



Summary

Week 48: November 26 – December 2, 2017

State influenza and influenza-like illness (ILI) activity:

- Influenza activity has been steadily increasing over the last few weeks. In week 48:
 - Visits to EDs among pregnant women increased notably and was well above levels observed during the previous two flu seasons at this time.
- Five outbreaks were reported: (3) influenza, (1) ILI, and (1) respiratory syncytial virus (RSV); 32 outbreaks of influenza and ILI have been reported since the start of the 2017-18 season. **More outbreaks have been reported so far this season than in previous seasons at this time, which may be an early indication of a more severe influenza season.**
- All regions are currently in RSV season. RSV activity remains high and well above previous seasons (see page 12).

National influenza activity:

- Influenza activity has continued to increase and was above the national baseline for the first time this season. The Centers for Disease Control and Prevention (CDC) noted that several flu activity indicators were higher than typically observed for this time of year.
- As in Florida, influenza A (H3) has been the most common influenza subtype reported to the CDC. The CDC has continued to report extensive genetic diversity in the HA genes of influenza A (H3) viruses submitted to CDC for phylogenetic analysis.

Immunizations and prevention:

- Flu vaccines can vary in effectiveness from season to season but they continue to be the best way to prevent influenza infection and serious influenza complications.
- Interim vaccine effectiveness (VE) estimates for Australia's 2017 influenza season revealed very low VE estimates for influenza A (H3) viruses. VE estimates were higher for influenza A 2009 (H1N1) viruses (50%) and influenza B viruses (57%).
 - VE estimates for the United States are not currently available, and while influenza A (H3) viruses have been most common so far this season, it is still unknown what viruses will predominate this season.
- Getting vaccinated is important because it also protects people around you, including those who are more vulnerable to complications from influenza infection and those who cannot get vaccinated themselves. To locate a flu shot near you, contact your physician, your local county health department, or use the Florida Department of Health's flu shot locator: www.floridahealth.gov/findaflushot.

Treatment:

- The CDC recommends the use of antiviral treatment as soon as possible for all persons with suspected influenza who are at higher risk for complications: children <2 years, adults age ≥65, and pregnant women, and those with underlying medical conditions; administer treatment within 48 hours of illness onset.

Weekly State Influenza Activity

Regional

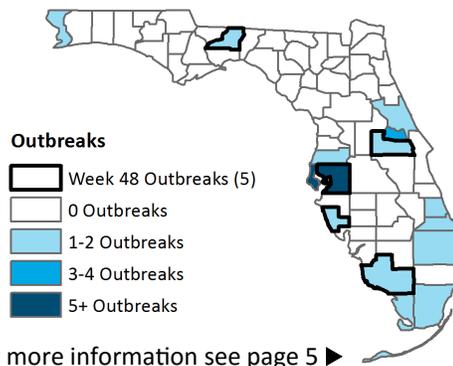
For more information see page 2 ►

Predominately Circulating Strain

A (H3)

For more information see page 7 ►

Influenza and ILI Outbreaks Reported as of 12/2/2017



County Influenza Activity

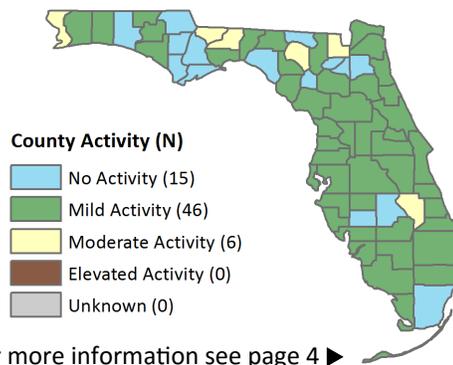


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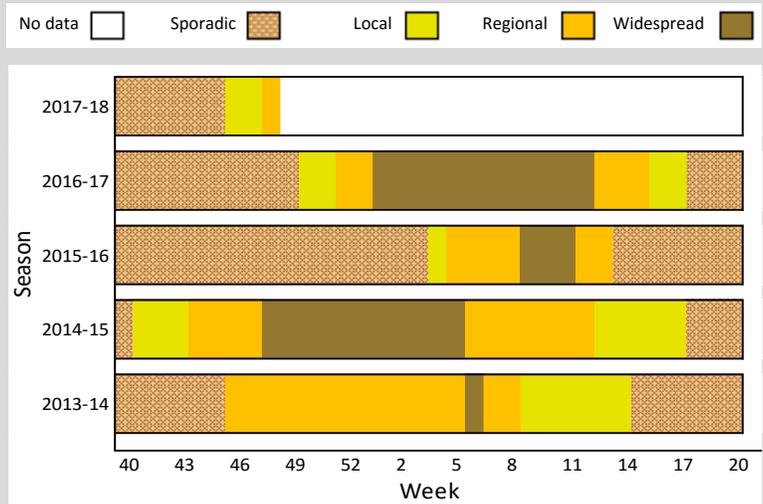
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Weekly State Influenza Activity Reporting

Below is the state influenza activity level reported to CDC each week since the 2013-14 influenza season. **Florida reported regional influenza activity for week 48.**



Influenza activity in Florida can vary widely from season to season. This unpredictability underscores the importance of influenza surveillance in Florida.

Influenza surveillance goals:

- Influenza surveillance is conducted to detect changes in the influenza virus. These data are used to help determine the annual national vaccine composition and to prepare for potential epidemics or pandemics.
- Surveillance is also conducted to identify unusually severe presentations of influenza infection, detect outbreaks, and determine seasonal influenza trends in order to guide influenza prevention, particularly in high-risk populations like children, adults ≥65 years old, and pregnant women. These activities are particularly important at the start of flu season in order to identify potential changes in circulating influenza strains.

Note: Surveillance case definitions for influenza-like illness (ILI) vary across surveillance systems. For more information on influenza surveillance systems and associated case definitions used in Florida, see page 14 ►

Statewide ILI Visits

ED and UCC Visits for ILI by Flu Season

ED = emergency department, UCC = urgent care center, ILI = influenza-like illness

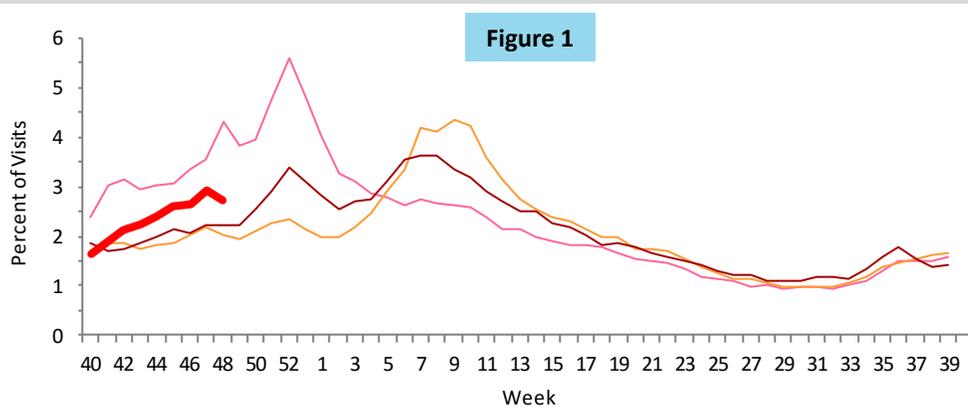


Figure 1 shows the percent of visits for ILI from ED and UCC chief complaint data for ESSENCE-FL participating facilities (n=308), week 40, 2014 to week 48, 2017.

In week 48, the percent of visits to EDs and UCCs decreased slightly, however, influenza activity is steadily increasing. Some high-risk subpopulations (children <18 years, adults ≥65 years, and pregnant women) have continued to see elevated flu activity (see page 10).

2017-18 2016-17 2015-16 2014-15

The ESSENCE-FL ILI syndrome is composed of chief complaints that include the words “influenza” or “flu,” or chief complaints that include the words “fever” and “cough,” or “fever” and “sore throat.” For more information on ESSENCE-FL, see page 10.

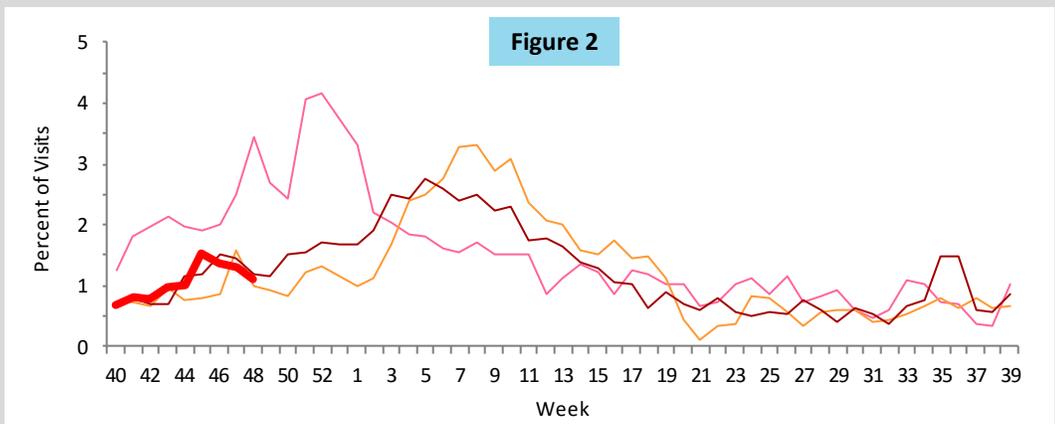


Visits for ILI to Outpatient Providers by Flu Season

ILI = influenza-like illness

Figure 2 shows the percent of visits for ILI reported by ILINet outpatient providers statewide (n=46), week 40, 2014 to week 48, 2017. For ILINet, influenza-like illness (ILI) is defined as a fever $\geq 100^{\circ}\text{F}$ AND sore throat and/or cough in the absence of another known cause.

In week 48, the percent of visits for ILI reported by ILINet outpatient providers decreased but remained similar to levels seen in previous seasons at this time.



P&I Deaths* from Vital Statistics by Flu Season

P&I = pneumonia and influenza

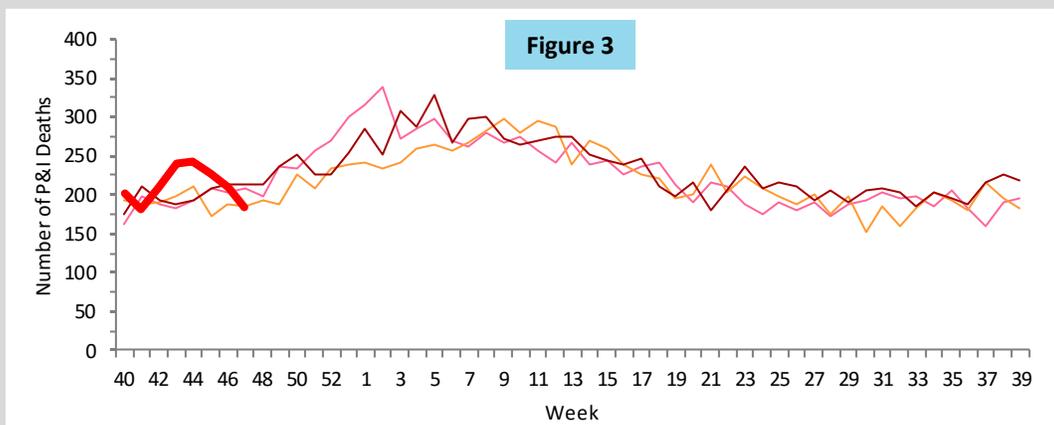


Figure 3 shows P&I deaths* for all Florida counties from the Bureau of Vital Statistics, as reported into ESSENCE-FL, week 40, 2014 to week 47, 2017.

In week 47 (ending November 25, 2017), 184 P&I deaths were reported.

The preliminary number of P&I deaths decreased and was slightly below levels seen in previous seasons at this time.

P&I Deaths*, Multi-Year Regression Model

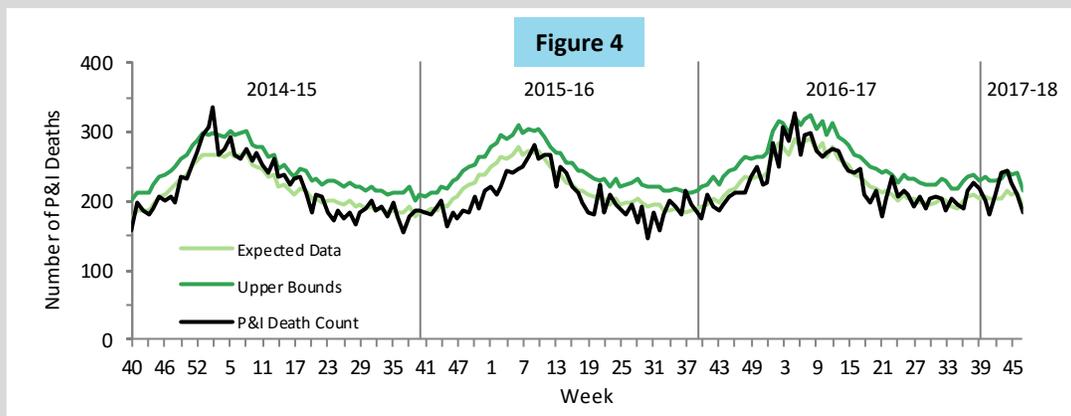
P&I = pneumonia and influenza

Figure 4 shows the number of preliminary estimated P&I deaths* for all Florida counties, the number of deaths predicted using a multi-year regression model, and the upper bound of the 95% confidence interval for this prediction.

For week 47 (ending November 25, 2017), 184 preliminary estimated P&I deaths were reported.

The upper bound of the 95% confidence interval for prediction is 216 deaths, with no excess deaths.

An early peak above the upper bound was observed in recent weeks indicating this flu season may be more severe. This trend will be closely monitored.



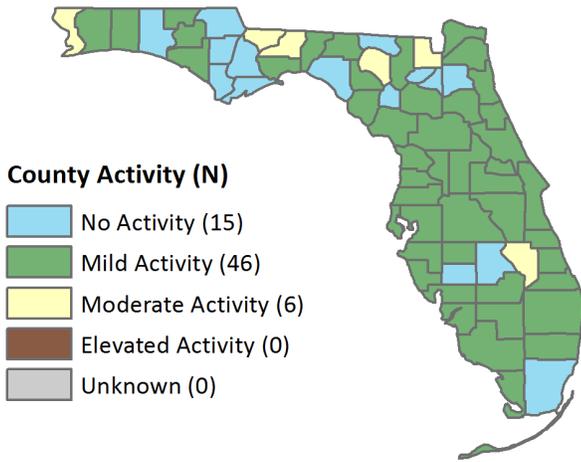
* Current season P&I death counts are preliminary estimates and may change as more data are received. *The most recent data available are displayed here. Vital statistics death records received in ESSENCE-FL are considered to be complete through week 47, 2017.*

County influenza activity data are reported by county health departments through EpiGateway on a weekly basis. Information is used to determine county activity and includes laboratory results, outbreak reports, and ILI activity. **The figures below reflect a county health department's assessment of influenza activity within their county. For week 48, 29 counties reported increasing activity, 34 counties reported activity at a plateau, and four counties reported decreasing activity.**

County Influenza Activity

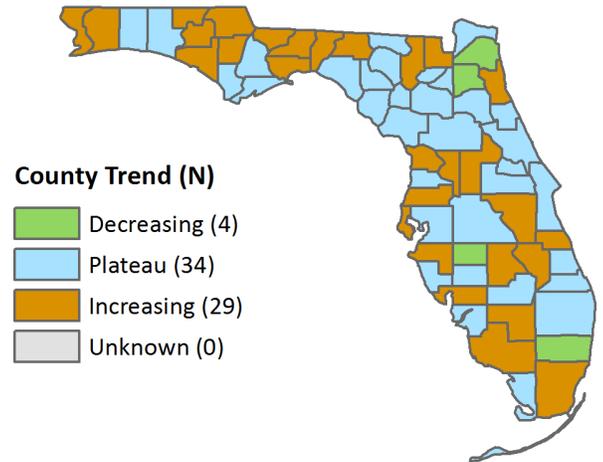
Map 1

County Influenza Activity Level for Week 48
Reported by 9:30 a.m. December 6, 2017



Map 2

County Influenza Activity Trend for Week 48
Reported by 9:30 a.m. December 6, 2017



As of 9:30 a.m. December 6, 2017, a total of 67 (100%) counties reported their weekly level of influenza activity. Please note that data reported after the deadline (Tuesday at 5 p.m.) are recorded but may not be included in the activity maps for this week.

Influenza-Associated Pediatric Deaths

Influenza-Associated Pediatric Deaths

Figures 5-7

Figures 5-7 show the number of pediatric deaths associated with influenza infection, week 40, 2013 to week 48, 2017.

In week 48, no influenza-associated pediatric deaths were reported. One influenza-associated pediatric death in an unvaccinated child has been reported so far this season. Eleven influenza-associated pediatric deaths were reported last season.

While rare, Florida receives reports of influenza-associated pediatric deaths each season. **Most deaths occur in unvaccinated children with underlying health conditions.** Children, especially those with underlying health conditions, are at higher risk of severe outcomes from influenza infection.

Annual vaccination remains the best way to protect children against influenza. Now is the perfect time to get vaccinated. CDC recommends vaccination as long as influenza viruses are circulating. To learn more, please visit: www.cdc.gov/flu/protect/whoshouldvax.htm#annual-vaccination.

Figure 5: Influenza-Associated Pediatric Deaths by Vaccination Status

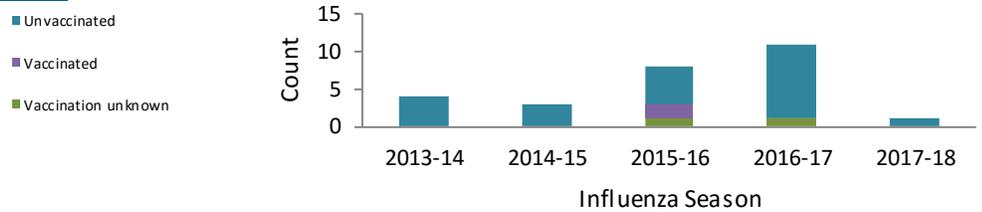


Figure 6: Influenza-Associated Pediatric Deaths by Medical History

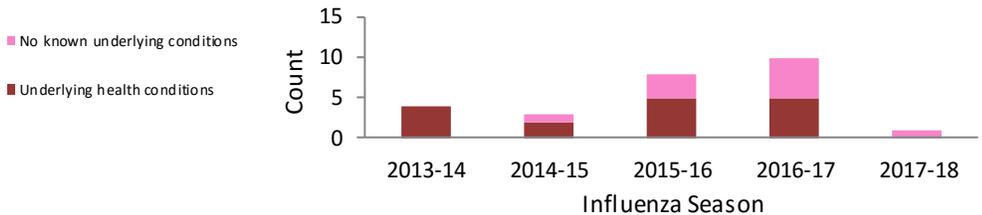
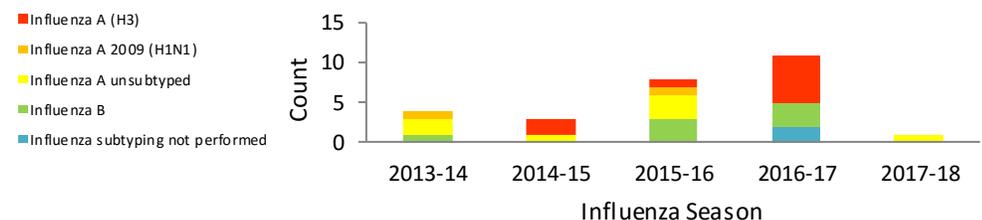


Figure 7: Influenza-Associated Pediatric Deaths by Strain Type



Reported Influenza and ILI Outbreaks

ILI = influenza-like illness

Map 3 shows influenza and ILI outbreaks by county for week 40, 2017 through week 48, 2017, as reported into Merlin.

In week 48, five outbreaks were reported: (3) influenza, (1) ILI, and (1) respiratory syncytial virus (RSV). As of week 48, 32 outbreaks of influenza and ILI have been reported since the start of the 2017-18 influenza season. More outbreaks have been reported so far this season than at this time previous seasons.

Nearly all of the outbreaks (93.9%) reported so far this season have been in facilities serving people at higher risk for complications due to influenza infection (children and adults aged ≥65 years). While these early season outbreaks are expected, the detection of these early outbreaks is important as it can serve as early indicators of unusual or more severe strains of influenza. **Based on the data available for the outbreaks that have been reported thus far, this flu season may be more severe; this trend will be monitored closely.**

For more detailed information on influenza and ILI outbreaks reported in week 48, see page 6. **Data presented on outbreaks are preliminary and subject to change as outbreak investigations progress.**

Map 3 Influenza and ILI Outbreaks by County Week 40, 2017 through Week 48, 2017

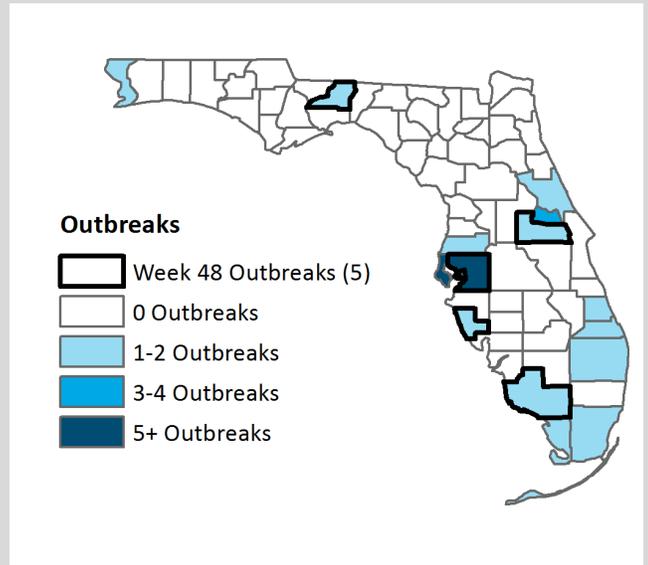


Table 1: Summary of Florida Influenza and ILI Outbreaks by Setting, Week 40, 2017 through Week 48, 2017*

Setting	Total	A (H3)	A 2009 (H1N1)	A Unsubtyped	A & B Unsubtyped	B Yamagata	B Victoria	B Unsubtyped	Influenza Unspecified	Other respiratory viruses	Currently unknown pathogen
Schools	3	-	-	1	1	-	-	-	-	-	1
Daycares	7	-	-	-	-	-	-	-	-	6-RSV	1
Jails & prisons	-	-	-	-	-	-	-	-	-	-	-
Mental health facilities	-	-	-	-	-	-	-	-	-	-	-
Nursing homes & long-term care facilities	21	3	-	8	-	-	-	3	2	1-RSV	4
Health care facilities	-	-	-	-	-	-	-	-	-	-	-
Other	1	1	-	-	-	-	-	-	-	-	-
Total	32	4	0	9	1	0	0	3	2	7	6

*Outbreak etiology is updated for two weeks after initial report.

Reported Influenza and ILI Outbreaks by Facility Type

ILI = influenza-like illness

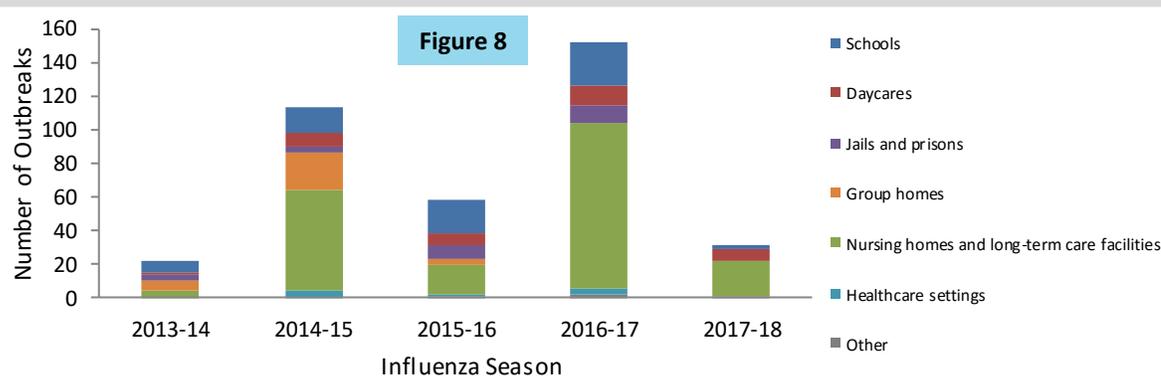


Figure 8 shows the distribution of outbreaks by facility type and season.

In week 48, five outbreaks were reported. Nearly all of the outbreaks reported so far this season (93.9%) have occurred in facilities serving at-risk subpopulations (adults aged ≥65 and children).

Reported Influenza and ILI Outbreaks

ILI = influenza-like illness

In week 48, five outbreaks were reported: three outbreaks of influenza, one outbreak of ILI, and one outbreak of respiratory syncytial virus (RSV), were reported into Merlin.

Hillsborough County:

- **A daycare** reported six individuals with ILI. No specimens have been available for testing at the Bureau of Public Health Laboratories (BPHL) thus far. The etiology of this outbreak is not yet known. Influenza vaccination status for the 2017-18 season for all children and staff is not yet known. Infection control measures were reviewed with facility leadership. This investigation is ongoing.

Sarasota County:

- **An assisted living facility** reported 20 residents with ILI. Four individuals were hospitalized as a result of their illness. Specimens collected from three individuals tested positive for influenza A by rapid antigen testing at local providers. No specimens have been available for testing at BPHL thus far. Influenza vaccination status for the 2017-18 season for all residents and staff is currently unknown. Infection control measures were reviewed with facility leadership. This investigation is ongoing.

Leon County:

- **An assisted living facility** reported 19 residents and one staff member with ILI. Three individuals tested positive for influenza A by rapid antigen testing at local providers. Three specimens were collected for testing at BPHL. Those results are pending. Influenza vaccination status for the 2017-18 season for all residents and staff is currently unknown. Infection control measures were reviewed with facility leadership. This investigation is ongoing.

Orange County:

- **A nursing and rehabilitation facility** reported 11 residents and 20 staff with ILI. Two individuals sought treatment at local emergency departments and one individual was hospitalized as a result of their illness. One individual tested positive for influenza A by PCR and one individual tested positive for influenza A (H3) by PCR at local health care providers. No specimens have been available for testing at BPHL. Influenza vaccination status for the 2017-18 season for all residents and staff is unknown. Infection control measures were reviewed with facility leadership. This investigation is closed.

Collier County:

- **A nursing facility** reported five residents and three staff with ILI. One individual was hospitalized as a result of their illness and tested positive for RSV (test type unknown). At least one specimen was collected for testing at BPHL. Those results are pending. Influenza vaccination status for the 2017-18 season for all residents and staff is not yet known. Infection control measures were reviewed with facility leadership. This investigation is ongoing.

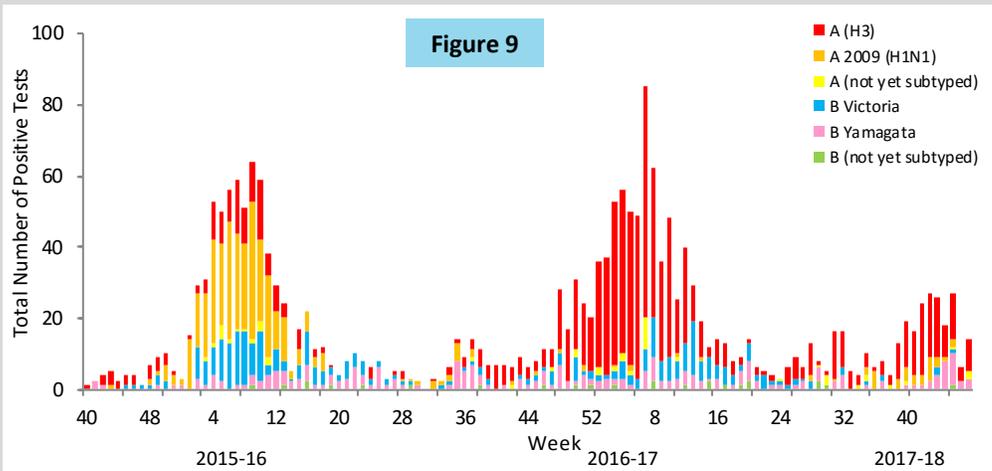
In week 47 (ending November 25, 2017), six outbreaks were reported into Merlin. Updates were made to one of these outbreaks during week 48.

Seminole County:

- **A skilled nursing facility** reported nine residents with ILI. Specimens collected from three individuals tested positive for influenza B by PCR at local health care providers. No specimens have been available for testing at BPHL thus far. Influenza vaccination status for the 2017-18 season for all residents and staff is currently unknown. Infection control measures were reviewed with facility leadership. **Update: one additional resident with ILI was reported. Five residents were hospitalized as a result of their illnesses. One additional specimen collected from an ill resident tested positive for influenza B by PCR at a local health care provider. This investigation is still ongoing.**

BPHL Viral Influenza Specimen Testing

BPHL = Bureau of Public Health Laboratories



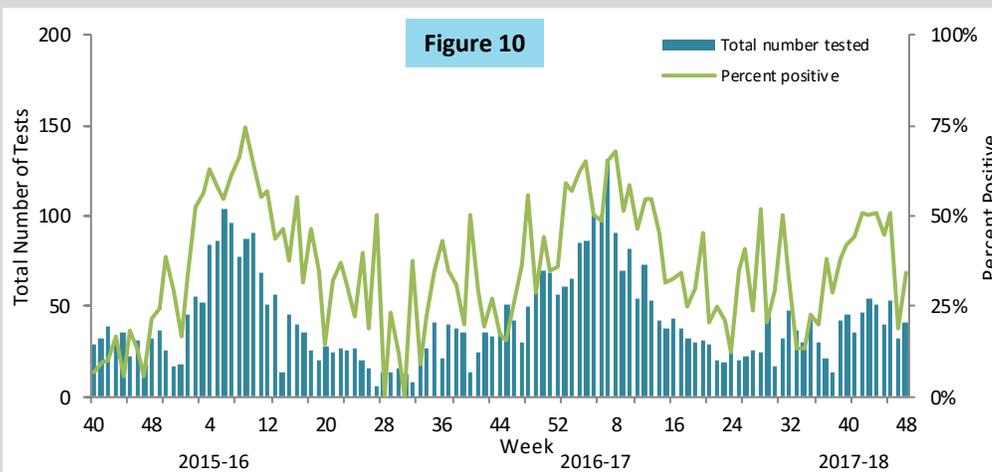
Figures 9 and 10 use BPHL viral surveillance data.

Figure 9 shows the number of influenza-positive specimens tested by subtype and lab event date.*

The most common influenza subtype detected at BPHL statewide for the 2016-17 influenza season has been influenza A (H3). The Centers for Disease Control and Prevention (CDC) has continued to report extensive genetic diversity in the HA genes of influenza A (H3) viruses submitted to CDC for phylogenetic analysis. Seasons in which A (H3) viruses predominate are associated with more severe illness in young children and adults ≥65 years old. It is still too early to say if influenza A (H3) will continue to predominate throughout the season.

Figure 10 shows the number of specimens tested by BPHL and the percent that were positive for influenza by lab event date*.

In week 48, the percent of specimens testing positive for influenza increased notably and was similar to levels observed in previous seasons at this time.



**Table 2: Bureau of Public Health Laboratories (BPHL) Viral Surveillance by Lab Event Date*
Reported by 10:00 a.m. December 6, 2017**

Influenza Type	Current Week 48	Previous Week 47	Current 2017-18 Season
Total Specimens Tested	41	32	399
Influenza positive specimens (% of total specimen tested)	14 (34.2%)	6 (18.8%)	177 (44.4%)
Influenza A 2009 (H1N1) (% of influenza positives)	-	-	23 (13.0%)
Influenza A (H3) (% of influenza positives)	9 (64.3%)	4 (66.7%)	115 (65.0%)
Influenza A not yet subtyped (% of influenza positives)	2 (14.3%)	-	4 (2.3%)
Influenza B Yamagata (% of influenza positives)	3 (21.4%)	2 (33.3%)	31 (17.5%)
Influenza B Victoria (% of influenza positives)	-	-	3 (1.7%)
Influenza B not yet subtyped (% of influenza positives)	-	-	1 (0.6%)

*"Lab event date" is defined as the earliest of the following dates associated with influenza testing at the laboratory: date specimen collected, date received by the laboratory, date reported, or date inserted.

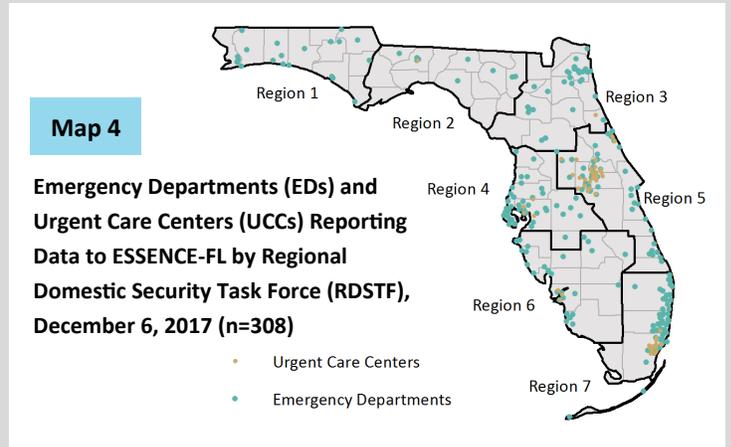
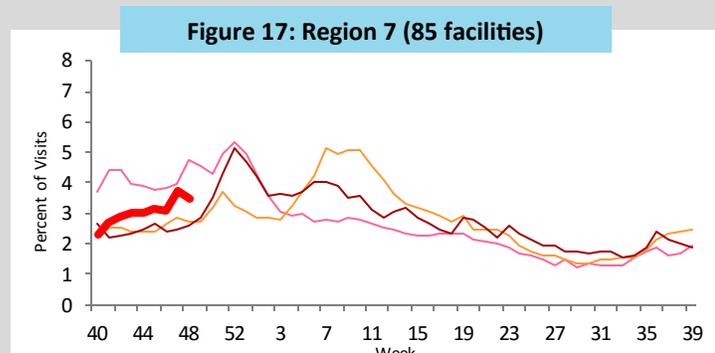
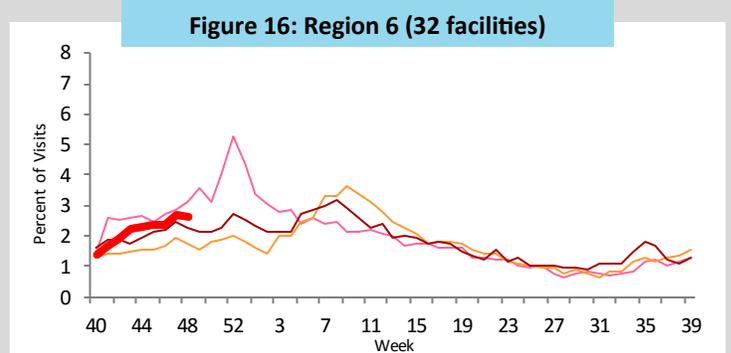
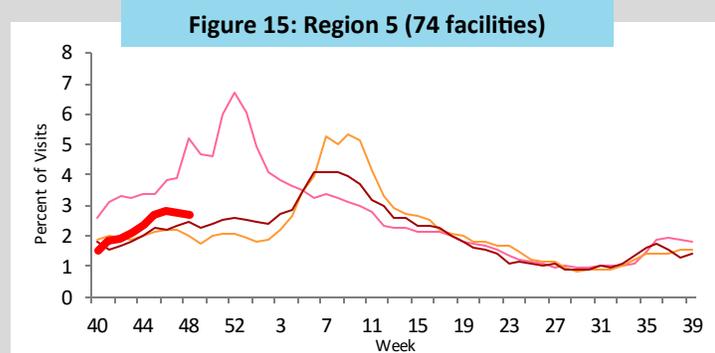
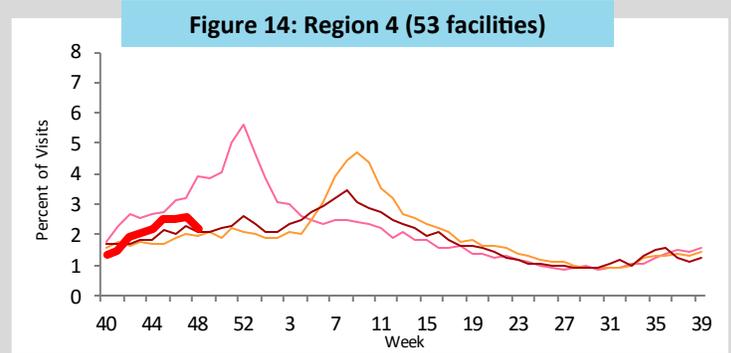
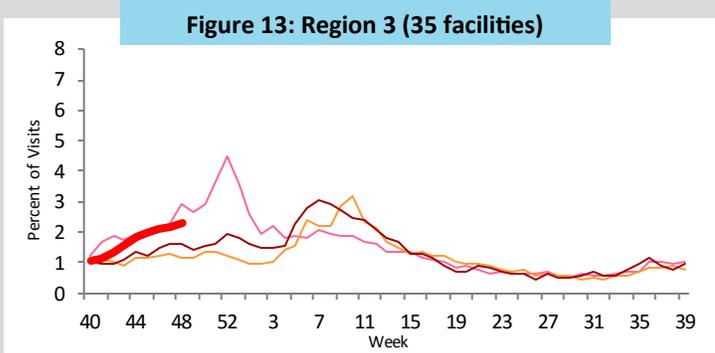
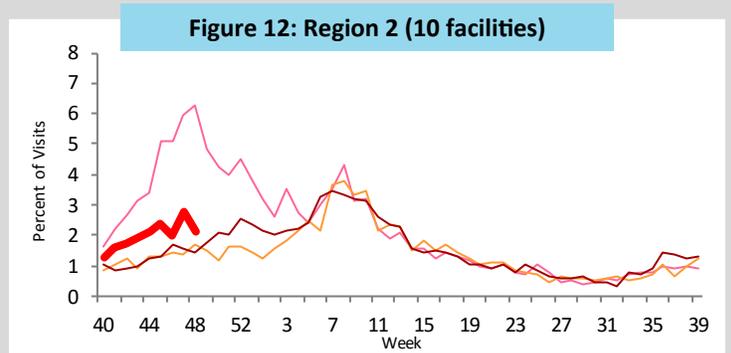
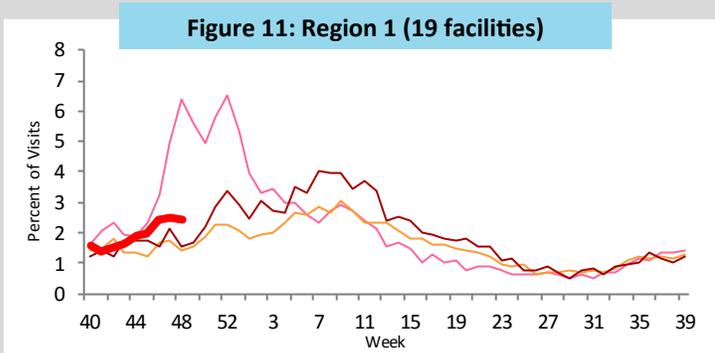
For county health departments seeking county-specific laboratory data, please refer to the Flu Lab Report in Merlin. For instructions on how to use the Flu Lab Report, please see the Guide to Flu Lab Report on the Bureau of Epidemiology website:
www.floridahealth.gov/diseases-and-conditions/influenza/_documents/flulabreportguide.pdf

ED and UCC Visits for ILI by Region

ED = emergency department, UCC = urgent care center, ILI = influenza-like illness

Figures 11-17 show the percent of visits for ILI from ED and UCC chief complaints for ESSENCE-FL participating facilities (n=308), by ESSENCE-FL Regional Domestic Security Task Force (RDSTF) regions (see map 4) from week 40, 2014 to week 48, 2017*. In week 48, the percent of ED and UCC visits for ILI increased in region 3 and decreased or remained the same in all other regions. ILI activity in all regions was similar to levels observed in previous seasons at this time.

the percent of ED and UCC visits for ILI increased in region 3 and decreased or remained the same in all other regions. ILI activity in all regions was similar to levels observed in previous seasons at this time.



*There is no week 53 for the 2015-16, and 2016-17 seasons; the week 53 data point for those seasons is an average of weeks 52 and 1.

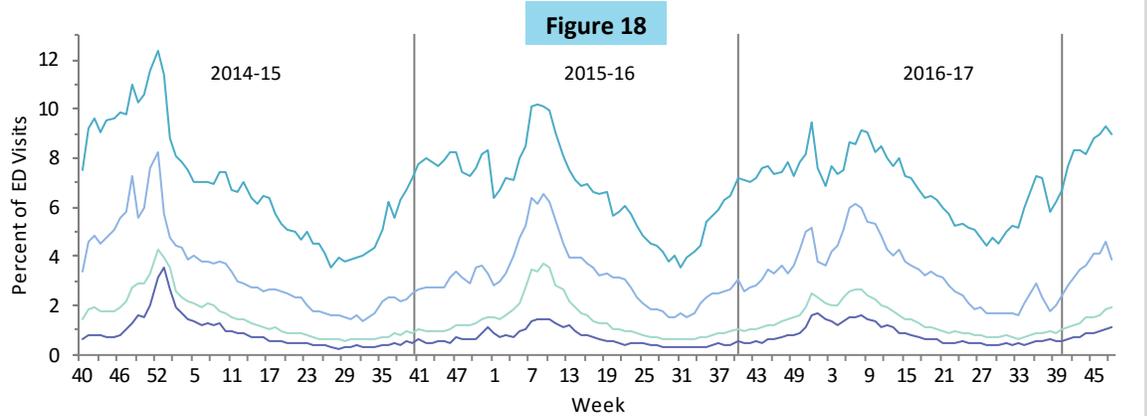
0 to 4 years old 5 to 24 years old 25 to 64 years old ≥65 years old

ED and UCC Visits for ILI by Age Group

ED = emergency department, UCC = urgent care center, ILI = influenza-like illness

Figure 18 shows the percent of visits for ILI from ED and UCC chief complaints by age group for ESSENCE-FL participating facilities (n=308), week 40, 2014 to week 48, 2017.

In week 48, ED and UCC visits for ILI increased in the 25-64 and ≥65 year age groups and decreased in the 0-4 and 5-24 year age groups. Levels were similar to those observed in previous seasons at this time in all age groups.



Visits to Outpatient Providers for ILI by Age Group*

ILI = influenza-like illness

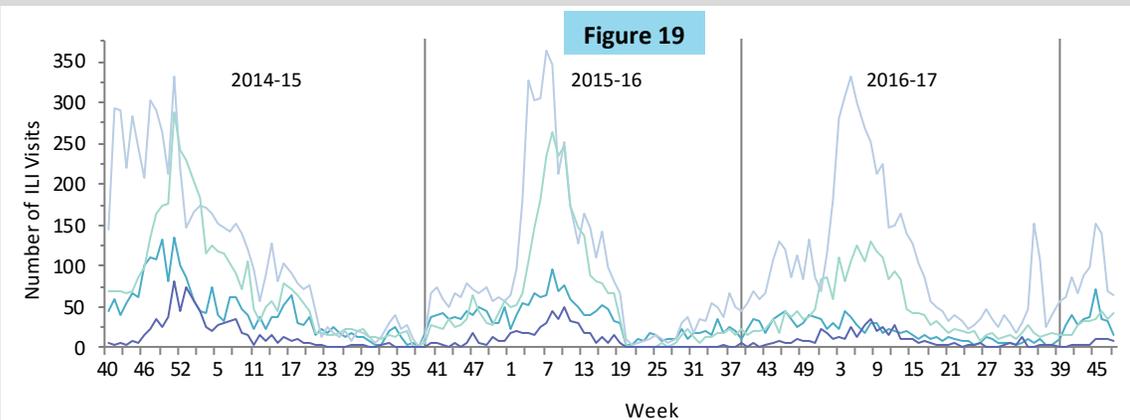


Figure 19 shows the number of visits for ILI reported by ILINet outpatient providers statewide (n=46) by age group, week 40, 2014 to week 48, 2017.

In week 48, the number of visits for ILI increased in the 25-64 year age group and decreased in all other age groups. Levels were similar to or below those observed in previous seasons at this time in all age groups.

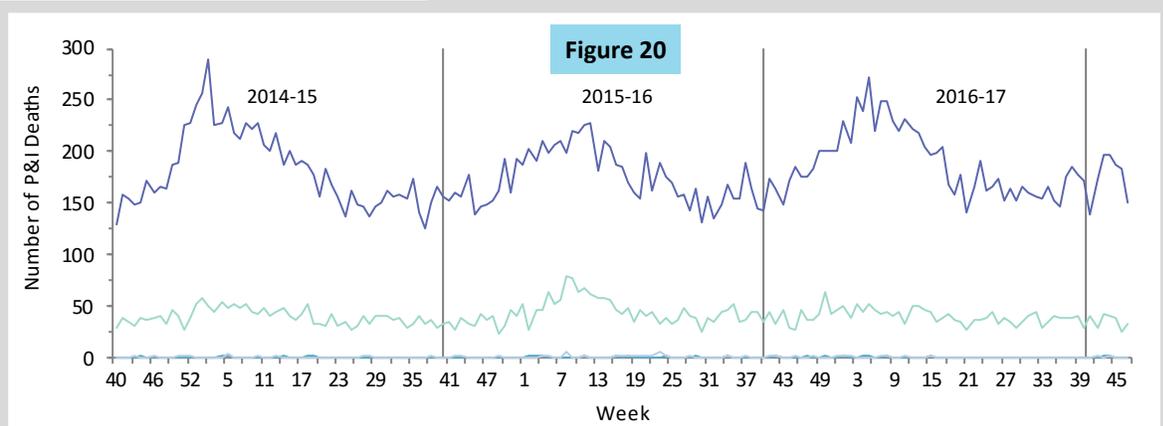
*Data presented here are counts, not proportions. This is because age group denominator data is not available through ILINet.

P&I Deaths* from Vital Statistics by Age Group

P&I = pneumonia and influenza

Figure 20 shows P&I deaths* for all Florida counties by age group, as reported into ESSENCE-FL, week 40, 2014 to week 47, 2017.

In week 47 (ending November 25, 2017), the number of P&I deaths increased in the 5-24 and 25-64 year age groups and decreased in the 0-4 and ≥65 year age groups. Levels were similar to or below those observed in previous seasons at this time in all age groups.



*Current season P&I death numbers are preliminary estimates and may change as more data are received. The most recent data available are displayed here. Vital statistics death records received in ESSENCE-FL are currently considered to be complete through week 47, 2017.

ESSENCE-FL collects data daily from 308 EDs and UCCs. Data are processed into 11 different syndrome categories based on the patient's chief complaint. One of the categories is ILI, which is composed of chief complaints that include the words "influenza" or "flu," or complaints that contain "fever" and "cough," or "fever" and "sore throat." The Florida Department of Health uses ED and UCC chief complaint data to monitor influenza and ILI activity in a timely manner in groups at higher risk of severe health outcomes (such as hospitalization and death) from influenza infection. These at-risk groups include pregnant women, children ≤ 18 years old, and adults ≥ 65 years old.

— 2017-18
 — 2016-17
 — 2015-16
 — 2014-15

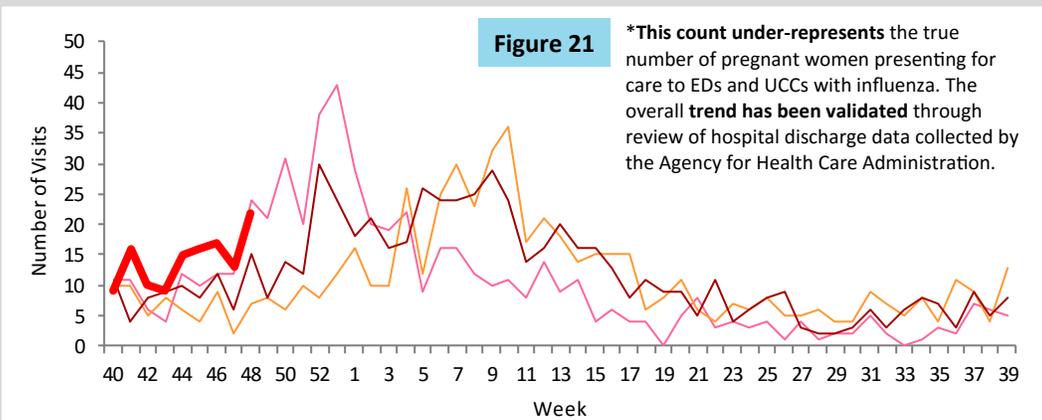
ED and UCC Visits for ILI by Pregnant Women

ED = emergency department, UCC = urgent care center, ILI = influenza-like illness

Pregnant women and their babies are at higher risk for severe complications due to influenza infection.

Figure 21 shows the number of visits* to EDs and UCCs with chief complaints of influenza infection and pregnancy, as reported into ESSENCE-FL, week 40, 2014 to week 48, 2017.

In week 48, the number of visits to EDs and UCCs by pregnant women with mention of influenza increased sharply and was above levels observed during the previous two seasons at this time. Levels were similar to those observed during the 2014-15 season at this time.



ED and UCC Visits for ILI by Children ≤ 18 Years Old

ED = emergency department, UCC = urgent care center, ILI = influenza-like illness

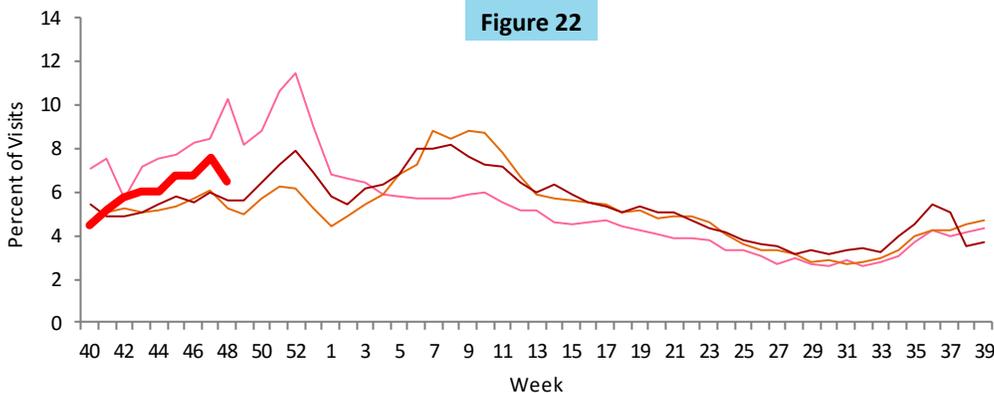


Figure 22 shows the percent of ILI visits among all ED and UCC visits for children ≤ 18 years old, as reported into ESSENCE-FL, week 40, 2014 to week 48, 2017.

In week 48, the percent of ILI visits among all ED and UCC visits for children ≤ 18 years old decreased notably, however, levels remained above those observed in the previous two seasons. Levels were below those observed during the 2014-15 season at this time.

Influenza spreads easily among children. Sick children should stay home from school. Flu activity in children often precedes activity in other age groups.

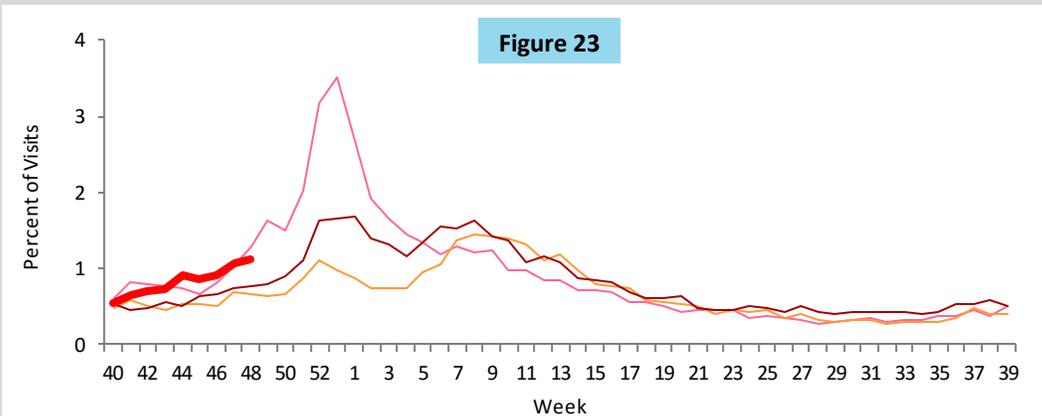
ED and UCC Visits for ILI by Adults ≥ 65 Years Old

ED = emergency department, UCC = urgent care center, ILI = influenza-like illness

Figure 23 shows the percent of ILI visits among all ED and UCC visits for adults ≥ 65 years old, as reported into ESSENCE-FL, week 40, 2014 to week 48, 2017.

In week 48, the percent of ILI visits among all ED and UCC visits for adults ≥ 65 years old decreased slightly but remained well above levels observed in the previous two seasons at this time.

Adults aged ≥ 65 years are at high-risk for complications due to influenza infection. People in this age group who have not yet been vaccinated for the 2017-18 season should get vaccinated as soon as possible.



ILI Activity by Setting Type

ILI = influenza-like illness

County health departments are asked to evaluate influenza activity in certain settings within their county. The assessment scale for activity ranges from no or minimal activity to very high activity.

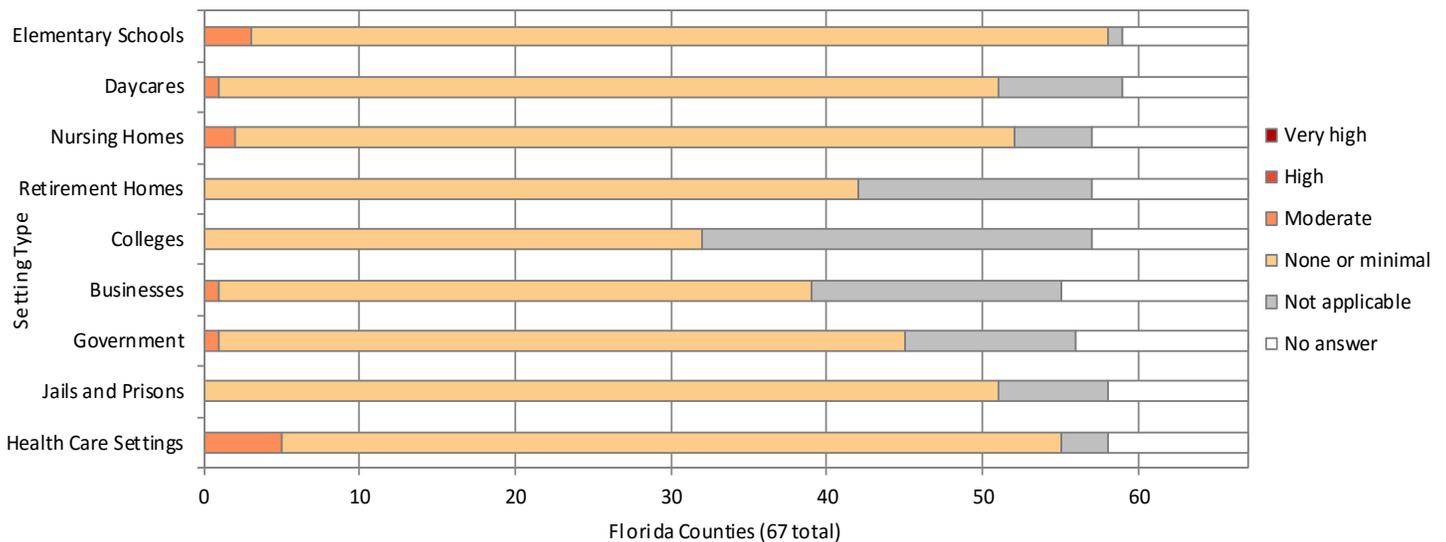
Figure 24 shows the results of the influenza activity assessment for week 48, 2017.

Counties that reported “not applicable” for the listed settings are excluded from the denominator in the calculations below.

ILI Activity Levels:

- No or very minimal activity
- Moderate activity
- High activity
- Very high activity

Figure 24



Settings for Children <18 Years Old

In **elementary schools**, 55 counties (83.3%) reported no or minimal influenza or ILI activity. Three counties (4.5%) reported moderate influenza or ILI activity.

In **daycare settings**, 50 counties (84.7%) reported no or minimal influenza or ILI activity. One county (1.7%) reported moderate influenza or ILI activity.

Settings for Adults >65 Years Old

In **nursing homes**, 50 counties (80.6%) reported no or minimal influenza or ILI activity. Two counties (3.2%) reported moderate influenza or ILI activity.

In **retirement homes**, 42 counties (80.8%) reported no or minimal influenza or ILI activity.

Settings for Adults 18 to 65 Years Old

In **colleges**, 32 of 42 counties (76.2%) reported no or minimal influenza or ILI activity.

In **businesses**, 38 counties (74.5%) reported no or minimal influenza or ILI activity. One county (2.0%) reported moderate influenza or ILI activity.

In **government offices**, 44 counties (78.6%) reported no or minimal influenza or ILI activity. One county (1.8%) reported moderate influenza or ILI activity.

Other Unique Settings

In **jails and prisons**, 51 counties (85.0%) reported no or minimal influenza or ILI activity.

In **health care settings**, 50 counties (78.1%) reported no or minimal influenza or ILI activity. Five counties (7.8%) reported moderate influenza or ILI activity.

Summary

Week 48: November 26 – December 2, 2017

Respiratory syncytial virus (RSV) activity:

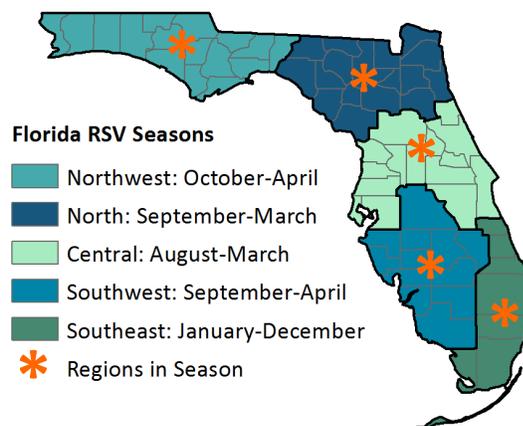
- In week 48, the percent of children <5 years old diagnosed with RSV at EDs and UCCs decreased but remained well above levels observed in previous seasons at this time.
- RSV activity this fall has remained higher than levels observed in previous seasons for several months in a row. All regions are currently in RSV season.
- To learn more about RSV in Florida, please visit: <http://www.floridahealth.gov/rsv>.

RSV seasonality:

- RSV activity in Florida typically peaks in November through January, though activity can vary dramatically by region. According to CDC, the start of RSV season is marked by the first two consecutive weeks during which the average percentage of specimens testing positive for RSV is $\geq 10\%$.
- Florida has established regular RSV seasons based on these thresholds.
- Florida's RSV season is longer than the rest of the nation and has distinct regional seasonality. For more information on RSV seasonality in Florida, see the American Academy of Pediatrics' (AAP) 2015 Red Book.

Map 5

Florida Respiratory Syncytial Virus (RSV) Regional Season Breakdown



RSV surveillance goals:

- A statewide RSV surveillance system was implemented in Florida to support clinical decision-making for prophylaxis of premature infants. The determination of unique seasonal and geographic trends of RSV activity has important implications as it relates to prescribing patterns for initiating prophylaxis to children at high risk for RSV infection. The AAP currently recommends that preapproval for prophylactic treatment be made based on state surveillance data.
- See the back page of this report for more information on RSV surveillance systems used in Florida: page 14 ►

ED and UCC Visits for RSV by Children <5 Years Old

ED = emergency department, UCC = urgent care center, RSV = respiratory syncytial virus

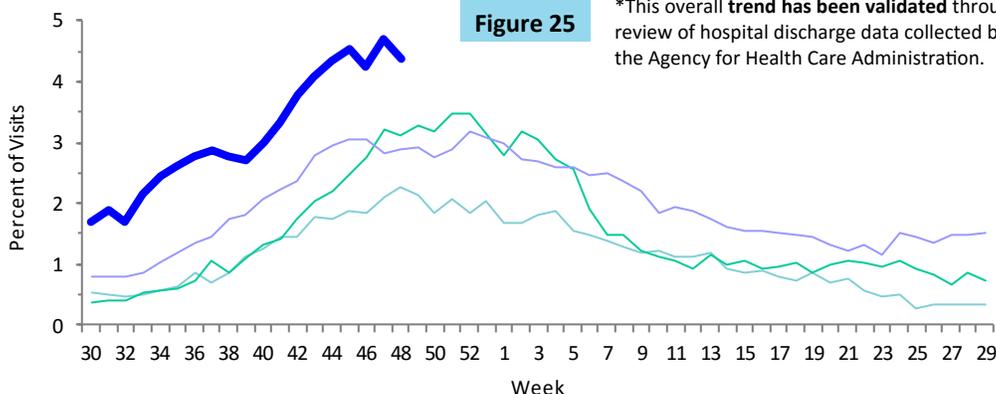


Figure 25 shows the percent of visits to EDs and UCCs with discharge diagnoses that include RSV or RSV-associated illness, as reported by participating ESSSENCE-FL facilities (n=308), week 30, 2014 to week 48, 2017.

In week 48, the percent of children presenting to participating EDs and UCCs for care with RSV decreased but remained well above levels observed in previous seasons at this time.

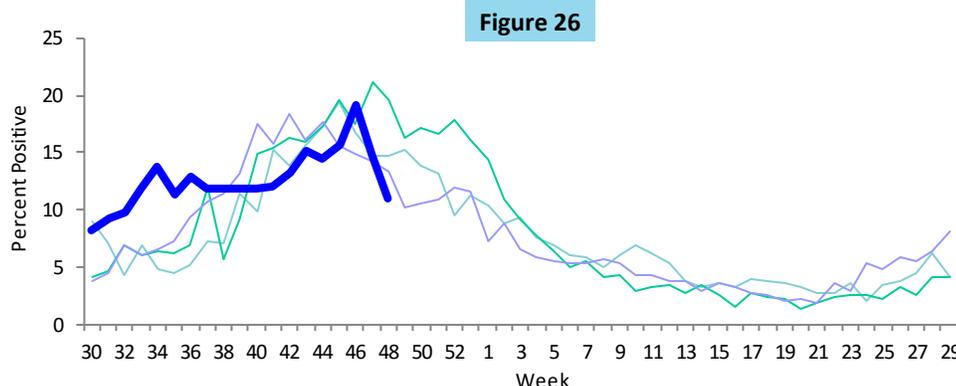
— 2017-18 — 2015-16
— 2016-17 — 2014-15

Laboratory RSV Surveillance

RSV = respiratory syncytial virus

Figure 26 shows the percent of laboratory results testing positive for RSV, as reported by hospital laboratories (n=10), week 30, 2014 to week 48, 2017.

In week 48, the percent of specimens testing positive for RSV decreased.



— 2017-18 — 2015-16
— 2016-17 — 2014-15

Other Respiratory Virus Surveillance

Statewide activity:

- In week 48, the percent of specimens testing positive for rhinovirus and adenovirus virus increased.
- The percent of specimens testing positive for rhinovirus remained higher than other respiratory viruses under surveillance.

Enterovirus D68 (EV-D68) activity:

- In week 48, no new people testing positive for EV-D68 were identified in Florida.
 - Three people testing positive EV-D68 by PCR have been identified in Florida so far in 2017. One person was identified in August 2017 during the investigation of an ILI outbreak. Two people were identified in October 2017 as part of routine outpatient surveillance as a result of Florida participating in the Acute Respiratory Infection Epidemiology and Surveillance (ARIES) Program.
- To learn more about EV-D68, please visit: <http://www.floridahealth.gov/diseases-and-conditions/d68>.

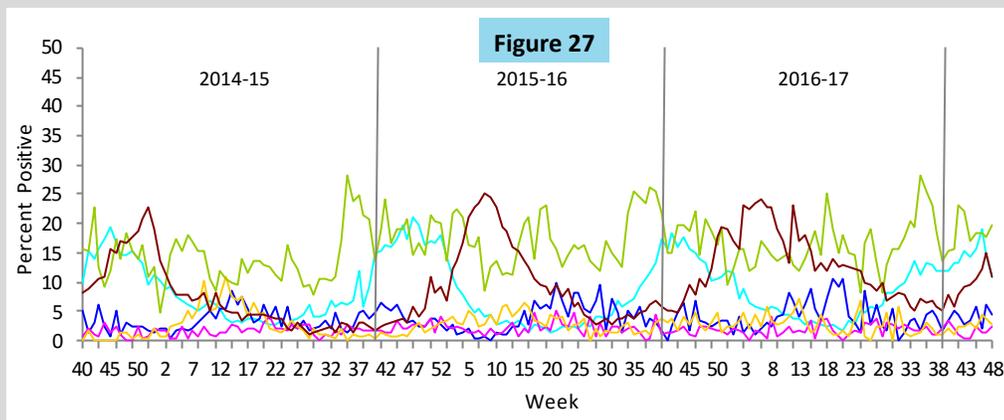
Outbreaks:

- In week 48, one outbreak of respiratory syncytial virus (RSV) was reported (see page 6). No outbreaks of parainfluenza 1-3, adenovirus, human metapneumovirus (MPV), rhinovirus, enterovirus, or coronavirus were reported.

Laboratory Viral Respiratory Surveillance

Figure 27 shows the percent of laboratory results testing positive for eight common respiratory viruses, as reported by hospital laboratories (n=10), week 40, 2014 to week 48, 2017.

In recent weeks, the percent of specimens testing positive for rhinovirus remained higher than other respiratory viruses under surveillance.



Non-Influenza ARIES Laboratory Outpatient Surveillance*

ARIES = Acute Respiratory Infection Epidemiology and Surveillance Program

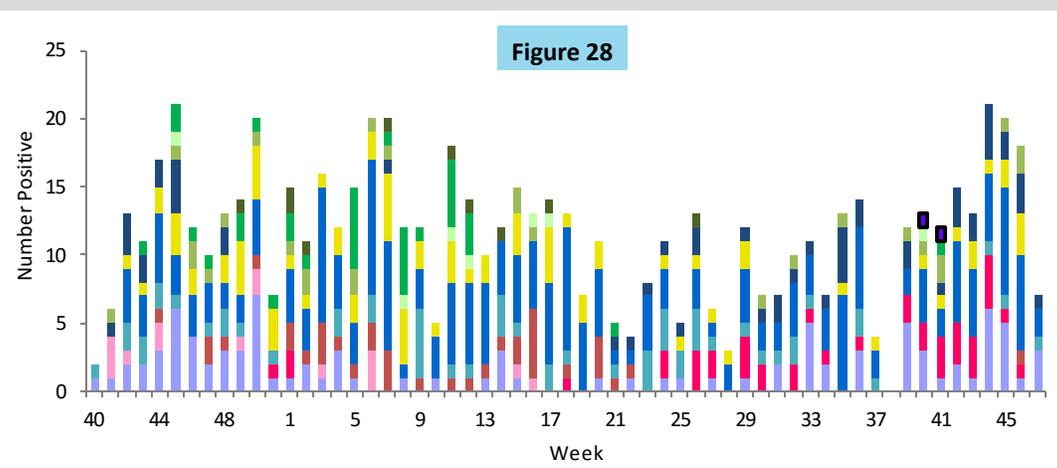
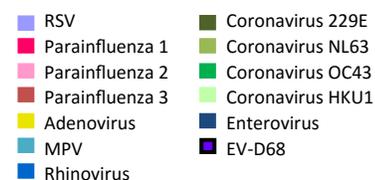


Figure 28 shows the number of specimens testing positive for 12 common respiratory viruses, as reported by BPHL and ARIES outpatient providers statewide (n=7), week 40, 2016 to week 47, 2017.

In week 47 (ending November 25, 2017), specimens submitted by ARIES providers tested PCR-positive for RSV, MPV, rhinovirus, and enterovirus.



*Data presented here are counts, not proportions. The most recent data available are displayed here. ARIES laboratory data are currently considered to be complete through week 47, 2017. Laboratory results for specimens that have not yet been tested in full will be included in future reports.

Florida ILINet · Data source for figures 2 and 19

- ILINet is a nationwide surveillance system composed of sentinel providers, predominately outpatient health care providers. Florida has 88 sentinel providers enrolled in ILINet who submit weekly influenza-like illness (ILI) and total visit counts, as well as submit ILI specimens to the Bureau of Public Health Laboratories (BPHL) for confirmatory testing.

ESSENCE-FL Syndromic Surveillance and Vital Statistics Portal · Data source for figures 1, 3-7, 11-18, 20-23, 25; map 4

- Electronic Surveillance System for the Early Notification of Community-based Epidemics (ESSENCE-FL) measures trends in ILI visits from emergency departments (ED) and urgent care clinics (UCC) and influenza mortality by using death certificates from the Bureau of Vital Statistics. Participating EDs and UCCs (n=308) electronically transmit visit data into ESSENCE-FL daily or hourly.
- For statewide and regional data on ILI, visits are counted as ED or UCC visits to participating facilities that include the words “influenza” or “flu” in patient chief complaints. Chief complaints with the words “fever” and “cough,” or “fever” and “sore throat” are also counted as ILI.
- For pneumonia and influenza (P&I) surveillance, death record literals are queried using a free-text query that searches for references to P&I on death certificates. Any mention of P&I in the death certificate literals, with certain exceptions, is counted as a P&I death.
- For respiratory syncytial virus (RSV) surveillance, visits are counted as ED or UCC visits to participating facilities for which RSV or RSV-associated illness is included in the discharge diagnosis. Death record literals are also queried using a free-text query that searches for references to RSV on death certificates for children <18 years old. Any mention of RSV in the death certificate literals, with certain exceptions, is counted as an RSV-associated pediatric death.

County Influenza Activity in EpiGateway · Data source for figures 19, 24, and maps 1 and 2

- County health department (CHD) epidemiologists report their county’s influenza and ILI surveillance data weekly into the EpiGateway website. Influenza activity is classified as: no activity, mild, moderate, or elevated. Setting-specific influenza activity and influenza trend information is also reported. EpiGateway data provided by CHDs creates a county-by-county breakdown of influenza and ILI activity around the state.

Outbreak Reporting in Merlin · Data source for figure 8, map 3, and table 1

- Merlin tracks influenza and ILI outbreak investigations by CHDs. Reports by CHDs include the type of respiratory disease causing the outbreak and settings where outbreaks are occurring. CHD epidemiologists report outbreaks of influenza or ILI into Merlin, Florida’s reportable disease surveillance system.
- Outbreaks are defined as two or more cases of influenza or ILI in a specific setting.

Bureau of Public Health Laboratories (BPHL) · Data source for figures 9, 10 and table 2

- BPHL performs confirmatory testing and subtyping on surveillance specimens from sentinel providers, outbreak investigations, patients with severe or unusual influenza presentations, and medical examiners.
- For county-specific laboratory data, please refer to the Flu Lab Report in Merlin. For instructions on how to use the Flu Lab Report, please see the Guide to Flu Lab Report on the Bureau of Epidemiology website at www.floridahealth.gov/diseases-and-conditions/influenza/_documents/flulabreportguide.pdf.

Laboratory Viral Respiratory Surveillance · Data sources for figures 26-27

- The National Respiratory and Enteric Virus Surveillance System (NREVSS) and Electronic Laboratory Reporting (ELR) collect data from laboratories in Florida on a weekly basis and monitor temporal and geographic patterns of eight commonly circulating respiratory viruses. NREVSS data is collected by the Centers for Disease Control and Prevention (CDC) and ELR data is collected by the Florida Department of Health (DOH).

Acute Respiratory Infection Epidemiology and Surveillance (ARIES) Program · Data source for figure 28

- Acute Respiratory Infection Epidemiology and Surveillance Program (ARIES) is a nationwide surveillance system composed of nine participating jurisdictions. Florida has seven sentinel providers enrolled in ARIES who submit weekly ILI counts, as well as submit ILI specimens to BPHL for testing.

Case-Based Influenza Surveillance

- Death in a child whose laboratory-confirmed influenza infection has been identified as a contributing to the child’s death is reportable in Florida. Influenza-associated pediatric deaths are documented by CHDs in Merlin.
- In addition, an individual of any age infected with novel or pandemic influenza strain(s) is reportable in Florida. Pandemic strain influenza cases are documented by CHDs in Merlin.
- For more information about reportable diseases, please visit www.Floridahealth.gov/diseasereporting.

Summary

November 2017

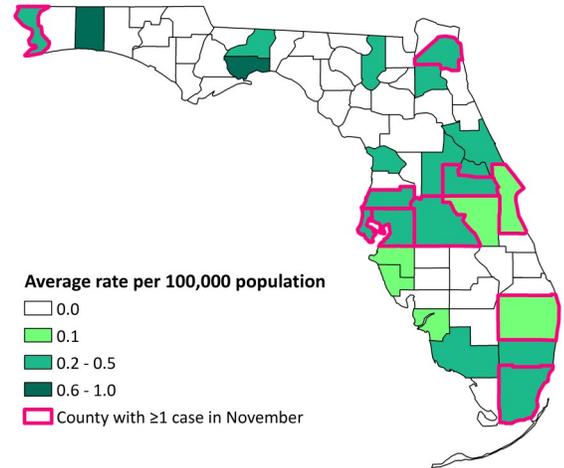
State pertussis activity:

- **Twenty-one confirmed and probable pertussis cases** were reported among 10 counties in November.
 - Decreased pertussis activity was observed during the fall months, which is consistent with trends observed in previous years at this time.
 - From January 1, 2017 through November 30, 2017, 336 confirmed and probable cases of pertussis were reported among 36 of Florida's 67 counties.
- Since 2014, an overall decrease in the annual number of confirmed and probable cases of pertussis reported has been observed. Pertussis is naturally cyclic in nature with peaks in disease every 3-5 years.
- **One outbreak of pertussis was reported in November involving two students at a school in Hillsborough County.**
 - For most pertussis cases, exposure to other known cases is never identified, and they are not able to be linked to outbreaks.
- **In November, for every pertussis case identified, there was an average of three exposed contacts who were recommended antibiotics to prevent illness.** For those diagnosed with pertussis, antibiotics can shorten the amount of time they are contagious to others. Antibiotics can also be used to prevent illness in those who have been exposed to someone with pertussis while they are contagious.
- **Infants less than one year old had the highest incidence of pertussis.** This is consistent with national trends, which also show the highest incidence rate in infants less than one year old. **Infants less than two months old were also most severely affected by pertussis,** as measured by emergency department visits and inpatient hospitalizations. Infants are at greatest risk for getting pertussis and having serious complications from infection. Infants less than two months old are too young to receive vaccinations against pertussis, which is why vaccination of other age groups is so important to help prevent infection in infants.
- **Vaccination is the best way to prevent pertussis infections.** In November, ten (48%) reported cases had not received the recommended number of pertussis vaccinations for their age. In general, those who have received at least one pertussis vaccination have less severe outcomes than those who have never been vaccinated.
- To learn more about pertussis, please visit <http://www.floridahealth.gov/pertussis>.

National pertussis activity:

- The number of pertussis cases has been gradually increasing since the 1980s, peaking in 2012 at levels not seen since the 1950s. Since 2012, the number of pertussis cases has started to gradually decrease.
- Pertussis incidence has remained highest among infants less than one year old and lowest among those age 20 and older since the 1990s.

Map 6 Average Pertussis Incidence Rates per 100,000 Population, August 2017 through October 2017



Pertussis surveillance goals:

- Pertussis surveillance is conducted to identify cases for treatment to prevent death, limit transmission in settings with infants or others who may transmit pertussis to infants, and identify and prevent outbreaks.
- Surveillance is also conducted to identify contacts of cases and recommend appropriate prevention measures, including exclusion, antibiotic prophylaxis and immunization and to monitor the effectiveness of immunization programs and vaccines. For more information on the data sources used in Florida for pertussis surveillance, see page 24 ▶

Pertussis Cases by Month Reported

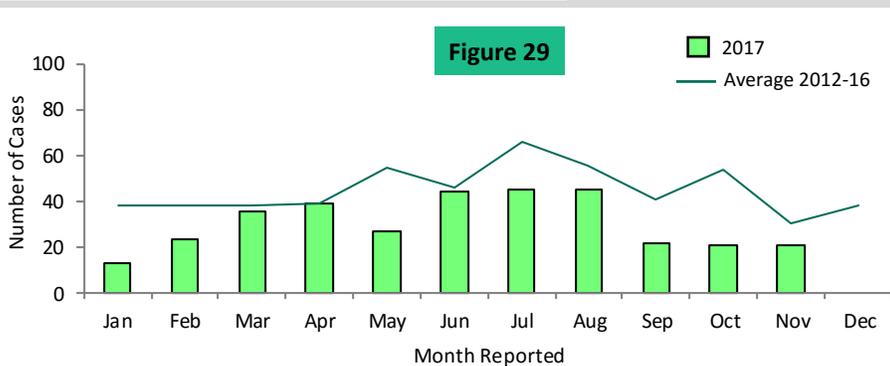


Figure 29 shows the number of confirmed and probable cases of pertussis reported into Merlin, January 2017 through November 2017 and the previous five-year average.

Thus far in 2017, the number of reported pertussis cases has been below average, except in April when two outbreaks occurred. In general, the number of reported pertussis cases tends to be highest during the summer months.

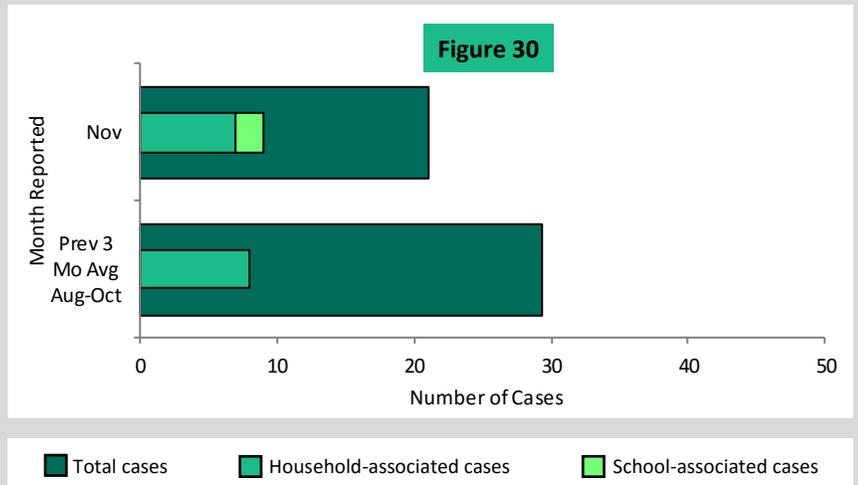
Pertussis Outbreaks

Figure 30 shows the number of confirmed and probable cases that were associated with at least one other case and the total number of confirmed and probable cases as reported into Merlin, November 2017 and the previous three-month average. Cases associated with at least one other case are shown by type of association.

In November, 9 (43%) cases were associated with other cases including two cases part of an outbreak and seven cases connected to other cases through living in the same household.

Outbreak Summary:

In November an outbreak of pertussis was reported at a Hillsborough County school among two students. From January 1, 2017 through October 31, 2017, a total of four outbreaks of pertussis were reported. All of the outbreaks reported thus far have been in school settings.



Pertussis Treatment and Contacts

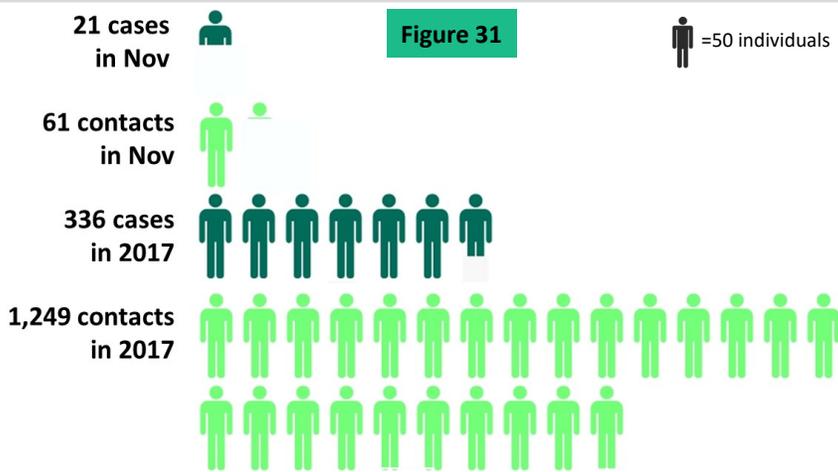
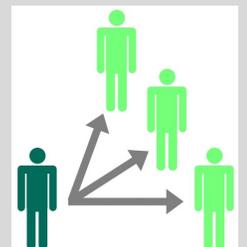


Figure 31 shows the number of confirmed and probable cases of pertussis, as reported into Merlin, and the number of contacts who were recommended antibiotics to prevent illness, November 2017 and 2017 to date.

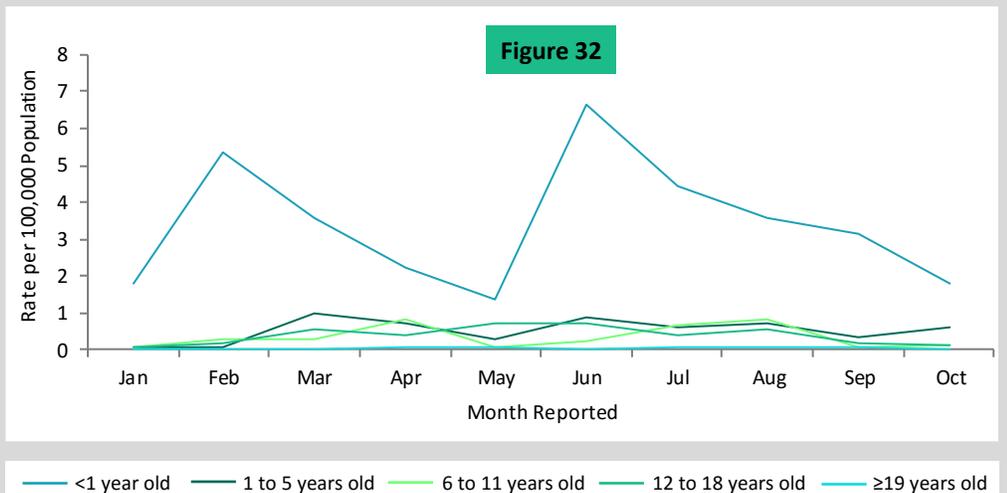
On average, for each case reported in November there were three people exposed to the case who were recommended antibiotics to prevent illness.



Pertussis Age-Specific Incidence Rates

Figure 32 shows the age-specific incidence rates of confirmed and probable cases of pertussis, as reported into Merlin, January 2017 through November 2017.

In November, the incidence rate was highest among infants <1 year old, which is consistent with previous months. Infants experience the greatest burden of pertussis infections, not only in number of cases but also in severity. Infants less than two months old are too young to receive vaccinations against pertussis, which is why vaccination of other age groups is so important to help prevent infection in infants.

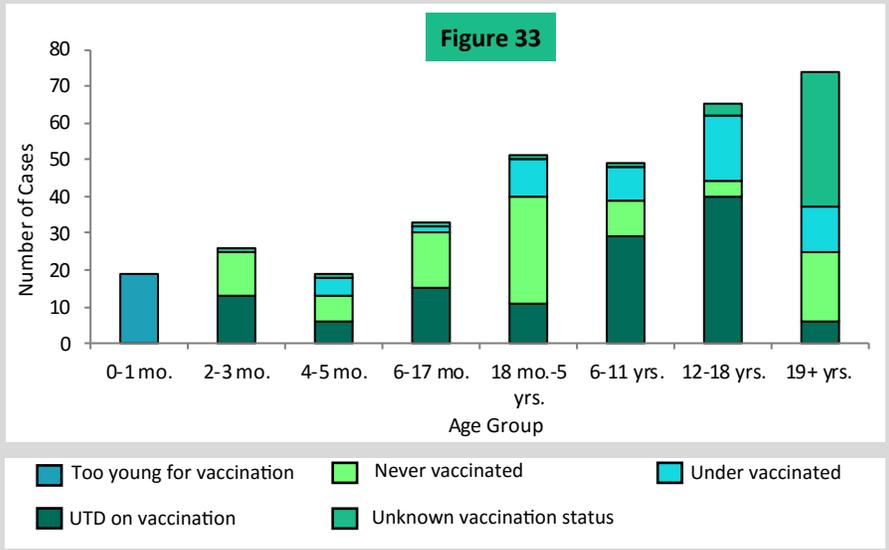


Vaccination History for Pertussis Cases

UTD = up-to-date

Figure 33 shows the vaccination status of pertussis cases by age group for confirmed and probable cases of pertussis, as reported into Merlin, January 2017 through November 2017 (n=312).

The majority of cases age 5 years and younger were not up to date on their pertussis vaccinations. The only age groups with more than half of cases up to date on pertussis vaccinations were school-aged children 6-18 years old.

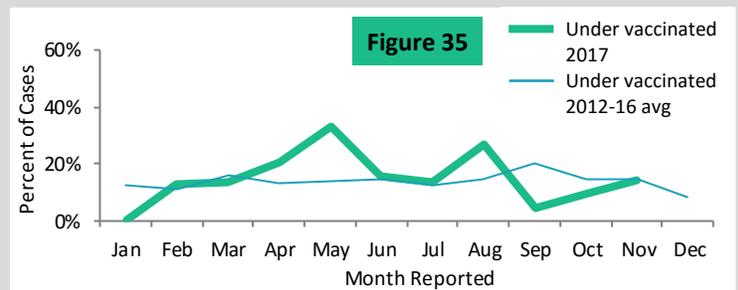
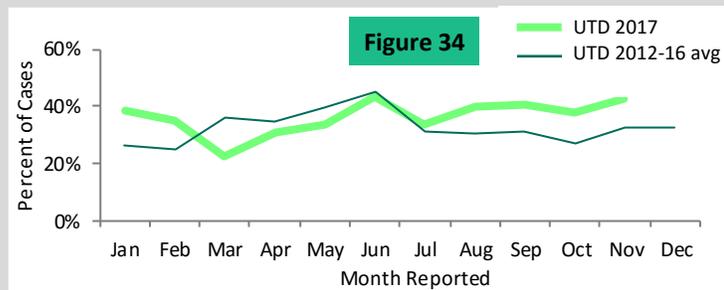


Pertussis Cases in Vaccinated Individuals

UTD = up-to-date

Figure 34 shows the percent of confirmed and probable pertussis cases who were up to date on their pertussis vaccinations, as reported into Merlin, January 2017 through November 2017 and the previous five-year average. **Figure 35** shows the percent of these cases who were under vaccinated during the same time periods.

Although individuals who have been vaccinated can still get pertussis, vaccination remains the best way to prevent pertussis and severe complications.



Pertussis Outcomes

UTD = up-to-date, ED = emergency department

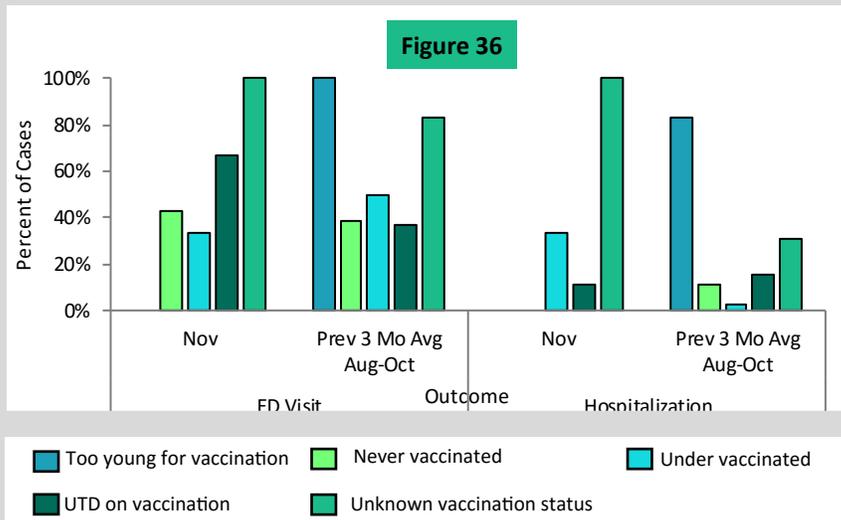


Figure 36 shows the percent of confirmed and probable cases of pertussis with select outcomes by vaccination status, as reported into Merlin, November 2017 and the previous three-month average.

In November, cases with unknown vaccination status were more likely to visit the emergency department and require inpatient hospitalization. However, in previous months infants too young for vaccination (age 0-1 months) were most severely affected by pertussis.

In general, older individuals are more likely to experience paroxysmal cough while younger individuals are more likely to experience posttussive vomiting and whoop. Primarily infants less than one year old experience apnea.

Summary

November 2017

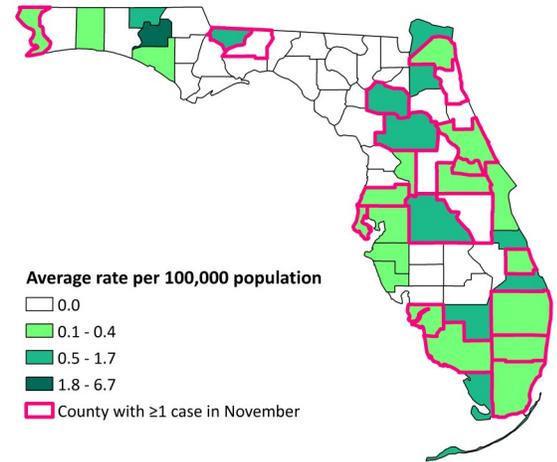
State varicella activity:

- **Sixty confirmed and probable varicella cases were reported among 21 counties in November.**
 - Reported varicella cases are starting to increase after having remained lower throughout the summer and fall. This is consistent with seasonal trends in past years.
 - Since January 1, 2017, 594 cases of varicella were reported among 52 of Florida’s 67 counties.
- A decreasing trend in the number of confirmed and probable cases of varicella reported annually in Florida was observed from 2008-2014. Since then, the number of cases reported annually has remained elevated. Thus far in 2017, the number of varicella cases is slightly lower than the number observed in 2016.
- **One outbreak of varicella was reported in November among five residents of a mental health hospital in Gadsden County.**
- **In November, children age less than one years old had the highest incidence of varicella.** This is consistent with what was observed for the majority of months thus far in 2017.
- **Vaccination is the best way to prevent varicella infections.** In November, 28 (47%) cases were not up to date on their varicella vaccinations. In general, those who have received at least one varicella vaccination even if they later develop disease have less severe outcomes than those who have never been vaccinated.
- In November, infants infected with varicella who were too young for vaccination and those with unknown vaccination status were most likely to visit the emergency department. Few varicella cases require inpatient hospitalization.
- To learn more about varicella, please visit <http://www.floridahealth.gov/varicella>.

National varicella activity:

- Varicella incidence decreased significantly since a vaccine became available in 1995 and has continued to decrease since 2006 when recommendations changed from one to two doses of varicella vaccine.
 - From 2006 –2015 all age groups saw a significant decrease in incidence with the largest decline in children age 5-9 years and age 10-14 years.
- Although not all states report varicella cases to the CDC, based on available data the number of varicella cases nationally has steadily decreased each year from 2012-2015.

Map 7 Average Varicella Incidence Rates per 100,000 Population, August 2017 through October 2017



Surveillance goals:

- Varicella surveillance is conducted to identify and control outbreaks and monitor trends and severe outcomes.
- Surveillance is also conducted to monitor effectiveness of immunization programs and vaccines. For more information on the data sources used in Florida for varicella surveillance, see page 24 ►

Varicella Cases by Month Reported

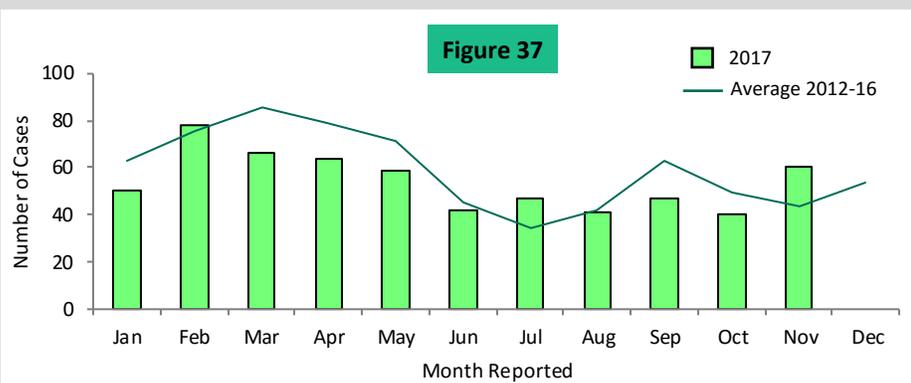


Figure 37 shows the number of confirmed and probable cases of varicella reported into Merlin, January 2017 through November 2017 and the previous five-year average.

In November, the number of reported varicella cases increased. Thus far in 2017, the number of reported varicella cases has been below average except for peaks in February, July, and November, which was around the same time as four outbreaks. In general, varicella cases peak in the spring and fall.

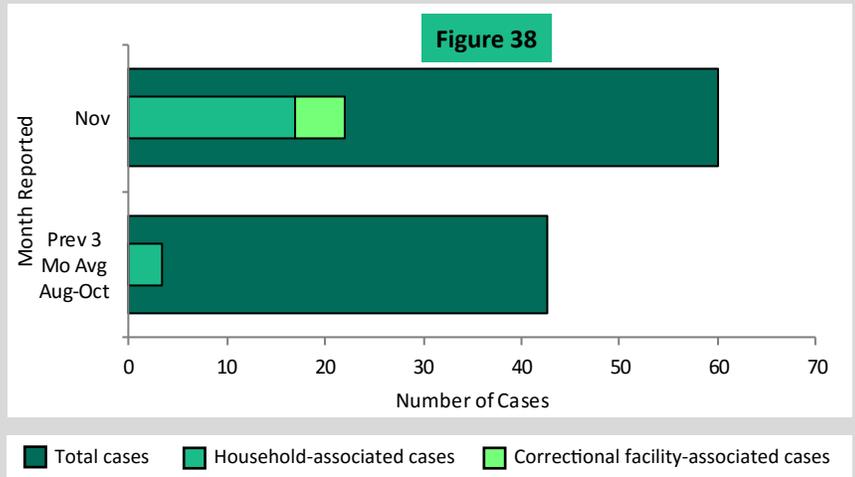
Varicella Outbreaks

Figure 38 shows the number of confirmed and probable cases that were associated with at least one other case and the total number of confirmed and probable cases as reported into Merlin, November 2017 and the previous three-month average. Cases associated with at least one other case are shown by type of association.

In November, 22 (37%) cases were associated with other cases, including five cases that were part of an outbreak and 17 that were connected to other cases through living in the same household.

Outbreak Summary:

An outbreak of varicella among five residents of a mental health hospital in Gadsden County was reported in November. From January 1, 2017 through October 31, 2017, a total of four outbreaks of varicella were reported. Three outbreaks were in correctional facilities and one outbreak was in a daycare setting.



Varicella Age-Specific Incidence Rates

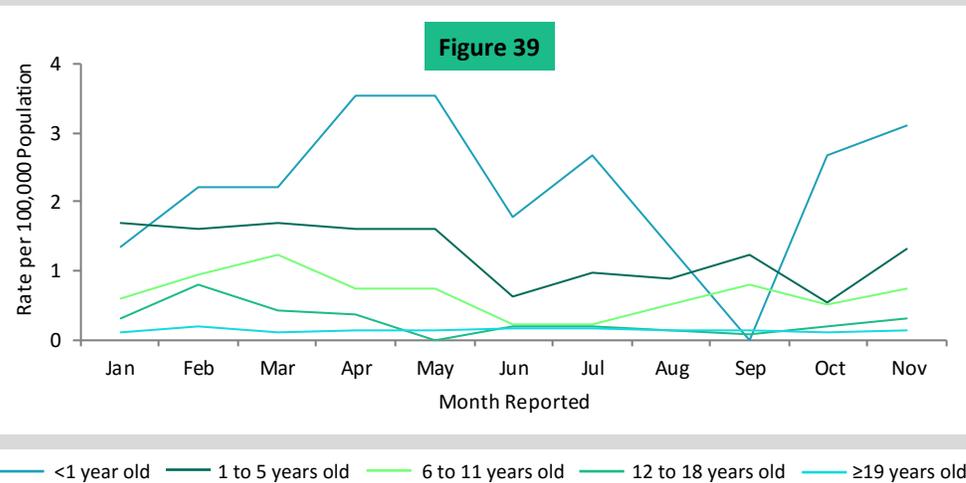


Figure 39 shows the age-specific incidence rates of confirmed and probable cases of varicella, as reported into Merlin, January 2017 through November 2017.

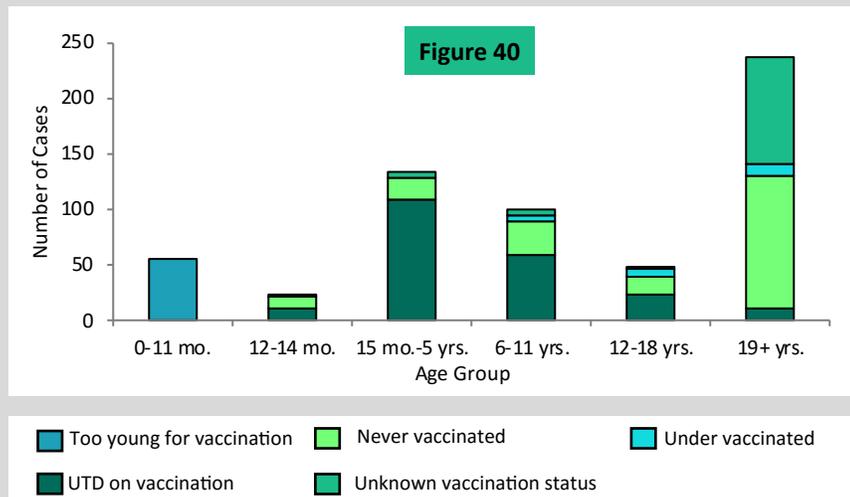
In November, the incidence rate was highest among infants less than one year old. This is consistent with trends seen earlier in 2017. Infants less than one year old are too young to receive vaccinations against varicella, which is why vaccination of other age groups is so important to help prevent infection in infants.

Vaccination History for Varicella Cases

UTD = up-to-date

Figure 40 shows the vaccination status of varicella cases by age group for confirmed and probable cases of varicella, as reported into Merlin, January 2017 through November 2017 (n=494).

Varicella vaccinations are recommended at 12-15 months of age and 4-6 years of age. Of the 133 cases reported in children aged 15 months-5 years, the majority (81%) were up to date on their varicella vaccinations, while about half (55%) of the cases in children aged 6 to 18 years were up to date.

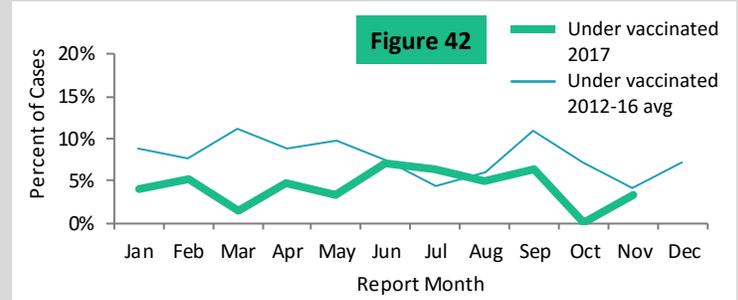
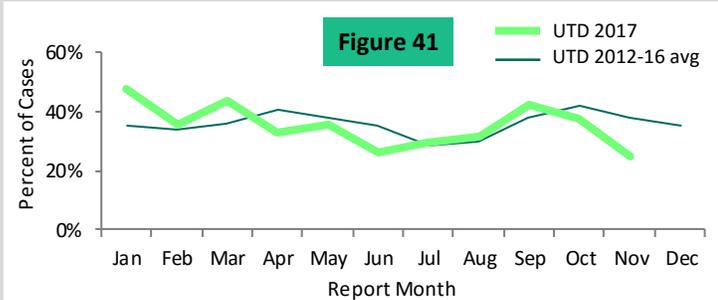


Varicella Cases in Vaccinated Individuals

UTD = up-to-date

Figure 41 shows the percent of confirmed and probable varicella cases who were up to date on their varicella vaccinations, as reported into Merlin, January 2017 through November 2017 and the previous five-year average. **Figure 42** shows the percent of these cases who were under vaccinated during the same time periods.

Although individuals who have been vaccinated can still get varicella, vaccination remains the best way to prevent varicella and severe complications.



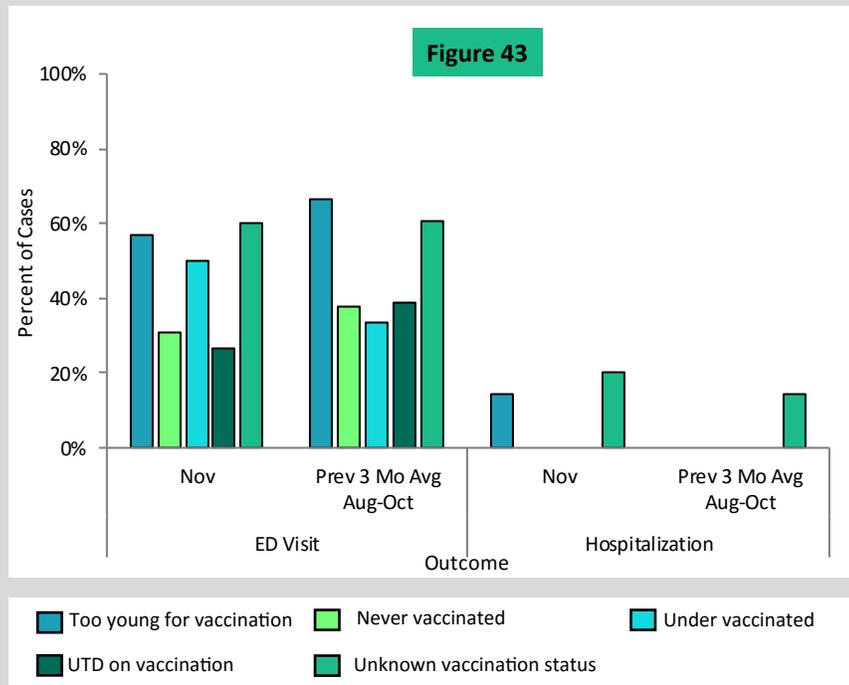
Varicella Outcomes

UTD = up-to-date, ED = emergency department

Figure 43 shows the percent of confirmed and probable cases of varicella with select outcomes by vaccination status, as reported into Merlin, November 2017 and the previous three-month average.

In general, cases who were UTD on their vaccinations were less likely to experience fever and vesicle lesions. Cases too young to be vaccinated or not yet vaccinated were more likely to experience papule lesions.

In November, infants too young for vaccination and those with unknown vaccination status were most likely to visit the emergency department. Few varicella cases require inpatient hospitalization; recent cases requiring hospitalization were either too young for vaccination or of unknown vaccination status.



Summary

November 2017

State mumps activity:

- **One confirmed and three probable mumps cases were reported among three counties in November.**
 - Mumps cases have remained elevated since April with a peak of 20 cases reported in August.
 - Since January 1, 2017, 17 confirmed and 37 probable cases of mumps were reported among 15 of Florida's 67 counties.
- In Florida, the number of reported mumps cases has remained relatively low over the past five years but started to increase in 2015 with ten cases and in 2016 with 16 cases. The last time the number of reported cases reached 2017 levels was in the 1990s.
- **No outbreaks of mumps were reported in November.** In October, a multi-county outbreak of mumps was reported that involved three cases in a close-contact sports profession.
 - In 2017, the majority of cases have been associated with outbreaks or household clusters.
 - While mumps outbreaks can occur in highly-vaccinated communities, high vaccination coverage limits the size, duration, and spread of outbreaks.
- **In November, all cases were adults age 19 and older.** All cases in October were also in adults, largely driven by the previously mentioned outbreak.
- **Vaccination is the best way to prevent mumps infections.** In November, all four cases had unknown vaccination history.
- In November, three (75%) cases visited the emergency department and one (25%) was hospitalized. In general, those who have received at least one mumps vaccination even if they later develop disease have less severe outcomes than those who have never been vaccinated.
- To learn more about mumps, please visit <http://www.floridahealth.gov/mumps>.

National mumps activity:

- Since 1989 when the two dose vaccination program was introduced, the number of mumps cases has fluctuated from a few hundred to a few thousand per year. Some years had higher numbers of cases than others mainly because of several large outbreaks in close-contact settings.
- In 2016, there were over 6,000 cases of mumps reported, and in 2017 there have been about 5,000 cases reported. Since 2013, the 18-22 year age group has had the highest incidence of mumps, largely driven by outbreaks. About half of the outbreaks reported since 2016 have been associated with colleges and universities, primarily affecting young adults.

Surveillance goals:

- Mumps surveillance is conducted to identify and control outbreaks and monitor trends and severe outcomes.
- Surveillance is also conducted to monitor effectiveness of immunization programs and vaccines. For more information on the data sources used in Florida for mumps surveillance, see page 24 ▶

Map 8 Average Mumps Incidence Rates per 100,000 Population, August through November 2017

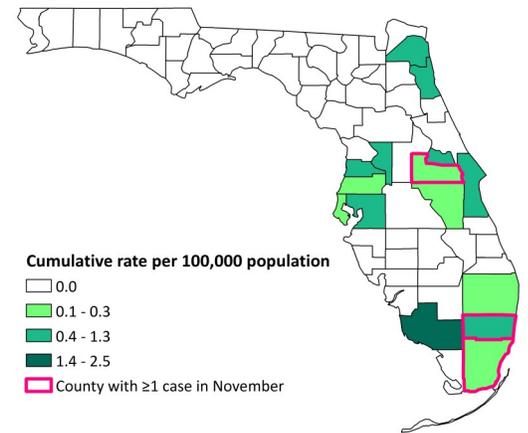
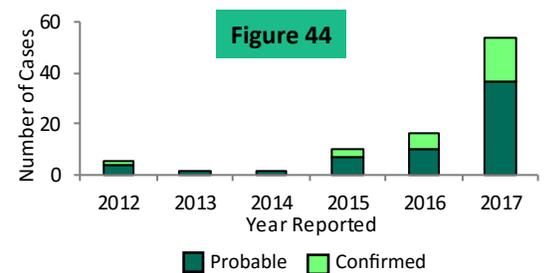


Figure 44 shows the number of confirmed and probable cases of mumps reported into Merlin, January 2012 through November 2017.



Mumps Cases by Month Reported

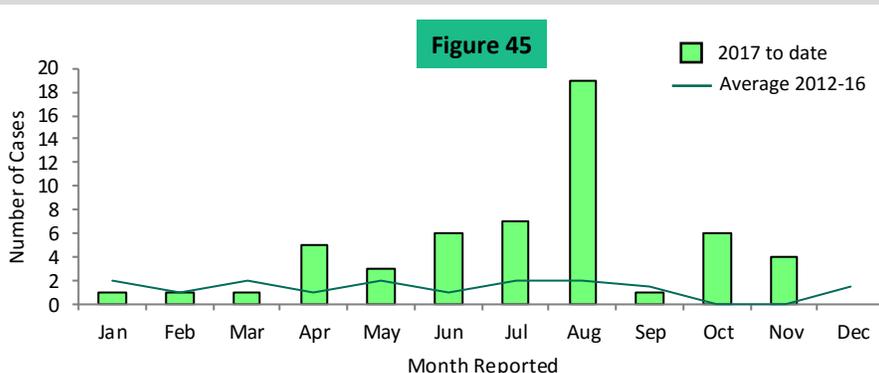


Figure 45 shows the number of confirmed and probable cases of mumps reported into Merlin, January 2017 through November 2017 and the previous five-year average.

Thus far in 2017, the number of reported mumps cases has been far above average. Cases were elevated through the summer months, peaking in August when several cases associated with outbreaks and household clusters were reported.

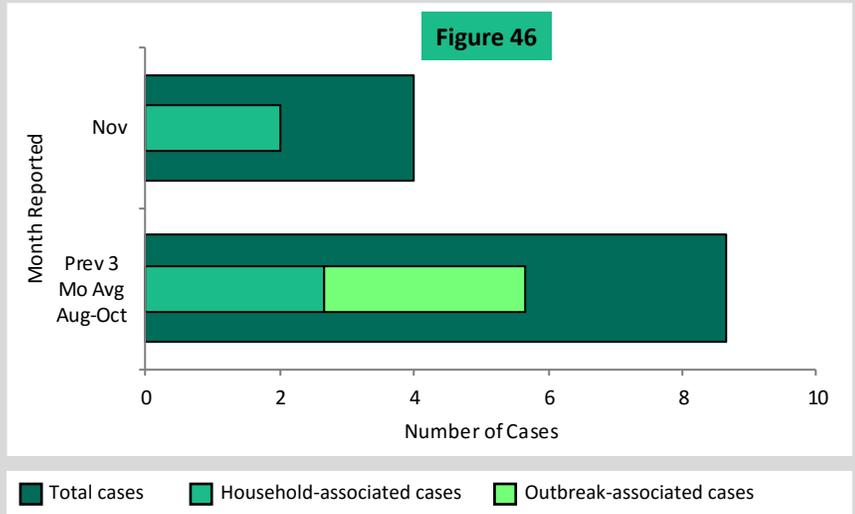
Mumps Outbreaks

Figure 46 shows the number of confirmed and probable cases that were associated with at least one other case and the total number of confirmed and probable cases as reported into Merlin, November 2017 and the previous three-month average. Cases associated with at least one other case are shown by type of association.

In November, half of cases were associated with a household cluster.

Outbreak Summary:

No mumps outbreaks were reported in November. Earlier in 2017, an outbreak involving transmission in both the community and a summer camp was reported in St. Johns, Duval, Hillsborough, and Miami-Dade Counties, an outbreak in a close-knit religious community was reported in Collier County, and an outbreak among professional athletes was reported in Hernando, Hillsborough, and Pinellas Counties.



Mumps Age-Specific Incidence Rates

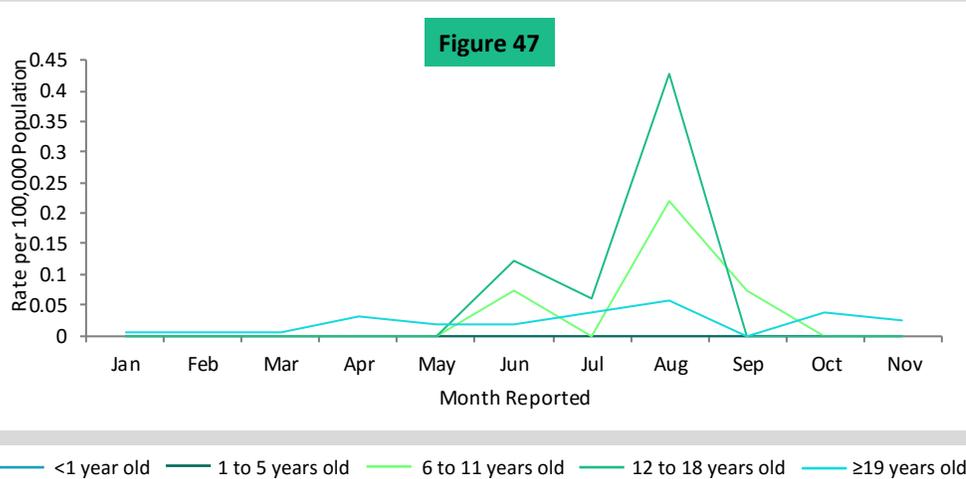


Figure 47 shows the age-specific incidence rates of confirmed and probable cases of mumps, as reported into Merlin, January 2017 through November 2017.

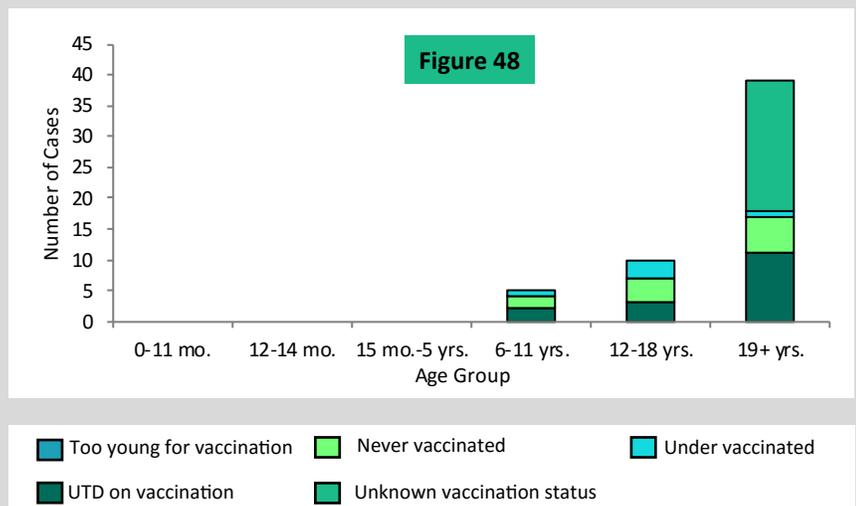
In November, the incidence rate was highest among adults age 19 and older. Thus far in 2017, the majority of cases have been in children age 12 to 18 and adults age 19 and older.

Vaccination History for Mumps Cases

UTD = up-to-date

Figure 48 shows the vaccination status of mumps cases by age group for confirmed and probable cases of mumps, as reported into Merlin, January 2017 through November 2017 (n=51).

Mumps vaccinations are recommended at 12-15 months of age and 4-6 years of age. The majority of cases 6 to 11 years old (60%) and 12 to 18 years old (70%) were not up to date on their mumps vaccinations, while 7 (18%) of cases 19 and older were not up to date.

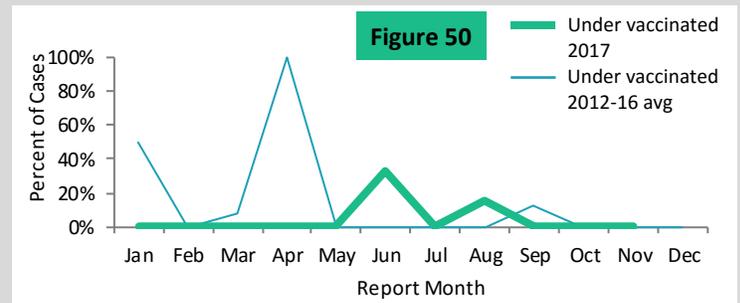
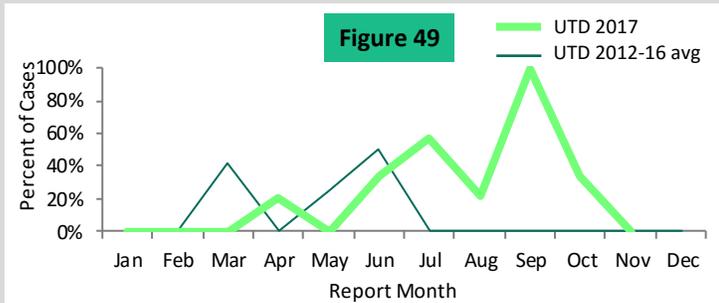


Mumps Cases in Vaccinated Individuals

UTD = up-to-date

Figure 49 shows the percent of confirmed and probable mumps cases who were up to date on their mumps vaccinations, as reported into Merlin, January 2017 through November 2017 and the previous five-year average. **Figure 50** shows the percent of these cases who were under vaccinated during the same time periods.

Although individuals who have been vaccinated can still get mumps, vaccination remains the best way to prevent mumps and severe complications.



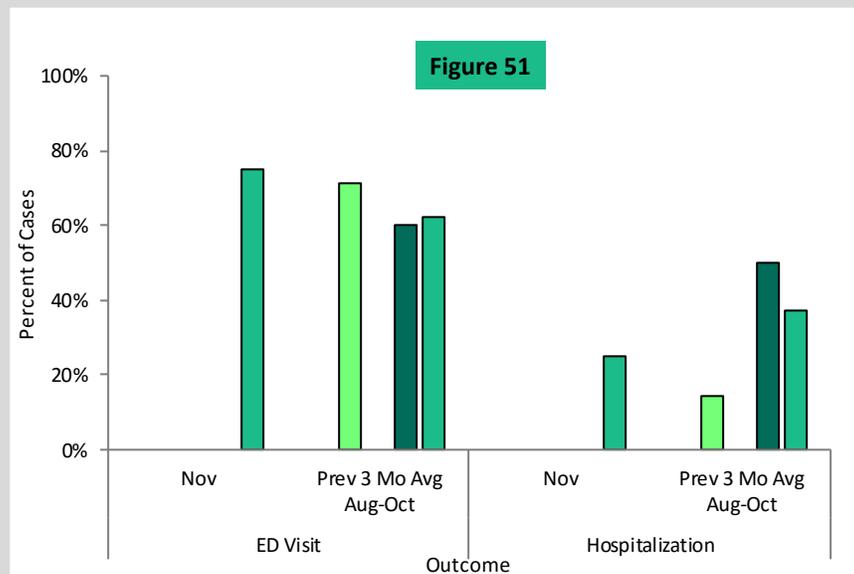
Mumps Outcomes

UTD = up-to-date, ED = emergency department

Figure 51 shows the percent of confirmed and probable cases of mumps with select outcomes by vaccination status, as reported into Merlin, November 2017 and the previous three-month average.

In November, all cases had unknown vaccination status. In recent months, cases who were never vaccinated against mumps were more likely to visit the ED than those who were up to date on their vaccinations.

Orchitis (testicular inflammation) is the most common complication from mumps in males. From January 2017 through November 2017, ten (19%) cases reported orchitis; two were never vaccinated, three were up to date on their vaccinations, and five had unknown vaccination status.



■ Too young for vaccination
 ■ Never vaccinated
 ■ Under vaccinated
■ UTD on vaccination
 ■ Unknown vaccination status

Case Data

- Pertussis, varicella, and mumps are reportable diseases in Florida. Case information is documented by county health department (CHD) epidemiologists in Merlin, Florida's reportable disease surveillance system.
- CHD epidemiologists also report outbreaks of pertussis, varicella, and mumps into Merlin. Outbreaks are defined as two or more cases associated with a specific setting outside of the home. Two or more cases among members of the same household are considered household-associated cases.
- Current case information is preliminary and may change as more data are received. The most recent data available are displayed in this report.
- For more information about reportable diseases, please visit www.Floridahealth.gov/diseasereporting.

Population Data

- Population data used to calculate incidence rates are from FLHealthCHARTS (Community Health Assessment Resource Tool Set).
- For more information about FLHealthCHARTS, please visit www.flhealthcharts.com.

Vaccination Data

- Vaccination data from cases are from Merlin, as identified by CHD epidemiologists.
- Vaccination status is determined using the Advisory Committee on Immunization Practices Recommended Immunization Schedule for Children and Adolescents Aged 18 Years or Younger, 2017.
- Cases are considered up-to-date if they have received the recommended number of doses of vaccine for a particular disease for their age at the time of their illness onset. Cases are considered under vaccinated if they have received at least one but not all doses of vaccine recommended for a particular disease for their age at the time of their illness onset.
- For more information about immunization schedules, please visit <https://www.cdc.gov/vaccines/schedules/index.html>.