

## **Section 3**

### **Narratives for Selected Reportable Diseases/Conditions of Infrequent Occurrence**



### Arsenic Poisoning

Arsenic is an element that naturally occurs in many minerals, usually in conjunction with sulfur and metals. Most arsenic-induced toxicity in humans is due to exposure to inorganic arsenic. Organic arsenic found in fish is not believed to be toxic. Acute ingestion of toxic amounts of inorganic arsenic typically causes severe gastrointestinal symptoms (e.g., vomiting, abdominal pain and diarrhea), which may lead rapidly to dehydration and shock. Different clinical manifestations may follow, including dysrhythmias, altered mental status and multisystem organ failure leading to death. Common sources of potential 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, arsenic is a naturally occurring contaminant found in water in certain areas of Florida, affecting (unregulated) private drinking wells. Surveillance for arsenic poisoning is important to identify sources of intoxication of public health concern (e.g., a water source, workplace exposure, homeopathic medicines, exposure to CCA-treated wood), to prevent further or continued exposure to those sources and when the source of intoxication appears to pose a risk to only a few people, to inform those people how they can reduce their risk of exposure.

Arsenic poisoning became reportable in Florida in November 2008. Since then, between 7 and 14 cases have been reported each year; only five cases were reported in 2012, all of which were sporadic and laboratory-confirmed. Two cases were hospitalized, but no deaths were reported. Two cases were in women, the other three were in men; two cases were in non-Hispanic white people, one case was in a white Hispanic person and two cases were in people of unknown race and ethnicity. Ages ranged from 29 to 79 years old (average age was 57 years, median was 65 years). Cases were reported in Alachua (1), Bay (2), Escambia (1), Pasco (1) counties. All cases were interviewed; one person's possible exposure was in Illinois (homeopathic medicine); the remaining exposures were in Florida. Two people with Florida exposures reported smoking. No other risk factors were reported.

### 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 and physical weakness. Brucellosis can also cause long lasting or chronic symptoms that include recurrent fevers, joint pain and fatigue. These bacteria are primarily passed among animals, but people can get the disease when they are in contact with infected animals or animal products contaminated with the bacteria. Animals that are most commonly infected in Florida include feral swine, dogs and dolphins. Outside the U.S., unpasteurized milk products from infected goats, sheep and cattle 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; early intervention and prophylaxis to prevent laboratory exposure-related infections; early detection of potentially contaminated products including food, transfusion, and organ transplant products; and early detection and response to a bioterrorist event.

Since 2002, 3 to 10 brucellosis cases were reported annually in Florida residents. In 2012, 17 cases were reported, 16 of which were interviewed, 13 of which were confirmed and none of which were outbreak-associated. Eleven cases were hospitalized, but no deaths were reported. Sixteen cases were in white men (four of which were Hispanic) and one case was in a black man. Ages ranged from 19 to 69 years old (average age was 37 years, median was 31 years). Cases occurred throughout the year, as is expected for a disease with an extended incubation period (up to several months) and the potential to cause chronic illness. Cases were reported in residents of Brevard (3), Hendry (3), Palm

Beach (2), Calhoun (1), Miami-Dade (1), Hardee (1), Jackson (1), Osceola (1), Polk (1), Sarasota (1), Seminole (1) and St. Lucie (1) counties. Two men acquired their infections in Mexico; both were culture-positive for *B. melitensis* and reported eating unpasteurized milk products or slaughtering livestock. One person who was culture-positive for *B. suis* had mental health issues and did not know where or how he acquired his infection. The remaining 14 men acquired their infections in Florida; 10 were culture-positive for *B. suis* and four were positive by serologic testing. Of the 14 men infected in Florida, 13 reported hunting feral swine or other direct swine or raw meat contact. One man did not have direct swine contact but reported a large number of feral swine regularly being in his yard, and sustained a significant cut on a lawn mower blade while working in the yard. He also had outside pets. Interestingly, the U.S. Department of Agriculture reported an increased number of *Brucella* positive feral swine in 2012.

### Cholera

Cholera is an acute bacterial infection caused by toxigenic *Vibrio cholerae* serogroups O1 and O139. People with cholera can experience a wide range of symptoms, from asymptomatic infection to severe diarrheal illness. Approximately 5-10% of infections cause severe disease, characterized by acute, profuse, watery diarrhea that can lead to rapid fluid loss and hypovolemic shock. Additional symptoms of severe illness may include vomiting, tachycardia, loss of skin turgor, muscle cramps, dry mucous membranes, hypotension and thirst. Without treatment, seizures, coma, and death can occur within hours. Humans are the only documented natural host, but free-living *V. cholerae* organisms can exist in the aquatic environment. People get cholera after ingesting contaminated water or food, particularly raw or undercooked shellfish. Cholera is rare in the U.S. and other industrialized nations, but its incidence has continued to increase globally since 2005. Surveillance for cholera is intended to determine if there is a source of infection of public health concern (e.g., contaminated commercially distributed food product) and to stop transmission from such a source, identify populations at risk of infection so as to provide targeted prevention outreach and monitor trends in the epidemiology of toxigenic *V. cholerae* serogroups O1 and O139.

In Florida, cholera is typically associated with history of travel to an area with epidemic cholera. Imported cases were seen in the early 1990s following the onset of the Latin American cholera epidemic. No cases were reported for more than a decade in Florida prior to the onset of the Haiti cholera epidemic in October 2010. Florida has approximately 241,000 Haitian-born residents, representing almost half of the Haitian-born population in the U.S., so imported cases were anticipated. Four cholera cases were reported in 2010, eleven cases in 2011, and seven cases in 2012. All seven cases reported in 2012 were culture-confirmed; five people were hospitalized but no deaths were reported. Six of the cases were interviewed. All infections were acquired in Haiti (6) or the Dominican Republic (1) and considered part of the ongoing epidemic in Hispaniola. Four cases were in non-Hispanic black women, two cases were in non-Hispanic black men and one case was in a white Hispanic man. Ages ranged from 23 to 78 years old (average age was 52 years, median was 61 years). Cases were reported in residents of Miami-Dade (3), Broward (2), Orange (1) and St. Lucie (1) counties. Cases occurred in April (1), May (2), June (1), August (1) and October (2).

### Hansen's Disease (Leprosy)

Hansen's disease, commonly known as leprosy, is a bacterial disease of the skin and peripheral nerves caused by *Mycobacterium leprae*. People with Hansen's disease can experience a wide range of clinical manifestations, but typically develop symptoms related to the skin, peripheral nerves and the mucosa of the upper airway. Although the mode of transmission of Hansen's disease is not clearly defined, most investigators think that *M. leprae* is usually spread from person to person in respiratory droplets. Some armadillos in the southern U.S. are naturally infected with Hansen's disease. It is possible to get infected through contact with armadillos, but the risk is low and not well understood. Transmission of Hansen's disease in the U.S. is rare, with about 200 cases reported each year, and most U.S. cases occur in immigrants, typically from Asia, the Asian Pacific Islands and Latin America. Surveillance for Hansen's disease is intended to facilitate early diagnosis and appropriate treatment by an expert in order to minimize permanent nerve damage and prevent transmission from infected people.

In Florida, between 7 and 12 Hansen's disease cases are reported each year. Ten cases were reported in 2012, all of which were sporadic, laboratory-confirmed cases. No hospitalizations or deaths were reported, and all 10 people were interviewed. Seven cases were in white non-Hispanic men, two cases were in white non-Hispanic women and one case was in a white Hispanic man. Ages ranged from 30 to 83 years old (average age was 57 years, median was 60 years). Cases were reported in residents of Brevard (5), Hillsborough (2), Orange (1), Osceola (1) and Polk (1) counties. No linkages between the Brevard County cases were identified. Two infections were reported as acquired in Florida (in Hillsborough and Brevard county residents), two were reported as acquired outside the U.S. (Mexico and Korea) and the origin of the remaining six cases was unknown. Two men reported exposure to armadillos, a possible source of infection. One man killed an armadillo 5-6 years prior to onset and one man reported extensive contact with armadillo feces, urine and blood in Florida and Georgia.

### **Mercury Poisoning**

Mercury is a naturally occurring element whose distribution in the environment is the result of both natural and man-made processes. There are three categories of mercury (elemental or metallic mercury, organic mercury compounds and inorganic mercury compounds), each with unique characteristics and potential toxic effects. Mercury exposures are typically due to ingestion of mercury or inhalation of mercury vapors. Forms of mercury most likely encountered by the general public include elemental mercury vapor (found in some thermometers and dental amalgam), methylmercury (found in fish and marine mammals), ethylmercury (found in some medical preservatives), and inorganic mercury (mercuric salts). Methylmercury is created when microorganisms in the environment convert inorganic mercury into its organic form, which can build up in the environment and accumulate in fish and marine mammals. Methylmercury is the most likely source of mercury to cause adverse health effects in the general population and can cause impaired neurological development; impaired peripheral vision; disturbed sensations (e.g., "pins and needles feelings" usually in the hands, feet, and around the mouth); lack of coordinated movements; impairment of speech, hearing and walking; and muscle weakness. Surveillance for mercury poisoning is important to determine if there is a source of intoxication of public health concern (e.g., fish, broken thermometer, dental amalgams), to prevent further or continued exposure to those sources and when the source of intoxication appears to pose a risk to only a few people, to inform those people how they can reduce their risk of exposure.

The number of mercury poisoning cases reported in Florida varies by year from a high of 69 cases in 2008 to a low of seven cases in 2011. One of the main reasons for the decrease in the number of cases after 2008 was a change in case definition. Ten cases were reported in 2012, all of which were sporadic and laboratory-confirmed in urine ( $\geq 10$  micrograms per liter [ $\mu\text{g/L}$ ]), whole blood ( $\geq 10$   $\mu\text{g/L}$ ) or hair ( $\geq 5$   $\mu\text{g/L}$ ). Only one person was hospitalized and no deaths were reported. Four cases were in white non-Hispanic men, three were in white non-Hispanic women, one was in a white Hispanic man, one was in a man of unknown race and ethnicity and one was in a woman of unknown race and ethnicity. Ages ranged from 21 to 81 years old (average age was 51 years, median was 48 years). Cases were reported in residents of Martin (2), Miami-Dade (2), Brevard (1), Broward (1), Indian River (1), Palm Beach (1), Sarasota (1) and St. Johns (1) counties. Eight of the cases were interviewed. One person was exposed in Venezuela; the other nine people were exposed in Florida. Nine of the cases were in people reporting fish consumption within a month of illness identification. One person reported eating  $\leq 12$  ounces of fish per week, one person reported 18 to 30 ounces per week, three people reported 36 to 60 ounces per week, one person reported 66 to 90 ounces per week, one person reported  $\geq 126$  ounces per week and two people did not report the amount of fish consumption. One person did not report any high-risk exposures for mercury poisoning.

### **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.

In Florida, between 10 and 20 mumps cases are typically reported each year. In 2012, only five cases were reported; all sporadic, four of which were confirmed, one of which was probable. One case was hospitalized and no deaths were reported. Three cases were in women, two were in men. Three cases occurred in white people, two of whom were Hispanic. Two cases occurred in people of other races. Four of the five cases were interviewed. Two infections were acquired in other countries (India and Malaysia) and three infections were acquired in Florida. Four people (aged 4, 26, 48 and 54 years) had at least one dose of mumps-containing vaccine, but one person (aged 43 years) was unvaccinated. Cases were reported in residents of Brevard, Duval, Miami-Dade, Palm Beach and Seminole counties. Four of the cases occurred during winter months (November, December, January and February) and one case occurred in August.

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

*Staphylococcus aureus* are common bacteria 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 infection, especially among chronically ill patients who have recently had invasive procedures or who have indwelling medical devices. *S. aureus* is transmitted from person to person by direct contact. *S. aureus* is spread via hands, especially among health care workers, which may 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. Consequently, physicians rely on vancomycin as the primary antibiotic for treating patients with serious MRSA infections. 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 relatively new and rare clinically-difficult organisms.

Typically, between one and six VISA cases are reported in Florida annually. Seven cases were reported in 2012, more than any previous year, all of which were sporadic and laboratory-confirmed. All cases were investigated. Three cases were non-Hispanic white men, one case was in a Hispanic white man, one case was in a non-Hispanic white woman, one case was in a black man and one case was in a man of other race. Patient age ranged from 50 to 74 years old (average age was 61 years, median was 62 years). Five cases were hospitalized and two cases died, though not necessarily from their VISA infection. Six cases had a history of vancomycin treatment for an infection prior to the isolation of VISA. One patient's history was unknown. The cases were reported by different facilities in six counties, Duval (2), Bay (1), Hernando (1), Hillsborough (1), Miami-Dade (1) and Palm Beach (1).



## Tetanus

Tetanus is a life-threatening but vaccine-preventable disease caused by the toxin produced by *Clostridium tetani* bacteria. 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 can be prevented through immunization and is rare in the U.S. 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. *Clostridium 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). Tetanus is under surveillance to collect information on the temporal, geographic and demographic occurrence to facilitate its prevention and control.

Typically, two to five tetanus cases are reported in Florida residents each year. Four cases were reported in 2012, all of which were sporadic and classified as probable. There are no clinical laboratory tests that can confirm tetanus infection. Due to the lack of confirmatory testing, there is no confirmed case definition for tetanus. Three of the four cases were hospitalized, but no deaths were reported. Two cases were in men and two cases were in women; three cases were in white Hispanic people, and one case was in a white non-Hispanic person. Ages ranged from 38 to 70 years old (average age was 57 years, median was 60 years). Cases were reported in Hernando, Lee, Marion and Miami-Dade counties. The two men sustained puncture wounds from nails, one woman sustained a puncture wound from a palm frond that remained embedded for several days, and one woman had a compound fracture of the lower leg after a fall outside.

## 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. *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.

Typically, 10 to 20 typhoid fever cases are reported in Florida residents annually, with incidence peaking in summer months. Approximately 80% of infections are acquired in other countries. Eleven cases were reported in 2012, all of which were confirmed and interviewed, none of which were outbreak-associated. Eight people were hospitalized, but no deaths were reported. Five of the 11 cases were in Asian/Pacific Islanders, two in blacks, two in white Hispanics and two in people of other races (one of whom was Hispanic). Seven of the cases were in women. Ages ranged from 3 to 59 years old (average age was 30 years, median was 38 years). Cases were reported in residents of Broward (3), Miami-Dade (3), Palm Beach (2), Alachua (1), Collier (1) and Orange (1) counties. Nine infections were acquired in other countries (four in India, and one each in Bangladesh, Guatemala, Haiti, Pakistan and the Philippines). Two infections were acquired in Florida (Miami-Dade and Collier county residents) and no source infection was identified for either case. One case was identified in a health care worker who was excluded from work until three negative stool specimens were obtained.

