# Section 3

# Narratives for Selected Reportable Diseases/Conditions of Infrequent Occurrence

## Anaplasmosis

Anaplasmosis is a tick-borne bacterial disease caused by *Anaplasma phagocytophilum*. It was previously known as human granulocytotropic ehrlichiosis (HGE), but was later renamed human granulocytic anaplasmosis (HGA) when the bacterium genus was changed from *Ehrlichia* to *Anaplasma*. Typical symptoms of anaplasmosis include fever, headache, chills, malaise, and muscle aches. More severe infections can be seen in those who are immunosuppressed. Anaplasmosis is transmitted to humans by tick bites primarily from *Ixodes scapularis*, the black-legged tick, and *I. pacificus*, the western black-legged tick. Unlike ehrlichiosis, most HGA cases reported in Florida are due to infections acquired in the Northeastern and Midwestern U.S. Surveillance for anaplasmosis is intended to monitor incidence over time, estimate burden of illness, understand the epidemiology of each species, and target areas of high incidence for prevention education. See Table 1 for additional information on anaplasmosis cases reported in 2015.

Table 1. Characteristics of Anaplasmosis Cases Reported in 2015, Florida

| Summary | |
|---|---|
| Number of cases in 2015 | 5 |
| 5-year trend (2011 to 2015) |  |

| Age (in years) | |
|---|---|
| Mean | 59 |
| Median | 66 |
| Min-max | 16 - 83 |

| Gender | Number | (Percent) |
|---|---|---|
| Female | 1 | (20.0) |
| Male | 4 | (80.0) |
| Unknown gender | 0 | (0.0) |

| Race | Number | (Percent) |
|---|---|---|
| White | 5 | (100.0) |
| Black | 0 | (0.0) |
| Other | 0 | (0.0) |
| Unknown race | 0 | (0.0) |

| Ethnicity | Number | (Percent) |
|---|---|---|
| Non-Hispanic | 4 | (80.0) |
| Hispanic | 0 | (0.0) |
| Unknown ethnicity | 1 | (20.0) |

| Case classification | Number | (Percent) |
|---|---|---|
| Confirmed | 3 | (60.0) |
| Probable | 2 | (40.0) |

| Outcome | Number | (Percent) |
|---|---|---|
| Interviewed | 4 | (80.0) |
| Hospitalized | 2 | (40.0) |
| Died | 0 | (0.0) |

| Outbreak status | Number | (Percent) |
|---|---|---|
| Sporadic | 5 | (100.0) |
| Outbreak-associated | 0 | (0.0) |
| Outbreak status unknown | 0 | (0.0) |

| Location where exposed | Number | (Percent) |
|---|---|---|
| Massachusetts | 2 | (40.0) |
| North Carolina | 1 | (20.0) |
| Rhode Island | 1 | (20.0) |
| Vermont | 1 | (20.0) |

| County of residence | Number | (Percent) |
|---|---|---|
| Collier | 2 | (40.0) |
| Broward | 1 | (20.0) |
| Indian River | 1 | (20.0) |
| Pasco | 1 | (20.0) |

## Arsenic Poisoning

Arsenic poisoning became a reportable condition in Florida in November 2008. Arsenic is a naturally occurring element that is widely distributed in the environment. It is usually found in conjunction with other elements like oxygen, chlorine, and sulfur (inorganic arsenic). Arsenic in animals and plants combines with carbon and hydrogen to form organic arsenic compounds. Most arsenic-induced toxicity in humans is due to exposure to inorganic arsenic. Acute ingestion of toxic amounts of inorganic arsenic typically causes severe gastrointestinal symptoms (e.g., vomiting, abdominal pain, diarrhea), which might quickly lead to dehydration and shock. Different clinical manifestations might follow, including dysrhythmias, altered mental status, and multisystem organ failure leading to death. Common sources of potential inorganic arsenic exposure are chromated copper arsenate (CCA)-treated wood, tobacco smoke, certain agricultural pesticides, and some homeopathic and naturopathic preparations and folk remedies. In addition, inorganic arsenic is a naturally occurring contaminant found in water in certain areas of Florida, affecting private drinking wells (which are not regulated). Surveillance for arsenic poisoning is important to identify sources of arsenic exposure that are of public health concern (e.g., a water source, workplace exposure, homeopathic medicines, exposure to CCA-treated wood), prevent further exposure, and to inform the public about how to reduce the risk of exposure. See Table 2 for additional information on arsenic cases reported in 2015. The source of exposure was unknown for 10 of the 16 cases. Of the six cases with reported exposures, two had well water exposure, one reported exposure to an iron pot made in China, one reported exposure to a telephone pole, one was a smoker, and one reported multiple exposures (agricultural pesticides, well water, and CCA-treated wood).

Table 2. Characteristics of Arsenic Poisoning Cases Reported in 2015, Florida

| Summary | |
|---|---|
| Number of cases in 2015 | 16 |
| 5-year trend (2011 to 2015) |  |
| **Age (in years)** | |
| Mean | 55 |
| Median | 57 |
| Min-max | 24 - 78 |

| Gender | Number | (Percent) |
|---|---|---|
| Female | 4 | (25.0) |
| Male | 12 | (75.0) |
| Unknown gender | 0 | (0.0) |

| Race | Number | (Percent) |
|---|---|---|
| White | 12 | (75.0) |
| Black | 2 | (12.5) |
| Other | 0 | (0.0) |
| Unknown race | 2 | (12.5) |

| Ethnicity | Number | (Percent) |
|---|---|---|
| Non-Hispanic | 12 | (75.0) |
| Hispanic | 2 | (12.5) |
| Unknown ethnicity | 2 | (12.5) |

| Case classification | Number | (Percent) |
|---|---|---|
| Confirmed | 14 | (87.5) |
| Probable | 2 | (12.5) |

| Outcome | Number | (Percent) |
|---|---|---|
| Interviewed | 16 | (100.0) |
| Hospitalized | 2 | (12.5) |
| Died | 0 | (0.0) |

| Outbreak status | Number | (Percent) |
|---|---|---|
| Sporadic | 16 | (100.0) |
| Outbreak-associated | 0 | (0.0) |
| Outbreak status unknown | 0 | (0.0) |

| Location where exposed | Number | (Percent) |
|---|---|---|
| Florida | 15 | (93.8) |
| Unknown | 1 | (6.3) |

| County of residence | Number | (Percent) |
|---|---|---|
| Brevard | 3 | (18.8) |
| Miami-Dade | 2 | (12.5) |
| Orange | 2 | (12.5) |
| Bay | 1 | (6.3) |
| Broward | 1 | (6.3) |
| Gadsden | 1 | (6.3) |
| Okaloosa | 1 | (6.3) |
| Osceola | 1 | (6.3) |
| Pinellas | 1 | (6.3) |
| Polk | 1 | (6.3) |
| Sarasota | 1 | (6.3) |
| Walton | 1 | (6.3) |

## Brucellosis

Brucellosis is a systemic illness caused by several species of *Brucella* bacteria that can cause a range of symptoms in humans that may include fever, sweats, headaches, back pain, weight loss, and weakness. Brucellosis can also cause long-lasting or chronic symptoms that include recurrent fevers, joint pain, and fatigue. These bacteria are primarily transmitted among animal reservoirs, but people can be exposed when they come into contact with infected animals or animal products contaminated with the bacteria. Laboratorians can be at risk for exposure to *Brucella* species while working with human or animal cultures. Human infections in Florida are most commonly associated with exposure to feral swine infected with *B. suis*. Dogs and domestic livestock may also be infected with *B. suis*. Although dogs and dolphins may be infected with their own *Brucella* species, human illness is not commonly associated with them. Outside the U.S., unpasteurized milk products from infected goats, sheep, and cattle infected with *B. melitensis* and *B. abortus* are important sources of human infections. Brucellosis is reportable to public health authorities because there are a number of public health actions that can be taken to help reduce incidence of this infection. These actions include identifying populations at risk to allow for targeted prevention outreach; increasing health care provider awareness for earlier diagnosis and treatment of infected persons; intervening early and providing prophylaxis to prevent laboratory exposure-related infections from developing; detecting potentially contaminated products including food, transfusion, and organ transplant products; and detecting and responding to a bioterrorist incident. See Table 3 for additional information on brucellosis cases reported in 2015. All five confirmed cases were caused by *B. suis*. Three cases were outbreak-associated; two confirmed cases were in a husband and wife. Exposure for the third outbreak-associated case was unclear and sexual transmission was a possibility. Two non-Florida residents were diagnosed with brucellosis while traveling in Florida (note that non-Florida residents are not included in Table 3). One was from Australia, worked as a veterinary assistant, and also was a hunter. The second was from Saudi Arabia where brucellosis is hyperendemic and reported drinking unpasteurized milk from goats and camels. Twenty-five potential laboratory exposures involving laboratorians working with *Brucella* cultures resulted from three of the cases reported in 2015, including a culture from one of the non-Florida residents.

Table 3. Characteristics of Brucellosis Cases Reported in 2015, Florida

| Summary | |
|---|---|
| Number of cases in 2015 | 8 |
| 5-year trend (2011 to 2015) |  |

| Age (in years) | |
|---|---|
| Mean | 41 |
| Median | 42 |
| Min-max | 23 - 56 |

| Gender | Number | (Percent) |
|---|---|---|
| Female | 3 | (37.5) |
| Male | 5 | (62.5) |
| Unknown gender | 0 | (0.0) |

| Race | Number | (Percent) |
|---|---|---|
| White | 8 | (100.0) |
| Black | 0 | (0.0) |
| Other | 0 | (0.0) |
| Unknown race | 0 | (0.0) |

| Ethnicity | Number | (Percent) |
|---|---|---|
| Non-Hispanic | 7 | (87.5) |
| Hispanic | 0 | (0.0) |
| Unknown ethnicity | 1 | (12.5) |

| Case classification | Number | (Percent) |
|---|---|---|
| Confirmed | 5 | (62.5) |
| Probable | 3 | (37.5) |

| Outcome | Number | (Percent) |
|---|---|---|
| Interviewed | 6 | (75.0) |
| Hospitalized | 6 | (75.0) |
| Died | 0 | (0.0) |

| Outbreak status | Number | (Percent) |
|---|---|---|
| Sporadic | 5 | (62.5) |
| Outbreak-associated | 3 | (37.5) |
| Outbreak status unknown | 0 | (0.0) |

| Location where exposed | Number | (Percent) |
|---|---|---|
| Florida | 8 | (100.0) |

| County of residence | Number | (Percent) |
|---|---|---|
| Marion | 2 | (25.0) |
| Gadsden | 1 | (12.5) |
| Gulf | 1 | (12.5) |
| Lee | 1 | (12.5) |
| Pinellas | 1 | (12.5) |
| St. Lucie | 1 | (12.5) |
| Volusia | 1 | (12.5) |

## Ehrlichiosis

Ehrlichiosis is a broad term used to describe a group of bacterial pathogens. At least three different *Ehrlichia* species are known to cause human illness in the U.S. Both *E. chaffeensis*, also known as human monocytic ehrlichiosis (HME) and *E. ewingii* are transmitted by the lone star tick (*Amblyomma americanum*), one of the most commonly encountered ticks in the southeastern U.S. A third *Ehrlichia* species, provisionally called *E. muris-like* (EML), has been reported in a small number of cases in Minnesota and Wisconsin, but no tick vector has been identified. Ehrlichiosis cases present with similar symptoms no matter which species is involved, and are indistinguishable by serologic testing. *E. ewingii* and EML are most frequently identified in immunocompromised patients. Severe illness is most frequent in adults >50 years old. Delays in treatment can also result in severe outcome. Unlike other tick-borne diseases such as anaplasmosis and Lyme disease, most reported ehrlichiosis cases were acquired in Florida. Surveillance for ehrlichiosis is intended to monitor incidence over time, estimate burden of illness, understand the epidemiology of each species, and target areas of high incidence for prevention education. See Table 4 for additional information on ehrlichiosis cases reported in 2015. Note that the number of people hospitalized is based on people who were hospitalized at the time of their illness, though the hospitalization may not necessarily have been due to the illness. Only 13 of the 16 hospitalized people were actually hospitalized for ehrlichiosis.

Table 4. Characteristics of Ehrlichiosis Cases Reported in 2015, Florida

| Summary | |
|---|---|
| Number of cases in 2015 | 18 |
| 5-year trend (2011 to 2015) |  |
| **Age (in years)** | |
| Mean | 64 |
| Median | 64 |
| Min-max | 39 - 81 |

| Gender | Number | (Percent) |
|---|---|---|
| Female | 5 | (27.8) |
| Male | 13 | (72.2) |
| Unknown gender | 0 | (0.0) |

| Race | Number | (Percent) |
|---|---|---|
| White | 14 | (77.8) |
| Black | 1 | (5.6) |
| Other | 0 | (0.0) |
| Unknown race | 3 | (16.7) |

| Ethnicity | Number | (Percent) |
|---|---|---|
| Non-Hispanic | 15 | (83.3) |
| Hispanic | 0 | (0.0) |
| Unknown ethnicity | 3 | (16.7) |

| Case classification | Number | (Percent) |
|---|---|---|
| Confirmed | 9 | (50.0) |
| Probable | 9 | (50.0) |

| Outcome | Number | (Percent) |
|---|---|---|
| Interviewed | 17 | (94.4) |
| Hospitalized | 16 | (88.9) |
| Died | 0 | (0.0) |

| Outbreak status | Number | (Percent) |
|---|---|---|
| Sporadic | 17 | (94.4) |
| Outbreak-associated | 0 | (0.0) |
| Outbreak status unknown | 1 | (5.6) |

| Location where exposed | Number | (Percent) |
|---|---|---|
| Florida | 16 | (88.9) |
| Missouri | 1 | (5.6) |
| Unknown | 1 | (5.6) |

| County of residence | Number | (Percent) |
|---|---|---|
| Flagler | 3 | (16.7) |
| Pinellas | 3 | (16.7) |
| Volusia | 3 | (16.7) |
| Alachua | 2 | (11.1) |
| Leon | 2 | (11.1) |
| Hernando | 1 | (5.6) |
| Lee | 1 | (5.6) |
| Nassau | 1 | (5.6) |
| St. Johns | 1 | (5.6) |
| Suwannee | 1 | (5.6) |

## Hepatitis E

Hepatitis E is a liver disease caused by the hepatitis E virus (HEV). HEV is widespread in the developing world, causing large epidemics of acute hepatitis. Many infections are asymptomatic. When symptoms do occur, they are similar to those of other types of acute viral hepatitis and can include fever, fatigue, loss of appetite, nausea, vomiting, abdominal pain, jaundice, dark urine, clay-colored stool, and joint pain. Hepatitis E is usually self-limiting, but some cases may develop into acute liver failure, particularly among pregnant woman and persons with preexisting liver disease. HEV may also cause chronic infection, primarily in immunocompromised persons. The virus is shed in the stools of infected persons. Globally, HEV is transmitted mainly through contaminated drinking water. Although rare in developed countries, individual cases and outbreaks have been linked to exposure to pigs and consumption of undercooked pork, wild game, or shellfish, and blood transfusions. Most locally acquired infections report no specific risk factors. Surveillance for hepatitis E worldwide is important because it is a significant cause of morbidity with an estimated 20 million HEV infections, three million acute cases of hepatitis E, and over 57,000 hepatitis E-related deaths. Pregnant women with hepatitis E, particularly those in the second or third trimester, are at an increased risk of acute liver failure, fetal loss, and death. Surveillance in the U.S. is conducted to monitor incidence and trends. See Table 5 for additional information on hepatitis E cases reported in 2015. Although there was an increase in the number of cases reported in 2015 compared to the previous three years, no commonalities were identified among cases. Consistent with national trends, no definitive sources were identified for the sporadic infections acquired in Florida.

Table 5. Characteristics of Hepatitis E Cases Reported in 2015, Florida

| Summary | |
|---|---|
| Number of cases in 2015 | 6 |
| 5-year trend (2011 to 2015) |  |

| Age (in years) | |
|---|---|
| Mean | 34 |
| Median | 30 |
| Min-max | 20 - 50 |

| Gender | Number | (Percent) |
|---|---|---|
| Female | 2 | (33.3) |
| Male | 4 | (66.7) |
| Unknown gender | 0 | (0.0) |

| Race | Number | (Percent) |
|---|---|---|
| White | 3 | (50.0) |
| Black | 0 | (0.0) |
| Other | 1 | (16.7) |
| Unknown race | 2 | (33.3) |

| Ethnicity | Number | (Percent) |
|---|---|---|
| Non-Hispanic | 3 | (50.0) |
| Hispanic | 1 | (16.7) |
| Unknown ethnicity | 2 | (33.3) |

| Case classification | Number | (Percent) |
|---|---|---|
| Confirmed | 6 | (100.0) |
| Probable | 0 | (0.0) |

| Outcome | Number | (Percent) |
|---|---|---|
| Interviewed | 6 | (100.0) |
| Hospitalized | 5 | (83.3) |
| Died | 0 | (0.0) |

| Outbreak status | Number | (Percent) |
|---|---|---|
| Sporadic | 6 | (100.0) |
| Outbreak-associated | 0 | (0.0) |
| Outbreak status unknown | 0 | (0.0) |

| Location where exposed | Number | (Percent) |
|---|---|---|
| Florida | 4 | (66.7) |
| India | 1 | (16.7) |
| South Africa | 1 | (16.7) |

| County of residence | Number | (Percent) |
|---|---|---|
| Collier | 2 | (33.3) |
| Duval | 1 | (16.7) |
| Hillsborough | 1 | (16.7) |
| Orange | 1 | (16.7) |
| Pasco | 1 | (16.7) |

## Leptospirosis

Leptospirosis is cased by the spirochete *Leptospira interrogans*, which has over 250 pathogenic serovars identified. About 90% of infections are asymptomatic or self-limited mild disease. Approximately 10% of infections, comprising the majority of recognized cases, are characterized by abrupt onset of fever, headache, muscle aches, vomiting, or diarrhea. Cases may experience a biphasic illness, with a short recovery period after the first week of illness followed by more severe symptoms. Approximately 10-15% of patients with clinical disease experience severe leptospirosis, a high-mortality syndrome with multi-organ involvement, such as kidney failure, liver failure, pulmonary hemorrhage, or meningitis. The spirochetes are maintained in the kidneys of many wild and domestic animal reservoirs. Organisms are shed in urine, amniotic fluid, and placenta, and can survive for months in water or moist environments. Human infection may occur following direct contact with urine or other body fluids from an infected animal, or indirectly through contact with contaminated water, soil, or food. Leptospira may enter the body through mucous membranes or abraded skin. Those at greatest risk include people working with animals; people exposed to wet freshwater conditions, such as sewer or sugarcane field workers; military personnel; and outdoor enthusiasts. The disease is more common in men, primarily because of occupational- or recreational-related exposures. Traditionally, leptospirosis has been considered an occupational disease; however, groups at risk have expanded to include urban children and recreationally exposed populations, such as adventure racers. Surveillance for leptospirosis is important to monitor incidence over time and identify temporal, geographic, and demographic occurrence to facilitate its prevention and control. See Table 6 for additional information on leptospirosis cases reported in 2015. Only one infection was acquired in Florida, and was likely due to occupational exposure. The infected man worked as an underwater bridge inspector, diving in all types of water all around Florida, including water near farms, livestock, and wildlife. Three people infected outside the U.S. all reported water exposures including swimming in a cave under a bat roosting site in Mexico, kayaking in Costa Rica, and being immersed in a river for a religious ceremony in India. One person also reported potential exposure to rodent excreta while hiking. Note that one case initially reported with an unknown exposure location was determined to be exposed in Mexico after the close of the 2015 morbidity database.

Table 6. Characteristics of Leptospirosis Cases Reported in 2015, Florida

| Summary | |
|---|---|
| Number of cases in 2015 | 4 |
| 5-year trend (2011 to 2015) |  |
| **Age (in years)** | |
| Mean | 39 |
| Median | 39 |
| Min-max | 23 - 54 |

| Gender | Number | (Percent) |
|---|---|---|
| Female | 0 | (0.0) |
| Male | 4 | (100.0) |
| Unknown gender | 0 | (0.0) |

| Race | Number | (Percent) |
|---|---|---|
| White | 4 | (100.0) |
| Black | 0 | (0.0) |
| Other | 0 | (0.0) |
| Unknown race | 0 | (0.0) |

| Ethnicity | Number | (Percent) |
|---|---|---|
| Non-Hispanic | 3 | (75.0) |
| Hispanic | 1 | (25.0) |
| Unknown ethnicity | 0 | (0.0) |

| Case classification | Number | (Percent) |
|---|---|---|
| Confirmed | 3 | (75.0) |
| Probable | 1 | (25.0) |

| Outcome | Number | (Percent) |
|---|---|---|
| Interviewed | 4 | (100.0) |
| Hospitalized | 4 | (100.0) |
| Died | 0 | (0.0) |

| Outbreak status | Number | (Percent) |
|---|---|---|
| Sporadic | 3 | (75.0) |
| Outbreak-associated | 1 | (25.0) |
| Outbreak status unknown | 0 | (0.0) |

| Location where exposed | Number | (Percent) |
|---|---|---|
| Florida | 1 | (25.0) |
| Costa Rica | 1 | (25.0) |
| India | 1 | (25.0) |
| Unknown | 1 | (25.0) |

| County of residence | Number | (Percent) |
|---|---|---|
| Hillsborough | 1 | (25.0) |
| Miami-Dade | 1 | (25.0) |
| Pinellas | 1 | (25.0) |
| Polk | 1 | (25.0) |

**Measles (Rubeola)**

Measles, also known as rubeola, is a vaccine-preventable respiratory disease caused by the measles virus. Before a routine vaccination program was introduced in the U.S., measles was a common illness in infants, children, and young adults. Most people have now been vaccinated in the U.S. and the disease has become rare. Measles is still common in many parts of the world where vaccination rates are low, including some countries in Africa, Asia, Europe, and the Pacific. Travelers with measles continue to bring the disease into the U.S. A typical case of measles begins with mild to moderate fever, cough, runny nose, red eyes, and sore throat, possibly followed by tiny white spots inside the mouth, a red or reddish-brown generalized maculopapular rash, and high fever. Measles is highly contagious among susceptible people and can spread to others from four days before to four days after the rash appears. Measles is only found in humans, and is spread by aerosolized droplets of saliva or mucus from the mouth, nose, or throat of an infected person, usually when the person coughs, sneezes, or talks. Surveillance for measles is important to identify infected people and prevent them from transmitting the virus to others by isolating the infected person and identifying and vaccinating any susceptible contacts. It is also important to educate potentially exposed people about the signs and symptoms of measles to facilitate early diagnosis and reduce the risk of further transmission. See Table 7 for additional information on measles cases reported in 2015. All five reported cases were outbreak-associated. For additional information on the outbreak, see Section 4: Notable Outbreaks and Case Investigations.

Table 7. Characteristics of Measles (Rubeola) Cases Reported in 2015, Florida

| Summary | |
|---|---|
| Number of cases in 2015 | 5 |
| 5-year trend (2011 to 2015) |  |

| Age (in years) | |
|---|---|
| Mean | 14 |
| Median | 17 |
| Min-max | 6 - 23 |

| Gender | Number | (Percent) |
|---|---|---|
| Female | 4 | (80.0) |
| Male | 1 | (20.0) |
| Unknown gender | 0 | (0.0) |

| Race | Number | (Percent) |
|---|---|---|
| White | 5 | (100.0) |
| Black | 0 | (0.0) |
| Other | 0 | (0.0) |
| Unknown race | 0 | (0.0) |

| Ethnicity | Number | (Percent) |
|---|---|---|
| Non-Hispanic | 5 | (100.0) |
| Hispanic | 0 | (0.0) |
| Unknown ethnicity | 0 | (0.0) |

| Case classification | Number | (Percent) |
|---|---|---|
| Confirmed | 5 | (100.0) |
| Probable | 0 | (0.0) |

| Outcome | Number | (Percent) |
|---|---|---|
| Interviewed | 5 | (100.0) |
| Hospitalized | 0 | (0.0) |
| Died | 0 | (0.0) |

| Outbreak status | Number | (Percent) |
|---|---|---|
| Sporadic | 0 | (0.0) |
| Outbreak-associated | 5 | (100.0) |
| Outbreak status unknown | 0 | (0.0) |

| Location where exposed | Number | (Percent) |
|---|---|---|
| Florida | 3 | (60.0) |
| India | 2 | (40.0) |

| County of residence | Number | (Percent) |
|---|---|---|
| Indian River | 3 | (60.0) |
| St. Lucie | 2 | (40.0) |

## Mumps

Mumps is a vaccine-preventable disease caused by the mumps virus. Mumps typically starts with a few days of fever, headache, muscle aches, tiredness and loss of appetite, followed by swelling of salivary glands. Before a routine vaccination program was introduced in the U.S., mumps was a common illness in infants, children and young adults. Most people have now been vaccinated in the U.S. and the disease has become rare. Mumps is only found in humans, and is spread by droplets of saliva or mucus from the mouth, nose or throat of an infected person, usually when the person coughs, sneezes or talks. Surveillance for mumps is important to identify infected people and prevent them from transmitting the infection to others by isolating the infected person and identifying and vaccinating any susceptible people. It is also important to educate potentially exposed people about the signs and symptoms of mumps to facilitate early diagnosis and reduce the risk of further transmission. Surveillance data are used to evaluate prevention programs and vaccine effectiveness. See Table 8 for additional information on mumps cases reported in 2015. Three cases were attributed to international travel. Transmission settings for the seven infections acquired in the U.S. were unknown.

Table 8. Characteristics of Mumps Cases Reported in 2015, Florida

| Summary | |
|---|---|
| Number of cases in 2015 | 10 |
| 5-year trend (2011 to 2015) |  |

| Age (in years) | |
|---|---|
| Mean | 32 |
| Median | 27 |
| Min-max | 18 - 68 |

| Gender | Number | (Percent) |
|---|---|---|
| Female | 3 | (30.0) |
| Male | 7 | (70.0) |
| Unknown gender | 0 | (0.0) |

| Race | Number | (Percent) |
|---|---|---|
| White | 7 | (70.0) |
| Black | 0 | (0.0) |
| Other | 2 | (20.0) |
| Unknown race | 1 | (10.0) |

| Ethnicity | Number | (Percent) |
|---|---|---|
| Non-Hispanic | 7 | (70.0) |
| Hispanic | 2 | (20.0) |
| Unknown ethnicity | 1 | (10.0) |

| Case classification | Number | (Percent) |
|---|---|---|
| Confirmed | 3 | (30.0) |
| Probable | 7 | (70.0) |

| Outcome | Number | (Percent) |
|---|---|---|
| Interviewed | 9 | (90.0) |
| Hospitalized | 3 | (30.0) |
| Died | 0 | (0.0) |

| Outbreak status | Number | (Percent) |
|---|---|---|
| Sporadic | 10 | (100.0) |
| Outbreak-associated | 0 | (0.0) |
| Outbreak status unknown | 0 | (0.0) |

| Location where exposed | Number | (Percent) |
|---|---|---|
| Florida | 5 | (50.0) |
| New York | 2 | (20.0) |
| Argentina | 1 | (10.0) |
| Brazil | 1 | (10.0) |
| India | 1 | (10.0) |

| County of residence | Number | (Percent) |
|---|---|---|
| Miami-Dade | 3 | (30.0) |
| Broward | 2 | (20.0) |
| Collier | 1 | (10.0) |
| Hillsborough | 1 | (10.0) |
| Palm Beach | 1 | (10.0) |
| Pasco | 1 | (10.0) |
| Polk | 1 | (10.0) |

## Ricin Toxin Poisoning

Ricin is a poison found naturally in castor beans. If castor beans are chewed and swallowed, the released ricin can cause injury. Ricin can be extracted from the waste material left over from processing castor beans. It takes a deliberate act to extract and purify ricin from castor beans and use it to poison people. Intentional ingestion of castor beans to attempt self-harm has been observed. Unintentional exposure to ricin is unlikely, except through the ingestion of castor beans. The major symptoms of ricin poisoning depend on the route of exposure and the dose received, though many organs may be affected in severe cases. Ricin exposure can occur via inhalation, injection, ingestion, skin contact, or eye contact. Onset of ricin poisoning symptoms occur within hours of exposure. Ricin is less toxic by oral ingestion than by other routes and this route of exposure is most common for intentional and unintentional exposures reported in Florida. Symptoms associated with ingestion include nausea, vomiting, abdominal pain, fever, and diarrhea that may become bloody. Severe intoxications through ingestion may involve vascular collapse, shock, and death. Surveillance for ricin toxin poisoning is important as exposures are intentional and may indicate criminal acts or bioterrorism. Four ricin toxin poisoning cases were reported in Florida in 2015. Two cases were in a mother and daughter who each ingested one castor bean for its laxative effects. Two cases were as a result of unrelated attempted suicides.

Table 9. Characteristics of Ricin Cases Reported in 2015, Florida

| Summary | |
|---|---|
| Number of cases in 2015 | 4 |
| 5-year trend (2011 to 2015) |  |
| **Age (in years)** | |
| Mean | 32 |
| Median | 34 |
| Min-max | 11 - 49 |

| Gender | Number | (Percent) |
|---|---|---|
| Female | 3 | (75.0) |
| Male | 1 | (25.0) |
| Unknown gender | 0 | (0.0) |

| Race | Number | (Percent) |
|---|---|---|
| White | 1 | (25.0) |
| Black | 3 | (75.0) |
| Other | 0 | (0.0) |
| Unknown race | 0 | (0.0) |

| Ethnicity | Number | (Percent) |
|---|---|---|
| Non-Hispanic | 4 | (100.0) |
| Hispanic | 0 | (0.0) |
| Unknown ethnicity | 0 | (0.0) |

| Case classification | Number | (Percent) |
|---|---|---|
| Confirmed | 2 | (50.0) |
| Probable | 2 | (50.0) |

| Outcome | Number | (Percent) |
|---|---|---|
| Interviewed | 3 | (75.0) |
| Hospitalized | 2 | (50.0) |
| Died | 0 | (0.0) |

| Outbreak status | Number | (Percent) |
|---|---|---|
| Sporadic | 2 | (50.0) |
| Outbreak-associated | 2 | (50.0) |
| Outbreak status unknown | 0 | (0.0) |

| Location where exposed | Number | (Percent) |
|---|---|---|
| Florida | 4 | (100.0) |

| County of residence | Number | (Percent) |
|---|---|---|
| Collier | 2 | (50.0) |
| Lake | 1 | (25.0) |
| Orange | 1 | (25.0) |

### *Staphylococcus aureus* Infection, Intermediate Resistance to Vancomycin

*Staphylococcus aureus* is a type of bacteria commonly found on the skin and in the noses of healthy people. Most *S. aureus* infections are minor, but sometimes serious or fatal bloodstream infections, wound infections, or pneumonia can occur. *S. aureus* is also an important cause of health care-associated infections, especially among chronically ill patients who have recently had invasive procedures or who have indwelling medical devices. *S. aureus* is transmitted person-to-person by direct contact. Commonly found among health care workers, *S. aureus* is spread by hands that become contaminated by contact with colonized or infected patients; colonized or infected body sites of the health care workers themselves; or devices, items, or other environmental surfaces contaminated with body fluids containing *S. aureus*.

Methicillin-resistant *S. aureus* (MRSA) is typically resistant to many antibiotics and has become more common in the last decade. Consequently, physicians rely heavily on vancomycin as the primary antibiotic for treating patients with serious MRSA infections, and resistance to vancomycin limits the available treatment options for MRSA. Vancomycin-intermediate *S. aureus* (VISA) and vancomycin-resistant *S. aureus* (VRSA) have acquired intermediate or complete resistance to vancomycin. VISA emerges when a patient with preexisting MRSA infection or colonization is exposed to repeated vancomycin use and the *S. aureus* strain develops a thicker cell wall. This resistance mechanism is not transferrable to susceptible strains. In contrast, VRSA emerges when a strain of *S. aureus* acquires the *vanA* gene from a vancomycin-resistant *Enterococcus* (VRE) organism. Recent exposure to vancomycin is not necessary. This type of gene-mediated resistance is theoretically transferable to susceptible strains or organisms, so there is potential for person-to-person transmission. No VRSA infection has ever been detected in Florida. Surveillance for VISA and VRSA is intended to identify infected people, evaluate their risk factors for infection, assess the risk of a patient transmitting infection to others, and to prevent such transmission. Additionally, it is important to track the emergence of a relatively new and rare clinically important organism. See Table 10 for additional information on VISA cases reported in 2015. Of the four reported cases in 2015, three were currently hospitalized, one was receiving outpatient services for dialysis, and none were currently residing in congregate settings. None of the individuals reported recent international travel.

Table 10. Characteristics of *Staphylococcus aureus* Infection, Intermediate Resistance to Vancomycin Cases Reported in 2015, Florida

| Summary | |
|---|---|
| Number of cases in 2015 | 4 |
| 5-year trend (2011 to 2015) |  |
| **Age (in years)** | |
| Mean | 71 |
| Median | 77 |
| Min-max | 46 - 86 |

| Gender | Number | (Percent) |
|---|---|---|
| Female | 0 | (0.0) |
| Male | 4 | (100.0) |
| Unknown gender | 0 | (0.0) |

| Race | Number | (Percent) |
|---|---|---|
| White | 4 | (100.0) |
| Black | 0 | (0.0) |
| Other | 0 | (0.0) |
| Unknown race | 0 | (0.0) |

| Ethnicity | Number | (Percent) |
|---|---|---|
| Non-Hispanic | 3 | (75.0) |
| Hispanic | 1 | (25.0) |
| Unknown ethnicity | 0 | (0.0) |

| Case classification | Number | (Percent) |
|---|---|---|
| Confirmed | 4 | (100.0) |

| Outcome | Number | (Percent) |
|---|---|---|
| Interviewed | 1 | (25.0) |
| Hospitalized | 3 | (75.0) |
| Died | 0 | (0.0) |

| Outbreak status | Number | (Percent) |
|---|---|---|
| Sporadic | 4 | (100.0) |
| Outbreak-associated | 0 | (0.0) |
| Outbreak status unknown | 0 | (0.0) |

| Location where exposed | Number | (Percent) |
|---|---|---|
| Florida | 4 | (100.0) |

| County of residence | Number | (Percent) |
|---|---|---|
| Duval | 1 | (25.0) |
| Leon | 1 | (25.0) |
| Miami-Dade | 1 | (25.0) |
| Santa Rosa | 1 | (25.0) |

## Tetanus

Tetanus is a life-threatening disease caused by the toxin produced by *Clostridium tetani* bacteria. Tetanus is entirely preventable through immunization. Another name for tetanus is "lockjaw" because it often causes a person's neck and jaw muscles to lock, making it hard to open the mouth or swallow. Other symptoms may include headache, muscle spasms, painful muscle stiffness all over the body, seizures, fever and sweating, high blood pressure, and fast heart rate. Tetanus is rare in the U.S. because vaccination rates are high. Tetanus vaccines are available for children and adults in several different formulations. Booster tetanus vaccines are recommended at least every 10 years. Nearly all cases of tetanus are among people who have never received a tetanus vaccine or adults who do not stay up-to-date on their 10-year booster shots. Unlike other vaccine-preventable diseases, tetanus is not spread from person to person. *C. tetani* bacteria are found in high concentrations in soil and animal excrement and people can become infected when contaminated soil, dust, or manure enter the body through breaks in the skin (usually cuts or puncture wounds caused by contaminated objects). The purpose of tetanus surveillance is to monitor the effectiveness of immunization programs and vaccines and to collect information on the temporal, geographic, and demographic occurrence to facilitate its prevention and control. See Table 11 for additional information on tetanus cases reported in 2015. Two men stepped on nails while outdoors, one man sustained an abrasion while mowing his lawn, and information about the fourth man's injury was limited. Heart disease was the underlying cause of death for one man with tetanus. Two men did not have any history of vaccination and two men had unknown vaccination histories.

Table 11. Characteristics of Tetanus Cases Reported in 2015, Florida

| Summary | |
|---|---|
| Number of cases in 2015 | 4 |
| 5-year trend (2011 to 2015) |  |
| **Age (in years)** | |
| Mean | 57 |
| Median | 58 |
| Min-max | 26 - 87 |

| Gender | Number | (Percent) |
|---|---|---|
| Female | 0 | (0.0) |
| Male | 4 | (100.0) |
| Unknown gender | 0 | (0.0) |

| Race | Number | (Percent) |
|---|---|---|
| White | 2 | (50.0) |
| Black | 2 | (50.0) |
| Other | 0 | (0.0) |
| Unknown race | 0 | (0.0) |

| Ethnicity | Number | (Percent) |
|---|---|---|
| Non-Hispanic | 3 | (75.0) |
| Hispanic | 1 | (25.0) |
| Unknown ethnicity | 0 | (0.0) |

| Case classification | Number | (Percent) |
|---|---|---|
| Probable | 4 | (100.0) |

| Outcome | Number | (Percent) |
|---|---|---|
| Interviewed | 3 | (75.0) |
| Hospitalized | 4 | (100.0) |
| Died | 2 | (50.0) |

| Outbreak status | Number | (Percent) |
|---|---|---|
| Sporadic | 4 | (100.0) |
| Outbreak-associated | 0 | (0.0) |
| Outbreak status unknown | 0 | (0.0) |

| Location where exposed | Number | (Percent) |
|---|---|---|
| Florida | 4 | (100.0) |

| County of residence | Number | (Percent) |
|---|---|---|
| Palm Beach | 2 | (50.0) |
| Collier | 1 | (25.0) |
| Pinellas | 1 | (25.0) |

## Typhoid Fever

Typhoid fever is a systemic illness caused by *Salmonella enterica* serotype Typhi (*Salmonella* Typhi) bacteria. People with typhoid fever typically have a sustained high fever and may also experience weakness, stomach pains, headache, loss of appetite, or rash. Typhoid fever can be severe. *Salmonella* Typhi lives only in humans. People get typhoid fever after eating food or drinking beverages that have been handled by a person who is shedding *Salmonella* Typhi in their stool or when sewage contaminated with *Salmonella* Typhi bacteria gets into the water used for drinking or washing food. Typhoid fever is common in most parts of the world except in industrialized regions such as the U.S., Canada, Western Europe, Australia, and Japan. Good sanitation and aggressive case follow-up help prevent typhoid fever from becoming endemic in industrialized regions. Surveillance for typhoid fever is intended to determine if there is a source of infection of public health concern (e.g., an infected food handler or contaminated commercially distributed food product) and to stop transmission from such a source, assess the risk of infected people transmitting infection to others and prevent such transmission, and identify other unrecognized cases. See Table 12 for additional information on typhoid fever cases reported in 2015. Typically, about 80% of infections are acquired in other countries. However, in 2015, three of the six reported cases were acquired in Florida in Lee, Miami-Dade, and Palm Beach counties. No commonality between these three cases was identified. Of the people who acquired typhoid fever internationally, two were visiting friends and family in Bangladesh and Haiti and one was a college student from India.

Table 12. Characteristics of Typhoid Fever Cases Reported in 2015, Florida

| Summary | |
|---|---|
| Number of cases in 2015 | 6 |
| 5-year trend (2011 to 2015) |  |

| Age (in years) | |
|---|---|
| Mean | 35 |
| Median | 22 |
| Min-max | 3 - 73 |

| Gender | Number | (Percent) |
|---|---|---|
| Female | 1 | (16.7) |
| Male | 5 | (83.3) |
| Unknown gender | 0 | (0.0) |

| Race | Number | (Percent) |
|---|---|---|
| White | 0 | (0.0) |
| Black | 3 | (50.0) |
| Other | 3 | (50.0) |
| Unknown race | 0 | (0.0) |

| Ethnicity | Number | (Percent) |
|---|---|---|
| Non-Hispanic | 5 | (83.3) |
| Hispanic | 1 | (16.7) |
| Unknown ethnicity | 0 | (0.0) |

| Case classification | Number | (Percent) |
|---|---|---|
| Confirmed | 6 | (100.0) |
| Probable | 0 | (0.0) |

| Outcome | Number | (Percent) |
|---|---|---|
| Interviewed | 6 | (100.0) |
| Hospitalized | 6 | (100.0) |
| Died | 0 | (0.0) |

| Outbreak status | Number | (Percent) |
|---|---|---|
| Sporadic | 6 | (100.0) |
| Outbreak-associated | 0 | (0.0) |
| Outbreak status unknown | 0 | (0.0) |

| Location where exposed | Number | (Percent) |
|---|---|---|
| Florida | 3 | (50.0) |
| Bangladesh | 1 | (16.7) |
| Haiti | 1 | (16.7) |
| India | 1 | (16.7) |

| County of residence | Number | (Percent) |
|---|---|---|
| Miami-Dade | 2 | (33.3) |
| Collier | 1 | (16.7) |
| Escambia | 1 | (16.7) |
| Lee | 1 | (16.7) |
| Palm Beach | 1 | (16.7) |

## West Nile Virus Disease

West Nile virus (WNV) is a mosquito-borne flavivirus that was first introduced to the northeastern U.S. in 1999 and first detected in Florida in 2001. Since its initial detection, WNV activity has been reported in all 67 Florida counties. People infected with WNV can experience a wide range of symptoms. Approximately 80% of those infected show no clinical symptoms, 20% have mild symptoms (headache, fever, pain, fatigue), and less than 1% suffer from the neuroinvasive form of illness, which may involve meningitis and encephalitis and can cause irreversible neurological damage, paralysis, coma or death. Several species of *Culex* mosquitoes, other animals (particularly wild birds and horses), and humans are all documented hosts for WNV. People become infected when they are bitten by a mosquito infected with WNV. WNV can also be transmitted to humans via contaminated blood transfusions and less frequently through organ transplantation. Since 2003, all blood donations are screened for the presence of WNV prior to transfusion. Symptoms typically appear from 2 to 14 days after the exposure. People spending large amounts of time outside (due to occupation, hobbies or homelessness) or not using insect repellant or other forms of prevention are at higher risk of becoming infected. Surveillance for WNV disease is important to identify areas where WNV is being transmitted to target prevention education for the public, monitor incidence over time, and estimate the burden of illness. See Table 13 for additional information on WNV disease cases reported in 2015. Only one of the 13 cases had non-neuroinvasive symptoms. One of the fatal cases was determined to have acquired WNV infection through an organ transplant.

Asymptomatic WNV infections do occur, though they do not meet Florida surveillance case definitions. Two asymptomatic infections in blood donors were identified in Florida residents in 2015. Asymptomatic blood donors were reported in Hillsborough (September) and Manatee (October) counties.

Table 13. Characteristics of West Nile Virus Disease Cases Reported in 2015, Florida

| Summary | |
|---|---|
| Number of cases in 2015 | 13 |
| 5-year trend (2011 to 2015) |  |
| **Age (in years)** | |
| Mean | 47 |
| Median | 54 |
| Min-max | 9 - 80 |

| Gender | Number | (Percent) |
|---|---|---|
| Female | 2 | (15.4) |
| Male | 11 | (84.6) |
| Unknown gender | 0 | (0.0) |

| Race | Number | (Percent) |
|---|---|---|
| White | 13 | (100.0) |
| Black | 0 | (0.0) |
| Other | 0 | (0.0) |
| Unknown race | 0 | (0.0) |

| Ethnicity | Number | (Percent) |
|---|---|---|
| Non-Hispanic | 13 | (100.0) |
| Hispanic | 0 | (0.0) |
| Unknown ethnicity | 0 | (0.0) |

| Case classification | Number | (Percent) |
|---|---|---|
| Confirmed | 12 | (92.3) |
| Probable | 1 | (7.7) |

| Outcome | Number | (Percent) |
|---|---|---|
| Interviewed | 10 | (76.9) |
| Hospitalized | 12 | (92.3) |
| Died | 2 | (15.4) |

| Outbreak status | Number | (Percent) |
|---|---|---|
| Sporadic | 13 | (100.0) |
| Outbreak-associated | 0 | (0.0) |
| Outbreak status unknown | 0 | (0.0) |

| Location where exposed | Number | (Percent) |
|---|---|---|
| Florida | 13 | (100.0) |

| County of residence | Number | (Percent) |
|---|---|---|
| Escambia | 4 | (30.8) |
| Hillsborough | 2 | (15.4) |
| Walton | 2 | (15.4) |
| Duval | 1 | (7.7) |
| Marion | 1 | (7.7) |
| Pinellas | 1 | (7.7) |
| Sarasota | 1 | (7.7) |
| Volusia | 1 | (7.7) |