

# Vaccine-Preventable Disease Surveillance

July 2018

## Summary

### Pertussis

- Pertussis activity was similar to last month. Overall, the total number of cases remained below the previous five-year average.
- There were 39 cases and one outbreak reported.
- Incidence remained highest among infants less than one year old; 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 this highly vulnerable group.

### Varicella

- Varicella activity decreased from last month but remained above the previous five-year average for the fifth month in a row.
- There were 75 cases and no outbreaks reported.
- Incidence was highest among infants less than one year old.
- This month, over half of cases were not up-to-date on their varicella vaccinations or had unknown vaccination status.

### Measles

- Three confirmed cases associated with international travel were investigated in July.
- All cases had either never been vaccinated or had unknown vaccination status.
- A total of 404 contacts who had potential exposure to measles were identified. None of these contacts developed measles.

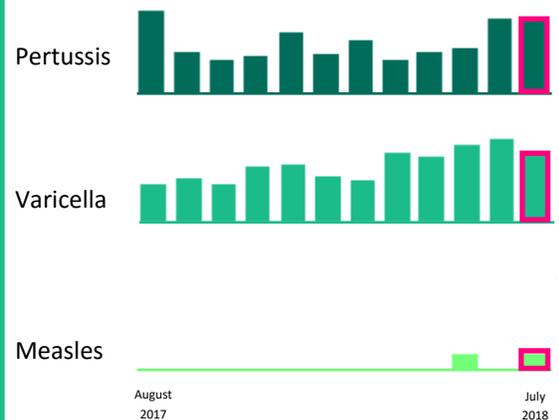
### Mumps

- Mumps activity was minimal. This is the first month since September 2017 where cases counts have been below the five-year average.
- There was one probable case reported, bringing the total case count for 2018 up to 37 cases.
- The mumps section will return when there is increased mumps activity.

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## Monthly Activity Trends August 2017-July 2018



**For all vaccine-preventable diseases, timely and complete vaccination is the best way to prevent infection. In general, those who have received at least one dose of vaccine have less severe outcomes than those who have never been vaccinated for the disease.**

## Vaccination

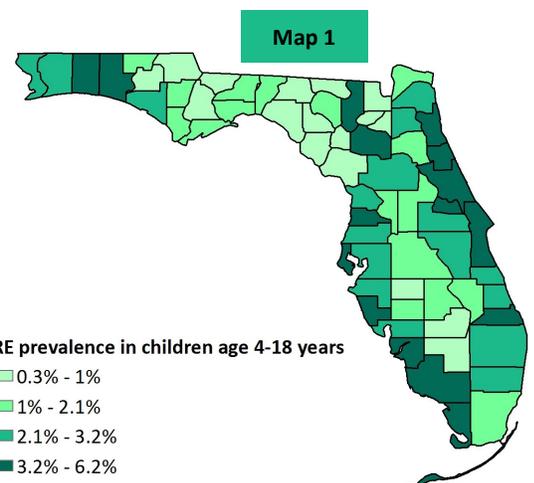
RE = religious exemption

**Map 1** shows the prevalence of children aged four to 18 years who have a registered religious exemption (RE) to vaccination in Florida SHOTS\* as of July 31, 2018.

Statewide, the estimated prevalence of REs among children age four to 18 years is 2.8% with individual counties ranging from 0.3% to 6.2%. In July 2017, the statewide prevalence was 2.4%, and the prevalence has steadily increased each month since.

**Unvaccinated children are at increased risk of vaccine-preventable diseases like pertussis, varicella, and mumps. Communities with a higher proportion of REs are at increased risk of vaccine-preventable disease transmission.**

\*Florida SHOTS (State Health Online Tracking System) is Florida's statewide immunization registry. All REs are required to be entered into Florida SHOTS.



Posted August 2, 2018 on the Bureau of Epidemiology (BOE) website: [www.floridahealth.gov/VPD](http://www.floridahealth.gov/VPD)

Produced by the BOE, Florida Department of Health

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Summary

July 2018

State activity:

- **Thirty-nine pertussis cases were reported among 16 counties.**
  - Pertussis activity was similar to that seen in the previous month and remained consistent with trends observed in previous years at this time.
  - From January 1, 2018 through July 31, 2018, 188 cases of pertussis were reported among 32 of Florida's 67 counties.
- Since 2014, an overall decrease in the annual number of reported pertussis cases has been observed. Pertussis is cyclic in nature with peaks in disease every 3-5 years. Pertussis cases last peaked between 2013 and 2014. Thus far in 2018, it appears case counts will remain consistent with those seen during non-peak years.
- **One outbreak of pertussis was reported in July.**
  - The outbreak involved five members of an extended family.
  - For most pertussis cases, exposure to other known cases is never identified, and they are not able to be linked to outbreaks.
- **In July, for every pertussis case identified, there was an average of four exposed contacts for whom antibiotics were recommended 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. 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 July, more than half of people reported with pertussis had not received the recommended number of pertussis vaccinations for their age or had unknown vaccination status. In general, those who have received at least one pertussis vaccination have less severe outcomes than those who have never been vaccinated. **In July, those who were too young for vaccination were most likely to require hospitalization, and those who had never been vaccinated were more likely to visit the emergency department.**
- To learn more about pertussis, please visit [www.floridahealth.gov/pertussis](http://www.floridahealth.gov/pertussis).

National 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.

Pertussis surveillance goals:

- Pertussis surveillance is conducted to identify cases to 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 10 ►

Map 2

Map 2 shows the previous three-month average of pertussis incidence rates per 100,000 population, April through June 2018 (green shading). Counties with one or more cases reported in July 2018 are highlighted in pink.

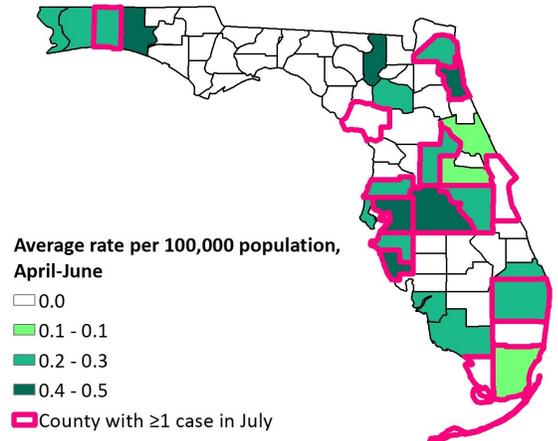
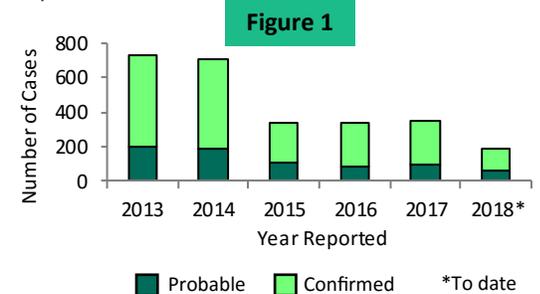


Figure 1 shows the number of confirmed and probable cases of pertussis reported into Merlin, 2013 through July 2018.



Pertussis Cases by Month Reported

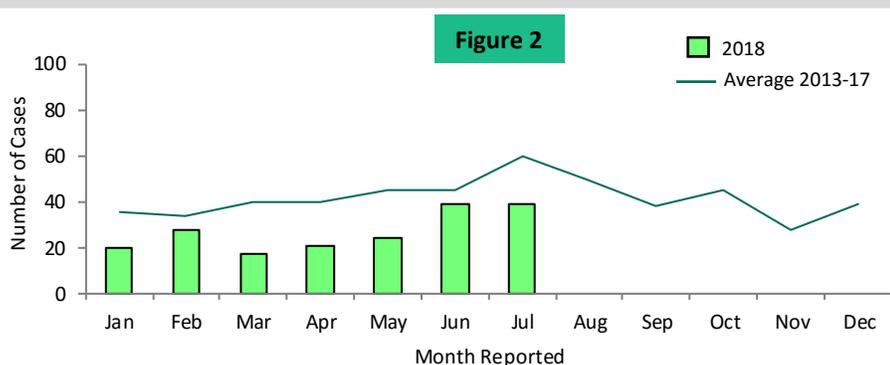


Figure 2 shows the number of confirmed and probable cases of pertussis reported into Merlin, January 2018 through July 2018 and the previous five-year average.

In July, the number of reported pertussis cases was the same as that in June and remained below the five-year average. In general, the number of reported pertussis cases tends to be highest during the summer months.

## Pertussis Outbreaks

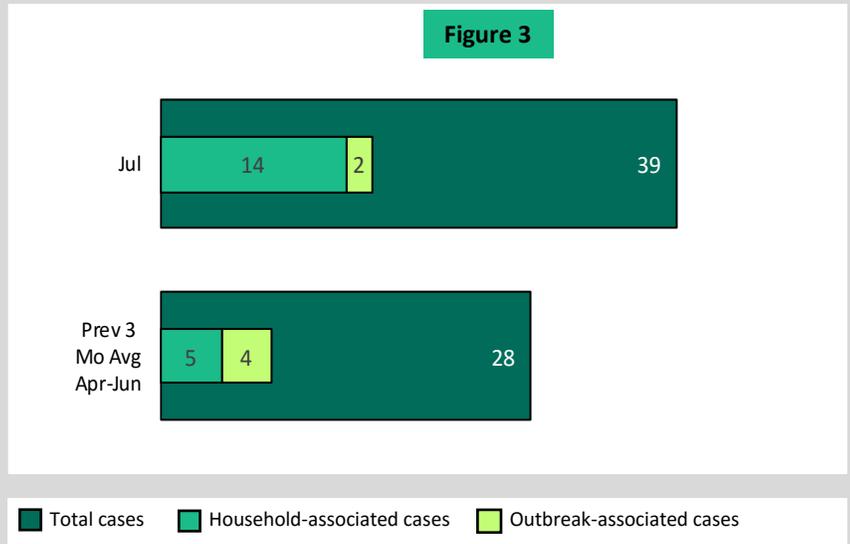
Figure 3 shows the number of confirmed and probable cases that were associated with at least one other case and the total number of confirmed and probable cases as reported into Merlin, July 2018 and the previous three-month average.

**In July, 14 (36%) cases were associated with transmission within households and two (5%) cases were outbreak-associated.**

### Outbreak Summary:

**In July, one outbreak of pertussis was reported that included cases previously reported in June.** The outbreak consisted of five cases, and transmission occurred within an extended family.

See [page 10](#) for outbreak definitions.



## Pertussis Treatment and Contacts

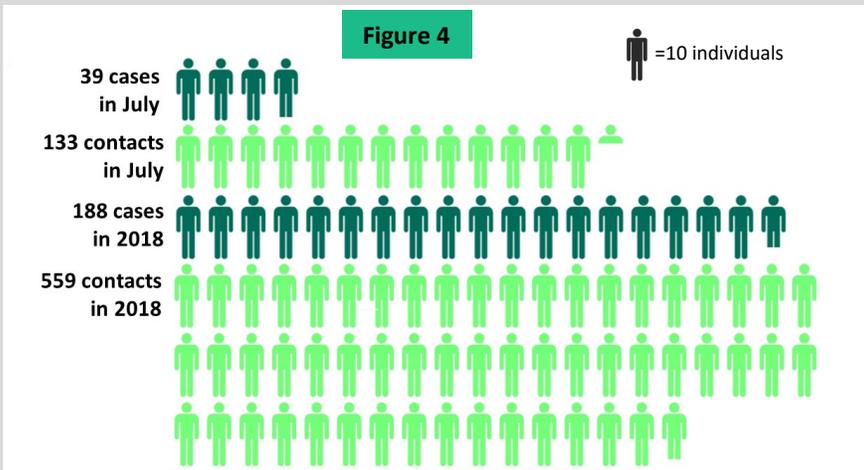
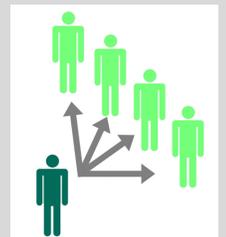


Figure 4 shows the number of confirmed and probable cases of pertussis, as reported into Merlin, and the number of contacts who were recommended antibiotics to prevent illness, July 2018 and 2018 to date.

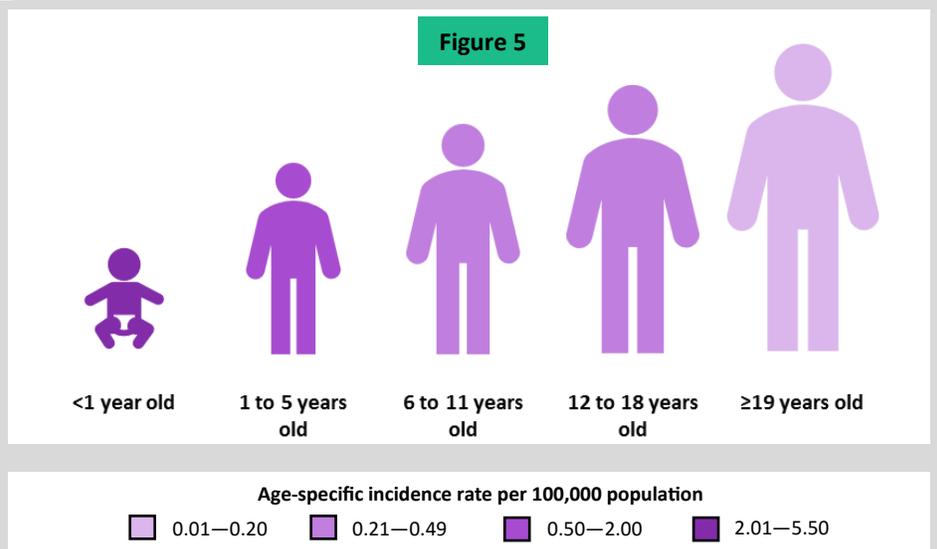
For each case reported in July, there was an average of four contacts for whom antibiotics were recommended to prevent illness.



## Pertussis Age-Specific Incidence Rates

Figure 5 shows the age-specific incidence rates of confirmed and probable cases of pertussis, as reported into Merlin, July 2018.

**In July, the incidence rate was highest among infants less than one year old at 5.3 cases per 100,000 population, 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 grandparents, parents, siblings, and other age groups is so important to help prevent infection in infants.

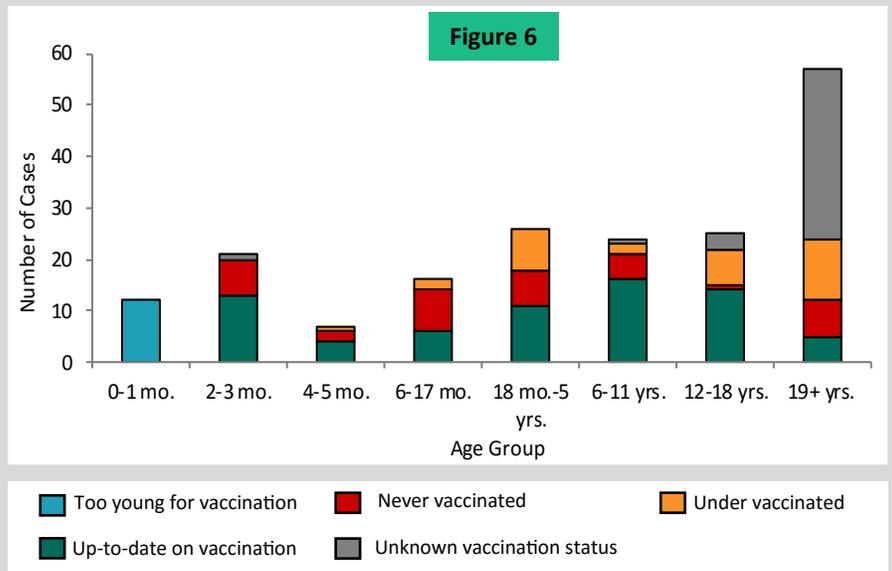


## Vaccination History for Pertussis Cases

**Figure 6** shows the vaccination status of pertussis cases by age group for confirmed and probable cases of pertussis, as reported into Merlin, January through July 2018 (n=188).

**Over half of individuals aged six months to five years were not up-to-date on their pertussis vaccinations.** In general, those who have received at least one pertussis vaccination have less severe outcomes than those who have never been vaccinated. Over half of individuals 19 years and older had unknown vaccination status.

See [page 10](#) for links to CDC-recommended vaccination schedules.

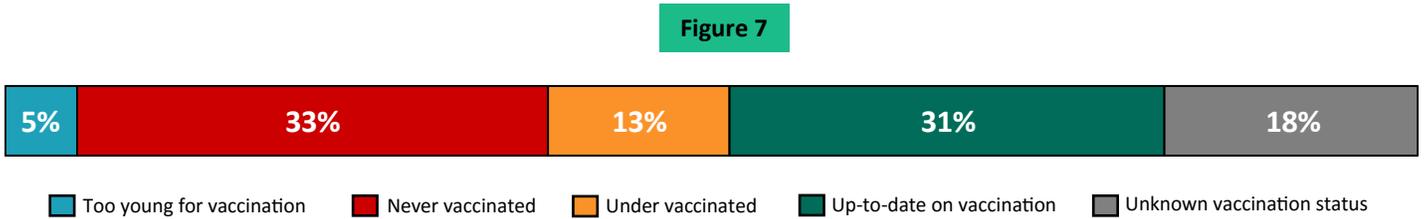


## Pertussis Cases by Vaccination Status

**Figure 7** shows the percent of confirmed and probable pertussis cases for each vaccination status, as reported into Merlin, July 2018.

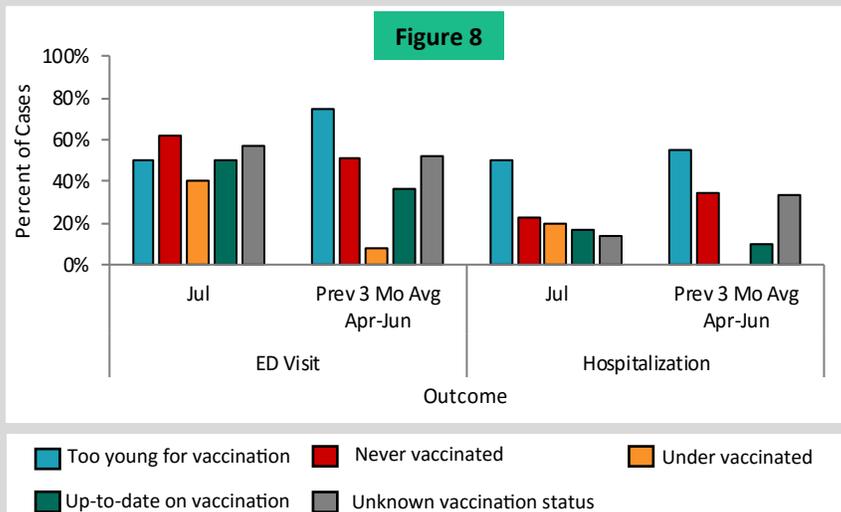
**Although individuals who have been vaccinated can still get pertussis, complete and timely vaccination remains the best way to prevent pertussis and severe complications.**

In July, 5% of cases were too young for vaccination. Vaccination against pertussis is important for infants, children, teenagers, and adults. Pregnant women should get vaccinated during the third trimester of each pregnancy to protect their babies.



## Pertussis Outcomes

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



**Figure 8** shows the percent of confirmed and probable cases of pertussis with select outcomes by vaccination status, as reported into Merlin, July 2018 and the previous three-month average.

**In July and the previous three months, cases who were too young for vaccination were more likely to require inpatient hospitalization. Cases who were never vaccinated or had unknown vaccination status were more likely to visit the emergency department in July.**

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

Summary

July 2018

**State activity:**

**Seventy-five varicella cases were reported among 25 counties.**

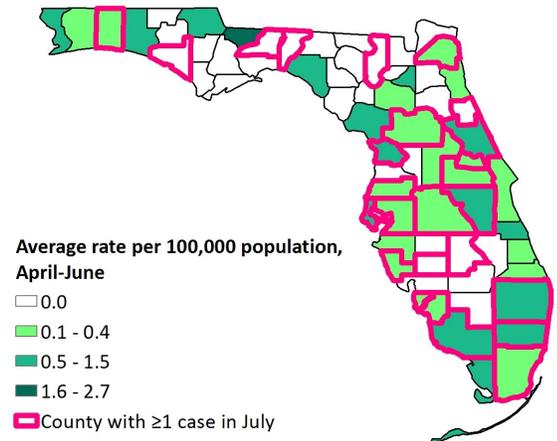
- Varicella activity decreased from last month but remained above the five-year average for the fifth month in a row.
- From January 1, 2018 through July 31, 2018, 484 cases of varicella were reported among 42 of Florida's 67 counties.
- A decreasing trend in the number of cases of varicella reported annually in Florida was observed from 2008-2014. From 2015-2017 there has been an increase in number of cases reported, and overall the number of cases reported thus far in 2018 is similar to that seen in 2017 at this time.
- **No varicella outbreaks were reported in July.**
  - So far in 2018, outbreaks have been reported in a school, correctional facility, and a rehabilitation center.
- **In July, infants less than one year old had the highest incidence of varicella.** This is consistent with trends seen during previous months in 2018.
- **Vaccination is the best way to prevent varicella infection.** In July, 60% of cases were not up-to-date on their varicella vaccinations or had unknown vaccination status. In general, those who have received at least one varicella vaccination have less severe outcomes than those who have never been vaccinated. In July, those too young for vaccination were the most likely to visit the emergency department.
- To learn more about varicella, please visit [www.floridahealth.gov/varicella](http://www.floridahealth.gov/varicella).

**National activity:**

- Varicella incidence decreased significantly following the vaccine becoming available in 1995 and has continued to decrease since 2006 when recommendations changed from one to two doses of varicella vaccine.
  - From 2006 to 2015, all age groups had a substantial decrease in incidence with the largest decline in children aged 5-9 years and aged 10-14 years.
- Although varicella is not reportable in all states and therefore not all states report varicella cases to the Centers for Disease Control and Prevention (CDC), based on available data, the number of varicella cases nationally has steadily decreased each year from 2012-2015.

**Map 3**

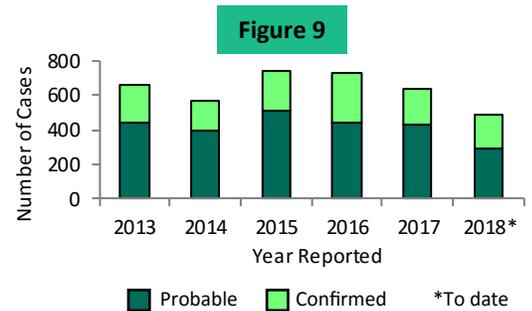
Map 3 shows the previous three-month average of varicella incidence rates per 100,000 population, April through June 2018 (green shading). Counties with one or more cases reported in July 2018 are highlighted in pink.



Average rate per 100,000 population, April-June

- 0.0
- 0.1 - 0.4
- 0.5 - 1.5
- 1.6 - 2.7
- County with ≥1 case in July

Figure 9 shows the number of confirmed and probable cases of varicella reported into Merlin, 2013 through July 2018.



**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 10 ►

Varicella Cases by Month Reported

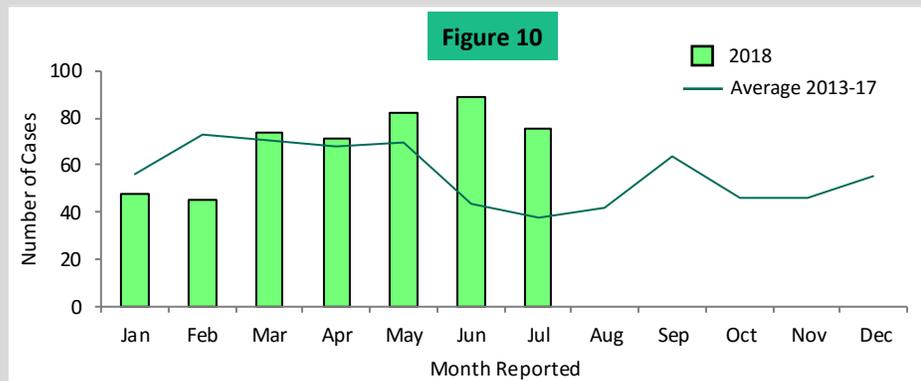


Figure 10 shows the number of confirmed and probable cases of varicella reported into Merlin, January through July 2018 and the previous five-year average.

**In July, the number of reported varicella cases decreased from June but remained above the previous five-year average for the fifth month in a row. In general, varicella activity is highest during the late winter and spring.**

## Varicella Outbreaks

**Figure 11** 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, July 2018 and the previous three-month average. Cases associated with at least one other case are shown by type of association.

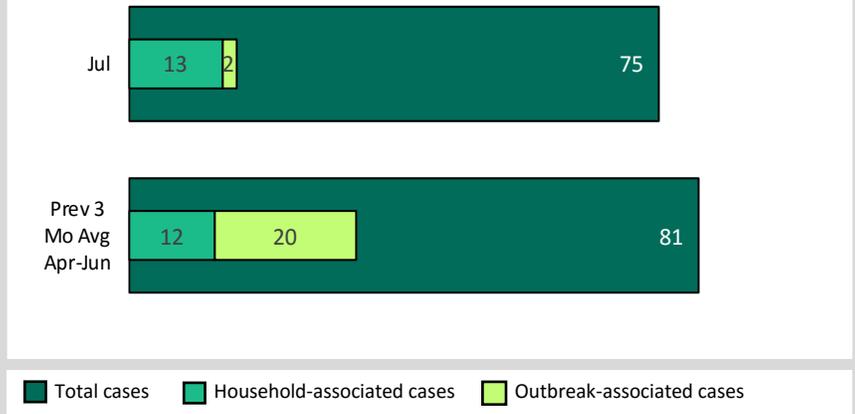
**In July, 13 (17%) cases were associated with transmission within households and two (3%) cases were outbreak-associated with an outbreak first reported in June.**

### Outbreak Summary:

**In July 2018, no varicella outbreaks were reported.** So far in 2018, outbreaks have been reported in a school, correctional facility, and a rehabilitation center.

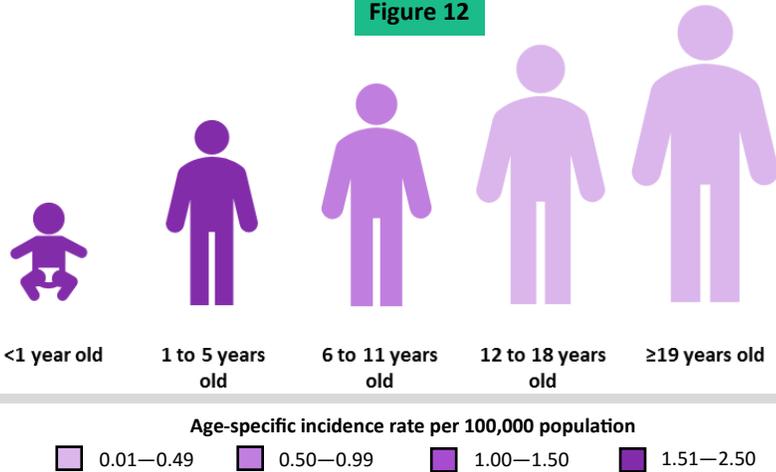
See [page 10](#) for outbreak definitions.

**Figure 11**



## Varicella Age-Specific Incidence Rates

**Figure 12**



**Figure 12** shows the age-specific incidence rates of confirmed and probable cases of varicella, as reported into Merlin, July 2018.

**In July, the varicella incidence rate was highest among infants less than one year old at 2.2 cases per 100,000 population, which is consistent with previous months.** Infants less than one year old are too young to receive varicella vaccination, which is why vaccination of grandparents, parents, siblings, and other age groups is so important to help prevent infection in infants.

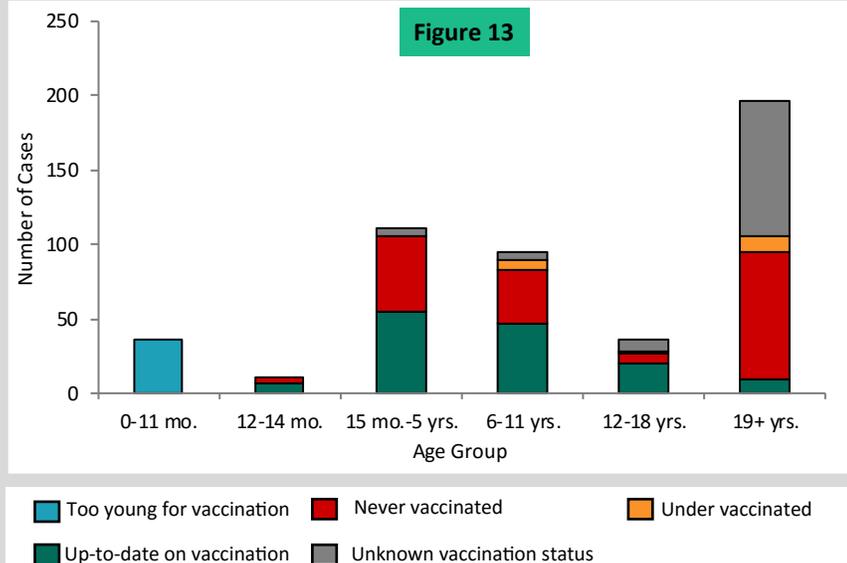
## Vaccination History for Varicella Cases

**Figure 13** shows the vaccination status of varicella cases by age group for confirmed and probable cases of varicella, as reported into Merlin, January through July 2018 (n=484).

**So far in 2018, 50 (45%) individuals aged 15 months to five years old and 36 (38%) individuals aged six to 11 years old have not been vaccinated for varicella. Of the 196 cases in adults aged 19 and older, 86 (44%) were not up-to-date on their varicella vaccinations.**

See [page 10](#) for links to CDC recommended vaccination schedules.

**Figure 13**

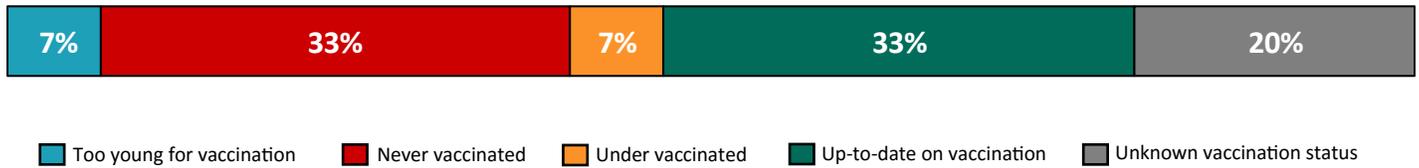


## Varicella Cases by Vaccination Status

Figure 14 shows the percent of confirmed and probable varicella cases for each vaccination status, as reported into Merlin, July 2018.

**Although individuals who have been vaccinated can still get varicella, complete and timely vaccination remains the best way to prevent varicella and severe complications.** In July, 33% of cases were never vaccinated for varicella.

Figure 14



## Varicella Outcomes

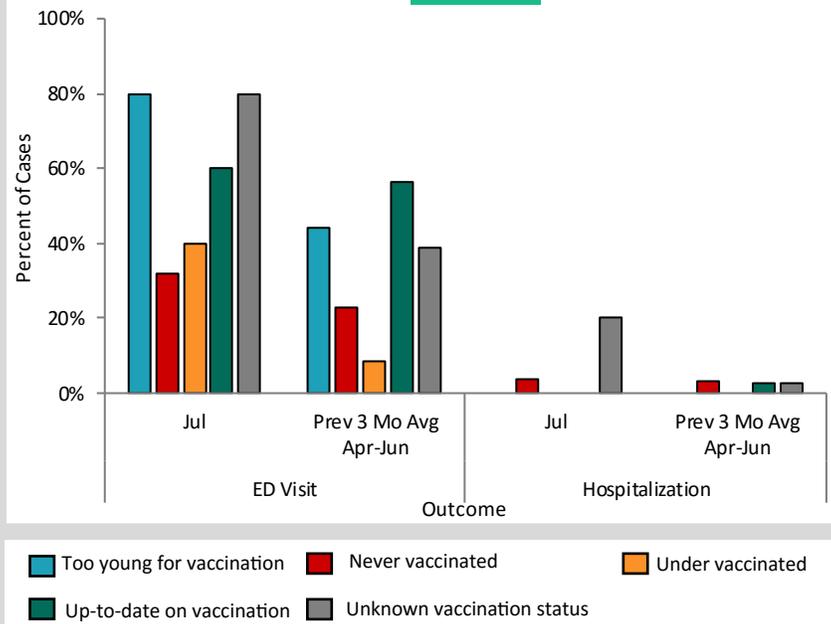
ED = emergency department

Figure 15 shows the percent of confirmed and probable cases of varicella with select outcomes by vaccination status, as reported into Merlin, July 2018 and the previous three-month average.

**In July, those who were too young to receive a varicella vaccination were more likely to visit the emergency department. Those who had unknown vaccination status were more likely to visit the emergency department and require hospitalization.**

In general, those who received at least one dose of varicella vaccination, even if they later develop disease, have less severe outcomes than those who have never been vaccinated.

Figure 15



## Summary

July 2018

Measles is a highly contagious disease among persons who are susceptible. The Florida Department of Health investigates all individuals with measles who spend time in Florida while infectious, including residents and visitors. However, only Florida residents are included in Florida's case counts reported to the CDC.

### State activity:

- **Two Florida residents and one visitor with confirmed measles associated with international exposures in Brazil and France were investigated in July.**
  - The two Florida residents were exposed to measles while traveling abroad. They had no measles vaccinations prior to exposure.
  - The visitor was exposed prior to arriving in the United States and had unknown vaccination status.
- Thus far in 2018, a total of four Florida residents and three visitors with measles have spent time in Florida while infectious.
- Contact investigations are conducted for both Florida residents and visitors with measles to determine the vaccination status of those potentially exposed to measles and to detect and prevent transmission.
  - **In July, a total of 404 contacts who had possible exposure to measles were identified.**
  - **No outbreaks of measles were reported.**
- **Vaccination is the best way to prevent measles infections.** In July, the two Florida residents with measles were never vaccinated prior to exposure and the visitor had unknown vaccination status.
- Due to generally high vaccination rates, cases of measles in Florida residents are rare but occur every year and are most often associated with international travel.
  - The number of reported measles cases in Florida residents has remained at less than 10 cases per year since 2010.
  - In 2017, all measles cases (n=3) were exposed to the measles virus outside of Florida.
- To learn more about measles, please visit [www.floridahealth.gov/measles](http://www.floridahealth.gov/measles).

### National activity:

- Even though measles has been eliminated in the United States, cases occur every year, mostly among unvaccinated individuals. As of July 14, the CDC has reported 107 confirmed cases of measles so far in 2018. In 2017, the CDC reported a total of 118 cases.
- In 2017, Minnesota experienced a large outbreak of measles in a community with low measles vaccination coverage that affected a total of 65 individuals. For detailed information on this outbreak see page 10.
- The two dose measles vaccination schedule has been successful at decreasing cases, and measles was eliminated from the United States in 2000.

### International activity:

- Recently, increased measles activity has been reported all over the world. In May 2018, multiple measles outbreaks were reported in the Americas, Asia, Africa, Europe, and the Pacific.
- The CDC has issued a Level 1 Travel Alert for several countries with measles outbreaks, including Greece, England, Serbia, Indonesia, Democratic Republic of the Congo, Italy, Ukraine, the Philippines, Romania, and France. Travelers to these countries should make sure they are vaccinated against measles with the MMR (measles, mumps, and rubella) vaccine. For more information, please visit [wwwnc.cdc.gov/travel/notices](http://wwwnc.cdc.gov/travel/notices).

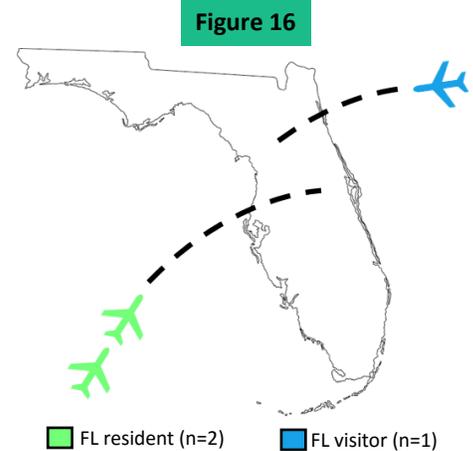


Figure 16 shows the number of measles investigations in Florida residents and visitors conducted in July.

### Surveillance goals:

- Measles surveillance is conducted to prevent transmission and severe disease, and initiate control measures.
- Surveillance is also conducted to monitor effectiveness of immunization programs and vaccines. For more information on the data sources used in Florida for measles surveillance, see page 10 ►

## Measles Cases by Year Reported

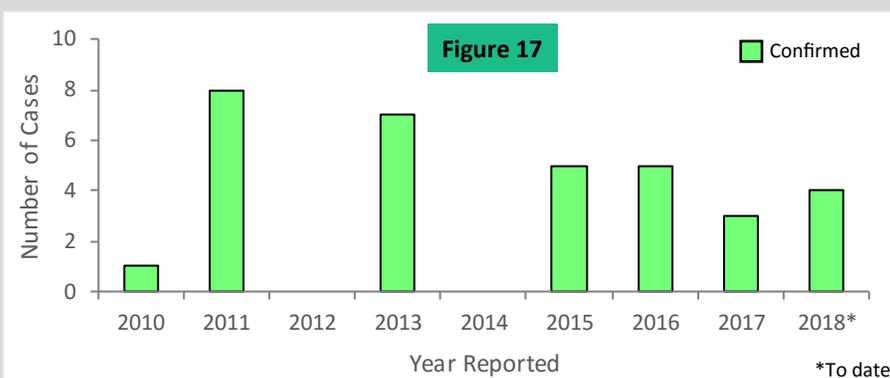
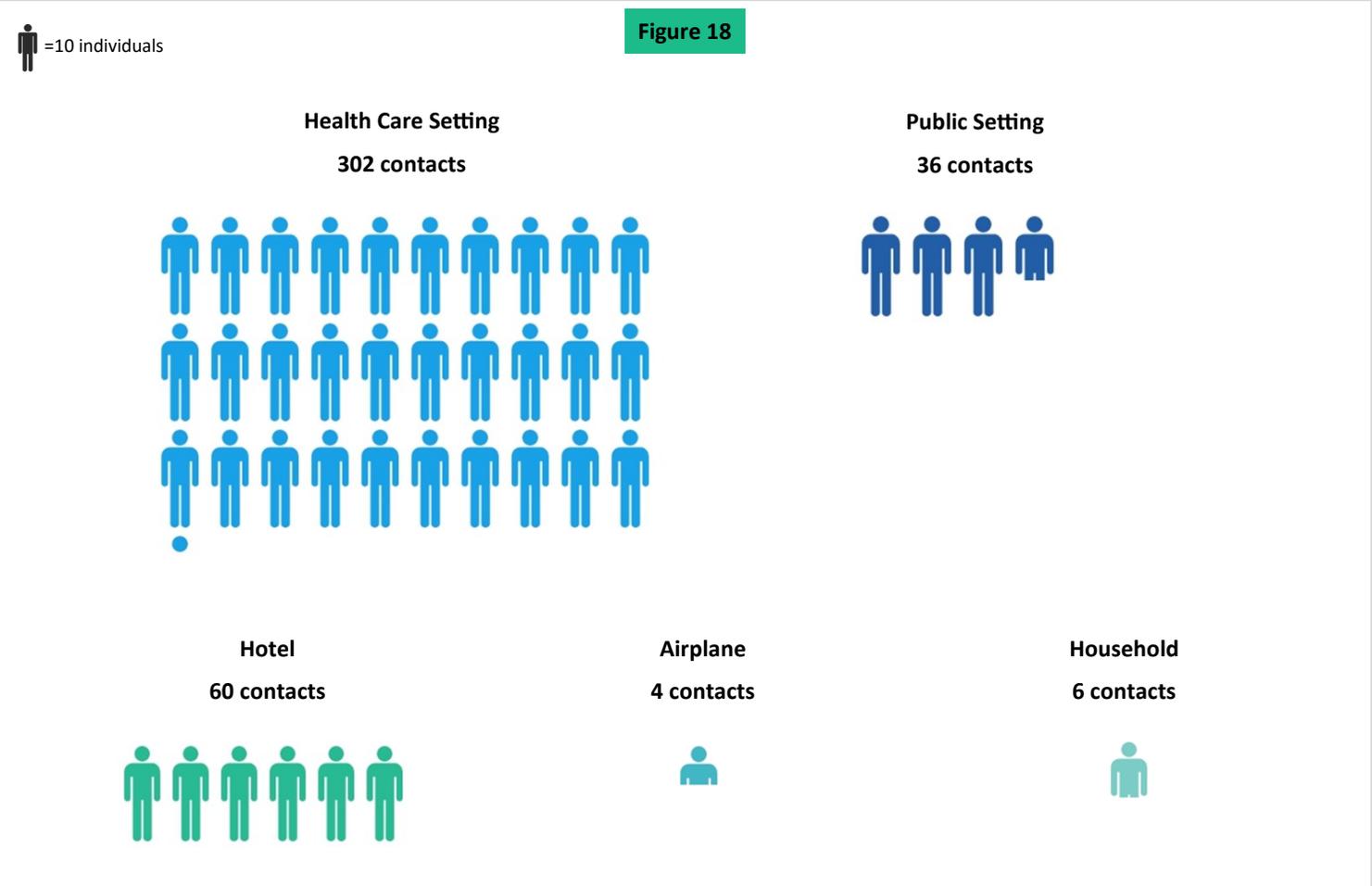


Figure 17 shows the number of confirmed measles cases reported into Merlin, 2010 through July 2018.

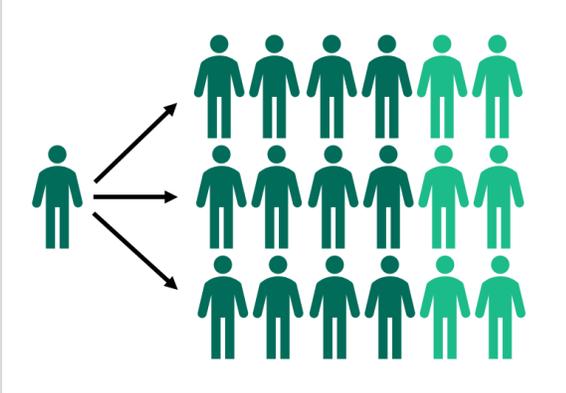
Thus far in 2018, four confirmed measles cases have been reported in Florida residents. Two of the cases are siblings. The swift identification and response to cases helped prevent disease transmission in Florida.

## Measles Contact Investigation

Measles is a highly contagious disease among persons who are susceptible. It is important to identify all contacts of cases to determine if they are protected against measles through either vaccination or history of disease and to quickly determine if they develop symptoms of measles, indicating a possible infection. In addition to contacts of measles cases who are Florida residents, contacts of cases from other states and countries who visited Florida while infectious must also be investigated. **In July, Florida investigated a total of 404 contacts of three measles cases, including two cases in Florida residents and one case in a foreign visitor. Figure 18** shows the number of contacts by setting.



Due to strong public health efforts, 404 contacts were identified. **Among those reached, the majority were vaccinated against measles.** Measles is a highly infectious virus, and the lack of secondary measles cases signifies the importance of herd immunity. In a population with no immunity to measles, one case of measles could potentially lead to 12 to 18 more cases. High measles vaccination rates are especially important to prevent infection in those too young to be vaccinated.



## Case Data

- Current case information is preliminary and will change as new data are gathered. The most recent data available are displayed in this report.
- 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.
  - Household-associated cases are defined as two or more cases exposed within the same household.
  - Pertussis and mumps outbreaks are defined as two or more cases associated with a specific setting outside of a household.
  - Varicella outbreaks are defined as five or more cases associated with a specific setting outside of a household.
- For more information about reportable diseases, please visit [www.Floridahealth.gov/diseasereporting](http://www.Floridahealth.gov/diseasereporting).
- For more information about Florida's guides to surveillance and investigation, including disease-specific surveillance case definitions, please visit [www.Floridahealth.gov/gsi](http://www.Floridahealth.gov/gsi).
- For the full article on a Minnesota outbreak of measles, please visit [www.cdc.gov/mmwr/volumes/66/wr/mm6627a1.htm](http://www.cdc.gov/mmwr/volumes/66/wr/mm6627a1.htm).

## 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](http://www.flhealthcharts.com).

## Vaccination Data

- Vaccination data for identified cases are from Merlin, as documented 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, 2018.
- For more information about immunization schedules, please visit [www.cdc.gov/vaccines/schedules/index.html](http://www.cdc.gov/vaccines/schedules/index.html).
- Individuals are considered up-to-date on vaccinations 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. Individuals 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 a full text version of a new study on pertussis vaccination, please visit [www.cidid.org/publications-1/2018/3/29/the-impact-of-past-vaccination-coverage-and-immunity-on-pertussis-resurgence](http://www.cidid.org/publications-1/2018/3/29/the-impact-of-past-vaccination-coverage-and-immunity-on-pertussis-resurgence)