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Seasonal Influenza (Flu)

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2010-2011 Influenza Season Week 6 ending February 12, 2011

All data are preliminary and may change as more reports are received.

Synopsis:

During week 6 (February 6-12, 2011), influenza activity in the United States remained elevated.

- Of the 9,448 specimens tested by U.S. World Health Organization (WHO) and National Respiratory and Enteric Virus Surveillance System (NREVSS) collaborating laboratories and reported to CDC/Influenza Division, 3,306 (35.0%) were positive for influenza.
- The proportion of deaths attributed to pneumonia and influenza (P&I) was above the epidemic threshold.
- Five influenza-associated pediatric deaths were reported. Three of these deaths were associated with 2009 influenza A (H1N1) virus, one was associated with an influenza A virus for which the subtype was not determined, and one was associated with an influenza B virus.
- The proportion of outpatient visits for influenza-like illness (ILI) was 4.5%, which is above the national baseline of 2.5%. All 10 regions reported ILI at or above region-specific baseline levels. Twenty states experienced high ILI activity; nine states experienced moderate ILI activity; New York City and five states experienced low ILI activity, and the District of Columbia and 16 states experienced minimal ILI activity.
- The geographic spread of influenza in 37 states was reported as widespread; 10 states reported regional influenza activity; the District of Columbia reported local activity; Puerto Rico, the U.S. Virgin Islands, and three states reported sporadic influenza activity, and Guam reported no influenza activity.

National and Regional Summary of Select Surveillance Components

| HHS Surveillance Regions* | Data for current week | | | Data cumulative since October 3, 2010 (Week 40) | | | | |
|---------------------------|-----------------------|---------------------|--|---|---------------|----------------------------|-------|------------------|
| | Out-patient ILI† | % positive for flu‡ | Number of jurisdictions reporting regional or widespread activity§ | A (H3) | 2009 A (H1N1) | A(Subtyping not performed) | B | Pediatric Deaths |
| Nation | Elevated | 35.0% | 47 of 54 | 9,628 | 4,582 | 6,358 | 7,264 | 35 |
| Region 1 | Elevated | 40.9% | 6 of 6 | 868 | 214 | 13 | 89 | 0 |
| Region 2 | Elevated | 27.5% | 2 of 4 | 410 | 115 | 586 | 109 | 4 |
| Region 3 | Elevated | 46.3% | 4 of 6 | 1,479 | 1,231 | 435 | 286 | 5 |
| Region 4 | Elevated | 27.1% | 8 of 8 | 885 | 764 | 2,084 | 3,146 | 7 |

| | | | | | | | | |
|------------------|----------|-------|--------|-------|-----|-------|-------|---|
| Region 5 | Elevated | 50.2% | 6 of 6 | 1,003 | 784 | 186 | 490 | 6 |
| Region 6 | Elevated | 40.0% | 5 of 5 | 1,483 | 243 | 1,364 | 1,473 | 5 |
| Region 7 | Elevated | 35.7% | 4 of 4 | 375 | 337 | 226 | 310 | 0 |
| Region 8 | Elevated | 27.2% | 6 of 6 | 1,387 | 308 | 1,145 | 560 | 4 |
| Region 9 | Elevated | 33.5% | 3 of 5 | 1,326 | 426 | 298 | 751 | 4 |
| Region 10 | Elevated | 34.3% | 3 of 4 | 412 | 160 | 21 | 50 | 0 |

*HHS regions (Region 1 CT, ME, MA, NH, RI, VT; Region 2: NJ, NY, Puerto Rico, US Virgin Islands; Region 3: DE, DC, MD, PA, VA, WV; Region 4: AL, FL, GA, KY, MS, NC, SC, TN; Region 5: IL, IN, MI, MN, OH, WI; Region 6: AR, LA, NM, OK, TX; Region 7: IA, KS, MO, NE; Region 8: CO, MT, ND, SD, UT, WY; Region 9: AZ, CA, Guam, HI, NV; and Region 10: AK, ID, OR, WA).

† Elevated means the % of visits for ILI is at or above the national or region-specific baseline

‡ National data are for current week; regional data are for the most recent three weeks

§ Includes all 50 states, the District of Columbia, Guam, Puerto Rico, and U.S. Virgin Islands

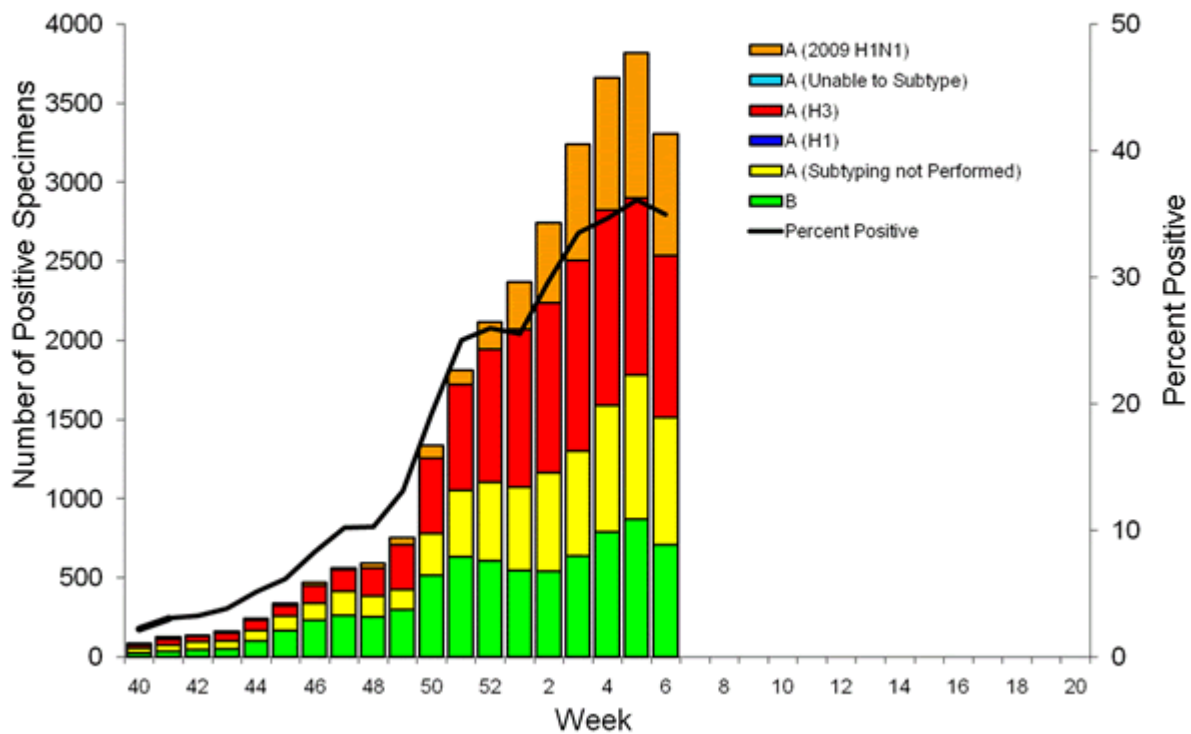
U.S. Virologic Surveillance:

WHO and NREVSS collaborating laboratories located in all 50 states and Washington D.C. report to CDC the number of respiratory specimens tested for influenza and the number positive by influenza type and subtype. The results of tests performed during the current week are summarized in the table below.

| | Week 6 |
|---|---------------|
| No. of specimens tested | 9,448 |
| No. of positive specimens (%) | 3,306 (35.0%) |
| Positive specimens by type/subtype | |
| Influenza A | 2,598 (78.6%) |
| A (2009 H1N1) | 773 (28.5%) |
| A (subtyping not performed) | 804 (30.9%) |
| A (H3) | 1,021 (39.3%) |
| Influenza B | 708 (21.4%) |

All influenza types and subtypes have been identified at high levels this season, and continue to circulate widely. The predominant virus has varied by week, region, and even between states within the same region. Nationally, an increased proportion of subtyped influenza A viruses have been identified as 2009 influenza A (H1N1) over the last few weeks.

Influenza Positive Tests Reported to CDC by U.S. WHO/NREVSS Collaborating Laboratories, National Summary, 2010-11

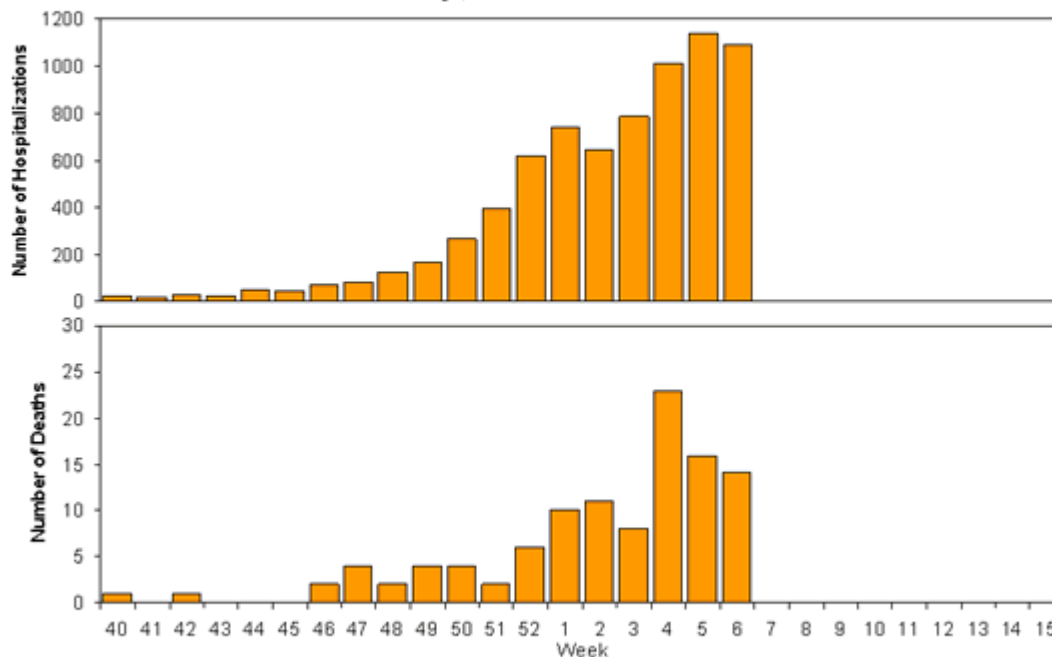


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Aggregate Hospitalization and Death Reporting Activity (AHDRA):

This system tracks weekly counts of laboratory-confirmed influenza-associated hospitalizations and deaths and was implemented on August 30, 2009, during the 2009 pandemic, and ended on April 4, 2010. AHDRA surveillance during the 2010-11 season is being continued on a voluntary basis and 18 jurisdictions reported during week 6. From October 3, 2010 – February 12, 2011, 7,332 laboratory-confirmed influenza associated hospitalizations and 108 laboratory-confirmed influenza associated deaths were reported to CDC.

Weekly Laboratory-Confirmed Influenza-Associated Hospitalizations and Deaths, National Summary, 2010-11 Influenza Season



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Antigenic Characterization:

CDC has antigenically characterized 644 influenza viruses [85 2009 influenza A (H1N1) viruses, 348 influenza A (H3N2) viruses, and 211 influenza B viruses] collected by U.S. laboratories since October 1, 2010.

2009 Influenza A (H1N1) [85]

- All 85 were characterized as A/California/7/2009-like, the influenza A (H1N1) component of the 2010-11 influenza vaccine for the Northern Hemisphere.

Influenza A (H3N2) [348]

- Three hundred forty-five (99%) of the 348 tested were characterized as A/Perth/16/2009-like, the influenza A (H3N2) component of the 2010-11 influenza vaccine for the Northern Hemisphere. Three viruses (1%) of the 348 tested showed reduced titers with antiserum produced against A/Perth/16/2009.

Influenza B (B/Victoria/02/87 and B/Yamagata/16/88 lineages) [211] Victoria Lineage [199]

- One hundred ninety-nine (94%) of the 211 influenza B viruses tested belong to the B/Victoria lineage of viruses.
 - 198 (99.5%) of these 199 viruses were characterized as B/Brisbane/60/2008-like, the recommended influenza B component for the 2010-11 Northern Hemisphere influenza vaccine
 - One (0.5%) of these 199 viruses showed somewhat reduced titers with antisera produced against B/Brisbane/60/2008

Yamagata Lineage [12]

- Twelve (6%) of the 211 viruses were identified as belonging to the B/Yamagata lineage of viruses.

Antiviral Resistance:

Testing of 2009 influenza A (H1N1), influenza A (H3N2), and influenza B virus isolates for resistance to neuraminidase inhibitors (oseltamivir and zanamivir) is performed at CDC using a functional assay. Additional 2009 influenza A (H1N1) clinical samples are tested for a single known mutation in the neuraminidase protein of the virus that confers oseltamivir resistance (H275Y). The data summarized below combine the results of both test methods and includes samples that were tested as part of routine surveillance purposes; it does not include diagnostic testing specifically done because of clinical suspicion of antiviral resistance.

High levels of resistance to the adamantanes (amantadine and rimantadine) persist among 2009 influenza A (H1N1) and A (H3N2) viruses (the adamantanes are not effective against influenza B viruses) circulating globally. As a result of the sustained high levels of resistance, data from adamantane resistance testing are not presented weekly in the table below.

Neuraminidase Inhibitor Resistance Testing Results on Samples Collected Since October 1, 2010

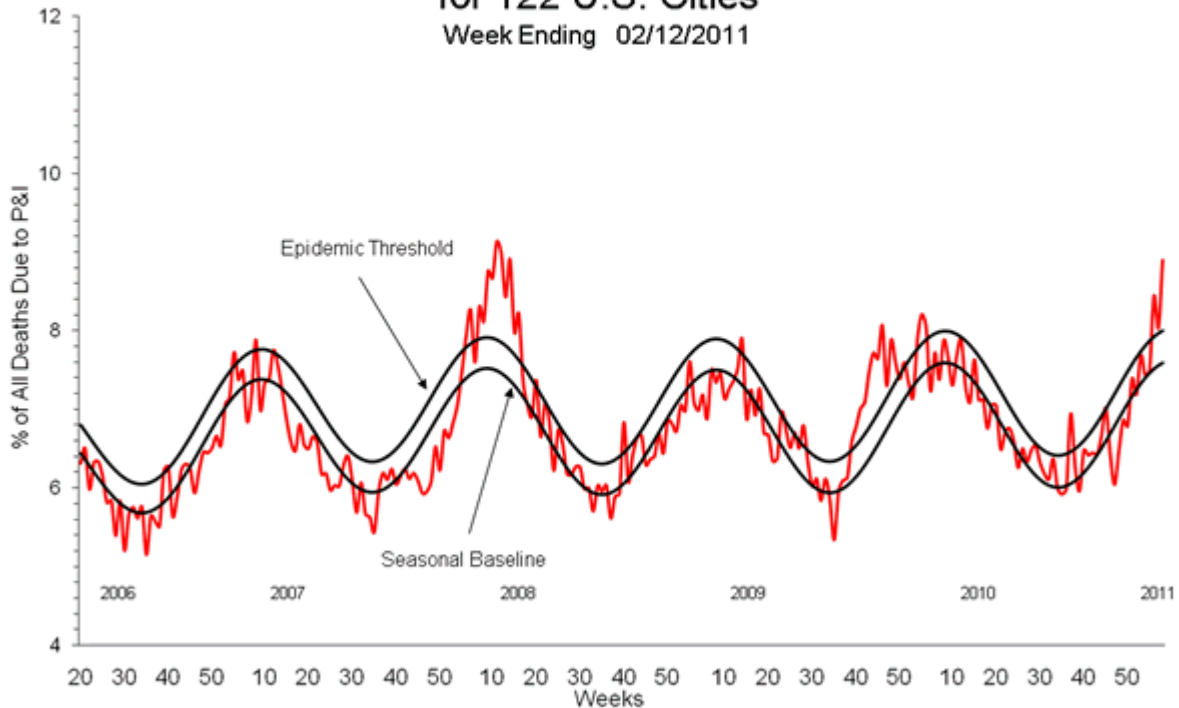
| | Virus Samples tested (n) | Resistant Viruses, <u>Number (%)</u> Oseltamivir | Virus Samples tested (n) | Resistant Viruses, <u>Number (%)</u> Zanamivir |
|------------------------------------|---|---|---|---|
| Seasonal Influenza A (H1N1) | 0 | 0 (0.0) | 0 | 0 (0.0) |
| Influenza A (H3N2) | 295 | 0 (0.0) | 292 | 0 (0.0) |
| Influenza B | 186 | 0 (0.0) | 186 | 0 (0.0) |
| 2009 Influenza A (H1N1) | 236 | 0 (0.0) | 117 | 0 (0.0) |

To prevent the spread of antiviral resistant virus strains, CDC reminds clinicians and the public of the need to continue hand and cough hygiene measures for the duration of any symptoms of influenza, even while taking antiviral medications. Additional information on antiviral recommendations for treatment and chemoprophylaxis of influenza virus infection is available at <http://www.cdc.gov/flu/antivirals/index.htm>.

Pneumonia and Influenza (P&I) Mortality Surveillance

During week 6, 8.9% of all deaths reported through the 122-Cities Mortality Reporting System were due to P&I.; This percentage was above the epidemic threshold of 8.0% for week 6.

Pneumonia and Influenza Mortality for 122 U.S. Cities Week Ending 02/12/2011



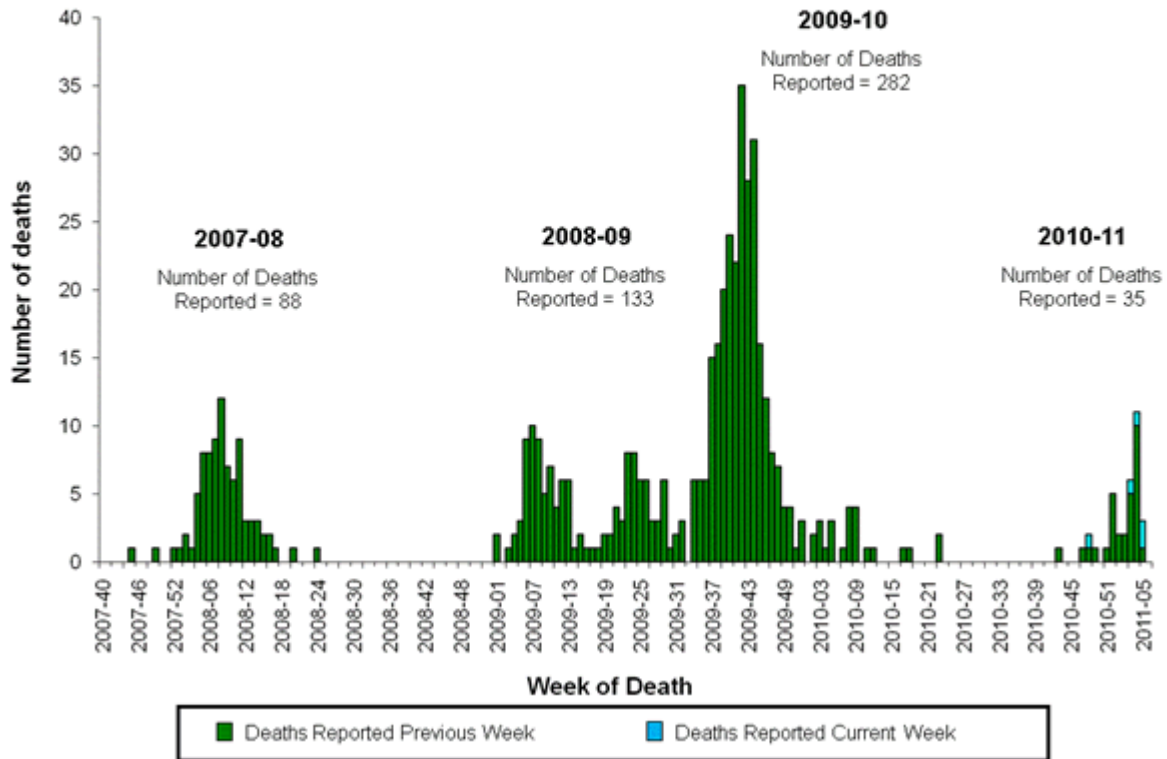
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Influenza-Associated Pediatric Mortality

Five influenza-associated pediatric deaths were reported to CDC during week 6. Three of these deaths were associated with 2009 influenza A (H1N1) virus, one was associated with an influenza A virus for which the subtype was not determined, and one was associated with an influenza B virus. Thirty-five deaths from 20 states (Arizona, Colorado, Florida, Georgia, Illinois, Indiana, Louisiana, Michigan, Nevada, New Jersey, New York, North Carolina, North Dakota, Oklahoma, Pennsylvania, Texas, Utah, Virginia, West Virginia, and Wisconsin) and New York City have been reported during this influenza season.

Thirteen of the 35 deaths reported were associated with influenza B viruses, nine deaths reported were associated with influenza A (H3) viruses, seven were associated with 2009 influenza A (H1N1) viruses, and six were associated with an influenza A virus for which the subtype was not determined.

Number of Influenza-Associated Pediatric Deaths by Week of Death: 2007-08 season to present



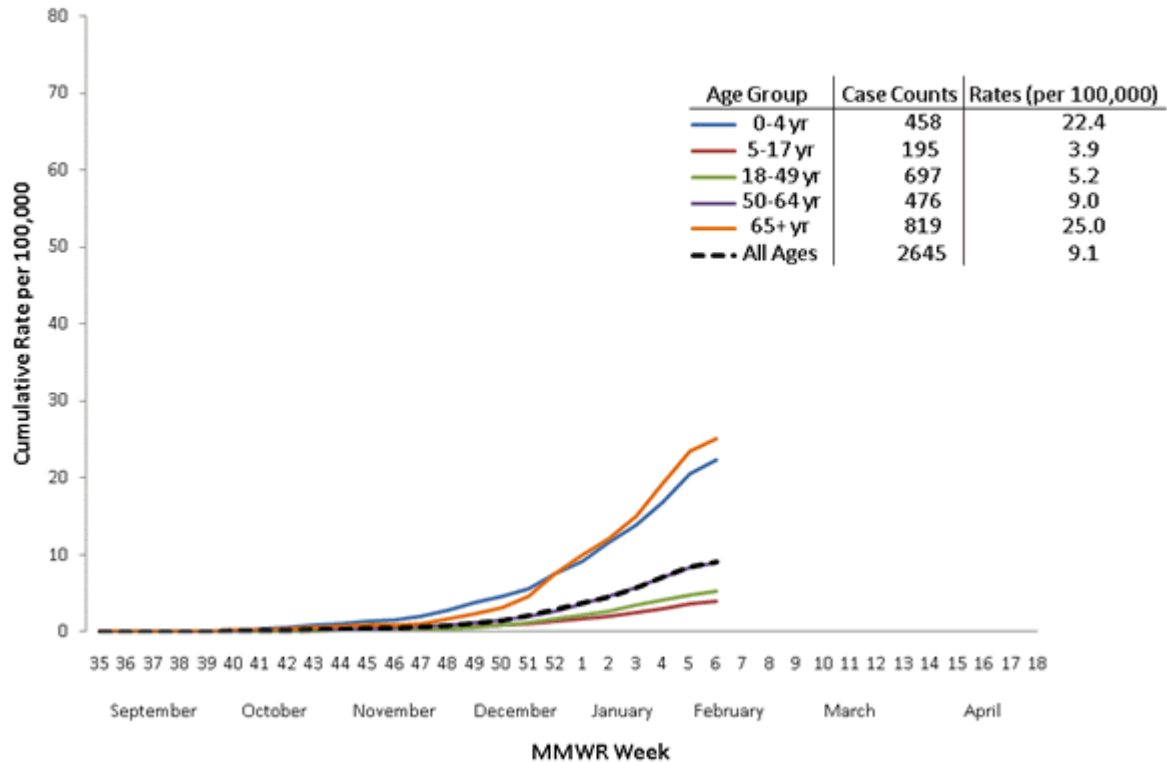
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Influenza-Associated Hospitalizations

FluSurv-NET conducts population-based surveillance for laboratory-confirmed influenza-associated hospitalizations in children (persons younger than 18 years) and adults. The current network covers over 80 counties in the 10 Emerging Infections Program (EIP) states (CA, CO, CT, GA, MD, MN, NM, NY, OR, and TN) and six additional states (ID, MI, OH, OK, RI, and UT).

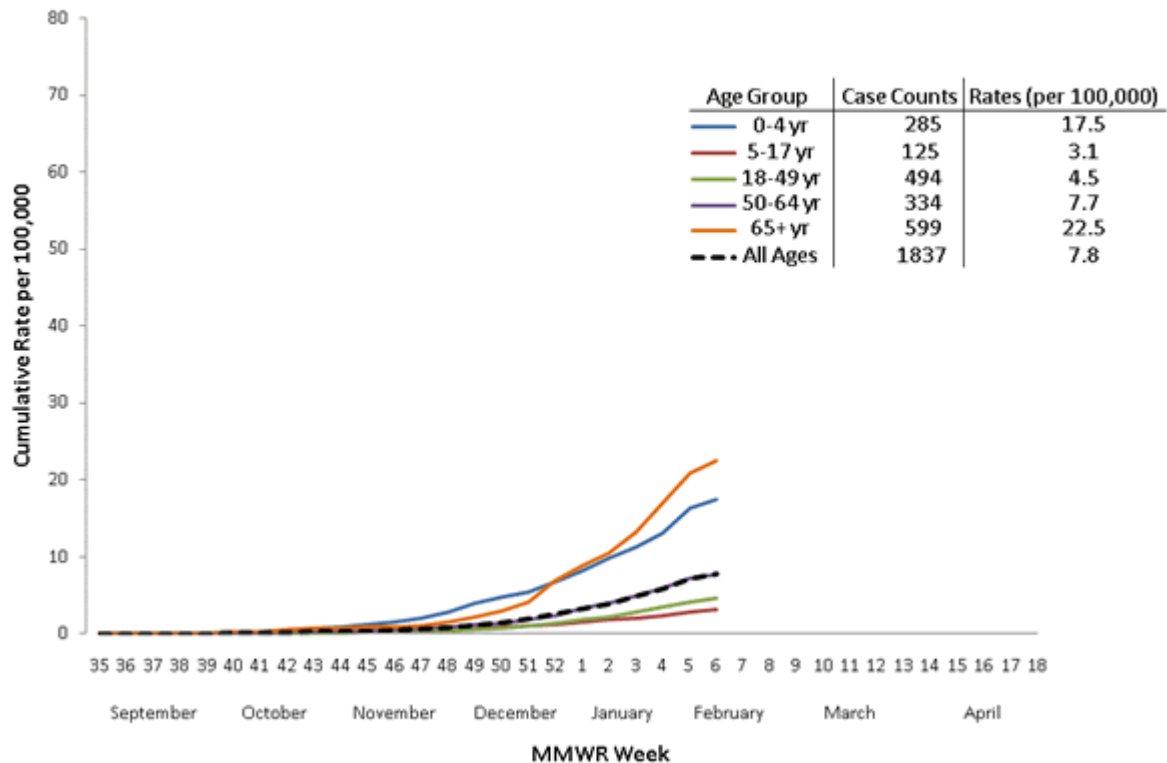
The current season's rates include cases from October 1, 2010 to February 12, 2011.

FluSurv-NET* Laboratory-Confirmed Cumulative Hospitalization Rates (per 100,000), 2010-11 Season



*FluSurv-NET results include surveillance at EIP sites and at sites in six additional states (ID, MI, OH, OK, RI, UT)

EIP* Laboratory-Confirmed Cumulative Hospitalization Rates (per 100,000), 2010-11 Season



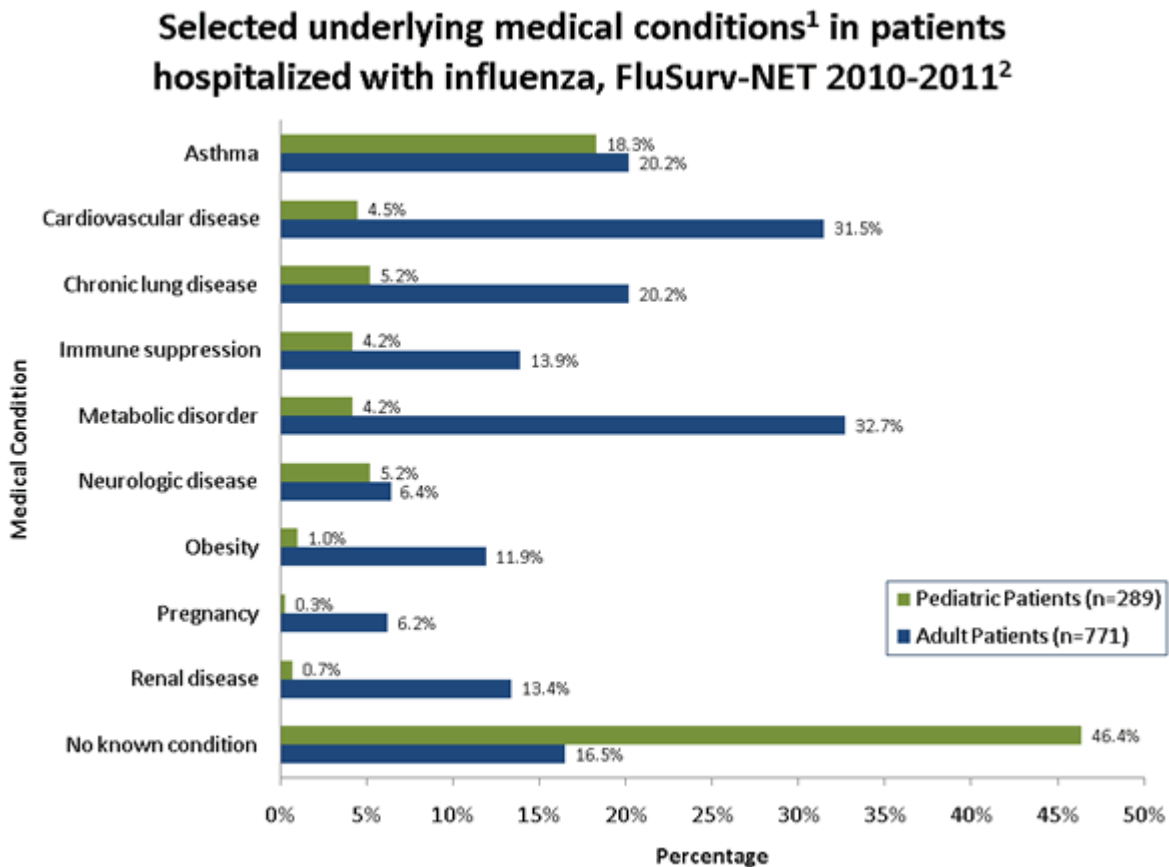
*EIP results represent surveillance in the 10 EIP states (CA, CO, CT, GA, MD, MN, NM, NY, OR, TN)

[Click here to view rates for 2010-2011 season](#) | [View PowerPoint Presentation](#)

[Click here to view rates for 2009-2010 season](#)
[Click here to view rates for 2008-2009 season](#)

[Click here to view rates for 2007-2008 season](#)

Please note the following: (i) The scale of the vertical axis on the Cumulative Hospitalization Rate figures will be adjusted during the season to make the graphs easier to read; (ii) FluSurv-NET was created during the 2009-2010 season when surveillance in six states was added to ongoing surveillance for influenza-associated hospitalizations in 10 EIP states. During the 2009-2010 season, FluSurv-NET included sites in the 10 EIP sites and sites in IA, ID, MI, ND, OK, and SD; (iii) the 2008-2009 EIP season ended April 14, 2009, due to the onset of the 2009 H1N1 pandemic.



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¹Asthma may include a diagnosis of asthma and reactive airway disease; Cardiovascular diseases may include conditions such as coronary heart disease, cardiac valve disorders, congestive heart failure, pulmonary hypertension, and aortic stenosis; Chronic lung diseases may include conditions such as bronchiolitis obliterans, chronic aspiration pneumonia, and interstitial lung disease; Immune suppression may include conditions such as immunoglobulin deficiency, leukemia, lymphoma, HIV/AIDS, and individuals taking immunosuppressive medications; Metabolic disorders may include conditions such as diabetes mellitus, thyroid dysfunction, adrenal insufficiency, and liver disease; Neurologic diseases may include conditions such as seizure disorders, neuromuscular disorders, and cognitive dysfunction; Obesity was defined as a body mass index (BMI) greater than 30 kg/m² in patients 20 years of age or older, or equal to or greater than the 95th percentile of a patient's age and sex category in patients under 20 years of age; Renal diseases may include conditions such as acute or chronic renal failure, nephrotic syndrome, glomerulonephritis, and impaired creatinine clearance.

²Data as of February 15, 2011. Includes 1,060 (of a total 2,662 reported) cases for which data collection has been completed through the medical chart review stage.

Demographic and clinical characteristics of laboratory-confirmed, influenza-associated hospitalizations identified in EIP¹ and FluSurv-NET² sites, 2006-2011

| | 2010-2011 FluSurv- NET3 N (%) | 2009-2010 FluSurv- NET3 N (%) | 2008-2009 EIP N (%) | 2007-2008 EIP N (%) | 2006-2007 EIP N (%) |
|---|--|--|------------------------------------|------------------------------------|------------------------------------|
| Total Cases | 2,662 | 7,517 | 1,698 | 3,930 | 1,279 |
| <u>Age in Years</u> | | | | | |
| 0-4 | 460 (17.3) | 1,326 (17.6) | 549 (32.3) | 639 (16.3) | 393 (30.7) |
| 5-17 | 198 (7.4) | 1,204 (16.0) | 244 (14.4) | 221 (5.6) | 130 (10.2) |
| 18-49 | 698 (26.2) | 2,779 (37.0) | 374 (22.0) | 736 (18.7) | 246 (19.2) |
| 50-64 | 480 (18.0) | 1,458 (19.4) | 201 (11.8) | 585 (14.9) | 155 (12.1) |
| 65+ | 823 (30.9) | 750 (10.0) | 330 (19.4) | 1,749 (44.5) | 355 (27.8) |
| <u>Sex</u> | | | | | |
| Male | 1,240 (46.6) | 3,517 (46.8) | 832 (49.0) | 1,825 (46.4) | 631 (49.3) |
| Female | 1,412 (53.0) | 4,000 (53.2) | 866 (51.0) | 2,104 (53.5) | 648 (50.7) |
| <u>Flu Type and Subtype</u> | | | | | |
| Influenza A | 2,114 (79.4) | 7,355 (97.8) | 1,236 (72.8) | 2,562 (65.2) | 1,082 (84.6) |
| Specimens subtyped⁴ | 415 | 5,325 | -- | -- | -- |
| A (H1) | 0 (0.0) | 0 (0.0) | -- | -- | -- |
| A (H3) | 335 (80.7) | 3 (0.1) | -- | -- | -- |
| A (2009 H1N1) | 80 (19.3) | 5,322 (99.9) | -- | -- | -- |
| Influenza B | 437 (16.4) | 52 (0.7) | 382 (22.5) | 1,199 (30.5) | 149 (11.6) |
| Intensive Care Unit | 173 (16.3) | 1,560 (20.8) | 298 (17.6) | 495 (12.6) | 198 (15.5) |
| Mechanical Ventilation | 68 (6.4) | 758 (10.1) | 157 (9.2) | 252 (6.4) | 111 (8.7) |
| Diagnosis of Pneumonia | 278 (26.2) | 2,804 (37.3) | 407 (24.0) | 1,220 (31.0) | 404 (31.6) |
| Died | 23 (2.2) | 222 (3.0) | 49 (2.9) | 104 (2.6) | 24 (1.9) |

Columns may not sum to 100% due to missing or unknown values.

¹Surveillance in EIP states (CA, CO, CT, GA, MD, MN, NM, NY, OR, TN) was conducted from 2006-2011.

²FluSurv-Net includes surveillance at EIP sites and at sites in additional states (IA, ID, MI, ND, OK, SD in 2009-2010; ID, MI, OH, OK, RI, UT in 2010-2011).

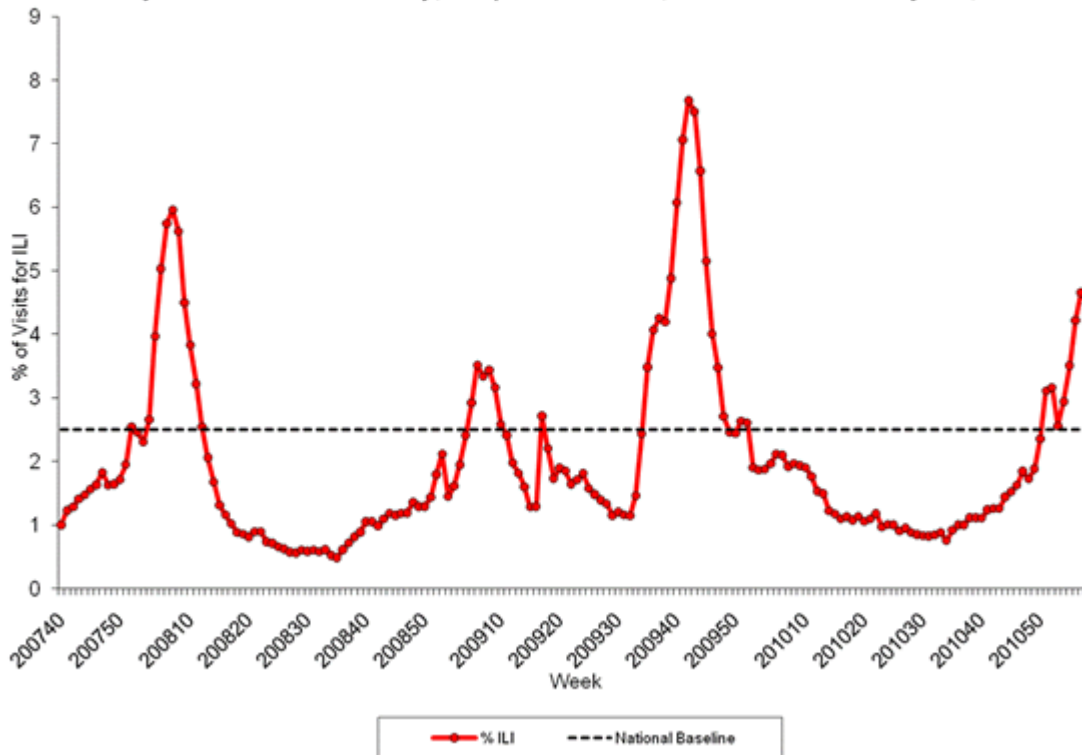
³Data as of February 15, 2011. Results describing influenza A subtype, intensive care unit admission, mechanical ventilation, diagnosis of pneumonia, and death are from 7,512 (of a total 7,517 reported) and 1,060 (of a total 2,662 reported) cases for which data collection has been completed through the medical chart review stage for the 2009-2010 and 2010-2011 seasons, respectively.

⁴Influenza A subtype results are available beginning with the 2007-2008 season. Percentages for influenza A subtypes are calculated using the number of influenza A specimens that were subtyped as a denominator.

Outpatient Illness Surveillance:

Nationwide during week 6, 4.5% of patient visits reported through the U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet) were due to influenza-like illness (ILI). This percentage is above the national baseline of 2.5%.

Percentage of Visits for Influenza-like Illness (ILI) Reported by the U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet), Weekly National Summary, September 30, 2007 – February 12, 2011



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On a regional level, the percentage of outpatient visits for ILI ranged from 2.3% to 7.4% during week 6. All 10 regions reported a proportion of outpatient visits for ILI at or above region-specific baseline levels.

Note: The region specific baseline for Region 8 was modified from 1.4% to 1.7% to reflect changes to data from previous seasons. These additional data did not affect the national baseline which remains at 2.5% for this season.

ILINet State Activity Indicator Map:

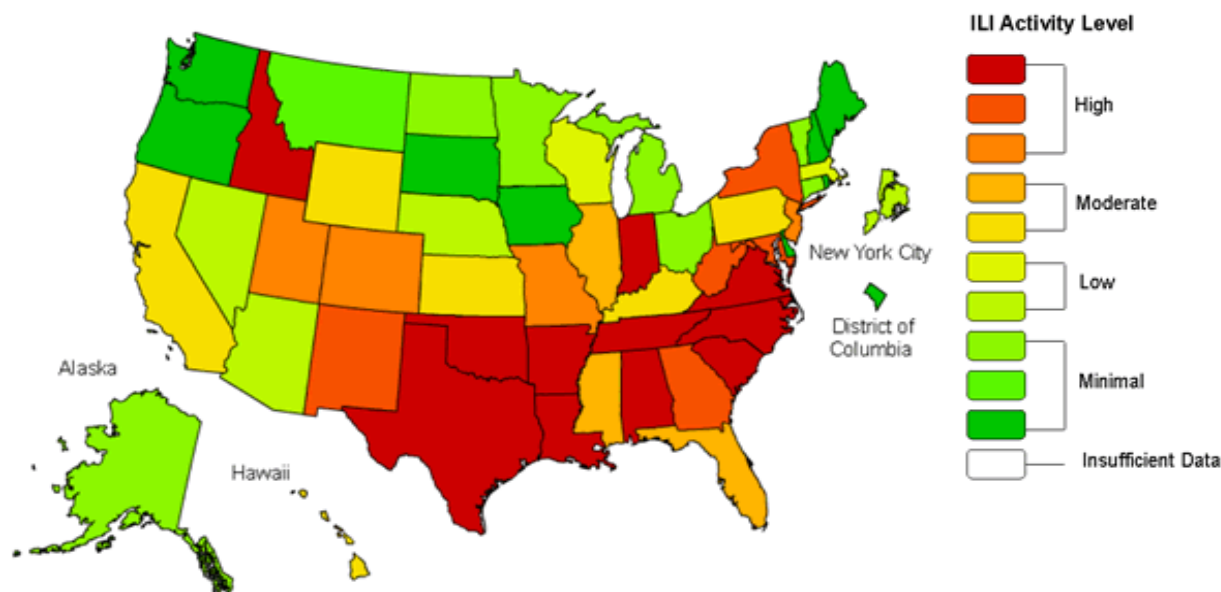
Data collected in ILINet are used to produce a measure of ILI activity* by state. Activity levels are based on the percent of outpatient visits in a state due to ILI and are compared to the average percent of ILI visits that occur during spring and fall weeks with little or no influenza virus circulation. Activity levels range from minimal, which would correspond to ILI activity from outpatient clinics being below the average, to high, which would correspond to ILI activity from outpatient clinics being much higher than the average. Because the clinical definition of ILI is very general, not all ILI is caused by influenza; however, when combined with laboratory data, the information on ILI activity provides a clear picture of influenza activity in the United States.

During week 6, the following ILI activity levels were experienced:

- Twenty states (Alabama, Arkansas, Colorado, Georgia, Idaho, Indiana, Louisiana, Maryland, Missouri, New Jersey, New Mexico, New York, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Utah, Virginia, and West Virginia) experienced high ILI activity.
- Nine states (California, Florida, Hawaii, Illinois, Kansas, Kentucky, Mississippi, Pennsylvania, and Wyoming) experienced moderate ILI activity.
- New York City and five states (Arizona, Massachusetts, Nebraska, Nevada, and Wisconsin) experienced low ILI activity.

- Minimal ILI activity was experienced by the District of Columbia and 16 states (Alaska, Connecticut, Delaware, Iowa, Maine, Michigan, Minnesota, Montana, New Hampshire, North Dakota, Ohio, Oregon, Rhode Island, South Dakota, Vermont, and Washington).

**Influenza-Like Illness (ILI) Activity Level Indicator Determined by Data Reported to ILInet
2010-11 Influenza Season Week 6 ending Feb 12, 2011**



[Click on map to launch interactive tool](#)

*This map uses the proportion of outpatient visits to health care providers for influenza-like illness to measure the ILI activity level within a state. It does not, however, measure the extent of geographic spread of flu within a state. Therefore, outbreaks occurring in a single city could cause the state to display high activity levels.

Data collected in ILINet may disproportionately represent certain populations within a state, and therefore, may not accurately depict the full picture of influenza activity for the whole state.

Data displayed in this map are based on data collected in ILINet, whereas the State and Territorial flu activity map are based on reports from state and territorial epidemiologists. The data presented in this map is preliminary and may change as more data is received.

Differences in the data presented by CDC and state health departments likely represent differing levels of data completeness with data presented by the state likely being the more complete.

Geographic Spread of Influenza as Assessed by State and Territorial Epidemiologists:

The influenza activity reported by state and territorial epidemiologists indicates geographic spread of influenza viruses, but does not measure the severity of influenza activity.

During week 6, the following influenza activity was reported:

- Widespread influenza activity was reported by 36 states (Alabama, Alaska, Arizona, Arkansas, Colorado, Connecticut, Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nebraska, New Hampshire, New Mexico, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, Rhode Island, South Carolina, Tennessee, Texas, Vermont, Virginia, West Virginia, Wisconsin, and Wyoming).
- Regional influenza activity was reported by 10 states (California, Idaho, Kentucky, Mississippi, Nevada, New Jersey, North Dakota, South Dakota, Utah, and Washington).
- The District of Columbia reported local activity.

- Sporadic influenza activity was reported by Puerto Rico, the U.S. Virgin Islands, and three states (Delaware, Hawaii, and Oregon).
- Guam reported no influenza activity.

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Additional National and International Influenza Surveillance Information

U.S. State and local influenza surveillance: Click on a jurisdiction below to access the latest local influenza information.

| | | | | |
|--------------------------------|-------------------------------|--------------------------------|--------------------------------------|-------------------------------|
| Alabama | Alaska | Arizona | Arkansas | California |
| Colorado | Connecticut | Delaware | District of Columbia | Florida |
| Georgia | Hawaii | Idaho | Illinois | Indiana |
| 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 | West Virginia | Wisconsin |
| Wyoming | New York City | Virgin Islands | | |

Distribute Project: Additional information on the Distribute syndromic surveillance project, developed and piloted by the International Society for Disease Surveillance (ISDS) now working in collaboration with CDC, to enhance and support Emergency Department (ED) surveillance, is available at <http://isdsdistribute.org/>

Google Flu Trends: Google Flu Trends uses aggregated Google search data in a model created in collaboration with CDC to estimate influenza activity in the U.S. For more information and activity estimates from the U.S. and worldwide, see <http://www.google.org/flutrends/>

Europe: for the most recent influenza surveillance information from Europe, please see WHO/Europe at <http://www.euroflu.org/index.php> and visit the European Centre for Disease Prevention and Control at <http://ecdc.europa.eu/en/Activities/Surveillance/EISN/Pages/home.aspx>

Public Health Agency of Canada: The most up to date influenza information from Canada is available at <http://www.phac-aspc.gc.ca/fluwatch/>

World Health Organization FluNet: Additional influenza surveillance information from participating WHO member nations is available at <http://gamapserver.who.int/GlobalAtlas/home.asp>

A description of surveillance methods is available at: <http://www.cdc.gov/flu/weekly/overview.htm>

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Page last reviewed: Feb 18, 2011

Page last updated: Feb 18, 2011

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