

2011-2012 Influenza Season (10/2/2011 – 9/29/2012)

Synopsis:

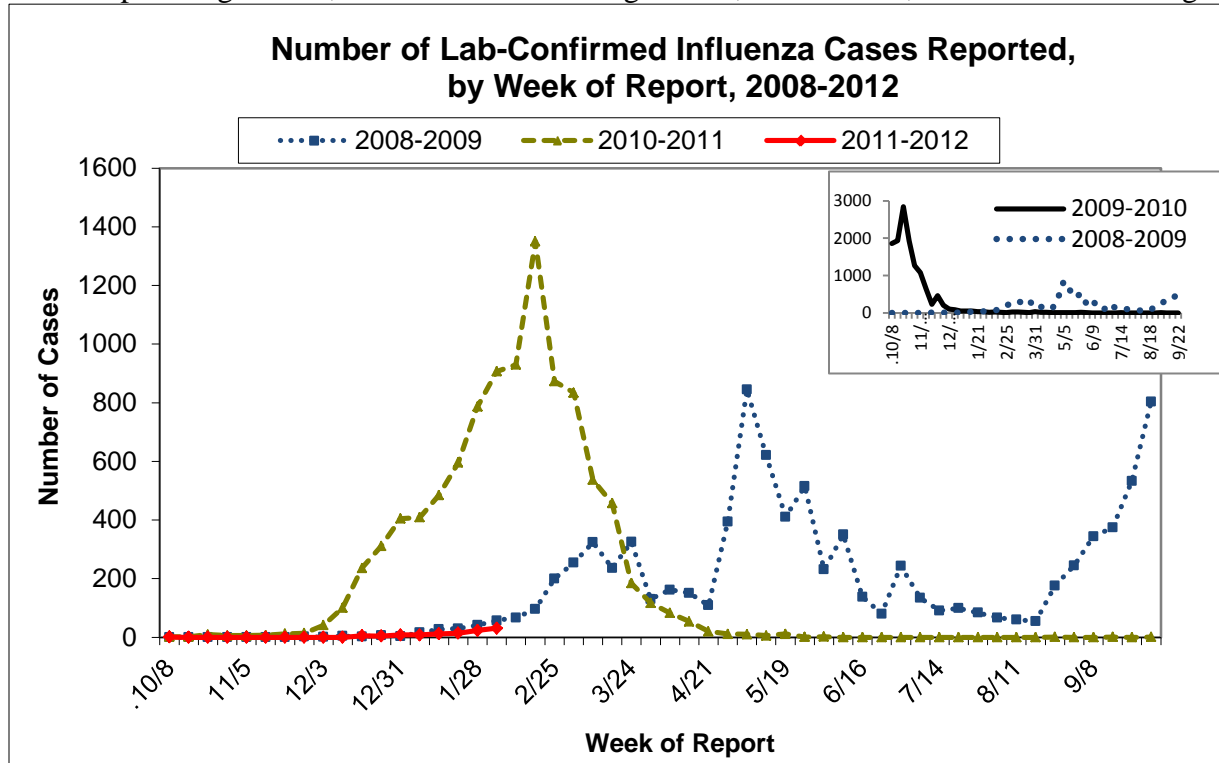
Influenza activity in Arizona remains low. Arizona reported sporadic activity for week 5.

Influenza activity highlights:

- Thirty-one laboratory-confirmed cases of influenza were reported in the past week, from five counties. 106 cases have been reported this season from ten counties.
- 90% of reports this season are influenza A; 8% are influenza B; 3% are unknown type. Of subtyped influenza A viruses, 47% are influenza A (H3) and 53% are influenza A 2009 (H1N1).
- Four of five specimens tested positive for influenza at the Arizona State Public Health Laboratory in the past week: one influenza A (H3) virus and three influenza A 2009 (H1N1) viruses.
- Influenza-like illness activity at sentinel providers was within Arizona’s threshold in week 4. Influenza-like illness at sentinel schools is increasing.
- New data were not available from the death certificate database this week. 151 P&I deaths have been identified for the 2011-2012 influenza season; 293 P&I deaths occurred in this period in the 2010-2011 season.
- The cases included in this report represent a small proportion of the true number of cases of influenza. Many people do not visit the doctor when ill and doctors should not be expected to run tests on all patients exhibiting influenza-like symptoms.

Laboratory-Confirmed Influenza Activity by Season [2008-2012]

Positive influenza tests are reported to ADHS. Many types of tests are included in the numbers below: rapid antigen tests, direct fluorescent antigen tests, viral culture, and molecular testing.



Reported Laboratory-Confirmed Cases Compared to Last Week and Last Season

| | Cumulative Season Total | Current Week Total |
|---|-------------------------|--------------------|
| 2011-2012 | 106 | 31 |
| 2010-2011 | 4,336 | 907 |
| % increase, compared to 2010-2011 season | -98% | -97% |
| % increase, compared to last week | 41% | 35% |

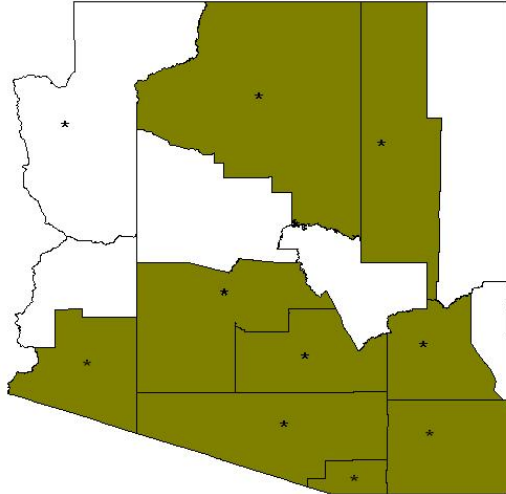
Arizona Influenza Activity Levels *(see definitions at the end of this report)*

| | 2011-2012 | 2010-2011 | 2009-2010 | 2008-2009 | 2007-2008 |
|---|----------------------------|----------------|-------------------------|--|---------------|
| This Week | Sporadic | Widespread | Sporadic | Regional | Widespread |
| Last Week | Sporadic | Widespread | Sporadic | Regional | Widespread |
| Date First Case Confirmed, no travel | Dec. 14, 2011 | Sept. 28, 2010 | Confirmed during summer | Nov. 19, 2008 | Nov. 19, 2007 |
| Weeks with Widespread Activity | No widespread activity yet | Weeks 52 – 10 | Weeks 40 – 48 | Weeks 6 – 12 Weeks 17 – 24 Weeks 35 – 39 | Weeks 4 – 11 |

Laboratory-Confirmed Cases Reported, by County, 2011-2012 Influenza Season

(Includes ALL reported lab-confirmed flu reports, regardless of subtype)

| County | 2011-2012 Season | Past Three Weeks | Last Week |
|--------------|------------------|------------------|-----------|
| Apache | 0 | 0 | 0 |
| Cochise | 14 | 13 | 8 |
| Coconino | 5 | 2 | 0 |
| Gila | 0 | 0 | 0 |
| Graham | 3 | 1 | 1 |
| Greenlee | 0 | 0 | 0 |
| La Paz | 0 | 0 | 0 |
| Maricopa | 45 | 27 | 11 |
| Mohave | 1 | 0 | 0 |
| Navajo | 7 | 3 | 0 |
| Pima | 24 | 16 | 9 |
| Pinal | 4 | 3 | 2 |
| Santa Cruz | 1 | 1 | 0 |
| Yavapai | 0 | 0 | 0 |
| Yuma | 2 | 2 | 0 |
| Total | 106 | 68 | 31 |



Key:

- * = Any activity reported this season
- Brown** = Activity reported in the previous three weeks
- White** = No activity reported in the previous three weeks

Age of Reported Influenza Cases

The age groups most affected by influenza vary somewhat season-to-season, depending in part on the circulating influenza types and subtypes and any existing immunity in the community. Variations in age groups of reported influenza cases can also be caused by differences in laboratory testing and reporting practices year-to-year.

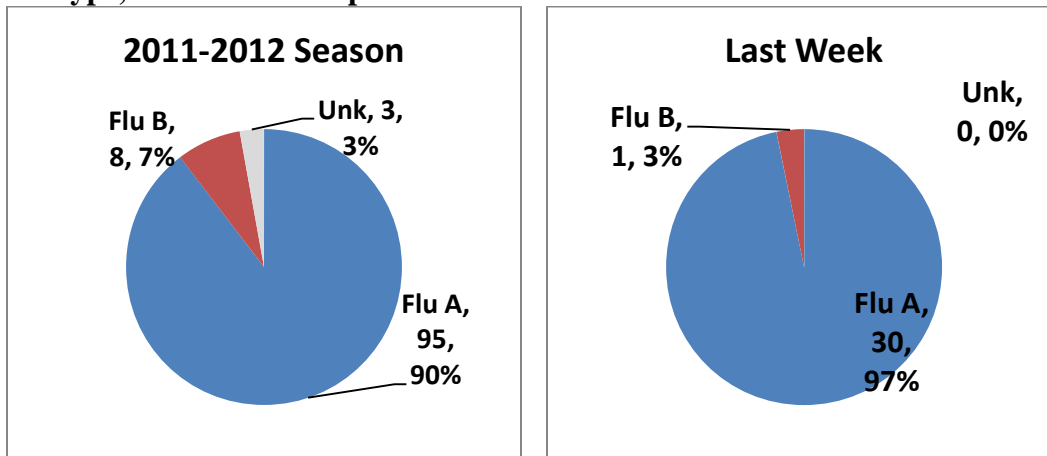
Age Group of Reported Influenza Cases, 2008-2009 through 2011-2012 Seasons

| Age Group | 2011-2012 Season (N=106) | 2010-2011 Season (N=9,822) | 2009-2010 Season (N=13,030) | 2008-2009 Season (N=9,159) |
|--------------------------|-----------------------------|-------------------------------|--------------------------------|-------------------------------|
| 0 to 4 years | 17 (16%) | 2,244 (23%) | 2,531 (19%) | 1,444 (16%) |
| 5 to 18 years | 16 (15%) | 2,677 (27%) | 4,943 (38%) | 4,220 (46%) |
| 19 to 49 years | 48 (45%) | 2,982 (30%) | 4,137 (32%) | 2,695 (29%) |
| 50 to 64 years | 10 (9%) | 799 (8%) | 951 (7%) | 459 (5%) |
| 65 years or older | 15 (14%) | 1,043 (11%) | 315 (2%) | 271 (3%) |
| Unknown age | 0 (0%) | 77 (1%) | 153 (1%) | 70 (1%) |

Influenza Types and Subtypes

There are two main types of influenza – Type A and Type B – that cause illness in people. Influenza A viruses can be further divided into subtypes such as A (H1), or A (H3). While most tests can distinguish between influenza A and B, only specialized testing such as that done at the State Public Health Laboratory and a few other labs around the state can differentiate subtypes. Viral culture or molecular testing (reverse transcriptase polymerase chain reaction or RT-PCR) are the methods used to identify subtypes; knowing the type and subtype of the influenza viruses circulating can help health professionals make the best treatment and vaccination decisions.

Influenza Type, from all tests reported



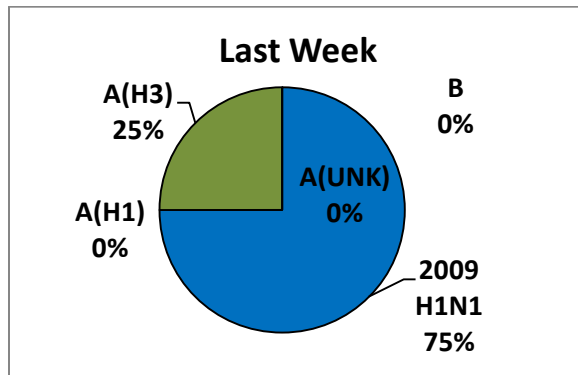
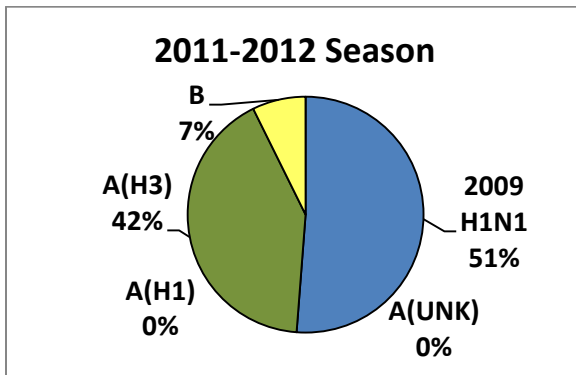
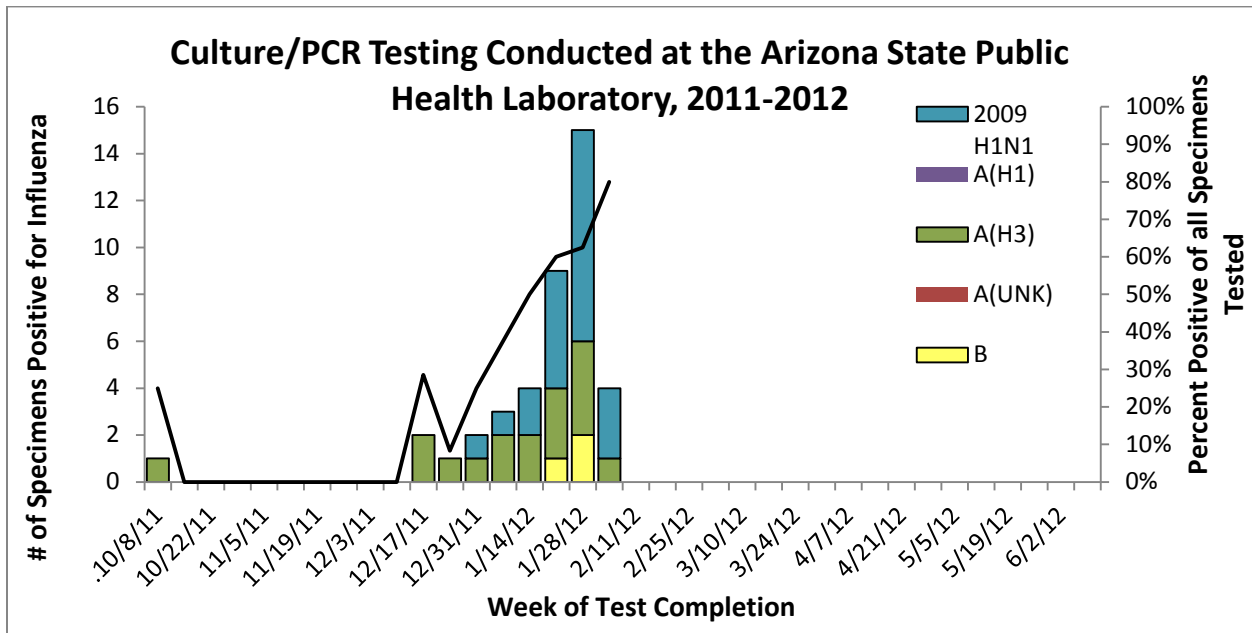
Influenza Type, by Season

| | 2011-2012 Season Number | 2011-2012 Season Percent | 2010-2011 Number (Percent) | 2009-2010 Number (Percent) | 2008-2009 Number (Percent) |
|--------------------|-------------------------------|--------------------------------|----------------------------------|----------------------------------|----------------------------------|
| Total | 106 | 100% | 9,837 (100%) | 13,032 (100%) | 9,149 (100%) |
| Influenza A | 95 | 90% | 7,248 (74%) | 12,954 (99%) | 7,262 (79%) |
| Influenza B | 8 | 8% | 2,276 (23%) | 33 (0.3%) | 1,691 (18%) |
| Unknown | 3 | 3% | 313 (3%) | 45 (0.3%) | 196 (2%) |

Influenza Subtype

Data from the Arizona State Public Health Laboratory (ASPHL)

- In the past week, four of five (80%) specimens tested positive for influenza at ASPHL: one for influenza A (H3) and three for influenza A 2009 (H1N1).
- A total of 41 specimens have been positive this season for influenza: 17 influenza A (H3), 21 influenza A 2009 (H1N1), and three influenza B were identified.



Influenza subtype, by season, from all laboratories performing culture or RT-PCR

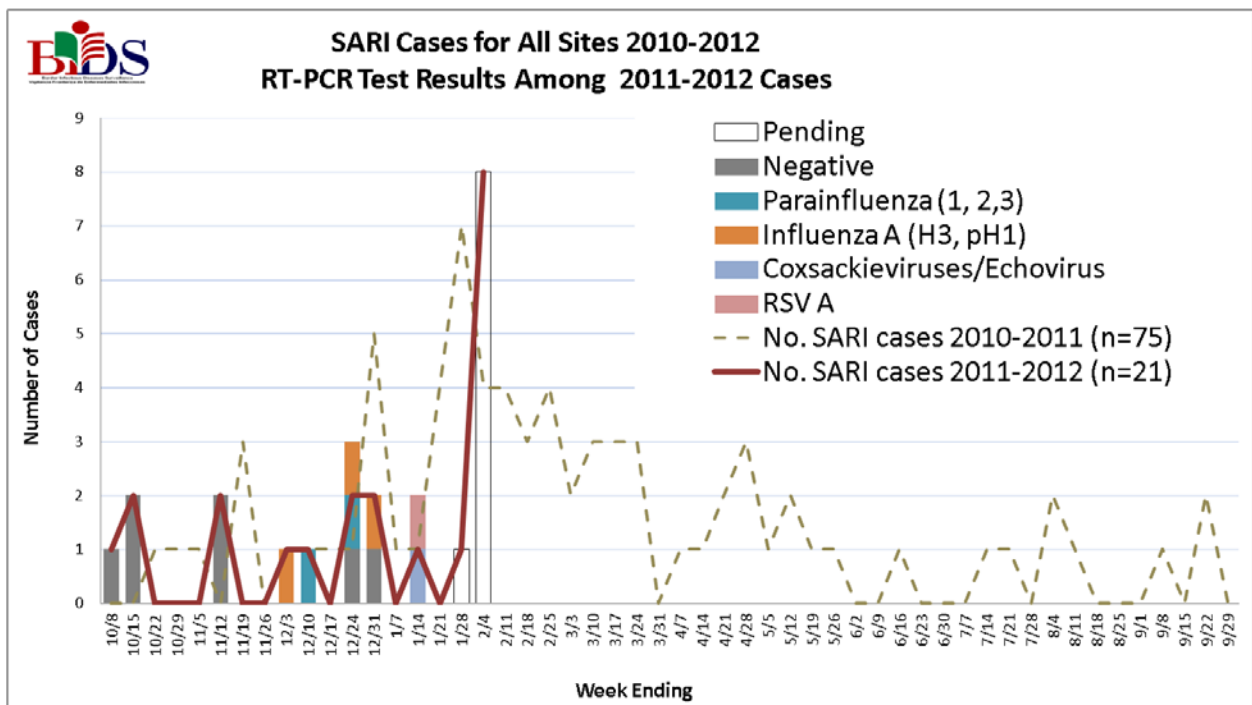
| | 2011-2012 Season Number | 2011-2012 Season Percent | 2010-2011 Number (Percent) | 2009-2010 Number (Percent) | 2008-2009 Number (Percent) |
|---------------------------|-------------------------|--------------------------|----------------------------|----------------------------|----------------------------|
| Influenza Subtypes | 44 | 100% | 3,177 (100%) | 7,497 (100%) | 4,104 (100%) |
| 2009 H1N1 | 19 | 43% | 483 (15%) | 6,392 (85%) | 2,243 (55%) |
| Seasonal A(H1) | 0 | 0% | 0 (0%) | 0 (0%) | 459 (11%) |
| Seasonal A(H3) | 17 | 39% | 1,237 (39%) | 1 (0.01%) | 382 (9%) |
| Influenza A(Unsubtyped) | 6 | 14% | 752 (24%) | 1,101 (15%) | 510 (12%) |
| Influenza B | 2 | 5% | 705 (22%) | 3 (0.04%) | 510 (12%) |

Severe Acute Respiratory Infections (SARI) Surveillance

Severe acute respiratory infections (SARI) surveillance is currently conducted at selected hospitals in counties along the Mexican border by the Office of Border Health's Border Infectious Disease Surveillance (BIDS) program. SARI is defined as a hospital admission with a fever of at least 100°F plus either a cough or a sore throat. This surveillance facilitates the detection of circulating influenza strains and allows us to monitor various causes of morbidity and mortality among inpatients with SARI.

SARI cases are tested using an RT-PCR viral panel that detects: influenza A and B; respiratory syncytial virus A and B; parainfluenza virus 1, 2, 3, and 4; human metapneumoviruses A/B; rhinovirus; adenovirus (ADVB and ADVE); coronavirus (NL63, HKU1, 229E, and OC43); coxsackieviruses/echovirus; and bocavirus. Serum from these patients is also tested for coccidioidomycosis.

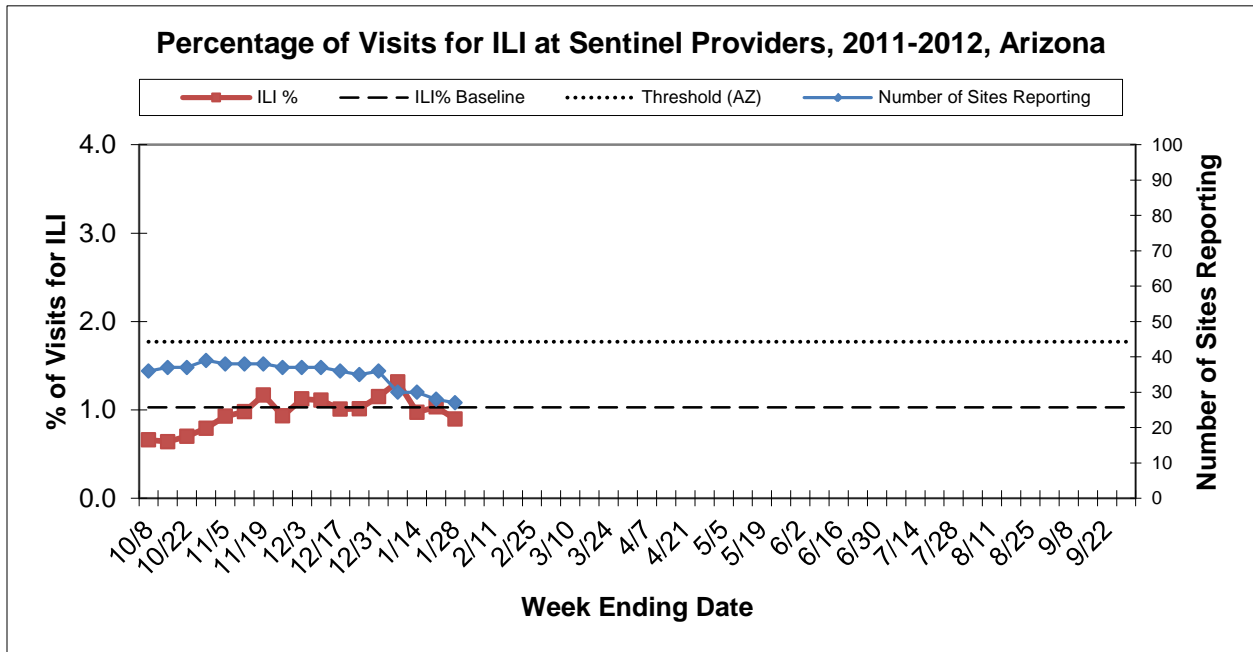
Twenty-one SARI cases have been identified for the 2011-2012 season. Three cases are positive for influenza A, two for parainfluenza viruses, one for respiratory syncytial virus and one for coxsackie/echovirus.



Influenza-Like Illness (ILI) Surveillance from Sentinel Outpatient Providers

ILI is defined as a fever of at least 100°F plus either a cough or a sore throat. In weeks when a relatively low number of enrolled facilities report data, the ILI proportion may not be as representative of Arizona activity as for other weeks. The state ILI baseline is 1.0% and the epidemic threshold is 1.8%*.

| | Week 4 | Week 3 |
|---|------------------|------------------|
| Proportion of patient visits to sentinel providers for ILI | 0.9% | 1.0% |
| Comparison to epidemic threshold* | Within threshold | Within threshold |
| Intensity level (<i>see definitions at the end of report</i>) | Minimal | Minimal |

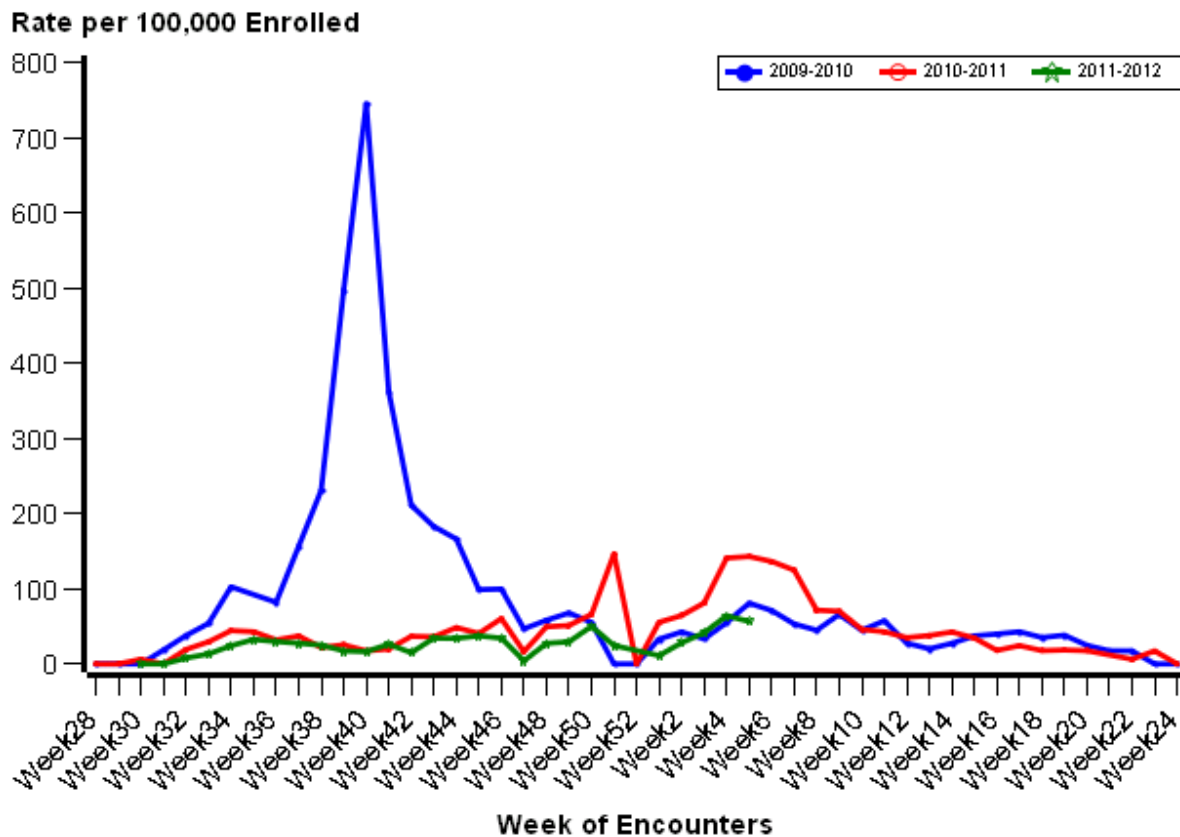


*The baseline is defined as the mean of the state ILI% in weeks in the 2008-2011 flu seasons (weeks 40 through 20) when <10% of specimens were positive at the Arizona State Public Health Laboratory. The epidemic threshold is defined as the mean plus two standard deviations.

School Surveillance for Influenza-Like Illness (ILI)

School nurses in approximately 200 Arizona schools around the state use a specific computer program (the Child Health Indicator Program) for electronic management of student health records. The graph presents the weekly trend of ILI syndromes reported among students during the past three school years. School nurse encounters are not diagnosed cases of communicable diseases but are based on the nursing codes that school nurses enter to track student conditions. Also, the numbers in the graph are only from schools that used CHIP during the school year.

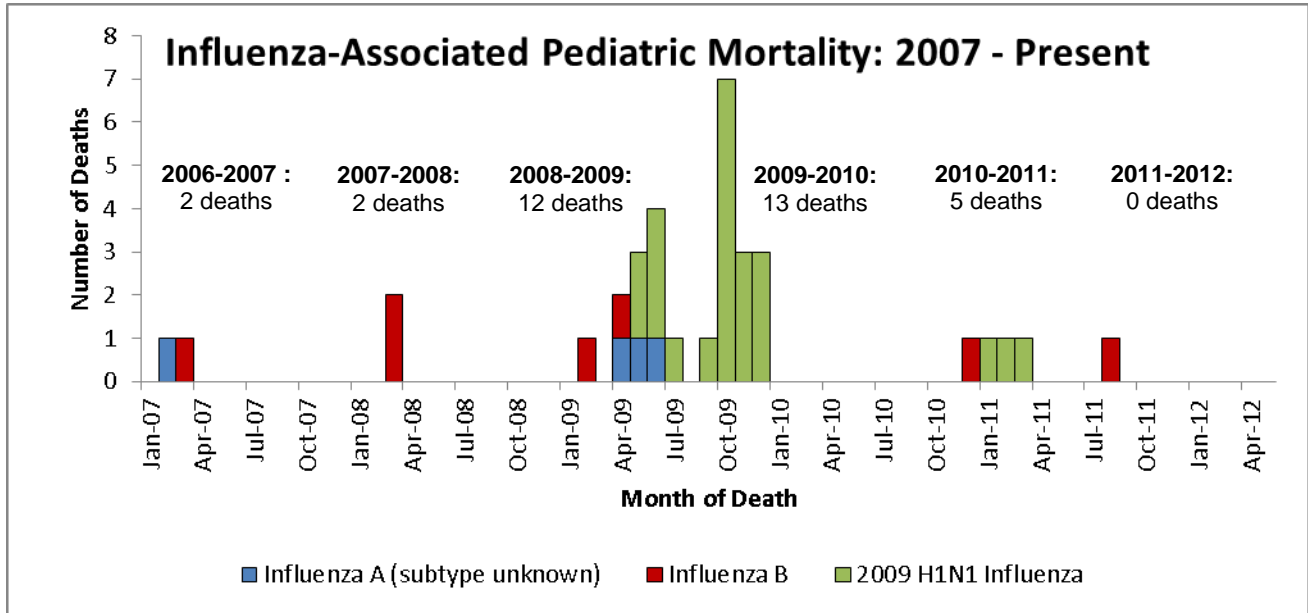
Influenza-Like Illness Per School Enrollment in Arizona (per 100,000)



Mortality Surveillance

Influenza-associated Pediatric Deaths

Influenza-associated pediatric deaths are reportable to the public health departments in Arizona. The 2008-2009 and 2009-2010 seasons showed an increase in influenza-associated deaths in children related to the circulation of the 2009 H1N1 strain. Two deaths were reported each of the previous two seasons, and five deaths were reported in 2010-2011. No influenza-associated pediatric deaths have been reported for the 2011-2012 season.

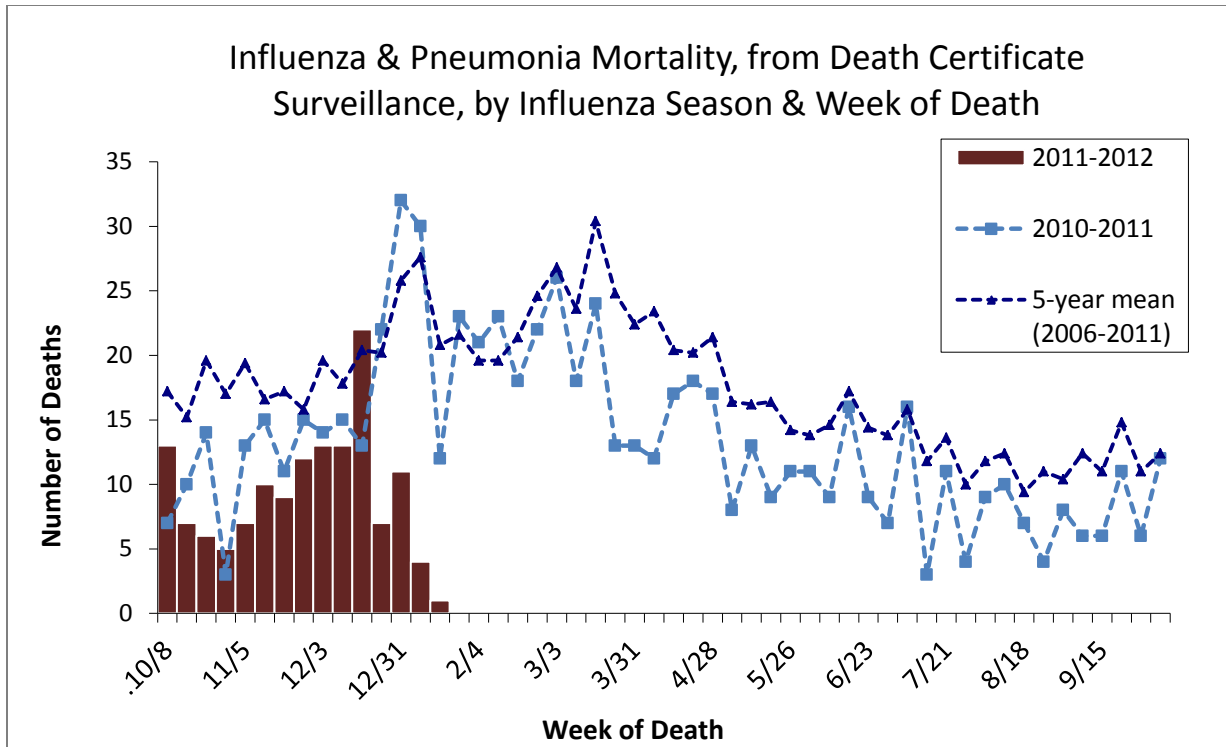


Pneumonia and Influenza Mortality from Death Certificates

Influenza-associated deaths in adults are not reportable in Arizona, and thus the number of laboratory-confirmed deaths each year is not available. Many influenza-related deaths are due to complications of influenza infection, including pneumonia, and influenza is infrequently listed as the cause of death on death certificates. Influenza mortality surveillance often uses the category of “pneumonia and influenza” (P & I) on death certificates as an indicator of the severity of an influenza season or of the trends within a season, even though not all pneumonias are associated with influenza. See the CDC website for more information http://www.cdc.gov/flu/about/disease/us_flu-related_deaths.htm

| | Week 5 | Week 4 |
|--|---------------|-------------------------|
| Number of deaths in 2011-2012 season <i>newly classified</i> as P & I | Not available | 11 |
| Number of classified P & I deaths with <i>date of death in previous four weeks</i> | Not available | 5 |
| Comparison of deaths in recent four weeks this year to same four weeks in past five years* | Not available | Below historical limits |

*Note: There is a two-week lag built into the data for the last row. For example, during week 50, the weeks included in the four week period will be weeks 45-48. The same weeks are used for the historical comparison years.



Glossary of Key Terms:

2011-2012 Influenza Season – The season is defined by surveillance weeks. The first day of the 2011-2012 influenza season was October 2nd, 2011, or week 40, and the 2011-2012 surveillance season will continue through September 29th, 2012, or week 39.

Regions – Regions in Arizona are defined by county: Central (Gila, Maricopa, Pinal); Northern (Apache, Coconino, Navajo, Yavapai); Southern (Cochise, Graham, Greenlee, Pima, Santa Cruz); Western (La Paz, Mohave, Yuma)

Activity Levels: Indicator of the geographic spread of influenza activity, reported to CDC by all states each week.

Widespread: Increased influenza-like illness from sentinel providers (ILI) in three or more regions and large numbers of laboratory-confirmed influenza cases in those regions.

Regional: Increased ILI in two regions and elevated numbers of laboratory-confirmed influenza cases in those regions.

Local: Increased ILI in one region and elevated numbers of laboratory-confirmed influenza cases in that region.

Sporadic: No increase in ILI activity and only isolated laboratory-confirmed influenza cases.

No Activity: No increase in ILI activity and no laboratory-confirmed influenza cases.

Intensity Levels: Intensity 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. Intensity levels range from minimal, corresponding to ILI activity from outpatient clinics being below the average, to intense, which would correspond to ILI activity from outpatient clinics being much higher than average.