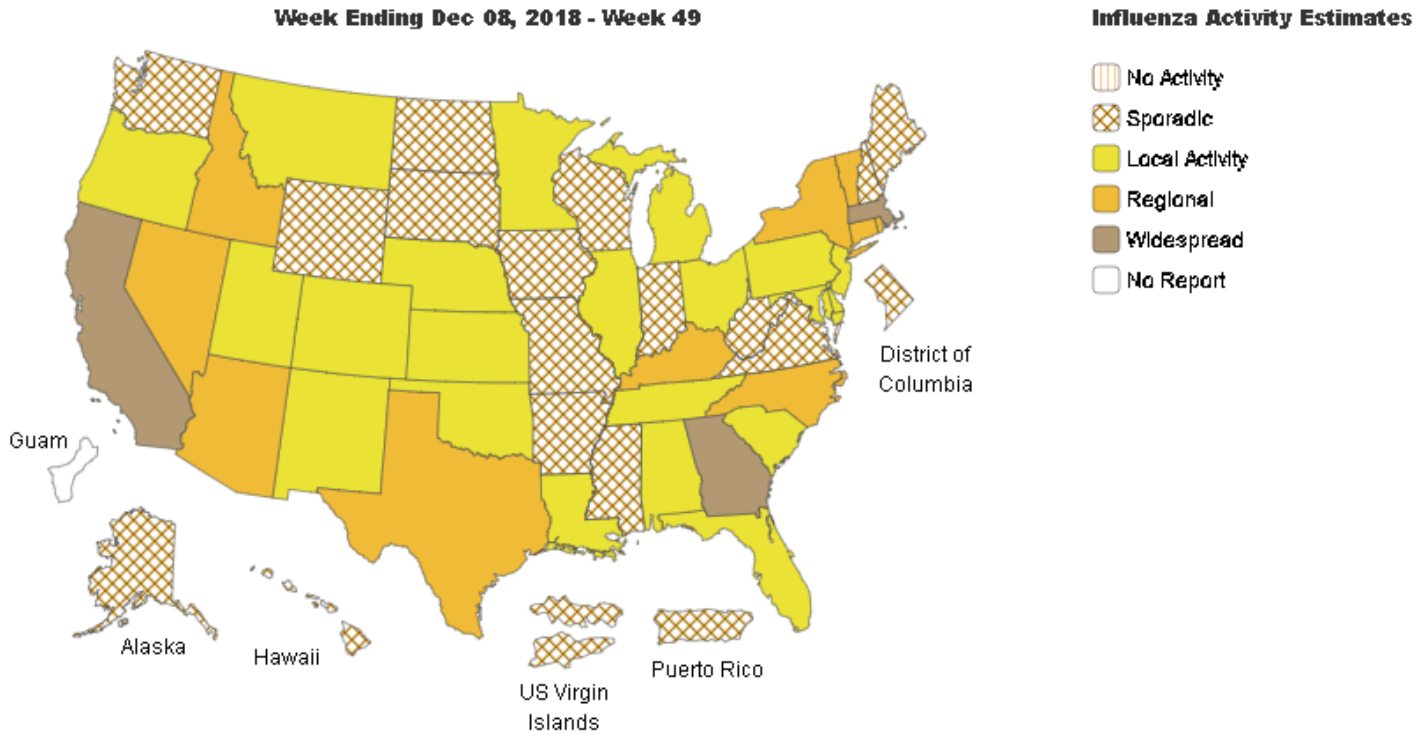


Figure 7. Weekly influenza activity (geographic spread) estimates reported by state and territorial epidemiologists



Source: https://www.cdc.gov/flu/weekly/

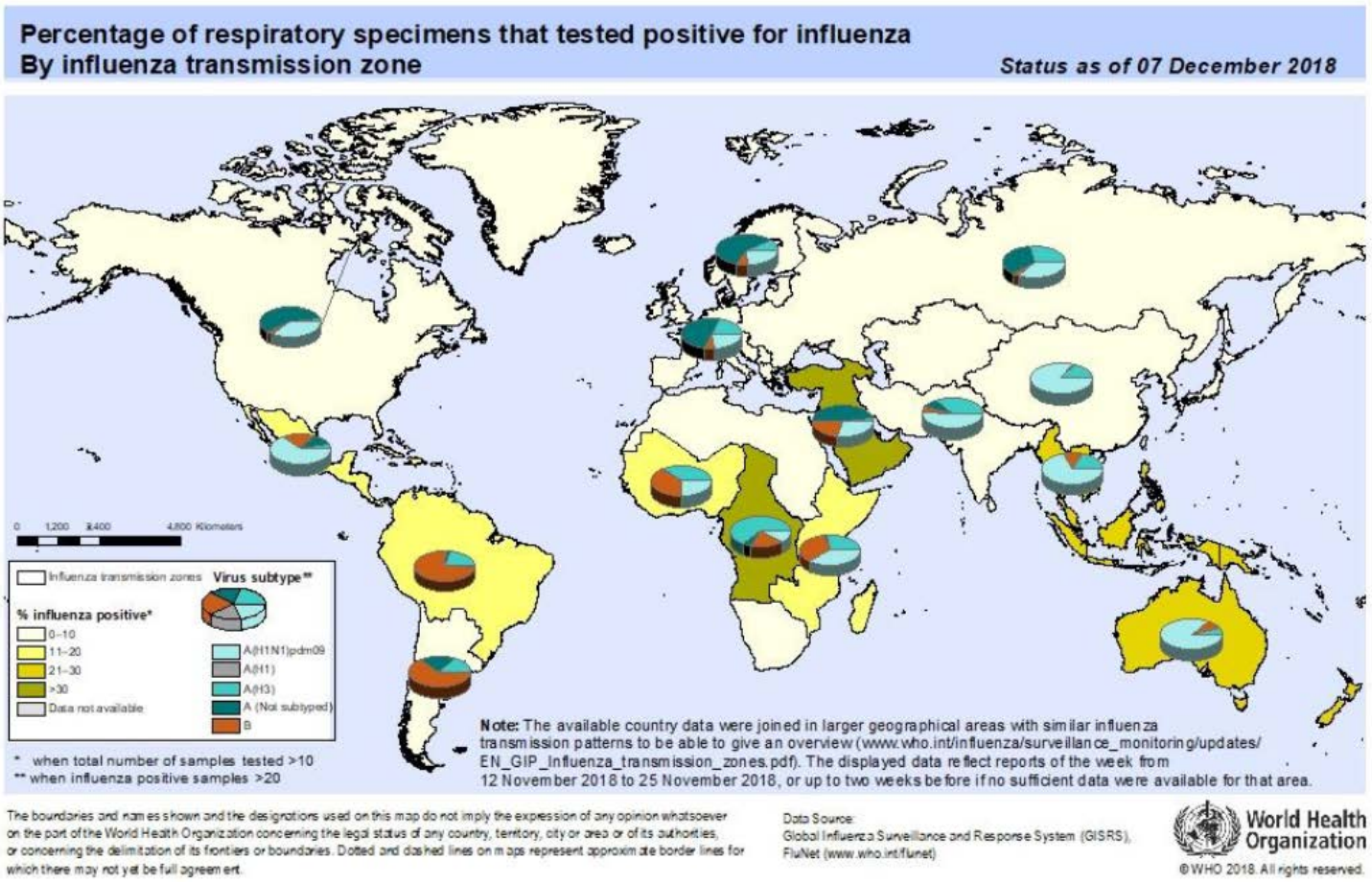
Global Surveillance:

Influenza Update Nº 330, World Health Organization (WHO), published 10 December 2018, based on data up to 25 November 2018. The Update is published every two weeks.

Summary

- ***In the temperate zone of the northern hemisphere influenza activity continued to increase although overall influenza activity remained low.*** Increased influenza detections were reported in some countries of Southern and South-East Asia. In the temperate zones of the southern hemisphere, influenza activity returned to inter-seasonal levels. Worldwide, seasonal influenza A viruses accounted for the majority of detections.

- National Influenza Centres (NICs) and other national influenza laboratories from 110 countries, areas or territories reported data to FluNet for the time period from 12 November 2018 to 25 November 2018 (data as of 2018-12-07 03:38:18 UTC). The WHO Global Influenza Surveillance and Response System (GISRS) laboratories tested more than 118399 specimens during that time period. 6596 were positive for influenza viruses, ***of which 5995 (90.9%) were typed as influenza A and 601 (9.1%) as influenza B.*** Of the sub-typed influenza A viruses, 3019 (85.5%) were influenza A(H1N1)pdm09 and 511 (14.5%) were influenza A(H3N2). Of the characterized B viruses, 39 (38.6%) belonged to the B-Yamagata lineage and 62 (61.4%) to the B-Victoria lineage.



Source: https://www.who.int/influenza/surveillance_monitoring/updates/latest_update_GIP_surveillance/en/

Influenza News from the CDC:

CDC Responds to Approval of New Flu Antiviral Drug

December 3, 2018—On October 24, the U.S. Food and Drug Administration (FDA) approved a new drug to treat influenza (flu) illness, called baloxavir marboxil (trade name Xofluza®). Baloxavir has benefits similar to other approved flu antiviral drugs, but works differently, giving clinicians another tool to treat flu illness. This new drug could be especially helpful in the event of the emergence of widespread resistance to the other influenza antiviral drugs (e.g., oseltamivir, zanamivir and peramivir).

Baloxavir is a "cap-dependent endonuclease (CEN) inhibitor" that interferes with viral RNA transcription and blocks virus replication. This means that it blocks the ability of the virus to make copies of itself within an infected cell. In comparison, the other available flu antiviral medications, which are "neuraminidase inhibitors," do not directly interrupt replication within an infected cell, but instead work to prevent new copies of the virus from leaving the infected cell and spreading to healthy cells.

In response to FDA's approval of baloxavir and its entry into the U.S. market, CDC has taken a number of steps:

For example, CDC conducted next-generation sequencing (NGS) and subsequently analyzed thousands of influenza viruses submitted as part of its active "right size" surveillance program. All influenza viruses submitted to CDC are sequenced as a first step so CDC can quickly analyze viruses, including identifying viruses with molecular markers known to confer baloxavir resistance.

In addition, a laboratory assay (i.e., a test) that uses pyrosequencing technology was developed to detect the principal markers of baloxavir resistance in clinical specimens. These markers, known as "PA-38T/M/F," were most commonly detected in viruses collected from baloxavir-treated patients. Validation of this pyrosequencing assay for use under Clinical Laboratory Improvement Amendments (CLIA) regulations is planned. CLIA are federal regulatory standards that apply to all clinical laboratory testing performed on humans in the United States. This new assay can be used in laboratories across the country to test for markers of baloxavir resistance.

Laboratory assays also were developed to test the susceptibility of influenza viruses to baloxavir in cell cultures. A "one-cycle infection-based" assay measures how well baloxavir inhibits the early stages of influenza virus infection (at a single cell level), while a "multi-cycle infection-based" assay measures how well baloxavir blocks infection of neighboring healthy cells. This multi-cycle assay is primarily used to test highly pathogenic avian influenza (HPAI) viruses with pandemic potential, whereas the one-cycle assay is used for testing of seasonal and other influenza viruses.

Baseline susceptibility to baloxavir was established by testing more than 100 seasonal human influenza viruses representing each influenza subtype and B virus lineage (e.g., influenza A(H3N2), A(H1N1), and influenza B/Yamagata and B/Victoria). Numerous animal or zoonotic influenza viruses that have pandemic potential were tested as well to determine their susceptibility to baloxavir. Eventually, the results of routine testing for baloxavir susceptibility will be incorporated into CDC's weekly influenza communications report: FluView.

As part of efforts to build laboratory capacity for baloxavir susceptibility testing of circulating influenza viruses in the United States, CDC is collaborating with the Association of Public Health Laboratories (APHL) and the Wadsworth Center with the New York State Department of Health. CDC has assisted in training laboratory staff on the use of CDC's new methods for assessing baloxavir susceptibility.

In addition to engaging in preparatory laboratory activities, CDC has begun to incorporate information and guidance surrounding the new antiviral drug into its public and clinician education and outreach activities materials, including a summary for clinicians.

FDA approval of baloxavir is a promising step forward for public health efforts aimed at acquiring new tools for combating seasonal influenza and future pandemics. Laboratory activities to prepare for the introduction of this new antiviral drug are an example of how CDC works diligently to prepare and respond when new medical countermeasures come to market.

Source web page: https://www.cdc.gov/flu/spotlights/cdc-responds-approval-new-flu-drug.htm

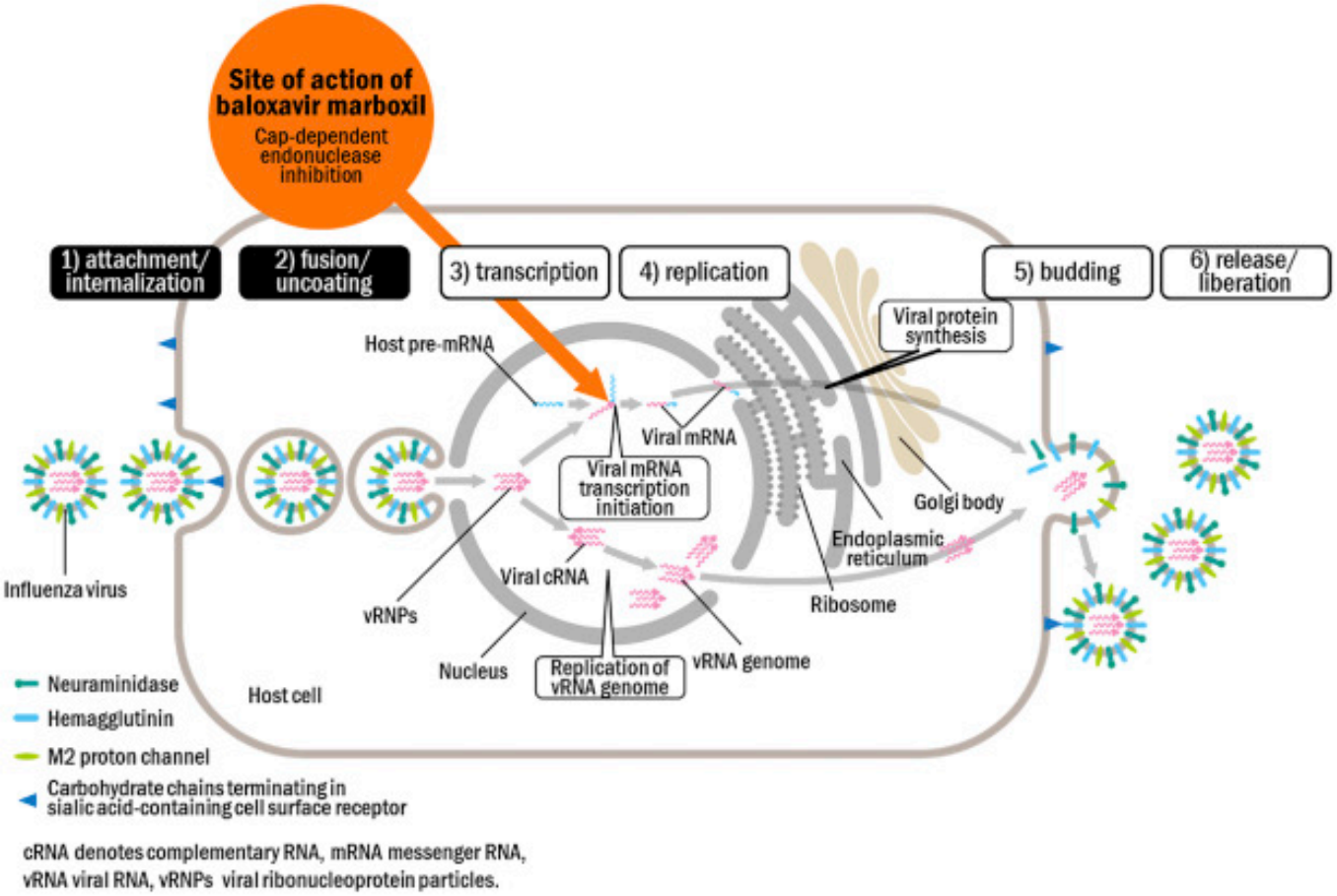


Image source: https://www.sciencedirect.com/science/article/pii/S0166354218303632

About this report: *Reporting agencies include labs, hospitals, long-term care and community-based care providers, physician offices, university clinic, pharmacies, and schools. Agencies are distributed throughout Summit County and report different indicators of flu activity including total lab tests, numbers of positive tests and type, antiviral prescriptions filled, school absences, and influenza like illness (ILI). Hospitalizations are lab confirmed for influenza and are obtained from the Ohio Disease Reporting System. Number of deaths associated with influenza and pneumonia are gathered from the Summit County Office of Vital Records death listings. Emergency room visits for complaints related to influenza are obtained by syndromic surveillance system (Epicenter).*
Special thanks to all agencies who report Influenza related data weekly.

Reporting from participants may not be complete each week. Numbers may change as updated reports are received. For questions, please contact Joan Hall or Tracy Rodriguez at the Summit County Public Health Communicable Disease Unit (330-375-2662 or cdu@schd.org). Report was issued on December 17, 2018.