

Section 3

Narratives for Selected Reportable Diseases/Conditions of Infrequent Occurrence

Arsenic Poisoning

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 or continued exposure, and to inform the public about how to reduce the risk of exposure.

Arsenic poisoning became a reportable condition in Florida in November 2008; since then, between 5 and 14 cases have been reported each year. Thirteen cases were reported in 2013, all of which were sporadic and laboratory-confirmed. Two cases were hospitalized, but no deaths were reported. Six cases were in women and seven were in men; 10 cases were in non-Hispanic white people, one case was in a non-Hispanic black person, and two cases were in people of unknown race and ethnicity. Ages ranged from 27 to 81 years old (average age was 57 years, median was 60 years). Cases were reported in residents of Bay (4), Broward (2), St. Lucie (2), Martin (1), Okaloosa (1), Pasco (1), Pinellas (1), and Walton (1) counties. All 13 people were interviewed. Twelve people were exposed in Florida; one person did not know where he was exposed. Three people were exposed to pesticides, one had intentional arsenic poisoning, one reported drinking well water, one took homeopathic medicines, and one person reported previous work in the mining industry. The remaining six people had unknown sources of exposure.

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 *Brucella 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 event.

Over the past 10 years, between 3 and 17 brucellosis cases were reported annually in Florida residents. In 2013, nine cases were reported; six were confirmed, three were probable. The six confirmed cases included three *B. suis*, two *B. melitensis*, and one *B. abortus*. One case was outbreak

-associated, the remaining cases were sporadic. Six people were hospitalized, but no deaths were reported. Two cases were in women and seven were in men; five cases were in non-Hispanic white people and four cases were in Hispanic white people. Ages ranged from 1 to 71 years old (average age was 48 years, median was 53 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 Broward (2), Orange (2), Hendry (1), Lee (1), Miami-Dade (1), Polk (1), and St. Lucie (1) counties. All nine cases were interviewed. Only three infections were acquired in Florida, all associated with feral swine contact. One infection was reported as acquired in Florida but had no identified exposures in Florida and reported living on a farm in the Canary Islands. The remaining five cases reported exposures in Wisconsin, Israel, Mexico (2), and Venezuela. The exposure in Wisconsin involved butchering a pig. Exposures in Israel and Mexico included raw milk or livestock contact, including one traveler who reportedly transported a goat carcass from Mexico to Florida in a suitcase. The person who acquired infection in Venezuela was a new immigrant who could not identify a likely source of exposure, but brucellosis is highly endemic in animals in that country. This person donated platelets that were culture-positive for *B. abortus* that were transfused into an ill Miami-Dade resident. Due to rapid response by the blood bank, hospital, and the Florida Department of Health, the platelet recipient received rapid treatment with prophylactic antibiotics and was not infected.

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. Large epidemics are often related to fecal contamination of water supplies or street-vended foods. Cholera is occasionally spread through eating raw or undercooked shellfish that are naturally contaminated. Cholera is rare in the U.S. and other industrialized nations and is usually due to ingestion of contaminated food or international travel. There has been a modest increase in imported cases since 1991 related to travel and ongoing epidemics in other countries. Surveillance for cholera in the U.S. 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 a 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, 11 cases in 2011, seven cases in 2012, and four in 2013. All four cases reported in 2013 were culture-confirmed; all four people were hospitalized but no deaths were reported. Two cases were in women and two were in men; three cases were in non-Hispanic black people, and one was in a Hispanic white person. Ages ranged from 46 to 58 years old (average age was 51 years, median was 50 years). Cases were reported in residents of Miami-Dade (3) and Collier (1) counties. Cases occurred in July (2), September (1) and December (1). Three of the four infected people were interviewed. Three infections were acquired outside of the U.S. (two in Haiti, one in Cuba) and linked to ongoing cholera outbreaks in the originating countries. One health care worker became infected in Florida while providing hospital care for a Haitian traveler ill with cholera (see Section 4: Notable Outbreaks and Case Investigations for additional information on this incident).

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*. Approximately 95% of people are resistant to infection. Those who do develop clinical illness can experience a wide range of clinical manifestations, but typically develop symptoms related to the skin, peripheral nerves, and nasal mucosa. Although the mode of transmission of Hansen's disease is not clearly defined, most investigators believe that *M. leprae* is usually spread person-to-person in respiratory droplets following extended close contact with an infected person, such as living in the same household. The incubation period is typically years, making it difficult to determine the source of infection. Some armadillos in the southern U.S. are naturally infected with *M. leprae*; it is not clear if armadillos are simply sentinels or true reservoirs of the bacteria. It is possible to get infected through contact with armadillos, but the risk is low. Transmission of Hansen's disease in the U.S. is rare, with about 200 cases reported each year. Most U.S. cases occur in immigrants, typically from Asia, the Asian Pacific Islands, and Latin America where the disease is endemic. 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 further transmission.

In Florida, less than 12 Hansen's disease cases are reported each year. Ten cases were reported in 2013, all of which were laboratory-confirmed cases. The median time from symptom onset to laboratory diagnosis was 8.5 months. Two people were known to be hospitalized but no deaths were reported. No cases were outbreak-associated. Five of the cases were in women and five were in men; seven cases were in non-Hispanic white people, two were in non-Hispanic black people, and one was in a Hispanic person of unknown race. Ages ranged from 35 to 75 years old (average age was 55 years, median was 58 years). Cases were reported in residents of Brevard (4), Hillsborough (2), Columbia (1), Martin (1), Okeechobee (1) and Polk (1) counties. No linkages between the cases were identified. Nine of the cases were interviewed. Two infections were reported as acquired in Florida (in Brevard County residents), one was reported as acquired outside the U.S. (Cuba), and the origin of the remaining seven infections was unknown. None of the infected people recalled direct contact with armadillos; one person reported chasing armadillos in Oklahoma. Of the nine people with known travel history, only two reported international travel (Cuba and Germany) including one person who was born in Cuba. One person was homeless.

Measles

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. Measles is highly contagious among susceptible people and can spread to others from four days before to four days after a rash appears. 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 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.

In Florida, less than five measles cases are typically reported each year. In 2013, seven cases were reported; all of which were laboratory-confirmed. Six cases were outbreak-associated, including two household outbreaks. One case was hospitalized and no deaths were reported. Five cases were in

women and two were in men; six were in non-Hispanic white people and one was in a non-Hispanic black person. Ages ranged from 4 to 41 years old (average age was 22 years, median was 13 years). Cases were reported in residents of Orange (4), Seminole (2), and Broward (1) counties. Cases occurred in December (1), January (3), February (1), and March (2). All seven infected people were interviewed. Two infections were acquired outside of the U.S. (one in Mexico, one in Sudan) and the remaining five infections were acquired in Florida following introduction of the virus by an overseas traveler. None of the seven cases had a documented history of receiving measles-containing vaccine. All four cases in children had a religious exemption to vaccination requirements.

Mercury Poisoning

Mercury is a naturally occurring element distributed in the environment as a result of both natural and man-made processes. There are three forms of mercury (i.e., elemental or metallic mercury, organic mercury compounds, inorganic mercury compounds), each with unique characteristics and potential health threats. 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, 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 leading to 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; impaired speech, hearing, and walking; and muscle weakness. Surveillance for mercury poisoning is important to determine if there is a source of mercury exposure of public health concern (e.g., fish, broken thermometer, dental amalgams), prevent further or continued exposure, and to inform the public about how to reduce the 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 five cases in 2013. All five cases were sporadic and laboratory-confirmed in urine (≥ 10 micrograms per liter [$\mu\text{g/L}$]) or whole blood (≥ 10 $\mu\text{g/L}$). No one was hospitalized and no deaths were reported. Two cases were in women and three were in men. Three cases were in non-Hispanic white people, one was in a non-Hispanic mixed-race person, and one was in a white person of unknown ethnicity. Ages ranged from 4 to 66 years old (average age was 39 years, median was 33 years). Cases were reported in residents of Bay (1), Miami-Dade (1), Duval (1), Highlands (1), and Monroe (1) counties. Only two people were directly interviewed, though some exposure information was available from the diagnosing physician for two additional cases. All five people were exposed in Florida. Four of the people reported fish consumption within a month of illness identification. Two people reported eating ≤ 12 ounces of fish per week, one person reported 36 to 60 ounces per week, and one person did not report their fish consumption. One person did not report any high-risk exposures for mercury poisoning.

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

Staphylococcus aureus is a common bacterium 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. *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 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. 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.

Typically, between one and seven VISA cases are reported in Florida annually. Five cases were reported in 2013, all of which were sporadic and laboratory-confirmed. All five cases were hospitalized and two cases died, though not necessarily from their VISA infection. Two cases were in women and three were in men; all cases were in non-Hispanic white people. Ages ranged from 50 to 85 years old (average age was 68 years, median was 70 years). Cases were reported in residents of Palm Beach (3), Duval (1), and Hillsborough (1) counties. All cases were investigated, though only one case was interviewed.

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. 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). Tetanus is under surveillance 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.

Typically, two to five tetanus cases are reported in Florida residents each year. Five cases were reported in 2013, 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. All five people were hospitalized and one death was reported. Two cases were in women and three were in men; two cases were in non-Hispanic white people, one was in a non-Hispanic black person, one was in a non-Hispanic American Indian/Alaskan native, and one was in non-Hispanic person of unknown race. Ages ranged from 16 to 79 years old (average age was 47 years, median was 36 years). Cases were reported in residents of Duval (2), Broward (1), Miami-Dade (1), and Okaloosa (1) counties.

Four of the five infected people were interviewed. One man sustained a puncture wound on his finger with dirty steel cable, one man was cut during an outdoor sculpting class, one elderly man was cut on the hand while cleaning a pool, and one elderly woman was cut on the arm after falling onto a footstool. The exposure history for the infected woman who was not interviewed is unknown. One person was up-to-date on vaccinations, two were not up-to-date on vaccinations, and the vaccination status of two people was unknown.

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 2013, 10 of which were confirmed. The single probable case was epidemiologically linked by household to one of the confirmed cases; these were the only two outbreak-associated cases. Nine people were hospitalized, but no deaths were reported. Seven cases were in women and four were in men. Five cases were in Hispanic white people, three were in non-Hispanic black people, two were in non-Hispanic Asian/Pacific Islanders, and one was in a non-Hispanic white person. Ages ranged from 3 to 93 years old (average age was 36 years, median was 32 years). Cases were reported in residents of Collier (3), Miami-Dade (3), Broward (2), Duval (1), Hendry (1), and Palm Beach (1) counties. All 11 cases were interviewed. Five infections were acquired outside of the U.S. (two each in India and Haiti, one in Nepal). Two infections were acquired in Florida (Collier and Miami-Dade county residents) with no source of infection identified for either case. The remaining four people spent time in Florida and other countries (two in Mexico, one in Haiti, one in Guatemala) during their exposure period. These infections were most likely acquired outside the U.S.

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 with WNV infections 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, 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 much time outside (due to occupation, hobbies or homelessness) or not using insect repellent 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 public education on prevention, monitor incidence over time, and estimate the burden of illness.

The incidence of WNV disease in Florida varies greatly from year to year but the incidence consistently peaks between July and September. The largest number of cases (94) was reported in 2003; from 2006 to 2009, only three cases were reported each year. In 2012, 74 cases were reported, compared to only seven cases reported in 2013. All seven cases were sporadic; six confirmed cases and one probable were reported. Six people were hospitalized but no deaths were reported. One case

was in a woman and the remaining six cases were in men; six cases were in non-Hispanic white people and one was in a non-Hispanic black person. Ages ranged from 41 to 69 years old (average and median age was 57 years). Cases were reported in residents of Duval (3), Alachua (1), Leon (1), Nassau (1), and Polk (1) counties. Consistent with past years, cases occurred in August (2), September (3), October (1) and November (1). Six of the seven infected people were interviewed. Six infections were acquired in Florida and one infection was acquired in South Dakota.

Asymptomatic WNV infections do occur, though they do not meet the Florida surveillance case definitions; two asymptomatic infections were identified in Florida residents in 2013. One asymptomatic blood donor from Duval County was reported with donation in August 2013. In addition, a WNV-associated transplant investigation was conducted when a Texas organ donor tested positive. One of the organ recipients was a Brevard County resident, who received a liver transplant in September 2013. A subsequent serum sample was positive for WNV by polymerase chain reaction-positive, though her infection remained asymptomatic.