Vaccine-Preventable Disease Surveillance

June 2018

Summary

Pertussis

- Pertussis activity increased slightly from last month. Overall, the total number of cases remained below the previous five-year average.
- There were 36 cases and two outbreaks reported in June.
- 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 increased from last month and remained above the previous five-year average for the fourth month in a row.
- There were 88 total cases and three outbreaks reported in June.
- Incidence was highest among children aged one to five years old in June.
- This month, more than three in four cases were not up to date on their varicella vaccinations or had unknown vaccination status, which is more than the previous month.

Mumps

- Mumps activity slightly decreased from last month but remained above the previous five-year average for the ninth month in a row.
- There were five cases and no outbreaks reported in June.
- Incidence was highest among children age six to 11 years old.
- This month, one in five cases were not up-to-date on their mumps vaccinations, a decrease from last month.

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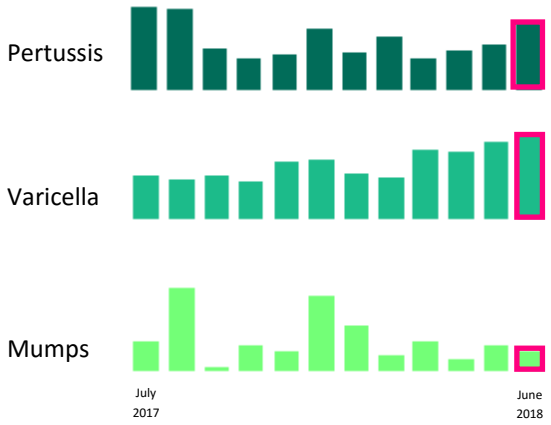


For all vaccine-preventable diseases, timely and complete vaccination is the best way to prevent infection. In general, those who are at least partially vaccinated against a disease, even if they later develop that disease, have less severe outcomes than those who have never been vaccinated.

Vaccination

RE = religious exemption

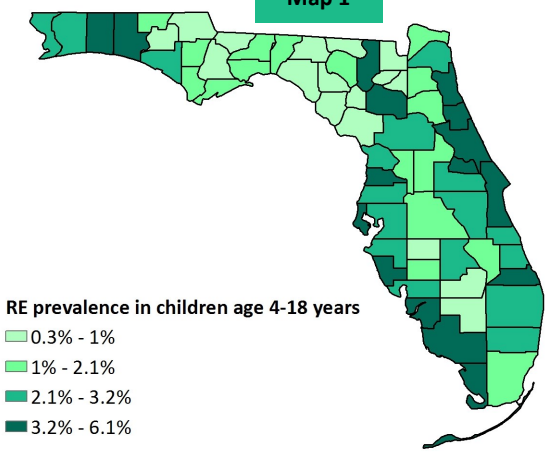
Map 1 shows the prevalence of children age four to 18 years who have a registered religious exemption (RE) to vaccination in Florida SHOTS* as of June 30, 2018.

Statewide, the estimated prevalence of REs among children age four to 18 years is 2.7% with individual counties ranging from 0.3% to 6.1%. Last year at this time, June 2017, the statewide prevalence was 2.3%, 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.

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

Map 1



Posted July 5, 2018 on the Bureau of Epidemiology (BOE) website: www.floridahealth.gov/VPD
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Summary

June 2018

State activity:

- **Thirty-six pertussis cases were reported among 16 counties in June.**
  - Pertussis activity increased slightly from the previous month but remained consistent with trends observed in previous years at this time.
  - From January 1, 2018 through June 30, 2018, 146 cases of pertussis were reported among 30 of Florida's 67 counties.
- Since 2014, an overall decrease in the annual number of cases of pertussis reported 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.
- **There were two outbreaks of pertussis reported in June.**
  - One outbreak was in a school, and the other in a daycare.
  - For most pertussis cases, exposure to other known cases is never identified, and they are not able to be linked to outbreaks.
- **In June, 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. 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 June, more than half of reported cases 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 June, those who were too young for vaccination were most likely to visit the emergency department and require hospitalization.**
- To learn more about pertussis, please visit 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.

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

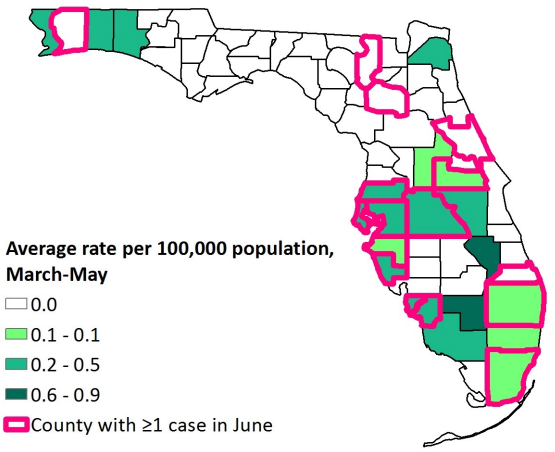
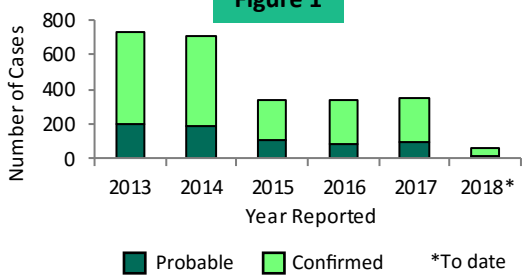


Figure 1 shows the number of confirmed and probable cases of pertussis reported into Merlin, 2013 through June 2018.

Figure 1



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 11 ▶

Pertussis Cases by Month Reported

Figure 2

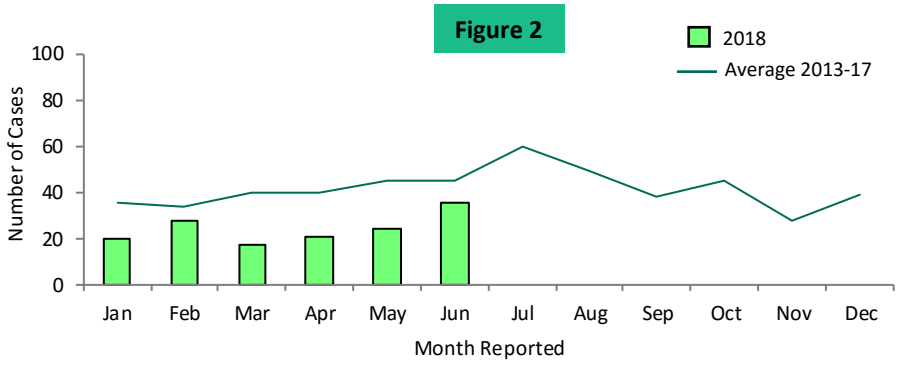


Figure 2 shows the number of confirmed and probable cases of pertussis reported into Merlin, January 2018 through June 2018 and the previous five-year average.

In June, the number of reported pertussis cases increased from May 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, June 2018 and the previous three-month average.

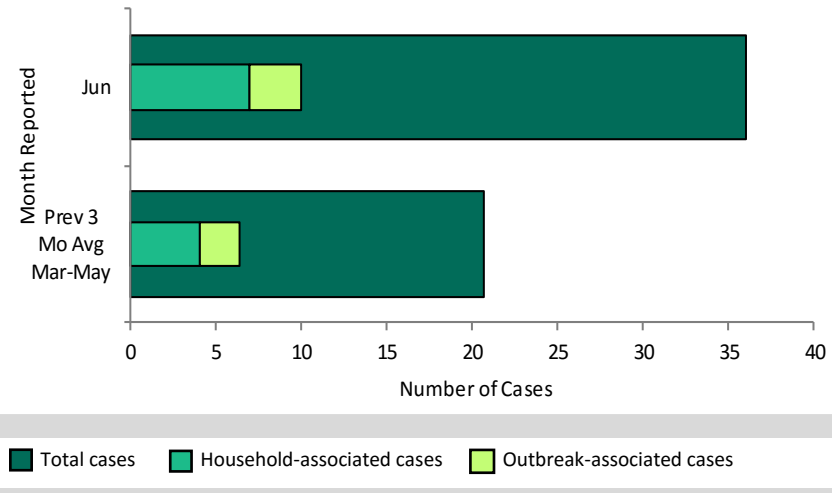
In June, seven (19%) cases were associated with transmission within households and three (8%) cases were outbreak associated.

Outbreak Summary:

In June, two outbreaks of pertussis was reported. The first outbreak consisted of two cases, and transmission occurred in a school. The second outbreak consisted of two cases, and transmission occurred in a daycare.

See page 11 for outbreak definitions.

Figure 3



Pertussis Treatment and Contacts

Figure 4

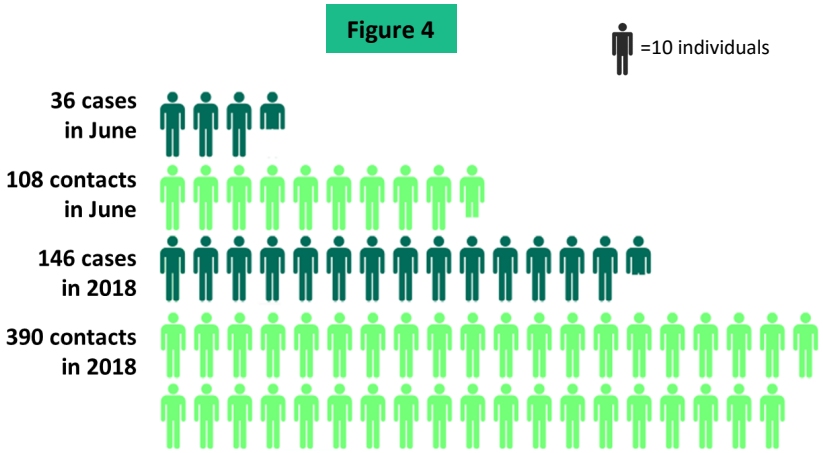
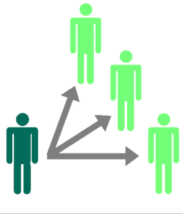


Figure 4 shows the number of confirmed and probable cases of pertussis, as reported into Merlin, and the number of contacts who were recommended antibiotics to prevent illness, June 2018 and 2018 to date.

For each case reported in June, there was an average of three contacts recommended antibiotics to prevent illness.

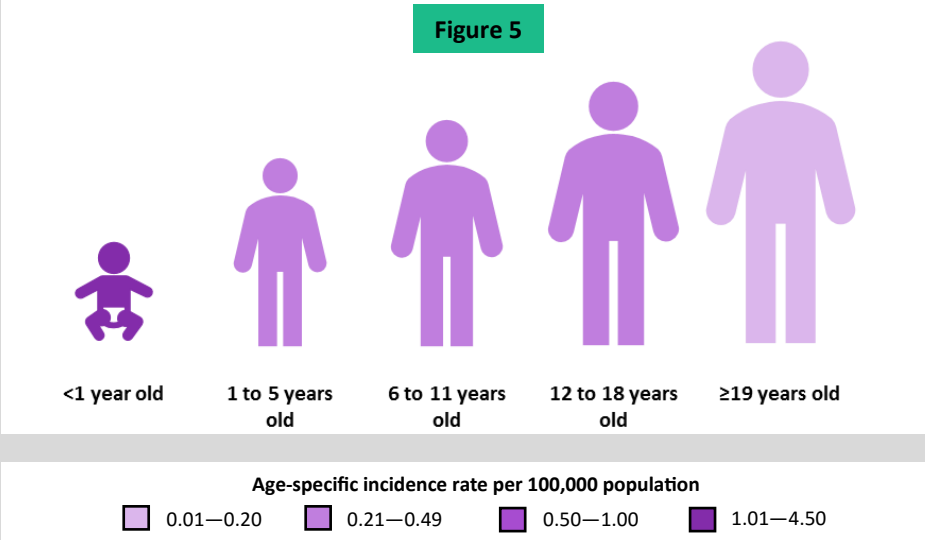


Pertussis Age-Specific Incidence Rates

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

In June, the incidence rate was highest among infants less than one year old at 4.4 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.

Figure 5



Vaccination History for Pertussis Cases

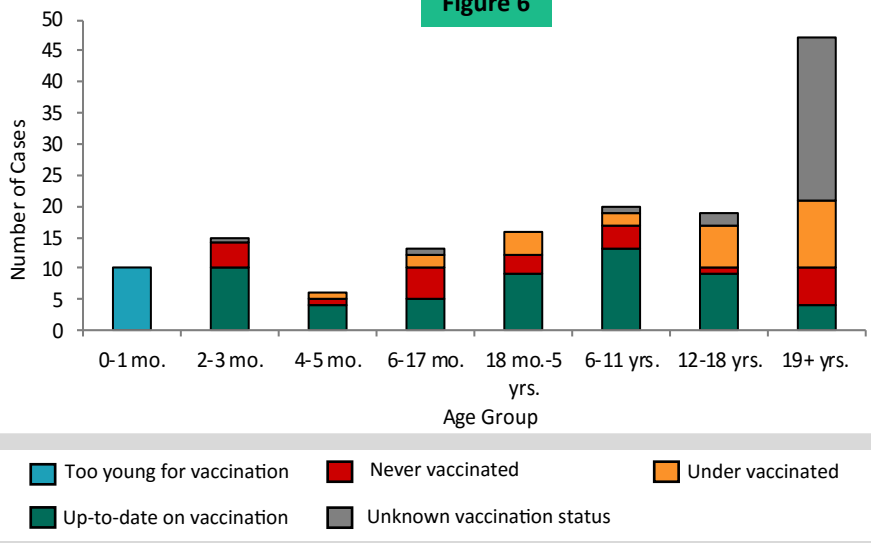
UTD = up-to-date

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 June 2018 (n=146).

Most individuals in the 6-17 months age group 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 11 for links to CDC recommended vaccination schedules.

Figure 6



Pertussis Cases by Vaccination Status

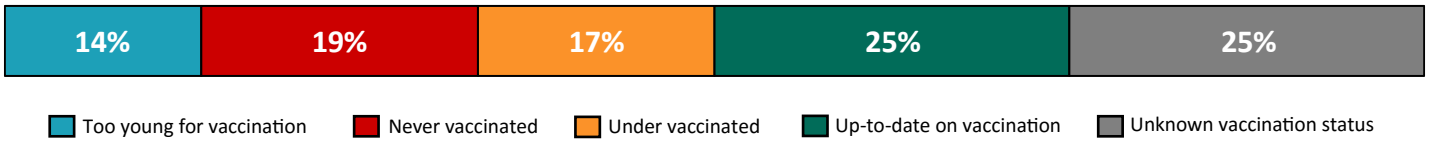
UTD = up-to-date

Figure 7 shows the percent of confirmed and probable pertussis cases for each vaccination status, as reported into Merlin, June 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 June, 14% 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.

Figure 7



Pertussis Outcomes

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

Figure 8

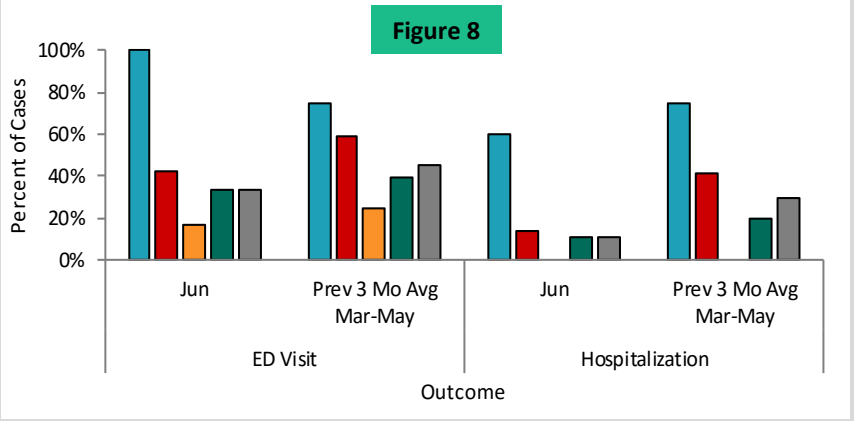


Figure 8 shows the percent of confirmed and probable cases of pertussis with select outcomes by vaccination status, as reported into Merlin, June 2018 and the previous three-month average.

In June and the previous three-month average, cases who were too young for vaccination were more likely to visit the emergency department and require inpatient hospitalization.

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

June 2018

State activity:

- **Eighty-eight varicella cases were reported among 18 counties in June.**
  - Varicella activity increased from last month and remained above the five-year average for the fourth month in a row.
  - From January 1, 2018 through June 30, 2018, 408 cases of varicella were reported among 46 of Florida's 67 counties.
- A decreasing trend in the number of cases of varicella reported annually in Florida was observed from 2008-2014. Although the number of cases was higher than the previous five years, overall the number of cases reported thus far in 2018 is similar to that seen in 2017 at this time.
- **In June, two varicella outbreaks were reported.**
  - The first outbreak was in a school and consisted of 19 cases.
  - The second outbreak spread from a correctional facility to a rehabilitation center and consisted of 7 cases.
- **In June, children aged one to five years old had the highest incidence of varicella.** Previously in 2018, infants had the highest incidence.
- **Vaccination is the best way to prevent varicella infection.** In June, 78% of cases were not up to date on their varicella vaccinations or had unknown vaccination status. In general, those who receive at least one dose of varicella vaccination, even if they later develop disease, have less severe outcomes than those who have never been vaccinated. In June, those too young for vaccination were the most likely to visit the emergency department.
- To learn more about varicella, please visit 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 –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 varicella is not reportable in all states and therefore not all states report varicella cases to the Centers for Disease Control (CDC), based on available data the number of varicella cases nationally has steadily decreased

Map 3

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

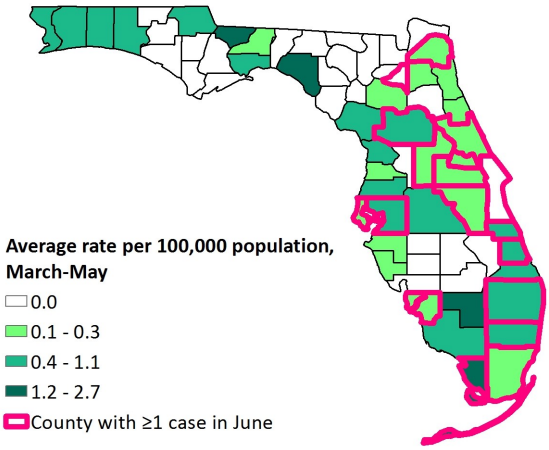
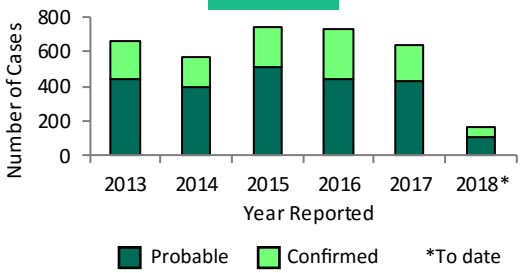


Figure 9 shows the number of confirmed and probable cases of varicella reported into Merlin, 2013 through June 2018.

Figure 9



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 11 ▶

Varicella Cases by Month Reported

Figure 10

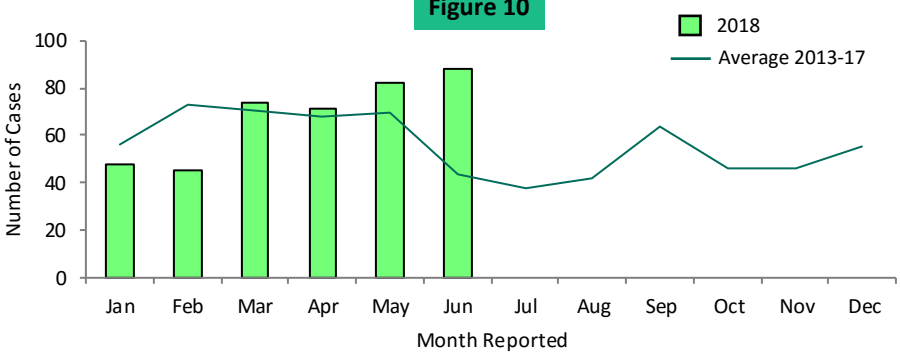


Figure 10 shows the number of confirmed and probable cases of varicella reported into Merlin, January through June 2018 and the previous five-year average.

In June, the number of reported varicella cases increased from that reported in May and remained above the previous five-year average for the fourth 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, June 2018 and the previous three-month average. Cases associated with at least one other case are shown by type of association.

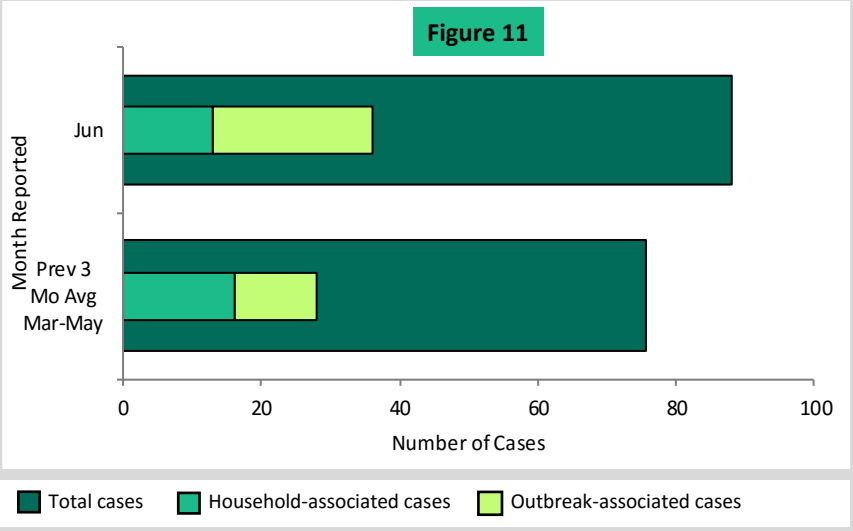
In June, 13 (15%) cases were associated with transmission within households and 23 (26%) cases were outbreak associated.

Outbreak Summary:

In June 2018, two varicella outbreaks were reported. The first outbreak consisted of 19 cases in a school in Pinellas County. The second outbreak spread from a correctional facility to a rehabilitation center with a total of 7 cases in Monroe, Broward, and Palm Beach counties.

See page 11 for outbreak definitions.

Figure 11



Varicella Age-Specific Incidence Rates

Figure 12

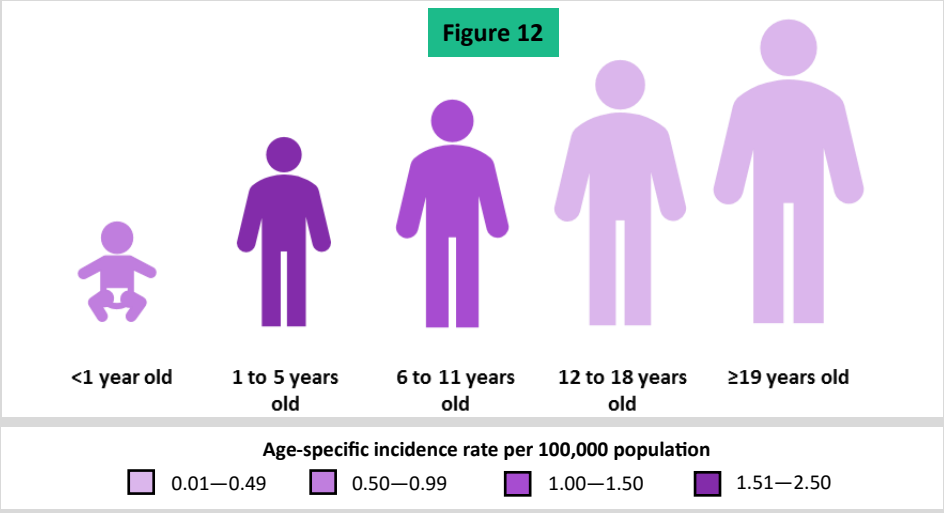


Figure 12 shows the age-specific incidence rates of confirmed and probable cases of varicella, as reported into Merlin, June 2018.

In June, the varicella incidence rate was highest among children one to five years old at 2.4 cases per 100,000 population. Previously in 2018, the incidence has been highest among infants less than one year old. 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

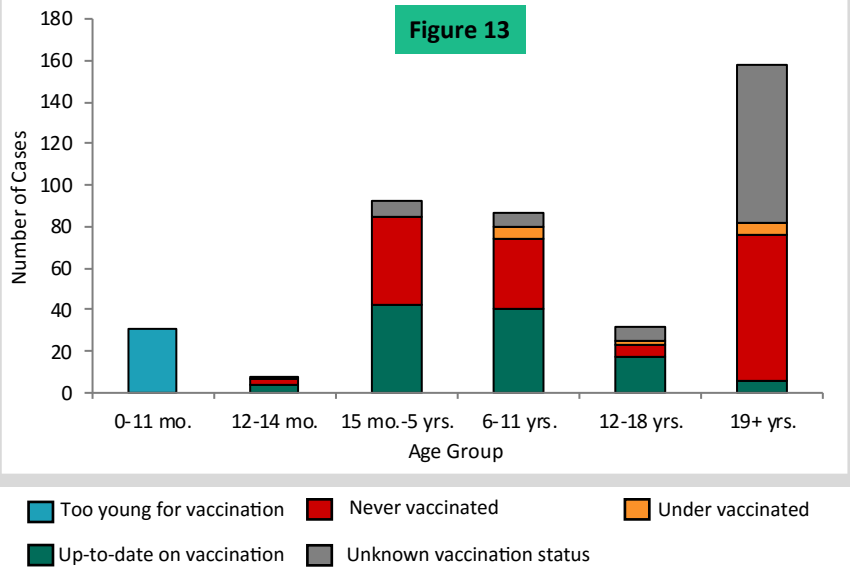
UTD = up-to-date

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 June 2018 (n=408).

Varicella vaccinations are recommended at 12-15 months of age and four to six years of age. So far in 2018, 47% of individuals 15 months to 5 years and 39% of individuals six to eleven years have not been vaccinated for varicella. Of the 158 cases in adults aged 19 and older, 70 (44%) were not up-to-date on their varicella vaccinations.

See page 11 for links to CDC recommended vaccination schedules.

Figure 13



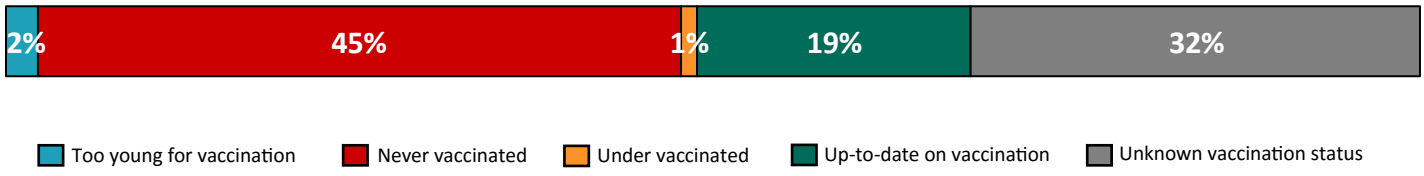
Varicella Cases by Vaccination Status

UTD = up-to-date

Figure 14 shows the percent of confirmed and probable varicella cases for each vaccination status, as reported into Merlin, June 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 June, 45% of cases were never vaccinated for varicella.

Figure 14



Varicella Outcomes

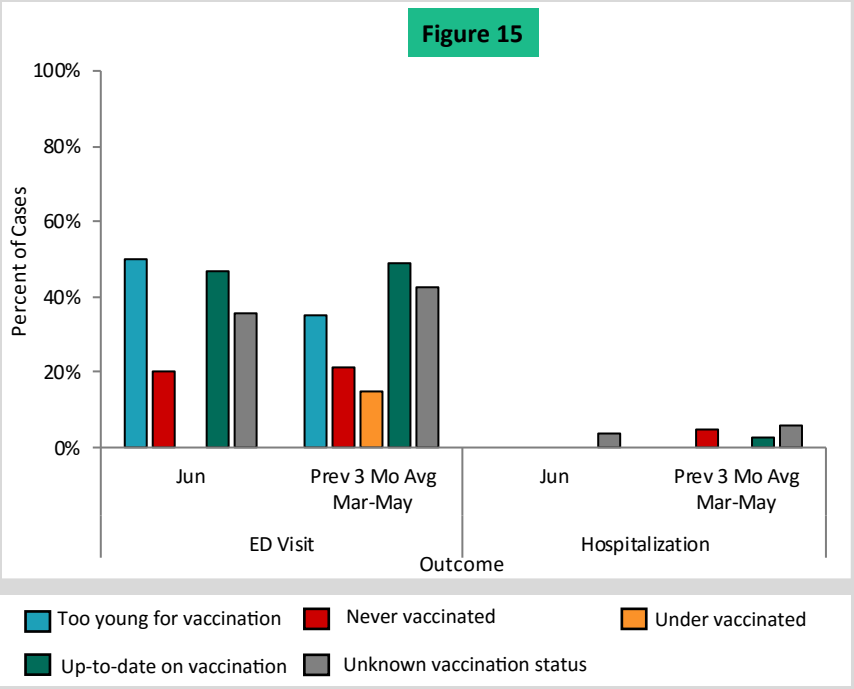
UTD = up-to-date, ED = emergency department

Figure 15 shows the percent of confirmed and probable cases of varicella with select outcomes by vaccination status, as reported into Merlin, June 2018 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 June, those who were too young to receive a varicella vaccination were more likely to visit the emergency department. 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

June 2018

State activity:

- **Five mumps cases were reported among four counties in June.**
  - Mumps cases have been elevated since April 2017 with a peak of 20 cases reported in August 2017; trends for 2018 will continue to be monitored closely.
  - From January 1, 2018 through June 30, 2018, 36 cases of mumps were reported among ten of Florida's 67 counties.
- In Florida, the number of reported mumps cases has remained relatively low over the past five years but has steadily increased since 2015 (10 cases), with a large spike in 2017 (70 cases). The last time the number of reported cases reached 2017 levels was in the 1990s.
- **No outbreaks of mumps were reported in June.**
  - In 2017, the majority of mumps cases were 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 June, the highest incidence of mumps was in children age 6-11 years old.**
- **Vaccination is the best way to prevent mumps infections.** In June, 20% of cases were not up-to-date on their mumps vaccinations.
- In recent months, cases not up to date on mumps vaccinations were more likely to visit the emergency department and require inpatient hospitalization. In general, those who have received at least one mumps vaccination even if they later develop disease suffer less severe outcomes than those who have never been vaccinated.
- To learn more about mumps, please visit http://www.floridahealth.gov/mumps.

National 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 were over 5,600 cases reported. Since 2013, the 18-22 year age group has had the highest incidence of mumps, largely driven by outbreaks and waning immunity among this age group. About half of the outbreaks reported since 2016 have been associated with colleges and universities, primarily affecting young adults.
- The Advisory Committee on Immunization Practices recently recommended a third mumps virus-containing vaccine for certain populations identified by public health authorities as being at increased risk of mumps because of an outbreak. To learn more, please visit https://www.cdc.gov/mmwr/volumes/67/wr/mm6701a7.htm.

Map 4

Map 4 shows the cumulative mumps incidence rates per 100,000 population, January through June 2018 (green shading). Counties with one or more cases reported in June 2018 are highlighted in pink.

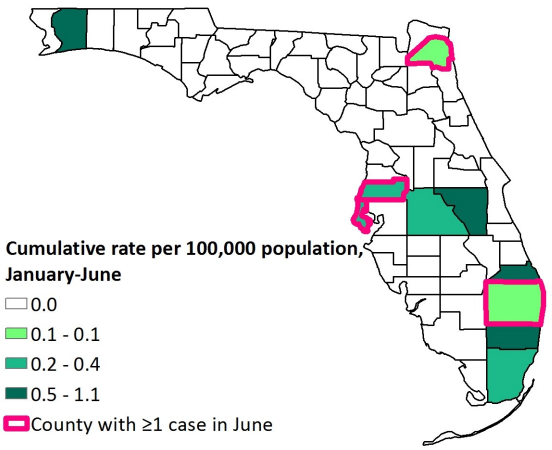
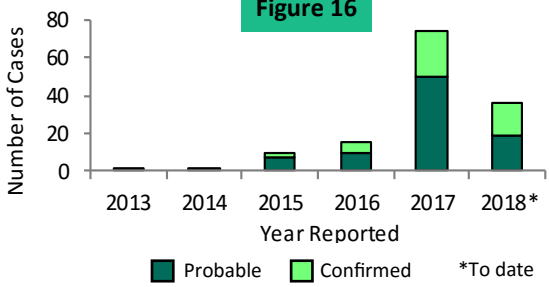


Figure 16 shows the number of confirmed and probable cases of mumps reported into Merlin, 2013 through June 2018.

Figure 16



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 11 ▶

Mumps Cases by Month Reported

Figure 17

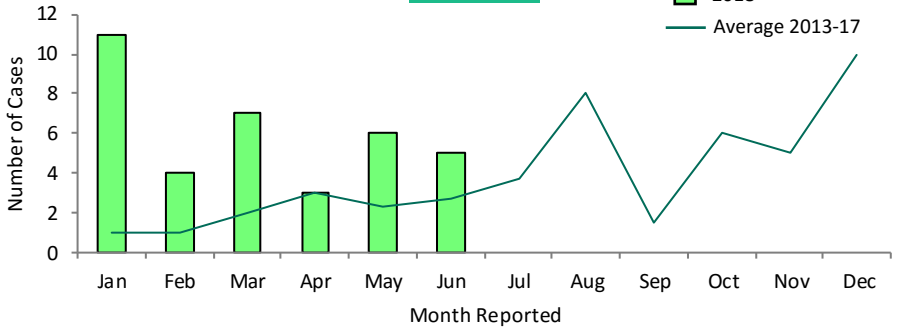


Figure 17 shows the number of confirmed and probable cases of mumps reported into Merlin, January through June 2018 and the previous five-year average.

In June, the number of reported mumps cases decreased from that in May but was still above the previous five-year average for the ninth month in a row. The number of cases have remained elevated since April 2017.

Mumps Outbreaks

Figure 18 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, June 2018 and the previous three-month average. Cases associated with at least one other case are shown by type of association.

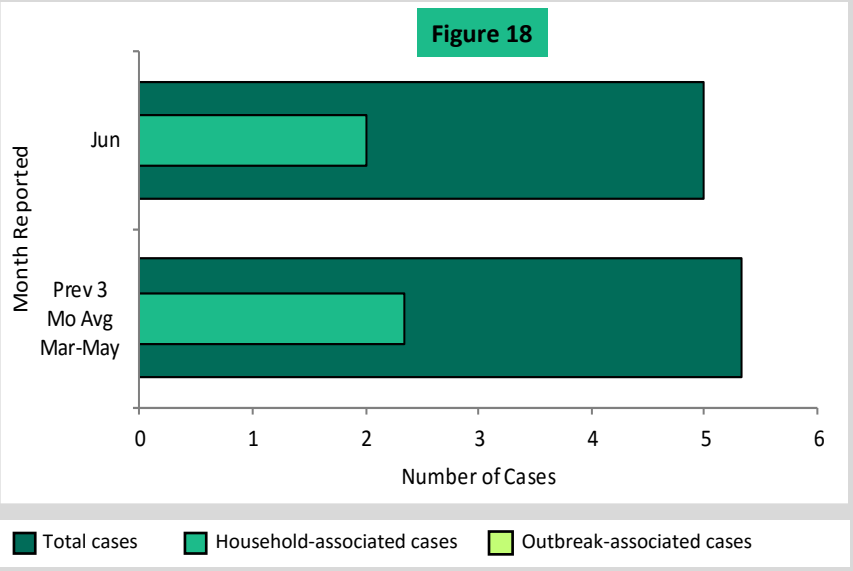
In June, two (40%) cases were associated with transmission within a household.

Outbreak Summary:

No outbreaks of mumps have been reported in 2018. All outbreak-associated cases reported in 2018 were identified during outbreak investigations that began in December 2017 and closed in January 2018.

See page 11 for outbreak definitions.

Figure 18



Mumps Age-Specific Incidence Rates

Figure 19

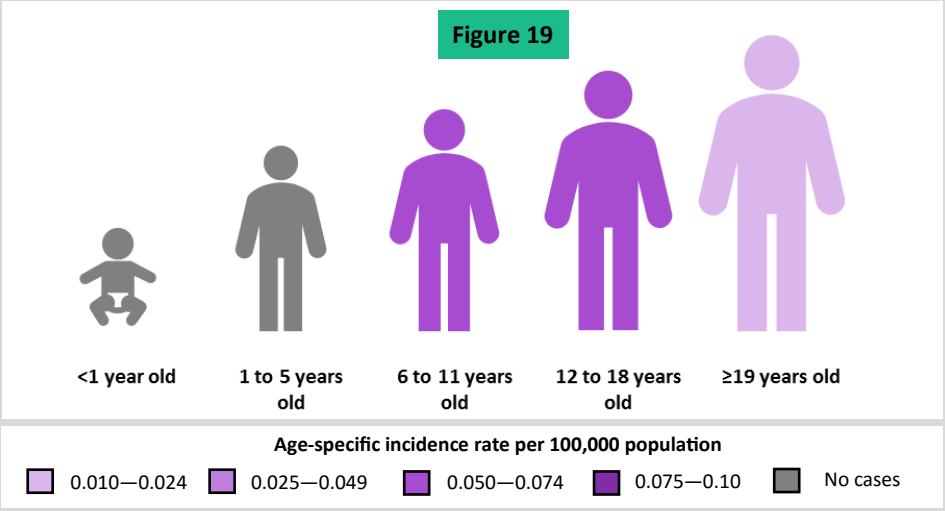


Figure 19 shows the age-specific incidence rates of confirmed and probable cases of mumps, as reported into Merlin, June 2018.

In June, the mumps incidence rate was highest among children age 6-11 years old at 0.07 cases per 100,000 population. There were no cases of mumps reported for two of the age groups in June 2018. Although the incidence rate was low among adults age 19 and older, 64% of cases reported so far in 2018 were in this age group.

Vaccination History for Mumps Cases

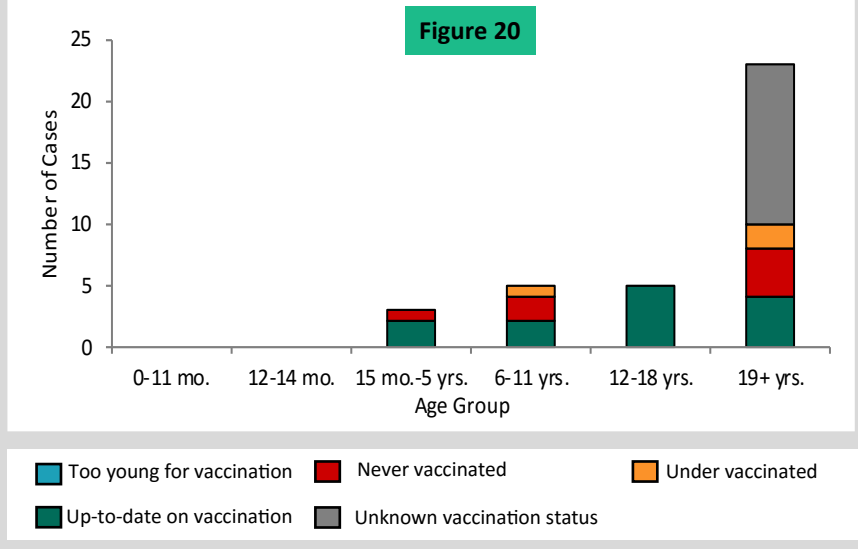
UTD = up-to-date

Figure 20 shows the vaccination status of mumps cases by age group for confirmed and probable cases of mumps, as reported into Merlin, January through June 2018 (n=36).

Mumps vaccinations are recommended at 12-15 months of age and again at 4-6 years of age. Three (60%) individuals age 6-11 years were not up-to-date on mumps vaccinations and 19 (83%) individuals age 19 years or older were not up-to-date or had unknown vaccination status.

See page 11 for links to CDC recommended vaccination schedules.

Figure 20



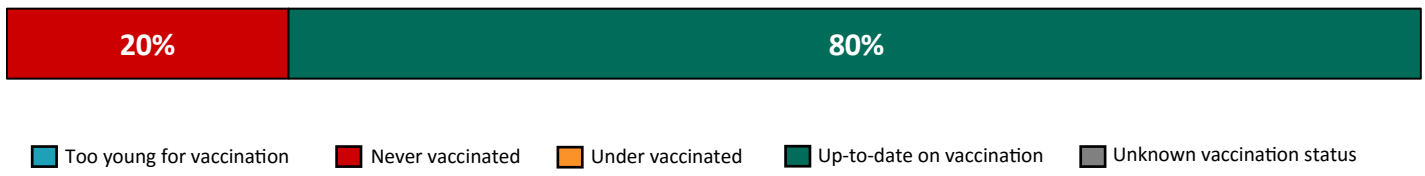
Mumps Cases by Vaccination Status

UTD = up-to-date

Figure 21 shows the percent of confirmed and probable pertussis cases for each vaccination status, as reported into Merlin, June 2018.

Although individuals who have been vaccinated can still get mumps, complete and timely vaccination remains the best way to prevent mumps and severe complications. In June, 20% of cases were never vaccinated for mumps.

Figure 21



Mumps Outcomes

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

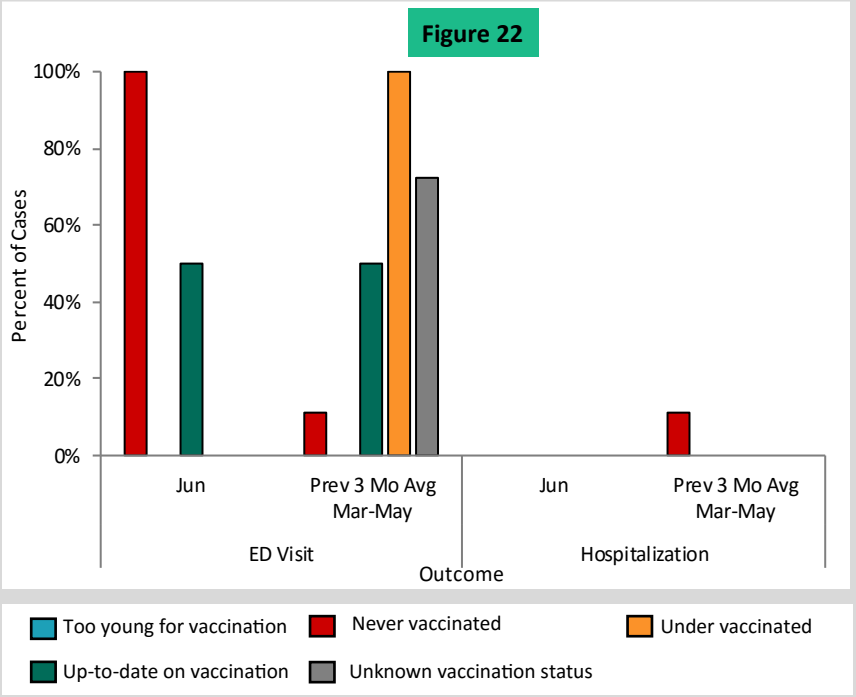
Figure 22 shows the percent of confirmed and probable cases of mumps with select outcomes by vaccination status, as reported into Merlin, June 2018 and the previous three-month average.

In June, individuals who had never been vaccinated were more likely to visit the emergency department.

Orchitis (testicular inflammation) is the most common complication from mumps in males. From January through June 2018, four (11%) cases reported orchitis; two were never vaccinated and two had an unknown vaccination status.

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

Figure 22



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.
- For more information about Florida's guides to surveillance and investigation, including disease specific probable and confirmed case definitions, please visit www.Floridahealth.gov/gsi.
- For the full article on a Minnesota outbreak of measles, please visit https://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.

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, 2018.
- 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.
- For a full text version of a new study on pertussis vaccination, please visit http://www.cidid.org/publications-1/2018/3/29/the-impact-of-past-vaccination-coverage-and-immunity-on-pertussis-resurgence