

# Vaccine-Preventable Disease Surveillance

January 2018

This report includes monthly updates for the high volume vaccine-preventable diseases (VPDs) pertussis and varicella, as well as mumps which has had increased activity in the state. Public health professionals and the WHO rank immunizations in the top 10 health achievements of the past century. Community immunity is a situation in which enough people in a community are vaccinated against a disease to make its spread from person to person unlikely. This means that even those who can't be vaccinated because of age or medical conditions are offered some protection because the disease has little opportunity to spread in the community. Vaccination is important to protect yourself, and those around you.

## Summary

### Pertussis

- Pertussis activity is low, which is consistent with previous months.
- There were 20 cases and no outbreaks reported in January.
- Incidence remains 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 infants.

### Varicella

- Varicella activity remains elevated.
- There were 48 cases and six outbreaks reported in January.
- Incidence remains highest among infants less than one year old, who are too young to be vaccinated
- 1 in 5 cases this month were not up-to-date on vaccinations.

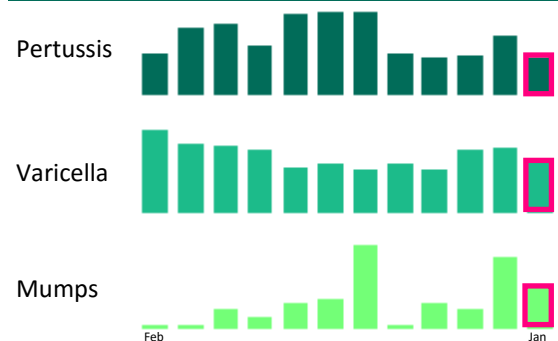
### Mumps

- Mumps activity remains elevated, and at levels not seen since the 1990s.
- There were 10 cases and no new outbreaks reported in January.
- Incidence was highest among children age 12-18 years.
- Half of the cases were associated with an outbreak at a middle school reported in December 2017.

## Table of Contents

Pertussis Surveillance .....	2
Varicella Surveillance.....	5
Mumps Surveillance .....	8
Surveillance System Summary.....	11

## Monthly Activity Trends Feb. 2017—Jan. 2018



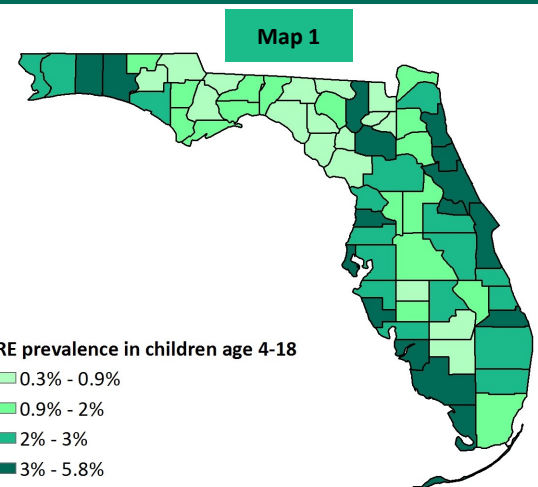
## Vaccination

**Map 1** shows the prevalence of children age 4-18 who have a registered religious exemption (RE) to vaccination in Florida SHOTS\* as of January 31, 2018.

Statewide, the estimated prevalence of REs among children age 4-18 is 2.6% with individual counties ranging from 0.3% to 5.8%.

**Unvaccinated children are at increased risk of vaccine-preventable diseases like pertussis, varicella, and mumps. Additionally, communities with a higher proportion of RE 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.



Posted February 7, 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

January 2018

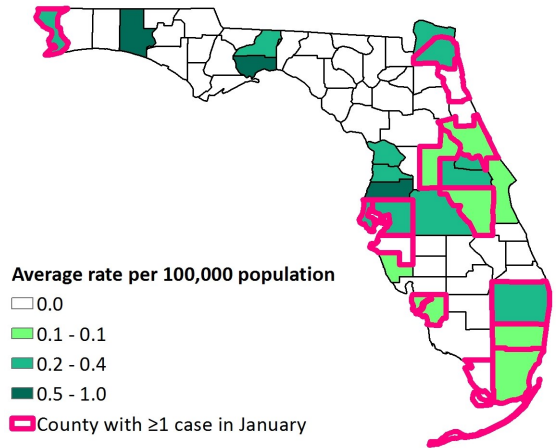
**State pertussis activity:**

- **Twenty confirmed and probable pertussis cases** were reported among 15 counties in January.
  - Pertussis activity is continuing to be lower, similar to during the fall months, which is consistent with trends observed in previous years at this time.
  - From January 1, 2017 through December 31, 2017, 368 confirmed and probable cases of pertussis were reported among 37 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.
- **There were no outbreaks of pertussis reported in January.**
  - Unfortunately, for most pertussis cases, exposure to other known cases is never identified, and they are not able to be linked to outbreaks.
- **In January, for every pertussis case identified, there was an average of two 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 inpatient hospitalizations. 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 January, 35% of 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.

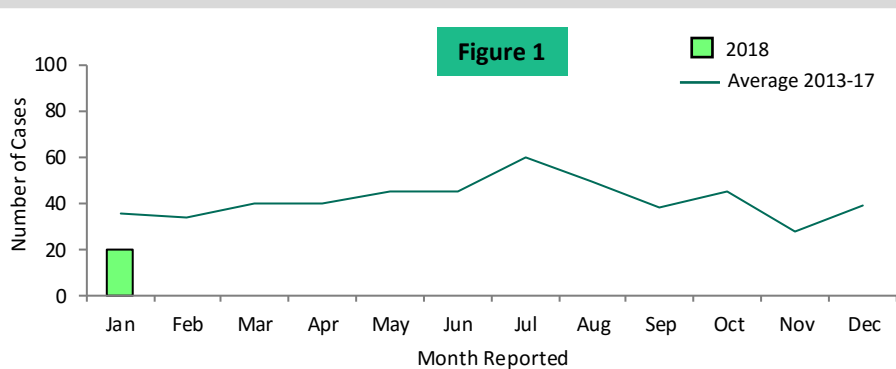
**Map 2** Average Pertussis Incidence Rates per 100,000 Population, October 2017 through December 2017



**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 1** shows the number of confirmed and probable cases of pertussis reported into Merlin for January 2018 and the previous five-year average.

**In the first month of 2018, the number of reported pertussis cases was below the 5-year average. In general, the number of reported pertussis cases tends to be highest during the summer months.**

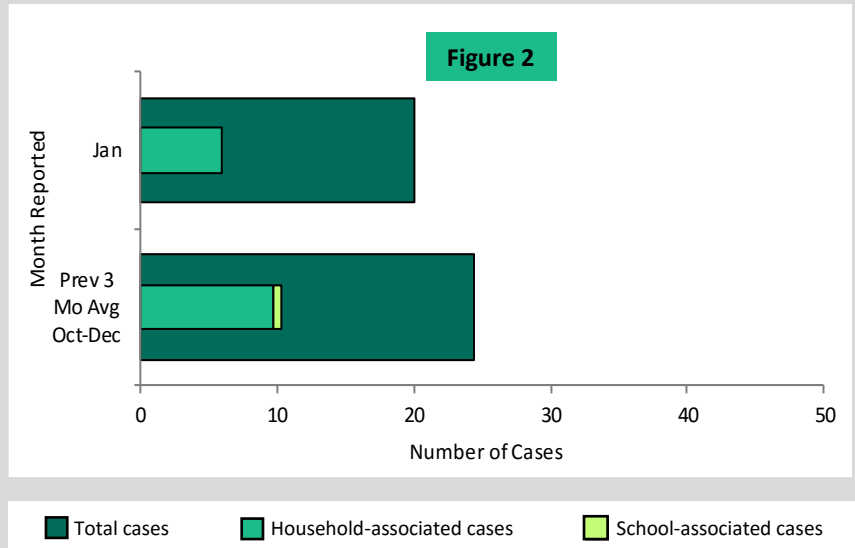
## Pertussis Outbreaks

Figure 2 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, January 2018 and the previous three-month average. Cases associated with at least one other case are shown by type of association.

**In January, 6 (30%) cases were associated with other cases through living in the same household.**

### Outbreak Summary:

**In January, no outbreaks of pertussis were reported.** In 2017, a total of five outbreaks of pertussis were reported, all in school settings.



## Pertussis Treatment and Contacts

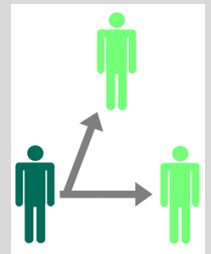
Figure 3

= 10 individuals



Figure 3 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, January 2018.

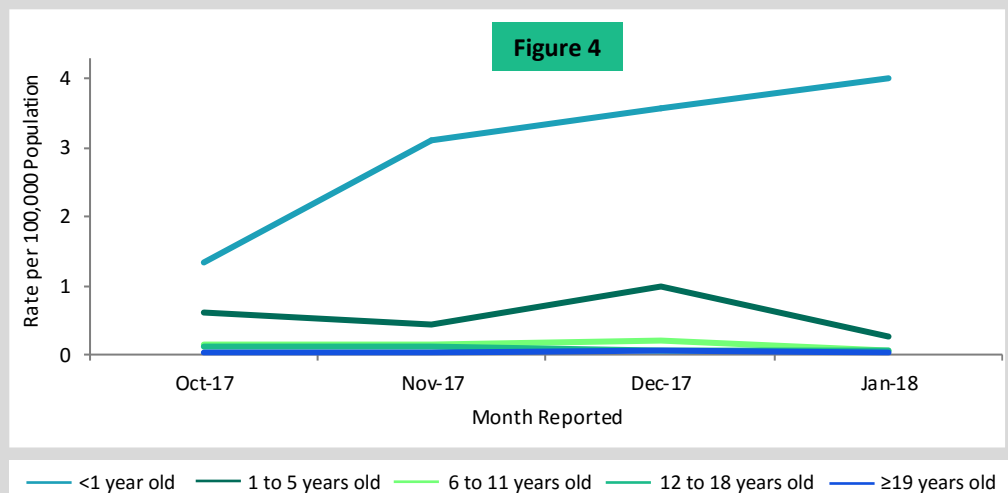
**On average, for each case reported in January there were two people exposed to the case who were recommended antibiotics to prevent illness.**



## Pertussis Age-Specific Incidence Rates

Figure 4 shows the age-specific incidence rates of confirmed and probable cases of pertussis, as reported into Merlin, October 2017 through January 2018.

**In January, 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.

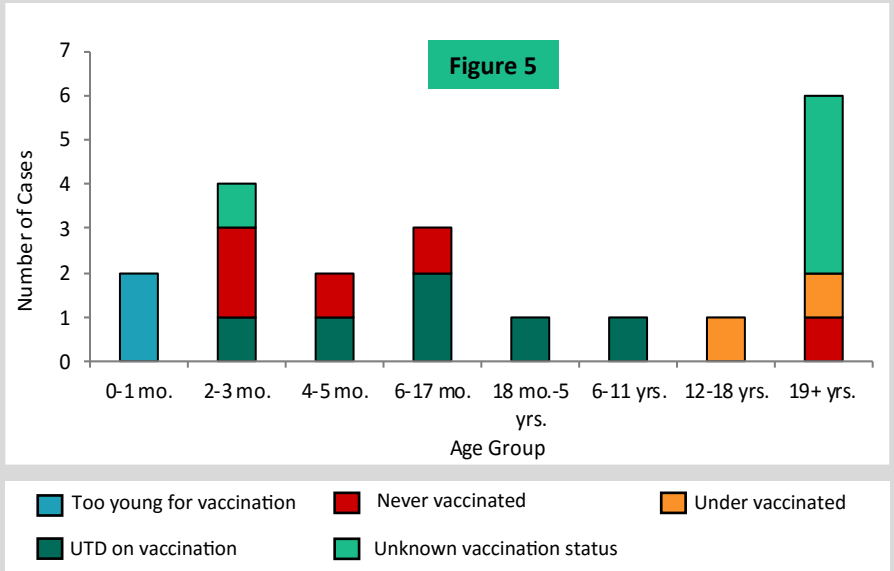


## Vaccination History for Pertussis Cases

UTD = up-to-date

**Figure 5** shows the vaccination status of pertussis cases by age group for confirmed and probable cases of pertussis, as reported into Merlin, January 2018 (n=20).

**Only half (50%) of cases ≤ 5 years old were up-to-date on their pertussis vaccinations. Whereas, the majority (75%) of cases older than 6 years old had unknown vaccination status or were under-vaccinated.**

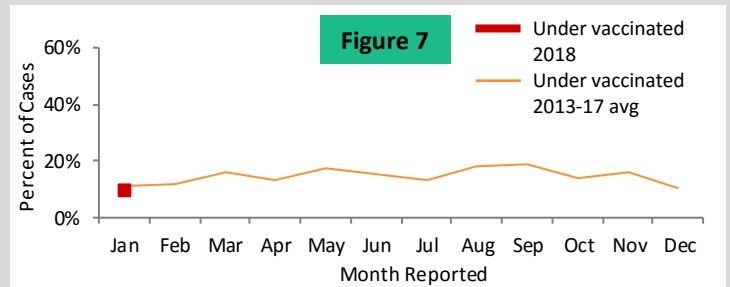
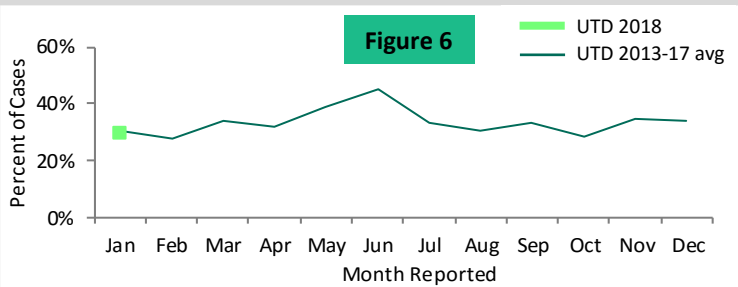


## Pertussis Cases in Vaccinated Individuals

UTD = up-to-date

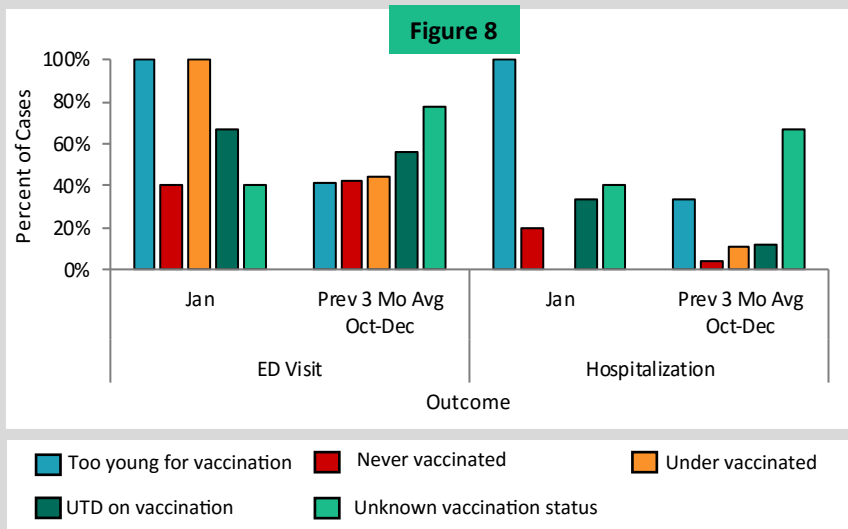
**Figure 6** shows the percent of confirmed and probable pertussis cases who were up to date on their pertussis vaccinations, as reported into Merlin, for January 2018 and the previous five-year average. **Figure 7** shows the percent of these cases who were under vaccinated during the same time periods.

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

**In January, cases who were too young for vaccination were more likely to 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. Primarily infants less than one year old experience apnea.

## Summary

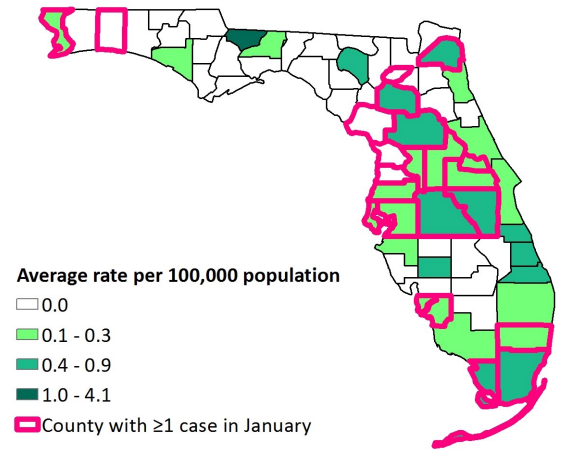
January 2018

### State varicella activity:

- Forty-eight confirmed and probable varicella cases were reported among 22 counties in January.**
  - Reported varicella cases are starting to increase after having remained lower throughout the summer and fall. In general, varicella activity is highest during the late winter and spring. This is consistent with seasonal trends in past years.
  - From January 1, 2017 through December 31, 2017, 655 cases of varicella were reported among 53 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. In 2017, the number of varicella cases is slightly lower than the number observed in 2016.
- Six outbreaks of varicella were reported in January.**
- In January, children age less than one year old had the highest incidence of varicella.** This is consistent with what was observed for the majority of months in 2017.
- Vaccination is the best way to prevent varicella infection.** In January, 1 in 5 cases were not up to date on their varicella vaccinations. 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.
- To learn more about varicella, please visit <http://www.floridahealth.gov/varicella>.

Map 3

Average Varicella Incidence Rates per 100,000 Population, October 2017 through December 2017



### National varicella 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 CDC, based on available data the number of varicella cases nationally has steadily decreased each year from 2012-2015.

### 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

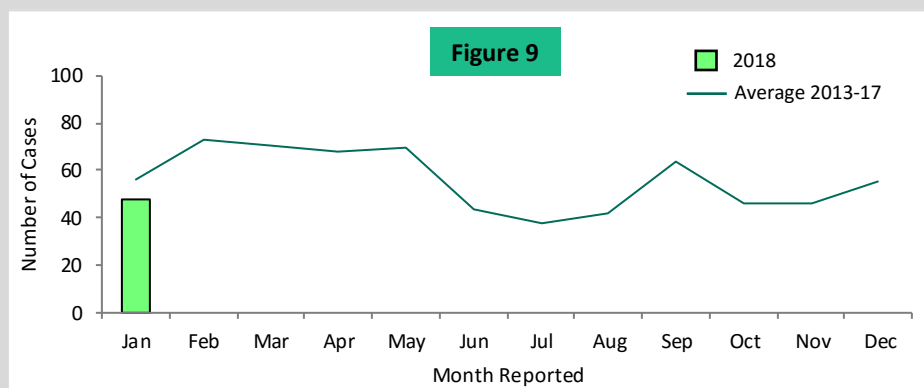


Figure 9 shows the number of confirmed and probable cases of varicella reported into Merlin, for January 2018 and the previous five-year average.

**In January, the number of reported varicella cases remained at levels seen during the previous month but were below the five-year average. In general, varicella cases peak in the spring and fall.**

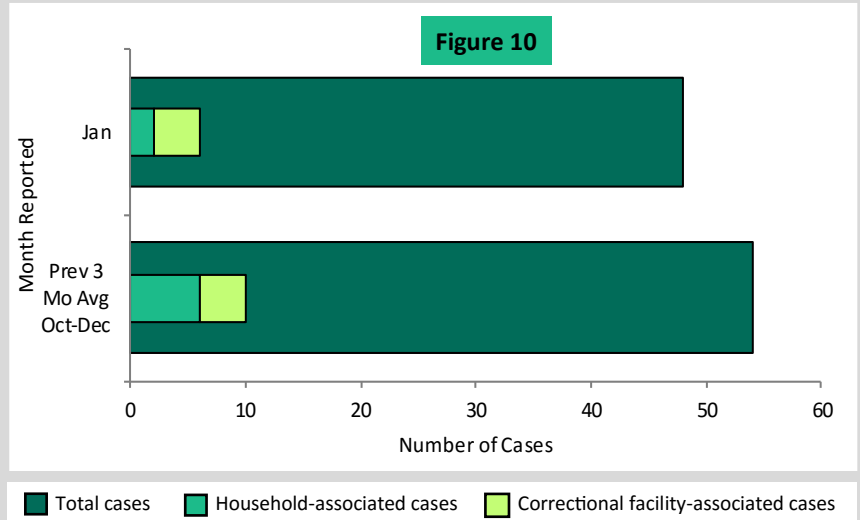
## Varicella Outbreaks

**Figure 10** 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, January 2018 and the previous three-month average. Cases associated with at least one other case are shown by type of association.

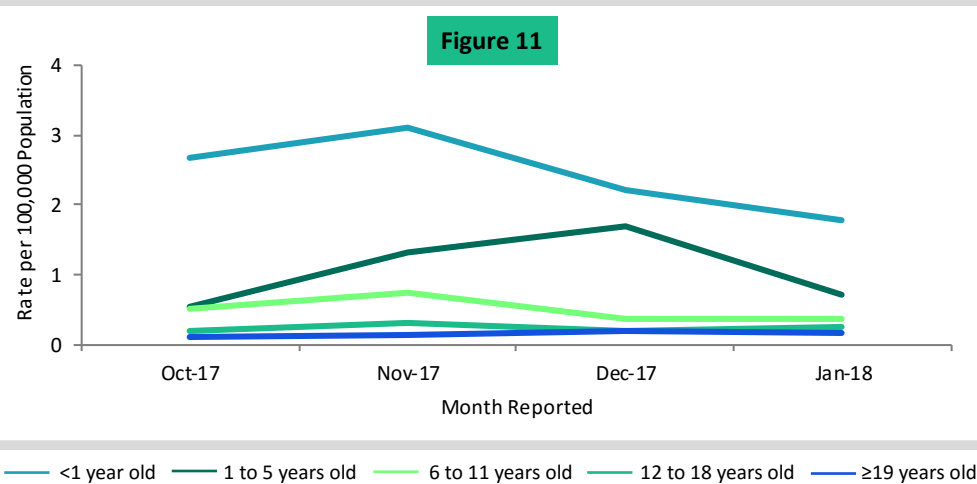
**In January, 6 (11%) cases were associated with other cases through living in the same household.**

### Outbreak Summary:

**Six outbreaks of varicella were reported in January.** Four of the outbreaks took place in households, and two of the outbreaks took place in correctional facilities.



## Varicella Age-Specific Incidence Rates



**Figure 11** shows the age-specific incidence rates of confirmed and probable cases of varicella, as reported into Merlin, for October 2017 through January 2018.

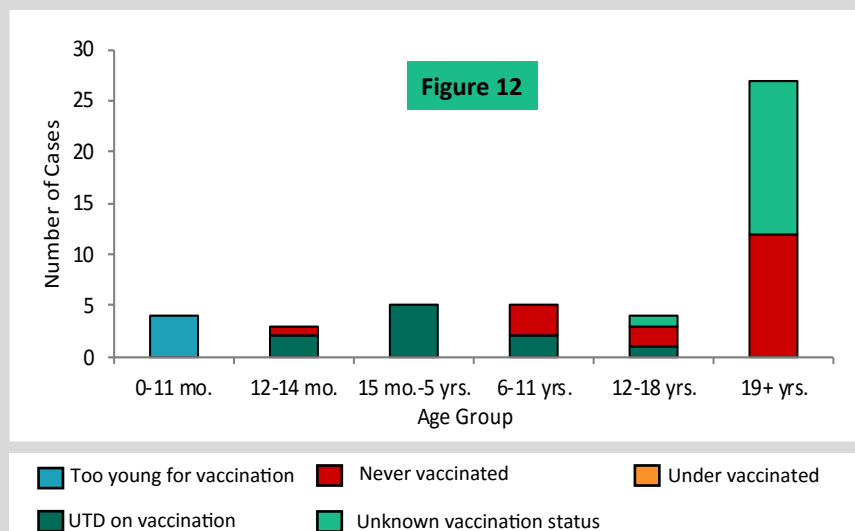
**In January, the incidence rate was highest among infants less than one year old.** This is consistent with trends seen in 2017. Infants less than one year old are too young to receive varicella vaccination, which is why vaccination of other age groups is so important to help prevent infection in infants.

## Vaccination History for Varicella Cases

UTD = up-to-date

**Figure 12** shows the vaccination status of varicella cases by age group for confirmed and probable cases of varicella, as reported into Merlin, January 2018 (n=48).

**Varicella vaccinations are recommended at 12-15 months of age and 4-6 years of age. Of the 48 cases reported in children aged 15 months-5 years, all (100%) were up to date on their varicella vaccinations, while only one third (33%) of the cases in children aged 6 to 18 years were up to date.**

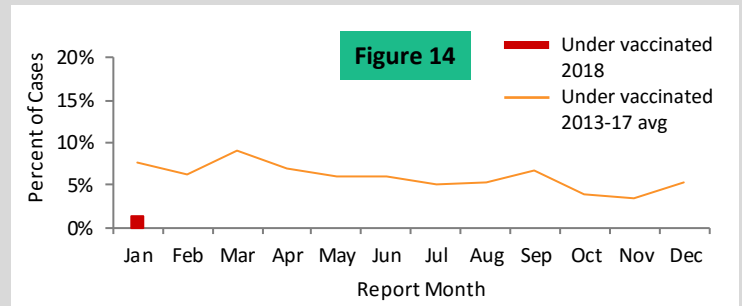
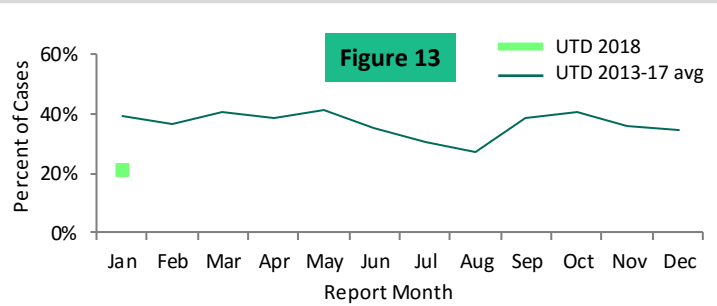


## Varicella Cases in Vaccinated Individuals

UTD = up-to-date

**Figure 13** shows the percent of confirmed and probable varicella cases who were up to date on their varicella vaccinations, as reported into Merlin, for January 2018 and the previous five-year average. **Figure 14** 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.**



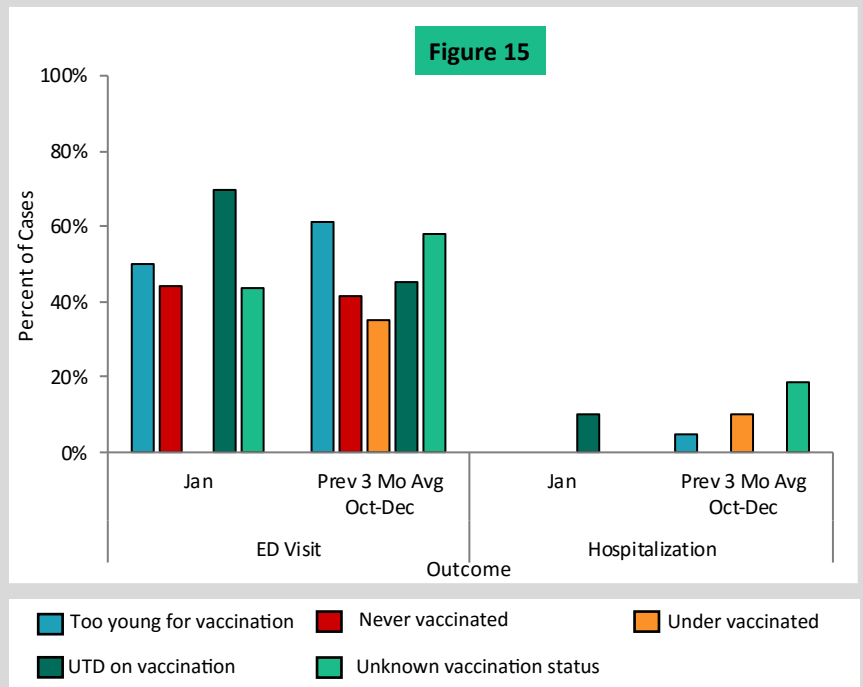
## Varicella Outcomes

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

**Figure 15** shows the percent of confirmed and probable cases of varicella with select outcomes by vaccination status, as reported into Merlin, January 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 December, individuals up-to-date on vaccination were most likely to visit the emergency department. However, 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. Few varicella cases require inpatient hospitalization.**





## Summary

January 2018

### State mumps activity:

- **Six confirmed and four probable mumps cases were reported among three counties in January.**
  - Mumps cases have remained elevated since last April with a peak of 20 cases reported in August.
  - From January 1, 2017 through December 31, 2017, 23 confirmed and 47 probable cases of mumps were reported among 17 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 January. However there were outbreak associated cases reported in January that were connected to outbreaks first reported in December 2017.**
  - 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 January, the highest incidence of mumps was in children age 12-18 years.** This was largely driven by the outbreaks that began in December 2017.
- **Vaccination is the best way to prevent mumps infections.** In January, 20% of cases were under vaccinated and 50% of cases had unknown vaccination history.
- In January, 90% of cases visited the emergency department and none were 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 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. About half of the outbreaks reported since 2016 have been associated with colleges and universities, primarily affecting young adults.

Map 4

Cumulative Mumps Incidence Rates per 100,000 Population, January 2018

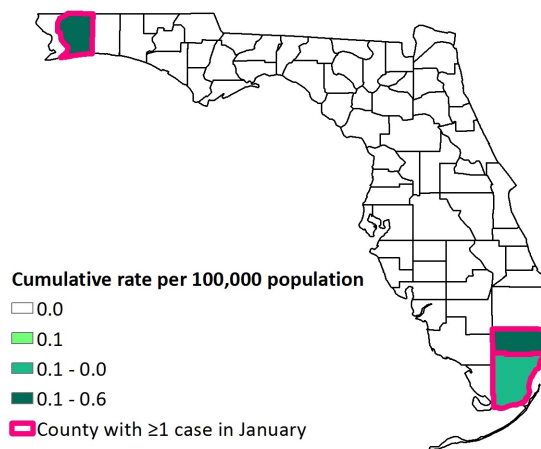
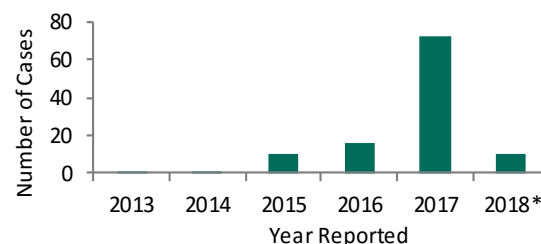


Figure 16 shows the number of confirmed and probable cases of mumps reported into Merlin, 2013 through January 2018.



\*To date

### 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

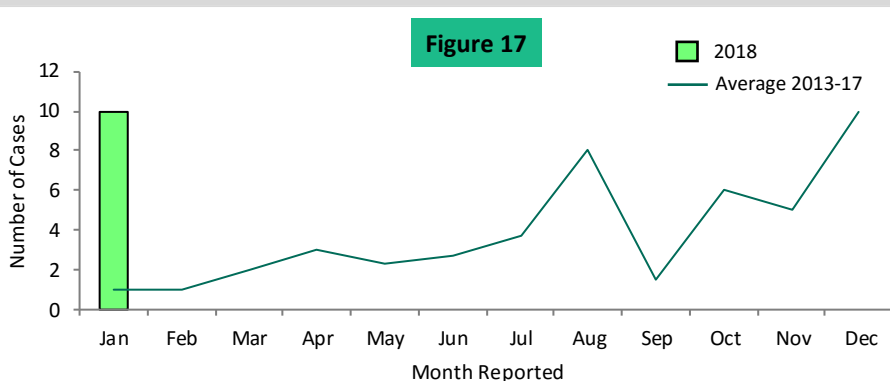


Figure 17

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

**In the first month of 2018, the number of reported mumps cases was far above average. Cases have been elevated since the summer months of 2017, peaking in August and December when several cases associated with outbreaks and household clusters were reported.**

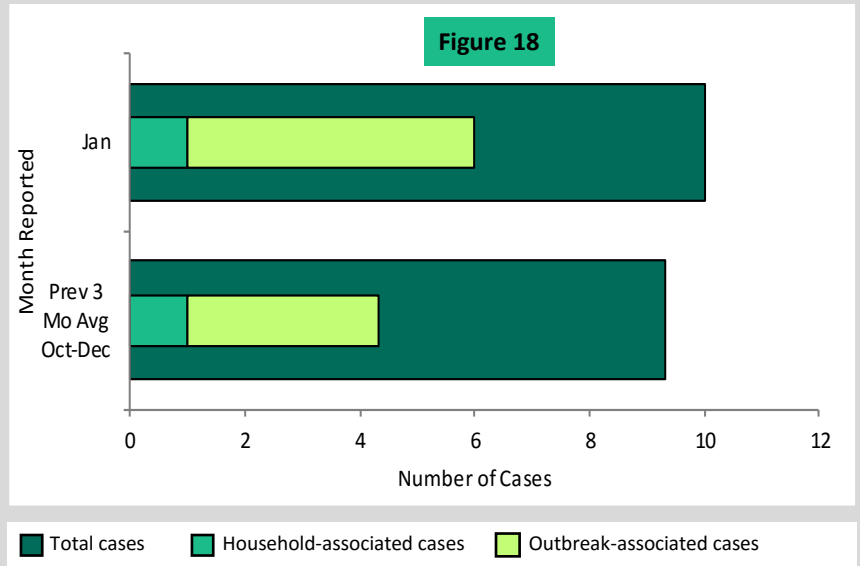


## Mumps Outbreaks

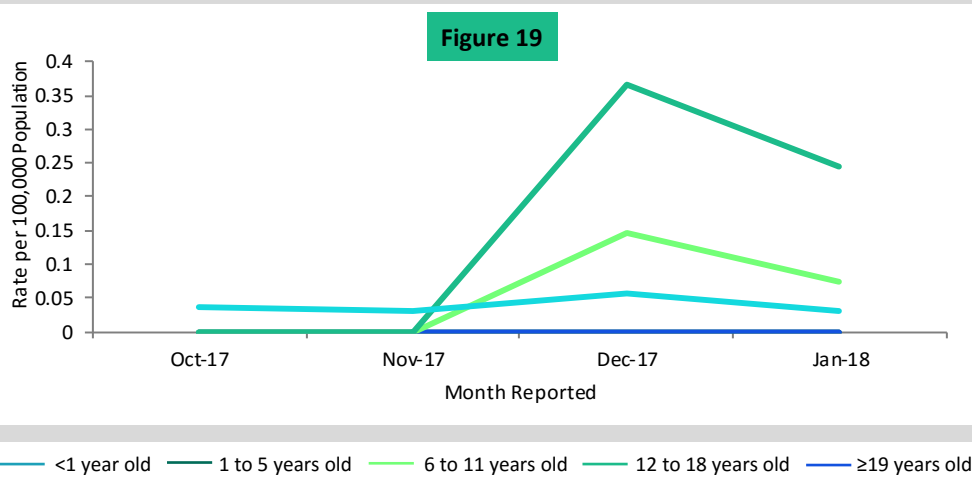
**Figure 18** shows the number of confirmed and probable cases that were associated with at least one other case and the total number of confirmed and probable cases as reported into Merlin, January 2018 and the previous three-month average. Cases associated with at least one other case are shown by type of association.

### Outbreak Summary:

**No mumps outbreaks were reported in January.** Five cases reported in January were associated to the outbreak in a Broward County middle school that was first reported in December 2017.



## Mumps Age-Specific Incidence Rates



**Figure 19** shows the age-specific incidence rates of confirmed and probable cases of mumps, as reported into Merlin, for October 2017 through January 2018.

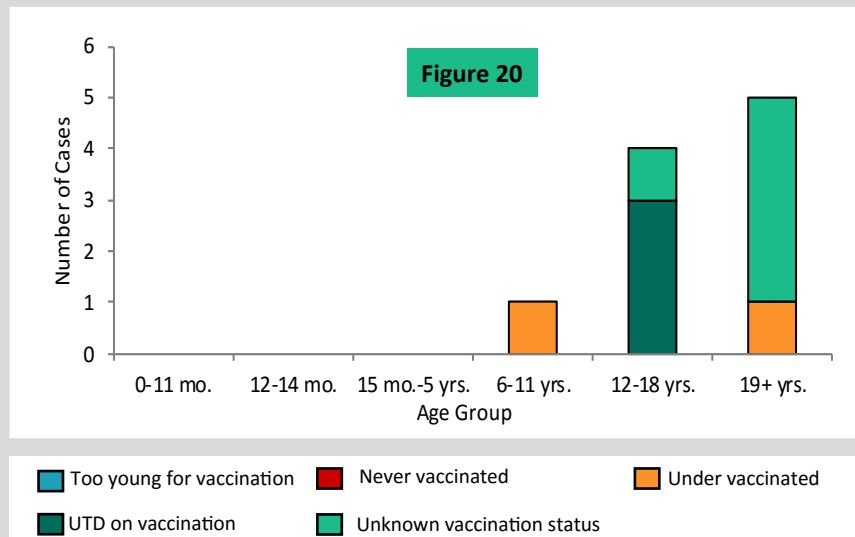
**In January, the incidence rate was highest among children age 12 to 18.** In 2017, the majority of cases have been in children age 12 to 18 and adults age 19 and older.

## Vaccination History for Mumps Cases

UTD = up-to-date

**Figure 20** shows the vaccination status of mumps cases by age group for confirmed and probable cases of mumps, as reported into Merlin, January 2018 (n=10).

**Mumps vaccinations are recommended at 12-15 months of age and 4-6 years of age. Most cases 12 to 18 years old were up-to-date (75%) on vaccinations, while most cases 19 and older had unknown vaccination status (80%).**

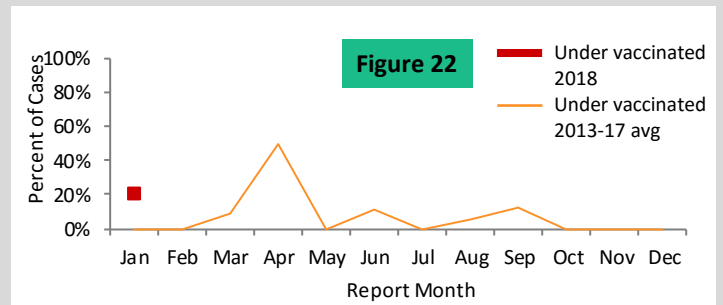
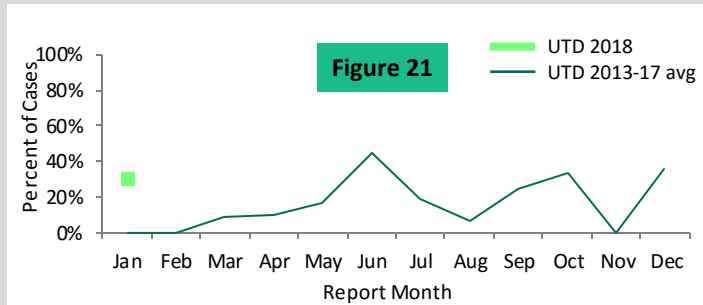


## Mumps Cases in Vaccinated Individuals

UTD = up-to-date

**Figure 21** shows the percent of confirmed and probable mumps cases who were up to date on their mumps vaccinations, as reported into Merlin, for January 2018 and the previous five-year average. **Figure 22** 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.**



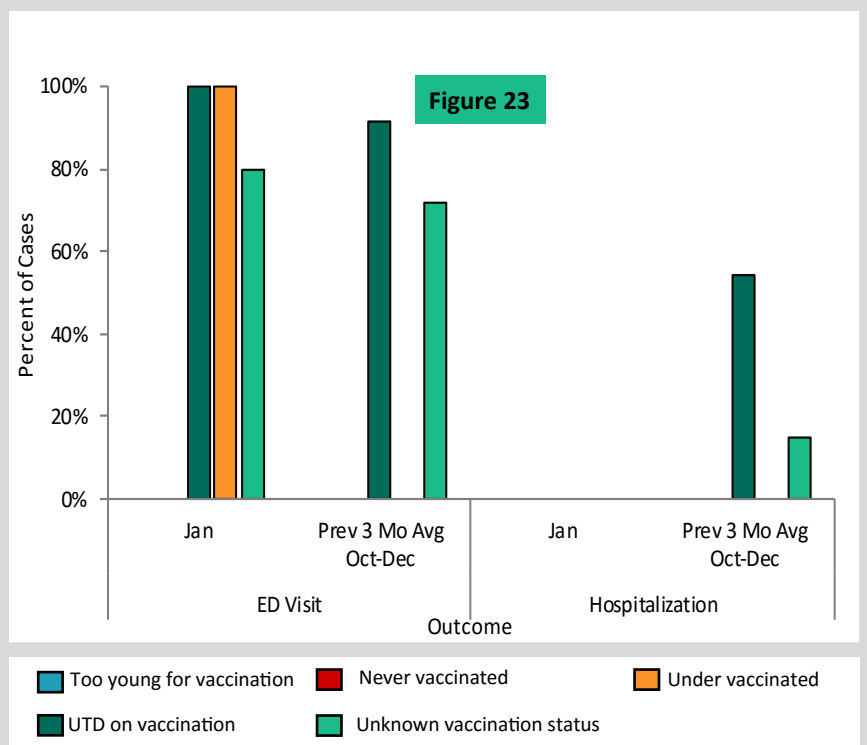
## Mumps Outcomes

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

**Figure 23** shows the percent of confirmed and probable cases of mumps with select outcomes by vaccination status, as reported into Merlin, January 2018 and the previous three-month average.

**In January, nine (90%) cases visited the emergency department and none were hospitalized.**

Orchitis (testicular inflammation) is the most common complication from mumps in males. From January 2017 through December 2017, 11 (16%) cases reported orchitis; two were never vaccinated, four were up to date on their vaccinations, and five had 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](http://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](http://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>.